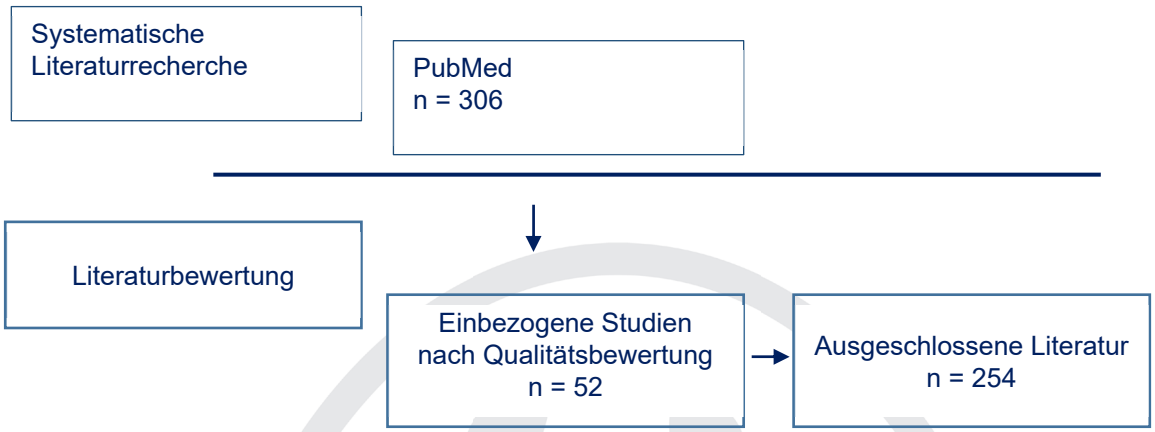
Anhang

Recherche in Pubmed

AG 1-AP
Date Run: 14.01.2019

Search	Hits
AG1-AP: (((Pancreatitis[MeSH] NOT Pancreatitis, chronic[MeSH]) AND (German[LA] OR English[LA]) NOT (editorial[PT] OR historical article[PT] OR comment[PT] OR case reports[PT] OR review[PT]) NOT („animals“[MeSH] NOT „humans“[MeSH]) AND (2010 : 2018/12/04[dp])) AND (etiology[SH] OR "drug-induced"[all fields] OR "drug induced"[all fields] OR "drug related"[All fields] OR "drug-related"[all fields] OR prevalence[MeSH] OR incidence[MeSH])) NOT (Diagnosis, Differential[MeSH] OR Endoscopy, Digestive System[MeSH] OR Surgery[MeSH] OR Diagnostic imaging[MeSH] OR Biomarkers[MeSH] OR Severity of Illness Index[MeSH] OR Prognosis[MeSH] OR Pancreatic Neoplasms [MeSH] OR Clinical laboratory Techniques[MeSH] OR Treatment[MeSH] OR chronic disease[MeSH] OR autoimmune disease[MeSH] OR Animal Experimentation[MeSH] OR Mice[MeSH] OR Rats[MeSH])	306

Ergebnis und PRISMA Flow Chart

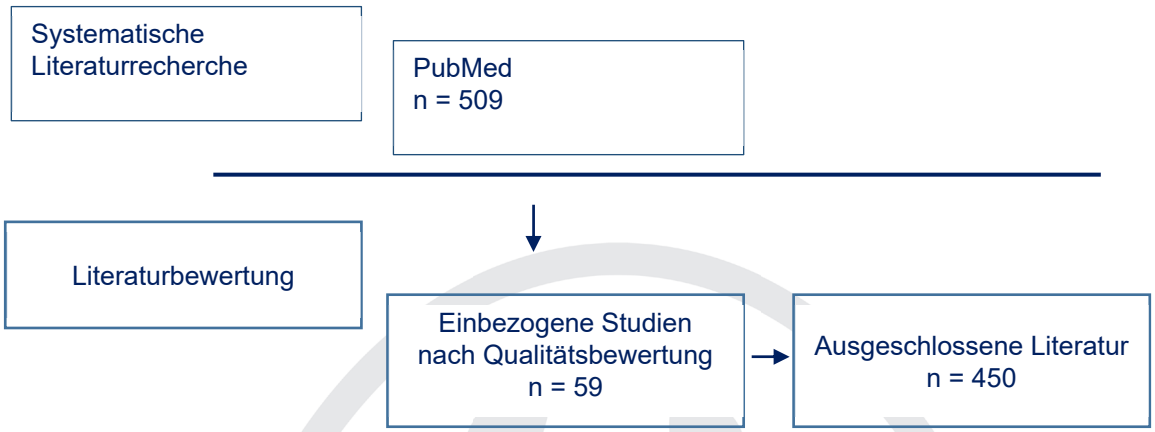


Evidenztabelle siehe Supplement, ab S. 55

AG 2-AP
Date Run: 06.12.2018

Search	Hits
AG2-AP: (((Pancreatitis[MeSH] NOT Pancreatitis, chronic[MeSH]) AND (German[LA] OR English[LA]) NOT (editorial[PT] OR historical article[PT] OR comment[PT] OR case reports[PT] OR review[PT]) NOT („animals“[MeSH] NOT „humans“[MeSH]) AND (1960 : 2018/12/04[dp])) AND ((Prediction OR Organ Dysfunction Scores[MeSH] OR Severity of Illness Index [MeSH]) AND (Pancreatitis/classification[MAJR] OR (Atlanta Classification AND classification[SH]) OR (Revised Atlanta Classification AND classification[SH]) OR (determinant-based classification AND classification[SH]) OR multiple organ failure[MeSH] OR fluid collection OR necrotizing pancreatitis[MeSH] OR peripancreatic necrosis OR walled-off necrosis OR "BISAP" OR Ranson score OR Glasgow Score OR C-reactive protein[MeSH] OR fine-needle aspiration OR microbiology)) NOT (Differential Diagnosis[All Fields] OR Endoscopy, Digestive System[MeSH] OR Surgery[SH]))	509

Ergebnis und PRISMA Flow Chart



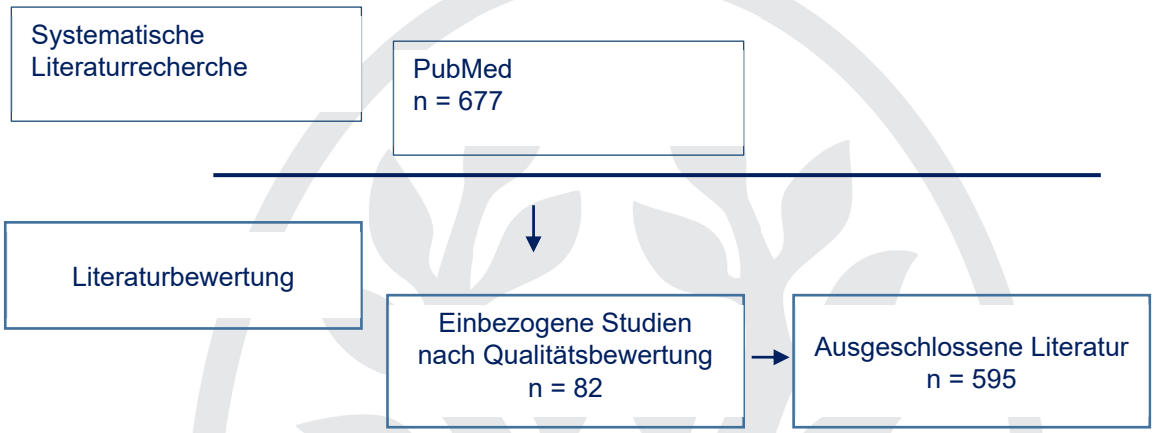
Evidenztabelle siehe Supplement, ab S. 55

AG 3-AP
Date Run: 12.12.2018

Search	Hits
AG2-AP: (((Pancreatitis[MeSH] NOT Pancreatitis, chronic[MeSH]) AND (German[LA] OR English[LA]) NOT (editorial[PT] OR historical article[PT] OR comment[PT] OR case reports[PT] OR review[PT]) NOT („animals“[MeSH] NOT „humans“[MeSH]) AND (1960 : 2018/12/04[dp])) AND (diagnostic imaging[MeSH] AND (Computed Tomography Angiography[MeSH] OR Tomography, Spiral Computed[MeSH] OR Multidetector Computed Tomography[MeSH] OR Endosonography[MeSH] OR Ultrasonography[MeSH] OR Endoscopic Ultrasound-Guided Fine Needle Aspiration[MeSH] OR Elasticity Imaging Techniques [MeSH] OR "CELMI" OR Ultrasound OR endoscopic ultrasound OR "CEUS"OR contrast enhanced ultrasound OR Magnetic Resonance Imaging[MeSH] OR Cholangiopancreatography, Magnetic Resonance[MeSH] OR Diffusion Magnetic Resonance Imaging[MeSH] OR Cholangiopancreatography, Magnetic Resonance[MeSH])) NOT	677

(Therapy OR Diagnosis, Differential[MeSH] OR Surgery[SH] OR Pancreatic Neoplasms[MeSH] OR Cholangiopancreatography, Endoscopic Retrograde[MeSH] OR Absorptiometry, Photon[MeSH] OR Echocardiography[MeSH] OR Autoimmune Diseases[MeSH]))	

Ergebnis und PRISMA Flow Chart



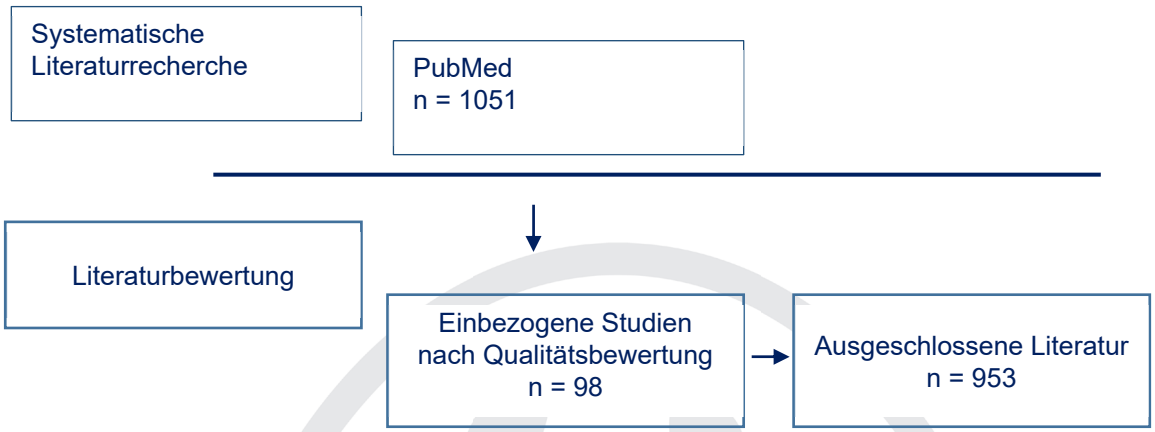
Evidenztabelle siehe Supplement, ab S. 55

AG 4-AP
Date Run: 14.12.2018

Search	Hits
AG4-AP: (((Pancreatitis[MeSH] NOT Pancreatitis, chronic[MeSH]) AND (German[LA] OR English[LA]) NOT (editorial[PT] OR historical article[PT] OR comment[PT] OR case reports[PT] OR review[PT]) NOT („animals“[MeSH] NOT „humans“[MeSH]) AND (1960 : 2018/12/04[dp]))	
AND	
(((Volume AND Depletion) OR Hypovolemia[MeSH] OR Fluid Therapy[MeSH] OR (Resuscitation[MeSH] AND Fluid Therapy[MeSH]) OR Infusions, Intravenous[MeSH] OR Early Goal-Directed Therapy[MeSH] OR (goal directed AND Fluid Therapy[MeSH]) OR preload[all fields] OR Crystalloid Solutions[MeSH] OR Colloids OR Colloid solutions OR Plasma Substitutes[MeSH] OR Hydroxyethyl Starch Derivatives[MeSH] OR Plasma[MeSH] OR FFP OR fresh frozen plasma OR Blood Transfusion[MeSH] OR (Albumin[MeSH] AND Fluid Therapy[MeSH]) OR	1051

(Analgesia[MeSH] NOT (Acupuncture Analgesia[MeSH] OR Analgesia, Obstetrical[MeSH] OR Audioanalgesia[MeSH] OR Diffuse Noxious Inhibitory Control[MeSH] OR Interpleural Analgesia[MeSH] OR Neuroleptanalgesia[MeSH] OR Transcutaneous Electric Nerve Stimulation[MeSH]) OR Analgesics, Non-Narcotic[MeSH] OR Analgesics, Opioid [MeSH] OR Narcotics[MeSH]) OR (Intra-Abdominal Hypertension[MeSH] OR intra-abdominal pressure OR intraabdominal pressure OR abdominal compartment) OR ((Prediction OR Organ Dysfunction Scores[MeSH] OR Severity of Illness Index [MeSH]) AND (Critical Care[MeSH] OR "Intensive care" OR "intermediate care" OR (Intensive Care Units[MeSH] NOT (Burn units[MeSH] OR Coronary Care Units[MeSH] OR Intensive Care Units, Pediatric[MeSH] OR Recovery Room[MeSH])) OR Patient Transfer[MeSH] OR primary care centers OR Secondary Care Centers[MeSH] OR Tertiary Care Centers[MeSH] OR Hospitals, High-Volume[MeSH] OR Hospitals, Low-Volume[MeSH] OR Hospitals, Community[MeSH] OR Hospitals, General[MeSH]))) NOT (Differential Diagnosis[All Fields] OR Endoscopy, Digestive System[MeSH] OR Surgery[SH])	

Ergebnis und PRISMA Flow Chart



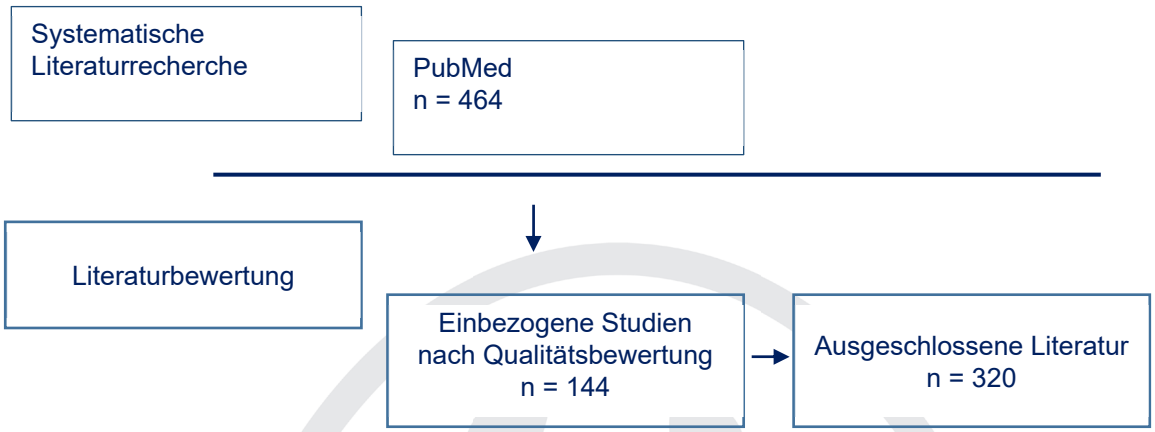
Die AG 4 hat zusätzlich noch über die Handsuche 9 weitere Literaturstellen hinzugezogen und bewertet.

Evidenztabelle siehe Supplement, ab S. 55

AG 5-AP
Date Run: 16.12.2018

Search	Hits
AG5-AP: ((Pancreatitis[MeSH] NOT Pancreatitis, chronic[MeSH]) AND (German[LA] OR English[LA]) NOT (editorial[PT] OR historical article[PT] OR comment[PT] OR case reports[PT] OR review[PT]) NOT („animals“[MeSH] NOT „humans“[MeSH]) AND (1960 : 2018/12/04[dp])) AND ((Anti-Bacterial Agents[MeSH] OR Antibiotic Prophylaxis[MeSH] OR antibiotics OR "prophylactic antibiotics" OR Diet, Food, Nutrition[MeSH] OR Enteral Nutrition[MeSH] OR Parenteral Nutrition[MeSH] OR Nutrition Therapy[MeSH] OR Dietary Supplements[MeSH] OR (selective[All Fields] AND ("intestines"[MeSH Terms] OR "intestines"[All Fields] OR "intestinal"[All Fields]) AND ("decontamination"[MeSH Terms] OR "decontamination"[All Fields]))) AND (Survival[MeSH] OR outcome OR adverse effects[SH] OR "side effects" OR Anti-Bacterial Agents/CL OR Time Factors[MeSH] OR Timing OR "Time Point"OR "mild pancreatitis" OR "moderately severe pancreatitis" OR "severe pancreatitis" OR "mild acute pancreatitis" OR "moderately severe acute pancreatitis" OR "severe acute pancreatitis" OR "predicted mild pancreatitis" OR " predicted severe pancreatitis" OR Pancreatitis, Acute Necrotizing[MeSH]))	464

Ergebnis und PRISMA Flow Chart



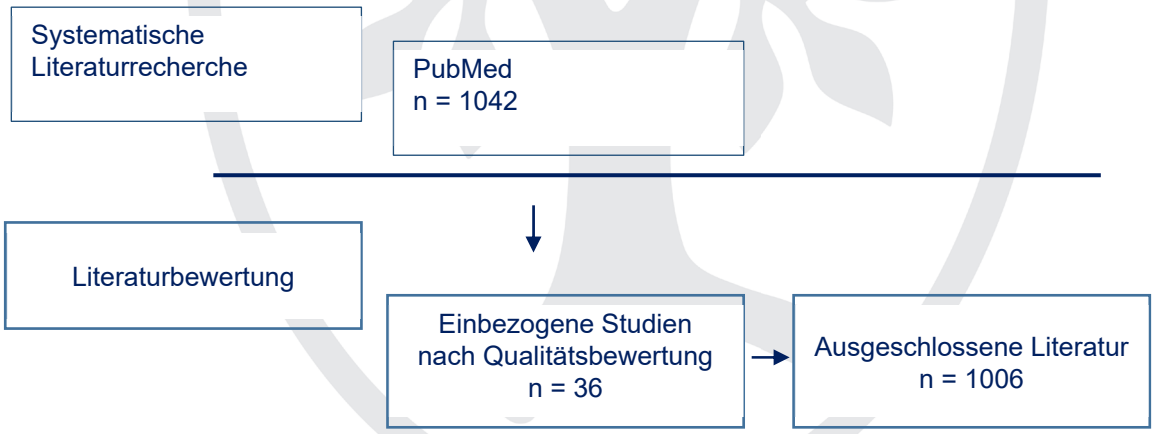
Evidenztabelle siehe Supplement, ab S. 55

AG 6-AP
Date Run: 16.12.2018

Search	Hits
AG6-AP: ((Pancreatitis[MeSH] NOT Pancreatitis, chronic[MeSH]) AND (German[LA] OR English[LA]) NOT (editorial[PT] OR historical article[PT] OR comment[PT] OR case reports[PT] OR review[PT]) NOT („animals“[MeSH] NOT „humans“[MeSH]) AND (1960 : 2018/12/04[dp])) AND (((biliary [all fields] OR "biliary pancreatitis" [all fields] OR "gallstone pancreatitis" [all fields]) AND (Diagnosis[MeSH] OR "diagnostic criteria" [all fields] OR "diagnostic algorithm"[all fields] OR "diagnostic modality"[all fields])) OR ((Cholestasis[MeSH] OR Cholangitis[MeSH] OR Choledocholithiasis[MeSH]) AND (Diagnosis[MeSH] OR "diagnostic criteria"[all fields] OR "diagnostic algorithm"[all fields])) OR ((biliary [all fields] OR "biliary pancreatitis" [all fields] OR "gallstone pancreatitis" [all fields]) AND (Sphincterotomy, Endoscopic[MeSH] OR Cholangiopancreatography,	1042

Endoscopic Retrograde[MeSH] OR Cholecystectomy[MeSH] OR Endosonography[MeSH] OR Cholangiopancreatography, Magnetic Resonance[MeSH] OR Tomography, X-Ray Computed[MeSH] OR Ultrasonography[MeSH] NOT (Carotid Intima-Media Thickness [MeSH] OR Echocardiography [MeSH] OR Echoencephalography [MeSH] OR Elasticity Imaging Techniques [MeSH] OR Focused Assessment with Sonography of Trauma [MeSH] OR Microscopy, Acoustic [MeSH] OR Ultrasonography, Interventional [MeSH] OR Ultrasonography, Mammary [MeSH] OR Ultrasonography, Prenatal [MeSH]))))	
NOT	
(Pancreatic Neoplasms[MeSH] OR autoimmune disease[MeSH] OR "post-ERCP pancreatitis"[all fields] OR "post-endoscopic retrograde cholangiopancreatography pancreatitis"[all fields] OR Self Expandable Metallic Stents[MeSH] OR "pancreatic duct stent" OR "bile duct stent" OR "biliary stent" OR stent[all fields] OR Diagnosis, Differential[MeSH] OR Chronic Disease[MeSH]))	

Ergebnis und PRISMA Flow Chart



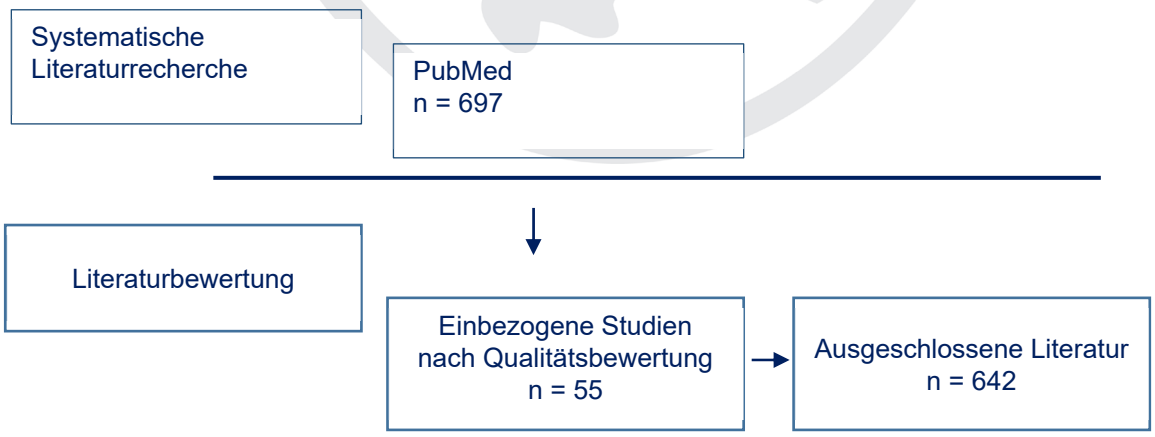
Die AG 6 hat zusätzlich noch über die Handsuche 4 weitere Literaturstellen hinzugezogen und bewertet.

Evidenztabelle siehe Supplement, ab S. 55

AG 7-AP
Date Run: 18.12.2018

Search	Hits
AG7-AP: (((Pancreatitis[MeSH] NOT Pancreatitis, chronic[MeSH]) AND (German[LA] OR English[LA]) NOT (editorial[PT] OR historical article[PT] OR comment[PT] OR case reports[PT] OR review[PT]) NOT („animals“[MeSH] NOT „humans“[MeSH]) AND (1960 : 2018/12/04[dp])) AND (((Infection[MeSH] OR Sepsis[MeSH]) AND (Diagnostic Imaging [MeSH] OR Biopsy, Fine-Needle [MeSH] OR Endosonography[MeSH])) OR (Pancreatitis, Acute Necrotizing[MeSH] AND Anti-Infective Agents[MeSH]) OR (Pancreatitis, Acute Necrotizing[MeSH] AND (Conservative Treatment[MeSH] OR Drainage[MeSH] OR "percutaneous drainage"[all fields] OR "transmural drainage"[all fields] OR "endoscopic drainage"[all fields] OR "necrosectomy"[all fields] OR "percutaneous necrosectomy"[all fields] OR "transmural necrosectomy"[all fields] OR "endoscopic necrosectomy"[all fields] OR "debridement"[all fields] OR "video-assisted retroperitoneal debridement"[all fields] OR Endoscopy, Digestive System[MeSH] OR Ultrasonography, Interventional[MeSH] OR Video-Assisted Surgery[MeSH] OR Therapeutic irrigation[MeSH] OR Lavage[MeSH] OR Self Expandable Metallic Stents[MeSH] OR (Stents[MeSH] NOT (Drug-Eluting Stents[MeSH] OR "coronary stents" OR "vascular stents")) OR "plastic stents" OR "pigtail stents" OR "double-pigtail stents"))))	697

Ergebnis und PRISMA Flow Chart

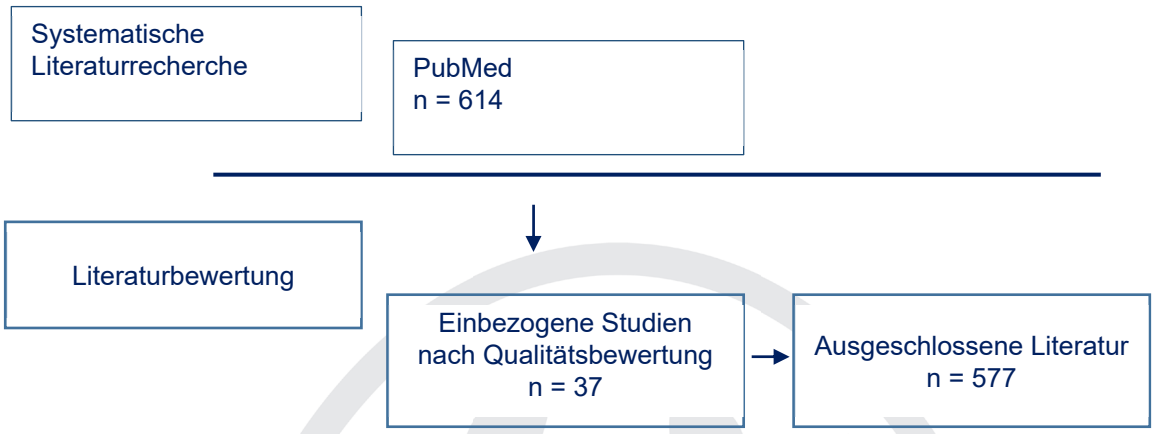


Evidenztabelle siehe Supplement, ab S. 55

AG 8-AP
Date Run: 19.12.2018

Search	Hits
AG8-AP: (((Pancreatitis[MeSH] NOT Pancreatitis, chronic[MeSH]) AND (German[LA] OR English[LA]) NOT (editorial[PT] OR historical article[PT] OR comment[PT] OR case reports[PT] OR review[PT]) NOT („animals“[MeSH] NOT „humans“[MeSH]) AND (1960 : 2018/12/04[dp])) AND (Aftercare[MeSH] OR "follow-up"[all fields] OR "follow up"[all fields] OR ((Diabetes Mellitus[MeSH] OR "endocrine insufficiency"[all fields]) AND (incidence[MeSH] OR "new onset"[all fields])) OR ((Exocrine Pancreatic Insufficiency[MeSH] OR "steatorrhea"[MeSH]) AND (incidence[MeSH] OR "new onset"[all fields])) OR (pancreatic neoplasm[MeSH] AND (incidence[MeSH] OR "new onset"[all fields])) OR ((Protective Factors[MeSH] OR Risk Factors[MeSH]) AND (recurrence[MeSH] OR Secondary Prevention[MeSH]))) NOT (Quality of Life[MeSH] OR Endoscopy, Digestive System[MeSH] OR Surgery[SH] OR Autoimmune Disease[MeSH]))	614

Ergebnis und PRISMA Flow Chart



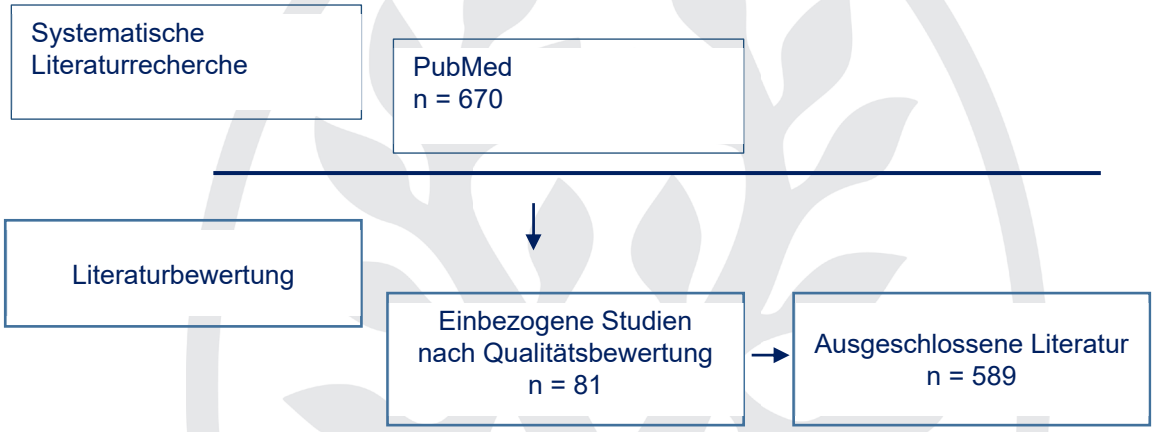
Evidenztabelle siehe Supplement, ab S. 55

AG 1-CP
Date Run: 30.11.2018

Search	Hits
AG1-CP: ((((„Pancreatitis“[MeSH] AND (German[LA] OR English[LA])) NOT (editorial[PT] OR historical article[PT] OR comment[PT] OR case reports[PT] OR review[PT])) NOT („animals“[MeSH] NOT „humans“[MeSH]))) AND (1960 : 2018/11/30[dp]) AND ((Etiology AND chronic pancreatitis[MeSH]) AND ((pancreatitis[All Fields] AND idiopathic[All Fields]) OR ((pancreatitis[All Fields] AND hereditary[All Fields]) OR alcohol drinking[MeSH] OR gallstones[MeSH] OR hyperlipidemias[MeSH] OR autoimmune diseases[MeSH] OR diabetes mellitus[MeSH] OR hyperparathyroidism[MeSH] OR (pancreas[All Fields] AND divisum[All Fields] OR annular[All Fields]) OR ((anatomic[All Fields] AND variants[All Fields]) AND idiopathic pancreatitis) OR ((hereditary pancreatitis[MeSH] OR idiopathic chronic pancreatitis OR alcoholic chronic pancreatitis) AND (trypsinogen[MeSH] AND mutation[All Fields]) OR (SPINK[All Fields] AND mutation[All Fields]) OR (Cystic Fibrosis Transmembrane Conductance Regulator[MeSH] AND mutation[All Fields]) OR (chymotrypsin[MeSH] AND mutation[All Fields]) OR (cathepsin B[MeSH] AND mutation[All Fields])) OR (positive family history AND risk) OR virus diseases[MeSH] OR parvovirus b19, human[MeSH] OR viral hepatitis OR cytomegalovirus[MeSH] OR hiv[MeSH] OR parasites OR (Adenoma, Islet Cell[MeSH] OR Carcinoma, Pancreatic Ductal[MeSH]) OR (papillary[All Fields] AND adenoma[All Fields]) OR (tropical pancreatitis AND pathogenesis) OR smoking[MeSH] OR risk factors[All Fields] OR (toxins[All Fields] AND biological[All Fields]) OR surveillance strategy)) OR (Incidence[MeSH] OR prevalence[MeSH]	670

AND (idiopathic pancreatitis OR chronic pancreatitis[MeSH]) AND (alcohol OR (family[All Fields] AND history[All Fields]) OR (anatomical[All Fields] AND variants[All Fields]) OR (metabolic[All Fields] AND disorders[All Fields]) OR mutations[All Fields] OR (genetic[All Fields] AND defects[All Fields]))) OR ((alcoholism[All Fields] AND chronic pancreatitis[MeSH]) AND (threshold OR linear correlation OR pathogenesis)) OR (guidelines[All Fields] AND genetic counseling[MeSH] AND chronic pancreatitis[MeSH]) OR ((genetic[All Fields] AND testing[All Fields]) AND indication AND chronic pancreatitis[MeSH]))	

Ergebnis und PRISMA Flow Chart



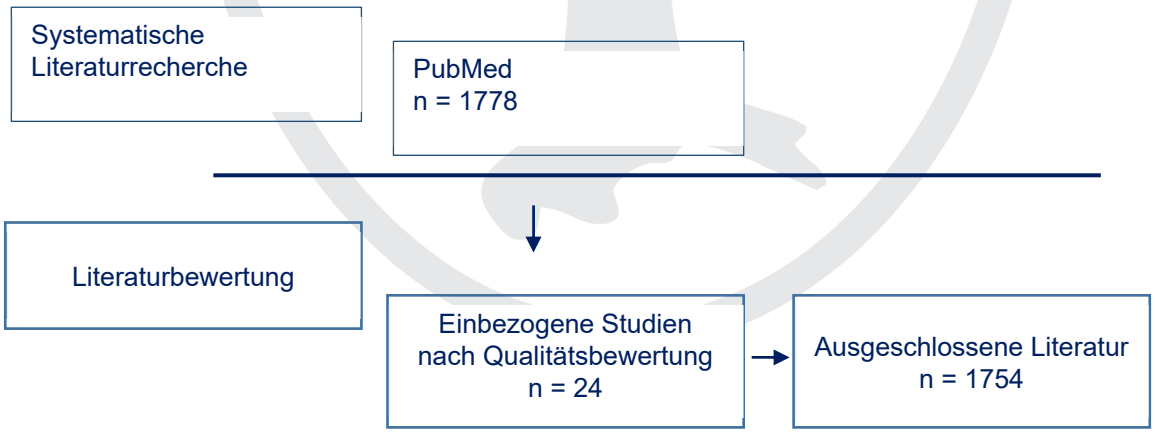
Evidenztabelle siehe Supplement, ab S. 55

AG 2-CP
Date Run: 30.11.2018

Search	Hits
AG2-CP: Funktionstests: ((((„Pancreatitis“[MeSH] AND (German[LA] OR English[LA])) NOT (editorial[PT] OR historical article[PT] OR comment[PT] OR case reports[PT] OR review[PT])) NOT („animals“[MeSH] NOT „humans“[MeSH]))) AND (1960 : 2018/11/30[dp]) AND (Exocrine Pancreatic Insufficiency[MeSH] OR ((pancreas[MeSH] AND pancreatic[All Fields]) AND (amylase[MeSH] OR lipase[MeSH] OR trypsin[MeSH] OR chymotrypsin[MeSH] OR pancreatic elastase[MeSH] OR bicarbonate[MeSH])) OR pancreatic function tests[MeSH] OR steatorrhea[MeSH] OR fecal enzyme OR breath test[MeSH] OR secretin[MeSH] OR caerulein OR cholecystokinin[MeSH] OR pancreolauryl OR 4-aminobenzoic acid[MeSH])	1778

Klassifikation/Bildgebende Verfahren: ((chronic pancreatitis[MeSH] AND (German[LA] OR English[LA])) NOT ((animals[MeSH] NOT humans[MeSH]) OR (editorial[PT] OR historical article[PT] OR comment[PT] OR case report*[PT]))) AND (1960[PDAT] : 2018/11/30[PDAT]) AND (sensitiv*[Title/Abstract] OR sensitivity and specificity[MeSH] OR diagnos*[Title/Abstract] OR diagnosis[MeSH] OR diagnosis[Subheading] OR Diagnosis, Differential[MeSH]) AND (Chronic pancreatitis[MeSH] AND Classification[MeSH] OR rosemont classification OR cambridge classification OR milwaukee classification OR atlanta classification OR grading OR Predictive Value of Tests[MeSH] OR cystic lesion OR morpholog* OR punction OR histolog* OR imaging[All Fields] OR elastograph* OR ultrasonography[MeSH] OR Endosonography[MeSH] OR ultrasound miniprobes OR idus OR direct pancreatography OR cholangiopancreatography, endoscopic retrograde[MeSH] OR Cholangiopancreatography, Magnetic Resonance[MeSH] OR magnetic resonance imaging[MeSH] OR Positron-Emission Tomography[MeSH] OR tomography, x-ray computed[MeSH] OR secretin[MeSH] OR contrast OR autoimmune OR Pancreatic Pseudocyst[MeSH] OR complication OR cystic fibrosis[MeSH] OR (parenchymal AND criteria) OR (duct AND criteria) OR neoplasia[All Fields] OR (cystic AND neoplasia) OR ipmn OR main duct OR branch duct OR anatomic anomaly OR (pancreas AND divisum) OR pancreatoscope OR pseudoaneurysm[All Fields] OR thrombosis[All Fields] OR Calcification[All Fields])	

Ergebnis und PRISMA Flow Chart

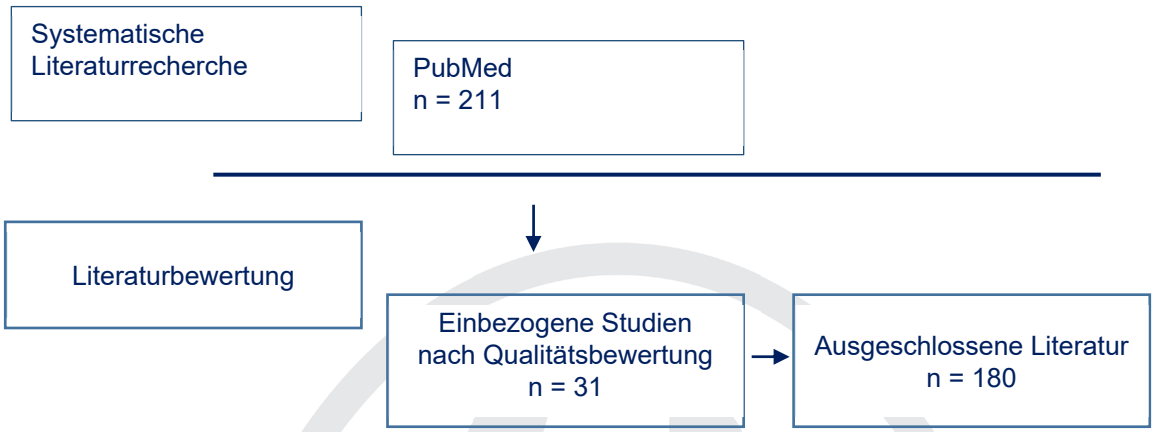


Evidenztabelle siehe Supplement, ab S. 55

AG 3-CP
Date Run: 21.10.2018

Search	Hits
AG3-CP: Schmerztherapie: ((Pancreatitis[MeSH] AND Chronic) **AND** (German[LA] OR English[LA]) NOT (editorial[PT] OR historical article[PT] OR comment[PT] OR case reports[PT] OR review[PT]) NOT („animals“[MeSH] NOT „humans“[MeSH]) AND (1960 : 2018/10/21[dp])) AND (pain OR medical therapy OR analge* OR NSAID OR Paracetamol OR opioid OR tramadol OR morphine OR oxycodone OR antidepressant OR anticonvulsant OR pregabalin OR anxiolytic) NOT (surgical therapy OR endoscop* therapy OR interventional therapy)) Ernährung: ((Pancreatitis[MeSH] AND Chronic) AND (German[LA] OR English[LA]) NOT (editorial[PT] OR historical article[PT] OR comment[PT] OR case reports[PT] OR review[PT]) NOT („animals“[MeSH] NOT „humans“[MeSH]) AND (1960 : 2018/10/21[dp])) AND (malnutrition OR diet* OR high-fat OR low-fat OR vitamin OR trace elements OR alcohol OR smoking OR medium chain triglycerides OR enteral nutrition OR parenteral nutrition) AND (nutrition[MeSH] OR malnutrition OR nutritional therapy) Enzymsubstitution: ((Pancreatitis[MeSH] AND Chronic) AND (German[LA] OR English[LA]) NOT (editorial[PT] OR historical article[PT] OR comment[PT] OR case reports[PT] OR review[PT]) NOT („animals“[MeSH] NOT „humans“[MeSH]) AND (1960 : 2018/10/21[dp])) AND (exocrine insufficiency OR enzyme supplementation OR (pancreatin AND (porcine OR bovine OR bacterial OR fungal)) OR (lipase AND (porcine OR bovine OR bacterial OR fungal)) OR acid-resistant OR fibrosing colonopathy). Diabetes ((Pancreatitis[MeSH] AND chronic) AND (German[LA] OR English[LA]) NOT (editorial[PT] OR historical article[PT] OR comment[PT] OR case reports[PT] OR review[PT]) NOT („animals“[MeSH] NOT „humans“[MeSH]) AND (1960 : 2018/10/21[dp])) AND (endocrine insufficiency OR diabetes mellitus) AND (insulin OR metformin OR sulfonylurea OR glinide OR thiazolidine OR “alpha-glycosidase inhibitor” OR “incretin-based therapy” OR GLP-1 OR SGLT-2 inhibitor)	211

Ergebnis und PRISMA Flow Chart



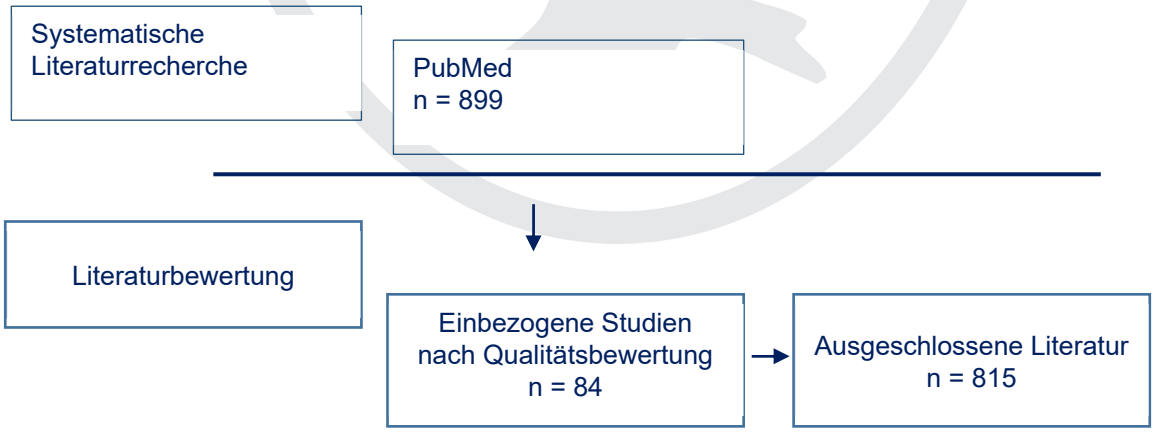
Evidenztabelle siehe Supplement, ab S. 55

AG 4-CP
Date Run: 30.11.2018

Search	Hits
AG4-CP: ((((„Pancreatitis“[MeSH] AND (German[LA] OR English[LA])) NOT (editorial[PT] OR historical article[PT] OR comment[PT] OR case reports[PT] OR review[PT])) NOT („animals“[MeSH] NOT „humans“[MeSH]))) AND (1960 : 2018/11/30[dp]) AND (((Indication AND surgery AND „Pancreatitis, chronic“[MeSH]) AND (Abdominal Pain[MesH] OR Cholestasis[MeSH] OR suspect malignancy OR Adenoma, Islet Cell[MesH] OR Carcinoma, Pancreatic Ductal[MesH] OR Exocrine Pancreatic Insufficiency[MesH] OR endocrine insufficiency OR gastric outlet obstruction[MesH] OR duodenal obstruction[MesH] OR pseudoaneurysm OR bleeding OR Pancreatic Pseudocyst[MesH] OR perforation OR pancreatic duct stones OR recurrent episodes)) OR (Interventional therapy AND pain AND „Pancreatitis, chronic“[MeSH] AND pancreatic duct stent) OR ((pain AND „Pancreatitis, chronic“[MeSH]) AND (((pancreatic duct stent OR metal stent) AND treatment duration) OR lithotripsy [MesH] OR celiac plexus infiltration OR celiac plexus blockade)) OR ((Biliary obstruction AND „Pancreatitis, chronic“[MeSH] AND bile duct stenting) AND (treatment duration OR multistenting OR metal stent OR (calcification AND efficacy) OR long term efficacy OR elective change OR definition efficacy) OR ((advantage endoscopic OR benefit endoscopic) AND interventional therapy AND chronic pancreatitis AND biliary obstruction) OR (Indications for endoscopic treatment AND (gastric outlet obstruction OR duodenal outlet obstruction) AND chronic pancreatitis) OR ((Indications AND therapy AND symptomatic pancreatic pseudocyst AND chronic pancreatitis) AND (compression of large vessels OR gastric outlet obstruction[MesH] OR duodenal	899

obstruction[MesH] OR biliary obstruction OR cholangitis[MesH] OR infected pseudocysts OR abscess OR (pancreaticopleural effusions OR fistula OR satiety OR sickness OR vomiting[MesH] OR pain OR GI bleeding OR portal hypertension)) OR ((Indications AND therapy AND asymptomatic pancreatic pseudocyst AND chronic pancreatitis) AND (size OR wall OR pancreatic duct stricture OR pancreatic duct stones OR cystic malignancy)) OR ((Therapy AND symptomatic pancreatic pseudocyst AND chronic pancreatitis) AND (bulging OR EUS guided OR prerequisite endoscopic pancreatogram OR pancreatic duct morphology OR Nealon classification OR transpapillary drainage OR transgastric drainage OR (comparison transgastric AND transpapillary drainage) OR randomized controlled trials OR (randomized trials interventional therapy AND surgery) OR evidence based guidelines)) OR („Pancreatitis, chronic“[MeSH]/surgery* OR Pancreaticoduodenectomy/methods OR „Pancreatitis, chronic“[MeSH]/therapy* OR („Pancreatitis, chronic“[MeSH] AND economics) OR „Pancreatitis, chronic“[MeSH] AND pain/epidemiology) OR („Pancreatitis“[MeSH] AND chronic/cost-effectiveness analysis) OR („Pancreatitis, chronic“[MeSH] AND Biliary Tract Diseases/Surgery) OR („Pancreatitis, chronic“[MeSH] AND prosthesis design) OR („Pancreatitis, chronic“[MeSH] AND prosthesis complications) OR („Pancreatitis, chronic“[MeSH] AND absorbable implants/adverse effects*) OR („Pancreatitis, chronic“[MeSH] AND prosthesis failure) OR („Pancreatitis, chronic“[MeSH] AND Stents*/adverse effects) OR („Pancreatitis, chronic“[MeSH] AND treatment outcome) OR („Pancreatitis, chronic“[MeSH] AND self expandable metallic stents) OR („Pancreatitis, chronic“[MeSH] AND fully covered self expandable metallic stent)))

Ergebnis und PRISMA Flow Chart



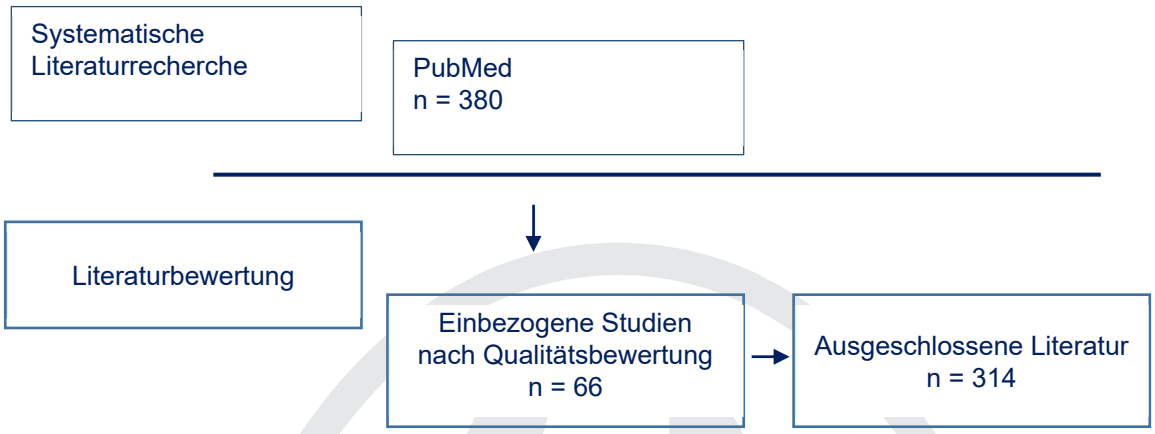
Die AG 4 hat zusätzlich noch über die Handsuche 8 weitere Literaturstellen hinzugezogen und bewertet.

Evidenztabelle siehe Supplement, ab S. 55

AG 5-CP
Date Run: 30.11.2018

Search	Hits
AG5-CP: ((((„Pancreatitis“[MeSH] AND (German[LA] OR English[LA])) NOT (editorial[PT] OR historical article[PT] OR comment[PT] OR case reports[PT] OR review[PT])) NOT („animals“[MeSH] NOT „humans“[MeSH]))) AND (1960 : 2018/11/30[dp]) AND ((Indication AND surgery AND chronic pancreatitis) AND (Abdominal Pain[MesH] OR Cholestasis[MeSH] OR suspect malignancy OR Adenoma, Islet Cell[MesH] OR Carcinoma, Pancreatic Ductal[MesH] OR Exocrine Pancreatic Insufficiency[MesH] OR endocrine insufficiency OR gastric outlet obstruction[MesH] OR duodenal obstruction[MesH] OR pseudoaneurysm OR bleeding OR Pancreatic Pseudocyst[MesH] OR perforation OR pancreatic duct stones OR recurrent episodes)) OR ((pain AND chronic pancreatitis) AND ((thoracoscopic splanchnicectomy OR (Beger AND Büchler) OR pylorus preserving Whipple OR Whipple OR Frey OR pancreatic tail resection OR laparoscopic tail resection OR Puestow OR Partington-Rochelle)) OR ((Biliary obstruction AND chronic pancreatitis) AND (Hepaticojejunostomy OR duodenum preserving pancreatic head resection OR Whipple OR (equivalency AND duodenum preserving pancreatic head resection AND Whipple) OR contraindication surgery OR (contraindication surgery AND (liver cirrhosis[MesH] OR coronary heart disease[MesH] OR congestive heart failure[MesH] OR portal hypertension[MesH]))))) OR ((Contraindication interventional therapy AND endoscopic therapy AND chronic pancreatitis) AND (biliary obstruction OR malignancy)) OR ((Indications AND therapy AND symptomatic pancreatic pseudocyst AND chronic pancreatitis) AND (compression of large vessels OR gastric outlet obstruction[MesH] OR duodenal obstruction[MesH] OR biliary obstruction OR cholangitis[MesH] OR infected pseudocysts OR abscess OR (pancreaticopleural effusions OR fistula) OR satiety OR sickness OR vomiting[MesH] OR pain OR GI bleeding)) OR ((Indications AND therapy AND asymptomatic pancreatic pseudocyst AND chronic pancreatitis) AND (size OR wall OR pancreatic duct stricture OR pancreatic duct stones OR cystic malignancy))	380

Ergebnis und PRISMA Flow Chart

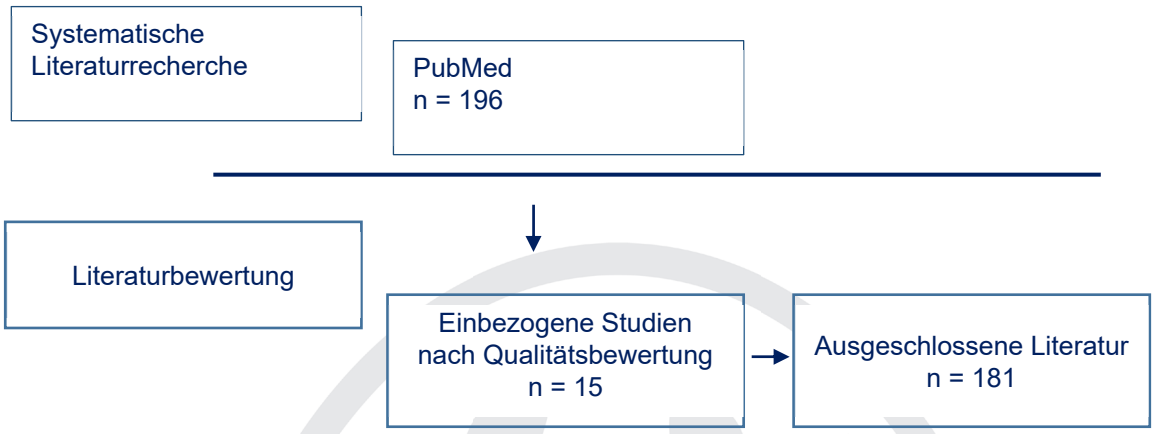


Evidenztabelle siehe Supplement, ab S. 55

AG 6-CP
Date Run: 30.11.2018

Search	Hits
AG6-CP: ((((„Pancreatitis“[MeSH] AND (German[LA] OR English[LA])) NOT (editorial[PT] OR historical article[PT] OR comment[PT] OR case reports[PT] OR review[PT])) NOT („animals“[MeSH] NOT „humans“[MeSH]))) AND (1960 : 2018/11/30[dp]) AND (((Mortality AND chronic pancreatitis) AND (cachexia[MeSH] OR malnutrition[MeSH] OR Exocrine Pancreatic Insufficiency[MeSH] OR endocrine insufficiency)) OR (Comorbidity[MeSH] AND chronic pancreatitis) OR ((Liver cirrhosis[MeSH] AND chronic pancreatitis) AND (incidence OR mortality)) OR ((Risk assessment AND chronic pancreatitis AND (mutation[MeSH] OR alcohol OR gallstones[MeSH] OR infection)) AND (liver cirrhosis OR pancreatic cancer OR Exocrine Pancreatic Insufficiency[MeSH] OR endocrine insufficiency)) OR ((Multidisciplinary treatment AND chronic pancreatitis) AND (gastroenterology OR surgery OR radiology OR psychology OR endocrinology OR general practitioner OR dietician OR infectiology)) OR (Treatment benefit AND case load AND chronic pancreatitis) OR ((Prophylactic AND medical treatment) AND chronic pancreatitis) OR ((Application AND treatment strategy) AND Germany AND chronic pancreatitis) OR (Total pancreatectomy AND chronic pancreatitis AND cancer risk))	380

Ergebnis und PRISMA Flow Chart

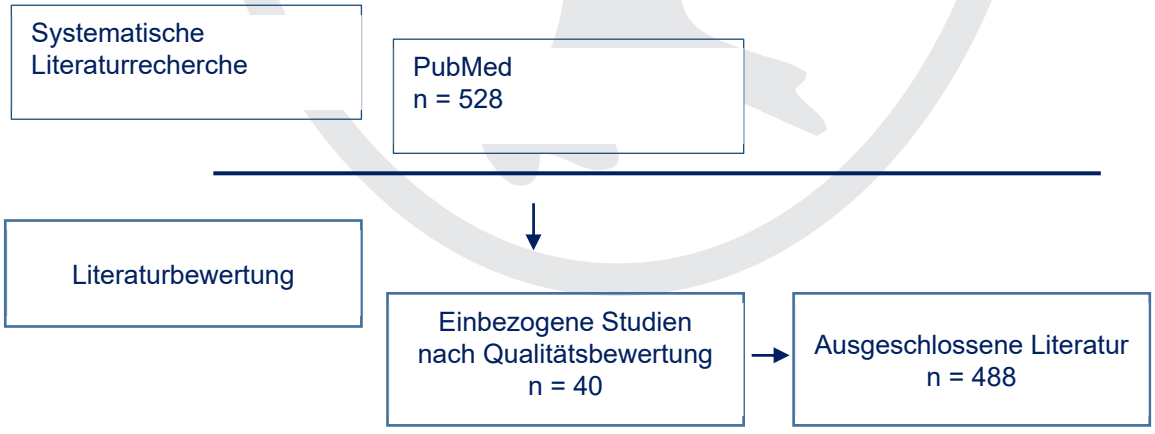


Evidenztabelle siehe Supplement, ab S. 55

AG 7-CP
Date Run: 16.12.2018

Search	Hits
AG7-CP: ((Pancreatitis[MeSH] AND children[MeSH]) AND (surgery[MeSH] OR radiology[MeSH] OR nutrition[MeSH] OR pain management[MeSH] OR genetic testing[MeSH])) AND ((German[LA] OR English[LA]) NOT (editorial[PT] OR historical article[PT] OR comment[PT] OR case reports[PT] OR review[PT]) NOT („animals“[MeSH] NOT „humans“[MeSH]) AND (1960 : 2018/11/30[dp]))	528

Ergebnis und PRISMA Flow Chart



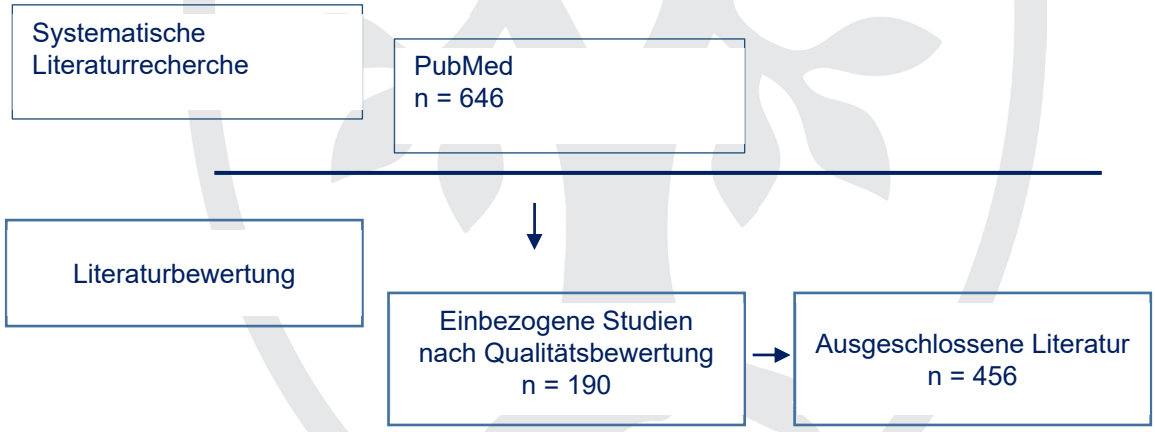
Die AG 7 hat zusätzlich noch über die Handsuche 51 weitere Literaturstellen hinzugezogen und bewertet.

Evidenztabelle siehe Supplement, ab S. 55

AG 8-Autoimmune Pankreatitis
Date Run: 30.11.2018

Search	Hits
AG8-Autoimmune Pankreatitis: ((((„Pancreatitis“[MeSH] AND (German[LA] OR English[LA])) NOT (editorial[PT] OR historical article[PT] OR comment[PT] OR case reports[PT] OR review[PT])) NOT („animals“[MeSH] NOT „humans“[MeSH]))) AND (1960 : 2018/11/30[dp]) AND ((autoimmune pancreatitis OR AIP) AND (diagnostic criteria OR guidelines OR IgG4 OR autoantibodies OR AIP type 1 OR AIP type 2 OR histology OR idiopathic duct centric pancreatitis OR IDCP OR lymphoplasmacytic sclerosing pancreatitis OR LPSP OR fibrosis OR GEL OR granulocyte epithelial lesion OR radiologic imaging OR MRI OR CT OR autoimmune disease OR cholangitis OR ulcerative colitis OR Crohn`s disease OR inflammatory bowel disease OR cancer OR treatment OR immunosuppressive drugs OR relapse OR pancreatic surgery OR pancreatic resection OR prognosis OR long term outcome)	646

Ergebnis und PRISMA Flow Chart



Evidenztabelle siehe Supplement, ab S. 55

Interessenkonflikt-Erklärungen – Tabellarische Zusammenfassung

1 Berater- bzw. Gutachtertätigkeit oder bezahlte Mitarbeit in einem wissenschaftlichen Beirat eines Unternehmens der Gesundheitswirtschaft (z. B. Arzneimittelindustrie, Medizinproduktindustrie), eines kommerziell orientierten Auftragsinstituts oder einer Versicherung

2 Mitarbeit in einem Wissenschaftlichen Beirat (advisory board)

3 Honorare für Vortrags- und Schulungstätigkeiten im Auftrag eines Unternehmens der Gesundheitswirtschaft, eines kommerziell orientierten Auftragsinstituts oder einer Versicherung

4 Bezahlte Autoren-/oder Coautorenschaft im Auftrag eines Unternehmens der Gesundheitswirtschaft, eines kommerziell orientierten Auftragsinstituts oder einer Versicherung

5 Forschungsvorhaben/ Durchführung klinischer Studien: finanzielle Zuwendungen (Drittmittel) für Forschungsvorhaben oder direkte Finanzierung von Mitarbeitern der Einrichtung vonseiten eines Unternehmens der Gesundheitswirtschaft, eines kommerziell orientierten Auftragsinstituts oder einer Versicherung

6 Eigentümerinteressen (Patent, Urheberrecht, Aktienbesitz): Besitz von Geschäftsanteilen, Aktien, Fonds mit Beteiligung von Unternehmen der Gesundheitswirtschaft

7 Indirekte Interessen: Mitglied von in Zusammenhang mit der Leitlinienentwicklung relevanten Fachgesellschaften/Berufsverbänden, Mandatsträger im Rahmen der Leitlinienentwicklung

	Berater-/ Gutachter - tätigkeit (1)	Mitarbeit in einem Wissenschaftlichen Beirat (advisory board) (2)	Bezahlte Vortrags-/oder Schulungs-tätigkeit (3)	Bezahlte Autoren-/oder Coautoren-schaft (4)	Forschungs-vorhaben/ Durchführung klinischer Studien (5)	Eigentümer-interessen (Patent, Urheberrecht, Aktienbesitz) (6)	Indirekte Interessen (7)	Bewertung
Aghdassi, Ali Alexander	Nein	Nein	Nein	Nein	Nein	Nein	Mitglied: DGVS Schwerpunkt: akute Pankreatitis, chronische Pankreatitis Federführung: - Persönlich: -	keine
Algül, Hana	Nein	Nein	Nein	Nein	Nein	Nein	Mitglied: - Schwerpunkt: - Federführung: - Persönlich: -	Keine
Anlauf, Martin	Novartis Pharma	Ipsen Pharma	Novartis Pharma und Ipsen Pharma	Nein	Nein	Nein	Mitglied: Deutsche Gesellschaft Pathologie Berufsverband Pathologie Vorstand Patientengruppe NET	gering

							Schwerpunkt: Neuroendokrine Neoplasien Federführung: Fortbildungen Neuroendokrine Neoplasien und Gastroupdates Persönlich: -	
Arlt, Alexander	Boston Scientific	Nein	Boston Scientific	Nein	Nein	Nein	Mitglied: - Schwerpunkt: - Federführung: - Persönlich: -	Gering
Beyer, Georg	Nein	Nein	bng service GmbH EAGEN Zagreb GfGB UEGW	Nein	EUROPAC-2 Repha DFG	Nein	Mitglied: DGVS DGVS AG Pankreatitis DGVS JUGA AG Mitglied: DPC (Deutscher Pankreasclub) Mitglied: EPC/IAP Mitglied: APA Schwerpunkt: Chronische Pankreatitis, Fibrose,	Moderat bei Enzymersatztherapie der Pankreatitis

							Diagnostik Pankreaskarzinom, Biomarker, Bildgebung Federführung: keine Persönlich: keine	
Bockhorn, Maximilian	Polyganics	Nein	Nein	Nein	Nein	Nein	Mitglied: - Schwerpunkt: - Federführung: - Persönlich: -	gering
Bufler, Philip	DFG verschiedene wissenschaftliche Zeitschriften	Promethera	AbbVie Nutricia	Verschiedene Autor/Coautorenschaften	Beteiligung an verschiedenen klinischen Studien	keine	Mitglied: keine Schwerpunkt: Immunologie Chronisch-entzündliche Darmerkrankungen Pädiatrische Gastroenterologie Experimentelle Hepatologie Federführung: - Persönlich: keine	gering
Büchler, Markus	Nein	Nein	Nein	Nein	Nein	Nein	Mitglied: Vereinigung	keine

D'Haese, Jan G.	Nein	Nein	Nein	Nein	Nein	Mitglied: Mitglied bei der DGAV, DGVS, DGCH, DPC, EPC, EDS Vertreter von EDS im Meeting of Persönlich: - Federführung: - Schwerpunkt: Gastrointestinale Erkrankungen, insbesondere Krebserkrankungen, Pankreaserkrankungen und klinisch-relevanter chirurgischer Fragestellungen Mitglied: Thüringische Gesellschaft für ChirurgieEhrenmitglied Mittelrheinischer Chirurgen Ehrenmitglied
						keine

							Members der UEG Schwerpunkt: Pankreatitis (experimentell) und Pankreaskarzinom Federführung: Organisation des Bayerischen Chirurgenkongresses als Kongresssekretär 2016 Persönlich: keine	
de Heer, Geraldine	Nein	Nein	Fresenius Kabi (Vortrag) Medtronic (Vortrag)	Nein	Nein	Nein	Mitglied: - Schwerpunkt: - Federführung: - Persönlich: -	gering
Demir, Ihsan Ekin	Nein	Nein	Nein	Nein	Nein	Nein	Mitglied: - Schwerpunkt: - Federführung: - Persönlich: -	keine

Denzer, Ulrike	Keine	Keine	Olympus Falk foundation Boston	Thieme Verlag Spinger	Boston	Keine	Mitglied: DGVS Mitglied LL QS Endoskopie, AG Terminologie,AG Qualität, Beirat Endoskopie, AG Hygiene Schwerpunkt: Endoskopische Forschung Federführung: ERCP und EUS Kurse in der Olympus Akademie Hamburg Persönlich: Keine	gering
Diener, Markus K.	Nein	Nein	Nein	Nein	Nein	Nein	Mitglied: - Schwerpunkt: - Federführung: - Persönlich: -	keine
Dietrich, Christoph F.	Hitachi	Siemens	Falk, Bracco, Pentax, Novartis, Supersonic, GE	Ich kann diese Zeile nicht löschen	Nein	Nein	Mitglied: IQWiG, Institut für Qualität und Wirtschaftlichkeit im	gering

							Gesundheitswesen Schwerpunkt: Endoskopischer Ultraschall, Endoskopie, Sonografie Federführung: DGVS, DGE-BV, DEGUMB, EFSUMB, WFUMB (Gesellschaften) Persönlich: Keine	
Dominguez-Munoz, Enrique	Nein	Boston Scientific	Viatris	Nein	Viatris		Mitglied: - Schwerpunkt: - Federführung: - Persönlich: -	Keine
Esposito, Irene	Ministerium für Wirtschaft, Wissenschaft und digitale Gesellschaft Thüringen /Thüringer	Nein	Astra-Zeneca Ibsen Falk Foundation	Nein	Nein	nein	Mitglied: Deutsche Gesellschaft für Pathologie Bundesverband der Deutschen Pathologen Internationale Akademie für Pathologie	gering

	Aufbauba nk						European Society of Pathology Schwerpunkt: Associate Editor Virchows Archiv Federführung: Vorstand und Educational Committee der Internationalen Akademie für Pathologie Council of the European Society of Pathology Persönlich: -	
Friess, Helmut Michael	Sander Stiftung	Bad Trissl	DGAV Update	Nein	Studie IOWSI	Nein	Mitglied: - Schwerpunkt: Pankreasforsch ung Federführung: - Persönlich: -	gering
Gloor, Beat	Nein	Nein	Nein	Nein	Nein	Nein	Mitglied: Schweizerische Patientenorgani sation (SPO)	keine

							Schwerpunkt: - Federführung: - Persönlich: -	
Grenacher, Lars	Nein	Nein	Nein	Nein	Nein	Nein	Mitglied: Deutsche Röntgengesellschaft (DRG), Mitglied AG Abdominelle Bildgebung der DRG, Vorstandsvorsitzender Schwerpunkt: Onkologische Bildgebung: Kriterien der Resektabilität, Radiologe. 2017 Dec;57(12):1075-1090 Schwerpunkt: European evidence-based guidelines on pancreatic cystic neoplasms. Gut. 2018 May;67(5):789-804.	keine

							Federführung: Conradia München, Weiterbildungsermächtigter Persönlich: -	
Gress, Thomas	Novartis Ipsen Novartis Ipsen	Scientific Committee UEGW	DGVS, UEGW, DGIM, AGA, EPC	Nein	Klinische Forschergruppe Tumor&Stroma Interaktion Pankreas	Nein	Mitglied: DGVS Mitglied: International Association of Pancreatology Mitglied: European Pancreatic Club Schwerpunkt: Klinik und Grundlagenforschung Pankreaskarzinom Federführung: Lehrstuhlinhaber Gastroenterologie Philipps Universität Marburg Persönlich: -	gering
Grothaus, Johannes	Nein	Nein	Nein	Nein	Nein	Nein	Mitglied: -	keine

							Schwerpunkt: - Federführung: - Persönlich: -	
Gubler, Christoph	keine	keine	Universitätsspital Zürich	keine	keine	keine	Mitglied: Co-Präsident der Schweizerischen Gastroenterologen Schwerpunkt: Interventionelle Endoskopie EUS ERCP Federführung: Assistenten und OA-Ausbildung an der Institution Persönlich: keine	gering
Gundling, Felix	Nein	Norgine GmBH	Norgine GmBH	Nein	Nein	Nein	Mitglied: - Schwerpunkt: - Federführung: - Persönlich: -	gering
Hackert, Thilo	Nein	Nein	Nein	Nein	Nein	Nein	Mitglied: - Schwerpunkt: -	Keine

							Federführung: - Persönlich: -	
Hartwig, Werner	Nein	Nein	Nein	Nein	Nein	Nein	Mitglied: Sprecher AG Pankreas Schwerpunkt: Pankreaskarzinom, Pankreatitis, Pankreaschirurgie "Heidelberg-Schule" Federführung: - Persönlich: -	keine
Hirth, Michael	N.A.	N.A.	N.A.	N.A.	TRAPS-Stipendium (clinicl scientist programm am Uniklinikum Mannheim)	N.A.	Mitglied: N.A. Schwerpunkt: Chronische Pankreatitis, Autoimmune Pankreatiti, Schmerzforschung Federführung: N.A. Persönlich: N.A.	gering
Hocke, Michael	Nein	Nein	Nein	Nein	Nein	Nein	Mitglied: DGVS/DEGUM	keine

							Schwerpunkt: Endosonographie und Ultraschall Federführung: nein Persönlich: nein	
Hoffmeister, Albrecht	Nein	Nein	Nein	Nein	Nein	Nein	Mitglied: - Schwerpunkt: - Federführung: - Persönlich: -	keine
Huber, Wolfgang	Nein	Pulsion Medical Systems, SE, Feldkirchen	Nein	Nein	Nein	Nein	Mitglied: - Schwerpunkt: - Federführung: - Persönlich: -	Moderat bei Monitoring akute Pankreatitis
Hübenthal, Barbara	Nein	Nein	Nein	Nein	Nein	Nein	Mitglied: Mitglied der Selbsthilfeorganisation Arbeitskreis der Pankreatektomierte e.V. Mitglied: - Schwerpunkt: -	keine

							Federführung: - Persönlich: -	
Kahl, Stefan	Nein	Nein	Nein	Nein	Nein	Nein	Mitglied: - Schwerpunkt: - Federführung: - Persönlich: -	keine
Karge, Torsten	Nein	Nein	Nein	Nein	Nein	Nein	Mitglied: - Mitglied: - Schwerpunkt: - Federführung: - Persönlich: -	keine
Keck, Tobias	Nein	Nein	Nein	Nein	Nein	Nein	Mitglied: - Schwerpunkt: - Federführung: - Persönlich: -	keine
Keller, Jutta	EMA	- Allergan - Develco Mundipharma	Falk - Nordmark Standard Instruments	Nein	Nein	Nein	Mitglied: DGVS, ALGK, BVGD Schwerpunkt: Gastrointestinale Funktionsstörungen einschließlich exokriner	Moderat bei Enzymersatztherapie der Pankreatitis

			Covidien/Medtronic Kyowa Kirin Novo Nordisc Mylan Takeda				Pankreasinsuffizienz Federführung: DGVS Zertifikatsseminar Neurogastroenterologie und Motilität Persönlich: -	
Klabunde, Steffen	Nein	Nein	Nein	Nein	Nein	Nein	Mitglied: - Schwerpunkt: - Federführung: - Persönlich: -	
Kleeff, Jörg	Nein	Nein	Nein	Nein	Nein	Nein	Mitglied: - Schwerpunkt: - Federführung: - Persönlich: -	Keine
Kleger, Alexander	Nein	Nein	Nein	Nein	Nein	Nein	Mitglied: - Schwerpunkt: - Federführung: - Persönlich: -	Keine
Krejs, Günter Josef	Nein	Nein	Institut Allergosan	Nein	Nein	Nein	Mitglied: -	Keine

							Schwerpunkt: - Federführung: Fortbildung Gastroenterologie FOMF Österreich Persönlich: -	
Kühn, Jens Peter	Nein	Nein	Nein	Nein	Nein	Nein	Mitglied: - Schwerpunkt: - Federführung: - Persönlich: -	keine
Lerch, Markus M.	Fractyl	KMG Kliniken Centogene Akcea	Akcea	Nein	Nordmark	Metanomic Health	Mitglied: DGVS Mitglied: DGIM Mitglied: Wissenschaftsrag Schwerpunkt: akute und chronische Pankreatitis Federführung: Professor, Universität Greifswald Persönlich: -	Moderat bei Enzymersatztherapie der Pankreatitis

Lynen Jansen, Petra	Nein	Nein	Lehrauftrag RWTH Aachen	Leitlinien-publikationen der DGVS	Nein	Nein	Mitglied: nein Schwerpunkt: Leitlinien Federführung: nein Persönlich: nein	keine
Löhr, Matthias	Mylan	Nordmark	Abbott	Nein	Nein	Nein	Mitglied: EPC secretary Schwerpunkt: Pankreasfunktion, PEI, autoimmune Pankreatitis Federführung: UEG HaPanEU guidelines; UEG IgG4-RD guidelines Persönlich: -	gering
Mayerle, Julia	Boehringer Ingelheoim	Nein	Falk, Abbvie	Nein	Metapac	Biomarkerassay	Mitglied: Deutscher Pankreasclub, European Pancreatic Club, DGVS, American Pancreatic association	Moderat bei Enzymersatztherapie der Pankreatitis

							Schwerpunkt: Pankreaserkrankungen Federführung: keine Persönlich: keine	
Meining, Alexander	OVESCO AG	Nein	Nein	Nein	Nein	Nein	Mitglied: DGVS DGEBV Schwerpunkt: GI Endoskopie Federführung: - Persönlich: -	gering
Menzel, Josef	Nein	Nein	Nein	Nein	Nein	Nein	Mitglied: DEGUM Schwerpunkt: Sonographie, Endosonographie Federführung: - Persönlich: -	keine
Michl, Patrick	Nein	Lilly BMS Shire	Falk MCI Merck	Nein	Ipsen	Nein	Mitglied: DGVS (Mitglied) Mitteldeutsche Gesellschaft für Gastroenterologie MGG	gering

			Ipsen NewConceptOncology GmbH				(Vorstand) DGIM (Mitglied) Schwerpunkt: Molekulare Genese der Tumorprogression beim Pankreaskarzinom. Chronische Inflammation als Trigger der Tumorgenese. Federführung: Organisation regelmässiger klinische Fortbildung zu Pankreaserkrankungen. Regelmässige Veranstaltungen mit der Arbeitsgemeinschaft der Pankreatektomierten (AdP) Persönlich: keine	
Muhl, Elke	Schlichtungsstelle der Norddeutschen Ã„rztekam	nein	Vorträge bei DIVI-Kongress	entfällt	entfällt	entfällt	Mitglied: Deutsche Interdisziplinäre Vereinigung für Intensivmedizin und Notfallmedizin	gering

	mem, Hannover						
Mössner, Joachim	Nordix	Nein	Nein	Nein	Nein	Nein	keine
Neeße, Albrecht	Nein	Nein	Falk	Nein	Nein	Nein	gering

(DIVI e.V.) Präsidentin der DIVI 2013/2014 Kongresspräsid entin DIVI-Kongress 2018 Deutsche Gesellschaft für Chirurgie

Schwerpunkt: operative Intensivmedizin

Federführung: DIVI-Kongresspräsid entin 2018

Persönlich: entfällt

Mitglied: -

Schwerpunkt: -

Federführung: -

Persönlich: -

Mitglied: AG Pankreas Sprecher (DGVS)

Mitglied: SIEGE UK Pancreatic Cancer Scientific

Advisory Board (Clinical Trial)	Mitglied: EPC Council Member	Mitglied: Vorstand des Deutschen Pancreasclubs	Schwerpunkt: Max Eder Arbeitsgruppenleiter der Deutschen Krebshilfe (Schwerpunkt Pankreaskarzinom)	Federführung: Deutscher Pankreasclub 2019 in Göttingen - Kongresspräsident	Federführung: Aktives Mitwirken und Organisieren von multiplen Fortbildungsveranstaltungen und		

							Minisymposien an der Universitätsmedizin Göttingen im Bereich Onkologie und Endoskopie/Sonographie mit Industriesponsoring jedoch ohne persönliche Honorare Persönlich: -	
Neuendorf, Horst	Nein	Nein	Nein	Nein	Nein	Nein	Mitglied: Mitglied im AdP e. V. Regionalgruppenleiter Pforzheim Schwerpunkt: - Federführung: - Persönlich: -	keine
Ockenga, Johann	Nein	Fresenius Kabi GmbH	Dr Karl Schulze, Hannover ifi Institut für Infektiologie & Hepatologie Merz	Nein	DLR - Innovationsfond, Universitätsklinik Köln	Nein	Mitglied: Präsident der Deutschen Gesellschaft für Ernährungsmedizin Mitglied: Mitglied Task	gering

			Aerztekammer Niedersachsen Falk Foundation e.v. GFO Kliniken Klinikum WHV Uniklinikum Essen Ã„rztliche Akademie Vechta Krhs Celle Falk Foundation e.V. Braun Melsungen				Force Quality of Care, UEG Mitglied: Vorstandsmitglied DGEM e.V. Schwerpunkt: Stoffwechsel und Ernährung, Pankreaserkrankungen Federführung: Erstellung Leitlinie Ernährung bei Pankreaserkrankungder Deutschen Gesellschaft für Ernährungsmedizin Federführung: Erstellung Leitlinien und Gremienarbeit European society of Enteral and Parenteral Nutrition Persönlich: -	
Pfützer, Roland	Nein	Nein	Falk Foundation	Nein	Nein	Nein	Mitglied: DGVS / Mitglied LL Pankreatitis /	gering

							Divertikelkrankheit Mitglied: MGG / Mitglied wissenschaftl. Beirat Schwerpunkt: Chronische Pankreatitis Federführung: - Persönlich: -	
Phillip, Veit	Nordmark Pharma	Nein	Beiersdorf	Nein	Nein	Nein	Mitglied: - Schwerpunkt: - Federführung: - Persönlich: -	gering
Prey, Dieter	Arbeitskreis der Pankreatektomierten e. V.	Nein	Nein	Nein	Nein	Nein	Mitglied: Regionalgruppenleiter OWL Bundesvorsitzender Schwerpunkt: - Federführung: - Persönlich: -	keine
Rey, Johannes	Nein	Nein	Böhringer Ingelheim	Nein	Nein	Nein	Mitglied: -	gering

							Schwerpunkt: - Federführung: - Persönlich: -	
Rosendahl, Jonas	Nein	Nein	Falk Pharma	Nein	Nein	Nein	Mitglied: - Schwerpunkt: - Federführung: - Persönlich: -	gering
Schmid, Roland	Sander Stiftung	Nein	Falk	Nein	Nein	Nein	Mitglied: DGVS, DDG, DGIM Schwerpunkt: Pankreas-karzinom, Grundlagen Federführung: - Persönlich: -	keine
Schmidt-Choudhury, Anjona	Nein	Nein	Nein	Nein	Nein	Nein	Mitglied: - Schwerpunkt: - Federführung: - Persönlich: -	keine
Schneider, Alexander	Nein	Nein	Nein	Nein	Nein	Nein	Mitglied: DGVS, DPC (Präsident 2014), Europäischer Pankreasclub, DGE-BV (Sekretär des	keine

							Jahreskongresses 2016) Schwerpunkt: Autoimmune Pankreatitis, chronische Pankreatitis Federführung: - Persönlich: -	
Seidensticker, Max	NA	Siemens, Boston Scientific, Bayer	Cook, SIRTEX, Boston Scientific, Bayer, Siemens	NA	SIRTEX	Astra Zeneca Aktien	Mitglied: Wissenschaftlicher Leiter der Deutschen Akademie für Mikrotherapie Schwerpunkt: Minimal invasive Onkologie, MRT Bildgebung Federführung: Wissenschaftlicher Leiter der Deutschen Akademie für Mikrotherapie Persönlich: NA	gering
Seifert, Hans	Nein	Nein	Falk-Foundation	ERBE-Instrumente	Nein	Nein	Mitglied: DGVS Vorsitz der	gering

							Sektion Endoskopie Schwerpunkt: Mitglied in DGVS, ASGE, AGA, BDI, DGEBV Federführung: - Persönlich: -	
Seufferlein, Thomas	Nein	CELGENE Bayer AMGEN Servier (vorher: Shire/Baxalta) MERCK Lilly Novartis Sanofi Halozyme	Merck Roche Bayer Servier (vorher Shire/Baxalta) Amgen	Nein	Celgene Sanofi AMGEN Boehringer	Nein	Mitglied: Deutsche Krebsgesellschaft Mitglied: Zertifizierungskommission Viszeralonkologische Zentren der DKG Mitglied: Eurpean Society for Digestive Oncology Schwerpunkt: Pankreaskarzinom, prädiktive Biomarker, klinische Forschung (Studien) beim Pankreas- und	gering

							Kolonkarzinom, liquid biopsies, Tumorbiologie, Signaltransduktion Mausmodelle beim Pankreaskarzinom Federführung: Deutschlandweite Fortbildungsreihe zum Pankreaskarzinom, organisiert durch MCI Persönlich: -	
Simon, Peter	Nein	Nein	Nein	Nein	Nein	Nein	Mitglied: - Schwerpunkt: - Federführung: - Persönlich: -	keine
Siveke, Jens	Wilhelm-Sander Stiftung AIRC (Associazione Italiana per la Ricerca	Celgene Shire Baxalta	BMS Amgen Celgene Roche Servier	Nein	Celgene - SEPION	FAPI Holding Aktien	Mitglied: Sprecher Leitgruppe Pankreaskarzinom AIO Schwerpunkt: Tumorheterogenität, Tumorresistenz	gering

	sul Cancro)						, Tumorentwicklung Federführung: - Persönlich: -	
Stecher, Stephanie-Susanne	Nein	Nein	Fresenius medical Care	Nein	CytoSorbents Europe	Nein	Mitglied: - Schwerpunkt: - Federführung: - Persönlich: -	gering
Strobel, Oliver	keine	keine	keine	keine	keine	keine	Mitglied: keine Schwerpunkt: keine Federführung: keine Persönlich: keine	keine
Tacke, Frank	Tobira/Allergan, Boehringer-Ingelheim, Abbott, Inventiva	Tobira/Allergan, AbbVie, Abbott, Inventiva	Gilead, MSD, AbbVie, Falk	Nein	Tobira/Allergan, Bristol Myers Squibb, Galapagos, Inventiva	keine	Mitglied: European Association for the Study of the Liver (EASL), Vorstandsmitglied Schwerpunkt: Hepatologie, Intensivmedizin, Immunologie	Moderat bei Enzymersatztherapie der Pankreatitis

Uhl, Waldemar	keine	keine	Celgene, Shire, Baxalta	Pfizer	Geistlich Pharma, Schweiz	keine	Federführung: Intensiv Update (Organisator) Persönlich: - Mitglied: Chirurgische Arbeitsgemeinschaft für Leber, Galle, Pankreas der DGAV. Vorsitzender Mitglied: Vereinigung Niederrheinisch .Westfälischer Chirurgen. Mitglied im Vorstand Mitglied: Berufsverband Deutscher Chirurgen (BDC). Vorsitzender der Landesverband es Westfalen-Lippe Mitglied: Arbeitskreis der Pankreatektomi erten (AdP). Mitglied im	gering

							wissenschaftlichen Beirat Schwerpunkt: Pankreaserkrankungen Federführung: keine Persönlich: keine	
Weitz, Jürgen	Nein	Nein	Nein	Nein	Nein	Nein	Mitglied: - Schwerpunkt: - Federführung: - Persönlich: -	keine
Weitz, Gunther	Nein	Nein	Falk-Foundation e.V.	Nein	Nein	Nein	Mitglied: DGVS Schwerpunkt: Akute Pankreatitis - Klinik Federführung: Lehrbeauftragter Innere Medizin Universität zu Lübeck Persönlich: -	gering

Werner, Jens	Nein	BÄK Sanderstiftung	Nein	Nein	Nein	Nein	Mitglied: DGCH, Schatzmeister Mitglied: VBC, Beirat Mitglied: ADP, Beirat Schwerpunkt: Pankreatologie Federführung: DGAV Weiterbildungskurse (FAcharztkurse, OP-Workshops, ANatomiekurse) Persönlich: -	gering
Witt, Heiko	nicht zutreffend	nicht zutreffend	Bayerische Landesärztekammer (BLÃ„K)	Nein	Nein	Nein	Mitglied: GPGE, DPC, EPC, IAP, DGVS, DGKJ, ESPGHAN Schwerpunkt: Chronische Pankreatitis Federführung: - Persönlich: keine	gering

Lorenz, Pia	Nein	Nein	Nein	Nein	Nein	Nein	Mitglied: - Schwerpunkt: - Federführung: - Persönlich: -	Keine
von Figura, Guido	Nein	Nein	Celgene	Nein	Nein	Nein	Mitglied: - Schwerpunkt: Pankreaskarzinom, Pankreatitis Mausmodelle Federführung: - Persönlich: -	Gering
von Schweinitz, Dietrich	Nein	Nein	Nein	Nein	Nein	Nein	Mitglied: - Schwerpunkt: - Federführung: - Persönlich: -	keine

Thieme

DGVS
1913
Deutsche Gesellschaft für Gastroenterologie, Verdauungs- und Stoffwechselkrankheiten

S3-Leitlinie Pankreatitis

Supplement zum Leitlinienreport der Deutschen Gesellschaft für Gastroenterologie, Verdauungs- und Stoffwechselkrankheiten (DGVS)

September 2021 – AWMF Registernummer 021 - 003

Evidenztabellen

Literatursammlung:

AG1-AP: Definition, Epidemiologie, Diagnose, und Aetiologie_Literatursuche_neu

Inhalt: *52 Literaturstellen*

Literaturstelle	Evidenzlevel	Studientyp
Alonso, Alvaro 2015	1	nested case-control study
Alves, Carlos 2012	1	meta-analysis
Aoun, Elie 2010	2	
Azoulay, Laurent 2016	2	international,multicenter,population-based cohort study
Bazerbachi, Fateh 2018	4	Systematic review
Bishu, Shrinivas 2018	3	case control
Cai, Feng 2015	3	case control
Chang, Hsien-Yen 2015	2	retrospective cohort study
Chen, Shimin 2017	1	meta-analysis.
Chen, Sy-Jou 2015	1	retrospective cohort study
Chen, Yu-Tso 2016	2	cohort study
Chou, Hsin-Chun 2014	2	nested case control
Culetto, Adrian 2017	3	observational cohort
Dore, D D 2011	3	cohort study
Faillie, Jean-Luc 2014	2	Population based cohort study
Faillie, Jean-Luc 2014	3	case/non- case method
Girman, C J 2010	2	cohort study
Gonzalez-Perez, Antonio 2010	3	case control
Haffar, Samir 2017	2	systematic review
Hsu, Fan-Gen 2017	2	population-based cohort study
Hung, Shih-Chang 2016	3	population-based caseecontrol study
Kim, Young-Gun 2018	2	population-based cohort study
Kuoppala, Jaana 2017	3	a population-based case–control study
Kuoppala, Jaana 2015	3	a population-based case–control study
Lai, S-W 2015	3	

Lai, S-W 2015	3	population-based case-control study
Lai, Shih-Wei 2015	3	population-based case control
Lai, Shih-Wei 2016	3	population based case control
Lai, Shih-Wei 2016	3	Population based case control
Lai, Shih-Wei 2015	3	population base case control
Lai, Shih-Wei 2015	3	population based case control
Lai, Shih-Wei 2015	3	Population based case control
Lai, Yun-Ju 2015	2	population based cohort
Li, Xiaochun 2014	3	self-controlled case series
Liao, Kuan-Fu 2016	3	population-based case-control study
Lin, Hsien-Feng 2017	3	case-control study
Liu, Chengcheng 2016	3	case control
Ljung, Rickard 2012	3	population based case control
Ljung, Rickard 2012	3	population based case control
Masamune, Atsushi 2011	3	case control
McGovern, Paul C 2014	2	Subject data from Phase 3 and 4 comparative tigecycline studies as case control study
Monami, Matteo 2011	1	systematic review of RCTs
Oskarsson, Viktor 2015	2	prospective cohort study
Oskarsson, Viktor 2014	2	prospective cohort study
Oskarsson, Viktor 2013	2	prospective cohort study
Oskarsson, Viktor 2016	2	prospective cohort study
Roshanov, Pavel S 2015	1	Systematic analysis of 3 RCT´s
Sadr-Azodi, O 2012	2	prospective population-based cohort study
Steinberg, William M 2017	1	RCT post hoc Analysis
Sun, Xiaobing 2015	1	systematic review of observational studies
Wu, Bechien U 2015	2	retrospective cohort stud
Yang, Lin 2013	1	metaanalysis

OXFORD (2011) Appraisal Sheet: Systematic Reviews: *8 Bewertung(en)*

Alves, Carlos et al. A meta-analysis of serious adverse events reported with exenatide and liraglutide: acute pancreatitis and cancer. Diabetes Res. Clin. Pract. 98. 271-84. 2012

Evidence level/Study Types	P - I - C	Outcomes/Results	Literature References
Evidence level: 1 **Study type:** meta-analysis **Databases:** Medline, EMBASE, Cochrane Library and clinicaltrials.gov **Search period:** **Inclusion Criteria:** Twenty-five studies were included: 1 – published in English language; 2 – RCT or longitudinal observational studies (case–control or cohort studies); 3 – patients of all ages with type 2 diabetes mellitus; 4 – comparison of GLP-1 agonists with a placebo or active control (oral hypoglycaemic agents or insulin) and 5 – effect estimates on acute pancreatitis or cancer associated with GLP-1 agonists use. **Exclusion Criteria:** only studies with duration of at least 12 weeks were included.	**Intervention:** 1 – published in English language; 2 – RCT or longitudinal observational studies (case–control or cohort studies); 3 – patients of all ages with type 2 diabetes mellitus; 4 – comparison of GLP-1 agonists with a placebo or active control (oral hypoglycaemic agents or insulin) and 5 – effect estimates on acute pancreatitis or cancer associated with GLP-1 agonists use. **Comparison:** -	**Primary:** aimed at evaluating the risk of AP associated with GLP-1 agonists in patients with type 2 diabetes. **Secondary:** **Results:** Neither exenatide (OR 0.84 [95% CI 0.58–1.22], I2 = 30%) nor liraglutide (OR 0.97 [95% CI 0.21–4.39], I2 = 0%) were associated with an increased risk of AP, independent of baseline comparator. **Author's Conclusion:** Current available published evidence is insufficient to support an increased risk of AP associated with GLP-1 agonists	

Methodical Notes

Funding Sources: grant from Foundation for Science and Technology (FCT), Portugal, reference: SFRH/BD/64957/2009.

COI: none

Study Quality: The quality of the retrieved studies was assessed using the checklist proposed by Downs and Black [21]. Studies' meth- odological quality was assessed as high, moderate or low when the total score was 20, from 10 to 19, and <10, respectively.

Heterogeneity:

Publication Bias:

Notes:

Bazerbachi, Fateh et al. Systematic review of acute pancreatitis associated with interferon-? or pegylated interferon-?: Possible or definitive causation?. Pancreatology. 18. 691-699. 2018

Evidence level/Study Types	P - I - C	Outcomes/Results	Literature References
Evidence level: 4 **Study type:** Systematic review **Databases:** several databases from each data- base's inception , in English, French, and Spanish languages was conducted. The databases included Ovid MEDLINE Epub Ahead of Print, Ovid Medline In-Process & Other Non-Indexed	**Population:** 16 studies that reported AP-IFN with a total of 23 patients. Fifteen studies had moderate to good methodological quality. In most cases IFN was used for chronic hepatitis C.	**Primary:** pancreatitis **Secondary:** **Results:** The frequency of AP-IFN was 7/3450 (0.2%) **Author's Conclusion:** AP-IFN is rare and but has a probable or definite causal relation according to Naranjo scale. The available	

Citations, Ovid MEDLINE, Ovid EMBASE, Ovid Cochrane Central Register of Controlled Trials, Ovid Cochrane Database of Systematic Reviews, and Scopus **Search period:** up until March 13th, 2017 **Inclusion Criteria:** acute pancreatitis associated with interferon-a or pegylated interferon-a **Exclusion Criteria:**	**Intervention:** - **Comparison:**	evidence supports a class Ia of Badalov classification. Hypertriglyceridemia is not the under- lying pathophysiological mechanism in IFN-AP. This form of drug- induced AP is usually mild or moderately severe, and responds favorably to supportive management.	
Methodical Notes			
Funding Sources: **COI:** **Study Quality:** **Heterogeneity:** high **Publication Bias:** high **Notes:**			

Chen, Shimin et al. Association between dipeptidyl peptidase-4 inhibitor drugs and risk of acute pancreatitis: A meta-analysis. Medicine (Baltimore). 96. e8952. 2017

Evidence level/Study Types	P - I - C	Outcomes/Results	Literature References
Evidence level: 1 **Study type:** meta-analysis. **Databases:** PubMed, Embase, Web of Science, and Cochrane library **Search period:** from inception to March 4, 2017. **Inclusion Criteria:** Original articles with data on DPP-4 inhibitors and acute pancreatitis were included **Exclusion Criteria:**	**Population:** Five case–control studies, 5 randomized controlled studies, and 3 cohort studies were selected of the 451 retrieved abstracts. **Intervention:** **Comparison:**	**Primary:** risk of acute pancreatitis **Secondary:** **Results:** A higher risk of acute pancreatitis was observed with the following RR/OR and 95%CI: RR 1.67 (1.08–2.59) in randomized controlled studies and OR 1.45 (1.30–1.61) in case–control studies. However, the pooled HR of the 3 cohort studies failed to confirm this association. **Author's Conclusion:** There is a marginally higher risk of acute pancreatitis with DPP-4 inhibitors. However, this risk was not observed in cohort studies. Thus, further clinical trials are required to confirm this finding.	
Methodical Notes			
Funding Sources:			

COI: None.

Study Quality: sound statistical analysis

Heterogeneity: high between RCT and cohort studies

Publication Bias:

Notes:

Haffar, Samir et al. Frequency and prognosis of acute pancreatitis associated with fulminant or non-fulminant acute hepatitis A: A systematic review. Pancreatology. 17. 166-175. 2017

Evidence level/Study Types	P - I - C	Outcomes/Results	Literature References
Evidence level: 2 **Study type:** systematic review **Databases:** vid Medline In-Process & Other Non-Indexed Citations, Ovid MEDLINE, Ovid EMBASE, Ovid Cochrane Central Register of Controlled Trials, Ovid Cochrane Database of Systematic Reviews, Scopus, Google Scholar, and reference lists of relevant articles. **Search period:** **Inclusion Criteria:** All available studies discussing AP associated with fulminant or non-fulminant AHA. **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** AP **Secondary:** **Results:** The frequency of reported AP associated with AHA is 0e0.1%. Thirty-eight publications with a total of 54 patients meeting the inclusion criteria have been published. Twenty-two studies had a low risk for bias, 10 had moderate risk and 6 had high risk. **Author's Conclusion:** Acute pancreatitis associated with AHA is rare with an estimated frequency of 0e0.1%. Fifty- four documented cases, mostly in Asian patients, have been reported.	

Methodical Notes

Funding Sources:

COI:

Study Quality:

Heterogeneity: high, most case reports

Publication Bias:

Notes:

Monami, Matteo et al. Safety of dipeptidyl peptidase-4 inhibitors: a meta-analysis of randomized clinical trials. Curr Med Res Opin. 27 Suppl 3. 57-64. 2011

Evidence level/Study Types	P - I - C	Outcomes/Results	Literature References
Evidence level: 1 **Study type:** systematic review of RCTs **Databases:** Medline and Embase	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** Fifty-three trials enrolling	

Search period: up to March 1, 2011 **Inclusion Criteria:** An extensive Medline and Embase search for 'vildagliptin', 'sitagliptin', 'saxagliptin', 'alogliptin', 'linagliptin', and 'dutogliptin' was performed, collecting all randomized clinical trials on humans up to March 1, 2011. The present meta-analysis was therefore performed including all randomized clinical trials with a duration of at least 24 weeks, enrolling patients with type 2 diabetes, comparing DPP4i with either placebo or active drugs. Completed but still unpublished trials were identified through a search of www.clinicaltrials.gov, Food and Drug Administration, and European Medicines Agency website. **Exclusion Criteria:**		20,312 and 13,569 patients for DPP4i and comparators, respectively, were included, reporting 176 malignancies, 257 MACE, and 22 pancreatitis. DPP4i, compared with placebo or other treatment, were associated with a similar risk of cancer (MH-OR 1.020 [0.742–1.402]; p ¼ 0.90) and pancreatitis (0.786 [0.357–1.734], p ¼ 0.55), and with a reduced risk of MACE (MH-OR 0.689 [0.528–0.899], p ¼ 0.006). **Author's Conclusion:** The present meta-analysis seems to exclude any relevant short term effect of DPP4i on the incidence of pancreatitis.	
Methodical Notes			
Funding Sources: M.M. has received speaking fees from Bristol Myers Squibb, Merck, and Takeda. I.D. has received fees from Novo Nordisk for participation on speakers bureaus. E.M. has received consul- tancy fees from Merck and Novartis, speaking fees from Astra Zeneca, Bristol Myers Squibb, Merck, and Novartis, **COI:** **Study Quality:** **Heterogeneity:** **Publication Bias:** **Notes:**			

Roshanov, Pavel S et al. Incretin-based therapies are associated with acute pancreatitis: Meta-analysis of large randomized controlled trials. Diabetes Res. Clin. Pract. 110. e13-7. 2015

Evidence level/Study Types	P - I - C	Outcomes/Results	Literature References
Evidence level: 1 **Study type:** Systematic analysis of 3 RCT´s **Databases:** Medien **Search period:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** AP **Secondary:** **Results:** This meta- analysis of three recent mega-trials found an 82% increase in the odds of acute pancreatitis with the use of these agents compared to usual care (95% CI, 1.17–2.82). **Author's Conclusion:** well-conducted randomized trials suggest that incretin-based therapies cause some cases of acute pancreatitis. In most patients, absolute risk of acute pancreatitis remains very small but additional caution may be warranted in people with multiple risk factors.	
Methodical Notes			

Funding Sources: none.

COI:

Study Quality:

Heterogeneity:

Publication Bias:

Notes:

Sun, Xiaobing et al. Meta-analysis: Tobacco smoking may enhance the risk of acute pancreatitis. Pancreatology. 15. 286-94. 2015

Evidence level/Study Types	P - I - C	Outcomes/Results	Literature References
Evidence level: 1 **Study type:** systematic review of observational studies **Databases:** MEDLINE and EMBASE through November 30, 2014. **Search period:** through November 30, 2014. **Inclusion Criteria:** **Exclusion Criteria:**	**Population:** A total of 3690 incident cases of AP included 12 observational studies (6 caseecontrol and 6 prospective cohort/nested caseecontrol studies) were identified. **Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** ompared with never smokers, the summary RR estimates were 1.54 (95% CI, 1.31e1.80) for ever smokers, 1.71 (95% CI, 1.37e2.14) for current smokers, and 1.21 (95% CI, 1.02e1.43) for former smokers. Smoking is found to be a potential risk factor for alcohol use, idiopathic factors and drugs related AP, but not for gallstone related AP, in the ever and current smokers. A doseeresponse effect of tobacco use on the risk was ascertained: current smokers had a 40% (95% CI, 30%e51%) increased risk of AP for every additional 10 cigarettes per day. **Author's Conclusion:** The present analysis suggests that smokers have an elevated risk of AP development. Further studies, however, are warranted before definitive conclusions can be drawn.	

Methodical Notes

Funding Sources:

COI:

Study Quality:

Heterogeneity:

Publication Bias:

Notes:

Yang, Lin et al. Type 2 diabetes mellitus and the risk of acute pancreatitis: a meta-analysis. Eur J

Gastroenterol Hepatol. 25. 225-31. 2013			
Evidence level/Study Types	**P - I - C**	**Outcomes/Results**	**Literature References**
Evidence level: 1 **Study type:** metaanalysis **Databases:** PubMed (January 1966), Embase (January 1974), Web of Science (January 1986), and Cochrane Library, **Search period:** through March 2012. **Inclusion Criteria:** All observational studies and randomized- controlled trials evaluating the relationship between type 2 diabetes mellitus and the risk of acute pancreatitis **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** AP **Secondary:** **Results:** A total of seven observational studies with 15 298 024 patients were identified for the meta-analysis. Meta-analysis of these observational studies showed that type 2 diabetes mellitus was associated with an increased risk of acute pancreatitis (relative risk = 1.84; 95% confidence interval 1.45–2.33; P = 0.000), **Author's Conclusion:** These outcomes strongly support the relationship between type 2 diabetes mellitus and an increased risk of acute pancreatitis	
Methodical Notes			
Funding Sources: public **COI:** **Study Quality:** **Heterogeneity:** with significant heterogeneity (P = 0.000, I2 = 93.7%). **Publication Bias:** **Notes:**			

OXFORD (2011) Appraisal Sheet: RCT: *1 Bewertung(en)*

Steinberg, William M et al. Amylase, Lipase, and Acute Pancreatitis in People With Type 2 Diabetes Treated With Liraglutide: Results From the LEADER Randomized Trial. Diabetes Care. 40. 966-972. 2017		
Population	**Intervention - Comparison**	**Outcomes/Results**
Evidence level: 1 **Study type:** RCT post hoc Analysis **Number of Patient:** 9,340 patients with type 2 diabetes	**Intervention:** were randomized to either liraglutide or placebo (median observation time 3.84 years). **Comparison:**	**Primary:** **Secondary:** **Results:** Compared with the placebo group, liraglutide-treated patients had increases in se- rum lipase and amylase of 28.0% and 7.0%, respectively. Levels were increased at 6 months and then remained stable. During the study, 18 (0.4% [1.1 events/1,000 patient-years of observation] [PYO]) liraglutide-treated and 23 (0.5% [1.7 events/ 1,000 PYO]) placebo patients had acute pancreatitis confirmed by adjudication. Most acute pancreatitis cases occurred ‡12 months after randomization. Liraglutide-treated patients with prior history of pancreatitis (n = 147) were not more likely to develop acute pancreatitis than similar patients in the placebo group (n =

Recruitung Phase: **Inclusion Criteria:** **Exclusion Criteria:**		120). Elevations of amylase and lipase levels did not predict future risk of acute pancreatitis (positive predictive value <1.0%) in patients treated with liraglutide. **Author's Conclusion:** In a population with type 2 diabetes at high cardiovascular risk, there were numer- ically fewer events of acute pancreatitis among liraglutide-treated patients (regard- less of previous history of pancreatitis) compared with the placebo group. Liraglutide was associated with increases in serum lipase and amylase, which were not pre- dictive of an event of subsequent acute pancreatitis.
Methodical Notes		
Funding Sources: Novo Nordisk **COI:** **Randomization:** y **Blinding:** y **Dropout Rate/ITT-Analysis:** **Notes:**		

NEWCASTLE - OTTAWA Checklist: Case Control: *24 Bewertung(en)*

Alonso, Alvaro et al. Association of amiodarone use with acute pancreatitis in patients with atrial fibrillation: a nested case-control study. JAMA Intern Med. 175. 449-50. 2015			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 1 **Study type:** nested case-control study	**Funding sources:** National Institutes of Health **Conflict of Interests:** none **Randomization:** n/a **Blinding:** n/a **Dropout rates:** n/a	**Total no. patients:** 1686 **Patient characteristics:** January 1, 2007, through De- cember 31, 2012 **Inclusion criteria:** Case patients were patients with nonvalvular AF (NVAF) admitted to the hospital with a primary diagnosis of acute pan- creatitis during the study period **Exclusion criteria:** n/a	**Interventions:** None **Comparison:** Five control patients with NVAF were matched with each case patient by sex, year of birth, and MarketScan enrollment date
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** odds ratios (ORs) and 95% CIs of acute pancreatitis by use of amio- darone and other antiarrhythmic drugs (each using separate regression models) and time since initiation and cumulative use of amiodarone, adjusting for confounders **Secondary**	**Results:** use of amiodarone but not of other antiarrhythmic drugs was asso- ciated with a 50% increased odds of acute pancreatitis among patients with NVAF. The odds were almost doubled in the 12 months after amiodarone therapy initiation and did not de- pend on cumulative use of amiodarone.	

Bishu, Shrinivas et al. The -251 A/T Polymorphism in the IL8 Promoter is a Risk Factor for Acute Pancreatitis. Pancreas. 47. 87-91. 2018

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 3 **Study type:** case control	**Funding sources:** Veterans Affairs Merit Review Award (PRO00000496; PI: G.I.P.). **Conflict of Interests:** n **Randomization:** n **Blinding:** n **Dropout rates:**	**Total no. patients:** 357 **Patient characteristics:** Prospectively recruited patients and control subjects **Inclusion criteria:** diagnosis of AP was based on the presence of at least two of three characteristic clinical, biochemical, and/or radiographic criteria, and was in accordance with the standard clinical definition. Inclusion criteria were (1) any patient admitted to the University of Pittsburgh Medical Center (UPMC) with the above criteria older than 18 years, (2) ability to given informed written consent and admitted within 7 days of onset of pain. **Exclusion criteria:** Patients were excluded if (1) they presented greater than 7 days from the onset of pain, (2) active malignancy and (3) inability to provide written informed consent.	**Interventions:** **Comparison:** Control subjects were recruited from the hospital and clinics at UPMC and included spouses and unrelated healthy subjects. Control subjects were excluded if they were (1) < 18 yrs old, (2) could not provide informed written consent, had either (3) active malignancy, (4) infection or (5) autoimmune conditions.
Notes:	**Author's conclusion:** The –251 polymorphism confer susceptibility to AP and disease severity in obese patients. However, its effect is moderate. One potential mechanism for this susceptibility is via increased IL-8 production by innate cells, with subsequent enhanced neutrophil influx and pancreatic injury.		
Outcome Measures/results	**Primary** We examined whether this IL-8 polymorphism confers susceptibility to AP. **Secondary**	**Results:** Compared to controls, the A/A genotype was more common in AP (P = 0.041; odds ratio, 1.42; 95% confidence interval, 1-1.99).	

Cai, Feng et al. Interleukin-10 -1082A/G polymorphism is associated with the development of acute pancreatitis in a Chinese population. Int J Clin Exp Pathol. 8. 15170-6. 2015

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 3 **Study type:** case control	**Funding sources:** - **Conflict of Interests:** none **Randomization:** - **Blinding:** - **Dropout rates:** -	**Total no. patients:** 240 patients **Patient characteristics:** May 2012 and January 2015 **Inclusion criteria:** Patients with proven acute pancreatitis **Exclusion criteria:** patients who had serious liver and kidney diseases.	**Interventions:** **Comparison:**
Notes:			

	Author's conclusion: we suggest that IL-10-1082A/G gene polymorphisms contribute to the development of acute pancreatitis in codominant, dominant and recessive models.	
Outcome Measures/results	**Primary** investigate the association between IL-10 gene polymorphism (-1082A/G, -819T/C, and -592A/C) and risk of acute pancreatitis in a Chinese population. **Secondary**	**Results:** There were signi cant differences in the genotype distributions of IL-10-1082A/G between patients with acute pancreatitis and control subjects (χ2=9.97, P=0.007). By multiple logistic regression analysis, we found that individuals with the GG genotype of IL-10-1082A/G were associated with an increased risk of acute pancreatitis when compared with the AA genotype (OR=2.32, 95% CI=1.20-4.59; P=0.007). In dominant and recessive models, the IL-10-1082A/G gene polymorphism was signi - cantly correlated with an elevated risk of acute pancreatitis, and the adjusted Ors (95% CI) were 1.50 (1.03-2.20) and 1.99 (1.06-3.79), respectively. However, no signi cant different was found between IL-10-819T/C and -592A/C gene polymorphisms and susceptibility to acute pancreatitis.

Chou, Hsin-Chun et al. Acute pancreatitis in patients with type 2 diabetes mellitus treated with dipeptidyl peptidase-4 inhibitors: a population-based nested case-control study. Drug Saf. 37. 521-8. 2014

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 2 **Study type:** nested case control	**Funding sources:** Food and Drug Administration, Taiwan (DOH102-FDA-41100). **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** 1,957 **Patient characteristics:** 2000 and 2011 **Inclusion criteria:** diabetic patient cohort who had at least one outpatient or inpatient diagnosis of type 2 diabetes and who filled at least one prescription of oral antihyperglycemic agents between 1 January 2001 and 31 December 2011. **Exclusion criteria:**	**Interventions:** **Comparison:** 7,828 age-, sex-, and cohort entry year- matched controls
Notes:	**Author's conclusion:** We found that DPP-4 inhib- itor use was not associated with acute pancreatitis.		
Outcome Measures/results	**Primary** acute pancreatitis **Secondary**	**Results:** The risks of acute pancreatitis among current and past users of DPP-4 inhibitors were comparable with those of non-users (current users: adjusted odds ratio (aOR) 1.04; 95 % CI [0.89–1.21]; past users: aOR 1.61 [0.93–2.77])	

Faillie, Jean-Luc et al. Pancreatitis associated with the use of GLP-1 analogs and DPP-4 inhibitors: a case/non-case study from the French Pharmacovigilance Database. Acta Diabetol. 51. 491-7. 2014

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 3 **Study type:** case/non- case method	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** 3,109 serious ADRs **Patient characteristics:** 2008-2013 **Inclusion criteria:** Cases were defined as reports of pancreatitis, and all other serious ADRs were considered non-cases. **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:** Temporal analysis found disproportionality for incretin-based drugs since their first		

	year of marketing in France.	
Outcome Measures/results	**Primary** Disproportionality was assessed by calculating reporting odds ratios (ROR) adjusted for age, gender, history of pancreatitis, other antihyperglycemic drugs and other drugs associated with a higher risk of pancreatitis. **Secondary**	**Results:** Among 3,109 serious ADRs, 147 (4.7 %) reports of pancreatitis were identified as cases and 2,962 reports (95.3 %) of other ADRs as non-cases. Among the cases, 122 (83.0 %) involved incretin-based drugs. Disproportionality was found for all incretin-based drugs (adjusted ROR: 15.7 [95 % CI 9.8–24.9]), all GLP-1 analogs (29.4 [16.0–53.8]), exenatide (28.3 [12.8–62.3]), liraglutide (30.4 [15.4–60.0]), all DPP-4 inhibitors (12.1 [7.3–20.0]), sitagliptin (12.4 [7.3–21.0]), saxagliptin (15.1 [4.3–52.7]), and vildagliptin (7.4 [3.1–17.6]).

Gonzalez-Perez, Antonio et al. Acute pancreatitis in association with type 2 diabetes and antidiabetic drugs: a population-based cohort study. Diabetes Care. 33. 2580-5. 2010

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 3 **Study type:** case control	**Funding sources:** This study was spon- sored by Novartis Global Clinical Epidemiology. **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** 419 cases of acute pancreatitis, 243 in the general population and 176 in the diabetes cohort. **Patient characteristics:** 1996-2006 **Inclusion criteria:** cohort of 85,525 type 2 diabetic patients and 200,000 diabetes-free individuals from the general population **Exclusion criteria:**	**Interventions:** **Comparison:** 200,000 diabetes-free individuals from the general population
Notes:	**Author's conclusion:** Type 2 diabetes may be associated with a slight increase in the risk of acute pancreatitis. We also found that insulin use in type 2 diabetes might decrease this risk.		
Outcome Measures/results	**Primary** risk of acute pancreatitis in adult patients with type 2 diabetes **Secondary**	**Results:** adjusted incidence rate ratio of acute pancreatitis in diabetic patients versus that in the general population was 1.77 (95% CI 1.46 –2.15). The magnitude of this association decreased with adjustment for multiple factors in the nested case-control analysis (adjusted odds ratio 1.37 [95% CI 0.99–1.89]). Furthermore, we found that the risk of acute pancreatitis was decreased among insulin- treated diabetic patients (0.35 [0.20 – 0.61]).	

Hung, Shih-Chang et al. Nabumetone use and risk of acute pancreatitis in a case-control study. Pancreatology. 16. 353-7. 2016

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 3 **Study type:** population-based caseecontrol study	**Funding sources:** This study is supported in part by Taiwan Ministry of Health and Welfare Clinical Trial and Research Center of Excellence (MOHW105-TDU-B-212-133019), China Medical University Hospital, Academia Sinica Taiwan Biobank Stroke Biosignature Project (BM10501010037), National Research Program for Bio- pharmaceuticals (NRPB) Stroke Clinical Trial Consortium (MOST 104-2325-B-039 -005), Tseng-Lien Lin Foundation, Taichung, Taiwan, Taiwan Brain Disease Foundation, Taipei, Taiwan, and Katsuzo and Kiyo Aoshima Memorial	**Total no. patients:** 5384 cases aged 20e84 years **Patient characteristics:** 1998-2011 **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:** 21,536 controls without acute pancreatitis

	Funds, Japan **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**		
Notes:	**Author's conclusion:** Active use of nabumetone may increase the risk of acute pancreatitis.		
Outcome Measures/results	**Primary** AP in nabumeone users vs. non-users **Secondary**	**Results:** The adjusted odds ratio of acute pancreatitis was 3.69 (95%CI 1.69, 8.05) for subjects with active use of nabumetone compared with those with never use. The odds ratios decreased to 1.0 (95%CI 0.88, 1.12) for subjects with non-active use.	

Kuoppala, Jaana et al. ACE inhibitors and the risk of acute pancreatitis-a population-based case-control study. Pharmacoepidemiol Drug Saf. 26. 853-857. 2017

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 3 **Study type:** a population-based case–control study	**Funding sources:** no specific funding **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** 4966 cases hospitalized i for acute pancreatitis **Patient characteristics:** n 2008–2010 **Inclusion criteria:** Finnish national registers on hospital discharges and prescriptions. **Exclusion criteria:**	**Interventions:** **Comparison:** A total of 24 788 age and sex-matched population-based controls were randomly selected using density sampling.
Notes:	**Author's conclusion:** Angiotensin converting enzyme inhibitor use seems to be associated with a moderately increased risk of acute pancreatitis.		
Outcome Measures/results	**Primary** AP **Secondary**	**Results:** A total of 1276 (26%) cases and 3946 (16%) controls had been exposed to ACE inhibitors. The use of ACE inhibitors was asso- ciated with an increased incidence rate of acute pancreatitis (odds ratio [OR] 1.76, 95% confidence interval [CI] 1.59–1.95). The increase was slightly higher among current new users (OR 1.86, 95%CI 1.65–2.09) and somewhat lower among current prevalent (OR 1.54, 95%CI 1.35–1.75) and former users (OR 1.51, 95%CI 1.31–1.74).	

Kuoppala, Jaana et al. Use of statins and the risk of acute pancreatitis: a population-based case-control study. Pharmacoepidemiol Drug Saf. 24. 1085-92. 2015

Evidence level	Methodical Notes	Patient characteristics	Interventions

Evidence level: 3 **Study type:** a population-based case–control study	**Funding sources:** no external sources of funding. **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** 4376 patients hospitalized in 2008–2010 for acute pancreatitis and 19 859 randomly selected age and sex-matched controls **Patient characteristics:** 2008–2010 **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:** Statin use seems to be associated with an increased risk of acute pancreatitis. The association is more apparent during the first year of statin use and among former users.		
Outcome Measures/results	**Primary** AP **Secondary**	**Results:** A total of 826 (19%) cases and 2589 (13%) controls had been exposed to statins. Statin use was associated with an increased in- cidence rate of acute pancreatitis (odds ratio (OR) 1.25, 95% confidence interval (CI) 1.13–1.39). This increase was seen especially during the first year of use both among current (OR 1.37, 95% CI 0.94–2.00 for at most 3 months of use and OR 1.32, 95% CI 1.07–1.63 for 4– 12 months of use) and former users (OR 1.64, 95% CI 1.33–2.03). The overall association remained when restricting analyses to participants with current use only, or with no history of gallstone or alcohol-related diseases, or with no comorbidities or medicines other than statins.	

Lai, S-W et al. Zopiclone use associated with increased risk of acute pancreatitis: a case-control study in Taiwan. Int. J. Clin. Pract. 69. 1275-80. 2015

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 3 **Study type:**	**Funding sources:** Taiwan Ministry of Health and Welfare Clinical Trial and Research mia Sinica Taiwan Biobank, Stroke Biosignature Pro- ject (BM104010092), NRPB Stroke Clinical Trial Consortium (MOST 103-2325-B-039-006), Tseng-Lien Lin Foundation in Taichung in Taiwan, Taiwan Brain Disease Foundation in Taipei in Taiwan, and Katsuzo and Kiyo Aoshima Memorial Funds in Japan. These funding agencies did not influence the study design, data collection and analysis, decision to publish, or preparation of the manuscript. Center of Excellence 113002), China Medical (MOHW104-TDU-B-212- University Hospital, **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** 5169 subjects aged 20–84 years **Patient characteristics:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:** 20,676 sex-matched and age-matched subjects without acute pancreatitis as the controls.

Notes:	**Author's conclusion:** Subjects actively using zopiclone are associated with increased risk of acute pancreatitis.	
Outcome Measures/results	**Primary** first-time attack of acute pancreatitis **Secondary**	**Results:** 5169 subjects aged 20–84 years with a first-time attack of acute pancreatitis as the patients and 20,676 sex-matched and age-matched subjects without acute pancreatitis as the controls. After adjustment for potential confounding variables, the adjusted OR of acute pancreatitis was 2.36 for subjects with active use of zopiclone (95% CI 1.70–3.28), as compared with those with never use of zopiclone. In further analysis, as a reference of subjects with never use of zopi- clone and without alcohol-related disease and biliary stone, the adjusted OR increased to 14.44 in those with active use of zopiclone and with alcohol-related disease or biliary stone (95% CI 7.47–27.89).

Lai, S-W et al. Increased risk of acute pancreatitis following pneumococcal pneumonia: a nationwide cohort study. Int. J. Clin. Pract. 69. 611-7. 2015

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 3 **Study type:** population-based case-control study	**Funding sources:** This study was supported in part by Taiwan Ministry of Health and Welfare Clinical Trial and Research Center of Excellence (MOHW103-TDU-B-212-113002). **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** 4535 subjects aged 20– 84 years with the first episode of acute pancreatitis as cases **Patient characteristics:** 2000 to 2011 **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:** 18,140 subjects without acute pancreatitis matched for sex, age, and index year as controls.
Notes:	**Author's conclusion:** Patients actively using zolpidem are at 7-fold increased odds of acute pancreatitis.		
Outcome Measures/results	**Primary** AP **Secondary**	**Results:** After adjustment for confounding factors, the multi-variable logistic regression model demonstrated that the ad-justed OR of acute pancreatitis was 7.20 for immediate use of zolpidem (95 % CI 5.81, 8.92), when compared to those with never use of zolpidem. The OR increased to 30.32 in subjects with immediate use of zolpidem and with any comorbidit	

Lai, Shih-Wei et al. Finasteride use and acute pancreatitis in Taiwan. J Clin Pharmacol. 55. 657-60. 2015

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 3 **Study type:** population-based case control	**Funding sources:** **Conflict of**	**Total no. patients:** 2,530 male subjects aged 40–84 years with a first-attack of acute pancreatitis	**Interventions:** **Comparison:** 10,119 randomly

	Interests: **Randomization:** **Blinding:** **Dropout rates:**	**Patient characteristics:** 1998–2011 **Inclusion criteria:** **Exclusion criteria:**	selected subjects without acute pancreatitis as the control group
Notes:	**Author's conclusion:** No association can be detected between finasteride use and the risk of acute pancreatitis.		
Outcome Measures/results	**Primary** **Secondary**	**Results:** After adjusting for potential confounders, the adjusted OR of acute pancreatitis decreased to 1.25 (95%CI 0.90, 1.73) for subjects with ever use of finasteride, but no statistical significance was seen.	

Lai, Shih-Wei et al. Use of methimazole and risk of acute pancreatitis: A case-control study in Taiwan. Indian J Pharmacol. 48. 192-5. 2016

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 3 **Study type:** population based case control	**Funding sources:** supported in part by Taiwan Ministry of Health and Welfare Clinical Trial and Research Center of Excellence **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** 5764 individuals aged 20–84 years with a first AP attack as the cases and 23,056 randomly selected sex- and age-matched individuals without acute pancreatitis as the controls **Patient characteristics:** from 1998 to 2011 **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:** 23,056 randomly selected sex- and age-matched individuals without acute pancreatitis as the controls
Notes:	**Author's conclusion:** No association can be detected between finasteride use and the risk of acute pancreatitis.		
Outcome Measures/results	**Primary** AP **Secondary**	**Results:** After adjusting for potential confounders, the adjusted OR of acute pancreatitis decreased to 1.25 (95%CI 0.90, 1.73) for subjects with ever use of finasteride, but no statistical significance was seen.	

Lai, Shih-Wei et al. Atorvastatin Use Associated With Acute Pancreatitis: A Case-Control Study in Taiwan. Medicine (Baltimore). 95. e2545. 2016

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 3 **Study type:** Population based case control	**Funding sources:** Taiwan Ministry of Health and Welfare Clinical Trial and Research Center of Excellence **Conflict of Interests:** **Randomization:**	**Total no. patients:** 5810 cases aged 20 to 84 years with a first-time diagnosis of acute pancreatitis **Patient characteristics:** during the period 1998 to 2011 **Inclusion criteria:**	**Interventions:** **Comparison:** and 5733 randomly selected controls without acute pancreatitis.

	Blinding: **Dropout rates:**	**Exclusion criteria:**	
Notes:	**Author's conclusion:** Current use of atorvastatin is associated with the diagnosis of acute pancreatitis.		
Outcome Measures/results	**Primary** **Secondary**	**Results:** The logistic regression analysis revealed that the odds ratio of acute pancreatitis was 1.67 for subjects with current use of atorvastatin (95% confidence interval 1.18, 2.38), when compared with subjects with never use of atorvastatin. The odds ratio decreased to 1.15 for those with late use of atorvastatin (95% confidence interval 0.87, 1.52), but without statistical significance.	

Lai, Shih-Wei et al. Rosuvastatin and risk of acute pancreatitis in a population-based case-control study. Int. J. Cardiol. 187. 417-20. 2015

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 3 **Study type:** population base case control	**Funding sources:** Taiwan Ministry of Health and Welfare Clinical Trial and Research Center of Excellence **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** 5728 subjects with the first episode of acute pancreatitis as the case group **Patient characteristics:** in 1998–2011 **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:** and we randomly selected 22,912 sex- and age-matched subjects without acute pancreatitis as the control group.
Notes:	**Author's conclusion:** We observed active use of rosuvastatin to be associated with increased risk for acute pancreatitis.		
Outcome Measures/results	**Primary** **Secondary**	**Results:** The multivariable analysis disclosed that the adjusted odds ratio for acute pancreatitis in subjects with active use of rosuvastatin was 3.21 (95% confidence interval 1.70, 6.06). The adjusted odds ratio was 0.90 in sub- jects with non-active use of rosuvastatin (95% confidence interval 0.67, 1.19), without statistical significance.	

Lai, Shih-Wei et al. Increased relative risk of acute pancreatitis in zolpidem users. Psychopharmacology (Berl.). 232. 2043-8. 2015

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 3 **Study type:** population based case control	**Funding sources:** Taiwan Ministry of Health and Welfare Clinical Trial and Research Center of Excellen **Conflict of Interests:** **Randomization:**	**Total no. patients:** we selected 4535 subjects aged 20– 84 years with the first episode of acute pancreatitis as cases **Patient characteristics:** 2000 to 2011,	**Interventions:** **Comparison:** and 18,140 subjects without acute pancreatitis matched for sex, age, and index year as controls.

	Blinding: **Dropout rates:**	**Inclusion criteria:** **Exclusion criteria:**	
Notes:	**Author's conclusion:** Patients actively using zolpidem are at 7-fold increased odds of acute pancreatitis.		
Outcome Measures/results	**Primary** **Secondary**	**Results:** After adjustment for confounding factors, the multi- variable logistic regression model demonstrated that the ad- justed OR of acute pancreatitis was 7.20 for immediate use of zolpidem (95 % CI 5.81, 8.92), when compared to those with never use of zolpidem.	

Lai, Shih-Wei et al. Amiodarone use and risk of acute pancreatitis: A population-based case-control study. Heart Rhythm. 12. 163-6. 2015

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 3 **Study type:** Population based case control	**Funding sources:** Taiwan Ministry of Health and Welfare Clinical Trial and Research Center of Excellence **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** 4986 subjects aged 20–84 years with a first episode of acute pancreatiti **Patient characteristics:** from 2000 to 2011. **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:** 19,944 randomly selected subjects without acute pancreatitis matched for sex, age, and index year as the control group.
Notes:	**Author's conclusion:** People with current use of amiodarone are at an increased risk of acute pancreatitis.		
Outcome Measures/results	**Primary** AP **Secondary**	**Results:** After adjustment for confounding factors, current use of amiodarone was positively associated with acute pancreatitis (adjusted odds ratio 5.21; 95% confidence interval 3.22–8.43). There was no significant association between recent or past amiodarone use and acute pancreatitis.	

Li, Xiaochun et al. Glucagon-like peptide 1-based therapies and risk of pancreatitis: a self-controlled case series analysis. Pharmacoepidemiol Drug Saf. 23. 234-9. 2014

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 3 **Study type:** self-controlled case series	**Funding sources:** no external funding **Conflict of Interests:** **Randomization:** **Blinding:**	**Total no. patients:** From dispensing data on 1.2 million patients, we found 7992 sitagliptin-exposed patients and 3552 exenatide-exposed patients **Patient characteristics:** be- tween 2004 and 2009. **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**

	Dropout rates:		
Notes:	**Author's conclusion:** We found no association between the use of GLP-1-based therapies and pancreatitis using SCCS analysis in a large observational database		
Outcome Measures/results	**Primary** **Secondary**	**Results:** the incidence density ratios for devel- opment of pancreatitis during exposure versus non-exposure ranged from 0.68 to 1.46, with all having 95% confidence intervals containing 1.	

Liao, Kuan-Fu et al. Sitagliptin use and risk of acute pancreatitis in type 2 diabetes mellitus: A population-based case-control study in Taiwan. Eur. J. Intern. Med. 27. 76-9. 2016

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 3 **Study type:** population-based case-control study	**Funding sources:** Taiwan Ministry of Health and Welfare Clinical Trial and Research Center of Excellenc **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** here were 349 subjects with type 2 diabetes mellitus aged 20–84 with a first-attack of acute pancre- atitis 349 subjects with type 2 diabetes mellitus aged 20–84as the case group and 1116 randomly selected subjects with type 2 diabetes mellitus without acute pancreatitis as the control group. **Patient characteristics:** from 2009 to 2011 **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:** 1116 randomly selected subjects with type 2 diabetes mellitus without acute pancreatitis as the control group.
Notes:	**Author's conclusion:** No significant association is detected between sitagliptin use and acute pancreatitis in type 2 diabe- tes mellitus.		
Outcome Measures/results	**Primary** **Secondary**	**Results:** After statistical correction for potential confounders, the adjusted OR of acute pancreatitis was 2.47 for subjects with current use of sitagliptin (95% CI 0.84, 7.28), when compared with those never using sitagliptin, but without statistical significance. The adjusted OR decreased to 1.14 for subjects with late use of sitagliptin (95% CI 0.66, 1.98), but without statistical significance.	

Lin, Hsien-Feng et al. Association of use of selective serotonin reuptake inhibitors with risk of acute pancreatitis: a case-control study in Taiwan. Eur. J. Clin. Pharmacol. 73. 1615-1621. 2017

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 3 **Study type:** case-control study	**Funding sources:** Taiwan Ministry of Health and Welfare Clinical Trial Center **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** 4631 cases with first attack of acute pancreatitis and 4631 controls without acute pancreatitis were selected using a randomly sampled cohort of one million health insurance enrollees **Patient characteristics:** from 2000 to 2013. **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:** and 4631 controls without acute pancreatitis

Notes:	**Author's conclusion:** Current use of SSRIs is associated with the diagnosis of acute pancreatitis.	
Outcome Measures/results	**Primary** **Secondary**	**Results:** After adjusting for covariables, multivariate logistic regression analysis revealed that compared with patients with no use of SSRIs, the adjusted OR of acute pancreatitis for those with current use of SSRIs was 1.7 (95% CI, 1.1–2.5), whereas that for patients with late use of SSRIs was 1.0 (95% CI, 0.9–1.2) without statistical significance.

Liu, Chengcheng et al. Clinical and Genetic Risk Factors for Acute Pancreatitis in Patients With Acute Lymphoblastic Leukemia. J. Clin. Oncol. 34. 2133-40. 2016

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 3 **Study type:** case control	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** cohort of 5,185 children and young adults with acute lymphoblastic leukemia, including 117 (2.3%) who were diagnosed with at least one episode of acute pancreatitis during therapy. **Patient characteristics:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:** Older age, higher exposure to asparaginase, and higher Native American ancestry were independent risk factors for pancreatitis in patients with acute lymphoblastic leukemia. Those who inherit a nonsense rare variant in the CPA2 gene had a markedly increased risk of asparaginase-induced pancreatitis.		
Outcome Measures/results	**Primary** **Secondary**	**Results:** Risk factors associated with pancreatitis included genetically defined Native American ancestry (P , .001), older age (P , .001), and higher cumulative dose of asparaginase (P , .001).	

Ljung, Rickard et al. Increased risk of acute pancreatitis among tetracycline users in a Swedish population-based case-control study. Gut. 61. 873-6. 2012

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 3 **Study type:** population based case control	**Funding sources:** Swedish Research Council (SIMSAM), Bengt Ihre Foundation. **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** The Swedish Patient Register was used to identify 6161 cases of first- episode acute pancreatitis. **Patient characteristics:** 2006 and 2008 **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:** The Swedish Patient Register was used to identify 6161 cases of first-episode acute pancreatitis. The Register of the Total Population was used to randomly select 61 637 control subjects from the general population using frequency- based density sampling, matched for age, sex, and calendar year.
Notes:	**Author's conclusion:** Current use of tetracycline is associated with an increased risk of acute		

	pancreatitis, verifying previous case reports.	
Outcome Measures/results	**Primary** **Secondary**	**Results:** There was a 60% increased risk of acute pancreatitis among current users of tetracycline after adjustment for potential confounders (OR¼1.6, 95% CI 1.2 to 2.1). There was no increased OR for any category of previous use.

Ljung, Rickard et al. Selective serotonin reuptake inhibitors and the risk of acute pancreatitis: a Swedish population-based case-control study. J Clin Psychopharmacol. 32. 336-40. 2012

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 3 **Study type:** population based case control	**Funding sources:** Astrid and David Hagele´n Foundation. The study was supported by grants from the Swedish Research Council (SIMSAM) and a Regional agreement on medical training and clinical research (ALF) between Stockholm County Council and Karolinska Institutet, and the Bengt Ihre Foundation. **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** 6161 cases of first-episode acute pancreatitis. **Patient characteristics:** 2006-2008 **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:** The Register of the Total Population was used to randomly select 61,637 control subjects from the general population using frequency-based density sampling, matched for age, sex, and cal- endar year.
Notes:	**Author's conclusion:** In conclusion, no increased risk of acute pan- creatitis remained among users of SSRI after adjusting for confounding factors.		
Outcome Measures/results	**Primary** **Secondary**	**Results:** The OR for acute pancreatitis, adjusted for matching variables, was increased among present users of SSRI (OR, 1.5; 95% CI, 1.4Y1.7). After adjusting for diseases or medications related to alcohol overconsumption, tobacco smoking, diabetes, ischemic heart disease, obesity, and severe pain together with educational level and marital status, the corresponding OR was 1.1 (95% CI, 1.0Y1.3). After adjusting for the number of distinct medications, a proxy for comorbidity, the corresponding OR was 1.0 (95% CI, 0.9Y1.1). The OR for antidepressant use other than SSRI showed a similar pattern.	

Masamune, Atsushi et al. Genetic background is different between sentinel and recurrent acute pancreatitis. J. Gastroenterol. Hepatol. 26. 974-8. 2011

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 3 **Study type:** case control	**Funding sources:** public **Conflict of Interests:**	**Total no. patients:** 261 patients with AP (174 with a sentinel attack, and 87 with recurrent attacks) and healthy controls **Patient characteristics:**	**Interventions:** **Comparison:** healthy controls

	Randomization: **Blinding:** **Dropout rates:**	**Inclusion criteria:** **Exclusion criteria:**	
Notes:	**Author's conclusion:** The PRSS1 p.R122H mutation, SPINK1 p.N34S, and PRSS3 p.E32del vari- ants were associated with recurrent, but not sentinel AP. The genetic background could possibly be different between sentinel and recurrent AP.		
Outcome Measures/results	**Primary** **Secondary**	**Results:** Patients with recurrent attacks were younger. The proportions of biliary pancre- atitis and severe cases were lower, and that of idiopathic pancreatitis was higher in patients with a sentinel attack than in those with recurrent attacks. The frequencies of the genetic variants examined did not differ between controls and patients with sentinel pancreatitis. The frequencies of the PRSS1 p.R122H mutation, SPINK1 p.N34S variant, and PRSS3 p.E32del variant, but not other genetic variants, were higher in patients with recurrent attacks than in controls or those with a sentinel attack.	

NEWCASTLE - OTTAWA Checklist: Cohort: *19 Bewertung(en)*

Aoun, Elie et al. SPINK1 N34S is strongly associated with recurrent acute pancreatitis but is not a risk factor for the first or sentinel acute pancreatitis event. Am. J. Gastroenterol. 105. 446-51. 2010			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 2 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Azoulay, Laurent et al. Association Between Incretin-Based Drugs and the Risk of Acute Pancreatitis. JAMA Intern Med. 176. 1464-1473. 2016			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 2 **Study type:** international,multicenter,population-based cohort study	**Funding sources:** This study was made possible through data-sharing	**Total no. patients:** 1 532 513 **Recruiting**	**Interventions:** none **Comparison:** Currentuseofincretin-baseddrugscomparedwithcurrentuseofatleast2oral

	agreements between Canadian Network for Observational Drug Effect Studies (CNODES) member research centers and the respective provincial governments of Alberta, Manitoba (Health Information Privacy Committee: 2014/2015-08; Health Research Ethics Authority: H2014:236), Ontario, and Quebec. The CNODES, a collaborating center of the Drug Safety and Effectiveness Network, is funded by Canadian Institutes of Health Research grant DSE-111845. Dr Azoulay is the recipient of a Chercheur-Boursier Career Award from the Fonds de Recherche du Quebec-Santé (FRQS [Quebec Foundation for Health Research]). Dr Filion holds a Canadian Institutes of Health Research New Investigator Award. Dr Platt holds the Albert Boehringer I. Chair and is supported by a Chercheur-National Career Award of the	**Phase:** between January 1, 2007, and June 30, 2013, was included, with follow-up until June 30, 2014 **Inclusion criteria:** patients with type 2 diabetes initiating the use of antidiabetic drugs **Exclusion criteria:**	antidiabetic drugs

	FRQS. Dr Durand is supported by a clinical investigator award of the FRQS. Dr Juurlink is supported by the Eaton Scholar Program, Department of Medicine, University of Toronto. **Conflict of Interests:** none **Randomization:** none **Blinding:** none **Dropout rates:** none		
Notes:	**Author's conclusion:** Inthislargepopulation-basedstudy,useofincretin-based drugs was not associated with an increased risk of acute pancreatitis compared with other oral antidiabetic drugs.		
Outcome Measures/results	**Primary** acute pancreatitis **Secondary**	**Results:** current use of incretin-based drugs was not associated with an increased risk of acute pancreatitis (pooled adjusted HR, 1.03; 95% CI, 0.87-1.22)	

Chang, Hsien-Yen et al. Anti-diabetic therapies and the risk of acute pancreatitis: a nationwide retrospective cohort study from Taiwan. Pharmacoepidemiol Drug Saf. 24. 567-75. 2015

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 2 **Study type:** retrospective cohort study	**Funding sources:** National Health Research Database provided by the National Health Insurance Administration (NHIA), Ministry of Health and Welfare (MOHW), and managed by the National Health Research Institutes (NHRI) in Taiwan **Conflict of Interests:** - **Randomization:** - **Blinding:** - **Dropout rates:** -	**Total no. patients:** 4113/101 498/44 772 DPP-4/Metformin/Sulfonylurea **Recruiting Phase:** 01 January 2006 to 31 December 2011 **Inclusion criteria:** Our study population included Type-II diabetic patients with the first prescription of three oral antihyperglycemic agents (DPP-4, metformin, or sul- fonylurea) that occurred as follows: (1) between 1 Mar 2009 and 31 Dec 2011; and (2) after the first diag- nosis of diabetes (n: 307 001). **Exclusion criteria:**	**Interventions:** **Comparison:**

Notes:	**Author's conclusion:** Our findings suggest that sulfonylureas may potentially be associated with an increased risk of pancreatitis compared with DPP-4 or metformin.	
Outcome Measures/results	**Primary** **Secondary**	**Results:** Dipeptidyl peptidase-4 was statistically significantly associated with a decreased risk of acute pancreatitis compared with sulfonyl- ureas (adjusted HR: 0.36, 95%CI [0.17, 0.75]) but not metformin (adjusted HR: 0.67, 95%CI [0.32, 1.41]); metformin was statistically sig- nificantly associated with a lower risk of pancreatitis than sulfonylurea (adjusted HR: 0. 53; 95%CI [0.37, 0.76]). In addition, low-dose metformin was statistically significantly associated with a lower risk of pancreatitis compared with high-dose metformin (HR: 0.65; 95% CI [0.44, 0.97]).

Chen, Sy-Jou et al. Acetaminophen Poisoning and Risk of Acute Pancreatitis: A Population-Based Cohort Study. Medicine (Baltimore). 94. e1195. 2015

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:** retrospective cohort study	**Funding sources:** Taiwan Ministry of Health and Welfare Clinical Trial and Research Center of Excellence (MOHW104-TDU-B-212-113002); China Medical University Hospital, Academia Sinica Taiwan Biobank, Stroke Biosignature Project (BM104010092); NRPB States. Stroke Clinical Trial Consortium (MOST 103-2325-B-039-006); Tseng-Lien Lin Foundation, Taichung, Taiwan; Taiwan Brain Disease Founda- tion, Taipei, Taiwan; Katsuzo and Kiyo Aoshima Memorial Funds, Japan; and CMU under the Aim for Top University Plan of the Ministry of Education, Taiwan. **Conflict of Interests:** none **Randomization:** no **Blinding:** no **Dropout rates:**	**Total no. patients:** 2958 **Recruiting Phase:** between 2000 and 2011 **Inclusion criteria:** newly identified acetaminophen poisoning patients aged 20 years **Exclusion criteria:**	**Interventions:** **Comparison:** comparison cohort comprised ran- domly selected patients with no history of acetaminophen poisoning. The acetaminophen and comparison cohorts were frequency matched by age, sex, and index year (N ¼ 11,832) at a 1:4 ratio.
Notes:	**Author's conclusion:** Acetaminophen poisoning is associated with an increased risk of acute pancreatitis.		
Outcome Measures/results	**Primary** **Secondary**	**Results:** The risk of acute pancreatitis was 3.11-fold higher in the acetami- nophen cohort than in the comparison cohort (11.2 vs 3.61 per 10,000 person-years), with an adjusted hazard ratio of 2.40 (95% confidence interval, 1.29–4.47). The incidence rate was considerably high in patients who were aged 35 to 49 years, men, those who had comorbid- ities, and within the first year of follow-	

		up.

Chen, Yu-Tso et al. Inflammatory bowel disease on the risk of acute pancreatitis: A population-based cohort study. J. Gastroenterol. Hepatol. 31. 782-7. 2016

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 2 **Study type:** cohort study	**Funding sources:** Taiwan Ministry of Health and Welfare Clinical Trial and Research Center of Excellence (MOHW104-TDU-B-212-113002); China Medical University Hospital, Academia Sinica Taiwan Biobank, Stroke Biosignature Project (BM104010092); NRPB Stroke Clinical Trial Consortium (MOST 103-2325-B-039-006); Tseng-Lien Lin Foundation, Taichung, Taiwan; Taiwan Brain Disease Foundation, Taipei, Taiwan; Katsuzo and Kiyo Aoshima Memorial Funds, Japan; and CMU under the Aim for Top University Plan of the Ministry of Education, Taiwan. **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** 11 909 **Recruiting Phase:** 2000-2010 **Inclusion criteria:** patients diagnosed with IBD between 2000 and 2010 from Taiwan National Health Insurance Research Database **Exclusion criteria:**	**Interventions:** **Comparison:** 47636 age-matched patients without IBD
Notes:	**Author's conclusion:** IBD is a risk factor for acute pancreatitis.		
Outcome Measures/results	**Primary** risk of acute pancreatitis **Secondary**	**Results:** The overall incidence of acute pancreatitis was 3.56-fold higher in the study co- hort than in the comparison cohort (31.8 vs 8.91 per 10 000 person-years, crude hazard ratio [HR] = 3.56, 95% confidence interval [CI] = 2.96–4.28). After adjustment for age, sex, and comorbidities, namely alcohol-related disease, biliary stone, hypertension, hyperlipidemia, diabetes mellitus, obesity, hepatitis B, hepatitis C, hypertriglyceridemia, cardiovascular diseases, chronic kidney disease, chronic obstructive pulmonary disease, and hypercalce- mia, the adjusted HR for acute pancreatitis was 2.93-fold higher (95% CI = 2.40–3.58) in the study cohort than in the comparison cohort.	

Culetto, Adrian et al. Clinical profile of cannabis-associated acute pancreatitis. Dig Liver Dis. 49. 1284-1285. 2017

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 3 **Study type:** observational cohort	**Funding sources:** **Conflict of Interests:** **Randomization:**	**Total no. patients:** 617 **Recruiting Phase:** nd **Inclusion criteria:** absence of chronic	**Interventions:** **Comparison:** Total number of patients with AP n = 617, biliary n = 256, alcohol n = 116, others n = 134 (med- ication, metabolic, iatrogenic, genetic. . .),

	Blinding: **Dropout rates:**	alcohol intake **Exclusion criteria:**	idiopathic n = 111)
Notes:	**Author's conclusion:** cannabis-associated AP are benign and occurred in a context of chronic heavy and long lasting consumption of cannabis the withdrawal of which prevent the recurrence.		
Outcome Measures/results	**Primary** cannabis associated AP **Secondary**	**Results:** Cannabis-induced AP accounts percentage of 2.9% among all the series of 617 patients with AP	

Dore, D D et al. A cohort study of acute pancreatitis in relation to exenatide use. Diabetes Obes Metab. 13. 559-66. 2011

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 3 **Study type:** cohort study	**Funding sources:** i3 Drug Safety and Amylin Pharmaceuticals, Inc. **Conflict of Interests:** Dr. D. D. D., Ms. S. G. Q., Ms. C. H., Ms. C. R. C. and Dr. J. D. S. are employees of i3 Drug Safety. Drs. G. L. B. and M. W. were employees of Amylin Pharmaceuticals, Inc when this work was conducted and are current shareholders of Amylin Pharmaceuticals, Inc. Drs. D. K. B. and R. A. N. are employees of Eli Lilly and Company. Amylin Pharmaceuticals, Inc. has a global agreement with Eli Lilly and Company to collaborate on the development and commercialization of exenatide. **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** 40 **Recruiting Phase:** 2005-2007 **Inclusion criteria:** At least one dispensing of eventide, 25,000 its **Exclusion criteria:**	**Interventions:** **Comparison:** At least one dispensing of another antihyperglycaemic medication*, 234,000 its
Notes:	**Author's conclusion:** Exenatide use was not associated with an increased risk of acute pancreatitis.		
Outcome Measures/results	**Primary** Acute pancreatitis **Secondary**	**Results:** There were 40 confirmed cases of acute pancreatitis in the exenatide cohort and 254 among other antihyperglycaemic drug initiators. Compared to other antihyperglycaemic drugs, the propensity score-adjusted RR for exenatide was 0.5 (95% CI 0.2–0.9) for current use, 1.1 (95% CI 0.4–3.2) for recent use and 2.8 (95% CI 1.6–4.7) for past use. The case–control analysis resulted in a RR of 0.2 for current use (95% CI 0.0–1.4) and 0.1 for recent use (95% CI 0.0–1.3), but an attenuated RR in the past use association (RR 1.1; 95% CI 0.1–11.0).	

Faillie, Jean-Luc et al. Incretin based drugs and risk of acute pancreatitis in patients with type 2 diabetes:

cohort study. BMJ. 348. g2780. 2014			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 2 **Study type:** Population based cohort study	**Funding sources:** Canadian Institute of Health Research (CIHR), and the Canada Foundation for Innovation. **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** 20 748 new users of incretin based drugs were compared with 51 712 users of sulfonylureas **Recruiting Phase:** 2007 to 2012 **Inclusion criteria:** new users of incretin based drugs were compared with users of sulfonylureas **Exclusion criteria:**	**Interventions:** **Comparison:** users of sulfonylureas
Notes:	**Author's conclusion:** Compared with use of sulfonylureas, the use of incretin based drugs is not associated with an increased risk of acute pancreatitis.		
Outcome Measures/results	**Primary** AP **Secondary**	**Results:** The crude incidence rate for acute pancreatitis was 1.45 per 1000 patients per year (95% confidence interval 0.99 to 2.11) for incretin based drug users and 1.47 (1.23 to 1.76) for sulfonylurea users. The rate of acute pancreatitis associated with the use of incretin based drugs was not increased (hdPS adjusted hazard ratio: 1.00, 95% confidence interval 0.59 to 1.70) relative to sulfonylurea use.	

Girman, C J et al. Patients with type 2 diabetes mellitus have higher risk for acute pancreatitis compared with those without diabetes. Diabetes Obes Metab. 12. 766-71. 2010			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 2 **Study type:** cohort study	**Funding sources:** All authors are employed by and own stock or stock options in Merck Sharp & Dohme Corp. **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** 2 984 755, 5.0% with T2DM **Recruiting Phase:** 2003-2007 **Inclusion criteria:** Patients in the General Practice Research Database (2 984 755, 5.0% with T2DM) **Exclusion criteria:**	**Interventions:** **Comparison:** Pst without DM
Notes:	**Author's conclusion:** After adjusting for risk factors, patients with T2DM had an elevated risk of AP compared with patients without diabetes. Physicians should be aware of the increased risk in patients with T2DM, particularly in those with prior pancreatitis.		
Outcome Measures/results	**Primary** AP **Secondary**	**Results:** Patients with T2DM had higher risk for AP compared with patients without diabetes (crude HR: 2.89, 95% CI: 2.56–3.27). Patients with T2DM had significantly higher rates of prior alcohol and tobacco exposure (44.2 and 61.9% vs. 34.1 and 35.9%, $p < 0.001$) and of comorbid conditions (14.7% with CCI ≥1 vs. 4.3%, $p < 0.001$). Histories of obesity, pancreatitis, gallbladder disease, smoking or alcohol use were significant predictors of AP. After adjusting for these factors, age, gender and comorbidities, the risk of	

		developing AP remained elevated in patients with T2DM (adjusted HR: 1.49, 95% CI: 1.31–1.70).

Hsu, Fan-Gen et al. Tamoxifen use and acute pancreatitis: A population-based cohort study. PLoS ONE. 12. e0173089. 2017			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 2 **Study type:** population-based cohort study	**Funding sources:** This study is supported in part by Taiwan Ministry of Health and Welfare Clinical Trial and Research Center of Excellence (MOHW104-TDU-B- 212-113002, MOHW105-TDUB-212-133019); China Medical University Hospital, Academia Sinica Taiwan Biobank, **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** 22 005 patients aged 20 years with breast cancer **Recruiting Phase:** January 1, 2000 to December 31, 2009 **Inclusion criteria:** pst with breast cancer **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:** No significant correlation was observed between tamoxifen use and the risk of AP in patients with breast cancer.		
Outcome Measures/results	**Primary** developing AP during the follow-up **Secondary**	**Results:** After adjustment for covariates and medication use including fluorouracil and doxorubicin, the risk of AP was not significant between tamoxifen users and tamoxifen nonusers (adjusted HR = 0.94, 95% CI = 0.74–1.19) in the non-matching cohorts.	

Kim, Young-Gun et al. Dipeptidyl Peptidase-4 Inhibitors and the Risk of Pancreatitis in Patients with Type 2 Diabetes Mellitus: A Population-Based Cohort Study. J Diabetes Res. 2018. 5246976. 2018			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 2 **Study type:** population-based cohort study	**Funding sources:** study utilized data from the National Health Insurance Service (REQ0000010380) **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** 33,395 new users of SU and DPP-4i **Recruiting Phase:** from 1 January 2008 to 31 December 2015 **Inclusion criteria:** SU-treated patients and DPP-4i-treated patients were matched by 1 : 1 propensity score matching. **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:** Our findings suggest that DPP-4i is less likely to cause drug-induced pancreatitis than SU. This finding was not evident in patients with CVD, but DPP-4i was not more likely to induce pancreatitis in these patients than SU was.		

Outcome Measures/results	**Primary** AP **Secondary**	**Results:** The hazard ratio (HR) of hospitalization for acute pancreatitis was 0.642 (95% confidence interval (CI): 0.535–0.771) in DPP-4i-treated patients compared with SU-treated patients.

Lai, Yun-Ju et al. Dipeptidyl Peptidase-4 Inhibitors and the Risk of Acute Pancreatitis in Patients With Type 2 Diabetes in Taiwan: A Population-Based Cohort Study. Medicine (Baltimore). 94. e1906. 2015

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 2 **Study type:** population based cohort	**Funding sources:** Bureau of National Health Insurance, Department of Health, and the National Health Research Institutes for providing and managing, respectively, the National Health Insurance Research Database. **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** The study cohort comprised 114,141 patients. **Recruiting Phase:** January 1, 2008 and December 31, 2009 **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:** Female and elderly DPP-4 inhibitor users had significantly elevated risks of acute pancreatitis development. Further well-conducted studies are needed to confirm our findings.		
Outcome Measures/results	**Primary** **Secondary**	**Results:** In subgroup analyses, significant risks of acute pancreatitis were noted in female and elderly DPP-4 inhibitor users. Among women, the risk of acute pancreatitis was significantly higher among DPP-4 inhibitor users than among nonusers (HR 2.27, 95% CI: 1.30–3.97).	

McGovern, Paul C et al. Pancreatitis in tigecycline Phase 3 and 4 clinical studies. J. Antimicrob. Chemother. 69. 773-8. 2014

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 2 **Study type:** Subject data from Phase 3 and 4 comparative tigecycline studies as case control study	**Funding sources:** Programming support was provided by Jeff Goodrich of Pfizer Inc. **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** included 3788 subjects treated with tigecycline and 3646 subjects treated with a comparator. **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:** 3646 subjects treated with a comparator.
Notes:	**Author's conclusion:** Pancreatitis was uncommon in subjects treated with tigecycline, with an occurrence of ,1%. Con- comitant medications known to cause pancreatitis should be considered when prescribing tigecycline, but may not identify those at risk of developing pancreatitis.		

Outcome Measures/results	**Primary** AP **Secondary**	**Results:** There were 9 cases identified among the tigecycline-treated subjects [9 of 3788 (0.24%; 95% CI, 0.11–0.45)] and 10 cases among the comparator-treated subjects [10 of 3646 (0.27%; 95% CI, 0.13 – 0.50)].

Oskarsson, Viktor et al. Fish consumption and risk of non-gallstone-related acute pancreatitis: a prospective cohort study. Am. J. Clin. Nutr. 101. 72-8. 2015

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 2 **Study type:** prospective cohort study	**Funding sources:** upported by the Swedish Research Council/Committee for Infrastruc- ture, the Board of Research at Karolinska Institutet (Distinguished Professor Award), and the Board of Postgraduate Education at Karolinska Institutet (Clinical Scientist Training Program). **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** 39,267 men and 32,191 women **Recruiting Phase:** 1998–2010 **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** Fish consumption was assessed by using a food-frequency questionnaire at baseline, and cases of incident non–gallstone-related acute pancreatitis were identified by linkage to the Swedish National Patient Register. **Comparison:**
Notes:	**Author's conclusion:** Our data suggest that the consumption of total fish (fatty fish and lean fish combined) may be associated with decreased risk of non–gallstone-related acute pancreatitis.		
Outcome Measures/results	**Primary** AP **Secondary**	**Results:** We observed that total fish consumption #2.0–3.0 servings/wk was associated with a significantly decreased risk of the disease (P-nonlinearity = 0.017). In comparison with 0.9 servings/wk, multivariable-adjusted HRs were 0.86 (95% CI: 0.76, 0.96), 0.77 (95% CI: 0.62, 0.96), and 0.85 (95% CI: 0.65, 1.10) for 1.4, 2.4, and 3.5 servings/wk, respectively.	

Oskarsson, Viktor et al. High dietary glycemic load increases the risk of non-gallstone-related acute pancreatitis: a prospective cohort study. Clin. Gastroenterol. Hepatol. 12. 676-82. 2014

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 2 **Study type:** prospective cohort study	**Funding sources:** Swedish Research Council/Committee **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** 44,791 men and 36,309 women (aged 45–84 years), without a history of acute pancreatitis, from the Cohort of Swedish Men and the Swedish Mammography Cohort. **Recruiting Phase:** 1997-2010 **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** Glycemic loads were calculated from food frequency questionnaire data collected in 1997, and participants were followed for the development of non–gallstone-related acute pancreatitis through 2010 via linkage to the Swedish National Patient Register. **Comparison:**
Notes:			

	Author's conclusion: Based on a large, prospective cohort study, diets with high glycemic load are associated with an increased risk of non–gallstone-related acute pancreatitis.	
Outcome Measures/results	**Primary** **Secondary**	**Results:** Incidence rates, standardized for age and sex, were 49 cases per 100,000 person-years in the highest quartile of glycemic load and 33 cases per 100,000 person-years in the lowest. The multivariate-adjusted HR of non–gallstone-related acute pancreatitis was 1.60 (95% confidence interval [CI], 1.17–2.18) for the highest compared with the lowest quartile. Every 50-unit increase in glycemic load per day (w3 servings of white bread) had an HR of 1.38 in men (95% CI, 1.11–1.72) and women (95% CI, 1.02–1.86).

Oskarsson, Viktor et al. Vegetables, fruit and risk of non-gallstone-related acute pancreatitis: a population-based prospective cohort study. Gut. 62. 1187-92. 2013

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 2 **Study type:** prospective cohort study	**Funding sources:** public. **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** 80 019 women and men, aged 46–84 years, completed a food-frequency questionnaire at baseline and was followed up for incidence of non-gallstone-related acute pancreatitis **Recruiting Phase:** from 1 January 1998 to 31 December 2009. **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** Participants were categorised into quintiles according to consumption of vegetables and consumption of fruit. Cox proportional hazards models were used to estimate RRs and 95% CIs. **Comparison:**
Notes:	**Author's conclusion:** Vegetable consumption, but not fruit consumption, may play a role in the prevention of non- gallstone-related acute pancreatitis.		
Outcome Measures/results	**Primary** **Secondary**	**Results:** n total, 320 incident cases (216 men and 104 women) with non-gallstone-related acute pancreatitis were identified during 12 years of follow-up (891 136 person-years). After adjustment for potential confounders, the authors observed a significant inverse linear dose– response association between vegetable consumption and risk of non-gallstone-related acute pancreatitis; every two additional servings per day were associated with 17% risk reduction (RR=0.83; 95% CI 0.70 to 0.98; p=0.03). Among participants consuming >1 drink of alcohol per day and among those with body mass index ≥25 kg/m2, the RR for the highest compared with the lowest quintile of vegetable consumption was 0.29 (95% CI 0.13 to 0.67) and 0.49 (95% CI 0.29 to 0.85), respectively. Fruit consumption was not significantly associated with the risk of non-gallstone-related acute pancreatitis; the RR comparing extreme quintiles of consumption was 1.20 (95% CI 0.81 to 1.78).	

Oskarsson, Viktor et al. A prospective cohort study on the association between coffee drinking and risk of non-gallstone-related acute pancreatitis. Br. J. Nutr. 115. 1830-4. 2016

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 2 **Study type:** prospective cohort study	**Funding sources:** public **Conflict of Interests:**	**Total no. patients:** 76 731 men and women **Recruiting Phase:** 1998 and 2012 **Inclusion criteria:**	**Interventions:** **Comparison:**

	Randomization: **Blinding:** **Dropout rates:**	**Exclusion criteria:**	
Notes:	**Author's conclusion:** In conclusion, coffee consumption was not associated with risk of non-gallstone-related acute pancreatitis in this large prospective cohort study. Because of the limited number of epidemiological studies and their conflicting results, further research is needed to elucidate this potential association.		
Outcome Measures/results	**Primary** **Secondary**	**Results:** During 1 035 881 person- years of total follow-up, 383 cases (246 in men and 137 in women) of incident non-gallstone-related acute pancreatitis were identified. Overall, and irrespective of whether a categorical or a continuous exposure model was used, we observed no association between coffee consumption and risk of non-gallstone-related acute pancreatitis (e.g. the multivariable-adjusted hazard ratio for each 1cup/d increase in coffee consumption was 0·97; 95 % CI 0·92, 1·03). There was no evidence of effect modification by alcohol intake (Pinteraction = 0·77).	

Sadr-Azodi, O et al. Cigarette smoking, smoking cessation and acute pancreatitis: a prospective population-based study. Gut. 61. 262-7. 2012

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 2 **Study type:** prospective population-based cohort study	**Funding sources:** Swedish Cancer Foundation and the Swedish Research Council Committee **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** 84 667 Swedish women and men, aged 46e84, during 12 years to study the association between smoking status, smoking intensity and duration, duration of smoking cessation and the risk of acute pancreatitis. **Recruiting Phase:** 1987-1997 **Inclusion criteria:** Only those with the first event of the disease and no previous history of acute pancreatitis were included. **Exclusion criteria:**	**Interventions:** djusted for age, gender, body mass index, diabetes, educational level and alcohol consumption. **Comparison:**
Notes:	**Author's conclusion:** Smoking is an important risk factor for non- gallstone-related acute pancreatitis. Early smoking cessation should be recommended as a part of the clinical management of patients with acute pancreatitis.		
Outcome Measures/results	**Primary** **Secondary**	**Results:** The risk of non-gallstone-related acute pancreatitis was more than double (RR¼₂.29; 95% CI 1.63 to 3.22, p<0.01) among current smokers with $20 pack-years of smoking as compared with never-smokers. The corresponding risk among individuals with $400 g monthly consumption of alcohol was increased more than fourfold (RR¼₄₄.12; 95% CI 1.98 to 8.60, p<0.01). The duration of smoking rather than smoking intensity increased the risk of non-gallstone-related acute pancreatitis. After two decades of smoking cessation the risk of non-gallstone-related acute pancreatitis was reduced to a level comparable to that of non-smokers. There was no association between smoking and gallstone-related acute pancreatitis.	

Wu, Bechien U et al. Simvastatin is associated with reduced risk of acute pancreatitis: findings from a regional integrated healthcare system. Gut. 64. 133-8. 2015			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 2 **Study type:** retrospective cohort stud	**Funding sources:** none **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** Among 3 967 859 adult patients (median duration of follow-up of 3.4 years), 6399 developed an initial episode of AP. **Recruiting Phase:** 2006–2012 **Inclusion criteria:** Population wide. **Exclusion criteria:**	**Interventions:** **Comparison:** simva vs. non-simva
Notes:	**Author's conclusion:** Use of simvastatin was independently associated with reduced risk of AP in this integrated healthcare setting. Similar findings for atorvastatin suggest a possible class effect.		
Outcome Measures/results	**Primary** **Secondary**	**Results:** Among 3 967 859 adult patients (median duration of follow-up of 3.4 years), 6399 developed an initial episode of AP. A total of 707 236 patients received simvastatin during the study period. Patients that received simvastatin were more likely to have gallstone-related disorders, alcohol dependence or hypertriglyceridaemia compared with the reference population. Nevertheless, risk of AP was significantly reduced with simvastatin use, crude incidence rate ratio 0.626 (95% CL 0.588, 0.668), p<0.0001. In multivariate analysis, simvastatin was independently associated with reduced risk of pancreatitis, adjusted RR 0.29 (95% CL 0.27, 0.31) after adjusting for age, gender, race/ethnicity, gallstone disorders, alcohol dependence, smoking and hypertriglyceridaemia. Similar results were noted with atorvastatin, adjusted RR 0.33 (0.29, 0.38).	

Literatursammlung:

AG1-CP

Inhalt: *81 Literaturstellen*

Literaturstelle	Evidenzlevel	Studientyp
2016	3	
?i?man, Gürhan 2016	3	
?i?man, Gürhan 2015	3	Case control
Adike, Abimbola 2017	3	cross sectional study
Aghdassi, Ali A 2017	3	
Ahmed Ali, Usama 2016	1	
Ammann, Rudolf W 2010	3	
Aoyagi, H 2009	1	
Balakrishnan, Vallath 2008	1	
Balázs, Anita 2016	5	
Beer, Sebastian 2017	4	
Beer, Sebastian 2013	4	
Bendicho, Maria Teresita 2005	4	
Bhadada, Sanjay K 2008	4	
Bhasin, Deepak K 2009	4	
Bhasin, Deepak Kumar 2013	4	
Bhattacharjee, Prosanta Kumar 2015	4	
Boulling, Arnaud 2016	4	
Camara, Soriba Naby 2015	4	
Capurso, Gabriele 2017	4	
Cavestro, Giulia Martina 2015	4	
Cho, Sun Mi 2016	4	
Conwell, Darwin L 2017	4	
Coté, Gregory A 2011	4	
Derikx, Monique H M 2009	4	

Derikx, Monique H 2015	4	
Di Leo, Milena 2017	4	
Diaconu, Brîndu?a 2008	4	
Felderbauer, P 2006	4	
Felderbauer, P 2008	4	
Fjeld, Karianne 2015	4	
Frulloni, L 2009	4	
Giefer, Matthew J 2017	4	
Giri, Anil K 2016	4	
Gonoi, Wataru 2011	4	
Grabarczyk, Alicja Monika 2017	4	
GROSS, J B 1962	4	
Hegyi, Eszter 2019	4	
Hirota, Morihisa 2012	4	
Janka-Zires, Marcela 2015	4	
Jha, Ashish Kumar 2017	4	
Joergensen, Maiken 2010	4	
Kume, Kiyoshi 2015	4	
Lankisch, M R 2001	4	
Lankisch, P G 2002	4	
Law, Ryan 2010	4	
Lerch, Markus M 2010	4	
Lévy, Philippe 2006	4	
Li, Jing-Nan 2011	4	
Lin, Y 2000	4	
Mahurkar, S 2006	4	
Masamune, Atsushi 2018	4	
Masson, Emmanuelle 2013	4	
Masson, Emmanuelle 2015	4	
Mayerle, Julia 2013	2	
Midha, Shallu 2010	4	
Mora, Josefina 2009	4	
Muddana, Venkata 2008	4	

Murugaian, Elango E 2008	4	
Oracz, Grzegorz 2016	4	
Paliwal, Sumit 2013	4	
Pezzilli, Raffaele 2012	4	
Pezzilli, Raffaele 2009	4	
Rajesh, Gopalakrishna 2015	4	
Rebours, V 2009	4	
Romagnuolo, Joseph 2016	4	
Rosendahl, Jonas 2013	4	
Rosendahl, Jonas 2008	4	
Ryu, Ji Kon 2005	4	
Segal, Isidor 2011	4	
Singh, Shweta 2014	4	
Sisman, Gurhan 2014	4	
Sofia, Valentina Maria 2018	4	
Steiner, Bernhard 2011	4	
Wang, Luo Wei 2009	4	
Weiss, Frank Ulrich 2015	4	
Witt, Heiko 2013	4	
Wu, Hao 2017	4	
Yadav, Dhiraj 2010	4	
Yadav, Dhiraj 2011	4	
Zoller, Heinz 2007	4	

OXFORD (2011) Appraisal Sheet: Systematic Reviews: *5 Bewertung(en)*

Beer, Sebastian et al. [Identical Variants Different Disease Course - Genetics of Chronic Pancreatitis]. Dtsch. Med. Wochenschr. 142. 673-677. 2017

Evidence level/Study Types	P - I - C	Outcomes/Results	Literature References
Evidence level: 4 **Study type:** **Databases:** **Search period:** **Inclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** **Author's Conclusion:**	

Exclusion Criteria:			
Methodical Notes			
Funding Sources: **COI:** **Study Quality:** **Heterogeneity:** **Publication Bias:** **Notes:**			

Lerch, Markus M et al. Advances in the etiology of chronic pancreatitis. Dig Dis. 28. 324-9. 2010			
Evidence level/Study Types	**P - I - C**	**Outcomes/Results**	**Literature References**
Evidence level: 4 **Study type:** **Databases:** **Search period:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** **Author's Conclusion:**	
Methodical Notes			
Funding Sources: **COI:** **Study Quality:** **Heterogeneity:** **Publication Bias:** **Notes:**			

Mayerle, Julia et al. Chronic pancreatitis--definition, etiology, investigation and treatment. Dtsch Arztebl Int. 110. 387-93. 2013			
Evidence level/Study Types	**P - I - C**	**Outcomes/Results**	**Literature References**
Evidence level: 2 **Study type:** **Databases:** **Search period:** **Inclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** **Author's Conclusion:**	

Exclusion Criteria:			
Methodical Notes			
Funding Sources: **COI:** **Study Quality:** **Heterogeneity:** **Publication Bias:** **Notes:**			

Pezzilli, Raffaele. Pancreas divisum and acute or chronic pancreatitis. JOP. 13. 118-9. 2012			
Evidence level/Study Types	**P - I - C**	**Outcomes/Results**	**Literature References**
Evidence level: 4 **Study type:** **Databases:** **Search period:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** **Author's Conclusion:**	
Methodical Notes			
Funding Sources: **COI:** **Study Quality:** **Heterogeneity:** **Publication Bias:** **Notes:**			

Pezzilli, Raffaele. Etiology of chronic pancreatitis: has it changed in the last decade?. World J. Gastroenterol. 15. 4737-40. 2009			
Evidence level/Study Types	**P - I - C**	**Outcomes/Results**	**Literature References**
Evidence level: 4 **Study type:** **Databases:** **Search period:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** **Author's Conclusion:**	

Methodical Notes
Funding Sources:
COI:
Study Quality:
Heterogeneity:
Publication Bias:
Notes:

OXFORD (2011) Appraisal Sheet: Diagnostic Studies: *3 Bewertung(en)*

Balázs, Anita et al. Pathogenic cellular role of the p.L104P human cationic trypsinogen variant in chronic pancreatitis. Am. J. Physiol. Gastrointest. Liver Physiol. 310. G477-86. 2016		
Evidence level/Study Types	**Population**	**Outcomes/Results**
Evidence level: 5 **Study type:**	**Number of patients / samples:** **Reference standard:** **Validation:** **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	**Results:** **Author conclusions:**
Methodical Notes		
Funding Sources: **COI:** **Notes:**		

Beer, Sebastian et al. Comprehensive functional analysis of chymotrypsin C (CTRC) variants reveals distinct loss-of-function mechanisms associated with pancreatitis risk. Gut. 62. 1616-24. 2013		
Evidence level/Study Types	**Population**	**Outcomes/Results**
Evidence level: 4 **Study type:**	**Number of patients / samples:** **Reference standard:** **Validation:** **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	**Results:** **Author conclusions:**

Methodical Notes
Funding Sources:
COI:
Notes:

Bendicho, Maria Teresita et al. Polymorphism of cytokine genes (TGF-beta1, IFN-gamma, IL-6, IL-10, and TNF-alpha) in patients with chronic pancreatitis. Pancreas. 30. 333-6. 2005		
Evidence level/Study Types	**Population**	**Outcomes/Results**
Evidence level: 4 **Study type:**	**Number of patients / samples:** **Reference standard:** **Validation:** **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	**Results:** **Author conclusions:**
Methodical Notes		
Funding Sources: **COI:** **Notes:**		

OXFORD (2011) Appraisal Sheet: Prognostic Studies: *1 Bewertung(en)*

Boulling, Arnaud et al. Discovery and Functional Annotation of PRSS1 Promoter Variants in Chronic Pancreatitis. Hum. Mutat. 37. 1149-1152. 2016		
Population	**Intervention**	**Outcomes/Results**
Evidence level: 4 **Study type:** **Number of Patient:** **Recruitung Phase:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** **Author's Conclusion:**
Methodical Notes		
Funding Sources: **COI:**		

Randomization: **Blinding:** **Dropout Rate/ITT-Analysis:** **Notes:**

NEWCASTLE - OTTAWA Checklist: Case Control: *1 Bewertung(en)*

?i?man, Gürhan et al. Mutation analysis of PRSS1, SPINK1 and CFTR gene in patients with alcoholic and idiopathic chronic pancreatitis: A single center study. Turk J Gastroenterol. 26. 176-80. 2015			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 3 **Study type:** Case control	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Patient characteristics:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

NEWCASTLE - OTTAWA Checklist: Cohort: *71 Bewertung(en)*

. Recurrent acute and chronic pancreatitis in children has high disease burden. Community Pract. 89. 23. 2016			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 3 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary**	**Results:**	

	Secondary	

?i?man, Gürhan et al. Demographic characteristics of chronic pancreatitis patients in the era of endosonography: Experience of a single tertiary referral center in Turkey. Turk J Gastroenterol. 27. 284-9. 2016			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 3 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	Oxford Level 4 **Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Adike, Abimbola et al. Pancreatitis in Patients With Pancreas Divisum. Pancreas. 46. e80-e81. 2017			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 3 **Study type:** cross sectional study	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Aghdassi, Ali A et al. Analysis of lifestyle factors in patients with concomitant chronic pancreatitis and liver cirrhosis. Pancreatology. 17. 698-705. 2017			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 3 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:**	**Interventions:** **Comparison:**

	Blinding: **Dropout rates:**	**Exclusion criteria:**	
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Ahmed Ali, Usama et al. Risk of Recurrent Pancreatitis and Progression to Chronic Pancreatitis After a First Episode of Acute Pancreatitis. Clin. Gastroenterol. Hepatol. 14. 738-46. 2016			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 1 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Ammann, Rudolf W et al. Is obesity an additional risk factor for alcoholic chronic pancreatitis?. Pancreatology. 10. 47-53. 2010			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 3 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Aoyagi, H et al. Impact of cystic fibrosis transmembrane conductance regulator gene mutation on the

occurrence of chronic pancreatitis in Japanese patients. J. Int. Med. Res. 37. 378-84. 2009			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 1 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	bad quality study, 3b (siehe Bewertung 2010) **Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Balakrishnan, Vallath et al. Chronic pancreatitis. A prospective nationwide study of 1,086 subjects from India. JOP. 9. 593-600. 2008			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 1 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	Prospective nationwide study on 1086 subjects from India with chronic pancreatitis. Oxford Evidence level 4. **Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Bhadada, Sanjay K et al. Chronic pancreatitis in primary hyperparathyroidism: comparison with alcoholic and idiopathic chronic pancreatitis. J. Gastroenterol. Hepatol. 23. 959-64. 2008			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**

Notes:	**Author's conclusion:**	
Outcome Measures/results	**Primary** **Secondary**	**Results:**

Bhasin, Deepak K et al. Clinical profile of idiopathic chronic pancreatitis in North India. Clin. Gastroenterol. Hepatol. 7. 594-9. 2009			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	Case series, Oxford 4 **Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Bhasin, Deepak Kumar et al. Clinical presentation and outcome of endoscopic therapy in patients with symptomatic chronic pancreatitis associated with pancreas divisum. JOP. 14. 50-6. 2013			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	Case series **Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Bhattacharjee, Prosanta Kumar et al. Demographic and clinicopathological profile of patients with chronic pancreatitis in a tertiary referral teaching hospital of West Bengal: Personal experience. Indian J Gastroenterol. 34. 365-71. 2015			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**

Evidence level: 4 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	case series, cohort study **Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Camara, Soriba Naby et al. Etiology, pathology, management and prognosis of chronic pancreatitis in Chinese population: A retrospective study. J. Huazhong Univ. Sci. Technol. Med. Sci. 35. 384-389. 2015

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 4 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Capurso, Gabriele et al. Prevalence of chronic pancreatitis: Results of a primary care physician-based population study. Dig Liver Dis. 49. 535-539. 2017

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 4 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		

Outcome Measures/results	**Primary** **Secondary**	**Results:**

Cavestro, Giulia Martina et al. A single-centre prospective, cohort study of the natural history of acute pancreatitis. Dig Liver Dis. 47. 205-10. 2015			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Cho, Sun Mi et al. PRSS1, SPINK1, CFTR, and CTRC Pathogenic Variants in Korean Patients With Idiopathic Pancreatitis. Ann Lab Med. 36. 555-60. 2016			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Conwell, Darwin L et al. Validation of Demographics, Etiology, and Risk Factors for Chronic Pancreatitis in the USA: A Report of the North American Pancreas Study (NAPS) Group. Dig. Dis. Sci. 62. 2133-2140. 2017			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 **Study type:**	**Funding sources:** **Conflict of Interests:**	**Total no. patients:** **Recruiting Phase:**	**Interventions:** **Comparison:**

	Randomization: Blinding: Dropout rates:	Inclusion criteria: Exclusion criteria:	
Notes:	Author's conclusion:		
Outcome Measures/results	Primary Secondary	Results:	

Coté, Gregory A et al. Alcohol and smoking as risk factors in an epidemiology study of patients with chronic pancreatitis. Clin. Gastroenterol. Hepatol. 9. 266-73; quiz e27. 2011			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 Study type:	Funding sources: Conflict of Interests: Randomization: Blinding: Dropout rates:	Total no. patients: Recruiting Phase: Inclusion criteria: Exclusion criteria:	Interventions: Comparison:
Notes:	Author's conclusion:		
Outcome Measures/results	Primary Secondary	Results:	

Derikx, Monique H M et al. Tropical calcific pancreatitis and its association with CTRC and SPINK1 (p.N34S) variants. Eur J Gastroenterol Hepatol. 21. 889-94. 2009			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 Study type:	Funding sources: Conflict of Interests: Randomization: Blinding: Dropout rates:	Total no. patients: Recruiting Phase: Inclusion criteria: Exclusion criteria:	Interventions: Comparison:
Notes:	Author's conclusion:		
Outcome Measures/results	Primary Secondary	Results:	

Derikx, Monique H et al. Polymorphisms at PRSS1-PRSS2 and CLDN2-MORC4 loci associate with alcoholic and non-alcoholic chronic pancreatitis in a European replication study. Gut. 64. 1426-33. 2015			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 Study type:	Funding sources: Conflict of Interests: Randomization: Blinding: Dropout rates:	Total no. patients: Recruiting Phase: Inclusion criteria: Exclusion criteria:	Interventions: Comparison:
Notes:	Author's conclusion:		
Outcome Measures/results	Primary Secondary	Results:	

Di Leo, Milena et al. Low Alcohol and Cigarette Use Is Associated to the Risk of Developing Chronic Pancreatitis. Pancreas. 46. 225-229. 2017			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 Study type:	Funding sources: Conflict of Interests: Randomization: Blinding: Dropout rates:	Total no. patients: Recruiting Phase: Inclusion criteria: Exclusion criteria:	Interventions: Comparison:
Notes:	Author's conclusion:		
Outcome Measures/results	Primary Secondary	Results:	

Diaconu, Brîndu?a et al. Risk factors in patients with chronic pancreatitis in Romania. Rom J Intern Med. 46. 331-6. 2008			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 Study type:	Funding sources: Conflict of Interests: Randomization: Blinding: Dropout rates:	Total no. patients: Recruiting Phase: Inclusion criteria: Exclusion criteria:	Interventions: Comparison:

Notes:	**Author's conclusion:**	
Outcome Measures/results	**Primary** **Secondary**	**Results:**

Felderbauer, P et al. Mutations in the calcium-sensing receptor: a new genetic risk factor for chronic pancreatitis?. Scand. J. Gastroenterol. 41. 343-8. 2006			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Felderbauer, P et al. A novel A121T mutation in human cationic trypsinogen associated with hereditary pancreatitis: functional data indicating a loss-of-function mutation influencing the R122 trypsin cleavage site. J. Med. Genet. 45. 507-12. 2008			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Fjeld, Karianne et al. A recombined allele of the lipase gene CEL and its pseudogene CELP confers susceptibility to chronic pancreatitis. Nat. Genet. 47. 518-522. 2015			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**

Evidence level: 4 Study type:	Funding sources: Conflict of Interests: Randomization: Blinding: Dropout rates:	Total no. patients: Recruiting Phase: Inclusion criteria: Exclusion criteria:	Interventions: Comparison:
Notes:	Author's conclusion:		
Outcome Measures/results	Primary Secondary	Results:	

Frulloni, L et al. Chronic pancreatitis: report from a multicenter Italian survey (PanCroInfAISP) on 893 patients. Dig Liver Dis. 41. 311-7. 2009			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 Study type:	Funding sources: Conflict of Interests: Randomization: Blinding: Dropout rates:	Total no. patients: Recruiting Phase: Inclusion criteria: Exclusion criteria:	Interventions: Comparison:
Notes:	Author's conclusion:		
Outcome Measures/results	Primary Secondary	Results:	

Giefer, Matthew J et al. Early-Onset Acute Recurrent and Chronic Pancreatitis Is Associated with PRSS1 or CTRC Gene Mutations. J. Pediatr. 186. 95-100. 2017			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 Study type:	Funding sources: Conflict of Interests: Randomization: Blinding: Dropout rates:	Total no. patients: Recruiting Phase: Inclusion criteria: Exclusion criteria:	Interventions: Comparison:
Notes:	Author's conclusion:		

Outcome Measures/results	Primary Secondary	Results:

Giri, Anil K et al. Common Variants in CLDN2 and MORC4 Genes Confer Disease Susceptibility in Patients with Chronic Pancreatitis. PLoS ONE. 11. e0147345. 2016			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 Study type:	Funding sources: Conflict of Interests: Randomization: Blinding: Dropout rates:	Total no. patients: Recruiting Phase: Inclusion criteria: Exclusion criteria:	Interventions: Comparison:
Notes:	Author's conclusion:		
Outcome Measures/results	Primary Secondary	Results:	

Gonoi, Wataru et al. Pancreas divisum as a predisposing factor for chronic and recurrent idiopathic pancreatitis: initial in vivo survey. Gut. 60. 1103-8. 2011			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 Study type:	Funding sources: Conflict of Interests: Randomization: Blinding: Dropout rates:	Total no. patients: Recruiting Phase: Inclusion criteria: Exclusion criteria:	Interventions: Comparison:
Notes:	Author's conclusion:		
Outcome Measures/results	Primary Secondary	Results:	

Grabarczyk, Alicja Monika et al. Chymotrypsinogen C Genetic Variants, Including c.180TT, Are Strongly Associated With Chronic Pancreatitis in Pediatric Patients. J. Pediatr. Gastroenterol. Nutr. 65. 652-657. 2017			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 Study type:	Funding sources: Conflict of Interests:	Total no. patients: Recruiting Phase:	Interventions: Comparison:

	Randomization: Blinding: Dropout rates:	Inclusion criteria: Exclusion criteria:	
Notes:	Author's conclusion:		
Outcome Measures/results	Primary Secondary	Results:	

GROSS, J B et al. Hereditary pancreatitis. Description of a fifth kindred and summary of clinical features. Am. J. Med. 33. 358-64. 1962			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 Study type:	Funding sources: Conflict of Interests: Randomization: Blinding: Dropout rates:	Total no. patients: Recruiting Phase: Inclusion criteria: Exclusion criteria:	Interventions: Comparison:
Notes:	Author's conclusion:		
Outcome Measures/results	Primary Secondary	Results:	

Hegyi, Eszter et al. Human . Gut. 68. 301-312. 2019			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 Study type:	Funding sources: Conflict of Interests: Randomization: Blinding: Dropout rates:	Total no. patients: Recruiting Phase: Inclusion criteria: Exclusion criteria:	Interventions: Comparison:
Notes:	Author's conclusion:		
Outcome Measures/results	Primary Secondary	Results:	

Hirota, Morihisa et al. The sixth nationwide epidemiological survey of chronic pancreatitis in Japan. Pancreatology. 12. 79-84. 2012			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 Study type:	Funding sources: Conflict of Interests: Randomization: Blinding: Dropout rates:	Total no. patients: Recruiting Phase: Inclusion criteria: Exclusion criteria:	Interventions: Comparison:
Notes:	Author's conclusion:		
Outcome Measures/results	Primary Secondary	Results:	

Janka-Zires, Marcela et al. Decrease in the Prevalence of Pancreatitis Associated with Primary Hyperparathyroidism: Experience at a Tertiary Referral Center. Rev. Invest. Clin. 67. 177-81. 2015			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 Study type:	Funding sources: Conflict of Interests: Randomization: Blinding: Dropout rates:	Total no. patients: Recruiting Phase: Inclusion criteria: Exclusion criteria:	Interventions: Comparison:
Notes:	Author's conclusion:		
Outcome Measures/results	Primary Secondary	Results:	

Jha, Ashish Kumar et al. Chronic pancreatitis in Eastern India: Experience from a tertiary care center. Indian J Gastroenterol. 36. 131-136. 2017			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 Study type:	Funding sources: Conflict of Interests: Randomization: Blinding: Dropout rates:	Total no. patients: Recruiting Phase: Inclusion criteria: Exclusion criteria:	Interventions: Comparison:

Notes:	Author's conclusion:	
Outcome Measures/results	Primary Secondary	Results:

Joergensen, Maiken et al. Incidence, prevalence, etiology, and prognosis of first-time chronic pancreatitis in young patients: a nationwide cohort study. Dig. Dis. Sci. 55. 2988-98. 2010			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 Study type:	Funding sources: Conflict of Interests: Randomization: Blinding: Dropout rates:	Total no. patients: Recruiting Phase: Inclusion criteria: Exclusion criteria:	Interventions: Comparison:
Notes:	Author's conclusion:		
Outcome Measures/results	Primary Secondary	Results:	

Kume, Kiyoshi et al. Alcohol Consumption and the Risk for Developing Pancreatitis: A Case-Control Study in Japan. Pancreas. 44. 53-8. 2015			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 Study type:	Funding sources: Conflict of Interests: Randomization: Blinding: Dropout rates:	Total no. patients: Recruiting Phase: Inclusion criteria: Exclusion criteria:	Interventions: Comparison:
Notes:	Author's conclusion:		
Outcome Measures/results	Primary Secondary	Results:	

Lankisch, M R et al. The effect of small amounts of alcohol on the clinical course of chronic pancreatitis. Mayo Clin. Proc. 76. 242-51. 2001			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**

Evidence level: 4 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Lankisch, P G et al. Epidemiology of pancreatic diseases in Lüneburg County. A study in a defined german population. Pancreatology. 2. 469-77. 2002

Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Law, Ryan et al. Cigarette smoking is independently associated with chronic pancreatitis. Pancreatology. 10. 54-9. 2010

Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		

Outcome Measures/results	**Primary** **Secondary**	**Results:**

Lévy, Philippe et al. Estimation of the prevalence and incidence of chronic pancreatitis and its complications. Gastroenterol. Clin. Biol. 30. 838-44. 2006			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Li, Jing-Nan et al. Trends in etiologies of chronic pancreatitis within 20 years: analysis of 636 cases. Chin. Med. J. 124. 3556-9. 2011			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Lin, Y et al. Nationwide epidemiological survey of chronic pancreatitis in Japan. J. Gastroenterol. 35. 136-41. 2000			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 **Study type:**	**Funding sources:** **Conflict of Interests:**	**Total no. patients:** **Recruiting Phase:**	**Interventions:** **Comparison:**

	Randomization: Blinding: Dropout rates:	Inclusion criteria: Exclusion criteria:	
Notes:	Author's conclusion:		
Outcome Measures/results	Primary Secondary	Results:	

Mahurkar, S et al. Association of cathepsin B gene polymorphisms with tropical calcific pancreatitis. Gut. 55. 1270-5. 2006			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 Study type:	Funding sources: Conflict of Interests: Randomization: Blinding: Dropout rates:	Total no. patients: Recruiting Phase: Inclusion criteria: Exclusion criteria:	Interventions: Comparison:
Notes:	Author's conclusion:		
Outcome Measures/results	Primary Secondary	Results:	

Masamune, Atsushi et al. Nationwide survey of hereditary pancreatitis in Japan. J. Gastroenterol. 53. 152-160. 2018			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 Study type:	Funding sources: Conflict of Interests: Randomization: Blinding: Dropout rates:	Total no. patients: Recruiting Phase: Inclusion criteria: Exclusion criteria:	Interventions: Comparison:
Notes:	Author's conclusion:		
Outcome Measures/results	Primary Secondary	Results:	

Masson, Emmanuelle et al. A conservative assessment of the major genetic causes of idiopathic chronic pancreatitis: data from a comprehensive analysis of PRSS1, SPINK1, CTRC and CFTR genes in 253 young French patients. PLoS ONE. 8. e73522. 2013			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 Study type:	Funding sources: Conflict of Interests: Randomization: Blinding: Dropout rates:	Total no. patients: Recruiting Phase: Inclusion criteria: Exclusion criteria:	Interventions: Comparison:
Notes:	Author's conclusion:		
Outcome Measures/results	Primary Secondary	Results:	

Masson, Emmanuelle et al. Overrepresentation of Rare CASR Coding Variants in a Sample of Young French Patients With Idiopathic Chronic Pancreatitis. Pancreas. 44. 996-8. 2015			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 Study type:	Funding sources: Conflict of Interests: Randomization: Blinding: Dropout rates:	Total no. patients: Recruiting Phase: Inclusion criteria: Exclusion criteria:	Interventions: Comparison:
Notes:	Author's conclusion:		
Outcome Measures/results	Primary Secondary	Results:	

Midha, Shallu et al. Idiopathic chronic pancreatitis in India: phenotypic characterisation and strong genetic susceptibility due to SPINK1 and CFTR gene mutations. Gut. 59. 800-7. 2010			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 Study type:	Funding sources: Conflict of Interests: Randomization: Blinding:	Total no. patients: Recruiting Phase: Inclusion criteria: Exclusion criteria:	Interventions: Comparison:

	Dropout rates:		
Notes:	Author's conclusion:		
Outcome Measures/results	Primary Secondary	Results:	

Mora, Josefina et al. Genetic mutations in a Spanish population with chronic pancreatitis. Pancreatology. 9. 644-51. 2009			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 Study type:	Funding sources: Conflict of Interests: Randomization: Blinding: Dropout rates:	Total no. patients: Recruiting Phase: Inclusion criteria: Exclusion criteria:	Interventions: Comparison:
Notes:	Author's conclusion:		
Outcome Measures/results	Primary Secondary	Results:	

Muddana, Venkata et al. Association between calcium sensing receptor gene polymorphisms and chronic pancreatitis in a US population: role of serine protease inhibitor Kazal 1type and alcohol. World J. Gastroenterol. 14. 4486-91. 2008			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 Study type:	Funding sources: Conflict of Interests: Randomization: Blinding: Dropout rates:	Total no. patients: Recruiting Phase: Inclusion criteria: Exclusion criteria:	Interventions: Comparison:
Notes:	Author's conclusion:		
Outcome Measures/results	Primary Secondary	Results:	

Murugaian, Elango E et al. Novel mutations in the calcium sensing receptor gene in tropical chronic pancreatitis in India. Scand. J. Gastroenterol. 43. 117-21. 2008

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 4 Study type:	Funding sources: Conflict of Interests: Randomization: Blinding: Dropout rates:	Total no. patients: Recruiting Phase: Inclusion criteria: Exclusion criteria:	Interventions: Comparison:
Notes:	Author's conclusion:		
Outcome Measures/results	Primary Secondary	Results:	

Oracz, Grzegorz et al. The clinical course of hereditary pancreatitis in children - A comprehensive analysis of 41 cases. Pancreatology. 16. 535-41. 2016			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 Study type:	Funding sources: Conflict of Interests: Randomization: Blinding: Dropout rates:	Total no. patients: Recruiting Phase: Inclusion criteria: Exclusion criteria:	Interventions: Comparison:
Notes:	Author's conclusion:		
Outcome Measures/results	Primary Secondary	Results:	

Paliwal, Sumit et al. Comprehensive screening of chymotrypsin C (CTRC) gene in tropical calcific pancreatitis identifies novel variants. Gut. 62. 1602-6. 2013			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 Study type:	Funding sources: Conflict of Interests: Randomization: Blinding: Dropout rates:	Total no. patients: Recruiting Phase: Inclusion criteria: Exclusion criteria:	Interventions: Comparison:
Notes:			

	Author's conclusion:	
Outcome Measures/results	Primary Secondary	Results:

Rajesh, Gopalakrishna et al. Time trends in the etiology of chronic pancreatitis in South India. Trop Gastroenterol. 35. 164-7. 2015			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 Study type:	Funding sources: Conflict of Interests: Randomization: Blinding: Dropout rates:	Total no. patients: Recruiting Phase: Inclusion criteria: Exclusion criteria:	Interventions: Comparison:
Notes:	Author's conclusion:		
Outcome Measures/results	Primary Secondary	Results:	

Rebours, V et al. The natural history of hereditary pancreatitis: a national series. Gut. 58. 97-103. 2009			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 Study type:	Funding sources: Conflict of Interests: Randomization: Blinding: Dropout rates:	Total no. patients: Recruiting Phase: Inclusion criteria: Exclusion criteria:	Interventions: Comparison:
Notes:	Author's conclusion:		
Outcome Measures/results	Primary Secondary	Results:	

Romagnuolo, Joseph et al. Clinical Profile, Etiology, and Treatment of Chronic Pancreatitis in North American Women: Analysis of a Large Multicenter Cohort. Pancreas. 45. 934-40. 2016			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 Study type:	Funding sources: Conflict of Interests:	Total no. patients: Recruiting Phase:	Interventions:

	Randomization: Blinding: Dropout rates:	Inclusion criteria: Exclusion criteria:	Comparison:
Notes:	Author's conclusion:		
Outcome Measures/results	Primary Secondary	Results:	

Rosendahl, Jonas et al. CFTR, SPINK1, CTRC and PRSS1 variants in chronic pancreatitis: is the role of mutated CFTR overestimated?. Gut. 62. 582-92. 2013			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 Study type:	Funding sources: Conflict of Interests: Randomization: Blinding: Dropout rates:	Total no. patients: Recruiting Phase: Inclusion criteria: Exclusion criteria:	Interventions: Comparison:
Notes:	Author's conclusion:		
Outcome Measures/results	Primary Secondary	Results:	

Rosendahl, Jonas et al. Chymotrypsin C (CTRC) variants that diminish activity or secretion are associated with chronic pancreatitis. Nat. Genet. 40. 78-82. 2008			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 Study type:	Funding sources: Conflict of Interests: Randomization: Blinding: Dropout rates:	Total no. patients: Recruiting Phase: Inclusion criteria: Exclusion criteria:	Interventions: Comparison:
Notes:	Author's conclusion:		
Outcome Measures/results	Primary Secondary	Results:	

Ryu, Ji Kon et al. Clinical features of chronic pancreatitis in Korea: a multicenter nationwide study. Digestion. 72. 207-11. 2005			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Segal, Isidor et al. Insights into the development of alcoholic chronic pancreatitis at Soweto, South Africa: a controlled cross-sectional study. Pancreas. 40. 508-16. 2011			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Singh, Shweta et al. Frequency of CFTR, SPINK1, and cathepsin B gene mutation in North Indian population: connections between genetics and clinical data. ScientificWorldJournal. 2014. 763195. 2014			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**

Notes:	Author's conclusion:	
Outcome Measures/results	Primary Secondary	Results:

Sisman, Gurhan et al. Familial chylomicronemia syndrome related chronic pancreatitis: a single-center study. HBPD INT. 13. 209-14. 2014			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 Study type:	Funding sources: Conflict of Interests: Randomization: Blinding: Dropout rates:	Total no. patients: Recruiting Phase: Inclusion criteria: Exclusion criteria:	Interventions: Comparison:
Notes:	Author's conclusion:		
Outcome Measures/results	Primary Secondary	Results:	

Sofia, Valentina Maria et al. Trans-heterozygosity for mutations enhances the risk of recurrent/chronic pancreatitis in patients with Cystic Fibrosis. Mol. Med. 24. 38. 2018			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 Study type:	Funding sources: Conflict of Interests: Randomization: Blinding: Dropout rates:	Total no. patients: Recruiting Phase: Inclusion criteria: Exclusion criteria:	Interventions: Comparison:
Notes:	Author's conclusion:		
Outcome Measures/results	Primary Secondary	Results:	

Steiner, Bernhard et al. Common CFTR haplotypes and susceptibility to chronic pancreatitis and congenital bilateral absence of the vas deferens. Hum. Mutat. 32. 912-20. 2011			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**

Evidence level: 4 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Wang, Luo Wei et al. Prevalence and clinical features of chronic pancreatitis in China: a retrospective multicenter analysis over 10 years. Pancreas. 38. 248-54. 2009

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 4 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Weiss, Frank Ulrich et al. Fucosyltransferase 2 (FUT2) non-secretor status and blood group B are associated with elevated serum lipase activity in asymptomatic subjects, and an increased risk for chronic pancreatitis: a genetic association study. Gut. 64. 646-56. 2015

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 4 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		

Outcome Measures/results	Primary Secondary	Results:

Witt, Heiko et al. Variants in CPA1 are strongly associated with early onset chronic pancreatitis. Nat. Genet. 45. 1216-20. 2013			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 Study type:	Funding sources: Conflict of Interests: Randomization: Blinding: Dropout rates:	Total no. patients: Recruiting Phase: Inclusion criteria: Exclusion criteria:	Interventions: Comparison:
Notes:	Author's conclusion:		
Outcome Measures/results	Primary Secondary	Results:	

Wu, Hao et al. No significant enrichment of rare functionally defective CPA1 variants in a large Chinese idiopathic chronic pancreatitis cohort. Hum. Mutat. 38. 959-963. 2017			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 Study type:	Funding sources: Conflict of Interests: Randomization: Blinding: Dropout rates:	Total no. patients: Recruiting Phase: Inclusion criteria: Exclusion criteria:	Interventions: Comparison:
Notes:	Author's conclusion:		
Outcome Measures/results	Primary Secondary	Results:	

Yadav, Dhiraj et al. Smoking is underrecognized as a risk factor for chronic pancreatitis. Pancreatology. 10. 713-9. 2010			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 Study type:	Funding sources: Conflict of Interests:	Total no. patients: Recruiting Phase:	Interventions: Comparison:

	Randomization: Blinding: Dropout rates:	Inclusion criteria: Exclusion criteria:	
Notes:	Author's conclusion:		
Outcome Measures/results	Primary Secondary	Results:	

Yadav, Dhiraj et al. Incidence, prevalence, and survival of chronic pancreatitis: a population-based study. Am. J. Gastroenterol. 106. 2192-9. 2011			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 Study type:	Funding sources: Conflict of Interests: Randomization: Blinding: Dropout rates:	Total no. patients: Recruiting Phase: Inclusion criteria: Exclusion criteria:	Interventions: Comparison:
Notes:	Author's conclusion:		
Outcome Measures/results	Primary Secondary	Results:	

Zoller, Heinz et al. CFTR gene mutations in pancreatitis: Frequency and clinical manifestations in an Austrian patient cohort. Wien. Klin. Wochenschr. 119. 527-33. 2007			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 Study type:	Funding sources: Conflict of Interests: Randomization: Blinding: Dropout rates:	Total no. patients: Recruiting Phase: Inclusion criteria: Exclusion criteria:	Interventions: Comparison:
Notes:	Author's conclusion:		
Outcome Measures/results	Primary Secondary	Results:	

Literatursammlung:

AG2-AP: Schweregrade, Klassifikation und Vorhersage des Schweregrads_Literatursuche

Inhalt: *59 Literaturstellen*

Literaturstelle	Evidenzlevel	Studientyp
Abu-Zidan, F M 2000	4	Retrospective data analyses of consecutive patients admitted with a diagnosis of acute pancreatitis .
Abulimiti, Alimujiang 2018	3	Allegedly a randomized controlled trial with 2x 20 patients with severe acute pancreatitis that were divided into 2 groups: control (n=22, treated with fasting, decompression, and intravenous somatostatin) and HVHF (n=18, HVHF administration in addition to the treatment in the control group) groups to study the effects of outcome of SIRS treatment with HVHF.
Acevedo-Piedra, Nelly G 2014	3	Retrospective analyses of data from consecutive patients with acute pancreatitis admitted admitted to Hospital General Universitario de Alicante from December 2007 to February 2013. Imaging results were reviewed, and the two classification systems for severity of acute pancreatitis RAC and DBC were validated and compared in terms of outcomes.
Bakker, Olaf J 2013	2	A post hoc analysis was performed of a prospective multicentre database including 639 patients with necrotising pancreatitis on contrast-enhanced CT. All CECT scans were reviewed by a single radiologist blinded to the clinical outcome.
Bansal, S S 2016	3	Single center observational cohort study of patients with acute pancreatitis identified from an institutional database. Retrospective design.
Bollen, Thomas L 2012	3	retrospective analysis of this prospectively collected clinical database, single center.
Cardoso, Filipe S 2013	3	single-center retrospective cohort study.This study evaluated the prognostic accuracy of CRP for severe acute pancreatitis (SAP), pancreatic necrosis (PNec), and in-hospital mortality (IM) in terms of the best timing for CRP measurement and the optimal CRP cutoff points.
Chen, Hong-Ze 2017	3	Retrospective analyses of consecutive patients with sever a ute pancreatitis.
Chen, Yuhui 2015	3	
Cho, Young-Seok 2013	3	Retrospective analysis of data from consecutive patients admitted between 01.2008-07.2010 with acute pancreatitis at a single institution.
Choi, Jun-Ho 2017	3	retrospective analysis of a prospective acute pancreatitis (AP) database
Choi, Jun-Ho 2014	3	Retrospective data analyses of a single center prospective database
Dambrauskas, Zilvinas 2010	3	prospective observational study in the period between June 2005 and December 2007. All patients admitted to the Department of Surgery, Kaunas University of Medicine Hospital (Lithuania) with a diagnosis of AP and onset of the disease within last 72 h were included in this study (n = 108).

Garg, Pramod Kumar 2005	2	Prospective database of consecutive patients with acute pancreatitis, prospective data collection retrospective data analyses.
Guo, Qiang 2015	3	a prospective database on AP in a single west chines tertiary referral center was retrospectively analyses to check the categories of the different classification systems.
He, Wen-Hua 2017	3	Retrospective analyses of a prospective database of consecutive patients with AP admitted to a tertiary referral center
Hong, Wandong 2017	3	Retrospective data analyses of a prospective database of consecutive patients admitted with acute pancreatitis
Huang, Jie 2016	3	Retrospective data analyses of a prospective single center database of acute pancreatitis patients admitted to a single tertiary center
Jin, Zhouxiang 2017	3	Patients admitted with MAP to our hospital from March 2013 to May 2016 were included and prospectively evaluated. Effectively this again a prospective database of consecutive patients admitted with acute pancreatitis, focusing on the subgroups of mild AP, retrospectively analyses.
Johnson, C D 2004	2	Manual review of trial database to determine: the presence of organ failure (Marshall score >2) on each of the first seven days in hospital, duration of organ failure, and outcome of pancreatitis (death, complications by Atlanta criteria). This study reviews a database of patients with predicted severe acute pancreatitis entered into a placebo controlled trial of lexipafant.10 The database contained 290 patients with a confirmed diagnosis of acute pancreatitis, aged over 18 and less than 80 years, with an APACHE-II score11 .6 in the 24 hours before entry to the study. All patients were primary admissions to hospital and had symptoms for less than 72 hours before entry to the study. Patients were recruited from 78 hospitals, including 18 centres constituting the British Acute Pancreatitis Study Group. All data were recorded prospectively.
Kadiyala, Vivek 2016	3	Single center, retrospective analysis of a prospective acute pancreatitis database
Ke, Lu 2014	4	Retrospective data analysis of a single center prospective database of patients admitted with acute pancreatitis.
Kim, Yeon Ji 2017	4	retrospective data analysis of consecutive patients admitted to a single center
Kim, Yeon Soo 2008	4	Between July 2004 and July 2005, retrospective review of the charts of 119 patients who were admitted to a single hospital with acute pancreatitis.
Koutroumpakis, Efstratios 2015	2	A Post Hoc Analysis of Three Large Prospective Databases.
Koziel, Dorota 2015	3	Retrospective analysis of data from consecutive patients admitted with acute pancreatitis to 16 surgical wards in Poland and recorded in a prospective database
Kumar, Akshat 2014	3	retrospective analysis of data from consecutive patients admitted on day 1 of acute pancreatitis to Mayo Clinic and had a positive SIRSS (≥2) were followed for 14 days or until discharge.
Kumaravel, Arthi 2015	2	Based on retrospective evaluation of consecutive AP patinets admitted to the Cleveland Medical center to establish the CAB score (discover cohort). Validation of the CAB-score in an independent cohort of 140 AP patients recruited at the Pittsburgh Medical Center.
Lankisch, P G 1999	3	Retrospective data analyses of consecutive patients admitted with the first attack of acute pancreatitis at the municipal hospital of Lüneburg
Lee, Kyong Joo 2016	3	Prospective analysis of scoring systems/lab test for prediction of severe AP.

Liu, Terrence H 2003	3	Retrospective analysis of clinical and radiologic prognosticators at predicting clinical course and outcome of acute pancreatitis in intensive care unit patients
Lytras, Dimitrios 2008	3	Retrospective analysis to study outcome of patients with SAP
Mikolasevic, I 2016	3	Retrospective cohort analysis for disease course of AP in patients with or without metabolic syndrome
Modrau, Ivy Susanne 2005	3	Prospective Study: Analysing the predictive value of PCT and comparison to Apache II, CRP, HCT, Ranson for AP severity and to evaluate PCT as a marker to distinguish biliary from non-biliary pancreatitis
Mofidi, R 2006	3	Retrospective analysis retrieved from a prospectively collected database regarding associatom of SIRS and disease outcome in patients with AP SIRS was present if patient had two or more of the following: temperature greater than 38◦C or less than 36◦C, heart rate greater than 90 beats per min, respiratory rate above 20 breaths per min, arterial partial pressure of carbon dioxide of less than 32 mmHg, and white cell count greater than 12 000 or less than 4000 cells/mm
Mounzer, Rawad 2012	2	Analysis of a prospectively collected training and validation cohort of AP patients in predicting persistent organ failure using various clinical scoring systems
Natu, Ashwinee 2017	3	Retrospective cohort study including consecutive patients with AP to study association of visceral fat with pancreatitis severity
Nawaz, Haq 2015	3	Prospective observational study to analyse the effect of triglyceride levels on AP outcome
Nawaz, Haq 2013	3	Prospectively collected observational cohort to study the different AP classifications (Atlanta cl., revised Atlanta cl., determinant based cl.) regarding AP outcomes
Neoptolemos, J P 2000	3	Prospective cohort of consectuive patients with AP to analyse the value of urinary trypsinogen activation peptide (TAP) in predicting pancreatitis severity
Papachristou, Georgios I 2006	3	Prospective cohort of consecutive AP patients to study predictive value of APACHE-O and to correlate Obesity with pancreatitis severity
Park, Ji Young 2013	3	Retrospective cohort analysis of BISAP score to predict AP severity and organ failure
Peng, Tao 2017	3	Retrospective study of patients with AP to study the effect of hypocalcemia on admission on disease outcome
Rau, Bettina M 2007	3	Retrospective cohort to investigate the value of Procalcitonin (PCT) for identifying patients at risk to develop pancreatic infections in severe AP
Remes-Troche, José M 2005	3	Retrospective cohort study to determine whether the hematocrit (Hct) at admission or at 24 h after admission was associated with severe acute pancreatitis (AP), organ failure (OF), and pancreatic necrosis
Senapati, Debadutta 2014	3	BISAP score was retrospectively evaluated in 246 consequtive patients with acute pancreatitis admitted to a single tertiary center in India
Singh, Vikesh K 2009	3	Prospective study
Stirling, Aaron D 2017	3	retrospective study of all first incidence AP was conducted over a 5-year period
Tee, Yu-San 2018	3	Retrospective cohort study

Tran, D D 1992	3	retrospective cohort study
Tran, D D 1993	3	retrospective study
Ueda, Takashi 2007	3	Retrospective single centre cohort study
Valverde-López, Francisco 2017	3	prospective cohort study
Vasudevan, Sreejith 2018	3	prospective observational study
Williams, M 1999	3	retrospectice single centre study
Wu, B U 2008	3	large population- based cohort study
Wu, Bechien U 2017	1	Systematic meta-analysis of 5 RCTs
Yang, Zhiyong 2015	3	retrospective single centre study
Ye, Jiang-Feng 2017	3	non-randomised cohort

OXFORD (2011) Appraisal Sheet: Systematic Reviews: *1 Bewertung(en)*

Stirling, Aaron D et al. The predictive value of C-reactive protein (CRP) in acute pancreatitis - is interval change in CRP an additional indicator of severity?. HPB (Oxford). 19. 874-880. 2017

Evidence level/Study Types	P - I - C	Outcomes/Results	Literature References
Evidence level: 3 **Study type:** retrospective study of all first incidence AP was conducted over a 5-year period **Databases:** 337 cases of first incidence AP were included **Search period:** retrospective study of all first incidence AP was conducted over a 5-year period **Inclusion Criteria:** first incidence AP **Exclusion Criteria:** recurrent AP	**Population:** 337 cases of first incidence AP **Intervention:** none **Comparison:** none	**Primary:** Correlation of absolute values in C-reactive protein (CRP), with interval changes in CRP, for severity stratification in acute pancreatitis **Secondary:** **Results:** second day as the most useful time for repeat CRP measurement. A CRP interval change >90 mg/dL at 48 h was equivalent to an absolute value of >150 mg/dL within 48 h **Author's Conclusion:** This study suggests a rise of >90 mg/dL from admission or an absolute value of >190 mg/dL at 48 h predicts severe disease with the greatest accuracy	HPB (Oxford). 2017 Oct;19(10):874-880. doi: 10.1016/j.hpb.2017.06.001. Epub 2017 Jul 8. The predictive value of C-reactive protein (CRP) in acute pancreatitis - is interval change in CRP an additional indicator of severity? Stirling AD, Moran NR, Kelly M, Ridgway PF, Conlon KC.
Methodical Notes			

Funding Sources: none

COI: retrospective study of all first incidence AP was conducted over a 5-year period, no drop outs

Study Quality: none

Heterogeneity:

Publication Bias: none

Notes:

OXFORD (2011) Appraisal Sheet: Diagnostic Studies: *2 Bewertung(en)*

Abu-Zidan, F M et al. Severity of acute pancreatitis: a multivariate analysis of oxidative stress markers and modified Glasgow criteria. Br J Surg. 87. 1019-23. 2000

Evidence level/Study Types	Population	Outcomes/Results
Evidence level: 4 **Study type:** Retrospective data analyses of consecutive patients admitted with a diagnosis of acute pancreatitis .	**Number of patients / samples:** Consecutive patients were divided into mild (n = 62) and severe (n = 23) groups based on the old Atlanta classification. Sample size is low, thus collective can not be representative **Reference standard:** Classification of acute pancreatitis severity following the old Atlanta classification. Evaluation of modified Glasgow criteria. Canonical correlation analysis was used to describe the relationship between oxidative markers and the modified Glasgow criteria **Validation:** There was a significant correlation between markers of oxidative stress and the modified Glasgow criteria (first canonical correlation 0.69, P < 0.0001, Wilk's lambda test). Blood urea, serum albumin and white cell count were the best variables that discriminated mild and severe acute pancreatitis, and all were better than the oxidative stress markers. **Blinding:** none **Inclusion of clinical information:** yes, comparison to modified Glasgow criteria and old Atlanta criteria for mild and severe AP. **Dealing with ambiguous clinical findings:** only abstract available, nothing mentioned there	**Results:** There was a significant correlation between markers of oxidative stress and the modified Glasgow criteria (first canonical correlation 0.69, P < 0.0001, Wilk's lambda test). Blood urea, serum albumin and white cell count were the best variables that discriminated mild and severe acute pancreatitis, and all were better than the oxidative stress markers. **Author conclusions:** The markers of oxidative stress were highly correlated with the severity of pancreatitis. They are unlikely to be better than the modified Glasgow criteria in predicting it.

Methodical Notes

Funding Sources: not mentioned, most likely institutional funds

COI: none mentioned

Notes: Consecutive patients admitted with a diagnosis of acute pancreatitis were divided into mild (n = 62) and severe (n = 23) groups based on the old Atlanta classification. Plasma oxidative stress markers were measured within 24 h of admission and correlated to severity according to the old Atlanta classification. Overall underpowered study

Bakker, Olaf J et al. Extrapancreatic necrosis without pancreatic parenchymal necrosis: a separate entity in necrotising pancreatitis?. Gut. 62. 1475-80. 2013

Evidence level/Study Types	Population	Outcomes/Results
Evidence level: 2 **Study type:** A post hoc analysis was performed of a prospective multicentre database including 639 patients with necrotising pancreatitis on contrast-enhanced CT. All CECT scans were reviewed by a single radiologist blinded to the clinical outcome.	**Number of patients / samples:** 639 patients **Reference standard:** atients with EXPN were compared with patients with pancreatic parenchymal necrosis (with or without extrapancreatic necrosis). **Validation:** not given. The results indicated that: Patients with EXPN less often suffered from complications: persistent organ failure (21% vs 45%, p<0.001), persistent multiple organ failure (15% vs 36%, p<0.001), infected necrosis (16% vs 47%, p<0.001), intervention (18% vs 57%, p<0.001)and mortality (9% vs 20%, p<0.001). When infection of extrapancreatic necrosis developed, outcomes between groups were equal (mortality with infected necrosis: EXPN 28% vs pancreatic necrosis 18%, p=0.16). **Blinding:** All CECT scans were reviewed by a single radiologist blinded to the clinical outcome. **Inclusion of clinical information:** The following clinical outcomes were analysed: persistent organ failure, persistent multiple organ failure, infected necrosis, the need for intervention and mortality. EXPN was entered into the model as the main factor. As co-variables, all prognostic variables that were potentially The following clinical outcomes were analysed: persistent organ failure, persistent multiple organ failure, infected necrosis, the need for intervention and mortality. EXPN was entered into the model as the main factor. As co-variables, all prognostic variables that were potentially **Dealing with ambiguous clinical findings:** To assess whether EXPN is an independent predictor of clinical outcome, multivariable regression analysis was performed adjusting for potential confounders (eg, prognostic variables on admission such as age). After adjustment for potential confounding factors with multi- variable regression, patients with EXPN still had better clinical outcomes. After adjusting for male sex, Imrie score and transferred patients, EXPN was independently associated with a lower risk of organ failure (adjusted OR 0.53, CI 0.37 to 0.78, p<0.001), mul- tiple organ failure (adjusted OR 0.48, CI 0.32 to 0.72, p<0.001), infected	**Results:** 315 patients with EXPN were compared with 324 patients with pancreatic parenchymal necrosis. Patients with EXPN less often suffered from complications: persistent organ failure (21% vs 45%, p<0.001), persistent multiple organ failure (15% vs 36%, p<0.001), infected necrosis (16% vs 47%, p<0.001), intervention (18% vs 57%, p<0.001) and mortality (9% vs 20%, p<0.001). When infection of extrapancreatic necrosis developed, outcomes between groups were equal (mortality with infected necrosis: EXPN 28% vs pancreatic necrosis 18%, p=0.16). **Author conclusions:** EXPN causes fewer complications than pancreatic parenchymal necrosis. It should therefore be considered a separate entity in acute pancreatitis. Outcome in cases of infected necrosis is similar.

	necrosis (adjusted OR 0.30, CI 0.20 to 0.45, p<0.001), any intervention (adjusted OR 0.25, CI 0.17 to 0.38, p<0.001) and mortality (adjusted OR 0.59, CI 0.35 to 0.97, p=0.04).	

Methodical Notes

Funding Sources: The study was supported by a research grant from the Dutch Organization for Health Research and Development (ZonMw, grant numbers 945-06-910). OJB is sponsored by The Netherlands Organization for Health Research and Development (ZonMw, grant number 17 099.2902) to perform clinical studies on necrotising pancreatitis. The sponsors had no involvement in any stage of the study design, data collection, data analysis and interpretation of the study results.

COI: none obvious and none indicated

Notes: A post hoc analysis was performed of a prospective multicentre database including 639 patients with necrotising pancreatitis on contrast-enhanced CT. All CECT scans were reviewed by a single radiologist blinded to the clinical outcome.

Good data quality in a prospective multicenter database with a sufficient number of patients. Excellent publication, methodology checked by journal statistician

OXFORD (2011) Appraisal Sheet: Prognostic Studies: *55 Bewertung(en)*

Abulimiti, Alimujiang et al. Evaluation of HVHF for the treatment of severe acute pancreatitis accompanying MODS. Medicine (Baltimore). 97. e9417. 2018

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** Allegedly a randomized controlled trial with 2x 20 patients with severe acute pancreatitis that were divided into 2 groups: control (n=22, treated with fasting, decompression, and intravenous somatostatin) and HVHF (n=18, HVHF administration in addition to the treatment in the control group) groups to study the effects of outcome of SIRS treatment with HVHF. **Number of Patient:** 2 x 20 Patients with severe acute pancreatitis (group 1= 18 and group 2= 22) **Recruitung Phase:** not described, most likely consecutive patients with sever acute pancreatitis **Inclusion Criteria:** Patients with severe acute pancreatitis defined by RAC accompanying multiple organ dysfunction syndromes. **Exclusion Criteria:** not defined	**Intervention:** control (n=22, treated with fasting, decompression, and intravenous somatostatin as standard therapy) and intervention groups received high-volume hemofiltration (HVHF) (n=?8, HVHF administration in addition to the treatment in the control group) groups; as special intervention to ameliorate SIRS **Comparison:** control group with sever acute pancreatitis treated with local standard vs intervention group receiving HVHF (see above)	**Primary:** : control (n?=?22, treated with fasting, decompression, and intravenous somatostatin) and HVHF (n?=?18, HVHF administration in addition to the treatment in the control group) groups; and were assessed for serum and urine amylase, WBC, C-reactive protein (CRP), and hepatic and renal functions. Vital signs and abdominal symptoms were recorded, and complications and mortality were analyzed.APACHE II scores **Secondary:** not indicated **Results:** APACHE II scores in the HVHF group were significantly lower than in the control group at 3 and 7 days (6.3?±?1.7 vs 9.2?±?2.1 and 3.3?±?0.8 vs 6.2?±?1.7, respectively). Compared with controls, serum, and urine amylase, WBC, CRP, and organ functions significantly improved after HVHF treatment. Meanwhile, mortality (16.7% vs 31.8%) and complication (11.1% vs 40.9%) rates were significantly reduced.The other clinical parameters were significantly ameliorated by HVHF. **Author's Conclusion:** HVHF rapidly reduces abdominal symptoms and improves prognosis, reducing mortality in SAP patients; and is likely through systemic inflammatory response syndrome attenuation in the early disease stage. This study suggests that treatment of SIRS is a

		prominent prognostic parameter.

Methodical Notes

Funding Sources: not indicated, most likely institutional funds

COI: none

Randomization: not described. Consecutive patients with severe acute pancreatitis were allocated either to control treatment or control treatment + HVHF, only abstract available no description of randomization process.

Blinding: none

Dropout Rate/ITT-Analysis: none described

Notes: Allegedly a randomized controlled trial with 2x 20 patients with severe acute pancreatitis that were divided into 2 groups: control (n=22, treated with fasting, decompression, and intravenous somatostatin) and HVHF (n=18, HVHF administration in addition to the treatment in the control group) groups to study the effects of outcome of SIRS treatment with HVHF. Underpowered study .

Acevedo-Piedra, Nelly G et al. Validation of the determinant-based classification and revision of the Atlanta classification systems for acute pancreatitis. Clin. Gastroenterol. Hepatol. 12. 311-6. 2014

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** Retrospective analyses of data from consecutive patients with acute pancreatitis admitted admitted to Hospital General Universitario de Alicante from December 2007 to February 2013. Imaging results were reviewed, and the two classification systems for severity of acute pancreatitis RAC and DBC were validated and compared in terms of outcomes. **Number of Patient:** Data was analyzed from 543 episodes of AP in 459 adult patients who were admitted from December 2007 to February 2013. **Recruitung Phase:** from December 2007 to February 2013. **Inclusion Criteria:** onsecutive adult (!18 years) patients with AP admitted in our center between December 2007 and February 2013 were included. This period corresponded to the episodes of AP available for analysis at	**Intervention:** none **Comparison:** Epidemiologic, clinical, and outcome variables were prospectively collected. The aim was to compare the two competing classifications of severity of acute pancreatitis RAC and DBC.. An expert radiologist (S.G.) who was blinded for clinical outcomes retrospectively reviewed imaging (mainly computed tomography scans; magnetic resonance imaging is scarcely used in our center to study local complications) to describe the new local complications defined in both classifications. The radiologist had data about timing between imaging and presentation of disease to allow a correct classification of local complica- tions (acute collections versus pseudocysts, acute necrotic collections versus walled-off pancreatic necrosis).	**Primary:** The authors investigated the clinical outcome according to the different categories of Atlanta classification, DBC and RAC. Outcome variables were need for nutritional support (parenteral and/or enteral nutrition), invasive treatment (endoscopic drainage/necrosectomy, percutaneous drainage and/or surgery), intensive care unit (ICU) admis- sion, length of hospital stay, and in-hospital mortality. They compared the severe plus critical categories of the DBC (both supposed to be associated with high morbidity and mortality, being maximal for the critical category) with the severe category of the RAC. Moderate and mild categories were directly compared between both classifications. **Secondary:** Not defined **Results:** Pancreatic necrosis was present in 66 of the patients (12%), peripancreatic necrosis in 109 (20%), walled-off necrosis in 61 (11%), acute peripancreatic fluid collections in 98 (18%), and pseudocysts in 19 (4%). Transient and persistent organ failures were present in 31 patients (6%) and 21 patients (4%), respectively. Sixteen patients (3%) died. On the basis of the DBC, 386 (71%), 131 (24%), 23 (4%), and 3 (0.6%) patients were determined to have mild, moderate, severe, or critical AP, respectively. On the basis of the RAC, 363 patients (67%), 160 patients (30%), and 20 patients (4%) were determined to have mild, moderately severe, or severe AP, respectively. The different categories of severity for each classification system were associated with statistically significant and clinically relevant differences in length of hospital stay, need for admission to the intensive care unit, nutritional support, invasive treatment, and in-hospital mortality. In comparing similar categories between the classification systems, no significant differences were found.

the time we decided to perform the study and was not based on sample size calculation. Diagnosis of AP was defined by at least 2 of the following criteria: (1) amylase level increase up to 3 times higher than the upper limit of normal, (2) abdominal pain, and (3) imaging compatible with AP. **Exclusion Criteria:** Excluded from analysis were patients with chronic pancreatitis diagnosed during hospital admission.		**Author's Conclusion:** The DBC and the RAC accurately classify the severity of AP in subgroups of patients.

Methodical Notes

Funding Sources: not indicated. Most likely institutional funds.

COI: none

Randomization: none

Blinding: none

Dropout Rate/ITT-Analysis: Retrospective analyses of consecutive cases of acute pancreatitis admitted to on single hospital. No drop out rates.

Notes: Retrospective evaluation of consecutive patients admitted for acute pancreatitis in a center in Spain, retrospectively analyzed with two new classifications systems of pancreatitis severity.

Bollen, Thomas L et al. A comparative evaluation of radiologic and clinical scoring systems in the early prediction of severity in acute pancreatitis. Am. J. Gastroenterol. 107. 612-9. 2012

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** retrospective analysis of this prospectively collected clinical database, single center. **Number of Patient:** 150 patients (84 men,66 women; mean age, 54 years; age range, 21–91 years **Recruitung Phase:** 2.5 years, dates not mentioned **Inclusion Criteria:** patients with a primary diagnosis of AP admitted or transferred to our institution during a 2.5-	**Intervention:** none **Comparison:** Seven CT scoring systems (CT severity index (CTSI), modi- fied CT severity index (MCTSI), pancreatic size index (PSI), extrapancreatic score (EP), ‘‘extrapancre- atic inflammation on CT’’ score (EPIC), ‘‘mesenteric oedema and peritoneal fluid’’ score (MOP), and Balthazar grade) as well as two clinical scoring systems: Acute Physiology, Age, and Chronic Health Evaluation (APACHE)-II and Bedside Index for Severity in AP (BISAP) were comparatively evaluated with regard to their ability to predict the severity of AP on admission (first 24h of hospitalization).	**Primary:** The following parameters were collected for each episode of AP: in-hospital mortality, length of hospital stay, admission to and length of intensive care unit stay, presence and duration of organ failure (transient; ≤48 h and persistent; >48 h), pancreatic infection (infection of pancreatic and/or peripancreatic necrosis), and need for intervention (endoscopic, percutaneous drainage, and/or surgical necrosectomy). Clinically severe AP was defined as one or more of the following: mortality, persistent organ fail- ure and/or the presence of local pancreatic complications that require intervention (endoscopic or radiologic drainage or **Secondary:** The following parameters were collected for each episode of AP: in-hospital mortality, length of hospital stay, admission to and length of intensive care unit stay, presence and duration of organ failure (transient; ≤48 h and persistent; >48 h), pancreatic infection (infection of pancreatic and/or peripancreatic necrosis), and need for intervention (endoscopic, percutaneous drainage, and/or surgical necrosectomy). Clinically severe AP was defined as one or more of the following: mortality, persistent organ fail- ure and/or the presence of local pancreatic complications that require intervention (endoscopic or radiologic drainage

year period was prospectively collected for this study. AP was defined as two or more of the following: characteristic abdominal pain; serum amylase and/or lipase levels three or more times the upper limit of normal (i.e., >210 and 180 U/l, respectively); and/or an imaging study (CT or magnetic resonance imaging) demonstrating changes consist- ent with AP (19). The day of admission was defined as the first 24h of hospitalization in our institution or in the referring hospital. **Exclusion Criteria:** Excluded episodes (n = 238 or 397 episodes of acute pancreatitis in 150 patients): No CT study performed (n = 139) CT performed more than 24 h after admission (n = 48) Acute on chronic pancreatitis (n=51)		or surgical necrosectomy). This definition is in accordance with the most updated revised Atlanta classification (20). The principle dis- tinction between the new and former definition of clinical sever- ity is that the mere presence of pancreatic parenchymal necrosis, peripancreatic collections, or organ failure is not regarded as clini- cally severe disease, unless organ failure exceeds 48 h in duration or complications of pancreatic necrosis or peripancreatic collec- tions occur, which require active intervention. Organ failure was defined as a score of ≥2 in one or more of the three (respiratory, renal, and cardiovascular) organ systems of the modified Marshall score (20,21). **Results:** Of 346 consecutive episodes of AP, there were 159 (46%) episodes in 150 patients (84 men, 66 women; mean age, 54 years; age range, 21–91 years) who were evaluated with a contrast- enhanced CT scan (n=131 episodes) or an unenhanced CT scan (n=28 episodes) on the first day of admission. Clinically severe AP was diagnosed in 29/159 (18%) episodes; 9 (6%) patients died. Overall, the Balthazar grading system (any CT technique) and CTSI (contrast-enhanced CT only) demonstrated the highest accuracy among the CT scoring systems for predicting severity, but this was not statistically significant. There were no statistically significant differences between the predictive accuracies of CT and clinical scoring systems. **Author's Conclusion:** The predictive accuracy of CT scoring systems for severity of AP is similar to clinical scoring systems. Hence, a CT on admission solely for severity assessment in AP is not recommended.

Methodical Notes

Funding Sources: This study was supported in part by a clinical research Grant from the National Pancreas Foundation to P.A.B. (Principle Investigator) and V.K.S. (Co-Investigator).

COI: non declared

Randomization: none

Blinding: All CT scans were reviewed in consensus by two radiologists, each blinded to patient outcome.

Dropout Rate/ITT-Analysis: none given or applicable

Notes: retrospective analysis of this prospectively collected clinical database, single center.

Cardoso, Filipe S et al. C-reactive protein prognostic accuracy in acute pancreatitis: timing of measurement and cutoff points. Eur J Gastroenterol Hepatol. 25. 784-9. 2013

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** single-center retrospective cohort study.This study evaluated the prognostic accuracy of CRP for severe	**Intervention:** None **Comparison:** CRP determinations at hospital admission, 24, 48, and 72 h after hospital admission were collected. Discriminative and	**Primary:** to properly assess CRP prognostic accuracy in AP, the three outcomes considered were SAP (severe acute pancreatitis), pancreatic necrosis (PNec), and in-hospital mortality (IM). Patients were classified as SAP if organ failure

acute pancreatitis (SAP), pancreatic necrosis (PNec), and in-hospital mortality (IM) in terms of the best timing for CRP measurement and the optimal CRP cutoff points. **Number of Patient:** including 379 patients consecutively admitted with acute pancreatitis. **Recruitung Phase:** 01.2009 till 06.2011 **Inclusion Criteria:** The diagnosis of AP was made if two of the following three features were present: (a) abdominal pain sugges- tive of AP; (b) serum amylase and/or lipase activity at least three times greater than the upper limit of normal; and (c) characteristic findings of AP on transabdominal ultrasonography or on contrast-enhanced computed tomography (CECT) [11]. **Exclusion Criteria:** All patients in whom the minimum three-fold hyperamyla- semia was proved to be of other cause, rather than AP, were not included in the study.	predictive abilities of CRP for SAP (severe acute pancreatitis), PNec (pancreatic necrosis), and IM (in hospital mortality) were assessed by the area under the receiver-operating characteristic curve and the Hosmer–Lemeshow test, respectively. To determine the optimal CRP cutoff points for SAP, PNec, and IM, the minimum P-value approach was used.	was present for more than 48h. According to the Marshall Scoring System, organ failure includes at least one of the following features: (a) respiratory failure, defined as PO2/ FiO2 levels of 300 mmHg or less; (b) renal failure, defined as serum creatinine level of at least 1.9mg/dl; and (c) shock, defined as systolic blood pressure of less than 90 mmHg and unresponsive to fluid therapy [11]. As a local complication, PNec was diagnosed by CECT when there was a lack of enhancement in pancreatic parenchyma after contrast infusion [11]. All scans were performed and reviewed by experienced radiologists, with more than 5 years of practice, dedicated to abdominal imaging.IM referred to death occurring from AP or its complica- tions during the initial hospitalization. **Secondary:** none **Results:** In total, 11% of patients had SAP, 20% developed PNec, and 4.2% died. The area under the receiver-operating characteristic curves of CRP at 48 h after hospital admission for SAP, PNec, and IM were 0.81 [95% confidence interval (CI) 0.72–0.90], 0.77 (95% CI 0.68–0.87), and 0.79 (95% CI 0.67–0.91), respectively. The Hosmer–Lemeshow test P-values of CRP at 48 h after hospital admission for SAP, PNec, and IM were 0.82, 0.47, and 0.24, respectively. The optimal CRP at 48 h after hospital admission cutoff points for SAP, PNec, and IM derived were 190, 190, and 170 mg/l, respectively. **Author's Conclusion:** CRP at 48 h after hospital admission showed a good prognostic accuracy for SAP, PNec, and IM, better than CRP measured at any other timing. The optimal CRP at 48 h after hospital admission cutoff points for SAP, PNec, and IM varied from 170 to 190 mg/l.

Methodical Notes

Funding Sources: not declared, most likely institutional funds

COI: none declared

Randomization: consecutive patients, no randomization

Blinding: no blinding

Dropout Rate/ITT-Analysis: retrospective analyses of consecutive patients no dropout Rate/Itt analysis done

Notes: single-center retrospective cohort study including 379 patients consecutively admitted with acute pancreatitis. CRP determinations at hospital admission, 24, 48, and 72 h after hospital admission were collected.

Chen, Hong-Ze et al. Early prediction of infected pancreatic necrosis secondary to necrotizing pancreatitis. Medicine (Baltimore). 96. e7487. 2017

Population	Intervention	Outcomes/Results

Evidence level: 3 **Study type:** Retrospective analyses of consecutive patients with sever a ute pancreatitis. **Number of Patient:** 215 **Recruitung Phase:** 01.2012-08.2016 **Inclusion Criteria:** Consecu- tive adult patients (>18 years) with a first episode of AP who were admitted to the Department of Pancreatic and Biliary Surgery, First Affiliated Hospital of Harbin Medical University from January 2012 to August 2016 were enrolled. **Exclusion Criteria:** Age < 18, pain for more than 48 h before admission, referral patients, known history of acute or chronic pancreatitis, known history of severe chronic illness, any invasive intervention or death within the first 3 days due to severe complications, incomplete data	**Intervention:** none **Comparison:** Comparison of clinical parameter as prognostic parameters for those patients among the 215 that developed infected (n=87) versus non-infected (n=128) pancreatic necrosis. Severity assessment using revised Atalanta classification (RAC). The baseline variables were recorded within 48hours of admission, including demographic data, such as the age, gender, etiology, and body mass index (BMI), and the maximum value of the following clinical data within 48hours: white blood cell (WBC) count, HCT, platelet (PLT) count, BUN, Cr, D-dimer, CRP, PCT, and heart rate. APACHE-II and Imrie scores were evaluated on the second day after admission. Additionally, the modified Marshall scoring system, sequential organ failure assessment (SOFA) score, and modified CTSI at the end of third day were also documented.	**Primary:** Prognostic Clinical parameters associated with the presence of infected or non-infected pancreatic necrosis **Secondary:** none defined **Results:** A total of 215 patients were enrolled in our study. Among them, 87 (40.5%) patients developed IPNs after a median of 13.5 (9.5–23.0) days from admission. Multivariate analysis indicated that the level of hematocrit (HCT) from 40% to 50% (P=.012, odds ratio (OR) = 2.407), HCT over 50% (P < .009, OR = 6.794), blood urea nitrogen (BUN) (P = .040, OR = 1.894), C-reactive protein (CRP) (P=.043, OR=1.837), and procalcitonin (PCT) (P=.002, OR=2.559) were independent risk factors of IPN secondary to NP. The ROC cures revealed that the area under the ROC (AUC) of the maximum level of HCT, BUN, CRP, and PCT within 48hours of admission was 0.687, 0.620, 0.630, and 0.674 respectively. Furthermore, the combination of these 4 individual parameters contributes to a more preferable AUC of 0.789 with a sensitivity of 67.8% and specificity of 77.3%. **Author's Conclusion:** The maximum levels of PCT, CRP, HCT, and BUN within 48hours of admission are independent factors of IPN and their combination might accurately predict the occurrence of IPN secondary to NP.

Methodical Notes

Funding Sources: This study was funded by the National Nature Scientific Foundation of China (Nos 81372613, 81370565, 81470887, 81670583), National High Technology Research and Development Program of China (2014AA020609), and Wei-Han Yu Scientific Foundation of Harbin Medical University.

COI: none

Randomization: none

Blinding: none

Dropout Rate/ITT-Analysis: none

Notes: To assess the association between the clinical parameters within 48 hours of admission and the occurrence of infected pancreatic necrosis (IPN) during the late phase of necrotizing pancreatitis (NP). Retrospective analyses of consecutive patients with sever acute pancreatitis.

Chen, Yuhui et al. Association between severity and the determinant-based classification, Atlanta 2012 and Atlanta 1992, in acute pancreatitis: a clinical retrospective study. Medicine (Baltimore). 94. e638. 2015

Population	Intervention	Outcomes/Results

Evidence level: 3 **Study type:** **Number of Patient:** **Recruitung Phase:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** **Author's Conclusion:**

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes: Consecutive patients with acute pancreatitis, data retrospectively reviewed to compare three classifications systems for severity (Atlanta 92, Revised Atlanta=RAC), Determinant-based classification (DBC)

Cho, Young-Seok et al. Usefulness of the Bedside Index for severity in acute pancreatitis in the early prediction of severity and mortality in acute pancreatitis. Pancreas. 42. 483-7. 2013

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** Retrospective analysis of data from consecutive patients admitted between 01.2008-07.2010 with acute pancreatitis at a single institution. **Number of Patient:** 299 consecutive patients **Recruitung Phase:** 01.2008-07.2010 **Inclusion Criteria:** Patients admitted with acute pancreatitis. Definition: The definitions used in this study are according to the proposed revision of the Atlanta Classification. Acute pancreatitis was defined as 2 or more of the following 3 features: (i)abdominal pain strongly suggestive of AP, (ii) serum amylase and/ or lipase activity at least 3 times greater than the upper limit of normal, and (iii) characteristic findings of AP on transabdom- inal ultrasonography or contrast-enhanced abdominal computed tomography. The patients were classified as having mild AP or SAP. Severe AP was defined as the persistence of OF for more than 48 hours. Organ failure was defined in accordance with the Marshall scoring system as a score of 2 or greater for at least 1 of the 3 organ systems (respiratory, renal, or cardiovascular).7,11 Multiorgan failure was defined as 2 or more organs failing in the same 2- to 3-day period. **Exclusion Criteria:** incomplete data	**Intervention:** none **Comparison:** Predictive capacity of the BiSAP scoring system for severity and mortality	**Primary:** Severity of acute pancreatitis as defined by the old Atlanta classification and death: Severe AP was defined as the persistence of OF for more than 48 hours. Organ failure was defined in accordance with the Marshall scoring system as a score of 2 or greater for at least 1 of the 3 organ systems (respiratory, renal, or cardiovascular).7,11 Multiorgan failure was defined as 2 or more organs failing in the same 2- to 3-day period **Secondary:** none defined **Results:** Of 299 consecutive patients, 22 (7.4%) were classified as having severe AP, and 8 (2.7%) died. There were statistically significant trends for increasing severity (P G 0.001) and mortality (P G 0.001) with increasing BISAP. The AUC for severity predicted by BISAP was 0.762 (95% confidence interval, 0.631Y0.893) and by Ranson score was 0.804 (0.717Y0.892). The AUC for mortality predicted by BISAP was 0.940 (0.863Y1.018) and by Ranson score was 0.861 (0.734Y0.988). **Author's Conclusion:** The authors

		conclude that BISAP is an accurate means of risk stratification in AP within 24 hours of presentation.

Methodical Notes

Funding Sources: Not indicated, most likely institutional funds

COI: None

Randomization: none

Blinding: none

Dropout Rate/ITT-Analysis: not given

Notes: The medical records of all patients with acute pancreatitis (AP) admitted at a single between January 2008 and July 2010 were reviewed retrospectively.

Choi, Jun-Ho et al. Revised Atlanta classification and determinant-based classification: Which one better at stratifying outcomes of patients with acute pancreatitis?. Pancreatology. 17. 194-200. 2017

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** retrospective analysis of a prospective acute pancreatitis (AP) database **Number of Patient:** 748 **Recruitung Phase:** 03.2006-01.2015 **Inclusion Criteria:** consecutive patients with an index episode of AP within 3 days from the onset of symptoms were included. A group of patients reported in our previous publication were partly included in the study [12]. Acute pancreatitis was defined as 2 or more of the following: (1) sudden onset of upper abdominal pain, (2) elevated serum amylase or lipase (more than three times the upper limit of the reference range), and (3) characteristic findings of AP on cross-sectional im- aging of the abdomen. **Exclusion Criteria:** Patients who exhibit radiographic evidence of chronic pancreatitis (multiple parenchymal calcifications, pancreatic stone, parenchymal atrophy or irregular dilatation of main pancreatic duct) were excluded. Patients who were trans- ferred from another hospital after a stay of 24 h or longer were also excluded from the study.	**Intervention:** none **Comparison:** his study aims to compare the ability of three classification systems (RAC, DBC, and original Atlanta classification [OAC]) to stratify outcomes of AP and to determine the association between different severity categories and clinical outcomes.	**Primary:** Main outcomes for comparison were need for interventions (percutaneous, endoscopic and surgical drainage/debridement), need for intensive care unit (ICU) care, total duration of ICU stay, total length of hospital stay and in-hospital mortality. For each patient, the peak severity category during the hospitalization was selected for each stratification system. The effect of timing of OF on outcomes in AP was also investigated. **Secondary:** none **Results:** Overall, as the grade of severity increased, the morbidity and mortality increased accordingly in the three classification systems. The RAC and DBC were comparable, but performed better than OAC in predicting mortality (AUC 0.92 and 0.95 vs. 0.66, p < 0.001), ICU admission (AUC 0.92 and 0.96 vs. 0.68, p < 0.001), ICU LOS (AUC 0.73 and 0.76 vs. 0.50, p < 0.001), and hospital stay (AUC 0.81 and 0.83 vs. 0.70, p < 0.001). The DBC performed better than the RAC and OAC in predicting the need for intervention (AUC 0.87 vs. 0.79 and 0.68, p < 0.05). The mortality rate in patients with critical DBC category was higher than that in those with severe RAC category (42.1% vs. 24.7%; p ¼ 0.008). POF (OR 19.4, p ¼ 0.001) and IN (OR 11.0, p ¼ 0.025) were independent risk factors for mortality. **Author's Conclusion:** In tertiary referral setting, patients in the critical category (DBC) are at the greatest risk for death and should be managed in an intensive care unit. Although IN (Infected Necrosis) itself may be less influential on mortality than POF (Persistent Organ Failure), IN as well as POF should be considered as the key determinants for severity stratification.

Methodical Notes
Funding Sources: noz indicated **COI:** none **Randomization:** none **Blinding:** none **Dropout Rate/ITT-Analysis:** not given **Notes:** retrospective analysis of a prospective acute pancreatitis (AP) database

Choi, Jun-Ho et al. Clinical relevance of the revised Atlanta classification focusing on severity stratification system. Pancreatology. 14. 324-9. 2014

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** Retrospective data analyses of a single center prospective database **Number of Patient:** 553 **Recruitung Phase:** 01.2006-01.2013 **Inclusion Criteria:** patients aged !18 years with a diagnosis of acute pancreatitis during the study period (January 2006 through January 2013). Patients were eligible for inclusion if they had a diagnosis of AP based on two or more of the following [1]: sudden onset of upper abdominal pain [2], elevated serum amylase or lipase (more than three times the upper limit of the reference range), and [3] characteristic findings of AP on contrast-enhanced computed to- mography (CECT) of the abdomen. **Exclusion Criteria:** Patients who had symptoms for more than 7 days were excluded from the study. Patients who exhibited radiographic evidence of chronic pancreatitis (multiple parenchymal calcifications, pancreatic stone, parenchymal atrophy or irregular dilatation of main pancreatic duct) were excluded.	**Intervention:** none **Comparison:** validate the revised Atlanta classification and to determine the association of this new classification system with relevant clinical outcome in patients with AP	**Primary:** Primary outcomes included the need for interventions, the need for intensive care unit (ICU) care, length of ICU stay, total hospital stay, and mortality. **Secondary:** none **Results:** The different grades of severity for revised Atlanta classification system were associated with statistically significant differences in terms of clinical outcomes. Patients with severe AP that had IN, compared to those without IN, were associated with worse clinical outcomes. Having stratified patients with severe AP category according to the presence or absence of IN, the mortality rate increased fourfold to 32.3% for the presence of infected necrosis. **Author's Conclusion:** the revised Atlanta classification seems to be valid, since it correlates well with clinical outcome. To more accurately assess clinical outcome of patients with severe AP defined by the revised Atlanta classification, however, severe AP patients with IN should be considered separately from those without IN in classification system.

Methodical Notes
Funding Sources: not indicated **COI:** none declared **Randomization:** none **Blinding:** none **Dropout Rate/ITT-Analysis:** not given

Notes: Retrospective data analyses of a single center prospective database

Dambrauskas, Zilvinas et al. Value of the different prognostic systems and biological markers for predicting severity and progression of acute pancreatitis. Scand. J. Gastroenterol. 45. 959-70. 2010

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** prospective observational study in the period between June 2005 and December 2007. All patients admitted to the Department of Surgery, Kaunas University of Medicine Hospital (Lithuania) with a diagnosis of AP and onset of the disease within last 72 h were included in this study (n = 108). **Number of Patient:** 108 **Recruitung Phase:** june 2005-december 2007 **Inclusion Criteria:** All patients admitted to the Department of Surgery, Kaunas University of Medicine Hospital (Lithuania) with a diagnosis of AP and onset of the disease within last 72 h were included in this study (n = 108). The diagnosis was established on the basis of acute abdominal pain, at least three-fold elevated levels of serum amylase and typical radiological findings. The contrast-enhanced CT scan was performed on days four to seven after onset of the disease to demonstrate the presence of pancreatic necrosis. **Exclusion Criteria:** Patients with underlying chronic pancreatitis and patients with AP referred to our hospital from other institutions after management for more than three days were excluded from this study.	**Intervention:** none **Comparison:** aim of this study was to reassess and compare the value of some known and newly- introduced prognostic markers in the clinical context	**Primary:** Clinical data related to the severity of disease, development of organ dysfunction, and/or septic complications were prospectively collected in a standardized fashion. Data necessary for the calculation of the multifactorial clinical scores used for the statistical analysis were collected within 12–24 h after admission to the hospital but not later than 72 h after onset of the disease. Blood samples for the assessment of serum markers were drawn on the admission to the hospital, processed immediately, and stored in -70C before analysis. **Secondary:** none **Results:** Among single biochemical markers, C-reactive protein remains the most useful. Despite its delayed increase, it is accurate, cheap, and widely available. Interleukin-6 and macrophage migration inhibitory factor seem to be new promising parameters for use in clinical routine. Pancreas specific scores (Imrie-Glasgow, pancreatitis outcome prediction) and scores assessing organ dysfunction (acute physiology and chronic health evaluation II, multiple organ dysfunction score, and Marshall score) remain of value in determining the severity, complications, and possible outcome of AP. **Author's Conclusion:** ndication, timing, and consequences of the methods applied need to be carefully considered and incorporated into clinical assessments. Currently, there is no single prognostic marker that would cover the whole range of problems associated with the treatment of AP. The prediction of severity and progression of AP can be achieved using a series of accurate methods. The decision to undertake interventional or surgical treatment is the most complex task requiring both clinical judgment and meticulous monitoring of the patient

Methodical Notes

Funding Sources: none declared

COI: The authors report no conflicts of interest.

Randomization: none

Blinding: none

Dropout Rate/ITT-Analysis: not given

Notes: prospective observational study in the period between June 2005 and December 2007. All patients admitted to the Department of Surgery, Kaunas University of Medicine Hospital (Lithuania) with a diagnosis of AP and onset of the disease within last 72 h were included in this study (n = 108).

Garg, Pramod Kumar et al. Association of extent and infection of pancreatic necrosis with organ failure and death in acute necrotizing pancreatitis. Clin. Gastroenterol. Hepatol. 3. 159-66. 2005

Population	Intervention	Outcomes/Results
Evidence level: 2 **Study type:** Prospective database of consecutive patients with acute pancreatitis, prospective data collection retrospective data analyses. **Number of Patient:** 276 **Recruitung Phase:** January 1997-May 2002 **Inclusion Criteria:** All consecutive patients with acute pancreatitis admit- ted under the gastroenterology services of our hospital, a tertiary care referral center, were included in the study. The diagnosis of acute pancreatitis was made in the presence of suggestive clinical features, increased serum amylase level (**Exclusion Criteria:** not defined	**Intervention:** none **Comparison:**	**Primary:** Pancreatic Necrosis Pancreatic necrosis was diagnosed as non-enhancing (nonviable) areas of pancreas on a CECT scan. The amount of pancreatic necrosis was graded as **Secondary:** none defined **Results:** Of 276 patients (mean age, 41.25 years; 172 men), 104 had pancreatic necrosis: 30 had <30% necrosis, 37 had 30%–50% necrosis, and 37 had >50% necrosis; 74 had sterile necrosis, and 30 had infected necrosis. Of them, 37 (35%) patients developed organ failure. Two signifi- cant factors were associated with the development of organ failure, the extent of necrosis (<30% necrosis vs 30%–50% necrosis: P **Author's Conclusion:** Extent of necrosis and infected pancreatic necrosis were associated with the develop- ment of organ failure in patients with acute necrotizing pancreatitis. Infected pancreatic necrosis was the most significant predictor of mortality.

Methodical Notes

Funding Sources: not indicated

COI: none declared

Randomization: none

Blinding: none

Dropout Rate/ITT-Analysis: not given

Notes: All consecutive patients with acute pancreatitis admitted under the gastroenterology services of , a tertiary care referral center, were included in the study. The diagnosis of acute pancreatitis was made in the presence of suggestive clinical features, increased serum amylase level retrospective data analyses

Guo, Qiang et al. Determinant-based classification and revision of the Atlanta classification, which one should we choose to categorize acute pancreatitis?. Pancreatology. 15. 331-6. 2015

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** a prospective database on AP in a single west chines tertiary referral center was retrospectively analyses to check the	**Intervention:** none **Comparison:** The two AP severity classification systems (RAC and DBC) were applied to this prospectively-enrolled cohort	**Primary:** the clinical outcome according to the different categories of the two classifi- cation systems. Outcome variables were as follows: intensive care unit (ICU) admission, interventional treatment (open pancreatic necrosectomy, retroperitoneal pancreatic necrosectomy, or primary percutaneous catheter drainage), length of ICU stay, length of hospital stay, and in-hospital mortality. **Secondary:** none defined **Results:** Using the RAC system, 66%, 27%, and 7% of the patients were categorized as mild, moderately severe, and severe, respectively. Using the DBC system, 83%, 7%, 7%, and 2% patients were determined to have mild, moderate, severe, and critical AP, respectively. The mortality and ICU admission rates were similar between the subgroups of the severe category under the RAC system. The severe and critical categories had similar

categories of the different classification systems. **Number of Patient:** This study included 973 episodes of AP from 867 patients (61% males; median age, 49 years old). **Recruitung Phase:** July 2012 to March 2013 **Inclusion Criteria:** During the study period (July 2012 to March 2013), adult patients diagnosed with AP and hospitalized at West China Hospital were enrolled in the database. AP diagnosis was defined by the occurrence of at least two of the following criteria: (i) amylase level increased up to three times higher than the upper limit of the normal level; (ii) abdominal pain suggestive of AP; and (iii) imaging results compatible with AP. **Exclusion Criteria:** none defined	of patients. For each patient, the peak severity category during the hospitalization was selected for each classification system.	mortality rates [35% (7/20) vs. 29% (20/70), P ¼ 0.59] based on DBC. A subgroup of severe category of DBC (IPN and no persistent OF) had significantly lower mortality rate than the other two subgroups of severe category of DBC (SPN and persistent OF; persistent OF and no PN) [0% (0/18) vs. 29% (10/34) vs. 56% (10/18), P < 0.05]. **Author's Conclusion:** Somesubgroupsofseverecategoriesunder theDBCsystemdidnotaccuratelyreflectedclinical outcomes. RAC seemed to be a better choice to guide the selection of patient populations for clinical research and provide a more accurate description of AP classification in the clinical setting than DBC.

Methodical Notes

Funding Sources: none declared

COI: The authors declare no conflicts of interest and financial funding.

Randomization: none

Blinding: none

Dropout Rate/ITT-Analysis: not given

Notes: a prospective database on AP in a single west chines tertiary referral center was retrospectively analyses to check the categories of the different classification systems.

He, Wen-Hua et al. Comparison of multifactor scoring systems and single serum markers for the early prediction of the severity of acute pancreatitis. J. Gastroenterol. Hepatol. 32. 1895-1901. 2017

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** Retrospective analyses of a prospective database of consecutive patients with AP admitted to a tertiary referral center **Number of Patient:** 708 consecutive **Recruitung Phase:** patients with AP were prospectively collected between January 2011 and December 2012 **Inclusion Criteria:** The data from 1087 hospitalized patients with AP were prospectively collected between January 1, 2011 and December 31, 2012 from the AP database, and follow-up data were collected through December 2013. Of these 1087 patients, we selected 708 patients (18–85 years old) who were admitted within 3 days of disease onset; **Exclusion Criteria:** patients younger than 18 years or older than 85 years, with incomplete data or who were admitted after 3 days of disease onset, were excluded.	**Intervention:** none **Comparison:** The severity was classified using the revised Atlanta and determinant-based classification systems. The predictive accuracies for moderately severe AP (MSAP), severe AP (SAP), critically severe AP (CAP), IPN, and mortality were measured using area under the receiver operating characteristic curves.	**Primary:** Classification of acute pancreatitis severity. In this study, we classified the severity of AP at the time of discharge based on the occurrence of organ failure (OF), systemic complications, and pancreatic local complications of patients during the period from onset to hospital discharge. Then, patients with AP were first divided into MAP, MSAP, and SAP according to the revised Atlanta classification2 and then categorized as MAP, MSAP, SAP, and CAP using the determinant-based classification system.16 The AP mortality statistics were based on the patients who died during hospitalization or within 30 days of discharge. **Secondary:** none defined **Results:** Results: The receiver operating characteristic analysis showed that the multifactor scoring systems and single serum markers had a low predictive accuracy regarding moderately severe AP. The Acute Physiology and Chronic Health Evaluation (APACHE) II score had the highest accuracy in predicting SAP with area under the curve (AUC) values of 0.75 (95% CI = 0.71–0.79) and 0.77 (95% CI = 0.73–0.81) at 24 and 48 h after admission, respectively. Procalcitonin was the most accurate predictor for CAP and IPN, with respective AUCs of 0.86 (95% CI = 0.82–0.89) and 0.83 (95% CI = 0.78–0.87) at 48 h after admission. In predicting mortality, both the APACHE II score and blood urea nitrogen had the highest accuracy. **Author's Conclusion:** The APACHE II score had the highest predictive accuracy for SAP and mortality as defined by the revised Atlanta classification, whereas procalcitonin was the Introduction Acute pancreatitis (AP) is a common disease that has high morbidity and mortality worldwide.1 Additionally, 20–30% of patients with AP develop severe AP (SAP), a condition in which the mortality rate may reach 36–50%.1,2 Assessing a patient's condition early and identifying the occurrence of SAP are critical for improving patient outcomes and reducing mortality.3,4 The AP classification criteria established by the 1992 Atlanta International Symposium used Acute Physiology and Chronic Health Evaluation (APACHE) II scores ≥8 and Ranson scores ≥3 as early markers of SAP.5 Subsequently, many guidelines have also recommended using APACHE II and Ranson scores to assess disease severity at 24–48 h after admission.4,6 Moreover, certain guidelines recommend using computed tomography severity index (CTSI) scores ≥3,7,8 C-reactive protein (CRP) levels ≥150 mg/L,8,9 and hematocrit (HCT) levels ≥44%6 to predict SAP. Recently, the

		bedside index for severity in AP (BISAP),10–12 procalcitonin (PCT),13 Cr,14 and blood urea nitrogen (BUN)15 have been used to predict SAP and mortality. Journal of Gastroenterology and Hepatology 32 (2017) 1895–1901 © 2017 Journal of Gastroenterology and Hepatology Foundation and John Wiley & Sons Australia, Ltd 1895 most accurate predictor for CAP and IPN.

Methodical Notes

Funding Sources: This work was supported by the National Clinical Key Specialty Construction Project ((2011) 872) and the Graduate Special Fund for Innovative Projects in Jiangxi (YC2011—13008).

COI: none

Randomization: none

Blinding: none

Dropout Rate/ITT-Analysis: not given

Notes: Retrospective analyses of a prospective database of consecutive patients with AP admitted to a tertiary referral center

Hong, Wandong et al. Serum Albumin Is Independently Associated with Persistent Organ Failure in Acute Pancreatitis. Can J Gastroenterol Hepatol. 2017. 5297143. 2017

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** Retrospective data analyses of a prospective database of consecutive patients admitted with acute pancreatitis **Number of Patient:** 700 patients with acute pancreatitis were enrolled **Recruitung Phase:** January 2012 and January 2015 **Inclusion Criteria:** Patients with AP who were admitted (index admissions) to our hospital within 72 hours of the onset of symptoms between January 2012 and January 2015 were enrolled for the study. Acute pancreatitis was defined as described previously [4]. Organ failure [1] was defined as having a Marshall score ≥ 2 for at least one of the three organs (respiratory, cardiovascu- lar, and renal failure) involved. Duration of organ failure was defined as persistent if it lasted for >48 hours [1, 3] **Exclusion Criteria:** Exclusion criteria included [21] patients that had developed organ failure before data collection, recurrent or not first-time pancreatitis, previous pancreatic surgery, ERCP or trauma- induced pancreatitis, chronic pancreatitis, pancreatic cancer, pleural effusions preceding the development of AP, and pleu- ral effusions resulting from concomitant diseases (e.g., pneu- monia,	**Intervention:** none **Comparison:** Age, gender, body mass index (BMI), time from pain onset to admission, and biochemical parameters were recorded within 12 hours of admission before the develop- ment of persistent organ failure [4, 21]. Serum albumin levels were measured within 24 hours of admission [12]. If patients had multiple albumin measurements within 24 hrs, only the first-time measurement was picked. Hypoalbuminemia was defined by a serum albumin < 35 g/l [11]. Similar to previous studies [8, 22], patients with hypoalbuminemia were further divided into mild (<35 g/l but ≥30 g/l) and severe (<30 g/l) groups according to the serum albumin level.	**Primary:** incidence of organ failure, transient or persistent **Secondary:** none **Results:** As levels of serum albumin decrease, the risk of persistent organ failure significantly increases (**Author's Conclusion:** A low serum albumin is independently associated with an increased risk of developing of persistent organ failure and death in acute pancreatitis. It may also be useful for the prediction of the severity of acute pancreatitis.

chronic heart failure), patients with albumin infusion before data collection in our hospital, hypoalbuminemia due to malnutrition, chronic renal disease, albuminuria, hep- atitis, bleeding/coagulation disorders, chronic alcoholism, and liver cirrhosis, and patients for whom completed data was unavailable. Chronic concomitant diseases [12] were classified as neurologic (stroke), cardiovascular (coronary heart disease and arrhythmia), pulmonary (emphysema and chronic bronchitis), diabetes mellitus, hypertension, hepatitis virus carrier, and fatty liver.		

Methodical Notes

Funding Sources: none declared

COI: none

Randomization: none

Blinding: none

Dropout Rate/ITT-Analysis: not given

Notes: Retrospective data analyses of a prospective database of consecutive patients admitted with acute pancreatitis

Huang, Jie et al. The revised Atlanta criteria 2012 altered the classification, severity assessment and management of acute pancreatitis. HBPD INT. 15. 310-5. 2016

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** Retrospective data analyses of a prospective single center database of acute pancreatitis patients admitted to a single tertiary center **Number of Patient:** 602 patients admitted with MAP were recruited **Recruitung Phase:** March 2013 to May 2016 **Inclusion Criteria:** Patients admitted with MAP to our hospital from March 2013 to May 2016 were included and prospectively evaluated.	**Intervention:** None **Comparison:** The effects of variables for developing MSAP or SAP were evaluated using univariate and multivariate logistic regression models. Mortality, hospital duration, and rate of ICU transfer of patients were compared between patients who developed MSAP or SAP and patients who did not.	**Primary:** Possible risk factors for developing MSAP or SAP , Mortality, hospital duration, and rate of ICU transfer of patients were compared between patients who developed MSAP or SAP and patients who did not. **Secondary:** none evaluable only abstract available **Results:** A total of 602 patients admitted with MAP were recruited into this study (256 men and 346 women). Seventy-four patients (12.3%) developed MSAP or SAP. According to univariate logistic regression analyses, the results indicated that there were 5 significant differences between patients who developed MSAP or SAP and those who did not: VFA (>100 cm²) (p=0.003), BMI (?25 kg/m²) (p=0.001), Ranson score(p=0.004), APACHE-II (?5) (p=0.001), and blood glucose level on admission (>11.1 mmol/L) (p=0.040). Further multivariate logistic regression analyses revealed that BMI (?25 kg/m²) (p=0.005), APACHE-II (?5) (p=0.001), and blood glucose level on admission (>11.1 mmol/L) (p=0.004) were independent risk factors for developing MSAP or SAP in patients admitted with MAP. Moreover, patients who developed MSAP or SAP had a mortality rate of 5.4%. **Author's Conclusion:** Significant risk factors for developing MSAP or SAP in patients admitted with MAP included BMI (?25 kg/m²), APACHE-II (?5), and blood glucose level on admission (>11.1 mmol/L). These factors should be used in the prediction of more severe pancreatitis in patients admitted with MAP.

Exclusion Criteria: not evaluable only abstract available		

Methodical Notes

Funding Sources: not evaluable

COI: not evaluable

Randomization: none

Blinding: none

Dropout Rate/ITT-Analysis: not given

Notes: Retrospective data analyses of a prospective single center database of acute pancreatitis patients admitted to a single tertiary center.

Full text coud not be downloaded, thus evaluation based on abstract only

Jin, Zhouxiang et al. Risk Factors for Worsening of Acute Pancreatitis in Patients Admitted with Mild Acute Pancreatitis. Med. Sci. Monit. 23. 1026-1032. 2017

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** Patients admitted with MAP to our hospital from March 2013 to May 2016 were included and prospectively evaluated. Effectively this again a prospective database of consecutive patients admitted with acute pancreatitis, focusing on the subgroups of mild AP, retrospectively analyses. **Number of Patient:** 602 **Recruitung Phase:** March 2013 to May 2016 **Inclusion Criteria:** The time interval from symptom onset to hospi- talization was less than 48 hours. All enrolled patients in our study were MAP patients when admitted. The characteristics of patients, including sex, BMI, age, etiology, and other fac- tors, were recorded in every patient at enrollment. Each en- rolled patient was evaluated according to the Acute Physiology and Chronic Health Evaluation (APACHE-II scores) [9] and the Ranson scores [10]. An abdominal computed tomography (CT) scan was performed in every patient at enrollment. The diagnosis of AP involved a combination of symptoms, phys- ical examination, and focused laboratory	**Intervention:** none **Comparison:** Possible risk factors for developing MSAP or SAP were age, blood glucose level on admission, eti- ology, sex, Ranson score, amylase level, Acute Physiology and Chronic Health Evaluation II (APACHE-II) scores, C-reactive protein (CRP) level, serum calcium level, visceral fat area (VFA), body mass index (BMI), whether this was the first episode of AP, and method of administration of octreotide. The effects of variables for develop- ing MSAP or SAP were evaluated using univariate and multivariate logistic regression models. Mortality, hos- pital duration, and rate of ICU transfer of patients were compared between patients who developed MSAP or SAP and patients who did not.	**Primary:** Clinical outcomes, in- cluding death, hospital duration, and transfer to ICU, were re- corded. **Secondary:** none **Results:** A total of 602 patients admitted with MAP were recruited into this study (256 men and 346 women). Seventy- four patients (12.3%) developed MSAP or SAP. According to univariate logistic regression analyses, the results indicated that there were 5 significant differences between patients who developed MSAP or SAP and those who did not: VFA (>100 cm2) (p=0.003), BMI (325 kg/m2) (p=0.001), Ranson score(p=0.004), APACHE-II (35) (p=0.001), and blood glucose level on admission (>11.1 mmol/L) (p=0.040). Further multivariate logistic regres- sion analyses revealed that BMI (325 kg/m2) (p=0.005), APACHE-II (35) (p=0.001), and blood glucose level on admission (>11.1 mmol/L) (p=0.004) were independent risk factors for developing MSAP or SAP in patients ad- mitted with MAP. Moreover, patients who developed MSAP or SAP had a mortality rate of 5.4%. **Author's Conclusion:** Significant risk factors for developing MSAP or SAP in patients admitted with MAP included BMI (325 kg/m2), APACHE-II (35), and blood glucose level on admission (>11.1 mmol/L). These factors should be used in the pre- diction of more

values, with 2 of the following 3 features: 1) upper abdominal pain of acute onset often radiating through to the back, 2) serum amylase or li- pase activity greater than 3 times normal, and 3) findings on cross-sectional abdominal imaging consistent with acute pan- creatitis. Every patient in our study underwent pancreatic im- aging. AP was divided into 3 degrees based on severity: mild, moderately severe, and severe acute pancreatitis, according to the Atlanta Classification 2012 revision [2,11,12]. Patients diagnosed with MAP had an absence of organ failure and lo- cal/systemic complications. Patients diagnosed with MSAP had transient organ failure/organ failure that resolved within 48 hours and/or local or systemic complications. Patients di- agnosed with SAP had persistent single or multiple organ fail- ure (>48 hours duration). **Exclusion Criteria:** none defined		severe pancreatitis in patients admitted with MAP.

Methodical Notes

Funding Sources: non declared

COI: none

Randomization: none

Blinding: none

Dropout Rate/ITT-Analysis: not given

Notes: Patients admitted with MAP to our hospital from March 2013 to May 2016 were included and prospectively evaluated. Effectively this again a prospective database of consecutive patients admitted with acute pancreatitis, focusing on the subgroups of mild AP, retrospectively analyses.

Johnson, C D et al. Persistent organ failure during the first week as a marker of fatal outcome in acute pancreatitis. Gut. 53. 1340-4. 2004

Population	Intervention	Outcomes/Results
Evidence level: 2 **Study type:** Manual review of trial database to determine: the presence of organ failure (Marshall score >2) on each of the first seven days in hospital, duration of organ failure, and outcome of pancreatitis (death, complications by Atlanta criteria). This study reviews a database of patients with predicted severe acute pancreatitis entered into a placebo controlled trial of lexipafant.10 The database contained 290 patients with a confirmed diagnosis of acute pancreatitis, aged over 18 and less than 80 years, with an APACHE-II score11 .6 in the 24 hours before entry to the study. All patients were primary admissions to hospital and had symptoms for less	**Intervention:** none for this data evaluation, patient were recruited from a trial that had administration of lexipafant as intervention **Comparison:** To determine mortality rates in patients with transient (,48 hours) and persistent (.48 hours) early organ failure and to show whether persistent organ failure predicts death or	**Primary:** the presence of organ failure (Marshall score >2) on each of the first seven days in hospital, duration of organ failure, and outcome of pancreatitis (death, complications by Atlanta criteria). **Secondary:** none given **Results:** Early organ failure was present in 174 (60%) patients. After transient organ failure (n=71), outcome was good: one death and 29% local complications. Persistent organ failure (n=103) was followed by 36 deaths and 77% local complications, irrespective of

than 72 hours before entry to the study. Patients were recruited from 78 hospitals, including 18 centres constituting the British Acute Pancreatitis Study Group. All data were recorded prospectively. **Number of Patient:** 290 **Recruitung Phase:** patients prospectively recruited in clinical trial of lexipafant or placebo during trial recruitment phase, no recruitment dates given. **Inclusion Criteria:** This study reviews a database of patients with predicted severe acute pancreatitis entered into a placebo controlled trial of lexipafant.10 The database contained 290 patients with a confirmed diagnosis of acute pancreatitis, aged over 18 and less than 80 years, with an APACHE-II score11 .6 in the 24 hours before entry to the study. All patients were primary admissions to hospital and had symptoms for less than 72 hours before entry to the study. Patients were recruited from 78 hospitals, including 18 centres constituting the British Acute Pancreatitis Study Group. All data were recorded prospectively. **Exclusion Criteria:** none given, supposedly mild AP and chronic pancreatitis as defined by the lexipafant study protocol	local complications.	onset of organ failure on admission or later during the first week. **Author's Conclusion:** Duration of organ failure during the first week of predicted severe acute pancreatitis is strongly associated with the risk of death or local complications. Resolution of organ failure within 48 hours suggests a good prognosis; persistent organ failure is a marker for subsequent death or local complications.

Methodical Notes

Funding Sources: non disclosed, but patients were recruited in a clinical trial of lexipafant.

COI: none declared

Randomization: non described for this retrospective data analysis, patients were randomized between lexipafant and placebo infusion in the trial.

Blinding: No blinding in this retrospective analyses, in original trial blinded application of Lexipafant or placebo

Dropout Rate/ITT-Analysis: not given for this analysis

Notes: Manual review of trial database to determine: the presence of organ failure (Marshall score >2) on each of the first seven days in hospital, duration of organ failure, and outcome of pancreatitis (death, complications by Atlanta criteria).
This study reviews a database of patients with predicted severe acute pancreatitis entered into a placebo controlled trial of lexipafant.10 The database contained 290 patients with a confirmed diagnosis of acute pancreatitis, aged over 18 and less than 80 years, with an APACHE-II score11 .6 in the 24 hours before entry to the study. All patients were primary admissions to hospital and had symptoms for less than 72 hours before entry to the study. Patients were recruited from 78 hospitals, including 18 centres constituting the British Acute Pancreatitis Study Group. All data were recorded prospectively.

Kadiyala, Vivek et al. The Atlanta Classification, Revised Atlanta Classification, and Determinant-Based Classification of Acute Pancreatitis: Which Is Best at Stratifying Outcomes?. Pancreas. 45. 510-5. 2016

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** Single center, retrospective analysis of a prospective acute pancreatitis database	**Intervention:** non **Comparison:** Acute pancreatitis se- verity was stratified according to the Atlanta classification (AC)	**Primary:** The primary outcome was mortality. The secondary out- comes were admission to the ICU, ICU length of stay, and hospital length of stay (including outside hospital before transfer). **Secondary:** none defined

Number of Patient: 338 **Recruitung Phase:** june 2005-december 2007 **Inclusion Criteria:** all patients directly admitted to our institution with a diagnosis of AP between June 2005 and December 2007 were collected for this study. Among patients who were admitted more than once to our institution, only the data from the first admission were included. Acute pancreatitis was defined as 2 or more of the following: characteristic abdominal pain, serum amylase and/or lipase levels 3 or more times the upper limit of normal, and/or a contrast- enhanced computer tomography scan or magnetic resonance im- aging within the first 7 days of hospitalization demonstrating characteristic changes of AP. **Exclusion Criteria:**	1992, the revised Atlanta classification (RAC) 2012, and the determinant-based classification (DBC) 2012. Receiver operating characteristic analysis (area under the curve) compared the accuracy of each classification. Logistic re- gression identified predictors of mortality.	**Results:** 338 patients were analyzed: 13% had persistent organ failure (POF) (>48 hours), of whom 37% had multisystem POF, and 11% had pan- creatic necrosis, of whom 19% had infected necrosis. Mortality was 4.1%. For predicting mortality (area under the curve), the RAC (0.91) and DBC (0.92) were comparable (P = 0.404); both outperformed the AC (0.81) (P < 0.001). For intensive care unit admission, the RAC (0.85) and DBC (0.85) were comparable (P = 0.949); both outperformed the AC (0.79) (P < 0.05). There were 2 patients in the critical category of the DBC. Mul- tisystem POF was an independent predictor of mortality (odds ratio, 75.0; 95% confidence interval, 13.7–410.6; P < 0.001), whereas single-system POF, sterile necrosis, and infected necrosis were not. **Author's Conclusion:** The RAC and DBC were generally comparable in stratify- ing severity. The paucity of patients in the critical category in the DBC limits its utility. Neither classification accounts for the impact of multisys- tem POF, which was the strongest predictor of mortality.

Methodical Notes

Funding Sources: This study was supported by a clinical research grant from the National Pancreas Foundation (P.A.B. and V.K.S.).

COI: none declared

Randomization: none

Blinding: none

Dropout Rate/ITT-Analysis: not given

Notes: Single center, retrospective analysis of a prospective acute pancreatitis database (June 2005–December 2007). Acute pancreatitis se- verity was stratified according to the Atlanta classification (AC) 1992, the revised Atlanta classification (RAC) 2012, and the determinant-based classification (DBC) 2012.

Ke, Lu et al. Predictors of critical acute pancreatitis: a prospective cohort study. Medicine (Baltimore). 93. e108. 2014

Population	Intervention	Outcomes/Results
Evidence level: 4 **Study type:** Retrospective data analysis of a single center prospective database of patients admitted with acute pancreatitis.	**Intervention:** none **Comparison:** In this study, we aimed to evaluate the accuracy of 4 parameters (Acute Physiology and Chronic Health Evaluation [APACHE] II score, C-reactive protein [CRP],	**Primary:** Severity of acute pancreatitis and severity determinators of acute pancreatitis. Special focus on "critical acute pancreatitis" (CAP) subgroup (later introduced in the DBC severity classification system) was defined as the presence of both persistent OF and IPN.2 The criteria for OF were described for 3 organ systems: cardiovascular

Number of Patient: 173 of 876 admitted acute pancreatitis patients were recruited for this study. **Recruitung Phase:** January 2009-maerch 2013 **Inclusion Criteria:** The study inclusion criteria were diagnosis of AP and admission to Jinling Hospital within 96 hours after onset of symptoms. Diagnosis of AP was based on abdominal pain sugges- tive of AP, serum amylase at least 3 times the upper limit of normal, and/or characteristic findings of AP on computed tomography **Exclusion Criteria:** Patients were excluded if they were <18 years, they were pregnant, they had suffered previous attacks of AP, they had a known history of coagulative disorders or a recent history of myocardial infarction or cerebral infarction, they had devel- oped CAP, data on studied parameters (IAP, D-dimer, CRP on admission, APACHE II score within first 24 hours) were not available, and treatment was terminated because of nonmedical reasons.	D-dimer, and intra- abdominal pressure [IAP]) for predicting CAP early after hospital admission. During the study period, data on patients with AP were prospectively collected and D-dimer, CRP, and IAP levels were measured using standard methods at admission whereas the APACHE II score was calculated within 24 hours of hospital admission. The receiver-operating characteristic (ROC) curve analysis was applied and the likelihood ratios were calculated to evaluate the predictive accuracy.	(need for inotropic agent), renal (creatinine 3171 µmol/L), and respiratory (PaO2/FIO2 300 mm Hg). Persistent OF was defined as OF in the same organ system for 48 hours or more. IPN was confirmed when 1 or more of the following were present: gas bubbles within (peri)pancreatic necrosis on computed tomography; a positive culture of (peri)pancreatic necrosis obtained by image-guided fine-needle aspiration; a positive culture of (peri)pancreatic necrosis obtained during the first drainage and/or necrosectomy. The category of severity for each patient was confirmed after discharge or hospital death. **Secondary:** none **Results:** A total of 173 consecutive patients were included in the analysis and 47 (27%) of them developed CAP. The overall hospital mortality was 11% (19 of 173). APACHE II score 311 and IAP 313 mm Hg showed significantly better overall predictive accuracy than D-dimer and CRP (area under the ROC curve—0.94 and 0.92 vs 0.815 and 0.667, correspondingly). The positive likelihood ratio of APACHE II score is excellent (9.9) but of IAP is moderate (4.2). The latter can be improved by adding CRP (5.8). In conclusion, of the parameters studied, APACHE II score and IAP are the best available predictors of CAP within 24 hours of hospital admission. **Author's Conclusion:** Given that APACHE II score is rather cumbersome, the combination of IAP and CRP appears to be the most practical way to predict critical course of AP early after hospital admission.

Methodical Notes

Funding Sources: This study was supported by the National Science Foundation of China (81300360) and Jiangsu Provincial Special Program of Medical Science (BL2012006).

COI: none

Randomization: none

Blinding: none

Dropout Rate/ITT-Analysis: not given

Notes: Retrospective data analysis of a single center prospective database of patients admitted with acute pancreatitis.

Kim, Yeon Ji et al. Analysis of factors influencing survival in patients with severe acute pancreatitis. Scand. J. Gastroenterol. 52. 904-908. 2017

Population	Intervention	Outcomes/Results

Evidence level: 4 **Study type:** retrospective data analysis of consecutive patients admitted to a single center **Number of Patient:** 68 patients with severe acute pancreatitis of 660 admitted patients. **Recruitung Phase:** January 2003-january 2013 **Inclusion Criteria:** Patients with SAP were included in this study and divided into two groups according to survival or death due to AP. Baseline characteristics including age, sex, BMI, smoking, alcohol consumption, co-existing disease, and the etiology of AP were investigated and compared between survivor and non-survivor groups. Patients who had previously diagnosed with diabetes and those who were newly diagnosed at admission were all classified as diabetic patients. On the basis of the revised Atlanta classification of AP, clinically SAP was defined as persistent single or multiple organ failure (organ failure that lasts for !2 d). Organ failure was defined as ascore of 2 or more for one of the organ systems (respiratory, cardiovascular, and renal) according to the Marshall scoring system [5,6]. **Exclusion Criteria:** non severe acute pancreatitis, mild and moderately severe were excluded	**Intervention:** none **Comparison:** The group of patients with severe acute pancreatitis was subdivided into survivors and non-survivors and the authors aimed to determine the factors that predict survival and mortality in patients with SAP.	**Primary:** mortality of severe acute pancreatitis **Secondary:** organ failure, necrosis, infected necrosis , duration of organ failure were analyzed (not specifically defined as secondary outcome) **Results:** The frequency of SAP was 5.6% (68/1213 cases). Among these patients, 17 died due to pan- creatitis-induced causes. We compared several factors between the survivor (n ¼ 51) and non-survivor (n ¼ 17) groups. On multivariate analysis, there were significant differences in the incidence of diabetes mellitus (p¼.04), Ranson score (p¼.03), bacteremia (p¼.05) and body mass index (BMI) (p¼.02) between the survivor and non-survivor groups. **Author's Conclusion:** Bacteremia, high Ranson score, DM, and lower BMI were closely associated with mortality in patients with SAP. When patients with SAP show evidence of bacteremia or diabetes, aggressive treatment is necessary. For the prediction of disease mortality, the Ranson score might be a useful tool in SAP.

Methodical Notes

Funding Sources: not indicated

COI: none declared

Randomization: none

Blinding: none

Dropout Rate/ITT-Analysis: not gives

Notes: retrospective data analysis of consecutive patients admitted to a single center

Kim, Yeon Soo et al. Is there correlation between pancreatic enzyme and radiological severity in acute pancreatitis?. World J. Gastroenterol. 14. 2401-5. 2008

Population	Intervention	Outcomes/Results
Evidence level: 4 **Study type:** Between July 2004	**Intervention:** none **Comparison:** The	**Primary:** Not clearly defined. The authors wanted to compare the severity of acute pancreatitis as classified with the Balthazar score in !!weekly CT"" with laboratory

and July 2005, retrospective review of the charts of 119 patients who were admitted to a single hospital with acute pancreatitis. **Number of Patient:** 119 **Recruitung Phase:** July 2004-July 2005 **Inclusion Criteria:** 119 patients who were admitted to Chung Nam National University Hospital with acute pancreatitis. The diagnosis of acute pancreatitis was based on typical symp- toms, including acute abdominal pain and a serum amylase level that was three times higher than the normal limit. After diagnosis is established, computed tomography (CT) scanning was performed to determine the findings and grade of disease. **Exclusion Criteria:** Cases in which the CT scan was not performed were excluded	authors aimed to investigate the correlation between the changes of pancreatic enzyme, the biochemical markers and the clinical results according to the Balthazar computer tomography (CT) grade.	parameters. **Secondary:** none defined **Results:** On the univariate analysis, the factors that affected the radiological grade were the leukocyte count at admission (P = 0.048), the hemoglobin (P = 0.016) and total bilirubin concentrations (P = 0.023), serum lipase (P = 0.009), the APACH II scores at admission (P = 0.017), the APACH II scores after 24 h (P = 0.031), the C-reactive protein (CRP) titer (P = 0.0001) and the follow up CRP titer (P = 0.003). But the CRP level (P = 0.001) and follow up CRP titer (P = 0.004) were only correlated with the radiological grade on multivariate analysis. According to the ROC curve, when we set the CRP cut off value at 83 mg/L, the likelihoodratio for a positive test was 3.84 and the likelihood ratio for a negative test was 0.26 in group 3. **Author's Conclusion:** In conclusion, our study suggests that the CRP with the radiological severity may be used to estimate the severity of acute pancreatitis.

Methodical Notes

Funding Sources: none declared

COI: nothing declared

Randomization: none

Blinding: none

Dropout Rate/ITT-Analysis: nothing declared

Notes: Between July 2004 and July 2005, retrospective review of the charts of 119 patients who were admitted to a single hospital with acute pancreatitis.
Weak study with many issues in design, many question remain unanswered.

Koutroumpakis, Efstratios et al. Admission Hematocrit and Rise in Blood Urea Nitrogen at 24?h Outperform other Laboratory Markers in Predicting Persistent Organ Failure and Pancreatic Necrosis in Acute Pancreatitis: A Post Hoc Analysis of Three Large Prospective Databases. Am. J. Gastroenterol. 110. 1707-16. 2015

Population	Intervention	Outcomes/Results
Evidence level: 2 **Study type:** A Post Hoc Analysis of Three Large Prospective Databases. **Number of Patient:** 1,612 AP patients, enrolled prospectively in three independent cohorts (University of Pittsburgh, Brigham and Women's Hospital, Dutch Pancreatitis Study	**Intervention:** none **Comparison:** The present study compares admission blood urea nitrogen (BUN), hematocrit, and creatinine, as well as changes in their levels over 24h, aiming to determine the most	**Primary:** Organ failure, persistent organ failure, pancreatic necrosis **Secondary:** none defined **Results:** Admission hematocrit ≥44% and rise in BUN at 24h were the most accurate in predicting persistent organ failure (AUC: 0.67 and 0.71, respectively) and pancreatic necrosis (0.66 and 0.67, respectively), outperforming the other laboratory

Group) **Recruitung Phase:** 1) The Severity of Acute Pancreatitis/Pancreatitis-associated Risk Of Organ Failure (SAPS/PROOF) is an ongoing prospective cohort study, which was initiated in 2003 at UPMC (Pittsburgh, PA) 2) The Markers of Severity in Acute Pancreatitis (MOSAP) cohort was developed at BWH, in Boston, MA (14,24). AP patients directly admitted or transferred to BWH from 2005 through 2009 were prospectively recruited. 3) The DPSG cohort consisted of AP patients admitted to any one of the 15 collaborating Dutch hospitals (8 university and 7 major teaching hospitals) from 2004 to 2007 **Inclusion Criteria:** Patients admitted with acute pancreatitis to any of the three cohorts named above. The diagnosis of AP was established when patients satisfied at least two out of the three following criteria: (1) characteristic epigastric abdominal pain; (2) elevation of amylase and/or lipase to greater than three times the upper limit of normal at the respective laboratories; and (3) abdominal imaging findings consistent with AP **Exclusion Criteria:**	accurate laboratory test for predicting persistent organ failure and pancreatic necrosis.	parameters and the acute physiology and chronic health evaluation-II score. In a pooled analysis, admission hematocrit ≥44% and rise in BUN at 24 h were associated with an odds ratio of 3.54 and 5.84 for persistent organ failure, and 3.11 and 4.07, respectively, for pancreatic necrosis. In addition, the classification tree illustrated that when both admission hematocrit was ≥44% and BUN levels increased at 24 h, the rates of persistent organ failure and pancreatic necrosis reached 53.6% and 60.3%, respectively. **Author's Conclusion:** Admission hematocrit ≥44% and rise in BUN at 24h may be the optimal predictive tools in clinical practice among existing laboratory parameters and scoring systems.

Methodical Notes

Funding Sources: The study was supported by a Veterans Affairs Merit Review Award (PRO00000496; PI: G.I.P.).

COI: none

Randomization: none

Blinding: none

Dropout Rate/ITT-Analysis: not given

Notes: A Post Hoc Analysis of Three Large Prospective Databases. Excellent retrospective data analyses of large number of patients with acute pancreatitis.

Koziel, Dorota et al. Comparative analysis of selected scales to assess prognosis in acute pancreatitis. Can J Gastroenterol Hepatol. 29. 299-303. 2015

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** Retrospective analysis	**Intervention:** none **Comparison:** To evaluate the utility of	**Primary:** Severity of acute pancreatitis as defined by the Revised Atlanta Classification 2012 (RAC) using severity scales including: Balthazar CT, Pancreatitis 3, Ranson, APACHE II, BISAP within 24 h after admission

of data from consecutive patients admitted with acute pancreatitis to 16 surgical wards in Poland and recorded in a prospective database **Number of Patient:** 1014 **Recruitung Phase:** December 2010 and December 2011 **Inclusion Criteria:** The criterion for inclusion in the study was the diagnosis of AP according to the revised Atlanta classification. **Exclusion Criteria:** not defined	selected scales to prognosticate the severity and risk for death among patients with acute pancreatitis (AP) according to the revised Atlanta classification published in 2012.	**Secondary:** none defined **Results:** Mild AP was diagnosed in 822 (81.1%) cases, moderate in 122 (12%) and severe in 70 (6.9%); 38 (3.7%) patients died. The main causes of AP were cholelithiasis (34%) and alcohol abuse (26.7%). Recurrence of AP was observed in 244 (24.1%) patients. In prognosticating the severity of AP, the most useful scale proved to be the Acute Physiology and Chronic Health Evaluation (APACHE) II (area under the curve [AUC] 0.724 [95% CI 0.655 to 0.793]), fol- lowed by BISAP (AUC 0.693 [95% CI 0.622 to 0.763]). In prognos- ticating a moderate versus mild course of AP, the CT severity index proved to be the most decisive (AUC 0.819 [95% CI 0.767 to 0.871]). Regarding prognosis for death, APACHE II had the highest predic- tive value (AUC 0.726 [95% CI 0.621 to 0.83]); however, a similar sensitivity was observed using the BISAP scale (AUC 0.707 [95% CI 0.618 to 0.797]). **Author's Conclusion:** Scoring systems used in prognosticating the course of the disease vary with regard to sensitivity and specificity. The CT severity index scoring system showed the highest precision in prognos- ticating moderately severe AP (as per the revised Atlanta criteria, 2012); however, in prognosticating a severe course of disease and mortality, APACHE II proved to have the greatest predictive value.

Methodical Notes

Funding Sources: not declared

COI: not declared

Randomization: none

Blinding: none

Dropout Rate/ITT-Analysis: none

Notes: Retrospective analysis of data from consecutive patients admitted with acute pancreatitis to 16 surgical wards r in Poland and recorded in a prospective database

Kumar, Akshat et al. Can the time course of systemic inflammatory response syndrome score predict future organ failure in acute pancreatitis?. Pancreas. 43. 1101-5. 2014

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** retrospective analysis of data from consecutive patients admitted on day 1 of acute pancreatitis to Mayo Clinic and had a positive SIRSS (≥2) were followed for 14 days or until discharge. **Number of Patient:** 117 **Recruitung Phase:** june 2004-august 2005 **Inclusion Criteria:** Consecutive	**Intervention:** none **Comparison:** to pre- cisely quantify the association between systemic inflammatory response syndrome score (SIRSS), an easily measured bedside tool, and various ad- verse outcomes of AP.	**Primary:** The parameters compared in the group were length of hospi- tal stay, ICU stay, need for ICU, incidence of local complications (necrosis and fluid collections), need for intervention, OF at any point during hospitalization, persistent OF, and mortality. These were defined according to the Atlanta Classification. **Secondary:** None defined **Results:** SIRSS and persistent SIRSS were associated with all the compli- cations of AP with a high sensitivity and negative predictive value, ranging from 73.1% to 100.0%. Persistent SIRSS at day 3 added significantly higher specificity to this

patients (n = 117) from June 2004 to August 2005 in whom SIRSS was available on the day of diagnosis (day 1) of AP were included in the study. Additional pa- tients diagnosed outside but admitted to Mayo on the same day of diagnosis of AP were also included. The AP was diagnosed by standard criteria, that is, if any 2 of the following 3 were pres- ent: (1) characteristic abdominal pain, (2) greater than 3-fold ele- vation of pancreatic enzymes, and (3) CT evidence of AP. **Exclusion Criteria:** none defined		association (71.7%–80.0%). All patients who de- veloped late-onset organ failure had the highest possible value of cumula- tive SIRSS. **Author's Conclusion:** SIRSS of less than 2 on day 1 has a high negative predic- tive value for complications of AP. Eighty percent of the patients with per- sistent SIRSS on day 3 will develop at least 1 adverse outcome. A new variable “cumulative SIRSS” has the potential to reliably predict late-onset persistent organ failure.

Methodical Notes

Funding Sources: none declared

COI: no declaration

Randomization: none

Blinding: none

Dropout Rate/ITT-Analysis: none

Notes: "Prospective identification" of patients admitted to Mayo Clinic on day 1 of AP. Patients with positive SIRSS (≥2) on day 1 were further followed up with daily measurement of SIRSS and organ failure status for 14 days or until discharge.
Overall, retrospective analysis of data from consecutive patients admitted on day 1 of acute pancreatitis to Mayo Clinic and had a positive SIRSS (≥2) were followed for 14 days or until discharge.

Kumaravel, Arthi et al. A Model to Predict the Severity of Acute Pancreatitis Based on Serum Level of Amylase and Body Mass Index. Clin. Gastroenterol. Hepatol. 13. 1496-501. 2015

Population	Intervention	Outcomes/Results
Evidence level: 2 **Study type:** Based on retrospective evaluation of consecutive AP patinets admitted to the Cleveland Medical center to establish the CAB score (discover cohort). Validation of the CAB-score in an independent cohort of 140 AP patients recruited at the Pittsburgh Medical Center. **Number of Patient:** Discover cohort n=182 (21 severe) Validation cohort n=145 (35 severe) **Recruitung Phase:** **Inclusion Criteria:** Consecutive patients admitted with acute pancreatitis to both centers in Cleveland and Pittsburgh, The diagnosis of AP was based on American College of Gastroenterology criteria and required the presence of at least 2 of the 3 following factors: (1) abdominal pain	**Intervention:** none **Comparison:** retrospective analysis to determine whether the percentage changes in amylase and lipase were associated with the severity of disease that developed in patients with AP	**Primary:** Severity of acute pancreatitis as determined by the revised Atlanta classification (RAC) **Secondary:** none **Results:** Univariable analysis identified the percentage change in the serum level of amylase and other factors to be associated significantly with the severity of AP (P [.017). The CAB score was best at identifying patients who developed severe AP, with an area under the receiver operating characteristics curve value of 0.79 in the discovery cohort (95% confidence interval, 0.71–0.87) and 0.731 in the validation cohort (95% confidence interval, 0.61–0.84). **Author's Conclusion:** A model was developed to identify patients most likely to develop severe AP based on the percentage changes in serum level of amylase during the first 2 days after admission to the hospital and BMI.

characteristic of AP, (2) serum amylase and/or lipase levels 3 or more times the upper limit of normal, and (3) CT findings characteristic of AP.1 Only patients with at least 2 serum amylase and lipase levels measured within the first 48 hours after admission were included in the study. **Exclusion Criteria:** Patients with <2 serum amylase and lipase levels measured within the first 48 hours after admission.		

Methodical Notes

Funding Sources: not declared

COI: none

Randomization: none

Blinding: none

Dropout Rate/ITT-Analysis: none

Notes: Evaluation of a new prognostic score for acute pancreatitis based on change rate of serum amylase and BMI.
Based on retrospective evaluation of consecutive AP patients admitted to the Cleveland Medical center to establish the CAB score (discover cohort). Validation of the CAB-score in an independent cohort of 140 AP patients recruited at the Pittsburgh Medical Center.
Good methodology despite retrospective nature of data

Lankisch, P G et al. Which etiology causes the most severe acute pancreatitis?. Int. J. Pancreatol. 26. 55-7. 1999

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** Retrospective data analyses of consecutive patients admitted with the first attack of acute pancreatitis at the municipal hospital of Lüneburg **Number of Patient:** 208 consecutive patients admitted from 1988 to 1995 with a first attack of acute pancrcatitis to the Municipal Hospital of Lüineburg, **Recruitung Phase:** 1988-1995 **Inclusion Criteria:** 208 consecutive patients admitted from 1988 to 1995 with a first attack of acute pancreatitis to the Municipal Hospital of Lueneburg.The diagnosis was based on charactcristic signs and symptoms, ele- vated serum amylase and/or iipasc Icvels, and con- trast-enhanced CT results obtained <72 h after admission and scored according to Balthazar et al. **Exclusion Criteria:** All patients with prior unexplained episodes of abdominal pain and/or	**Intervention:** none **Comparison:** o define the prognostic role of etiology in the course of acute pancreatitis.	**Primary:** The following parameters of severity were eval- uated in regard to etiology: days spent in the inten- sive care unit (ICU); total hospital stay (THS); Ranson (2), Imrie (3), and Balthazar (4) scores (con- trast-enhanced CT within 72 h after admission): indi- cation for artificial ventilation, dialysis, or surgery (necrosectomy): development of pancreatic pseudo- cysts; mortality **Secondary:** none **Results:** Alcoholic etiology correlated significantly more frequently than other subgroups with necrotizing pancreatitis, need for artificial ventilation, and development of pancreatic pseudocysts. For the other parameters, there were no significant differences between the etiologies. **Author's Conclusion:** Patients with alcohol-induced acute pancreatitis should be given special attention because of the higher incidence of necrotizing pancreatitis and necessity for artificial ventilation. Whether the pronounced frequency of pseudocysts in alcoholics suggests progression to chronic pan- creatitis has to be clarified in follow-up studies.

acute pancreatitis, and all patients with signs of chronic pancreatitis on sub- sequent imaging procedures were excluded.		

Methodical Notes

Funding Sources: none stated

COI: none stated

Randomization: none

Blinding: none

Dropout Rate/ITT-Analysis: none

Notes: Retrospective data analyses of consecutive patients admitted with the first attack of acute pancreatitis at the municipal hospital of Lüneburg

Lee, Kyong Joo et al. Comparison of Predictive Systems in Severe Acute Pancreatitis According to the Revised Atlanta Classification. Pancreas. 45. 46-50. 2016

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** Prospective analysis of scoring systems/lab test for prediction of severe AP. **Number of Patient:** Of a total of 146 patients, 92 were men, and 54 were women. According to the revised Atlanta classification, 86 patientsreceived a diagnosis of mild AP, 43 patients received a diagnosisof moderately severe AP, and 17 patients received a diagnosisof SAP. **Recruitung Phase:** Patients with AP were prospectively enrolled in MyongjiHospital between March 2010 and September 2013 **Inclusion Criteria:** Consecutive AP patients were enrolled. The diagnosis of AP was based on 2 of the following3 features: (1) acute abdominal pain, (2) at least 3-fold elevated levels of serum amylase or lipase, and (3) characteristic findingson radiological study. **Exclusion Criteria:** Patients not fulfulling AP criteria.	**Intervention:** none **Comparison:** Comparison of Different Prognostic Markers and Scoring Systems in Predicting Moderately Severe AP and SAP Versus Mild AP, AND Comparison of Different Prognostic Markers andScoring Systems in Predicting SAP Versus Mild and Moderately Severe AP	**Primary:** We aimed toassess the prognostic value of various predictors including PCT,CRP, and Computed Tomography Severity Index (CTSI), aswell as complex scoring systems such as BISAP, Ranson score,and APACHE II score to predict SAP according to the revisedAtlanta classification. AP severity based on the revised Atlanta Classification: mild, moderately severe, and severe. Mild AP, which is introduced in Atlanta 1992, is described by the ab-sence of organ failure and local or systemic complications. The newly classified moderately severe AP is described by transientorgan failure that resolves within 48 hours and local or systemiccomplications without persistent organ failure. The newly intro-duced SAP is described as persistent organ failure.1 **Secondary:** not defined **Results:** There were 146 patients with acute pancreatitis (mean age,50.6 ± 18.3 years; 63% male), of which 43 patients (29.5%) received a di-agnosis of moderately severe AP, and 17 patients (11.6%) received a diag-nosis of SAP. In patients with moderately severe acute pancreatitis to SAP,CTSI (odds ratio [OR], 10.46; 95% confidence interval [CI], 4.3–25.43;P< 0.001), APACHE II (OR, 3.87; 95% CI, 1.18–12.64;P= 0.025), andCRP2 (OR, 4.5; 95% CI, 1.53–13.1;P= 0.006) were strongly relatedto moderately severe acute pancreatitis and SAP. In patients with SAP com-pared with mild to moderately severe AP, procalcitonin (OR, 4.36; 95% CI,1.01–18.96;P= 0.049) was the only factor strongly associated with SAP. **Author's Conclusion:** Procalcitonin was the best predictor for patients with SAP;CTSI, APACHE II, and CRP2 were valuable predictors for patients withmoderately severe acute pancreatitis and SAP.

Methodical Notes
Funding Sources: This work was supported by Gachon University Gil Medical Center (grant2013-49) and Basic Science Research Program through the NationalResearch Foundation of Korea funded by the Ministry of Education,Science and Technology (no. 2011-0013944). **COI:** none **Randomization:** none **Blinding:** none **Dropout Rate/ITT-Analysis:** none **Notes:**

Liu, Terrence H et al. Acute pancreatitis in intensive care unit patients: value of clinical and radiologic prognosticators at predicting clinical course and outcome. Crit. Care Med. 31. 1026-30. 2003

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** Retrospective analysis of clinical and radiologic prognosticators at predicting clinical course and outcome of acute pancreatitis in intensive care unit patients **Number of Patient:** 77 patients were admitted to the hospital with acute pancreatitis. Of these, 28 patients (6%) were admitted to the ICU during the hospital course. Two of the patients (7%) were admitted to the ICU after surgery, whereas the remaining patients had nooperative interventions before ICU admission. **Recruitung Phase:** Patients admitted to the Lyndon B. Johnson General Hospital with the diagnosis of acute pancreatitis from January 1, 1997 to June 30, 2000 were identified through the hospital medical records department by Inter-national Classification of Diseases, Ninth Revision (ICD-9) codes. This list of patients wasthen cross-referenced	**Intervention:** none **Comparison:** no direct comparison between the prediction scores provided	**Primary:** Measured outcomes included the oc-currence of intraabdominal and systemic com-plications, ICU days, hospital days, and venti-lator days. Organ dysfunction was defined according to the definitions proposed by the Atlanta conference. Patients were determined to have mild or severe acute pancreatitis according to definitions set forth by the Atlanta classifica-tions. The first CT scan obtained duringeach patient's hospitalization was used for tab-ulation of the Balthazar's CT index scores. **Secondary:** none **Results:** A total of 477 patientswere hospitalized with the diagnosis of acute pancreatitis. Of these, 28 patients (6%) were admitted to the intensive care unit. Ranson's, Imrie scores, Acute Physiologic and Chronic Health Evaluation (APACHE) II and III scores, simplified acute physiology scores, and multiple organ dysfunction scores were tabulated at 1, 2, 3, 7, and 14 days after intensive care unit admission. Abdominal computed tomography was available for review for 24 of the 28 patients (86%), where the mean Balthazar's computed tomography index was 4.50.4 (range2 to 10). Hospital mortality rate for the intensive care unit patients was 14% (4 of 28). The intensive care unit length of stay ranged from 1 to 79 days (mean 15 days, median 5 days).Fifty-seven percent of the patients developed organ dysfunction, and 36% of the patients required mechanical ventilatory support, ranging in duration from 1 to 70 days. Infectious morbidity occurred in 43% of patients. Thirty-six percent of the patients required operative intervention for intraabdominal complications. APACHE II scores at 7 days after intensive care unit admission correlated closely with ventilator days (r2.90;p.003) and correlated with the occurrence of infectiouscomplications (r2.71;p.02). Patient age, APACHE III, simplified acute physiology scores, multiple organ dysfunction scores, Ranson, Imrie, computed tomography, and APACHE II scores before day 7 did not closely correlate with the occurrence of adverse clinical outcome. **Author's Conclusion:** The clinical course and outcomes of intensive careunit patients with acute pancreatitis can be highly variable. AnAPACHE II score<10 during the initial 48 hrs correlated with mildpancreatitis and uncomplicated intensive care unit course; however,multifactorial prognosticators were not useful for the early identifi-cation of patients who developed complications or required extendedintensive care unit care.

with the ICU registry toidentify those patients who required ICU admission for the treatment of acute pancreatitis. Patient data were accumulated by retrospective chart review. **Inclusion Criteria:** Patients admitted to ICU with a diagnosis of AP (retrieved retrospectively by the ICD-9 code) **Exclusion Criteria:**		

Methodical Notes

Funding Sources: not provided

COI: not provided

Randomization: none

Blinding: none

Dropout Rate/ITT-Analysis: none, retrospective design

Notes:

Lytras, Dimitrios et al. Persistent early organ failure: defining the high-risk group of patients with severe acute pancreatitis?. Pancreas. 36. 249-54. 2008

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** Retrospective analysis to study outcome of patients with SAP **Number of Patient:** 234 **Recruitung Phase:** Between January 2002 and December 2006, 234 patients with acute pancreatitis were treated at the 1st Surgical Department of Agia Olga Hospital. According to the Atlanta classification for severity 64 patients with APACHE II score of 8 or more on first admission and C-reactive protein greater than 150 mg/dL within 24 to 48 hours were predicted to have severe form of the disease. **Inclusion Criteria:** patients with acute pancreatitis (defined as epigastric abdominal pain and vomiting accompanied by serum amylase greater than 3 times the upper normal range)	**Intervention:** none **Comparison:** Patients with early organ failure vs. patients without EOF	**Primary:** Development of Necrosis +/- Infection **Secondary:** **Results:** Transient (G48 h duration) or persistent (948 h duration)early organ failure (EOF) was present in 33 of 64 patients (51.5%). All 9 deaths (9/55 patients; 16.5% mortality) were recorded among patients who developed pancreatic necrosis, and the combination of EOF and necrosis was present in most (8/9) patients with fatal outcome (P= 0.009). Persistent EOF was significantly associated with development of infected necrosis (P= 0.037) and worse outcome (P= 0.028) as well. Multivariate analysis with backward elimination identified the duration of EOF as an independent factor affecting outcome. **Author's Conclusion:** Persistent organ failure early in the course of acute pancreatitis is a major determinant of outcome. In combination with pancreatic necrosis, survival rate is strongly compromised

Exclusion Criteria: Patients with acute exacerbation of known chronic pancreatitis		

Methodical Notes

Funding Sources: not provided

COI: not provided

Randomization: none

Blinding: none

Dropout Rate/ITT-Analysis: none

Notes:

Mikolasevic, I et al. Metabolic syndrome and acute pancreatitis. Eur. J. Intern. Med. 32. 79-83. 2016

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** Retrospective cohort analysis for disease course of AP in patients with or without metabolic syndrome **Number of Patient:** 700 91 patients were excluded, leaving 609 patients for the final analysis. **Recruitung Phase:** 700 patients diagnosed with acute pancreatitis and admitted to UHC Rijeka, Croatia in the period from January 1, 2008 to June 31, 2015. **Inclusion Criteria:** Acute pancreatitis was defined as the onset of typical upper abdominal pain (nausea and/or vomiting) within 48 h prior to admission and the elevation of serum amylase and/or lipase activity at least 3 times above the upper limit of normal. Only the patients having the first attack of acute pancreatitis were included in the study.	**Intervention:** none **Comparison:** Patients with AP +/- metabolic syndrome Metabolic syndrome was defined according to the International Diabetes Federation criteria by the presence of waist circumference >94 cm for men and >80 cm for women and at least two of the followingmetabolic abnormalities: blood pressure ≥130/85 mmHg or anti-hypertensive treatment; previously physician-diagnosed type 2 diabetes mellitus, or use of any hypoglycemic drugs or a fasting plasma glucose level≥5.6 mmol/L; triglyceride levels >1.7 mmol/L; HDL-cholesterol <1.04 mmol/L for men and <1.29 mmol/L for women or lipid-lowering treatment	**Primary:** Relation between thepresence of metabolic syndrome and the severity of acute pancreatitis **Secondary:** - the number of metabolic syndrome components in relation to the severity of acute pancreatitis according to the revised Atlanta classification from 2012; - severity of acute pancreatitis with respect to the presence of metabolic syndrome according to the APACHE II score; - the number of local (peripancreatic fluid collections, pancreatic and peripancreatic necrosis and pseudocysts) and systemic complication of acute pancreatitis with respect to the presence of metabolic syndrome. The occurrence of walled-off necrosis was not investigated due to the small number of patients with this type of localcomplication; - the duration of total hospital stay, hospital stay in high dependency unit and intensive care unit between patients with metabolic syndrome and those without metabolic syndrome; - the survival rate with respect to the presence of metabolic syndrome. **Results:** Of 609 patients with acute pancreatitis, 110 fulfilled the criteria for metabolic syndrome. Patients with metabolic syndrome had statistically significantly higher incidence of moderately severe (38.2% vs. 28.5%;p = 0.05) and severe (22.7% vs. 12.8%; p = 0.01) acute pancreatitis in comparison to those without metabolic syndrome, while patients without metabolic syndrome had higher incidence of mild acute pancreatitis in comparison to those patients with metabolic syndrome (58.7% vs. 39.1%; p<0.001). Patients with metabolic syndrome had a higher number of local and systemic complications, and higher APACHE II score in comparison to patients without metabolic syndrome. In multivariable logistic regression analysis, the presence of metabolic syndrome was independently associated with

Exclusion Criteria: Patients with a relapse of acute pancreatitis or an exacerbation of chronic pancreatitis were excluded. Patients suffering from active malignant diseases, patients younger than 18 years and those with incomplete medical data were excluded fromthe analysis.		moderately severe and severe acute pancreatitis. Comparing sur-vival rates, patients suffering from metabolic syndrome had a higher death rate compared to patients without metabolic syndrome (16% vs. 4.5%; p<0.001). **Author's Conclusion:** The presence of metabolic syndrome at admission portends a higher risk of moderately severe andsevere acute pancreatitis, as well as higher mortality rate.

Methodical Notes

Funding Sources: none

COI: none

Randomization: none

Blinding: none

Dropout Rate/ITT-Analysis:

Notes:

Modrau, Ivy Susanne et al. The clinical value of procalcitonin in early assessment of acute pancreatitis. Am. J. Gastroenterol. 100. 1593-7. 2005

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** Prospective Study: Analysing the predictive value of PCT and comparison to Apache II, CRP, HCT, Ranson for AP severity and to evaluate PCT as a marker to distinguish biliary from non-biliary pancreatitis **Number of Patient:** 75 consecutive patients **Recruitung Phase:** 75 consecutive patients with acute pancreatitis admitted to Aalborg Hospital, Denmark, over a 12-month period **Inclusion Criteria:** AP patients: The diagnosis of acute pancreatitis was based on the presence of acute upper abdominal pain associated with a raised serum amylase concentration and/or radiological evidence compatible withacute pancreatitis. **Exclusion Criteria:**	**Intervention:** none **Comparison:** Comparing the predictive value of PCT with Apache II, CRP, HCT, Ranson for AP severity Comparing the vlaue of PCT compared to ALT / AP to distinguish biliary from non-biliary pancreatitis	**Primary:** - disease severity according to the Atlanta classification of 1993 (mild/severe) - biliary etiology: The clinical diagnosis of biliary pancreatitiswasbased on the detection of gallstones by ultrasonographyand/or elevated laboratory parameters indicating cholestasis (AP and bilirubin) **Secondary:** **Results:** The most accurate prediction of severe disease was provided by the APACHE II score on the day of admission (AUC: APACHE II, 0.78; CRP, 0.73; HCT, 0.73; and PCT, 0.61), and by CRP after 48 h (AUC:CRP, 0.94; Ranson score, 0.81; PCT, 0.71; APACHE II score, 0.69; and HCT, 0.46). ALT was the most accurate indicator of biliary pancreatitis (AUC: ALT, 0.83; AP, 0.81; and PCT, 0.68). **Author's Conclusion:** PCT is of limited additional value for early assessment of severity and etiology in acute pancreatitis.CRP is found to be a reliable prognostic marker with a delay of 48 h, while ALT is validated as the best indicator of biliary etiology.

Methodical Notes
Funding Sources: The work was supported by grants from the Nordjyllands Amts Forskningsfond and the Obels Fond, Denmark. **COI:** not provided **Randomization:** none **Blinding:** none **Dropout Rate/ITT-Analysis:** none **Notes:**

Mofidi, R et al. Association between early systemic inflammatory response, severity of multiorgan dysfunction and death in acute pancreatitis. Br J Surg. 93. 738-44. 2006

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** Retrospective analysis retrieved from a prospectively collected database regarding associatom of SIRS and disease outcome in patients with AP SIRS was present if patient had two or more of the following: temperature greater than 38◦C or less than 36◦C, heart rate greater than 90 beats per min, respiratory rate above 20 breaths per min, arterial partial pressure of carbon dioxide of less than 32 mmHg, and white cell count greater than 12 000 or less than 4000 cells/mm **Number of Patient:** 759 consecutive patients (388 men and 371 women) with a median age of 57 (range 18–93) years **Recruitung Phase:** Patients who presented with acute pancreatitis between January 2000 and December 2004 were identified from aprospectively collected Lothian surgical audit database and reviewed retrospectively **Inclusion Criteria:** Patients with AP Acute pancreatitis was defined as an increase in serum amylase concentration of three times the upper limit of the normal value inassociation with typical symptoms of acute pancreatitis, computed	**Intervention:** none **Comparison:** Outcome of patients with persistent, transient, or without SIRS in AP	**Primary:** Development of organ dysfunction. Organ dysfunction was defined as a Marshall score of 2 or more for each organ system. Occurence of death **Secondary:** **Results:** A total of 759 patients with acute pancreatitis were identified, of whom 45 (5·9percent)died during the index admission. SIRS was identified in 162 patients on admission and was persistent in 138 at 48 h. The median (range) cumulative Marshall scorein patients with persistent SIRS was significantly higher than that in patients in whom SIRS resolved and in those with no SIRS (4 (0–12), 3 (0–7) and 0 (0–9) respectively;P<0·001). Thirty-five patients (25·4 per cent) with persistent SIRS died from acute pancreatitis, compared with six patients (8 per cent) with transient SIRS and four (0·7percent) without SIRS (P<0·001). No correlation was observed between CRP level on admission and Marshall score (P=0·810); however, there was a close correlation between CRP level at 48 h and Marshall score(P<0·001). **Author's Conclusion:** Persistent SIRS is associated with MODS and death in patients with acute pancreatitis andis an early indicator of the likely severity of acute pancreatitis

tomographic evidence of acute pancreatitis, or the diagnostic finding of pancreatic inflammation and saponification made at the time of laparotomy in patients with a normal serum amylase level **Exclusion Criteria:** Patients with chronic or recurrent acute pancreatitis		

Methodical Notes

Funding Sources: not provided

COI: not stated

Randomization: none

Blinding: none

Dropout Rate/ITT-Analysis:

Notes:

Mounzer, Rawad et al. Comparison of existing clinical scoring systems to predict persistent organ failure in patients with acute pancreatitis. Gastroenterology. 142. 1476-82; quiz e15-6. 2012

Population	Intervention	Outcomes/Results
Evidence level: 2 **Study type:** Analysis of a prospectively collected training and validation cohort of AP patients in predicting persistent organ failure using various clinical scoring systems **Number of Patient:** training cohort: 256 validation cohort: 397 **Recruitung Phase:** Data from Training cohort were from the Severity of Acute Pancreatitis Study that was conducted in 3 phases, each lasting 1 year, between July 2003 and August 2010at the University of Pittsburgh Medical Center in Pittsburgh, PA Datafrom the validation cohort were from the Markers of Severity in Acute Pancreatitis study that was conducted between June 2005 and December 2007 at Brigham and Women's Hospital in Boston, MA **Inclusion Criteria:** Patients admitted with AP. Diagnosis of acute pancreatitis was based on the presence of at least 2 of the following 3 features: (1) abdominal pain	**Intervention:** none **Comparison:** Comparison of APACHE-II, BISAP, Glasgow, HAPS, JSS, Panc 3, POP, Ranson, SIRS, and combinations of these in predicting persistent organ failure in AP	**Primary:** he primary outcome measure was the development of per-sisten organ failure (lasting>=48 hours). Organ failure included the cardiovascular system, defined as the development of shock (systolic blood pressure <90 mm Hg) that persisted after fluid resuscitation; the pulmonary system, defined by arterial PO2<60mm Hg on room air or requirement for mechanical ventilation; and/or the renal system, defined as a serum creatinine level >=2mg/dL after rehydration or the need for hemodialysis in patients without pre-existing renal disease. **Secondary:** **Results:** Existing scoring systems showed modest accuracy (areas under the curve at admission of 0.62–0.84 in the trainingcohort and 0.57–0.74 in the validation cohort). The Glasgow score was the best classifier at admission in both cohorts. Serum levels of creatinine and blood urea nitrogen provided similar levels of discrimination in each set of patients. The 12 predictive rules increased accuracy to 0.92 in the training cohort and 0.84 in the validation cohort. **Author's Conclusion:** The existing scoring systems seem to have reached their maximal efficacy in predicting persistent organ failure inacute pancreatitis. Sophisticated combinations of pre-dictive rules are more accurate but cumbersome to use,and therefore of limited clinical use. Our ability to pre-dict the severity of acute pancreatitis cannot be expected to improve unless we develop new

characteristic of acute pancreatitis; (2) serum amylase and/or lipase levels >3 times the upper limit of normal;and (3) characteristic findings of acute pancreatitis on abdominal computerized tomography scan **Exclusion Criteria:**		approaches

Methodical Notes

Funding Sources: Anna Evans was supported by a Doris Duke Clinical Research Fellowship

COI: none

Randomization: none

Blinding: none

Dropout Rate/ITT-Analysis:

Notes:

Natu, Ashwinee et al. Visceral Adiposity Predicts Severity of Acute Pancreatitis. Pancreas. 46. 776-781. 2017

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** Retrospective cohort study including consecutive patients with AP to study association of visceral fat with pancreatitis severity **Number of Patient:** 574 screened, 252 met study criteria **Recruitung Phase:** Clinical data were collected from consecutive patients with AP admitted to the University Hospitals Cleveland Medical Center between January 2010 and January 2015. **Inclusion Criteria:** The diagnosis of AP was con-firmed using the American College of Gastroenterology Practice Guidelines, which requires the presence of at least 2 of the following 3 criteria: (1) characteristic pancreatic abdominal pain, (2) elevation in serum lipase or amylase to 3 times greater than the upper limit of normal, and (3) characteristic findings of AP on imaging. **Exclusion Criteria:** Pa-tients were excluded from the study if they were aged younger than 18 years, had chronic pancreatitis, had missing data in the electronic medical record, or did not undergo a computed tomography (CT) scan between 3 months before the	**Intervention:** none **Comparison:** AP outcomes of patients in correlation to visceral adipose tissue volume	**Primary:** - Severity of pancreatitis was determined using the Revised Atlanta Classification criteria. - Persistent SIRS - Acute necrotic collections - multisystem organ failure - In-hospital mortality - Readmission in 30 d **Secondary:** none **Results:** Five hundred and seventy four patients were admitted during the study period, of which 252 had a computed tomography scan available. Patients with severe AP had a larger VAT area compared with those with mild or moderate AP (mean: 184.9 cm2vs 79.9 cm2,P= 0.006). Patients who developed multisystem organ failure or had acute necrotic collections had a larger VAT area than those who did not (150.6 cm2vs 91.0 cm2,P= 0.004 and 174.0 cm2vs 91.9 cm2,P= 0.003, respectively). Visceral adipose tissue area demonstrated superior discrimination of severe AP compared with other severity predictors. **Author's Conclusion:** Increased VAT area is a strong predictor of severe pancre-atitis, necrosis, and multisystem organ failure.

hospitalization to within 72 hoursof admission.		

Methodical Notes

Funding Sources: none

COI: none

Randomization: none

Blinding: none

Dropout Rate/ITT-Analysis: none

Notes:

Nawaz, Haq et al. Elevated serum triglycerides are independently associated with persistent organ failure in acute pancreatitis. Am. J. Gastroenterol. 110. 1497-503. 2015

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** Prospective observational study to analyse the effect of triglyceride levels on AP outcome **Number of Patient:** totally 400, of which 201 had available triglyceride levels **Recruitung Phase:** Th e study was conducted in three separate time periods starting in June 2003, and patients were enrolled consecutively in each of these time periods until June 2014 conducted at the University of Pittsburgh Medi-cal Center. **Inclusion Criteria:** The diagnosis of AP was based on the presence of at least two of the following three criteria: (i) abdominal pain suggestive of AP, (ii) elevation in serum amylase and / or lipase > 3 times the upper limit of normal, and (iii) computed tomography (CT) findings characteristic of AP. **Exclusion Criteria:**	**Intervention:** none **Comparison:** Patients with or without high triglycerides (HTG) were analysed regarding outcome of AP. HTG was classified to different severity categories: mild (serum TG levels of 150–199 mg dl-1), moderate (200–999 mg dl−1), severe (1,000–1,999 mg dl−1), and very severe (≥2,000 mg dl−1).	**Primary:** - persistent organ failure - need for ICU treatment - median hospital days - mortality **Secondary:** **Results:** Two hundred and one out of 400 AP patients had serum TGs measured within 72 h of presentation, of which 115 had normal TG levels and 86 HTG (20 mild, 41 moderate, and 25 severe/very severe). Patients with HTG were of younger age (44 vs. 52 years), predominantly male (65% vs. 45%), obese (57% vs. 34%), diabetic (38% vs. 17%), and developed more frequently persistent organ failure (40% vs. 17%) compared with those with normal TGs (P<0.02). The rate of persistent organ failure increased proportionally with HTG severity grades (17% when normal TGs, 30% in mild, 39% in moderate, and 48% in severe/very severe HTG, Ptrend<0.001). On multivariate analysis controlling for age, gender, body mass index, diabetes, and alcohol etiology, moderate HTG (odds ratio (OR), 2.6; P=0.04) and severe/very severe HTG (OR, 4.9; P=0.009) were independently associated with persistent organ failure. **Author's Conclusion:** Elevated serum TGs in AP patients are independently and proportionally correlated with persistent organ failure regardless of etiology. TG-mediated lipotoxicity may be an attractive target to design novel interventions for severe AP.

Methodical Notes

Funding Sources: The study was supported by a Veterans Affairs Merit Review Award (IQ1CX000272-Q1A2: PI: G.I.P)

COI: none

Randomization: none

Blinding: none

Dropout Rate/ITT-Analysis: none

Notes:

Nawaz, Haq et al. Revised Atlanta and determinant-based classification: application in a prospective cohort of acute pancreatitis patients. Am. J. Gastroenterol. 108. 1911-7. 2013

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** Prospectively collected observational cohort to study the different AP classifications (Atlanta cl., revised Atlanta cl., determinant based cl.) regarding AP outcomes **Number of Patient:** 256 **Recruitung Phase:** The Severity of Acute Pancreatitis Study (SAPS) was conducted in three 1-year phases between 2003 and 2010 at the Univer-sity of Pittsburgh Medical Center in Pittsburgh, PA. In each 1-year periods approximately 60 – 100 consecutive patients were prospectively enrolled. **Inclusion Criteria:** The diagnosis of AP was based on the presence of at least two of the following three criteria: (i) abdominal pain suggestive of AP, (ii) elevation in serum amylase and / or lipase >3 times the upper limit of normal, and (iii) computed tomography (CT) findings characteristic of AP. **Exclusion Criteria:**	**Intervention:** none **Comparison:** AP outcome in comparison to disease classfications: Atlanta cl. of 1992 (mild, severe AP), revised Atlanta cl. of 2012 (mild, moderate, severe AP), and determinant based cl. (mild, moderate, severe, critical AP)	**Primary:** Primary outcomes included mortality, intensive care unit (ICU) admission, need for surgical or minimally invasive interventions, ICU length of stay (LOS), and overall hospi-tal LOS. These outcomes have been previously reported in validation studies for classification of AP severity. Hospital LOS reflected the index hospitalization and included the days in the outside hospital for transferred patients. Interventions were defined as surgical (surgical cystgastro-stomy, open and laparoscopic pancreatic debridement, and exploratory laparotomy for abdominal compartment syn-drome), endoscopic (cystgastrostomy and direct endoscopic necrosectomy), and interventional (percutaneous drain placement). **Secondary:** **Results:** Overall, higher grades of severity were associated with worse clinical outcomes for all three classification systems. Atlanta 2012 and DBC performed better than Atlanta 1992 and were comparable in predicting mortality (AUC 0.89 for both vs. 0.76, P< 0.001), ICU admission (AUC 0.91 for both vs. 0.80, P< 0.001), and ICU LOS (Somer ' s D 0.21 and 0.28 vs. 0.07, P< 0.05). DBC performed better in predicting need for interventions (AUC 0.93 vs. 0.85, P< 0.001), whereas Atlanta 2012 performed better in predicting hospital LOS (Somer's D 0.43 vs. 0.37, P= 0.04). **Author's Conclusion:** Atlanta 2012 and DBC severity categories accurately reflected clinical outcomes in our cohort and were superior to Atlanta 1992. These novel classification systems can guide the selection of homogeneous patient populations for clinical research and provide an accurate spectrum of disease severity categories in the clinical setting.

Methodical Notes

Funding Sources: Veterans Affairs VA Merit Review (PR000000496).

COI: none

Randomization: none **Blinding:** none **Dropout Rate/ITT-Analysis:** none **Notes:**

Neoptolemos, J P et al. Early prediction of severity in acute pancreatitis by urinary trypsinogen activation peptide: a multicentre study. Lancet. 355. 1955-60. 2000

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** Prospective cohort of consectuive patients with AP to analyse the value of urinary trypsinogen activation peptide (TAP) in predicting pancreatitis severity **Number of Patient:** 246 (172 with AP, 74 controls) **Recruitung Phase:** Consecutive patients were recruited for 6–12 months from July, 1997, to July, 1998, at the Royal Liverpool University Hospital, Liverpool, UK, Helsinki University Central Hospital, Helsinki, Finland, Ulm University Hospital, Ulm, Germany, and the Mater Misericordiae Hospital, Dublin, Ireland. **Inclusion Criteria:** Eligible patients were those admitted from the community with a diagnosis of acute pancreatitis. Acute pancreatitis was defined as acute abdominal pain with a typical clinical picture and serum amylase concentration at least three times the upper limit of normal, typical findings on computed tomography, or both. **Exclusion Criteria:** patients who had had previous abdominal surgery for pancreatitis or pancreatic resection, had pre-existing chronic pancreatitis, were	**Intervention:** none **Comparison:** urinary TAP levels in patients with mild and severe pancreatitis, and controls. Comparison of TAP levels to CRP, Ranson score, Glasgow score, and APACHE II score in predicting pancreatitis severity.	**Primary:** severity of acute pancreatitis by the development of local or systemic complications or death, according to the Atlanta classification **Secondary:** **Results:** At 24 h after symptom onset, the median urinary TAP concentration was 37 nmol/L (IQR 17–110) for severe and 15 nmol/L (5–35) for mild disease (p<0·001). The respective values for plasma C-reactive protein were 24 mg/L (3–34) and 25 mg/L (6–75; p=0·208). The sensitivity, specificity, positive predictive, and negative predictive values of the test to show severe acute pancreatitis compared with mild acute pancreatitis at 24 h were: for TAP (>35 nmol/L), 58%, 73%,39%, and 86%, respectively, and for C-reactive protein (>150 mg/L), 0%, 90%, 0%, and 75%. 48 h after admissionthe values for the clinicobiochemical scoring systems were: APACHE II (>=8), 56%, 64%, 30%, and 85%; Ranson score(>=3), 89%, 64%, 38%, and 96%; and Glasgow score (>=3),77%, 75%, 44%, and 93%. At 48 h, the values for C-reactive protein were 86%, 61%, 37%, and 94% and for TAP were 83%,72%, 44%, and 94%. Combined testing of C-reactive protein and TAP was not superior to TAP alone for accuracy. **Author's Conclusion:** Urinary TAP provided accurate severity prediction 24 h after onset of symptoms. This single marker of severity in acute pancreatitis deserves routine clinical application.

younger than 18 years, and who were tertiary referrals.		

Methodical Notes

Funding Sources: This study was funded by Biotrin, Dublin, Ireland

COI: not reported

Randomization: none

Blinding: none

Dropout Rate/ITT-Analysis: none

Notes:

Papachristou, Georgios I et al. Obesity increases the severity of acute pancreatitis: performance of APACHE-O score and correlation with the inflammatory response. Pancreatology. 6. 279-85. 2006

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** Prospective cohort of consecutive AP patients to study predictive value of APACHE-O and to correlate Obesity with pancreatitis severity **Number of Patient:** 102 **Recruitung Phase:** We prospectively studied 102 consecutive patients with AP admitted to the University of Pittsburgh Medical Center between June 2003 and October 2004. **Inclusion Criteria:** The diagnosis of AP was based on upper abdominal pain or abdominal localizing signs and plasma amylase and/or lipase levels at least 3 times above the upper limit of normal. The time interval between the onset of symptoms and admission to the hospital was no more than 48 h. Patients were recruited within 24 h from the time of admission. **Exclusion Criteria:**	**Intervention:** none **Comparison:** - APACHE-II and APACHE-O in predicting AP severity - AP outcome of obese (BMI >= 30) vs. non-obese	**Primary:** - occurence of severe AP: severe AP (SAP) was reserved for remote organ dys-function including cardiovascular, pulmonary and renal failure necessitating ICU admission or organ support (meaning systolic pres-sure ! 90 mm Hg or use of vasopressors, arterial pO2 ! 60 mm Hg at room air or mechanical ventilation and serum creatinine 1 2 mg/dl after rehydration or initiation of hemodialysis) - Pancreatic necrosis was assessed by contrast-enhancing abdominal CT scan, which was performed in most of the patients (77 out of 102; 76%). - Hospital mortality was defined as death within the same hospitalization for AP **Secondary:** **Results:** Admission APACHE-O (area under the curve AUC 0.895) and APACHE-II (AUC 0.893) showed similar accuracy in predicting severe out-come. BMI was identified as a significant risk for SAP (OR 2.8, p = 0.048) and mortality (OR 11.2, p = 0.022). CRP levels were significantly higher in obese AP patients (p = 0.0001) as well as Ranson's score (p = 0.021). IL-6 and MCP-1 levels were higher in obese patients but did not reach statistical signifi cance. **Author's Conclusion:** Obesity is an independent risk for SAP. Admission APACHE-O score is not more accurate than APACHE-II. Our study results suggest that obesity increases the severity of AP by amplifying the immune response to injury.

Methodical Notes

Funding Sources: This work was supported by DK061451 (D.C.W.) and DK054709.

COI: none reported

Randomization: none

Blinding: none

Dropout Rate/ITT-Analysis: none

Notes: To determine if APACHE-O adds any predictive value to APACHE-II score and to test the hypothesis that obese patients are at increased risk of severe AP (SAP)

Park, Ji Young et al. Bedside index for severity in acute pancreatitis: comparison with other scoring systems in predicting severity and organ failure. HBPD INT. 12. 645-50. 2013

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** Retrospective cohort analysis of BISAP score to predict AP severity and organ failure **Number of Patient:** 303 **Recruitung Phase:** March 2007 through December 2010, 303 patients were admitted to the Inje University Sanggye Paik Hospital, Seoul, Republic of Korea with acute pancreatitis **Inclusion Criteria:** AP defined by the presence of two of the following three features: 1) abdominal pain consistent with acute pancreatitis (acute onset of a persistent, severe, epigastric pain often radiating to the back); 2) serum amylase and/or lipase at least three times greater than the upper limit of normal value; and 3) characteristic manifestations of acute pancreatitis on CECT, less commonly MR imaging or transabdominal ultrasonography. **Exclusion Criteria:**	**Intervention:** none **Comparison:** Comparison of BISAP score to other pancreatitis severity indices (Ranson, APACHE II, CT severity index, CRP, HCT, BMI) in predicting AP severity.	**Primary:** - Acute pancreatitis was classified as mild or severe on the basis of organ failure (transient or persistent) and/or local complications such as peripancreatic fluid collections and infected necrosis. - Organ failure including shock (systolic blood pressure <90 mmHg), pulmonary insufficiency (arterial PO2 <60 mmHg in room air or the need for mechanical ventilation), and renal failure (serum creatinine level >2 mg/dL after rehydration or hemodialysis) persisted for more than 48 hours - hospital length of stay - mortality **Secondary:** **Results:** Of the 303 patiants, 31 (10.2%) were classified ashaving severe acute pancreatitis. Organ failure occurred in 23(7.6%) patients, pancreatic necrosis in 40 (13.2%), and death in 6 (2.0%). A BISAP score of 2 was a statistically significant cutoff value for the diagnosis of severe acute pancreatitis, organ failure, and mortality. AUCs for BISAP predicting severe pancreatitis and death were 0.80 and 0.86, respectively, which were similar to those for APACHE-II (0.80, 0.87) and Ranson criteria (0.74,0.74) and greater than AUCs for CTSI (0.67, 0.42). The AUC for organ failure predicted by BISAP, APACHE-II, Ranson criteria,and CTSI was 0.93, 0.95, 0.84 and 0.57, respectively. AUCs for BISAP predicting severity, organ failure, and death were greater than those for CRP (0.69, 0.80, 0.72), hematocrit (0.45, 0.35, 0.14),and BMI (0.41, 0.47, 0.17). **Author's Conclusion:** The BISAP predicts severity, death, and especiallyorgan failure in acute pancreatitis as well as APACHE-II does andbetter than Ranson criteria, CTSI, CRP, hematocrit, and BMI.

Methodical Notes

Funding Sources: This work was supported by a grant from the 2007 Inje University (0001200743900).

COI: none

Randomization: none

Blinding: none

Dropout Rate/ITT-Analysis: none

Notes:

Peng, Tao et al. Serum calcium as an indicator of persistent organ failure in acute pancreatitis. Am J Emerg Med. 35. 978-982. 2017

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** Retrospective study of patients with AP to study the effect of hypocalcemia on admission on disease outcome **Number of Patient:** 128 **Recruitung Phase:** Retrospective study of patients with AP admitted to the Pancreatic Disease Institute of Wuhan Union Hospital between January 2014 and May 2015. **Inclusion Criteria:** Patients with AP. Diagnose was based on the presence of two or more of the following three criteria: 1)abdominal pain consistent with AP; 2) serum amylase and/or lipaseelevation≥three times the upper limit of normal; and/or 3) contrast-enhanced computed tomography (CECT), magnetic resonance imaging(MRI) or abdominal ultrasonographyfindings characteristic of AP **Exclusion Criteria:** 1) the time from abdominal pain onset to hospital admission≥72 h; 2) age younger than 18 years; 3) pancreatitis induced by trauma; 4) chronic pancreatitis; and 5) unavailable laboratory measurements or medical records.	**Intervention:** none **Comparison:** AP outcome in the absence or presence of hypocalcemia (<2mmol/L) at admission	**Primary:** Occurence of persistent organ failure (POF), Pancreatic necrosis (PNec), ICU stay >7 days, In-hospital mortality Disease severity was determined according to the revised 2012 Atlanta classification[2]. OF was diagnosed when the following cutoffs were exceeded: 1) cardiovascular failure if systolic blood pressure was <90 mmHg despite fluid replacement; 2) respiratory failure if theratio of PaO2/FiO2 was <300 mmHg; and 3) renal failure if serum creat-inine was ≥1.9 mg/dL. POF was identified if OF lasts for >48 h. PNec wasdefined as appearance of pancreatic parenchymal and/or peripancreatic necrosis on CECT images **Secondary:** **Results:** A total of 128 consecutive AP patients, including 29 with POF, were included. Compared to patients without POF, patients with POF showed a significantly lower value of serum calcium on admission (2.11 ± 0.46 vs. 1.55 ±0.36 mmol/L,Pb0.001). After multivariate logistic analysis, serum calcium remained an independent risk factor for POF (Hazard ratio 0.21, 95% confident interval: 0.08–0.58;P= 0.002). A calcium value of 1.97 mmol/L predicted POF with an area under the curve (AUC) of 0.888, a sensitivity with 89.7% and specificity with 74.8%, respectively **Author's Conclusion:** Our results indicate that serum calcium on admission is independently associated with POF in AP and mayserve as a potential prognostic factor.

Methodical Notes

Funding Sources: none

COI: none

Randomization: none

Blinding: none

Dropout Rate/ITT-Analysis: none

Notes:

Rau, Bettina M et al. Early assessment of pancreatic infections and overall prognosis in severe acute pancreatitis by procalcitonin (PCT): a prospective international multicenter study. Ann. Surg. 245. 745-54.

2007

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** Retrospective cohort to investigate the value of Procalcitonin (PCT) for identifying patients at risk to develop pancreatic infections in severe AP **Number of Patient:** 104 patients with predicted severe acute pancreatitis **Recruitung Phase:** Patients were recruited from December 1999 to March 2004 at the Department of General Surgery, University of Ulm, Ulm, Germany, at the Department of General-, Visceral-,and Vascular Surgery, University of the Saarland, Homburg/Saar, at the Department of Surgery, Helsinki University Central Hospital, Helsinki, Finland, at the Department of Surgery and Gastroenterology, Pancreatic Unit, University ofVerona, Italy, and the Department of Visceral- and Trans-plantation Surgery, University of Bern, Bern, Switzerland. **Inclusion Criteria:** General inclusion criteria for acute pancreatitis were defined as 1) a time interval between onset of typical abdom-inal symptoms and study inclusion of 96 hours and less, 2)the presence of SIRS, and 3) informed consent according to local rules. Specific inclusion criteria for severe acute pan-creatitis were 1) at least 3-fold elevated serum amylase or lipase levels, 2) the presence of intrapancreatic/extrapancre-atic necrosis documented by contrast-enhanced CT or a C-reactive protein (CRP) of >=250 mg/L or alternatively at least one failing organ system (pulmonary failure: arterial pO2<60 mm Hg at room air or mechanical ventilation, renal failure: creatinine>180umol/L or hemofiltration/dialysis,shock: systolic blood pressure <80 mm Hg over >15 minutes or pressure support) according to the Atlanta classification system **Exclusion Criteria:** 1) a time interval between onset of abdominal symptoms and study inclusion>96hours, 2) absence of SIRS, 3) age of less than 18 years, 4) hepatitis B, C, or HIV infection, and 5) psychoses except delirium tremens. In addition, previous pancreatic interven-tions or surgery due to the current attack of acute pancreatitis was also an exclusion criterion.	**Intervention:** none **Comparison:** PCT and CRP levels at different days after disease onset in patients with severe acute pancreatitis +/- infected necrosis +/- multiorgan dysfunction	**Primary:** - presence of multiorgan dysfunction syndrome (MODS): MODS was defined as the presence of 2 or more failing organ systems requiring specific ICU treatment, such as mechanical ventilation, hemofiltration/dialysis, or pressure support. Septic MODS was defined as MODS in the presence of an infectious focus documented by positive bacteriology. - presence of infected necrosis: Infection of pancreatic necrosis was diagnosed by guided FNA and/or by intraoperative findings. FNA was performed whenever infection of intrapancreatic/extrapancre-atic necrosis was suspected by persisting or new onset clinical and/or laboratory signs of sepsis after other sources of infec-tions had been ruled out. - Mortality **Secondary:** **Results:** In contrast to CRP, PCT concentrations were significantly elevated in patients with pancreatic infections and associated mul-tiorgan dysfunction syndrome (MODS) who all required surgery(n=10) and in nonsurvivors (n=8) early after onset of symptoms.PCT levels revealed only a moderate increase in patients with pancreatic infections in the absence of MODS (n=7), all of whom were managed non operatively without mortality. A PCT value of >=3.5 ng/mL on 2 consecutive days was superior to CRP >=430 mg/L for the assessment of infected necrosis with MODS or nonsurvival as determined by ROC analysis with a sensitivity and specificity of 93% and 88% for PCT and 40% and 100% for CRP, respectively(P<0.01). The single or combined prediction of the two major complications was already possible on the third and fourth day after onset of symptoms with a sensitivity and specificity of 79% and 93%for PCT>=3.8 ng/mL compared with 36% and 97% for CRP>=430mg/L, respectively (P=0.002). **Author's Conclusion:** Monitoring of PCT allows early and reliable assess-ment of clinically relevant pancreatic infections and overall prog-nosis in AP. This single test parameter significantly contributes to animproved stratification of patients at risk to develop majorcomplications.
Methodical Notes		
Funding Sources: not provided		

COI: Dr. Rau (the first author) has served as consultant and received payments from BRAHMS to attend meetings related to this trial, for travel expenses, and speaking engagements

Randomization: none

Blinding: none

Dropout Rate/ITT-Analysis: none

Notes:

Remes-Troche, José M et al. Hemoconcentration is a poor predictor of severity in acute pancreatitis. World J. Gastroenterol. 11. 7018-23. 2005

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** Retrospective cohort study to determine whether the hematocrit (Hct) at admission or at 24 h after admission was associated with severe acute pancreatitis (AP), organ failure (OF), and pancreatic necrosis **Number of Patient:** 336 **Recruitung Phase:** Patients with a first AP episode admitted consecutively to a tertiary medical center between June 1998 and December 2001 were included in this study **Inclusion Criteria:** Patients with a first AP episode were included in this study. AP diagnosis was confirmed by typical clinical presentation and an increase in amylase or lipase concentration at least thrice the upper limit of normal, and/or evidence of pancreatic inflammation revealed by contrast-enhanced abdominal computed tomography **Exclusion Criteria:** patients with previous AP episode(s) or with a first AP episode previously treated in other institutions	**Intervention:** none **Comparison:** assessment of the association of hemoconcentration to the severity, necrosis and Organ failure (OF) in acute pancreatitis	**Primary:** To determine whether the hematocrit (Hct) at admission or at 24 h after admission was associated with severe acute pancreatitis (AP), organ failure (OF), and pancreatic necrosis. **Secondary:** **Results:** Hct levels were elevated in 58% (55/96) and 61% (33/54) patients with interstitial and necrotizing pancreatitis, respectively. Neither Hct levels at admission nor hemoconcentration at 24 h were associated with the severity, necrosis or OF. Sensitivity, specificity and positive predictive values for both determinations were very low; and negative predictive values were between 61% and 86%, being the highest values for OF. **Author's Conclusion:** Hct is not a useful marker to predict a worse outcome in acute pancreatitis.

Methodical Notes

Funding Sources: none declared

COI: none declared

Randomization: none declared

Blinding: none declared

Dropout Rate/ITT-Analysis: none declared

Notes:

Senapati, Debadutta et al. A prospective study of the Bedside Index for Severity in Acute Pancreatitis (BISAP) score in acute pancreatitis: an Indian perspective. Pancreatology. 14. 335-9. 2014

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** BISAP score was retrospectively evaluated in 246 consequtive patients with acute pancreatitis admitted to a single tertiary center in India **Number of Patient:** 246 **Recruitung Phase:** June 2011.-December 2013 **Inclusion Criteria:** All patients with acute pancreatitis defined as the presence of two or more of the following three criteria: 1) Charakteristika upper abdominal pain with or without radiation, serum amylase and/or lipase raised three times upper limit, imaging consistent with acute pancreatitis **Exclusion Criteria:** none defined, all consecutive AP patients were included	**Intervention:** none **Comparison:** All patients with acute pancreatitis were included in the study. BISAP score was calculated within 24 h of admission. A Contrast CT was used to differentiate interstitial from necrotizing pancreatitis within seven days of hospitalization whereas Marshall Scoring System was used to characterize organ failure.	**Primary:** 1) interstitial from necrotizing pancreatitis within seven days of hospitalization by contrast enhanced CT 2) Marshall Scoring System was used to characterize organ failure.3) Mortality **Secondary:** none defined **Results:** Among 246 patients M:F = 153:93, most common aetiology among men was alcoholism and among women was gallstone disease. 207 patients had no organ failure and remaining 39 developed organ failure. 17 patients had persistent organ failure, 16 of those with BISAP score ≥3. 13 patients in our study died, out of which 12 patients had BISAP score ≥3. We also found that a BISAP score of ≥3 had a sensitivity of 92%, specificity of 76%, a positive predictive value of 17%, and a negative predictive value of 99% for mortality. **Author's Conclusion:** The BISAP score is a simple and accurate method for the early identification of patients at increased risk for in hospital mortality and morbidity.

Methodical Notes

Funding Sources: no funding available

COI: none declared

Randomization: none

Blinding: none

Dropout Rate/ITT-Analysis: not given

Notes: BISAP score was retrospectively evaluated in 246 consequtive patients with acute pancreatitis admitted to a single tertiary center in India from June 2011 to December 2013

Singh, Vikesh K et al. Early systemic inflammatory response syndrome is associated with severe acute pancreatitis. Clin. Gastroenterol. Hepatol. 7. 1247-51. 2009

Population	Intervention	Outcomes/Results

Evidence level: 3 **Study type:** Prospective study **Number of Patient:** 252 **Recruitung Phase:** 2005-2007 (Division of Gastroenterology, Center for Pancreatic Disease, and ‡Division of Abdominal Imaging & Intervention, Department of Radiology, Brigham and Women's Hospital, Harvard Medical School, Boston, Massachusetts) **Inclusion Criteria:** The demographic, clinical, laboratory, and radiologic data for all patients directly admitted to our institution with a diagnosis of acute pancreatitis between June 2005 and December 2007 were collected for this study. **Exclusion Criteria:** All patients transferred from outside institutions were excluded.	**Intervention:** none **Comparison:** severity of SIRS (as assesses by number of SIRS criteria) and severity of acute pancreatitis	**Primary:** The aim of this study was to evaluate the role of SIRS in assessing severity of acute pancreatitis. **Secondary:** **Results:** SIRS occurred in 155/252 patients (62%) on day 1. SIRS on day 1 predicted severe disease with high sensitivity (85%–100%). The absence of SIRS on day 1 was associated with a high negative predictive value (98%– 100%). Patients with a higher number of systemic inflammatory response (SIR) criteria on day 1 and persistent SIRS had an increased risk for severe disease (P .01). **Author's Conclusion:** The majority of patients hospitalized with acute pancreatitis have SIRS on day 1. The severity of acute pancreatitis is greater among patients with SIRS on day 1 and, in particular, among those with 3 or 4 SIRS criteria, compared with those without SIRS on day 1.

Methodical Notes

Funding Sources: This study was supported by a clinical research grant from the National Pancreas Foundation to PAB (Principle Investigator) and V.K.S (Co-Investigator).

COI: none declared

Randomization: none

Blinding: none

Dropout Rate/ITT-Analysis: not given

Notes:

Tee, Yu-San et al. Serial evaluation of the SOFA score is reliable for predicting mortality in acute severe pancreatitis. Medicine (Baltimore). 97. e9654. 2018

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** Retrospective cohort study **Number of Patient:** 159 **Recruitung Phase:** anuary 2005 and December 2010, performed at Chang Gung Memorial Hospital, Linkou Branch in North Taiwan. **Inclusion Criteria:** only	**Intervention:** none **Comparison:** There were 110 patients in the survival group and 28 in the nonsurvival group.	**Primary:** We evaluated the effectiveness of serial measurement of several scoring systems in patients with acute severe pancreatitis. We retrospectively obtained serial measurements of Ranson, Acute Physiology and Chronic Health Assessment (APACHE) II, and Sequential Organ Failure Assessment (SOFA) scores of 159 patients with acute severe pancreatitis. **Secondary:** **Results:** All scoring systems were reliable for predicting overall and intensive care unit mortality, while the SOFA score on day 7 presented the largest area under the receiver operator characteristic (ROC) curve (0.858, SE 0.055). Changes in scores over time were evaluated for predicting the progression of organ failure, and the change in SOFA score on hospital day 7 or no interval change in SOFA score

patients with severe pancreatitis were included (ICU stay) **Exclusion Criteria:** mild / moderate acute pancreatitis (not treated on ICU)		was associated with higher mortality rates. **Author's Conclusion:** APACHE II and SOFA scores are both sensitive for predicting mortality in acute pancreatitis.

Methodical Notes

Funding Sources: none declared

COI: none declared

Randomization: none

Blinding: none

Dropout Rate/ITT-Analysis: none

Notes:

Tran, D D et al. Evaluation of severity in patients with acute pancreatitis. Am. J. Gastroenterol. 87. 604-8. 1992

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** retrospective cohort study **Number of Patient:** 259 **Recruitung Phase:** January 1971 - Dec. 1990, Free University Hospital Amsterdam **Inclusion Criteria:** Acute pancreatitis was defined as the presence of a consistent clinical history supported by elevated serum amylase levels and evidence from laparotomy or necropsy. **Exclusion Criteria:** none	**Intervention:** none **Comparison:** Comparison of the multiple organ system failure (MOSF) score, APACHE II, Ranson and Imrie scores for their predictive value in evaluationg severity of acute pancreatitis	**Primary:** Retrospective comparison of scoring systems for their predictive value in stratifying disease severity in patients with acute pancreatitis **Secondary:** **Results:** Of 4 scoring systems, only MOSF and APACHE II allowed repetitive assessment to monitor the course of the disease. MOSF is organ-specific and may be better than APACHE II in reflecting disease activity. **Author's Conclusion:** MOSF score is valuable in early identification and close monitoring of high risk patients and in deciding on therapy in these patients.

Methodical Notes

Funding Sources: none declared

COI: none declared

Randomization: none

Blinding: none

Dropout Rate/ITT-Analysis: none

Notes:

Tran, D D et al. Prevalence and prediction of multiple organ system failure and mortality in acute pancreatitis. J Crit Care. 8. 145-53. 1993

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** retrospective study **Number of Patient:** 267 **Recruitung Phase:** Januar 1971 - Dezember 1990, Free University Hospital, Amsterdam (tertiary care, 800-bed teaching hospital) **Inclusion Criteria:** Acute pancreatitis was defined as the presence of a consistent clinical history supported by elevated serum amylase levels and evidence from laparotomy or necropsy. **Exclusion Criteria:** none	**Intervention:** none declared **Comparison:** none	**Primary:** We studied the prevalence of multiple organ system failure (MOSF), the relations between age, pre-existing chronic conditions, local complications, systemic infection, organ system failure, and mortality in patients with acute pancreatitis. **Secondary:** **Results:** In multiple logistic regression, advanced age, chronic disease, local complications, and systemic infection independently contributed to the development of MOSF. Overall mortality was 19%. Advanced age, chronic disease, local complications, failure of the cardiovascular, renal, hepatic, gastrointestinal, and neurological systems are major risk factors for mortality, whereas systemic infection does not contribute. **Author's Conclusion:** Advanced age, chronic disease, local complications, failure of the cardiovascular, renal, hepatic, gastrointestinal, and neurological systems are major risk factors for mortality, whereas systemic infection does not contribute.

Methodical Notes

Funding Sources: none declared

COI: none declared

Randomization: none declared

Blinding: none declared

Dropout Rate/ITT-Analysis: none

Notes: Advanced age, chronic disease, local complications, failure of the cardiovascular, renal, hepatic, gastrointestinal, and neurological systems are major risk factors for mortality, whereas systemic infection does not contribute.

Ueda, Takashi et al. Simple scoring system for the prediction of the prognosis of severe acute pancreatitis. Surgery. 141. 51-8. 2007

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** Retrospective single centre cohort study **Number of Patient:** 137 **Recruitung Phase:** Since 1990, not clearly defined!	**Intervention:** none declared **Comparison:** Among the significant prognostic factors, multivariate analysis was carried out to determine independent variables that were associated with poor outcome (death). Therefore, all 137 patients were divided into survivorgroup (97 patients) and nonsurvivor group (40 patients).	**Primary:** From data that were obtained at the time of admission, the factors of statistically significant difference that were observed in the 2 groups were surveyed. Analyzed parameters were age, white bloodcell count, lymphocyte count, platelet count, hematocrit level, prothrombin time, PaO2 level, base excess level, lactate dehydrogenase (LDH) level, creatinine level, BUN level, calcium level, blood sugar level, total protein level, AST level, alanine aminotransferase level, total bilirubin level, amylase level, lipase level, CRP level, and interleukin-6 (IL-6) level. **Secondary:** **Results:** Three prognostic factors were selected: serum blood urea nitrogen >/= 25 mg/dL, serum lactatedehydrogenase >/= 900 IU/L, and contrast-enhanced computed tomography finding with

Inclusion Criteria: all patients with acute pancreatitis **Exclusion Criteria:** none declared		pancreatic necrosis (=Simple prognostic score, SPS). SPS demonstrated a significant difference between survivors and nonsurvivors from day 1 to day 6. **Author's Conclusion:** This scoring system that comprised 3 items is simple, is feasible for the prediction ofprognosis and conventional scoring systems, and is useful for the selection of the extremely severepatients with SAP on admission

Methodical Notes

Funding Sources: Supported by Grant-in-Aid for Scientific Research from theMinistry of Education, Science, Sports and Culture of Japan andfrom the Ministry of Health, Labor and Welfare of Japan

COI: none

Randomization: none

Blinding: none

Dropout Rate/ITT-Analysis: none

Notes:

Valverde-López, Francisco et al. BISAP, RANSON, lactate and others biomarkers in prediction of severe acute pancreatitis in a European cohort. J. Gastroenterol. Hepatol. 32. 1649-1656. 2017

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** prospective cohort study **Number of Patient:** 269 **Recruitung Phase:** June 2010 and June 2012, Virgen de las Nieves University Hospital (Spain) **Inclusion Criteria:** acute pancreatitis **Exclusion Criteria:** none declared	**Intervention:** none **Comparison:** For comparison, patients were divided in two groups, one including patients with SAPand the other with the rest of the patients (mild and moderatelysevere acute pancreatitis)	**Primary:** Comparison of biomarkers and scores in predicting severity, mortality, and ICU admission in acute pancreatitis **Secondary:** none **Results:** BISAP was the best predictor on admission for SAP, mortality, and ICU admission After 48 h, BUN 48 h was the best predictor of SAP, creatinine 48 h for ICU admission. All parameters were predictors for SAP, mortality, and ICU admission, but C-reactive protein on admission was only a significant predictor of SAP **Author's Conclusion:** Bedside index for severity acute pancreatitis is a good predictive system for SAP, mortality, and ICU admission, being useful for triaging patients for ICU manage-ment.

Methodical Notes

Funding Sources: none declared

COI: none declared

Randomization: none

Blinding: none

Dropout Rate/ITT-Analysis: none

Notes:

Vasudevan, Sreejith et al. Comparison of Various Scoring Systems and Biochemical Markers in Predicting the Outcome in Acute Pancreatitis. Pancreas. 47. 65-71. 2018

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** prospective observational study **Number of Patient:** 343 **Recruitung Phase:** May 2013 to May 2015 **Inclusion Criteria:** Diagnosis of AP (clinical symptoms and elevated serum amylase/lipase (>3 times the upper limitof normal) or characteristic findings on imaging. Post–endoscopicretrograde cholangiopancreatography (post-ERCP), Patients with AP presented within 2 weeks of onset, age older than 12 years, informed consent **Exclusion Criteria:** chronic pancreatitis or recurrent AP, no consent	**Intervention:** none **Comparison:** comparison of various scores and biochemical markers done on the day of admission in predicting the outcome	**Primary:** Prediction of Persistent Organ Failure, infected pancreatic necrosis and Mortality **Secondary:** none **Results:** scoring systems (APACHE II and BISAP) are superior to biochemical markers (CRP and BUN) in predicting the outcome. Scoring systems and biochemical markers are better in predicting severity and mortality than predicting IPN. **Author's Conclusion:** Both BISAP and APACHE II are comparable in predictingoutcome, but BISAP predicted all 3 outcomes

Methodical Notes

Funding Sources: none declared

COI: none declared

Randomization: none

Blinding: none

Dropout Rate/ITT-Analysis: none

Notes:

Williams, M et al. Prognostic usefulness of scoring systems in critically ill patients with severe acute pancreatitis. Crit. Care Med. 27. 901-7. 1999

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** retrospectice single centre study **Number of Patient:** 273 **Recruitung Phase:** January	**Intervention:** none **Comparison:** assessment of concordance between the following: a) length of stay and Ranson criteria; b) length of stay and Acute Physiology and Chronic Health Evaluation (APACHE) III score; and c) length of stay and modified Glasgow Coma score. Also, an unpaired t-test was used to obtain concordance between the following: a) death and Ranson; b) death and APACHE III; and c) death and modified Glasgow Coma score.	**Primary:** comparison of prognostic scoring systems in a retrospective series of patients with severe acute pancreatitis admitted to a surgical intensive care unit (**Secondary:** none **Results:** In this sample of patients, APACHE III scores >30 at 96 hrs, 5 or more Ranson criteria, and a modified Imrie (Glasgow) score of >3 predicted those who died or had multiple complications. Those patients with combined 48-hr and 96-hr APACHE III scores of >60 either

1992 and December 1996 **Inclusion Criteria:** discharge code of acute pancreatitis **Exclusion Criteria:**		died or had hospitalizations of >60 days. **Author's Conclusion:** APACHE III scores, Ranson criteria, and a modified Imrie (Glasgow) score predicted those who died, multiple complications or had hospitalizations of >60 days.

Methodical Notes

Funding Sources: none

COI: none

Randomization: none

Blinding: none

Dropout Rate/ITT-Analysis: none

Notes: To compare prognostic scoring systems in a retrospective series of patients with severe acute pancreatitis admitted to a surgical intensive care unit (ICU).

Wu, B U et al. The early prediction of mortality in acute pancreatitis: a large population-based study. Gut. 57. 1698-703. 2008

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** large population- based cohort study **Number of Patient:** 17 992 casesof AP from 212 hospitals in 2000–2001. The new scoringsystem was validated on data collected from 18 256 APcases from 177 hospitals in 2004–2005. **Recruitung Phase:** 212 hospitals in 2000–2001 (evaluation of risk factors) 177 hospitals in 2004–2005 (validation) **Inclusion Criteria:** The derivation cohort consisted of all cases in the Cardinal Health Research Database with principal diagnosis (from the International Classification of Diseases, ninth revision, clinical modification) ICD9-CM 577.0 (AP) from January 2000 to December 2001. The validation cohort included all patients with the principal diagnosis of AP admitted from January 2004 to September 2005. **Exclusion Criteria:** no AP	**Intervention:** none **Comparison:** presence of risk factors vs non present	**Primary:** CART analysis identified five variables for prediction of in-hospital mortality. One point is assigned for the presence of each of the following during the first 24 h: blood urea nitrogen (BUN) .25 mg/dl; impaired mental status; systemic inflammatory response syndrome (SIRS); age .60 years; or the presence of a pleural effusion (BISAP). **Secondary:** none **Results:** We have derived and validated the first population-based prognostic scoring system for use in AP. Using BUN, impaired mental status, SIRS, age and pleural effusion (BISAP), we were able to stratify patients within the first 24 h of hospitalisation into distinct risk groups for in-hospital mortality. **Author's Conclusion:** none

Methodical Notes

Funding Sources: none declared

COI: none declared

Randomization: none declared

Blinding: none

Dropout Rate/ITT-Analysis: none

Notes:

Wu, Bechien U et al. Dynamic Measurement of Disease Activity in Acute Pancreatitis: The Pancreatitis Activity Scoring System. Am. J. Gastroenterol. 112. 1144-1152. 2017

Population	Intervention	Outcomes/Results
Evidence level: 1 **Study type:** Systematic meta-analysis of 5 RCTs **Number of Patient:** 3123 **Recruitung Phase:** search of PubMed, Embase and the Cochrane database of studies published from 1996 to 2014 that met the following criteria: randomized control trials, English language, use of Human subjects, and studies that evaluated the effect of therapy in acute pancreatitis **Inclusion Criteria:** search of PubMed, Embase and the Cochrane database of studies published from 1996 to 2014 that met the following criteria: randomized control trials, English language, use of Human subjects, and studies that evaluated the effect of therapy in acute pancreatitis **Exclusion Criteria:** prevention studies either primary, for example, post-ERCP pancreatitis or secondary prevention of recurrent acute pancreatitis due to gallstones or alcohol	**Intervention:** none **Comparison:** process of development and initial validation of an acute Pancreatitis Activity Scoring System (PASS) that incorporates both clinical parameters and patient reported symptoms for the assessment of disease activity in patients with acute pancreatitis	**Primary:** develop a clinical activity index that incorporates routine clinical parameters to assist in the measurement, study, and management of acute pancreatitis. **Secondary:** **Results:** •The pancreatitis activity scoring system (PASS) is an objective method to monitor disease activity developed by an international panel of experts •Distinct profiles of disease activity can be identified based on the PASS system **Author's Conclusion:** The final instrument was then applied to patient data obtained from five separate study cohorts across Southern California to assess profiles of disease activity.

Methodical Notes

Funding Sources: None declared

COI: None declared

Randomization: none

Blinding: none

Dropout Rate/ITT-Analysis: none

Notes:

Yang, Zhiyong et al. Prediction of Severe Acute Pancreatitis Using a Decision Tree Model Based on the Revised Atlanta Classification of Acute Pancreatitis. PLoS ONE. 10. e0143486. 2015

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** retrospective single centre study **Number of Patient:** 603 **Recruitung Phase:** January 2008 and June 2013 **Inclusion Criteria:** patients with acute pancreatitis who were admitted to the Department of Pancreatic Surgery, Union Hospital, Tongji Medical College Inclusion criteria: (1) patients who were admitted within 36 h of the onset of the disaese; (2) patients aged older than 18 years; (3) patients with no history of pancreatitis; and (4) patients with no history of cardiac failure, respiratory dysfunction, or renal failure. **Exclusion Criteria:** (1) patients who were not admitted within 36 h of the onset of the disaese; (2) patients aged younger than 18 years; (3) patients with history of pancreatitis; and (4) patients with history of cardiac failure, respiratory dysfunction, or renal failure.	**Intervention:** none **Comparison:** All the 603 patients were randomly divided into training group (402 cases) and test group (201 cases).	**Primary:** To develop a model for the early prediction of severe acute pancreatitis **Secondary:** none **Results:** The decision tree model was developed using creatinine, lactate dehydrogenase, and oxygenation index to predict SAP. The diagnostic sensitivity and specificity of SAP in the training group were 80.9% and 90.0%, respectively, and the sensitivity and specificity in the test group were 88.6% and 90.4%, respectively **Author's Conclusion:** The decision tree model based on creatinine, lactate dehydrogenase, and oxygenation index is more likely to predict the occurrence of SAP.

Methodical Notes

Funding Sources: The authors have no support or funding to report

COI: none

Randomization: The patients (n = 603) were randomly divided into training and test groups with a ratio of 2:1 using the computer random number generator.

Blinding: None

Dropout Rate/ITT-Analysis: None

Notes:

Ye, Jiang-Feng et al. Building and verifying a severity prediction model of acute pancreatitis (AP) based on BISAP, MEWS and routine test indexes. Clin Res Hepatol Gastroenterol. 41. 585-591. 2017

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** non-randomised cohort	**Intervention:** None **Comparison:** value of the Bedside Index for Severity in Acute Pancreatitis (BISAP), Modified Early Warning Score (MEWS), serum Ca2+, similarly hereinafter, and red cell distribution	**Primary:** BISAP and serum Ca2+ have high predictive value for the severity of AP. However, the model built by combining BISAP and serum Ca2+ is remarkably superior to those of BISAP and serum Ca2+ individually

Number of Patient: 302 **Recruitung Phase:** mild / severe acute pancreatitis **Inclusion Criteria:** None **Exclusion Criteria:** None	width (RDW) for predicting the severity grade of acute pancreatitis	**Secondary:** None **Results:** BISAP and serum Ca2+ have high predictive value for the severity of AP. However, the model built by combining BISAP and serum Ca2+ is remarkably superior to those of BISAP and serum Ca2+ individually **Author's Conclusion:** BISAP and serum Ca2+ have high predictive value for the severity of AP. However, the model built by combining BISAP and serum Ca2+ is remarkably superior to those of BISAP and serum Ca2+ individually
Methodical Notes		
Funding Sources: None reported **COI:** None reported **Randomization:** None reported **Blinding:** None reported **Dropout Rate/ITT-Analysis:** None reported **Notes:** value of the Bedside Index for Severity in Acute Pancreatitis (BISAP), Modified Early Warning Score (MEWS), serum Ca2+, similarly hereinafter, and red cell distribution width (RDW) for predicting the severity grade of acute pancreatitis and to develop and verify a more accurate scoring system to predict the severity of AP.		

NEWCASTLE - OTTAWA Checklist: Cohort: *1 Bewertung(en)*

Bansal, S S et al. Performance of the revised Atlanta and determinant-based classifications for severity in acute pancreatitis. Br J Surg. 103. 427-33. 2016

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 3 **Study type:** Single center observational cohort study of patients with acute pancreatitis identified from an institutional database. Retrospective design.	**Funding sources:** none indicated, most likely institutional funding **Conflict of Interests:** none indicated or obvious **Randomization:** none **Blinding:** none **Dropout rates:** not defined	**Total no. patients:** 228 patients **Recruiting Phase:** 2010-2014 **Inclusion criteria:** Patients were identified from a prospectively maintained departmental database. Acute pancreatitis was defined using established criteria as two of the following: serum amylase level at least three times the upper limit of normal, abdominal pain in keeping with acute pancreatitis, or CT/MRI images in keeping with acute pancreatitis9. **Exclusion criteria:** none defined	**Interventions:** none **Comparison:** Performance of three classifications systems for severity of acute pancreatitis: old Atlanta classification (AC), revised Atlanta classification (RAC) and Determinant based classifications system (DBC)
Notes:	observational cohort study of patients with acute pancreatitis identified from an institutional database. Retrospective design, no controls, no adjustments to etiology and time of disease as well as no report of incomplete data. Only referral to missing data is in methodology, that states that		

	missing data was obtained via phone interviews with practitioners. **Author's conclusion:** The Atlanta 2012 and DBC perform equally well for classification of disease severity in acute pancreatitis. The addition of a critical category in the DBC identifies patients with the most severe disease.	
Outcome Measures/results	**Primary** The systems were compared for their ability to stratify patients in accordance with admission to the intensive care unit (ICU), need for surgical treatment of pancreatic necrosis or surgical complications, need for percutaneous drainage of pancreatic or peripancreatic necrosis, duration of ICU stay, overall duration of hospital stay, and death during the acute hospital admission. **Secondary** none defined	**Results:** The in-hospital mortality rate was 6·6 per cent (15 of 228 patients). All of the outcomes considered correlated significantly with the three systems, with the exception of the need for surgery in Atlanta 1992. Atlanta 2012 and the DBC had higher area under the curve (AUC) values than Atlanta 1992 for all outcomes. The revised Atlanta and DBC systems both performed similarly with regard to ICU admission (AUC 0·927 and 0·917 respectively; both $P < 0·001$), need for percutaneous drainage (AUC 0·879 and 0·891; both $P < 0·001$), need for surgery (AUC 0·827 and 0·845; $P = 0·006$ and $P = 0·004$ respectively) and in-hospital mortality (0·955 and 0·931; both $P < 0·001$). However, the critical category in the DBC system identified patients with the most severe disease; seven of eight patients in this group died in hospital, compared with 15 of 34 with severe pancreatitis according to Atlanta 2012.

Literatursammlung:

AG2-CP Teil1: Funktionstest

Inhalt: 9 Literaturstellen

Literaturstelle	Evidenzlevel	Studientyp
Domínguez-Muñoz, J Enrique 2012	1	Prospective, observational study.
Domínguez-Muñoz, J Enrique 2004	1	prospective case control
Domínguez-Muñoz, J Enrique 2016	1	Five consecutive prospective comparative studies in patients with known advanced CP and healthy controls were performed to develop the optimal breath test.
Dumasy, Vincent 2004	1	prospective case collection
Erchinger, Friedemann 2013	1	
Kothari, Darshan 2017	1	prospective crossover study
Lara, Luis F 2017	1	prospective
Madzak, Adnan 2017	1	prospective, consecutive patients and controls
Yasokawa, Kazuya 2018	1	prospective

OXFORD (2011) Appraisal Sheet: Diagnostic Studies: 5 Bewertung(en)

Domínguez-Muñoz, J Enrique et al. Development and Diagnostic Accuracy of a Breath Test for Pancreatic Exocrine Insufficiency in Chronic Pancreatitis. Pancreas. 45. 241-7. 2016

Evidence level/Study Types	Population	Outcomes/Results
Evidence level: 1 **Study type:** Five consecutive prospective comparative studies in patients with known advanced CP and healthy controls were performed to develop the optimal breath test.	**Number of patients / samples:** Twenty patients diagnosed as having advanced CP (mean age, 48 years; range, 36–57 years; 19 men, 1 woman) and 10 healthy controls (mean age, 36 years; range, 24–54 years; 5 men, 5 women) **Reference standard:** **Validation:** **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	**Results:** **Author conclusions:**

Methodical Notes

Funding Sources:

COI:

Notes:

Kothari, Darshan et al. Comparison of Combined Endoscopic Ultrasonography and Endoscopic Secretin Testing With the Traditional Secretin Pancreatic Function Test in Patients With Suspected Chronic Pancreatitis: A Prospective Crossover Study. Pancreas. 46. 770-775. 2017

Evidence level/Study Types	Population	Outcomes/Results
Evidence level: 1 **Study type:** prospective crossover study	**Number of patients / samples:** 17 **Reference standard:** traditional 1-hour secretin pancreatic function test (sPFT) and sEUS were included in the analysis **Validation:** **Blinding:** **Inclusion of clinical information:** yes **Dealing with ambiguous clinical findings:**	**Results:** **Author conclusions:** We demonstrate poor concordance between sPFT and sEUS suggesting that a combined shortened functional and structural test using a single instrument may not be a feasible test for diagnosis of suspected CP when a cutoff of 80 mEq/L is used.

Methodical Notes

Funding Sources:

COI:

Notes:

Lara, Luis F et al. A study of the clinical utility of a 20-minute secretin-stimulated endoscopic pancreas function test and performance according to clinical variables. Gastrointest. Endosc. 86. 1048-1055.e2. 2017

Evidence level/Study Types	Population	Outcomes/Results
Evidence level: 1 **Study type:** prospective	**Number of patients / samples:** **Reference standard:** **Validation:** **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	**Results:** **Author conclusions:**

Methodical Notes

Funding Sources:

COI:

Notes:

Madzak, Adnan et al. Secretin-stimulated MRI characterization of pancreatic morphology and function in patients with chronic pancreatitis. Pancreatology. 17. 228-236. 2017

Evidence level/Study Types	Population	Outcomes/Results

Evidence level: 1 **Study type:** prospective, consecutive patients and controls	**Number of patients / samples:** Eighty-two patients with CP and 22 HC were enrolled in the study **Reference standard:** **Validation:** **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	**Results:** All imaging parameters differentiated CP patients from HC; however, correlations between morphological and functional parameters in CP were weak. **Author conclusions:** S-MRI provides detailed information about pancreatic morphology and function and represents a promising non-invasive imaging method to characterize pancreatic pathophysiology and may enable monitoring of disease progression in patients with CP.

Methodical Notes

Funding Sources:

COI:

Notes:

Yasokawa, Kazuya et al. Evaluation of pancreatic exocrine insufficiency by cine-dynamic MRCP using spatially selective inversion-recovery (IR) pulse: Correlation with severity of chronic pancreatitis based on morphological changes of pancreatic duct. Magn Reson Imaging. 48. 70-73. 2018

Evidence level/Study Types	Population	Outcomes/Results
Evidence level: 1 **Study type:** prospective	**Number of patients / samples:** Thirty-nine patients with suspected chronic pancreatitis underwent cine-dynamic MRCP with a spatially selective IR pulse. The secretion grading score (5-point scale) based on the moving distance of pancreatic juice inflow on cine-dynamic MRCP was assessed, and compared with the stage of the severity of chronic pancreatitis based on morphological changes of pancreatic duct. **Reference standard:** **Validation:** **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	**Results:** The stage of the severity of chronic pancreatitis based on morphological changes had significant negative correlations with the secretion grade ($r = -0.698$, $P < 0.001$). The secretion grading score of stage 4 was significantly lower than stage 1–3 ($P < 0.001$, $P = 0.002$, $P = 0.025$, respectively). In all 19 patients in stage 4, the secretion grading score was< 0.70. The secretion grading score of stage 1 was significantly higher than stage 2 and 4 ($P = 0.019$, $P < 0.001$, respectively). In stage 2, the secretion grading score was< 0.70 in 8 (89%) of 9 patients showing pancreatic exocrine insufficiency. Conversely, in stage 3, the secretion grading score was> 0.70 in 2 (33%) of 6 patients showing normal pancreatic exocrine function. **Author conclusions:** Conclusion: It should be noted that the degree of morphological changes of pancreatic duct does not necessarily reflect the severity of pancreatic exocrine insufficiency at cine-dynamic MRCP in stage 2–3 chronic pancreatitis.

Methodical Notes

Funding Sources:

COI:

Notes:

NEWCASTLE - OTTAWA Checklist: Case Control: 2 Bewertung(en)

Domínguez-Muñoz, J Enrique et al. Quantification of pancreatic zinc output as pancreatic function test: making the secretin-caerulein test applicable to clinical practice. Pancreatology. 4. 57-62. 2004			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 1 **Study type:** prospective case control	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** 68 **Patient characteristics:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Erchinger, Friedemann et al. Quantification of pancreatic function using a clinically feasible short endoscopic secretin test. Pancreas. 42. 1101-6. 2013			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 1 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** 77 **Patient characteristics:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

NEWCASTLE - OTTAWA Checklist: Cohort: 2 Bewertung(en)

Domínguez-Muñoz, J Enrique et al. Endoscopic ultrasonography of the pancreas as an indirect method to predict pancreatic exocrine insufficiency in patients with chronic pancreatitis. Pancreas. 41. 724-8. 2012			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 1 **Study type:** Prospective,	**Funding sources:** none **Conflict of Interests:** none	**Total no. patients:** 115 pts, 35 of 115 had PEI **Recruiting Phase:** **Inclusion criteria:** Patients older than 18 years of	**Interventions:** EUS Elastography 13MTG breath test

observational study.	**Randomization:** none **Blinding:** EUS examiner were blinded to result of function tests and vice versa **Dropout rates:**	age with afinaldiagnosis of CP of any etiology werefinally included inthe study after signing the corresponding informedconsent. **Exclusion criteria:** The presence of any severe disease limiting apatient's life expectancy as well as the inability of thepatient to understand or to undergo any of the studymethods were considered as exclusion criteria.	**Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:** The degree of pancreatic fibrosis as measured by EUS-guided elastography allows quantification of the probability of PEI in patients with CP. (	

Dumasy, Vincent et al. Fat malabsorption screening in chronic pancreatitis. Am. J. Gastroenterol. 99. 1350-4. 2004

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:** prospective case collection	**Funding sources:** none **Conflict of Interests:** none **Randomization:** no **Blinding:** no **Dropout rates:** no	**Total no. patients:** 60 **Recruiting Phase:** **Inclusion criteria:** Patients were included in the alcoholic CP group if theyhad consumed more than 50 g of alcohol per day for morethan 5 yr, and in the idiopathic CP group in the ab-sence of alcohol consumption and after negative screeningfor hereditary pancreatitis by searches for mutations of thecationic trypsinogen gene and cystic fibrosis transmembranereceptor gene, and for metabolic disorders **Exclusion criteria:** We did not in-clude patients under 18 yr old or those with liver dis-ease, severe kidney failure (calculated creatinine clearance<30 ml/min), pancreatic or extrapancreatic neoplasia, orthose who had undergone pancreatic resection. None of thepatients included was suffering from inflammatory boweldisease	**Interventions:** none supervision **Comparison:** development of exocrine dysfunction in correlation of disease duration and etiology
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** time point of marked exocrine dysfunction **Secondary**	**Results:** Of the 60 patients, 38 (63%) developed exocrine dysfunction within 5 yr of theonset of the pancreatitis and 56 (94%) after 10 yr. Moreover, undetected or untreated malabsorption had a harmful effect on weight, even in the absence of overt clinical steatorrhea	

Literatursammlung:

AG2-CP Teil2: Klassifikation_Bildgebung

Inhalt: 16 Literaturstellen

Literaturstelle	Evidenzlevel	Studientyp
Andersen, Pernille Lykke 2018	1	retrospective
Bolado, Federico 2017	1	unclear if prospective
Catalano, Marc F 2009	1	Consensus study; Thirty-two internationally recognized endosonographers anonymously voted, on terminology of EUS features
Engjom, Trond 2017	1	prospective
Frøkjær, Jens Brøndum 2018	1	Guideline Paper
Hocke, M 2012	1	Prospektive
Iglesias García, Julio 2018	1	prospektive
Iglesias-Garcia, Julio 2013	1	Prospektiv
Issa, Y 2017	1	Metaanalysis
Issa, Yama 2017	1	retrospective
Janssen, J 2014	1	prospektive
Kawada, Natsuko 2016	1	prospektiv
Kuwahara, Takamichi 2016	1	Prospektiv
Mohamed, Amir 2017	1	retrospective
Sainani, Nisha I 2015	1	retrospective
Wilcox, C Mel 2015	1	

OXFORD (2011) Appraisal Sheet: Systematic Reviews: 2 Bewertung(en)

Frøkjær, Jens Brøndum et al. Guidelines for the Diagnostic Cross Sectional Imaging and Severity Scoring of Chronic Pancreatitis. Pancreatology. 18. 764-773. 2018			
Evidence level/Study Types	**P - I - C**	**Outcomes/Results**	**Literature References**
Evidence level: 1	**Intervention:**	**Primary:**	

Study type: Guideline Paper **Databases:** verschiedne **Search period:** **Inclusion Criteria:** **Exclusion Criteria:**	**Comparison:**	**Secondary:** **Results:** **Author's Conclusion:**	

Methodical Notes

Funding Sources:

COI:

Study Quality:

Heterogeneity:

Publication Bias:

Notes:

Issa, Y et al. Diagnostic performance of imaging modalities in chronic pancreatitis: a systematic review and meta-analysis. Eur Radiol. 27. 3820-3844. 2017

Evidence level/Study Types	P - I - C	Outcomes/Results	Literature References
Evidence level: 1 **Study type:** Metaanalysis **Databases:** Medline, Embase, Cochrane, Cinhal **Search period:** A search was performed in Cochrane Library, MEDLINE, EMBASE and CINAHL databases, without restrictions for publication date or language up to September 2016. **Inclusion Criteria:** Studies were eligible when EUS, ERCP, MR imaging, CTor US was evaluated in patients with suspected CP. Duplicates, reviews, letters, case reports and book chapters were excluded. The remaining studies were potentially eligible and their full text was retrieved. To identify additional relevant studies, the reference lists of the included studies were checked manually. Studies were included if they met the following criteria: (1) sufficient data was reported to construct 2 × 2 tables (true positive, false positive, true negative and false negative); (2) the imaging technique was	**Population:** 43 studies 3460 patients **Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** Sensitivity of endoscopic retrograde cholangiopancreatography (ERCP) (82%; 95%CI: 76%-87%) was significant higher than that of abdominal ultrasonography (US) (67%; 95%CI: 53%-78%; P=0.018). The sensitivity estimates of endoscopic ultrasonography (EUS), magnetic resonance imaging (MRI), and computed tomography (CT) were 81% (95%CI: 70%-89%), 78% (95%CI: 69%-85%), and 75% (95%CI: 66%-83%), respectively, and did not differ significantly from each other. Estimates of specificity were comparable for EUS (90%; 95%CI: 82%-95%), ERCP (94%; 95%CI: 87%-98%), CT (91%; 95% CI: 81%-96%), MRI (96%; 95%CI: 90%-98%), and US (98%; 95%CI: 89%-100%). **Author's Conclusion:** EUS, ERCP, MRI and CT all have comparable high diagnostic accuracy in the initial diagnosis of CP. EUS and ERCP are outperformers and US has the lowest accuracy.	

compared with a reference standard (e.g. surgery, histology, follow-up). **Exclusion Criteria:** (1) evaluation of imaging techniques other than the aforementioned (e.g. PET-CT, EUS-FNA, EUS-elastography); (2) imaging techniques used for treatment of patients with CP (e.g. therapeutic ERCP, EUS-guided pseudocyst drainage); (3) in vitro studies; (4) studies that included less than five patients with CP; (5) studies where no separate analysis were done for patients with CP; and (6) full-text articles that were not available or retrievable.			

Methodical Notes
Funding Sources: **COI:** **Study Quality:** **Heterogeneity:** **Publication Bias:** **Notes:**

OXFORD (2011) Appraisal Sheet: Diagnostic Studies: 14 Bewertung(en)

Andersen, Pernille Lykke et al. Quantification of parenchymal calcifications in chronic pancreatitis: relation to atrophy, ductal changes, fibrosis and clinical parameters. Scand. J. Gastroenterol. 53. 218-224. 2018

Evidence level/Study Types	**Population**	**Outcomes/Results**
Evidence level: 1 **Study type:** retrospective	**Number of patients / samples:** 54 **Reference standard:** CT vs. MRI **Validation:** **Blinding:** **Inclusion of clinical information:**	**Results:** There were no correlations between the number and size of parenchymal calcifications and any of the other morphological CT and MRI Parameters. **Author conclusions:** Parenchymal calcifications are an independent pathophysiological process involved in the development of CP.

	Dealing with ambiguous clinical findings:	

Methodical Notes

Funding Sources:

COI:

Notes:

Bolado, Federico et al. Chronic Pancreatitis-Like Changes Detected by Endoscopic Ultrasound in Type 1 Diabetics Are Not Associated With Gastrointestinal Symptoms or Nutritional Deficiencies. Pancreas. 46. 102-105. 2017

Evidence level/Study Types	Population	Outcomes/Results
Evidence level: 1 **Study type:** unclear if prospective	**Number of patients / samples:** Eighty-six T1-DM patients were prospectively included. **Reference standard:** **Validation:** **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	**Results:** Fifty-three patients (61.6%) showed at least 1 morphologic abnormality. Fifty-eight patients were included in group A, 21 in group B, and 7 in Group C. No significant differences were found when comparing the 3 groups. **Author conclusions:** Chronic pancreatitis-like changes are frequent in the pancreas of T1-DMpatients. These changes are not associated with demographic or clinical data. Therefore, the clinical relevance seems to be scarce.

Methodical Notes

Funding Sources:

COI:

Notes:

Catalano, Marc F et al. EUS-based criteria for the diagnosis of chronic pancreatitis: the Rosemont classification. Gastrointest. Endosc. 69. 1251-61. 2009

Evidence level/Study Types	Population	Outcomes/Results
Evidence level: 1 **Study type:** Consensus study; Thirty-two internationally recognized endosonographers anonymously voted, on terminology of EUS features	**Number of patients / samples:** 32 Experts, reviewing tapes **Reference standard:** reference Standard: Expert opinion Statement: Lack of broadly accepted reference standard	**Results:** **Author conclusions:** In a complex disease such as CP that has no universally accepted reference standard, an EUS-based criterion for diagnosis can be determined by expert consensus opinion and the existing body of evidence.

	Validation: **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	

Methodical Notes

Funding Sources:

COI:

Notes:

Engjom, Trond et al. Diagnostic Accuracy of Transabdominal Ultrasound in Chronic Pancreatitis. Ultrasound Med Biol. 43. 735-743. 2017

Evidence level/Study Types	Population	Outcomes/Results
Evidence level: 1 **Study type:** prospective	**Number of patients / samples:** prospective, 124 patients and controls **Reference standard:** clinical data; Mayo Score **Validation:** **Blinding:** no **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	**Results:** The unweighted count of features had a sensitivity of 0.69 (0.54–0.80) and specificity of 0.97 (0.90–1). The Rosemont score had a sensitivity of 0.81 (0.69–0.91) and specificity of 0.97 (0.90–1). **Author conclusions:** Wicxhtung der Kriterien ist snncoller, als ungewichtete Kriterien zu benutzen (pro Rosemont)

Methodical Notes

Funding Sources:

COI:

Notes:

Hocke, M et al. Advanced endosonographic diagnostic tools for discrimination of focal chronic pancreatitis and pancreatic carcinoma--elastography, contrast enhanced high mechanical index (CEHMI) and low mechanical index (CELMI) endosonography in direct comparison. Z Gastroenterol. 50. 199-203. 2012

Evidence level/Study Types	Population	Outcomes/Results
Evidence level: 1	**Number of patients / samples:** 58	**Results:** Die Spezifität und

Study type: Prospektive	**Reference standard:** selber Untersucher - kein Referenzverfahren **Validation:** **Blinding:** selber UNtersucher **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	Sensitivität der einzelnen Verfahren betrugen für die B-mode Endosonografie 73,3% und 61,5%, für die Elastografie 94,7% und 33,4%, für die CELMI-EUS 84,2% und 76,9% und für die CEHMI-EUS 89,5% und 92,3%. **Author conclusions:**

Methodical Notes

Funding Sources:

COI:

Notes:

Iglesias García, Julio et al. Endoscopic ultrasound (EUS) guided fine needle biopsy (FNB) with the Procore™ needle provides inadequate material for the histological diagnosis of early chronic pancreatitis. Rev Esp Enferm Dig. 110. 510-514. 2018

Evidence level/Study Types	Population	Outcomes/Results
Evidence level: 1 **Study type:** prospektive	**Number of patients / samples:** 11 . Studie abgebrochen wegen geringer diagnostischer Wertigkeit und Komplikationen **Reference standard:** **Validation:** **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	**Results:** geringe diagnostischer Wertigkeit und hohe Komplikationsrate **Author conclusions:** Keine effiziente Methode

Methodical Notes

Funding Sources:

COI:

Notes:

Iglesias-Garcia, Julio et al. Quantitative elastography associated with endoscopic ultrasound for the diagnosis of chronic pancreatitis. Endoscopy. 45. 781-8. 2013

Evidence level/Study Types	Population	Outcomes/Results
Evidence level: 1 **Study type:** Prospektiv	**Number of patients / samples:** 191 **Reference standard:** Bildgebung (EUS) **Validation:** **Blinding:**	**Results:** A highly significant direct linear correlationwas found between the number of EUS criteria of chronic pancreatitis and the strain ratio (r=0.813; P<0.0001). The area under the ROC curvewas 0.949 (95% confidence interval 0.916–0.982) and the accuracy of EUS–elastography for diagnosing chronic pancreatitiswas 91.1% (cut-off strain ratio of 2.25). The strain ratio

	Inclusion of clinical information: **Dealing with ambiguous clinical findings:**	varied significantly in different Rosemont classification groups (P<0.001). **Author conclusions:** EUS–elastography was an accurate tool for the diagnosis of chronic pancreatitis and provided relevant and objective information to support EUS findings.

Methodical Notes

Funding Sources:

COI:

Notes:

Issa, Yama et al. Diagnosing Chronic Pancreatitis: Comparison and Evaluation of Different Diagnostic Tools. Pancreas. 46. 1158-1164. 2017

Evidence level/Study Types	Population	Outcomes/Results
Evidence level: 1 **Study type:** retrospective	**Number of patients / samples:** 50 **Reference standard:** morphology **Validation:** **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	**Results:** Chronic pancreatitis was diagnosed in 50 patients (7%), 59 patients (9%), and 61 patients (9%) by the M-ANNHEIM, Lüneburg, and Büchler tools, respectively. The overall agreement between these tools was substantial (κ = 0.75). Differences between the tools regarding the following criteria led to significant changes in the total number of diagnoses of CP: abdominal pain, recurrent pancreatitis, moderate to marked ductal lesions, endocrine and exocrine insufficiency, pancreatic calcifications, and pancreatic pseudocysts. The Büchler tool had the highest sensitivity (94%), followed by the M-ANNHEIM (87%), and finally the Lüneburg tool (81%). **Author conclusions:** Differences between diagnostic tools for CP are mainly attributed to presence of clinical symptoms, endocrine insufficiency, and certain morphological complications.

Methodical Notes

Funding Sources:

COI:

Notes:

Janssen, J et al. Effect of aging and diffuse chronic pancreatitis on pancreas elasticity evaluated using semiquantitative EUS elastography. Ultraschall Med. 35. 253-8. 2014

Evidence level/Study Types	Population	Outcomes/Results
Evidence level: 1	**Number of patients / samples:** 72 **Reference standard:** gesunde (junge vs.	**Results:** Dehnbarkeitswerte (Standardabweichung) waren in Gruppe 1 110,2

Study type: prospektive	alte) vs. kranke **Validation:** **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	(23,9), in Gruppe 2 80,0 (16,4) und in Gruppe 3 32,4 (11,9). Alle Gruppen waren im paarweisen Vergleich signifikant verschieden (p < 0,001). **Author conclusions:** Semiquantitative Elastografiemittels Histogrammanalyse kann nachweisen, dass gesunde Pankreata mit zunehmendem Alter härter werden, aber weicher bleiben als bei chronischer Pankreatitis. Ein Dehnungswert unter 50 könnte ein diagnostisches Kriterium der chronischen Pankreatitis werden.

Methodical Notes

Funding Sources:

COI:

Notes:

Kawada, Natsuko et al. Elastography for the pancreas: Current status and future perspective. World J. Gastroenterol. 22. 3712-24. 2016

Evidence level/Study Types	Population	Outcomes/Results
Evidence level: 1 **Study type:** prospektiv	**Number of patients / samples:** 2 Phasen 1: 127 2: 53 **Reference standard:** **Validation:** **Blinding:** **Inclusion of clinical information:** 1 - gesunde - Standardisierung 2 - CP **Dealing with ambiguous clinical findings:**	**Results:** Phase 1: Median PEM in the head, body, and tail of the pancreas were 3.23, 3.17, and 2.91 kPa, respectively, with no significant difference among regions (P ¼ 0.554). The intraclass correlation coefficient showed good reproducibility (r ¼ 0.71) after 5 measurements. Phase 2: There was a significant positive correlation between PEM and the histological pancreatic fibrosis stage (rs ¼ 0.63, P < 0.001). Areas under the receiver operating characteristic curve for the accuracy of SW-EG for diagnosis of pancreatic fibrosis were 0.85 (mild), 0.84 (moderate), and 0.87 (severe). **Author conclusions:** Conclusion: SW-EG can be used to determine the stage of pancreatic fibrosis non-invasively with high accuracy and reproducibility.

Methodical Notes

Funding Sources:

COI:

Notes:

Kuwahara, Takamichi et al. Quantitative evaluation of pancreatic tumor fibrosis using shear wave elastography. Pancreatology. 16. 1063-1068. 2016

Evidence level/Study Types	Population	Outcomes/Results

Evidence level: 1 **Study type:** Prospektiv	**Number of patients / samples:** 2 Phasen 1 - gesunde - Stadardisierung - 127 2 - CP - 53 **Reference standard:** **Validation:** **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	**Results:** Phase 1: Median PEM in the head, body, and tail of the pancreas were 3.23, 3.17, and 2.91 kPa, respectively, with no significant difference among regions (P ¼ 0.554). The intraclass correlation coefficient showed good reproducibility (r ¼ 0.71) after 5 measurements. Phase 2: There was a significant positive correlation between PEM and the histological pancreatic fibrosis stage (rs ¼ 0.63, P < 0.001). Areas under the receiver operating characteristic curve for the accuracy of SW-EG for diagnosis of pancreatic fibrosis were 0.85 (mild), 0.84 (moderate), and 0.87 (severe). **Author conclusions:** SW-EG can be used to determine the stage of pancreatic fibrosis non-invasively with high accuracy and reproducibility.

Methodical Notes

Funding Sources:

COI:

Notes:

Mohamed, Amir et al. Pancreatic cancer in patients with chronic calcifying pancreatitis: Computed tomography findings - a retrospective analysis of 48 patients. Eur J Radiol. 86. 206-212. 2017

Evidence level/Study Types	Population	Outcomes/Results
Evidence level: 1 **Study type:** retrospective	**Number of patients / samples:** 48 **Reference standard:** fu/histology **Validation:** **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	**Results:** The presence of a pancreatic mass in a patient with CCP is suggestive of malignancy, especiallywhen few pancreatic calcifications are observed (that are pushed aside by the tumor) and when the tumorcauses dilation of the common bile duct and main pancreatic duct. **Author conclusions:** The presence of a pancreatic mass in a patient with CCP is suggestive of malignancy, especiallywhen few pancreatic calcifications are observed (that are pushed aside by the tumor) and when the tumorcauses dilation of the common bile duct and main pancreatic duct.

Methodical Notes

Funding Sources:

COI:

Notes:

Sainani, Nisha I et al. Evaluation of Qualitative Magnetic Resonance Imaging Features for Diagnosis of Chronic Pancreatitis. Pancreas. 44. 1280-9. 2015

Evidence level/Study Types	Population	Outcomes/Results
Evidence level: 1 **Study type:** retrospective	**Number of patients / samples:** 93 **Reference standard:** kein Referenzstandard - 2 unabhängige Radiologen **Validation:** **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	**Results:** Qualitative MRI parenchymal and ductal features are associated with CP. Presence of 6 or more features results in a higher specificity for the diagnosis of CP in advanced disease. **Author conclusions:** Presence of 6 or more features results in a higher specificity for the diagnosis of CP in advanced disease.

Methodical Notes

Funding Sources:

COI:

Notes:

Wilcox, C Mel et al. Chronic pancreatitis pain pattern and severity are independent of abdominal imaging findings. Clin. Gastroenterol. Hepatol. 13. 552-60; quiz e28-9. 2015

Evidence level/Study Types	Population	Outcomes/Results
Evidence level: 1 **Study type:**	**Number of patients / samples:** prospektiv **Reference standard:** 518 **Validation:** **Blinding:** **Inclusion of clinical information:** ja **Dealing with ambiguous clinical findings:**	**Results:** **Author conclusions:** Mechanisms that determine patterns and severity of pain in patients with chronic pancreatitis are largely independent of structural variants observed by abdominal imaging techniques. Pancreas-relevant quantitative and qualitative pain measures should be included in the evaluation of patients with chronic pancreatitis, to assess pain severity independently of imaging findings.

Methodical Notes

Funding Sources:

COI:

Notes:

Literatursammlung:

AG3-AP: Bildgebung bei akuter Pankreatitis_Literatursuche

Inhalt: *82 Literaturstellen*

Literaturstelle	Evidenzlevel	Studientyp
Ahmed, Moinuddin 2016	4	Fallserie
Ahn, Sun Ho 2002	4	retrospektive Fallserie
Al-Khazraji, Ahmed 2017	4	Fallserie
Alper, Emrah 2016	4	Fallserie
Álvarez, Jorge 2015	4	Fallserie (retrospectiv)
Arita, T 1999	4	Fallserie
Arvanitakis, M 2007	4	Fallserie (prospektiv)
Avanesov, Maxim 2017	4	Fallserie (retrospektiv)
Balci, N Cem 2008	4	Fallserie retrospektiv
Balci, N Cem 2010	4	Fallserie retrospektiv
Ball, Chad G 2010	4	Fallserie retrospektiv
Barlow, A D 2013	4	Fallserie retrospektiv
Bhattacharya, Anish 2014	4	Fallserie prospektiv
Bolondi, L 1989	4	Fallserie prospektiv
Bouwense, Stefan A 2017	5	retrospectiv
Cai, Di-Ming 2014	1	prospektiv
Casas, J Darío 2004	4	Fallserie retrospektiv
Chatzicostas, Constantinos 2003	4	Fallserie prospektiv
Chen, Chenyang 2017	4	Fallserie retrospektiv
Chi, Xiao Xiao 2014	4	Fallserie retrospektiv
Coban, Gökçen 2014	4	Fallserie retrospektiv
de Freitas Tertulino, Franklin 2015	4	Fallserie prospektiv
Ocampo, Carlos 2009	1	
Papós, M 1997	1	
Peng, Rong 2013	1	
Pérez, C 1993	1	
Petrozza, J A 1985	1	
Qi, R 2015	1	

Rau, B 1998	1	
Rehan, Amna 2016	1	
Rickes, S 2006	1	
Ripollés, Tomás 2010	1	
Rotman, N 1994	1	
Sakagami, Junichi 2002	1	
Sandrasegaran, Kumar 2017	1	
Schindera, Sebastian T 2007	1	
Schölmerich, J 1991	1	
Semelka, R C 1993	1	
Serafini, A N 1982	1	
Shimizu, T 2001	1	
Shreve, P D 1998	1	
Sica, Gregory T 2002	1	
Skouras, Christos 2016	1	
Smeets, Xavier J N M 2018	1	
Sotoudehmanesh, Rasoul 2010	1	
Sternby, Hanna 2016	1	
Stimac, Davor 2007	1	
Sugiyama, M 1995	1	
Syrota, A 1981	1	
Takasu, A 2001	1	
Takeda, Kazunori 2005	1	
Tang, Wei 2011	1	
Taydas, Onur 2018	1	
Thevenot, Aldine 2013	1	
Thomas, Stephen 2012	1	
Tian, Chunjiang 2016	1	
Topal, Naile Bolca 2007	1	
Triller, J 1992	1	
Tsuji, Yoshihisa 2010	1	
Uhl, Waldemar 2002	1	
van den Biezenbos, A R 1999	1	
van Grinsven, Janneke 2017	1	

van Santvoort, Hjalmar C 2008	1	multizentrische interobserver Kohortenstudie
Verdonk, Robert C 2018	1	post-hoc-Analyse eine multizentrischen Kohortenstudie
Vesentini, S 1993	1	prospektive Fall-Kontroll-Studie
Viremouneix, Loic 2007	1	prospektive Fall-Kontroll-Studie
Vriens, Patrick W 2005	1	retrospektive Fall-Kontroll-Studie
Wallace, M B 2001	1	retrospektive Fall-Kontroll-Studie
Wang, S S 1988	1	prospektive Fall-Kontroll-Studie
Wang, Xin 2013	1	retrospektive Fall-Kontroll-Studie
Wang, Yi 2018	1	retrospectiv
Ward, J 1997	1	Fall-Kontroll-Studie, prospektiv
Watanabe, Tsubasa 2013	1	retrospektiv
West, Jeffrey H 2002	1	retrospektiv
Wichmann, Julian L 2014	1	retrospektiv
Xie, Juan 2015	1	
Xu, Haotong 2014	1	retrospektiv
Yadav, Ajay Kumar 2015	1	prospektive Fall-Kontroll-Studie
Yasokawa, Kazuya 2015	1	Retrospektiv
Yencilek, Esin 2014	1	retrospektive Fall-Kontroll-Studie
Zerem, Enver 2013	1	prospektive Kohortenstudie (Fall-Kontroll-Studie)
Zhang, Xiao-Ming 2003	1	retrospektive Studie

OXFORD (2011) Appraisal Sheet: Systematic Reviews: *1 Bewertung(en)*

Smeets, Xavier J N M et al. The Accuracy of Pancreatic Perfusion Computed Tomography and Angiography in Predicting Necrotizing Pancreatitis: A Systematic Review. Pancreas. 47. 667-674. 2018

Evidence level/Study Types	P - I - C	Outcomes/Results	Literature References
Evidence level: 1 **Study type:** **Databases:** **Search period:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** **Author's Conclusion:**	
Methodical Notes			

Funding Sources: **COI:** **Study Quality:** **Heterogeneity:** **Publication Bias:** **Notes:**

OXFORD (2011) Appraisal Sheet: Diagnostic Studies: *2 Bewertung(en)*

Bouwense, Stefan A et al. Describing Peripancreatic Collections According to the Revised Atlanta Classification of Acute Pancreatitis: An International Interobserver Agreement Study. Pancreas. 46. 850-857. 2017		
Evidence level/Study Types	**Population**	**Outcomes/Results**
Evidence level: 5 **Study type:** retrospectiv	**Number of patients / samples:** 55 (willkürlich als repräsentativ ausgewählt) **Reference standard:** **Validation:** **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	**Results:** Interobserver-Variabilität in Bezug auf Atlanta Klassifikation **Author conclusions:** Interobserver-Variabilität in Bezug auf Atlanta Klassifikation als gut eingeschätzt
Methodical Notes		
Funding Sources: keine angegeben **COI:** keine angegeben **Notes:**		

Cai, Di-Ming et al. Diagnostic value of contrast enhanced ultrasound for splenic artery complications following acute pancreatitis. World J. Gastroenterol. 20. 1088-94. 2014		
Evidence level/Study Types	**Population**	**Outcomes/Results**
Evidence level: 1 **Study type:** prospektiv	**Number of patients / samples:** 118 **Reference standard:** ja **Validation:**	**Results:** Diagnostik von Milzarterienkomplikationen im Rahmen einer akuten Pankreatitis mittels Kontrast-Sonographie: diagnostische Sensitivität der KM-Sonographie des Pankreas: 0% diagnostische Sensitivität der KM-Sonographie der Milz: 41.7%

	Blinding: verblindet **Inclusion of clinical information:** ja **Dealing with ambiguous clinical findings:** nein	**Author conclusions:** Eine KM-Sonographie der Milz bei akuter Pankreatitis könnte Informationen zu Komplikationen der Milzarterie liefern, falls Patienten eine KM-Sonographie (für andere Indikation) benötigen
Methodical Notes		
Funding Sources: keine angegeben **COI:** keine angegeben **Notes:**		

NEWCASTLE - OTTAWA Checklist: Case Control: *79 Bewertung(en)*

Ahmed, Moinuddin et al. Vascular complications in cases of acute pancreatitis - CT scan based study. J Pak Med Assoc. 66. 977-89. 2016

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 4 **Study type:** Fallserie	**Funding sources:** none **Conflict of Interests:** none **Randomization:** none **Blinding:** none **Dropout rates:**	**Total no. patients:** 210 **Patient characteristics:** 24 month **Inclusion criteria:** Patients of clinically and biochemically suspected pancreatitis that underwent CT scanning **Exclusion criteria:** chronic pancreatitis, known malignancy, cirrhosis and established portal hypertension	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** incidence of vascular complications **Secondary**	**Results:** 11.43% thrombosis of splanchnic veins	

Ahn, Sun Ho et al. Acute nontraumatic abdominal pain in adult patients: abdominal radiography compared with CT evaluation. Radiology. 225. 159-64. 2002

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 4	**Funding sources:**	**Total no. patients:** 1000	**Interventions:** none

Study type: retrospektive Fallserie	**Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Patient characteristics:** 3 month **Inclusion criteria:** abdominal pain **Exclusion criteria:** none	**Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Al-Khazraji, Ahmed et al. The Role of Abdominal Computed Tomography Scan in Acute Pancreatitis. Pancreas. 46. e52-e54. 2017			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 **Study type:** Fallserie	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** 1044 **Patient characteristics:** 48 month **Inclusion criteria:** acute Pancreatitis **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Alper, Emrah et al. Radial EUS Examination Can be Helpful in Predicting the Severity of Acute Biliary Pancreatitis. Medicine (Baltimore). 95. e2321. 2016			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 **Study type:** Fallserie	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** 187 **Patient characteristics:** 36 month **Inclusion criteria:** acute Pancreatitis **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		

Outcome Measures/results	**Primary** **Secondary**	**Results:**

Álvarez, Jorge et al. Clinical and radiological indicators of severity in patients with acute pancreatitis. Bol Asoc Med P R. 107. 33-7. 2015			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 **Study type:** Fallserie (retrospectiv)	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** 174 **Patient characteristics:** 36 month **Inclusion criteria:** acute pancreatitis **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Arita, T et al. Hepatic perfusion abnormalities in acute pancreatitis: CT appearance and clinical importance. Abdom Imaging. 24. 157-62. 1999			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 **Study type:** Fallserie	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** 28 **Patient characteristics:** 48 month **Inclusion criteria:** acute pancreatitis with CT **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Arvanitakis, M et al. Staging of severity and prognosis of acute pancreatitis by computed tomography and magnetic resonance imaging-a comparative study. Dig Liver Dis. 39. 473-82. 2007			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**

Evidence level: 4 **Study type:** Fallserie (prospektiv)	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** 35 **Patient characteristics:** 38 month **Inclusion criteria:** acute pancreatitis <72 h **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Avanesov, Maxim et al. Diagnosing acute pancreatitis-Clinical and radiological characterisation of patients without threefold increase of serum lipase. Eur J Radiol. 95. 278-285. 2017			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 **Study type:** Fallserie (retrospektiv)	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** 234 **Patient characteristics:** 70 month **Inclusion criteria:** single (SAP) and recurrent attacks (RAP) of AP and CECT ≥72 h **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Balci, N Cem et al. Diffusion-weighted MRI of the pancreas: correlation with secretin endoscopic pancreatic function test (ePFT). Acad Radiol. 15. 1264-8. 2008			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 **Study type:** Fallserie retrospektiv	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:**	**Total no. patients:** 28 **Patient characteristics:** nicht beschrieben **Inclusion criteria:** MRCP bei Patienten mit Bauchschmerzen	**Interventions:** **Comparison:**

	Dropout rates:	**Exclusion criteria:**	
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Balci, N Cem et al. MRI and S-MRCP findings in patients with suspected chronic pancreatitis: correlation with endoscopic pancreatic function testing (ePFT). J Magn Reson Imaging. 31. 601-6. 2010			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 **Study type:** Fallserie retrospektiv	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** 36 **Patient characteristics:** 46 Monate **Inclusion criteria:** Vd. chronische Pankreatitis und Secretin-MRT + Sekreten-Test **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Ball, Chad G et al. Radiation dose from computed tomography in patients with necrotizing pancreatitis: how much is too much?. J. Gastrointest. Surg. 14. 1529-35. 2010			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 **Study type:** Fallserie retrospektiv	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** 238 **Patient characteristics:** 60 Monate **Inclusion criteria:** nekrotisierende Pankreatitis **Exclusion criteria:** nicht beschrieben	**Interventions:** **Comparison:** Häufigkeit von CT und die damit applizierte Strahlung
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Barlow, A D et al. The role of magnetic resonance cholangiopancreatography in the management of acute gallstone pancreatitis. Ann R Coll Surg Engl. 95. 503-6. 2013			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 **Study type:** Fallserie retrospektiv	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** 173 **Patient characteristics:** 36 Monate **Inclusion criteria:** akute biliäre Pankreatitis + MRCP **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Bhattacharya, Anish et al. PET/CT with 18F-FDG-labeled autologous leukocytes for the diagnosis of infected fluid collections in acute pancreatitis. J. Nucl. Med. 55. 1267-72. 2014			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 **Study type:** Fallserie prospektiv	**Funding sources:** nicht berichtet **Conflict of Interests:** nicht berichtet **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** 41 **Patient characteristics:** 18 Monate **Inclusion criteria:** akute Pankreatitis mit peripankreatischen Flüssigkeitsansammlungen **Exclusion criteria:** Antibiotikatherapie in letzten 7 Tagen; Schwere der Erkrankung, die Transport zur Nuklearmedizin verhindert	**Interventions:** PET-CT mit FDG markierten Leukozyten **Comparison:** Mikrobiologie
Notes:	**Author's conclusion:** Sensitivität und Spezifität 100% (von einigen existiert keine Mikrobiologie)		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Bolondi, L et al. Impaired response of main pancreatic duct to secretin stimulation in early chronic pancreatitis. Dig. Dis. Sci. 34. 834-40. 1989			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**

Evidence level: 4 **Study type:** Fallserie prospektiv	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** 15 **Patient characteristics:** nicht beschrieben **Inclusion criteria:** nicht beschrieben **Exclusion criteria:** nicht beschrieben	**Interventions:** Secretin stimulierter Ultraschall **Comparison:** Pankreashauptgang
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Casas, J Darío et al. Prognostic value of CT in the early assessment of patients with acute pancreatitis. AJR Am J Roentgenol. 182. 569-74. 2004

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 4 **Study type:** Fallserie retrospektiv	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** 148 **Patient characteristics:** 48 Monate **Inclusion criteria:** akute Pankreatitis, contrast-enhanced helical CT in ersten 72 Stunden nach Schmerzbeginn **Exclusion criteria:**	**Interventions:** **Comparison:** klinisches outcome (Komplikationen und Tod)
Notes:	**Author's conclusion:** CT mit Sensitivität von 100% und Spezifität von 61.6%für Vorhersage von Morbidität und 100% bzw 56.9% für Letalitätsvorhersage		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Chatzicostas, Constantinos et al. Balthazar computed tomography severity index is superior to Ranson criteria and APACHE II and III scoring systems in predicting acute pancreatitis outcome. J. Clin. Gastroenterol. 36. 253-60. 2003

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 4 **Study type:** Fallserie	**Funding sources:** nicht beschrieben	**Total no. patients:** 78 **Patient characteristics:** 18	**Interventions:** **Comparison:**

prospektiv	**Conflict of Interests:** nicht beschrieben **Randomization:** **Blinding:** **Dropout rates:**	Monate **Inclusion criteria:** akute Pankreatitis, CT <72 Stunden; assement innerhalb erster 48 Stunden mit Vd. auf schweren Verlauf **Exclusion criteria:** chronische Pankreatitis	Balthazar CTSI, APACHE III , Ranson und APACHE II
Notes:	**Author's conclusion:** Balthazar score besser als andere in Vorhersage der Schwere der Pankreatitis		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Chen, Chenyang et al. Evaluation of extrapancreatic inflammation on abdominal computed tomography as an early predictor of organ failure in acute pancreatitis as defined by the revised Atlanta classification. Medicine (Baltimore). 96. e6517. 2017

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 4 **Study type:** Fallserie retrospektiv	**Funding sources:** keine **Conflict of Interests:** keine **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** 208 **Patient characteristics:** 7 Monate **Inclusion criteria:** akute Pankreatitis und CT innerhalb 24 Stunden nach Schmerzbeginn **Exclusion criteria:** chronische Pankreatitis, Schwangerschaft, maligne Erkrankung	**Interventions:** keine **Comparison:** keine
Notes:	**Author's conclusion:** EPIC-Score kann bei der Vorhersage des Auftretens von Organversagen nützlich sein, unterscheidet aber nicht zwischen Schwere und Anzahl der ausfallenden Organe in der Frühphase der AP		
Outcome Measures/results	**Primary** extrapancreatic inflammation on computed tomography Score **Secondary**	**Results:**	

Chi, Xiao Xiao et al. The normal transverse mesocolon and involvement of the mesocolon in acute pancreatitis: an MRI study. PLoS ONE. 9. e93687.

2014			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 **Study type:** Fallserie retrospektiv	**Funding sources:** keine **Conflict of Interests:** keiner **Randomization:** **Blinding:** MRT Begutachtung verbindet **Dropout rates:**	**Total no. patients:** 210 **Patient characteristics:** 24 Monate **Inclusion criteria:** akute Pankreatitis **Exclusion criteria:** Kontraindikation für MRT, chronische Pancreatitis, Pankreaskarzinom, andere Erkrankung mesenterialer Beteiligung	**Interventions:** MRT **Comparison:** MRT; APACHIE II Score
Notes:	**Author's conclusion:** Beteiligung des Mesa des Kolon transversum kann mit MRT visualisiert werden und könnte ein zusätzlicher Indikator für die Schwere einer akuten Pankreatitis sein		
Outcome Measures/results	**Primary** Beteiligung des Mesa des Kolon transversum **Secondary**	**Results:**	

Coban, Gökçen et al. Body mass index, cholecystitis, cholelithiasis, pancreatitis and imaging of common bile duct stones. Am. J. Med. Sci. 347. 364-9. 2014			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 **Study type:** Fallserie retrospektiv	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** 253 **Patient characteristics:** 96 Monate **Inclusion criteria:** ERCP + MRCP **Exclusion criteria:** gutartige Gallengangsstenose,BMI nicht ermittelbar	**Interventions:** **Comparison:** BMI
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** Sensibilität der MRCP zur Diagnostik von Gallengangssteinen **Secondary**	**Results:** Übergewicht und Adipositas verschlechtern die Diagnostik von Gallensteinen mittels MRCP	

de Freitas Tertulino, Franklin et al. Diffusion-weighted magnetic resonance imaging indicates the severity of acute pancreatitis. Abdom Imaging. 40. 265-71. 2015

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 4 **Study type:** Fallserie prospektiv	**Funding sources:** nicht angegeben **Conflict of Interests:** nicht angegeben **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** 36 **Patient characteristics:** 48 Monate **Inclusion criteria:** Patienten mit Pankreatitis, die eine DWI-MRT bekommen haben **Exclusion criteria:** keine Pankreaserkrankung	**Interventions:** DWI-MRT **Comparison:** revidierte Atlanta Kriterien
Notes:	keine Angaben zum Zeitpunkt der Bildgebung; Patienten mit bildgebend unauffälligem Pankreas wurden als Kontrollen eingestuft **Author's conclusion:** DWI könne zwischen milder und nekrotisierender Pankreatitis differenzieren		
Outcome Measures/results	**Primary** DWI des Pankreas **Secondary**	**Results:**	

Ocampo, Carlos et al. Computed tomographic prognostic factors for predicting local complications in patients with pancreatic necrosis. Pancreas. 38. 137-42. 2009

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Patient characteristics:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Papós, M et al. Prognostic role of 99mTc-HM-PAO-leukocyte scintigraphy in acute pancreatitis and in patients with pancreatic pseudocysts. Pancreas. 14. 9-15. 1997

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 Study type:	Funding sources: Conflict of Interests: Randomization: Blinding: Dropout rates:	Total no. patients: Patient characteristics: Inclusion criteria: Exclusion criteria:	Interventions: Comparison:
Notes:	Author's conclusion:		
Outcome Measures/results	Primary Secondary	Results:	

Peng, Rong et al. Pancreatic duct patterns in acute pancreatitis: a MRI study. PLoS ONE. 8. e72792. 2013			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 1 Study type:	Funding sources: Conflict of Interests: Randomization: Blinding: Dropout rates:	Total no. patients: Patient characteristics: Inclusion criteria: Exclusion criteria:	Interventions: Comparison:
Notes:	Author's conclusion:		
Outcome Measures/results	Primary Secondary	Results:	

Pérez, C et al. Radiologic diagnosis of pseudoaneurysms complicating pancreatitis. Eur J Radiol. 16. 102-6. 1993			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 1 Study type:	Funding sources: Conflict of Interests: Randomization: Blinding: Dropout rates:	Total no. patients: Patient characteristics: Inclusion criteria: Exclusion criteria:	Interventions: Comparison:

Notes:	Author's conclusion:	
Outcome Measures/results	Primary Secondary	Results:

Petrozza, J A et al. The variable appearance of distal common bile duct stenosis in chronic pancreatitis. J. Clin. Gastroenterol. 7. 447-50. 1985			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 1 Study type:	Funding sources: Conflict of Interests: Randomization: Blinding: Dropout rates:	Total no. patients: Patient characteristics: Inclusion criteria: Exclusion criteria:	Interventions: Comparison:
Notes:	Author's conclusion:		
Outcome Measures/results	Primary Secondary	Results:	

Qi, R et al. The superior aspect of the perirenal space: could it be depicted by dual-source CT in vivo in adults. Br J Radiol. 88. 20140480. 2015			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 1 Study type:	Funding sources: Conflict of Interests: Randomization: Blinding: Dropout rates:	Total no. patients: Patient characteristics: Inclusion criteria: Exclusion criteria:	Interventions: Comparison:
Notes:	Author's conclusion:		
Outcome Measures/results	Primary Secondary	Results:	

Rau, B et al. Role of ultrasonographically guided fine-needle aspiration cytology in the diagnosis of infected pancreatic necrosis. Br J Surg. 85. 179-84. 1998

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 Study type:	Funding sources: Conflict of Interests: Randomization: Blinding: Dropout rates:	Total no. patients: Patient characteristics: Inclusion criteria: Exclusion criteria:	Interventions: Comparison:
Notes:	Author's conclusion:		
Outcome Measures/results	Primary Secondary	Results:	

Rehan, Amna et al. Diagnostic Accuracy of Modified CT Severity Index in Assessing Severity of Acute Pancreatitis. J Coll Physicians Surg Pak. 26. 967-970. 2016

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 Study type:	Funding sources: Conflict of Interests: Randomization: Blinding: Dropout rates:	Total no. patients: Patient characteristics: Inclusion criteria: Exclusion criteria:	Interventions: Comparison:
Notes:	Author's conclusion:		
Outcome Measures/results	Primary Secondary	Results:	

Rickes, S et al. Echo enhanced ultrasound: a new valid initial imaging approach for severe acute pancreatitis. Gut. 55. 74-8. 2006

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 Study type:	Funding sources: Conflict of Interests: Randomization: Blinding:	Total no. patients: Patient characteristics: Inclusion criteria: Exclusion criteria:	Interventions: Comparison:

	Dropout rates:		
Notes:	Author's conclusion:		
Outcome Measures/results	Primary Secondary	Results:	

Ripollés, Tomás et al. Contrast-enhanced ultrasound in the staging of acute pancreatitis. Eur Radiol. 20. 2518-23. 2010			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 1 Study type:	Funding sources: Conflict of Interests: Randomization: Blinding: Dropout rates:	Total no. patients: Patient characteristics: Inclusion criteria: Exclusion criteria:	Interventions: Comparison:
Notes:	Author's conclusion:		
Outcome Measures/results	Primary Secondary	Results:	

Rotman, N et al. Prognostic value of early computed tomographic scans in severe acute pancreatitis. French Association for Surgical Research. J. Am. Coll. Surg. 179. 538-44. 1994			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 1 Study type:	Funding sources: Conflict of Interests: Randomization: Blinding: Dropout rates:	Total no. patients: Patient characteristics: Inclusion criteria: Exclusion criteria:	Interventions: Comparison:
Notes:	Author's conclusion:		
Outcome Measures/results	Primary Secondary	Results:	

Sakagami, Junichi et al. Ultrasonographic splanchnic arterial flow measurement in severe acute pancreatitis. Pancreas. 24. 357-64. 2002

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 Study type:	Funding sources: Conflict of Interests: Randomization: Blinding: Dropout rates:	Total no. patients: Patient characteristics: Inclusion criteria: Exclusion criteria:	Interventions: Comparison:
Notes:	Author's conclusion:		
Outcome Measures/results	Primary Secondary	Results:	

Sandrasegaran, Kumar et al. The Value of Secretin-Enhanced MRCP in Patients With Recurrent Acute Pancreatitis. AJR Am J Roentgenol. 208. 315-321. 2017

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 Study type:	Funding sources: Conflict of Interests: Randomization: Blinding: Dropout rates:	Total no. patients: Patient characteristics: Inclusion criteria: Exclusion criteria:	Interventions: Comparison:
Notes:	Author's conclusion:		
Outcome Measures/results	Primary Secondary	Results:	

Schindera, Sebastian T et al. Magnetic resonance (MR) cholangiography: quantitative and qualitative comparison of 3.0 Tesla with 1.5 Tesla. Invest Radiol. 42. 399-405. 2007

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 Study type:	Funding sources: Conflict of Interests: Randomization: Blinding:	Total no. patients: Patient characteristics: Inclusion criteria: Exclusion criteria:	Interventions: Comparison:

	Dropout rates:		
Notes:	Author's conclusion:		
Outcome Measures/results	Primary Secondary	Results:	

Schölmerich, J et al. Scintigraphic assessment of leukocyte infiltration in acute pancreatitis using technetium-99m-hexamethyl propylene amine oxine as leukocyte label. Dig. Dis. Sci. 36. 65-70. 1991			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 1 Study type:	Funding sources: Conflict of Interests: Randomization: Blinding: Dropout rates:	Total no. patients: Patient characteristics: Inclusion criteria: Exclusion criteria:	Interventions: Comparison:
Notes:	Author's conclusion:		
Outcome Measures/results	Primary Secondary	Results:	

Semelka, R C et al. Chronic pancreatitis: MR imaging features before and after administration of gadopentetate dimeglumine. J Magn Reson Imaging. 3. 79-82. 1993			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 1 Study type:	Funding sources: Conflict of Interests: Randomization: Blinding: Dropout rates:	Total no. patients: Patient characteristics: Inclusion criteria: Exclusion criteria:	Interventions: Comparison:
Notes:	Author's conclusion:		
Outcome Measures/results	Primary Secondary	Results:	

Serafini, A N et al. Biliary scintigraphy in acute pancreatitis. Radiology. 144. 591-5. 1982			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 1 Study type:	Funding sources: Conflict of Interests: Randomization: Blinding: Dropout rates:	Total no. patients: Patient characteristics: Inclusion criteria: Exclusion criteria:	Interventions: Comparison:
Notes:	Author's conclusion:		
Outcome Measures/results	Primary Secondary	Results:	

Shimizu, T et al. Magnetic resonance cholangiopancreatography in assessing the cause of acute pancreatitis in children. Pancreas. 22. 196-9. 2001			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 1 Study type:	Funding sources: Conflict of Interests: Randomization: Blinding: Dropout rates:	Total no. patients: Patient characteristics: Inclusion criteria: Exclusion criteria:	Interventions: Comparison:
Notes:	Author's conclusion:		
Outcome Measures/results	Primary Secondary	Results:	

Shreve, P D. Focal fluorine-18 fluorodeoxyglucose accumulation in inflammatory pancreatic disease. Eur J Nucl Med. 25. 259-64. 1998			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 1 Study type:	Funding sources: Conflict of Interests: Randomization:	Total no. patients: Patient characteristics: Inclusion criteria:	Interventions: Comparison:

	Blinding: Dropout rates:	Exclusion criteria:	
Notes:	Author's conclusion:		
Outcome Measures/results	Primary Secondary	Results:	

Sica, Gregory T et al. Magnetic resonance imaging in patients with pancreatitis: evaluation of signal intensity and enhancement changes. J Magn Reson Imaging. 15. 275-84. 2002			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 1 Study type:	Funding sources: Conflict of Interests: Randomization: Blinding: Dropout rates:	Total no. patients: Patient characteristics: Inclusion criteria: Exclusion criteria:	Interventions: Comparison:
Notes:	Author's conclusion:		
Outcome Measures/results	Primary Secondary	Results:	

Skouras, Christos et al. Lung ultrasonography as a direct measure of evolving respiratory dysfunction and disease severity in patients with acute pancreatitis. HPB (Oxford). 18. 159-169. 2016			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 1 Study type:	Funding sources: Conflict of Interests: Randomization: Blinding: Dropout rates:	Total no. patients: Patient characteristics: Inclusion criteria: Exclusion criteria:	Interventions: Comparison:
Notes:	Author's conclusion:		
Outcome Measures/results	Primary Secondary	Results:	

Sotoudehmanesh, Rasoul et al. Prognostic value of endoscopic ultrasound in acute pancreatitis. Pancreatology. 10. 702-6. 2010			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 1 Study type:	Funding sources: Conflict of Interests: Randomization: Blinding: Dropout rates:	Total no. patients: Patient characteristics: Inclusion criteria: Exclusion criteria:	Interventions: Comparison:
Notes:	Author's conclusion:		
Outcome Measures/results	Primary Secondary	Results:	

Sternby, Hanna et al. Significant inter-observer variation in the diagnosis of extrapancreatic necrosis and type of pancreatic collections in acute pancreatitis - An international multicenter evaluation of the revised Atlanta classification. Pancreatology. 16. 791-7. 2016			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 1 Study type:	Funding sources: Conflict of Interests: Randomization: Blinding: Dropout rates:	Total no. patients: Patient characteristics: Inclusion criteria: Exclusion criteria:	Interventions: Comparison:
Notes:	Author's conclusion:		
Outcome Measures/results	Primary Secondary	Results:	

Stimac, Davor et al. The role of nonenhanced magnetic resonance imaging in the early assessment of acute pancreatitis. Am. J. Gastroenterol. 102. 997-1004. 2007			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 1 Study type:	Funding sources: Conflict of Interests:	Total no. patients: Patient characteristics:	Interventions: Comparison:

	Randomization: Blinding: Dropout rates:	Inclusion criteria: Exclusion criteria:	
Notes:	Author's conclusion:		
Outcome Measures/results	Primary Secondary	Results:	

Sugiyama, M et al. Diagnosis of acute pancreatitis: value of endoscopic sonography. AJR Am J Roentgenol. 165. 867-72. 1995			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 1 Study type:	Funding sources: Conflict of Interests: Randomization: Blinding: Dropout rates:	Total no. patients: Patient characteristics: Inclusion criteria: Exclusion criteria:	Interventions: Comparison:
Notes:	Author's conclusion:		
Outcome Measures/results	Primary Secondary	Results:	

Syrota, A et al. 11C-L-methionine for evaluation of pancreatic exocrine function. Gut. 22. 907-15. 1981			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 1 Study type:	Funding sources: Conflict of Interests: Randomization: Blinding: Dropout rates:	Total no. patients: Patient characteristics: Inclusion criteria: Exclusion criteria:	Interventions: Comparison:
Notes:	Author's conclusion:		
Outcome Measures/results	Primary Secondary	Results:	

Takasu, A et al. [11C]methionine positron emission tomography for the evaluation of pancreatic exocrine function in chronic pancreatitis. Pancreas. 22. 203-9. 2001			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 1 Study type:	Funding sources: Conflict of Interests: Randomization: Blinding: Dropout rates:	Total no. patients: Patient characteristics: Inclusion criteria: Exclusion criteria:	Interventions: Comparison:
Notes:	Author's conclusion:		
Outcome Measures/results	Primary Secondary	Results:	

Takeda, Kazunori et al. Pancreatic ischemia associated with vasospasm in the early phase of human acute necrotizing pancreatitis. Pancreas. 30. 40-9. 2005			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 1 Study type:	Funding sources: Conflict of Interests: Randomization: Blinding: Dropout rates:	Total no. patients: Patient characteristics: Inclusion criteria: Exclusion criteria:	Interventions: Comparison:
Notes:	Author's conclusion:		
Outcome Measures/results	Primary Secondary	Results:	

Tang, Wei et al. Magnetic resonance imaging versus Acute Physiology And Chronic Healthy Evaluation II score in predicting the severity of acute pancreatitis. Eur J Radiol. 80. 637-42. 2011			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 1 Study type:	Funding sources: Conflict of Interests:	Total no. patients: Patient characteristics:	Interventions: Comparison:

	Randomization: Blinding: Dropout rates:	Inclusion criteria: Exclusion criteria:	
Notes:	Author's conclusion:		
Outcome Measures/results	Primary Secondary	Results:	

Taydas, Onur et al. Accuracy of early CT findings for predicting disease course in patients with acute pancreatitis. Jpn J Radiol. 36. 151-158. 2018			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 1 Study type:	Funding sources: Conflict of Interests: Randomization: Blinding: Dropout rates:	Total no. patients: Patient characteristics: Inclusion criteria: Exclusion criteria:	Interventions: Comparison:
Notes:	Author's conclusion:		
Outcome Measures/results	Primary Secondary	Results:	

Thevenot, Aldine et al. Endoscopic ultrasound and magnetic resonance cholangiopancreatography in patients with idiopathic acute pancreatitis. Dig. Dis. Sci. 58. 2361-8. 2013			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 1 Study type:	Funding sources: Conflict of Interests: Randomization: Blinding: Dropout rates:	Total no. patients: Patient characteristics: Inclusion criteria: Exclusion criteria:	Interventions: Comparison:
Notes:	Author's conclusion:		
Outcome Measures/results	Primary Secondary	Results:	

Thomas, Stephen et al. Diffusion MRI of acute pancreatitis and comparison with normal individuals using ADC values. Emerg Radiol. 19. 5-9. 2012			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 1 Study type:	Funding sources: Conflict of Interests: Randomization: Blinding: Dropout rates:	Total no. patients: Patient characteristics: Inclusion criteria: Exclusion criteria:	Interventions: Comparison:
Notes:	Author's conclusion:		
Outcome Measures/results	Primary Secondary	Results:	

Tian, Chunjiang et al. Multislice Spiral Perfusion Computed Tomography to Assess Pancreatic Vascularity in Mild Acute Pancreatitis. J Comput Assist Tomogr. 41. 284-288. 2016			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 1 Study type:	Funding sources: Conflict of Interests: Randomization: Blinding: Dropout rates:	Total no. patients: Patient characteristics: Inclusion criteria: Exclusion criteria:	Interventions: Comparison:
Notes:	Author's conclusion:		
Outcome Measures/results	Primary Secondary	Results:	

Topal, Naile Bolca et al. The role of Doppler sonography in predicting severity of acute pancreatitis. J Clin Ultrasound. 36. 141-7. 2007			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 1 Study type:	Funding sources: Conflict of Interests:	Total no. patients: Patient characteristics:	Interventions: Comparison:

	Randomization: Blinding: Dropout rates:	Inclusion criteria: Exclusion criteria:	
Notes:	Author's conclusion:		
Outcome Measures/results	Primary Secondary	Results:	

Triller, J et al. [Splenic complications in inflammatory pancreatic diseases]. Radiologe. 32. 546-52. 1992			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 1 Study type:	Funding sources: Conflict of Interests: Randomization: Blinding: Dropout rates:	Total no. patients: Patient characteristics: Inclusion criteria: Exclusion criteria:	Interventions: Comparison:
Notes:	Author's conclusion:		
Outcome Measures/results	Primary Secondary	Results:	

Tsuji, Yoshihisa et al. Perfusion CT is superior to angiography in predicting pancreatic necrosis in patients with severe acute pancreatitis. J. Gastroenterol. 45. 1155-62. 2010			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 1 Study type:	Funding sources: Conflict of Interests: Randomization: Blinding: Dropout rates:	Total no. patients: Patient characteristics: Inclusion criteria: Exclusion criteria:	Interventions: Comparison:
Notes:	Author's conclusion:		
Outcome Measures/results	Primary Secondary	Results:	

Uhl, Waldemar et al. Influence of contrast-enhanced computed tomography on course and outcome in patients with acute pancreatitis. Pancreas. 24. 191-7. 2002			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 1 Study type:	Funding sources: Conflict of Interests: Randomization: Blinding: Dropout rates:	Total no. patients: Patient characteristics: Inclusion criteria: Exclusion criteria:	Interventions: Comparison:
Notes:	Author's conclusion:		
Outcome Measures/results	Primary Secondary	Results:	

van den Biezenbos, A R et al. Added value of CT criteria compared to the clinical SAP score in patients with acute pancreatitis. Abdom Imaging. 23. 622-6. 1999			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 1 Study type:	Funding sources: Conflict of Interests: Randomization: Blinding: Dropout rates:	Total no. patients: Patient characteristics: Inclusion criteria: Exclusion criteria:	Interventions: Comparison:
Notes:	Author's conclusion:		
Outcome Measures/results	Primary Secondary	Results:	

van Grinsven, Janneke et al. The Association of Computed Tomography-Assessed Body Composition with Mortality in Patients with Necrotizing Pancreatitis. J. Gastrointest. Surg. 21. 1000-1008. 2017			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 1 Study type:	Funding sources: Conflict of Interests:	Total no. patients: Patient characteristics:	Interventions: Comparison:

	Randomization: **Blinding:** **Dropout rates:**	**Inclusion criteria:** **Exclusion criteria:**	
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

van Santvoort, Hjalmar C et al. Describing peripancreatic collections in severe acute pancreatitis using morphologic terms: an international interobserver agreement study. Pancreatology. 8. 593-9. 2008

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:** multizentrische interobserver Kohortenstudie	**Funding sources:** - **Conflict of Interests:** - **Randomization:** - **Blinding:** - **Dropout rates:** -	**Total no. patients:** 248 **Patient characteristics:** keine Angabe **Inclusion criteria:** contrast-enhanced CTs from patients with predicted severe acute pancreatitis were collected **Exclusion criteria:** keine Angabe	**Interventions:** - **Comparison:** -
Notes:	**Author's conclusion:** - Interobserver agreement for the new set of morphologic terms to describe peripancreatic collections in AP is good to excellent - therefore, we recommend that current clinically based definitions for CT findings in AP (e.g. pancreatic abscess) should no longer be used		
Outcome Measures/results	**Primary** - **Secondary** -	**Results:** - overall agreement was good to excellent for the terms collection (percentage agreement = 1; IQR 0.68–1), relation with pancreas (1; 0.68–1), content (0.88; 0.87–1), shape (1; 0.78–1), mass effect (0.78; 0.62–1), loculated gas bubbles (1; 1–1), and air-fluid levels (1; 1–1) -overall agreement was moderate for extent of pancreatic nonenhancement (0.60; 0.46–0.88) and encapsulation (0.56; 0.48–0.69) - the percentage agreement was greater among radiologists than clinicians for extent of pancreatic nonenhancement (0.75 vs. 0.57, p = 0.008), encapsulation (0.67 vs. 0.46, p = 0.001), and content (1 vs. 0.78, p = 0.008)	

Verdonk, Robert C et al. Short article: Presence, extent and location of pancreatic necrosis are independent of aetiology in acute pancreatitis. Eur J Gastroenterol Hepatol. 30. 342-345. 2018

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:** post-hoc-Analyse eine multizentrischen Kohortenstudie	**Funding sources:** - **Conflict of Interests:** - **Randomization:** -- **Blinding:** - **Dropout rates:** -	**Total no. patients:** 50 **Patient characteristics:** keine Angabe **Inclusion criteria:** Only adult patients with a first epi- sode of AP were included **Exclusion criteria:** - insufficient quality of the CECT - signs of chronic pancreatitis (i.e. pancreatic calcifications and/or irregular pancreatic duct) - previous pancreas-related invasive intervention, except for endoscopic retrograde cholangiography	**Interventions:** - **Comparison:** -
Notes:	**Author's conclusion:** no association between the aetiology of AP and the presence, extent and anatomical location of pancreatic necrosis		
Outcome Measures/results	**Primary** - **Secondary** -	**Results:** - The most frequent aetiologies were biliary (105 patients, 37%), followed by alcohol (102 patients, 36%) and other aetiologies including idiopathic (78 patients, 27%) - No relationship was found between the aetiology and the presence of pancreatic necrosis, EXPN, location of pancreatic necrosis or presence of collections	

Vesentini, S et al. Prospective comparison of C-reactive protein level, Ranson score and contrast-enhanced computed tomography in the prediction of septic complications of acute pancreatitis. Br J Surg. 80. 755-7. 1993

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:** prospektive Fall-Kontroll-Studie	**Funding sources:** - **Conflict of Interests:** - **Randomization:** -	**Total no. patients:** 59 **Patient characteristics:** 06/1988 - 12/1990 **Inclusion criteria:** All had acute pancreatitis and fulfilled the following	**Interventions:** - **Comparison:** -

	Blinding: - **Dropout rates:** -	criteria: no previous pancreatic disease; no signs of sepsis on admission; no previous antibiotic treatment; admission within 48 h of onset of symptoms; availability of contrast-enhanced computed tomography (CT) within 24 h of admission; and no need for early biliary surgery **Exclusion criteria:** 12 were excluded from the study because of clinically demonstrated non-pancreatic infection requiring antibiotic treatment	
Notes:	**Author's conclusion:** Early detection of pancreatic necrosis by CT should be the primary inclusion criterion in future clinical trials of antibiotic prophylaxis in acute pancreatitis		
Outcome Measures/results	**Primary** - **Secondary** -	**Results:** Although all prognostic indices correlated signijicantly with sepsis, multivariate logistic regression analysis showed that the only variables predictive of the risk of subsequent sepsis were the presence and extent of necrosis.	

Viremouneix, Loic et al. Prospective evaluation of nonenhanced MR imaging in acute pancreatitis. J Magn Reson Imaging. 26. 331-8. 2007 90 Ul/liter) and lipase (normal 190 Ul/liter) **Funding sources: - renal failure with a serum creatinine level higher than 2 mg/dL** **- known allergy to iodinated contrast medium** **-pregnancy** **- age under 18 years** **- presence of metallic implants (pacemaker)** **- inability to cooperate because of claustrophobia** **Dropout rates: -** **Study limitations: -**	**Total no. patients:** - **Recruiting Phase:** - **Inclusion criteria:** - The coefficient correlation between CTSI and MRISI was good, with r 0.6 (P 0.001) - Considering CE-CT scan as the gold standard, sensitivity (Sn), specificity (Sp), positive predictive value (PPV), and negative predictive value (NPV) of NE-MRI for detecting severe AP based on imaging criteria were 100%, 82.6%, 100%, and 21%, respectively - NE- MRI discriminates normal pancreatic	**Interventions:** -

			parenchyma from edema and necrosis with a correlation between morbidity (P 0.008 **Exclusion criteria:** NE-MRI seems to be a reliable method of stag- ing AP severity in comparison to CE-CT scan nonenhanced (NE) magnetic resonance imaging (MRI) (NE-MRI)	
Notes:	**Author's conclusion:** -			
Outcome Measures/results	**Primary** - **Secondary** -	**Results:** -		

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Evidence level

Evidence level: 1

Study type: prospektive Fall-Kontroll-Studie

Methodical Notes

Funding sources: -

Conflict of Interests: -

Randomization: -

Blinding: -

Dropout rates: -

Patient characteristics

Total no. patients: 90

Patient characteristics: 01/2002 - 04/2004

Inclusion criteria: patients with acute pancreatitis

- presence of typical abdominal pain combined with three times the upper limits of normal for both amylase (normal 90 UI/liter) and lipase (normal 190 UI/liter)

Exclusion criteria: - renal failure with a serum creatinine level higher than 2 mg/dL

- known allergy to iodinated contrast medium

-pregnancy

Interventions

Interventions: -

Comparison: -

		- age under 18 years - presence of metallic implants (pacemaker) - inability to cooperate because of claustrophobia
Notes:	**Author's conclusion:** NE-MRI seems to be a reliable method of stag- ing AP severity in comparison to CE-CT scan nonenhanced (NE) magnetic resonance imaging (MRI) (NE-MRI)	
Outcome Measures/results	**Primary** - **Secondary** -	**Results:** - The coefficient correlation between CTSI and MRISI was good, with r 0.6 (P 0.001) - Considering CE-CT scan as the gold standard, sensitivity (Sn), specificity (Sp), positive predictive value (PPV), and negative predictive value (NPV) of NE-MRI for detecting severe AP based on imaging criteria were 100%, 82.6%, 100%, and 21%, respectively - NE- MRI discriminates normal pancreatic parenchyma from edema and necrosis with a correlation between morbidity (P 0.008

Vriens, Patrick W et al. Computed tomography severity index is an early prognostic tool for acute pancreatitis. J. Am. Coll. Surg. 201. 497-502. 2005

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:** retrospektive Fall-Kontroll-Studie	**Funding sources:** - **Conflict of Interests:** - **Randomization:** - **Blinding:** - **Dropout rates:** -	**Total no. patients:** 69 **Patient characteristics:** 01/1994 - 10/2002 **Inclusion criteria:** first time acute pancreatitis clinical presentation (acuteonset of epigascric pain, nausea, vomiting) and findings on physical examination (epigastric tenderness, decreased bowel sounds, tachycardia, hypo- tension), supported by laboratory determinations (leukocytosis > 12 X 10/ 1., serum amylase > 220 U/L,orurineamylase> 1,500U/L) **Exclusion criteria:** O+other causes of acute abdominal pain were ruled out	**Interventions:** - **Comparison:** -
Notes:	**Author's conclusion:** - early establishment of the CTSI is an excellent prognostic tool for complications and mortality		

	- Patients with a CTSI of 0 to 3 can safely be discharged from the ICU	
Outcome Measures/results	**Primary** - **Secondary** -	**Results:** - the overall complication rate was 57%; mortality was 9% - in patients with a CTSI of 0 to 3, these rates were 42% and 2%, respectively - in chose with CTSI of 4 to 6, 81% and 19 %, respectively - in those with CT SI of 7 to 10, 100%and 33%, respectively - outcomes of subsequent CT scans did not alter the initial prognosis - early CTSI correlated well with the incidence of complications, sepsis, mortality, and necessity for ICU admission

Wallace, M B et al. The reliability of EUS for the diagnosis of chronic pancreatitis: interobserver agreement among experienced endosonographers. Gastrointest. Endosc. 53. 294-9. 2001

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:** retrospektive Fall-Kontroll-Studie	**Funding sources:** - **Conflict of Interests:** - **Randomization:** - **Blinding:** - **Dropout rates:** -	**Total no. patients:** 45 **Patient characteristics:** **Inclusion criteria:** 33 patients undergoing EUS for abdominal pain of suspected pancreatic origin and 12 con- trol patients undergoing EUS for other indications **Exclusion criteria:** keine Angabe	**Interventions:** - **Comparison:** -

Notes:	**Author's conclusion:** - EUS is a reliable method for the diagnosis of chronic pancreatitis with good interobserver agreement among experienced endosonographers - Agreement on the EUS diagnosis of chronic pancreatitis is comparable to other commonly used endoscopic procedures such as bleeding ulcer stigmata and computed tomography of the brain for stroke localization and better than the physical diagnosis of heart sounds	
Outcome Measures/results	**Primary** - **Secondary** -	**Results:** - moderately good overall agreement for the final diagnosis of CP (K' = 0.45) - Agreement was good for individual features of duct dilatation (K' =0.6) and lobularity (K' =0.51) but poor for the other 7 features (K' < 0.4) - The expert panel had consensus or near consensus agreement (greater than 90%) on 206 of 450 (46%) individual EUS features including 22 of 45 diagnoses of CP - Agreement on the final diagnosis of CP was moderately good for those trained in third tier fellowships (K' = 0.42 ± 0.03) and those with more than 1100 lifetime pancreatic EUS examinations (K' = 0.46 ± 0.05) - The presence of stones was regarded as the most predictive feature of CP by all endosonographers, followed by visible side branches, cysts, lobularity, irregular main pancreatic duct, hyperechoic foci, hyperechoic strands, main pancreatic duct dilatation, and main duct hyperechoic margins - The most common diagnostic criterion for the diagnosis of CP was the total number of features (median 4 or greater, range 3 or greater to 5 or greater)

Wang, S S et al. Clinical significance of ultrasonography, computed tomography, and biochemical tests in the rapid diagnosis of gallstone-related pancreatitis: a prospective study. Pancreas. 3. 153-8. 1988

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:** prospektive Fall-Kontroll-Studie	**Funding sources:** - **Conflict of Interests:** - **Randomization:** - **Blinding:** - **Dropout rates:** -	**Total no. patients:** 88 **Patient characteristics:** 03/1986 - 04/1987 **Inclusion criteria:** Patienten mit akuter Pancreatitis (diagnosis of acute pancreatitis was based on a 10 SD elevation above the mean of serum amylase, serum lipase, and serum pancreatic isoamylase) **Exclusion criteria:** keine Angabe	**Interventions:** - **Comparison:** -
Notes:	**Author's conclusion:** - a combination of US and biochemical tests can provide the best noninvasive method in rapidly detecting gallstones as an etiological factor in acute pancreatitis - Computed tomography is not cost-effective - A positive result of biochemical tests despite a negative finding in US calls for an intensive search for gallstones by further investigation with endoscopic retrograde cholangiography or repeated US ex- aminations		
Outcome Measures/results	**Primary** - **Secondary** -	**Results:** - The sensitivity of biochemical tests was 84.6% when the patients had three or more positives of five parameters [including serum bilirubin, alkaline phos- phatase (AP), gamma-glutamyl transpeptidase (GGT), alanine transaminase (ALT), and alanine transaminase-aspartate transaminase (ALT-AST) ratio] - The sensitivity, specificity, and accuracy were 71.8, 98.0, and 86.4% for US, and 52.9%, 100%, and 79.5%for CT - The sensitivity, specificity, and accuracy were improved to 82.1, 100, and 93.2% by the combination of US and CT, and 94.9, 100, and 97.7% by the combination of US and biochemical tests -Adding CT to the combination of US and biochemical tests resulted in only a slight improvement in sensitivity and accuracy	

Wang, Xin et al. An evidence-based proposal for predicting organ failure in severe acute pancreatitis. Pancreas. 42. 1255-61. 2013

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:** retrospektive Fall-Kontroll-Studie	**Funding sources:** - **Conflict of Interests:** - **Randomization:** - **Blinding:** - **Dropout rates:** -	**Total no. patients:** 393 **Patient characteristics:** 2000 - 2012 **Inclusion criteria:** severe acute pancreatitis (defined by Atlanta Classification) **Exclusion criteria:** keine Angabe	**Interventions:** - **Comparison:** -
Notes:	**Author's conclusion:** CCAAB-Score is an efficient and accurate method for the early evaluation of patients with SAP for in- hospital organ failure		
Outcome Measures/results	**Primary** - **Secondary** -	**Results:** Prädiktoren für Organversagen bei SAP sind - calcium level greater than or equal to 1.84 mmol/L - serum creatinine level greater than or equal to 110 Hmol/L - age greater than or equal to 72 years activated partial thromboplastin time less than or equal to 30.95 seconds - Balthazar computed tomography score greater than or equal to 7 (CCAAB) score system	

Wang, Yi et al. The Value of Modified Renal Rim Grade in Predicting Acute Kidney Injury Following Severe Acute Pancreatitis. J Comput Assist Tomogr. 42. 680-687. 2018

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:** retrospectiv	**Funding sources:** - **Conflict of Interests:** - **Randomization:** - **Blinding:** - **Dropout rates:** -	**Total no. patients:** 105 **Patient characteristics:** 09/2013 - 10/2016 **Inclusion criteria:** diagnosis of SAP (severe acute pancreatitis) and underwent a contrast-enhanced CT examination in 48 hours after onset of symptom **Exclusion criteria:** (1) malignancy, traumatic AP, or acute-on-chronic pancreatitis, with severe primary heart, liver, kidney, or respiratory disease (2) patients who underwent invasive treatment before admission (3) patients who were pregnant or who were younger than 18 years (4) patients who had incomplete clinical data or poor CT image quality	**Interventions:** - **Comparison:** -
Notes:	**Author's conclusion:** Modified renal rim grade is well correlated with the occurrence of AKI and mortality in SAP - The PPR space involvement is a promising prognostic factor for nonrecovery of AKI in SAP patients		
Outcome Measures/results	**Primary** - **Secondary** -	**Results:** - Modified renal rim grade score of greater than 4 yielded sensitivities and specificities of 81% and 89% for predicting AKI and 88% and 66% for mortality - Modified renal rim grade correlated moderately with bedside index of severity in acute pancreatitis (Spearman r = 0.47) and New Japanese Severity Scoring system (r = 0.43) scores - prevalence of PPR space involvement in nonrecovery AKI patients was higher than that in recovery patients (94% vs 36%, P < 0.05)	

Ward, J et al. T2-weighted and dynamic enhanced MRI in acute pancreatitis: comparison with contrast enhanced CT. Clin Radiol. 52. 109-14. 1997

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:** Fall-Kontroll-Studie, prospektiv	**Funding sources:** - **Conflict of Interests:** - **Randomization:** - **Blinding:** - **Dropout rates:** -	**Total no. patients:** 33 **Patient characteristics:** keine Angabe **Inclusion criteria:** diagnosis of severe acute pancreatitis **Exclusion criteria:** keine Angabe	**Interventions:** - **Comparison:** -
Notes:	**Author's conclusion:** MR carries some advantages over CT and can be regarded as an alternative primary technique in patients with severe pancreatitis.		
Outcome Measures/results	**Primary** - **Secondary** -	**Results:** - MR and CT were concordant in distinguishing viable pancreatic tissue from areas of necrosis - MR appeared to be more effective than CT in characterizing the content of fluid collections and in demonstrating gall stones - CT remains superior in detecting flecks of gas and calcification	

Watanabe, Tsubasa et al. Relationship between pancreatic perfusion parameters and clinical complications of severe acute pancreatitis. Pancreas. 42. 180-2. 2013

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:**	**Funding sources:** -	**Total no. patients:** 49 **Patient characteristics:** 10/2004 - 11/2008	**Interventions:** -

retrospektiv	**Conflict of Interests:** - **Randomization:** - **Blinding:** - **Dropout rates:** -	**Inclusion criteria:** **Exclusion criteria:** keine Angabe	**Comparison:** -
Notes:	**Author's conclusion:** perfusion CT with single-compartment model can be useful to predicting the severity of SAP in early stage		
Outcome Measures/results	**Primary** - **Secondary** -	**Results:** all perfusion parameters with this model in the early stage of SAP were significantly related to the develop- ment of pancreatic necrosis. The T value was lower in the patients with SAP with MOF than in those without. This suggests that T may be useful in predicting the de- velopment of MOF in the early stage of SAP.	

West, Jeffrey H et al. Gallium uptake in complicated pancreatitis: a predictor of infection. AJR Am J Roentgenol. 178. 841-6. 2002

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:** retrospektiv	**Funding sources:** - **Conflict of Interests:** - **Randomization:** - **Blinding:** - **Dropout rates:** -	**Total no. patients:** 20 **Patient characteristics:** 5 Jahre **Inclusion criteria:** For inclusion in our study, the patient had to have undergone a definitive diagnostic procedure—ei- ther percutaneous or surgical drainage or aspiration— within 10 days of performance of the gallium scanning. **Exclusion criteria:** keine Angabe	**Interventions:** - **Comparison:** -
Notes:	**Author's conclusion:** - in patients with severe pancreatitis complicated by fluid collections or inflammatory masses, gallium SPECT is a useful predictor of infection and can be used to help guide subsequent intervention - Gallium SPECT allows targeting sites of infected fluid in patients with multiple fluid collections and potentially obviates intervention in patients with sterile fluid collections.		
Outcome Measures/results	**Primary** - **Secondary** -	**Results:** Of these 23 cases, 18 patients (78%) with gallium scans showing positive findings for infection had infected fluid; five patients (22%) with negative findings for infection on gallium scans had sterile fluid ($p < 0.00001$). No false-positive scans were found among our study cases, and we found no correlation between the uptake of gallium and the presence or absence of pancreatic necrosis	

Wichmann, Julian L et al. Single-portal-phase low-tube-voltage dual-energy CT for short-term follow-up of acute pancreatitis: evaluation of CT severity index, interobserver agreement and radiation dose. Eur Radiol. 24. 2927-35. 2014

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:** retrospektiv	**Funding sources:** - **Conflict of Interests:** - **Randomization:** - **Blinding:** -	**Total no. patients:** 558 **Patient characteristics:** 01/2011 - 11/2013 **Inclusion criteria:** primary acute pancreatitis (a) a dual- contrast-phase single- or dual-energy multi-detector CT ex- amination (including unenhanced, arterial and portal phase examination) for initial evaluation of acute pancreatitis within 3 days of hospital admission (b) a follow-up dual- contrast-phase DECT examination within 30 days after initial	**Interventions:** - **Comparison:** -

	Dropout rates: -	imaging **Exclusion criteria:** Exclusion for CT imitaging were known allergies to iodinated contrast material, pregnancy, age below 18 years or impaired renal function (eGFR < 45 ml/min) 492 patients had to be excluded because the initial CT examination at our department was performed later than 3 days after admission (n = 128), either initial or follow-up CT was not performed with a dual-contrast-phase protocol (n = 109), no follow-up CT had been performed (n = 113), follow-up CT was performed later than 30 days after initial imaging (n = 64) or follow-up CT was not performed in dual-energy mode (n = 78)	
Notes:	**Author's conclusion:** - Low-tube-voltage single-phase 100-kVp CT provides sufficient information for follow-up evaluation of acute pancreatitis and significantly reduces radiation exposure - Single-portal-phase CT provides sufficient evaluation for follow-up of acute pancreatitis - Follow-up CT does not benefit from unenhanced or arterial-phase acquisition - CT severity index scores are equal for dual-contrast-phase 100-/120-kVp acquisition (P>0.05) - 100-kVp single-portal-phase follow-up CT of acute pancreatitis significantly reduces radiation exposure		
Outcome Measures/results	**Primary** - **Secondary** -	**Results:** - mean CTSI scores on unenhanced, portal- and dual- contrast-phase images were 4.9, 6.1 and 6.2 (120 kVp) and 5.0, 6.0 and 6.1 (100 kVp), respectively - Contrast-enhanced series showed a higher CTSI compared to unenhanced images (P < 0.05) but no significant differences between single- and dual-contrast-phase series (P > 0.7) - CTSI scores were compa- rable for 100-kVp and 120-kVp images (P > 0.05) - Interobserver agreement was substantial for all evaluated se- ries and subcategories (ICC 0.67–0.93) - DLP of single-portal- phase 100-kVp images was reduced by 41 % compared to 120-kVp images (363.8 versus 615.9 mGy cm)	

Xie, Juan et al. A Preliminary Investigation of Normal Pancreas and Acute Pancreatitis Elasticity Using Virtual Touch Tissue Quantification (VTQ) Imaging. Med. Sci. Monit. 21. 1693-9. 2015

Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 1 **Study type:**	**Funding sources:** - **Conflict of Interests:** - **Randomization:** - **Blinding:** - **Dropout rates:** -	**Total no. patients:** 254 (44 Pat. mit aP und 210 gesunde Freiwillige) **Patient characteristics:** 03/2012 - 06/2013 **Inclusion criteria:** A total of 288 consecutive adult subjects were recruited at the time of their annual physical check-up or treatment in our hospi- tal between March 2012 and June 2013 a) middle and upper abdominal pain that continuously radiates to the back b) patients had amylase/lipase levels that were at least 3 times higher than the upper limit of the normal range c) there were morphological changes of the pancreas on imaging examinations **Exclusion criteria:** - history of primary or secondary pancreatic disease - any morphological or structural abnormality in the pancreas identified by US examination	**Interventions:** - **Comparison:** -
Notes:	**Author's conclusion:** virtual touch tissue quantification (VTQ) imaging technology is a new method that shows promise for the quantification of pancreatic elasticity		
Outcome Measures/results	**Primary** - **Secondary** -	**Results:** shear wave velocity (SWV) measurements - The pancreatic head SWV value in the whole healthy group was 1.18±0.23 m/s, and that in the pancreatic body was 1.21±0.20 m/s - in patients with acute pancreatitis, the mean SWV measurements at the head were 1.18±0.20 m/s, compared to 1.25±0.19 m/s in the pancreatic body - There was no statistically significant difference between whole healthy volunteers and the acute pancreatitis group	

Xu, Haotong et al. Retrocrural space involvement on computed tomography as a predictor of mortality and disease severity in acute pancreatitis. PLoS ONE. 9. e107378. 2014

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:** retrospektiv	**Funding sources:** - **Conflict of Interests:** - **Randomization:** - **Blinding:** - **Dropout rates:** -	**Total no. patients:** 257 **Patient characteristics:** 01/2012 - 12/2012 **Inclusion criteria:** Patientin mit akuter Pankreatitis (Diagnose mittels International Classification of Diseases, Ninth Revision, Clinical Modification code for AP Eligibility criteria for patients in this study were: (1) in-patient (2) acute onset of symptoms (3) pancreatitis at first onset (4) abdominal CT scans, with scanned coverage from the diaphragmatic dome to the iliac crest (5) CT examinations obtained 3–5 days after admission **Exclusion criteria:** 1) history of traumatic pancreatitis or postoperative pancreatitis 2) history of laparotomy or a previous hospitalization for AP that might hinder the interpretation of the severity of AP 3) without contrast- enhanced CT scans because of contraindication to iodinated contrast medium and the potential risk of nephrotoxicity.	**Interventions:** keine **Comparison:** CT severity index (CTSI), vs. retrocrural space involvement (RCSI)
Notes:	**Author's conclusion:** The RCSI scoring system can predict the mortality of AP better than the CTSI system, and the severity of AP equally as well.		
Outcome Measures/results	**Primary** - **Secondary** -	**Results:** - The RCSI score can accurately predict the mortality and disease severity - The area under the ROC curve for the RCSI versus CTSI score was 0.96260.011 versus 0.90060.021 for predicting the mortality, and 0.88860.025 versus 0.90460.020 for predicting the severity of AP	

Yadav, Ajay Kumar et al. Perfusion CT: can it predict the development of pancreatic necrosis in early stage of severe acute pancreatitis?. Abdom Imaging. 40. 488-99. 2015

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:** prospektive Fall-Kontroll-Studie	**Funding sources:** **Conflict of Interests:** - **Randomization:** - **Blinding:** - **Dropout rates:** -	**Total no. patients:** 57 **Patient characteristics:** 2011 - 2013 **Inclusion criteria:** patients with a clinical diagnosis of acute pancreatitis, who presented to the hospital within 72 h from the onset of symptoms **Exclusion criteria:** - pregnancy - past history of reaction to iodinated contrast agents - elevated serum creatinine level >1.8 mg/dL - failure to obtain adequate I.V. access to sustain high injection rates - Patients with ERCP and tumor-induced pancreatitis	**Interventions:** keine **Comparison:** kein Vergleich
Notes:	**Author's conclusion:** perfusion CT is a reliable tool for early prediction of pancreatic necrosis		
Outcome Measures/results	**Primary** keine Outcome-Studie **Secondary** keine Outcome-Studie	**Results:** sensitivity and specificity of perfusion CT for predicting pancreatic necrosis were 87.5% and 100%, respectively.	

Yasokawa, Kazuya et al. Noninvasive investigation of exocrine pancreatic function: Feasibility of cine dynamic MRCP with a spatially selective inversion-recovery pulse. J Magn Reson Imaging. 42. 1266-71. 2015

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:** Retrospektiv	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** 20 **Patient characteristics:** 08-2011 - 08/2014 **Inclusion criteria:** From our MRI database system, we searched for sub- jects who underwent abdominal MR examination including cine- dynamic MRCP using spatially selective IR pulses between August 2011 and August 2014. Among these, we identified 10 patients with clinically diagnosed chronic pancreatitis who underwent the BT-PABA test as an exocrine pancreatic function test (the chronic pancreatitis group). **Exclusion criteria:** 1) cannulation in the pancreatic duct, 2) history of sur- gical procedure of the pancreatobiliary system, and 3) unclear main pancreatic duct due to motion artifact.	**Interventions:** - **Comparison:** Keiner
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** Keine **Secondary** Keine	**Results:** Results: The urinary PABA excretion rate (%) had significant positive correlations with both the mean secretion grade (r50.66, P50.002) and frequency of secretory inflow (r50.62, P50.004) in cine dynamic MRCP. Both the mean fre- quency of observations of pancreatic secretory inflow (1.461.6 times vs. 14.364.2 times, P<0.001) and the mean secretion grade (grade 5 0.16 6 0.24 vs. grade 5 1.81 6 0.81, P < 0.001) was significantly lower in the chronic pancreatitis group than in the normal subject group.	

Yencilek, Esin et al. The efficacy of diffusion weighted imaging for detection of acute pancreatitis and comparison of subgroups according to Balthazar classification. Turk J Gastroenterol. 25. 553-7. 2014

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:** retrospektive Fall-Kontroll-Studie	**Funding sources:** - **Conflict of Interests:** - **Randomization:** - **Blinding:** - **Dropout rates:** -	**Total no. patients:** 50 **Patient characteristics:** **Inclusion criteria:** alle Patienten mit aP definiert bei: The clinical diagnosis of all the patients was established on the basis of the patient's clinical symptoms, physical findings, and elevated pancreatic enzymes. **Exclusion criteria:** - presence of a history of pancreatic disorders including neoplasia, cysts, prior hepatic and gastro- intestinal disease, pancreatic atrophy, and chronic pancreatitis	**Interventions:** - **Comparison:** -
Notes:	**Author's conclusion:** DWI with MRI and ADC (apparent diffusion coefficient values are helpful in the diagnosis of all subgroups of acute pancreatitis		
Outcome Measures/results	**Primary** - **Secondary** -	**Results:** pancreatic ADC signifikant niedriger in der AP- als in Kontrollgruppe	

Zerem, Enver et al. Prognostic value of acute fluid collections diagnosed by ultrasound in the early assessment of severity of acute pancreatitis. J Clin Ultrasound. 41. 203-9. 2013

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:** prospektive	**Funding sources:** -	**Total no. patients:** 128 **Patient characteristics:** 03/2006 - 03/2011	**Interventions:** -

Kohortenstudie (Fall-Kontroll-Studie)	**Conflict of Interests:** - **Randomization:** - **Blinding:** - **Dropout rates:** -	**Inclusion criteria:** AP and onset of pain of less than 72 hours before admission typical case history associated with clinical features (upper abdominal pain, nausea, vomiting) and threefold elevation of serum amylase above the upper reference limits **Exclusion criteria:** (1) patients subjected to surgical necrosectomy or percutaneous drainage within the first 10 days after admission (2) evidence of renal failure with serum creatinine more than 2 mg/ml (3) history of allergy to intravenous iodin- ated contrast medium (4) history of pancreatic carcinoma or chronic pancreatitis (5) pregnancy (6) inability of patients to cooperate	**Comparison:** -
Notes:	**Author's conclusion:** -		
Outcome Measures/results	**Primary** - **Secondary** -	**Results:** - Flüssigkeitskollektionen bei AP sind mit vermehrten Komplikationen assoziiert, höherem Ronson-Score und Balthazar-Grad (jeweils statistische Signifikanz) - and the majority of clinical, radiologic, and biochemical parameters for predicting complications of AP ($p < 0.05$) - Univariate logistic regression also revealed significant association between the number of AFC and the occurrence of complications (OR 4.4; 95% CI 2.5–7.6) - AFC remained prognostic for complications and a cutoff point of >1 AFC was prognostic of their occurrence with 88% sensitivity and 82% specificity.	

Zhang, Xiao-Ming et al. Suspected early or mild chronic pancreatitis: enhancement patterns on gadolinium chelate dynamic MRI. Magnetic resonance imaging. J Magn Reson Imaging. 17. 86-94. 2003

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:** retrospektive Studie	**Funding sources:** **Conflict of Interests:** - **Randomization:** - **Blinding:** - **Dropout rates:** -	**Total no. patients:** 24 Pat. mit cP und 20 Patienten in Kontrolle **Patient characteristics:** 01/1995 - 07/2000 **Inclusion criteria:** 1) relapsing up- per-abdominal pain 2) enzymatic abnormalities 3) recurrent attacks of acute nonbiliary pancreatitis 4) abnormal pancreatic function 5) prior imaging findings considered equivocal for chronic pancreatitis by Sarner and Cotton (11). These findings included three or fewer abnormal branches on ERCP, or one of the following CT or sonographic abnormalities: main duct enlargement (**Exclusion criteria:** keine	**Interventions:** keine (MRT-Studie) **Comparison:** keine Vergleichsstudie
Notes:	**Author's conclusion:** dynamisches MRT mit Gadolinium kann frühzeitige und milde Veränderungen der chronischen Pankreatitis erkennen		
Outcome Measures/results	**Primary** keine Outcome-Studie **Secondary** -	**Results:** s. 3.10	

Literatursammlung:

AG3-CP Enzymsubstitution_seit 2010

Inhalt: *19 Literaturstellen*

Literaturstelle	Evidenzlevel	Studientyp
Antigua, Abigail D 2015	1	Case-control
Bang, Ulrich C 2011	1	prospective placebo-controlled study including patients
Burton, F 2011	1	retrospective analysis of data from prospective cohort study
Castiñeira-Alvariño, M 2013	1	case-control (case-case) study, prospectively collected data, post hoc analysis?
D'Haese, Jan G 2014	1	1-year prospective, multicenter, observational cohort study
Domínguez-Muñoz, J Enrique 2010	1	prospective case-control (case-case) study
Erchinger, Friedemann 2018	1	case-control
Girish, B N 2018	1	case-control
Gubergrits, N 2011	1	cohort study, a 6-month, open-label extension of RCT
Klapdor, S 2012	1	mixed case-control and cohort study
Ní Chonchubhair, Hazel M 2018	1	Non-interventional case control
Olesen, Søren S 2017	1	case-control study
Ramesh, Hariharan 2013	1	51 wk open label extension
Shah, Nehal S 2010	1	case-control
Sikkens, Edmée C M 2011	1	prospective, cross-sectional study, observational, not interventional
Thorat, V 2012	1	1-week, double-blind, randomised, placebo-controlled, parallel-group, multicentre study
Toskes, Phillip P 2011	1	randomized, double-blind, dose-response,

		crossover study with placebo run-in (7Y9 days) and 2 treatment periods (9Y11 days) composed of a high dose (7 20,000 lipase units per day) and a low dose (7 5000 lipase units per day).
Whitcomb, David C 2015	1	retrospective, post hoc, subgroup (±DM) analysis of a double-blind, randomized, placebo-controlled trial of pancrelipase in patients with EPI due to chronic pancreatitis or pancreatectomy (total or partial).
Whitcomb, David C 2010	1	double-blind, randomized, multicountry, placebo-controlled, parallel-group trial

OXFORD (2011) Appraisal Sheet: RCT: *5 Bewertung(en)*

Bang, Ulrich C et al. Oral cholecalciferol versus ultraviolet radiation B: effect on vitamin D metabolites in patients with chronic pancreatitis and fat malabsorption - a randomized clinical trial. Pancreatology. 11. 376-82. 2011

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 1 **Study type:** prospective placebo-controlled study including patients **Number of Patient:** 99 patients were eligible for the study and contacted Thirty-nine patients were screened, 9 failed Screening, 30 randomized **Recruitung Phase:** **Inclusion Criteria:** diagnostic tests for CP and fat malabsorption. CP was considered if diagnosed by endoscopic retrograde cholangiopancreatography, computer tomography, magnetic resonance imaging or ultrasound. Fat malabsorption was considered if pancreas exocrine function had been evaluated with a Lundh test (lipase	**Intervention:** Participants were randomized to 1 of 3 groups: (A) UVB rays from a tanning bed weekly and 800 mg calcium daily; (B) oral cholecalciferol 1,520 IU and 800 mg calcium daily, or (C) 800 mg calcium daily (fig. 1). The participants were offered a shift to supplements without calcium (BioVinci , 2,000 IU or identical placebo) if intolerable constipation occurred. **Comparison:**	**Primary:** primary endpoint, serum 25OHD, was assessed at screening, randomization, 2 and 6 weeks, and at the end of the study at our in-house department of clinical biochemistry (Liason , DiaSorin, Italy, CV 6.8–11%, ref. range 50–200 nmol/l). **Secondary:** **Results:** 27 completed the study. Compliance to tablets and tanning sessions was 1 80%. The changes in 25OHD levels in group B (32.3 nmol/l; 95% CI 15–50) were significantly greater than changes in group A (p ! 0.001) and group C (p ! 0.001). Changes in group A (1.1 nmol/l) did not differ from the placebo group

! 25.000 units/l first 80 min), fecal elastase-1 (! 100 g/g), or fecal fat (F-aliphatic carboxylate 1 25 mmol/day). If a test of pancreas function was lacking in the medical record prior to screening, a fecal elastase-1 test was included in the screening of the participant. Additional inclusion criteria were 25OHD ! 75 nmol/l at screening, age 1 18 years and body mass index ! 30. **Exclusion Criteria:** Exclusion criteria were a history of skin cancer, any other cancer diagnosed within 5 years of inclusion, cirrhosis, excessive alcohol intake (1 250 g/week), cardiopathy, nephropathy, or surgical resection of the gastrointestinal tract.		(p = 0.9). Changes in calcitriol Levels were identical between groups **Author's Conclusion:** Daily vitamin D supplements increased 25OHD in patients with CP compared to placebo whereas weekly tanning bed sessions did not.
Methodical Notes		
Funding Sources: **COI:** **Randomization:** small Group size limits significance **Blinding:** **Dropout Rate/ITT-Analysis:** **Notes:**		

Thorat, V et al. Randomised clinical trial: the efficacy and safety of pancreatin enteric-coated minimicrospheres (Creon 40000 MMS) in patients with pancreatic exocrine insufficiency due to chronic pancreatitis--a double-blind, placebo-controlled study. Aliment. Pharmacol. Ther. 36. 426-36. 2012

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 1 **Study type:** 1-week, double-blind, randomised, placebo-controlled, parallel-group, multicentre study **Number of Patient:** 62 patients randomised (34 pancreatin, 28 placebo), 61	**Intervention:** Patients received pancreatin (Creon) 40000 MMS (Abbott) or placebo capsules orally. The	**Primary:** change in CFA from baseline to the end of double-blind treatment. CFA was determined by the equation CFA = 100*[(mean fat intake mean stool fat)/mean fat intake]. Stool samples

completed treatment; one patient in the placebo arm withdrew consent before completion **Recruitung Phase:** between June 2008 and May 2010. **Inclusion Criteria:** The diagnosis of CP was made using endoscopic retrograde cholangiopancreatography, endosonography, ultrasonography indicative of calcifications or duct dilatation, other suitable imaging techniques (e.g. plain film radiography, computed tomography) and/or histology. Patients were required to have PEI as determined by a CFA 80% during the run-in phase. Other inclusion criteria were 18 years of age and, if women, nonlactating and not of childbearing potential or having agreed to practice an approved contraception method throughout the study, which had been used for at least 3 months prior to screening. **Exclusion Criteria:** medical conditions that could interfere with the study or study drug; endocrine disease other than diabetes; major surgery except gallbladder removal or appendectomy; ileus or acute abdomen; any type of malignancy involving the digestive tract in the past 5 years; investigational drugs within 30 days prior to study entry; current excessive intake of alcohol or drug abuse; and hypersensitivity to porcine proteins or pancreatin. Concomitant use of other PERT preparations was prohibited.	dose was two capsules with each main meal (3 meals per day) and one capsule with snacks (2–3 snacks per day) for a total of six to nine capsules per day. The first dose was to be taken with the first meal on Day 1 **Comparison:**	were analysed at the Department of Biochemistry and Biophysics, St John's Medical College, Bangalore, India) and stool fat was determined according to the van de Kamer method **Secondary:** Secondary efficacy endpoints were change from baseline to end of the double-blind phase in CNA, stool characteristics, clinical symptoms, clinical global impression (CGI) of disease symptoms, body weight and body mass index (BMI). CNA was determined by the equation CNA = 100* [(mean nitrogen intake mean stool nitrogen)/mean nitrogen intake]. Mean stool weight, stool fat and stool nitrogen (g/day) were determined from the net weight/fat/ nitrogen in the 72-h stool sample. Mean fat and nitrogen intake were determined from the 96-h dietary diaries by a dietician using suitable software; nitrogen intake was determined by calculating the mean protein intake recorded then multiplying by 0.16 (the average nitrogen content of a polypeptide chain). Clinical symptoms were assessed by investigators by asking subjects to provide information on number of stools per day, stool consistency (hard, formed/ normal, soft, watery), flatulence (none, mild, moderate, or severe) and abdominal pain (none, mild, moderate, or severe). **Results:** Patients receiving pancreatin had a statistically significant greater

		improvement in fat absorption from baseline to the end of double-blind treatment compared with those receiving placebo, with a least squares mean change (95% CI) in CFA of 18.5% (15.8–21.2) vs. 4.1% (1.0–7.2), respectively. This resulted in a treatment difference of 14.4% (10.3–18.5); P = 0.001. Patients receiving pancreatin also had a statistically significant greater improvement in nitrogen absorption and greater reductions in mean stool fat, stool frequency and stool weight compared with those receiving placebo. Treatment-emergent adverse events occurred in 12 patients on pancreatin and in seven on placebo; none led to study discontinuation. **Author's Conclusion:** The results provide evidence for the efficacy of pancreatin (Creon 40000 MMS) in patients with pancreatic exocrine insufficiency due to chronic pancreatitis, and confirm that this formulation is well tolerated, with a good safety profile, at the dose administered.
Methodical Notes		
Funding Sources: **COI:** **Randomization:** **Blinding:** **Dropout Rate/ITT-Analysis:** **Notes:**		

Toskes, Phillip P et al. Efficacy of a novel pancreatic enzyme product, EUR-1008 (Zenpep), in patients with exocrine pancreatic insufficiency due to chronic pancreatitis. Pancreas. 40. 376-82. 2011

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 1 **Study type:** randomized, double-blind, dose-response, crossover study with placebo run-in (7Y9 days) and 2 treatment periods (9Y11 days) composed of a high dose (7 20,000 lipase units per day) and a low dose (7 5000 lipase units per day). **Number of Patient:** Eighty-two patients (FAS) were enrolled and received placebo during the placebo run-in phase. Seventy-six patients were randomized to treatment with ZENPEP high/low (n = 39) or low/high (n = 37) and 72 patients provided complete CFA data. **Recruitung Phase:** January 2008 andMarch 2009 **Inclusion Criteria:** Eligible patients were older than 18 years with a diagnosis of CP by medical history, preferably supported by at least one of the following imaging tests: abnormal endoscopic retrograde cholangio-pancreatography Cambridge Class 4, abnormal computed tomographic scan (dilated main pancreatic duct, atrophy of the pancreas, or calcification), abnormal ultrasound, or endoscopic	**Intervention:** After providing informed consent and undergoing screening, eligible patients were administered placebo capsules and entered the placebo baseline run-in phase (4-day ambulatory treatment). On day 5, they were hospitalized for 3 to 5 days for the baseline 72-hour measure of coefficient of fat absorption (CFA). The in-hospital diet contained a minimum of 100 g of fat daily. Patients were randomized to 1 of 2 active treatment crossover phases (a "high/low" or "low/high" dose sequence) and entered a 6-day ambulatory treatment period at home. Patients followed a diet prescribed by the site dietician and recorded data on study drug consumption, diet, clinical signs and symptoms, nonstudy drugs taken, and adverse events (AEs) in a patient diary. After 6 days, patients were hospitalized for 3 to 5 days to perform 72-hour CFA testing as described for theplacebo run-in period. Patients were then crossed over to the other dose and repeated the same treatment sequence ZENPEP was administered at a fixed daily dosage of 7 capsules per day, distributed according to the estimated fat content of the	**Primary:** CFA, Safety and tolerability were assessed from AE reporting, clinical laboratory parameters, physical examination, and vital signs. **Secondary:** **Results:** Mean CFA was significantly higher with low- (88.9%) and high-dose (89.9%) ZENPEP versus placebo run-in (82%; P G 0.001; n = 72) with no difference between doses (P = 0.228, primary end point). In patients with baseline CFA less than 90% (n = 33), the high dose was significantly more effective (CFA: 84.1%) than the low dose (CFA: 81.1%; P G 0.001). Post hoc analysis revealed an increase in treatment effect with more severe EPI. Coefficient of nitrogen absorption (P G 0.001), body weight (P e 0.021), and body mass index (P e 0.020) also increased significantly with both doses compared with baseline. Percentage of days with EPI symptoms decreased with both doses. **Author's Conclusion:** Our findings suggest that CP patients with EPI benefit from a low dose of ZENPEP, whereas the high dose might be needed for patients with more severe EPI.

ultrasound with 5 or more abnormalities noted. Patients with partial or distal pancreatic resection (not due to cancer) were also eligible. Exocrine pancreatic insufficiency was documented by fecal elastase (FE1) of 100 Kg/g of stool or less (Pancreatic Elastase 1; Genova Diagnostics, Asheville, NC) performed at the screening visit **Exclusion Criteria:** Patientswith a history of CF, excessive alcoholism, drug abuse, uncontrolled diabetes, acute pancreatitis, noncutaneous malignancy, or human immunodeficiency virus infection were excluded.At the start of the placebo treatment, patients discontinued all pancreatic enzyme products. Medications excluded from the study were antacids, anticholinergics, antispasmodics, octreotide, human growth hormone, motility agents (eg, metoclopramide and macrolides), agents for gastric ulcers (eg, misoprostol), proton pump inhibitors, H2 blockers, sucralfate, synthetic fat substitutes (eg, olestra), or fat-blocking nutritional supplements and laxatives (including mineral oil and castor oil).	meals (eg, 2 capsules with meals, 1 capsule with snacks). Patients administered the low dose of ZENPEP (“ZENPEP low”), seven 5000-USP lipase unit capsules, received a total daily dose of 35,000 USP lipase units. Patients administered the high dose of ZENPEP (“ZENPEP high”), seven 20,000-USP lipase unit capsules, received a total daily dose of 140,000 lipase units. **Comparison:**	
Methodical Notes		
Funding Sources: **COI:** **Randomization:**		

Blinding:

Dropout Rate/ITT-Analysis:

Notes:

Whitcomb, David C et al. Efficacy and Safety of Pancrelipase/Pancreatin in Patients With Exocrine Pancreatic Insufficiency and a Medical History of Diabetes Mellitus. Pancreas. 45. 679-86. 2015

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 1 **Study type:** retrospective, post hoc, subgroup (±DM) analysis of a double-blind, randomized, placebo-controlled trial of pancrelipase in patients with EPI due to chronic pancreatitis or pancreatectomy (total or partial). **Number of Patient:** 36 patientswith DMand 18 patients without DM among the 54 patients who entered the 1-week, double-blind, randomized period (safety population; Fig. 1). **Recruitung Phase:** **Inclusion Criteria:** patients aged 18 years or older who had provided written informed consent were eligible if they had radiographically or histologically confirmed chronic pancreatitis or total or partial pancreatectomy greater than 180 days before enrollment and confirmed EPI. The diagnosis of EPI was confirmed based on direct pancreatic function testing (eg, abnormal secretin test, fecal elastase < 100 µg/g, or fecal fat > 15 g/d) or a history of total pancreatectomy.	**Intervention:** In the first period, after prestudy screening, eligible patients who began the placebo run-in period (baseline) ingested 18 capsules per day with meals (6 capsules each at breakfast, lunch, and dinner) and 6 capsules per day with snacks (3 capsules at each of 2 daily snacks). Patients were then discharged from study centers for up to 16 days, during which time, patients were allowed to resume their usual PERT and diet. Patients were eligible to enroll in the double-blind randomized period if they were compliant with study procedures and had total stool fat content of 40 g or greater and CFA of less than 80% during the placebo run-in period. Eligible patients were randomized 1:1 to receive pancrelipase delayedrelease capsules or placebo for 7 days,	**Primary:** primary end point was the change in CFA from baseline to the end of the double-blind randomized period **Secondary:** The secondary end point was the CNA, Safety-related assessments included physical examination, vital signs, laboratory findings (ie, hematology, biochemistry, and urinalysis), and AEs as coded according to the Medical Dictionary for Regulatory Activities version 8.1. Treatment-emergent AEs (TEAEs) were those that began or worsened during the doubleblind randomized period or within 30 days after study termination if the patient did not receive subsequent open-label treatment. **Results:** Of the 25 patients who were randomized to the pancrelipase arm, 17 were diagnosed with DM; 19 of the 29 patients randomized to placebowere diagnosed with DM. Two patients had no postbaseline efficacy assessments of any kind (both in the DM group; 1 patient each in the pancrelipase and placebo arms). Three patients had no stoolrelated

For the post hoc analysis, patients were classified to have DM if they had a medical history of diabetes diagnosis at study entry, based on preferred terms of "diabetes mellitus," "diabetes mellitus malnutrition-related," "type 1 diabetes mellitus," "type 2 diabetes mellitus," or "pancreatogenous diabetes." **Exclusion Criteria:** Among the exclusion criteria were severe medical conditions that might limit participation in or completion of the study or recent major surgery with the exception of appendectomy, pancreatic surgery for chronic pancreatitis, abdominal surgery due tothe underlying pancreatic disease that necessitated the surgery, or gall bladder removal. Patients with celiac disease, Crohn disease, presence of a pancreatic pseudocyst of 4 cm or larger, active malignancy, human immunodeficiency virus infection, or continued excessive intake of alcohol or drug abuse were also excluded. Concomitant medications that could affect duodenal pH, gastric emptying, and bile secretion were allowed during the study if the dose was stable.	to be taken with the food as during the placebo run-in period. To maintain blinding, the appearance of the pancrelipase and placebo capsules was identical. The total dose of pancrelipase for patientswho received active treatment was 72,000 lipase units per main meal (six 12,000–lipase unit capsules) and 36,000 lipase units per snack (three 12,000–lipase unit capsules). All stools were collected for the final 72 hours of the placebo run-in period and the double-blind randomized period so that the fat and nitrogen contents could be measured. To accurately delineate the start and finish of the stool collection periods, patients ingested blue food dye (500 mg FD&C Blue #2 indigo carmine; Brenntag GmbH, Mülheim an der Ruhr, Germany, and Roha-Caleb UK Ltd, Caldicot, United Kingdom) on days 1 and 4 of the placebo run-in period and days 3 and 6 of the double-blind randomized period. During the placebo run-in and double-blind randomized periods, patientswere	efficacy assessments (ie, CFA and CNA). Therefore, the efficacy population consisted of the 49 patients who completed the double-blind, randomized period and had postbaseline CFA and CNA measurements, 32 (65.3%) of whom were diagnosed with DM (pancrelipase, n = 15; placebo, n = 17). Themean change frombaseline in CFA in the DMgroupwas significantly greater with pancrelipase than with placebo (Fig. 2). The mean (SD) change from baseline CFA values was 36.0% (18.6%) for pancrelipase (n = 15) and 7.5% (12.3%) for placebo (n = 17; P < 0.0001). The efficacy results in patients without DM (Fig. 3) were consistent with the results seen in the DM group. The mean (SD) change from baseline CFA values was 25.2% (17.5%) for pancrelipase (n = 7) and 12.3% (12.4%) for placebo (n = 10; P = 0.0326). Therewas a statistically nonsignificant trend (P = 0.0802) toward a greater impact of pancrelipase in patients with DM compared with patients without DM (Fig. 4). The mean change from baseline in CNA in the DM group was significantly greater with pancrelipase than with placebo (Fig. 5). The mean (SD) change from baseline CNA values was 33.4% (30.5%) for pancrelipase (n = 15) and 3.7% (29.0%) for placebo (n = 17; P = 0.0002). Ten of the 11 patients with 1 or more TEAEs were in the DM

	monitored and treated in a controlled setting (eg, clinical research unit, clinic facility, or hospital), and all food was provided to the patient by center personnel to ensure consumption of at least 80 g of fat each day. **Comparison:**	group; however, there was no significant difference between patients who received pancrelipase (n = 5/17, 29.4%) and those who received placebo (n = 5/19, 26.3%; P = 0.836). Most of the TEAEs consisted of gastrointestinal events and metabolism and nutritional disorders. In the DM group, hypoglycemia occurred in 1 patient in each treatment arm (pancrelipase and placebo), whereas hyperglycemia occurred in 1 patient in the pancrelipase arm and in 2 patients in the placebo arm. One pancrelipase-treated patient experienced inadequate diabetes control (vs none in the placebo arm). **Author's Conclusion:** Pancrelipase improved fat and protein absorption in patients with EPI due to chronic pancreatitis or pancreatectomy, with or without DM, and matched the safety profile previously reported
Methodical Notes		
Funding Sources: **COI:** **Randomization:** **Blinding:** **Dropout Rate/ITT-Analysis:** **Notes:**		

Whitcomb, David C et al. Pancrelipase delayed-release capsules (CREON) for exocrine pancreatic insufficiency due to chronic pancreatitis or pancreatic surgery: A double-blind randomized trial. Am. J. Gastroenterol. 105. 2276-86. 2010

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 1 **Study type:** double-blind, randomized, multicountry, placebo-controlled, parallel-group trial **Number of Patient:** In total, 180 patients provided consent, 179 entered the run-in period, and 54 were randomized (25 pancrelipase, 29 placebo) Overall, 52 patients completed the 1-week double-blind period **Recruitung Phase:** between 4 April 2007 and 18 August 2008. **Inclusion Criteria:** Patients ≥ 18 years of age who had provided written informed consent were eligible if they had confi rmed CP or total or partial pancreatectomy > 180 days before enrollment, and confi rmed EPI. CP was to be proven (in medical history) radiographically or histologically by at least one of the following criteria: imaging techniques (ultrasound, computed tomography, magnetic resonance imaging, or endoscopic ultrasound); endoscopic retrograde cholangiopancreatography; plain fi lm of the abdomen with pancreatic calcifi cation; or histology. EPI had to be proven by direct pancreatic function testing, e.g., abnormal-secretin test, or fecal elastase < 100 µ g / g, or fecal fat > 15 g/ day (according to 72-h fecal fat test), or total pancreatectomy documented in medical history. A fecal fat threshold of > 15 g/ day	**Intervention:** single-blind placebo run-in period followed by a double-blind randomized period, aft er which eligible patients could enter a 6-month open-label extension phase (open-label data to be reported separately). During both the run-in and randomized periods, all patients were actively monitored and treated in a strictly controlled inpatient setting such as a clinical research unit, clinic facility, or hospital. Site personnel monitored compliance with study procedures including dietary and stool collection requirements.Following the single-blind placebo run-in period, patients were discharged from study centers for up to 16 days while their eligibility for randomization to the double-blind phase was assessed. During this time there were no restrictions regarding pancreatic supplementation therapy. Th erefore patients could take their usual PERT and continue with their normal home diet. Patients who satisfi ed the following eligibility criteria were randomized to double-blind treatment with either pancrelipase or placebo: compliant with study procedures including diaries and stool collections, total stool fat content of ≥ 40 g, and coeffi cient of fat absorption (CFA) < 80 % during	**Primary:** primary outcome measure was the change in CFA from baseline to the end of the double-blind treatment period. **Secondary:** Secondary effi cacy outcomes included the coeffi cient of nitrogen absorption (CNA), stool fat, stool nitrogen, and clinical symptomatology. Safety measures included physical examination, assessment of vital signs, and safety laboratory values (hematology, biochemistry, and urinalysis), and recording of adverse events (AEs) according to the Medical Dictionary for Regulatory Activities version 8.1. AEs were considered treatment-emergent adverse events (TEAEs) if they had started during treatment, or if pre-existing AEs had worsened during treatment. **Results:** In total, 25 patients (median age of 54 years, 76 % male) received pancrelipase and 29 patients (median age of 50 years, 69 % male) received placebo. The mean ± s.d. change from baseline in CFA was signifi cantly greater with pancrelipase vs. placebo: 32.1 ± 18.5 % vs. 8.8 ± 12.5 % (

characterized patients with severe EPI who had a high probability of meeting the interim inclusion criteria and thus would be eligible for randomization to the double-blind phase. If medical records for a patient did not include documentation of the above, a fecal-elastase test was performed during screening to confi rm subject eligibility (fecal elastase < 100 µ g/ g required). Women with child-bearing potential were required to agree to use adequate birth control throughout the study and for 30 days aft er the last dose of study drug. **Exclusion Criteria:** Exclusion criteria included severe medical conditions that might limit participation in or completion of the study, or recent (as per investigator ' s judgment) major surgery with the exception of appendectomy, PS for CP, abdominal surgery due to the underlying pancreatic disease that necessitated the surgery (e.g., pancreatectomy with additional abdominal surgery), or gall bladder removal. Also excluded were patients with ileus or acute abdomen, any type of malignancy in the digestive tract other than pancreatic cancer in the past 5 years, any type of malignancy not in remission, HIV, celiac disease, Crohn ' s disease, presence of a pancreatic pseudocyst ≥ 4 cm, continued excessive intake of alcohol or drug abuse, known allergy to pancrelipase (pancreatin) or the inactive ingredients of pancrelipase delayed-release capsules,	the run-in period. Patients eligible to enter the double-blind phase were randomized 1:1 to pancrelipase delayedrelease capsules or placebo for 7 days, taken orally. Randomization was carried out centrally by telephone by the pharmaceutical supplies department of Solvay Pharmaceuticals, B.V. using blocks of pre-specifi ed size and stratifi ed by site. Patients in the pancrelipase group received 72,000 lipase units per main meal (six 12,000-lipase unit capsules) and 36,000 lipase units per snack (three 12,000-lipase unit capsules), to be taken during meals. Patients in the placebo group received placebo capsules as per the run-in period. **Comparison:**	P < 0.0001). Similarly, the mean ± s.d. change from baseline in CNA was greater for pancrelipase vs. placebo: 97.7 ± 82.3 % vs. 24.4 ± 101.0 % (P = 0.0013). Greater improvements from baseline in stool frequency, stool consistency, abdominal pain, and fl atulence were observed with pancrelipase vs. placebo. Treatment-emergent adverse events (TEAEs) were reported in fi ve patients (20.0 %) in the pancrelipase group and in six (20.7 %) in the placebo group; the most common were gastrointestinal (GI) events and metabolism / nutrition disorders. There were no treatment discontinuations due to TEAEs. **Author's Conclusion:** Pancrelipase delayed-release 12,000-lipase unit capsules were effective in treating fat and nitrogen maldigestion with a TEAE rate similar to that of placebo in patients with EPI due to CP or PS.

or exposure to an experimental drug within 4 weeks of the start of the study.Any medications that could interfere with the study medication, such as other pancreatic enzyme preparations or antidiarrheals, were prohibited		

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes:

NEWCASTLE - OTTAWA Checklist: Case Control: *8 Bewertung(en)*

Antigua, Abigail D et al. Challenges of Administering Pancrelipase in Pancreatitis Patients. J Am Coll Nutr. 35. 334-8. 2015

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:** Case-control	**Funding sources:** **Conflict of Interests:** **Randomization:** none **Blinding:** none **Dropout rates:**	**Total no. patients:** N=24 elemental Nutrition, N=41 pancrelipase enzyme supplementation (PES)+ non-elemental nutrition **Patient characteristics:** enteral nutrition from August 2008 to August 2010 or elemental nutrition from August 2011 to August 2013. **Inclusion criteria:** retrospective chart review was	**Interventions:** elemental Nutrition vs. pancrelipase enzyme supplementation (PES)+ non-elemental nutrition **Comparison:**

		conducted at a 939-bed tertiary academic medical center. Adult patients were eligible for inclusion if they had a diagnosis of pancreatitis and received PES (Zenpep or Creon) with **Exclusion criteria:** Patients were excluded if survived less than 48 hours, received PES for enteral access device clearance, or concurrently received PES and elemental nutrition or parenteral nutrition.	
Notes:	**Author's conclusion:** Utilizing elemental nutrition compared to PES plus nonelemental enteral nutrition in patients with pancreatitis was not associated with a significant reduction in percentage of diarrhea-free days, time-to-goal enteral nutrition, and nutrition status. A multicenter, prospective, randomized, controlled trial is warranted to further evaluate the efficacy of elemental nutrition in patients with pancreatitis.		
Outcome Measures/results	**Primary** primary outcome was the percentage of diarrhea-free days. Diarrhea was defined as having documented continuous stool output over a 24-hour period **Secondary** Secondary outcomes included nutrition status, institution-based	**Results:** no difference between the 2 groups in the percentage of diarrhea-free days (Table 2). The percentage of diarrhea-free day in the PES plus nonelemental enteral nutrition group was 53.45% § 36.76% compared to 46.80% § 29.03% in the elemental nutrition group (p=0.45) For secondary outcomes of time-to-goal enteral nutrition, pre-albumin, and albumin, there were no statistical differences between the 2 groups	

	nutrition protocol adherence, and malabsorption status.	

Castiñeira-Alvariño, M et al. The role of high fat diet in the development of complications of chronic pancreatitis. Clin Nutr. 32. 830-6. 2013			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 1 **Study type:** case-control (case-case) study, prospectively collected data, post hoc analysis?	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** A total of 193 patients from prospectively collected CP database fulfilled the inclusion criteriafinal cohort of 168 subjects **Patient characteristics:** **Inclusion criteria:** For the present study, patients with age <18 years at index visit to the CP outpatient clinic were included. **Exclusion criteria:** Patients who clearly modified the diet before the index visit were excluded. A modification of the diet was defined as the elimination of any type of food because of symptoms that the patient perceived as related to the disease.	**Interventions:** Demographic and clinical data were collected in a detailed questionnaire including sex, age, age from onset of symptoms, age at first episode of acute pancreatitis if any, body mass index (BMI), clinical presentations of the disease (pain, chronic diarrhea or jaundice), smoking and drinking habits, and results of diagnostic imaging.At inclusion, exocrine pancreatic functionwas investigated in all patients using the 13C-mixed trygliceryde (13C-MTG) breath test.Dietary data were obtained through a specific nutritional questionnaire presented to patients at diagnosis.24 The

			questionnaire assessed foods consumed during the preceding month. Daily fat and caloric intake was calculated based on standard nutritional contents of different foods and meals according to the Spanish Food Composition Database (Supplement 1). Fat intakewas classified as high when the daily caloric intake in fat exceeded 30% of the total daily intake of calories recommended by US Food and Nutrition Board (Table 1).25 In addition, we specifically asked if patients modified their diet from onset of CP symptoms. **Comparison:**
Notes:	**Author's conclusion:** In conclusion, an association between high fat diet and a low age at diagnosis and age at onset and continuous abdominal pain was observed in this cross-sectional caseecase study in a large cohort of patients with CP.		
Outcome Measures/results	**Primary** **Secondary**	**Results:** Based on the nutritional questionnaire, fat intake was classified as high in 24 (14.3%) patients and normal or low in 144 (85.7%) patients Mean age at diagnosis and age at disease onset was	

		significantly lower in subjects reporting a high fat diet High fat diet was associated with continuous abdominal pain (OR 2.84 (95%CI 1.06e7.61), p ¼ 0.03) but not with PEI, chronic diarrhea, diabetes or morphological severity, after adjusting for sex, years from onset, alcohol and tobacco consumption, etiology and BMI	

Domínguez-Muñoz, J Enrique et al. Oral pancreatic enzyme substitution therapy in chronic pancreatitis: is clinical response an appropriate marker for evaluation of therapeutic efficacy?. JOP. 11. 158-62. 2010			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 1 **Study type:** prospective case-control (case-case) study	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** 10 CP pts with moderate steatorrhea and no indication for enzyme replacement 21 pts with steatorrhea and enzyme replacement at a dose that successfully treats signs of steatorrhea **Patient characteristics:** not defined **Inclusion criteria:** a) the presence of severe chronic pancreatitis based on MRCP (Cambridge criteria) [11] and EUS (8 or more criteria of chronic pancreatitis) [12]; b) the presence of steatorrhea defined as a daily fecal excretion of more than 7.5 g of fat c) the absence of steatorrhea-related	**Interventions:** Based on generally accepted indications, enzyme substitution therapy had been prescribed to patients who developed either severe steatorrhea (daily excretion of more than 15 g fat) or steatorrhea-related diarrhea and/or weight loss during the evolution of chronic pancreatitis. On the contrary, patients with steatorrhea of less than 15 g/day and the absence of diarrhea and weight loss did not receive any enzyme therapy. Enzyme substitution therapy consisted of the oral administration

		diarrhea and weight loss over a period of at least 12 months prior to study entry **Exclusion criteria:** not defined	of pancreatic enzymes in the form of enteric-coated mini-microspheres (Kreon® , SolvayPharma, Hannover, Germany) at a dose capable of preventing diarrhea and weight loss. Enzyme therapy was started by giving 20,000 Eur.Ph.U lipase/meal (10,000 Eur.Ph.U lipase/snack). This dose was increased in intervals of 20,000 U lipase/meal if necessary to avoid diarrhea and weight loss. Patients who did not require enzyme therapy were seen at 6-month intervals for clinical follow-ups. In cases in which enzymes were prescribed, visits were made at 3-month intervals until relief of symptoms (diarrhea and weight loss), and at 6-month intervals thereafter **Comparison:**
Notes:	**Author's conclusion:** t oral pancreatic enzyme supplementation in patients with pancreatic exocrine insufficiency resulting from chronic pancreatitis cannot be correctly optimized based on the clinical evaluation of maldigestion-related		

	symptoms and signs (diarrhea and weight loss). Serum levels of fat soluble vitamins frequently remain abnormally low despite a theoretically adequate oral enzyme substitution therapy. Thus there is a clear need for using objective methods evaluating digestion and absorption of nutrients in order to optimize oral pancreatic enzyme substitution therapy in patients with pancreatic exocrine insufficiency.	
Outcome Measures/results	**Primary** not defined **Secondary** not defined	**Results:** Ten out of ten patients with asymptomatic steatorrhea, who did not fulfill the criteria for enzyme substitution therapy, and 11 out of 21 patients (52.4%) with symptomatic or more severe steatorrhea, who were under enzyme substitution therapy, showed a deficient nutritional status.

Erchinger, Friedemann et al. Fecal fat and energy loss in pancreas exocrine insufficiency: the role of pancreas enzyme replacement therapy. Scand. J. Gastroenterol. 53. 1132-1138. 2018 0.72) and fecal energy loss (r¼0.65). **Exclusion criteria: PERT reduces fecal energy and fat loss in patients with CP and PEI. Fecal energy loss in CP patients is strongly dependent on fecal fat loss, and on fecal weight.**			**Interventions:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** none **Secondary** none	**Results:**	

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Evidence level

Evidence level: 1

Study type: case-control

Methodical Notes	**Patient characteristics**	**Interventions**
Funding sources:	**Total no. patients:** 10 CP 12 HC	**Interventions:** Subjects received no PERT in the first week followed by four weeks PERT incrementally increasing doses every week. For each week, three-day stool collection followed three days registration of nutritional intake. We measured the
Conflict of Interests:	**Patient characteristics:**	
Randomization: none		
Blinding: none	**Inclusion criteria:**	
Dropout rates:	**Exclusion criteria:**	

	fecal output of fat and energy by van de Kamer titration and decomposition vessel calorimetry, respectively. We calculated fecal fat- and energy loss per day, the coefficient of fat absorption (CFA) and coefficient of energy absorption (CEA).
	Comparison: HC vs CP and effect of increase in enzyme doses within study groups
Notes:	**Author's conclusion:** PERT reduces fecal energy and fat loss in patients with CP and PEI. Fecal energy loss in CP patients is strongly dependent on fecal fat loss, and on fecal weight.
Outcome Measures/results	**Results:** Without PERT treatment, CP patients with PEI had significantly higher daily fecal fat and energy loss (p¼.022; p¼.035) compared to HC. In CP patients, there was a significant reduction of fecal fat and energy loss (p¼.045; p¼.037) when PERT doses reached maximum intake of 75,000 units per meal. In CP patients, there was a strong positive correlation between fecal loss of energy and fat (r¼0.99), and between fecal loss of energy and daily stool weight (r¼0.97). CFA and CEA correlated negatively with daily fecal fat loss (r¼0.72) and fecal energy loss (r¼0.65).
Primary exploratory, not defined	
Secondary	

Girish, B N et al. Zinc/copper ratio: a predictor of pancreatic function in chronic pancreatitis?. Trop Gastroenterol. 37. 19-26. 2018

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:** case-control	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** 01 CP patients (34 alcoholic chronic pancreatitis, and 67 tropical chronic pancreatitis) and 113 healthy controls **Patient characteristics:** not defined **Inclusion criteria:** Chronic pancreatitis was defined by features consistent with irreversible pancreatic inflammation, i.e., clinical, structural or functional abnormalities of the pancreas healthy controls: non-smoking hospital visitors in whom a history and physical examination did not show any physical illness or symptoms were considered to be normal healthy controls. None of the patients or controls had frank diarrhea. Those subjects **Exclusion criteria:** Subjects using vitamin and mineral supplements, or consuming fortified foods were excluded from the study.	**Interventions:** Dietary details of each subject were collected and recorded. Disease characteristics such as pain, steatorrhea, diabetes mellitus and insulin requirement, risk factors such as alcohol and smoking as well as imaging (US/CT) features such as calculi, parenchymal atrophy and ductal dilation, were recorded. BMI was also calculated (weight in kg / height in m2). Serum albumin was measured using bromocresol green11. Erythrocyte zinc and copper were estimated as they provide an assessment of zinc status over a longer period of time as compared to the plasma pool, where turnover was rapid Stool samples of chronic pancreatitis patients were collected and stored at -4°C for less than one week prior to use. Fecal pancreatic elastase1 was measured by using a polyclonal antibody-based ELISA kit (Bioserv, Rostock, Germany). **Comparison:**
Notes:	**Author's conclusion:** we showed reduced zinc levels and increased copper levels in CP patients. There is a significant association of Zn/Cu ratio with pancreatic exocrine and endocrine insufficiency supporting the idea that Zn/Cu ratio may be used as a biomarker for exocrine pancreatic dysfunction in pancreatitis patients.		
Outcome Measures/results	**Primary** not defined **Secondary** not defined	**Results:** The mean erythrocyte Zn level and Zn/Cu ratio were significantly lower whereas the copper level was significantly higher in CP patients than controls. The mean Zn level and Zn/Cu ratio was significantly lower in CP patients with diabetes and those with low elastase1 as compared to non-diabetics and those with normal elastase1 respectively. Erythrocyte Cu level was significantly higher in CP patients with diabetes and with low elastase1 than those without diabetes and with normal elastase1 levels respectively. There was a significant positive correlation between elastase1 and Zn/Cu ratio ($r = 0.396$, $p < 0.001$).	

Ní Chonchubhair, Hazel M et al. The prevalence of small intestinal bacterial overgrowth in non-surgical patients

with chronic pancreatitis and pancreatic exocrine insufficiency (PEI). Pancreatology. 18. 379-385. 2018

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:** Non-interventional case control	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** 35 CP, 31 age-, gender- and smoking status-matched healthy controls **Patient characteristics:** **Inclusion criteria:** Patients were included if they had a diagnosis of chronic pancreatitis based on at least two of the following criteria: patient history (abdominal pain typical of pancreatitis), functional deficits (exocrine/endocrine impairment) and/or findings of radiologic/ endoscopic studies (computed tomography/endoscopic ultrasonography). Exocrine insufficiency was defined by the use of the Faecal Elastase-1 test (FE-1). Patients with both mild (<200mg/g) and severe (<100mg/g) PEI were included Patients and controls were included if they were willing to participate following informed consent, and were aged 18 years or over. Each patient underwent detailed clinical evaluation including demographics, disease aetiology, surgical history, symptom assessment, alcohol use, smoking, medication use, and pain score using a visual analogue pain scale. Control subjects were unpaid healthy individuals from the local community who volunteered for inclusion following advertisement. They were matched for age, gender and smoking status. T **Exclusion criteria:** Exclusion criteria were a history of gastrointestinal or pancreatic resection, malabsorptive conditions (inflammatory bowel disease, Crohn's disease, ulcerative coilitis, coeliac disease), cystic fibrosis, pancreas cancer, pregnancy, or prognosis of <6months. Patients with severe or 'brittle' diabetes and who were unable to fast were excluded. Patients without a recorded FE-1 result at the time of study were excluded as this study utilised available laboratory data, without the need for supplementary testing outside of SIBO testing. Participants had to remain antibiotic-free for 4 weeks prior to testing, and those taking probiotics, prokinetics and laxatives in the 14 days prior to testing were excluded or had their inclusion postponed	**Interventions:** SIBO was diagnosed through GHBT according to Rome Consensus conference to achieve SIBO diagnosis [18]. A portable hand-held breath analyser (LactoFAN H_2 Breath Test Analyser, Fischer Analysen Instrumente, Leipzig, Germany) which was calibrated and checked according to company standards and operating protocols was used to diagnose the presence of SIBO. The study protocol was as follows; baseline fasting breath sample was obtained, the subjects were given 250 ml of glucose substrate, expired air breath samples were measured every 20 min for 120 min to measure hydrogen excretion. Patients continued to fast throughout and cigarette smoking was not permitted. An increase in breathhydrogen levels of 12ppmH2 from baseline (at least two readings) was diagnostic of SIBO. **Comparison:**

Notes:	**Author's conclusion:** The prevalence of SIBO in this study was almost 15% and consistent with other studies of SIBO in non-surgical chronic pancreatitis patients. These data support the testing of patients with clinically-relevant PEI unresolved by adequate doses of PERT, particularly in those patients with concurrent diabetes. SIBO can be easily diagnosed therefore allowing more specific and more targeted symptom treatment	
Outcome Measures/results	**Primary** **Secondary**	**Results:** Five patients (14.3%) tested positive for SIBO, while no controls did (P ¼ 0.029) (Table 2). Four out of the five patients that tested positive had an alcohol aetiology (P ¼ 0.023). There was no difference in the smoking status of SIBO positive versus SIBO negative patients (P ¼ 0.679). Chronic pancreatitis patients with concurrent diabetes, who were taking PERT, and who were taking PPIs, were more often positive for SIBO (P ¼ 0.009, P ¼ 0.016, P ¼ 0.022 respectively). All patients that tested positive for SIBO had severe PEI (FE-1 <100mg/g), while no mild PEI patients had SIBO (P ¼ 0.272). Of the 35 patients, 74.3% (n ¼ 26) had severe PEI (FE-1 <100mg/g) and 25.7% (n ¼ 9) had mild PEI (FE-1100-200mg/g). Despite apparently clinically adequate PERT regimes, 71.4% reported having abdominal pain, 57.1% abdominal distention/bloating, 34.3% diarrhoea, 51.4% excessive flatulence, 54.3% body aches, 45.7% fatigue and 22.9% unintentional weight loss. There were no differences in the prevalence of symptoms in those who had SIBO compared with those without SIBO, with the exception of unintentional weight loss, which more commonly occurred in those with SIBO (P ¼ 0.047). Chronic pancreatitis patients who tested positive were treated with Rifaxamin 400 mg thrice daily for 10 days. All patients were followed-up by phone call on day 12e14 post antibiotic treatment where symptoms were reassessed and compared with patients' pre-test reports. All of the patients who tested positive reported a good clinical response and improvement in such symptoms as; flatulence, abdominal distention, abdominal pain, diarrhoea, constipation, weight loss, fatigue and body aches

Olesen, Søren S et al. The prevalence of underweight is increased in chronic pancreatitis outpatients and associates with reduced life quality. Nutrition. 43-44. 1-7. 2017 4.2 kg/m2 versus 26.8 5.2 kg/m2 ; P < 0.0001). Of 166 patients with CP, 43 (26.0% [95% confidence interval: 19.8–33.1%]) were underweight compared with 15 of 160 controls (9.4% [95% confidence interval: 5.8–14.9%]; odds ratio: 3.38 [95% confidence interval: 1.79–6.38]; P ¼ 0.0001). Several QOL scales and items were associated with underweight, including physical functioning (P ¼ 0.024). Alcoholic etiology (P ¼ 0.002), EPI (P ¼ 0.004), and constant pain (P ¼ 0.026) were independently associated with low BMI. Exclusion criteria: One quarter of outpatients with CP are underweight and report reduced life quality compared with their normal-weight counterparts. EPI, alcoholic etiology, and pain-related symptoms are independent risk factors. Our findings emphasize the need for a multidisciplinary approach in the handling of patients with CP that focuses on alcohol cessation and the appropriate treatment of pain and EPI.			**Interventions:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

--> Evidence level Methodical Notes Patient characteristics Interventions **Evidence level:** 1

Study type: case-control study **Funding sources:**

Conflict of Interests:

Randomization:

Blinding:

Dropout rates: **Total no. patients:** 166 outpatients with CP, 160 age- and sex-matched controls.

Patient characteristics: m November 2010 through August 2015

Inclusion criteria: . The diagnosis of CP was based on the modified Mayo Clinic criteria (Lüneburg), and CP was defined as a score of 4 points

Exclusion criteria: **Interventions:** none

Comparison: **Notes:**

Author's conclusion: One quarter of outpatients with CP are underweight and report reduced life quality compared with their normal-weight counterparts. EPI, alcoholic etiology, and pain-related symptoms are independent risk factors. Our findings emphasize the need for a multidisciplinary approach in the handling of patients with CP that focuses on alcohol cessation and the appropriate treatment of pain and EPI. **Outcome Measures/results Primary** primary study outcome was underweight, defined as a BMI <20.0 kg/m2

Secondary Secondary outcomes included clinical and demographic risk factors for underweight and their interaction. **Results:** Patients with CP had a decreased mean BMI compared with controls (22.9 4.2 kg/m2 versus 26.8 5.2 kg/m2 ; P < 0.0001). Of 166 patients with CP, 43 (26.0% [95% confidence interval: 19.8–33.1%]) were underweight compared with 15 of 160 controls (9.4% [95% confidence interval: 5.8–14.9%]; odds ratio: 3.38 [95% confidence interval: 1.79–6.38]; P ¼ 0.0001). Several QOL scales and items were associated with underweight, including physical functioning (P ¼ 0.024). Alcoholic etiology (P ¼ 0.002), EPI (P ¼ 0.004), and constant pain (P ¼ 0.026) were independently associated with low BMI.

Shah, Nehal S et al. Quality of life assessment in patients with chronic pancreatitis receiving antioxidant therapy. World J. Gastroenterol. 16. 4066-71. 2010

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:** case-control	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** Sixty eight consecutive patients with CP who were taking Antox (antioxidants) were compared with 69 consecutive control CP patients not on Antox **Patient characteristics:** **Inclusion criteria:** CP was defined according to the Zurich classification. Interim analysis of the whole cohort data showed that there were significant differences in the median age and disease duration between patients in the Antox group and those in the Non-Antox cohort. In an effort to correct for at least one of these factors, disease duration matching was undertaken. The disease duration was recorded for each patient from the clinical chart. Patients in the NonAntox group were then matched with corresponding	**Interventions:** European Organization for Research and Treatment of Cancer Quality of Life Questionnaire Core questions 30 and Pancreatic Modification (28 questions) were used to assess QoL. **Comparison:**

		individuals from the Antox group. A disease duration of the same time period ± 12 mo was selected for matching. **Exclusion criteria:**	
Notes:	**Author's conclusion:** Contemporary quality of life assessments show that after correction for disease duration and cigarette smoking, patients with CP taking antox had better scores than non-antox controls.		
Outcome Measures/results	**Primary** QoL **Secondary**	**Results:** All: VAS, overall physical health scores and global QoL were significantly better in patients with CP taking Antox. These results are reflected in the significantly lower number of patients in the Antox group taking analgesics and opiates. Matched groups: Median visual analogue pain score in the Antox group was 3 (0-8) compared with 6 (0-8) in the Non-Antox group (P < 0.01). Perceptions of cognitive, emotional, social, physical and role function were impaired in the Non-Antox group compared to Antox patients (P < 0.0001, P = 0.0007, P = 0.0032 and P < 0.005 and P < 0.001, respectively). Analgesics and opiate usage was significantly lower in the Antox group (P < 0.01). Overall physical health and global QoL was better in the Antox group (P < 0.0001, 95% CI: 1.5-3).	

NEWCASTLE - OTTAWA Checklist: Cohort: *6 Bewertung(en)*

Burton, F et al. Use and perceived effectiveness of non-analgesic medical therapies for chronic pancreatitis in the United States. Aliment. Pharmacol. Ther. 33. 149-59. 2011

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:** retrospective analysis of data from prospective cohort study	**Funding sources:** **Conflict of Interests:** **Randomization:** none **Blinding:** none **Dropout rates:**	**Total no. patients:** 516 chronic pancreatitis patients **Recruiting Phase:** 2000-2006 **Inclusion criteria:** entry criteria for CP included definitive evidence on computed tomography scan and ⁄ or endoscopic retrograde cholangiopancreatography with the Cambridge class II or more (83%) or documentation of CP using magnetic resonance cholangiopancreatography, endoscopic ultrasound (EUS) or pancreatic histology in other enrollees **Exclusion criteria:**	**Interventions:** detailed questionnaire on personal and family history, risk factors, symptoms and quality of life, and an additional questionnaire was completed by a physicianinvestigator with expertise in pancreatic diseases. The physician questionnaire contained questions relating to clinical phenotype, working diagnosis, risk factors, diagnostic and therapeutic interventions; physician was asked, 'Which therapies were attempted, and which of these were helpful', and given specific categories for medical (including PERT, AO, CPB and octreotide), endoscopic and surgical treatment **Comparison:**
Notes:			

	Author's conclusion: Pancreatic enzyme replacement therapy is commonly utilized, but is considered useful in only subsets of chronic pancreatitis patients. Other medical therapies are used infrequently and have limited efficacy	
Outcome Measures/results	**Primary** **Secondary**	**Results:** . At least one of the four medical therapies was tried in 383/516 (74%) patients. In 283 (55%), only one medical therapy was utilized, while two or more than two medical therapies were used in 89/516 (17%) and 11/516 (2%) patients respectively Physicians perceived PERT to be most effective in patients with EI without pain (19/24, 79%) followed by EI with pain (49/98, 50%), and least effective in either pain category without EI. In contrast to PERT, other therapies were used infrequently in patients with CP: the second most commonly used modality was AO, in 71/516 (14%), followed by CPB in 34/516 (7%) and octreotide in 28/516 (5%) patients. Similar to PERT, the usage of other therapies correlated with the presence of symptoms ($P < 0.01$).

D'Haese, Jan G et al. Pancreatic enzyme replacement therapy in patients with exocrine pancreatic insufficiency due to chronic pancreatitis: a 1-year disease management study on symptom control and quality of life. Pancreas. 43. 834-41. 2014

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:** 1-year prospective, multicenter, observational cohort study	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** 351 patients were enrolled 57 patients had incomplete data or were lost to follow-up and were therefore excluded from the analysis. A total of 294 patients were included in the analysis; cohort 1 comprised 206 patients who are already receiving pancreatin therapy, and cohort 2 consisted of 88 patients with newly diagnosed EPI. **Recruiting Phase:** from January 2006 through October 2006 **Inclusion criteria:** cohort 1: CP patients already taking pancreatin cohort 2: patients with newly diagnosed EPI and newly initiated pancreatic enzyme Treatment confirmed diagnosis of CP and EPI, age older than 18 years, patients who are already on pancreatin therapy or had agreed to start pancreatin therapy for the treatment of EPI, and patients who are willing to complete a quality-of-life questionnaire. **Exclusion criteria:** Patients with pancreatic cancer or cystic fibrosis were excluded	**Interventions:** cohort 1 that consisted of patients already taking pancreatin (Kreon; Abbott ArzneimittelGmbH, Hannover, Germany) or cohort 2 that consisted of patients with newly diagnosed EPI without prior pancreatic enzyme treatment. Symptoms were documented, and quality of life was assessed using the gastrointestinal quality of life index (GIQLI) at baseline, 6 months, and 1 year. **Comparison:**
Notes:	**Author's conclusion:** pancreatin treatment over 1 year was effective in reducing EPI-related gastrointestinal symptoms, including diarrhea/steatorrhea and weight loss, in patients with		

	chronic EPI due to CP. Furthermore, pancreatin significantly improved quality of life, as measured by the GIQLI, at 6 months and at 1 year.	
Outcome Measures/results	**Primary** not defined **Secondary**	**Results:** The frequency of diarrhea/steatorrhea and weight loss, the cardinal symptoms of maldigestion due to EPI, was significantly reduced in both cohorts (both, P G 0.001; Table 2). Other EPI symptoms that decreased significantly (all, P G 0.001) during the course of the study in both cohorts were recurrent abdominal pain, nausea, and vomiting (Table 2). Body weight was relatively stable throughout the observation period in both cohorts. mean total GIQLI score for the overall patient population showed a statistically significant increase from baseline (60.9 [SD, 16.4]) to the end of the observation period (71.7 [15.9]; P G 0.001; Table 3, Fig. 1A). All 5 subscores of the overall population improved statistically significantly over the observation period (P G 0.001 for all subscores; Table 3, Fig. 1A). Analysis by cohort showed statistically significant improvements from baseline to the end of the observation period in the mean total GIQLI score Only 4 adverse events in 3 patients were reported during the 1-year observation period. All 3 patients died because of the underlying malignant disease (non-pancreatic)

Gubergrits, N et al. A 6-month, open-label clinical trial of pancrelipase delayed-release capsules (Creon) in patients with exocrine pancreatic insufficiency due to chronic pancreatitis or pancreatic surgery. Aliment. Pharmacol. Ther. 33. 1152-61. 2011

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:** cohort study, a 6-month, open-label extension of RCT	**Funding sources:** **Conflict of Interests:** **Randomization:** no **Blinding:** no **Dropout rates:** 51 entered the open-label extension period and 48 (94.1%) completed open-label treatment.	**Total no. patients:** 51 **Recruiting Phase:** not defined **Inclusion criteria:** completion of the double-blind treatment period subjects ‡18 years of age who had provided written informed consent were eligible to enter the double-blind phase if they had confirmed CP or total or partial pancreatectomy >180 days prior to enrolment and confirmed EPI. The EPI was determined by abnormal secretin tests, faecal elastase <100 lg ⁄ g, 72-h faecal fat determination (>15 g⁄day) or total pancreatectomy. **Exclusion criteria:** Patients were excluded if they had severe medical conditions that might limit participation in or completion of the study, or if they had recently undergone major surgery (excluding appendectomy and pancreatectomy for CP or abdominal surgery due to underlying disease, or gall-bladder removal).	**Interventions:** , all subjects received pancrelipase delayed-release 24 000-lipase unit capsules administered orally at individualised doses, as directed by the investigator or treating physician. Pancrelipase capsules were to be taken during meals and with snacks at the doses prescribed by the investigator⁄ treating physician Actual doses taken were determined based on the number of capsules taken per day, which was estimated based on the number of capsules dispensed and returned, and the length of the treatment period. Safety assessments included vital signs, physical examination and safety laboratory values, measured at the beginning of the double-blind phase (baseline) and at the end of the open-label period. AEs occurring during the study were recorded according to the Medical Dictionary for Regulatory Activities (MedDRA) version 8.1 Efficacy data collected during the open-label period included clinical symptomatology, CGI of disease symptoms and quality of life, to identify any improvement on pancrelipase compared with the standard PERT patients

			were receiving prior to study entry Clinical symptomatology was assessed at scheduled study visits by the investigator asking subjects to provide information regarding stool frequency (number per day), average stool consistency (0 = hard, 1 = formed / normal, 2 = soft, 3 = watery), average flatulence (0 = none, 1 = mild, 2 = moderate, 3 = severe) and average abdominal pain (0 = none, 1 = mild, 2 = moderate, 3 = severe). CGI of disease symptoms was rated at all scheduled study visits mutually by the investigator and the subject as follows: 0 = none (symptoms not present), 1 = mild (symptoms present but not bothersome), 2 = moderate (symptoms bothersome), 3 = severe (symptoms interfere with normal activities) and 4 = incapacitating (symptoms prevent subject from continuing with normal activities). Quality of life was assessed using the Short Form-36 **Comparison:**
Notes:	**Author's conclusion:** strong evidence for the long-term safety and tolerability of new formulation pancrelipase delayed-release capsules in the treatment of EPI due to CP or PS. A clinically relevant and statistically significant increase in body weight, a statistically significant reduction in stool frequency and improvement in clinical symptoms were observed, indicating correction of maldigestion and improvement in nutritional status.		
Outcome Measures/results	**Primary** **Secondary**	**Results:** mean age was 50.9 years, 70.6% of patients were male, 76.5% had CP and 23.5% had undergone PS. The mean s.d. pancrelipase dose was 186 960 74 640 lipase units/day. TEAEs were reported by 22 patients (43.1%) overall. Only four patients (7.8%) had TEAEs that were considered treatment related. From double-blind phase baseline to end of the open-label period, subjects achieved a mean s.d. body weight increase of 2.7 3.4 kg ($P < 0.0001$) and change in daily stool frequency of)1.0 1.3 ($P < 0.001$). Improvements in abdominal pain, flatulence and stool consistency were observed.	

Klapdor, S et al. Vitamin D status and per-oral vitamin D supplementation in patients suffering from chronic pancreatitis and pancreatic cancer disease. Anticancer Res. 32. 1991-8. 2012			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 1 **Study type:** mixed case-control and cohort study	**Funding sources:** **Conflict of Interests:**	**Total no. patients:** 248 ambulatory patients (n=140 patients suffering from exocrine pancreatic insufficiency due to chronic pancreatitis, pancreatic cancer	**Interventions:** in 91 of these patients (n=65 pancreatic patients, n=26 controls), we started supplementation with oral

	Randomization: **Blinding:** **Dropout rates:**	with/without previous resections of the pancreas n=108 patients without pancreatic disease) **Recruiting Phase:** not defined **Inclusion criteria:** ill defined patients suffering from exocrine pancreatic insufficiency: n=103 due to pancreatic cancer (n=51 after previous Whipple or pyloruspreserving Whipple resection; n=9 after previous total duodenopancreatectomy; n=11 after cauda resection; n=22 of these patients without signs of tumor since previous tumor resection), n=37 suffering from chronic pancreatitis. All these patients were treated with so-called pancreatic enzyme drugs in order to ameliorate their clinical signs of exocrine pancreatic insufficiency (proven decrease in pancreatic elastase in the stool) such as loss of body weight, diarrhea and meteorism. b) n=108 patients without signs of exocrine pancreatic insufficiency and without known pancreatic disease in their history (so-called controls). **Exclusion criteria:** not defined	vitamin D in combination with dietary advice and adequate substitution with pancreatic enzyme preparations, followed by subsequent serum 25(OH)D determinations **Comparison:**
Notes:	**Author's conclusion:** vitamin D deficiency is a common problem in patients suffering from exocrine pancreatic insufficiency from various reasons as well as in our controls. Apart from insufficient sun exposure, exocrine pancreatic insufficiency, as well as a too low vitamin D uptake with food seem to represent the main causes of low serum 25(OH)D. In nearly all patients, the serum 25(OH)D concentrations could be normalized by oral supplementation of vitamin D in the case of individual therapy based on routine serum controls.		
Outcome Measures/results	**Primary** not defined **Secondary** not defined	**Results:** Serum 25(OH)D concentrations were <30 ng/ml in 93% of the patients with pancreatic diseases ,<20 ng/ml in 77.9%, <10 ng/ml in 32.1% and <4 ng/ml in 9.3%. The results were comparable to those in patients suffering from chronic pancreatitis and those with pancreatic tumor disease, with or without a previous tumor resection Similar data were also found in the controls, only slightly higher. In contrast to the vitamin D data, however, determination of vitamins A and E in the serum resulted in values within the normal range for the majority of the patients of both groups, suggesting a diminished vitamin D uptake as being at least one reason to explain the low serum vitamin D concentrations in the patients with pancreatic diseases. Individual supplementation with oral vitamin D in all patients studied (n=91) resulted in an increase of the serum 25(OH)D concentrations into the normal range (14.2±5.8 up to 42.3±12 in controls, 11.9±7.4 up to 46.6±15.7 in patients with pancreatic diseases).	

Ramesh, Hariharan et al. A 51-week, open-label clinical trial in India to assess the efficacy and safety of pancreatin 40000 enteric-coated minimicrospheres in patients with pancreatic exocrine insufficiency due to chronic pancreatitis. Pancreatology. 13. 133-9. 2013

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:** 51 wk open label extension	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** 61 CO, 48 completed **Recruiting Phase:** 06/2008-05/2010 **Inclusion criteria:** confirmed CP with PEI **Exclusion criteria:**	**Interventions:** 3x80.000 U lipase (Kreon) per meal, 3x40.000 per snack **Comparison:**
Notes:	**Author's conclusion:** 9 AE possibly or probably related 5 SAE, none considered treatment related		
Outcome Measures/results	**Primary** **Secondary** CFA, CNA, body weight, BMI, blood parameters, clinical symptoms, adverse events	**Results:** significant improvement in CFA, CNA, body weight and symptoms at end of open label extension vs. baseline	

Sikkens, Edmée C M et al. Patients with exocrine insufficiency due to chronic pancreatitis are undertreated: a Dutch national survey. Pancreatology. 12. 71-3. 2011

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:** prospective, cross-sectional study, observational, not interventional	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** 161 **Recruiting Phase:** **Inclusion criteria:** Patients were eligible for this study if they had chronic pancreatitis and were using pancreatic enzymes to treat exocrine insufficiency. **Exclusion criteria:** There were no exclusion criteria.	**Interventions:** anonymous survey was distributed by mail among members of the Dutch Association of Patients with Pancreatic Disorders, a patient organization for pancreatic diseases. After 4 weeks, a reminder was sent out to members that had not responded. The survey contained free field and multiple-choice questions and took about 10 min to complete (Appendix). The questions focused on enzyme use, the presence of steatorrhea-related symptoms (abdominal cramps; bloating; voluminous, sticky, and greasy stools), referral to a dietician, and food restrictions. **Comparison:**
Notes:	**Author's conclusion:** Many patients with exocrine insufficiency caused by chronic pancreatitis are under-treated in		

	the Netherlands, a country with a well-organized healthcare system. To improve treatment efficacy, patients should be educated in adjusting the enzyme dosage according to steatorrhea-related symptoms and dietary fat intake. Moreover, patients should be referred to a well-trained, specialized dietician.	
Outcome Measures/results	**Primary** The primary endpoint was the daily enzyme dose, recalculated as the number of capsules containing 25,000 FIP-E units of lipase. **Secondary** Secondary endpoints were: the presence of steatorrhea-related symptoms, referral to a dietician, and a restriction of fat (recommended by a dietician or self-imposed)	**Results:** Hundred-and-seventy-eight members suffering from chronic pancreatitis responded to this survey, of which 161 (90%) were using enzyme replacement therapy for exocrine insufficiency. Patients were prescribed a median of 4 capsules a day when treatment was commenced. At the time of completing this survey, the median treatment duration was 77 months. The median enzyme dose had increased to 6 capsules per day. However, 25% of cases used 3 or less capsules per day (Table 1). Furthermore, 70% of the patients reported steatorrhea-related complaints, despite treatment, and 42% suffered from weight loss. Only 40 cases (25%) reported to have visited a dietician for their exocrine insufficiency. Remarkably, dietary consultation did not affect treatment efficacy. As summarized in Table 2, the enzyme dosage, restriction of fat, weight loss, and steatorrhea-related complaints did not improve. Nevertheless, patients who where referred to a dietician were significantly more satisfied with the information they received regarding enzyme use (p-value <0.005).

Literatursammlung:

AG3-CP Ernährung seit 2010

Inhalt: *12 Literaturstellen*

Literaturstelle	Evidenzlevel	Studientyp
Castiñeira-Alvariño, M 2013	1	case-control (case-case) study, prospectively collected data, post hoc analysis?
Dhingra, Rajan 2013	1	randomized, placebo-controlled, parallel-group trial
Domínguez-Muñoz, J Enrique 2010	1	prospective case-control (case-case) study
Girish, Banavara Narasimhamurthy 2010	1	prospective cohort study
Kataoka, Keisho 2014	1	multicenter, open-label, observational, postmarketing surveillance study conducted in 266 centers in Japan.
Olesen, Søren S 2017	1	case-control study
Olesen, Søren S 2016	1	prospective cohort study
Reddy, Sagili Vijaya Bhaskar 2013	1	RCT
Rupasinghe, Sukitha Namal 2017	1	retrospective cohort study
Sikkens, Edmée C M 2011	1	prospective, cross-sectional study, observational, not interventional
Skipworth, James Robert Anthony 2011	1	retrospective cohort study
Whitcomb, David C 2010	1	double-blind, randomized, multicountry, placebo-controlled, parallel-group trial

OXFORD (2011) Appraisal Sheet: RCT: *3 Bewertung(en)*

Dhingra, Rajan et al. Effect of antioxidant supplementation on surrogate markers of fibrosis in chronic pancreatitis: a randomized, placebo-controlled trial. Pancreas. 42. 589-95. 2013

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 1 **Study type:** randomized, placebo-controlled, parallel-group trial **Number of Patient:** total of 124 patients of CP were assessed during the study period. Of them, 65 patients fulfilled the inclusion criteria, but 4 did not give consent for the study. A high	**Intervention:** The antioxidant supplementation included daily doses of 600 Hg of organic selenium,0.54 g of vitamin C, 9000 IU of B-Catotene, 270 IU of vitamin E, and 2 g of methionine as suggested in a previous study.17 The placebo group	**Primary:** The primary outcome measures were change in surrogate markers of pancreatic fibrosis (serum levels of TGF-A1 and PDGF-AA). **Secondary:** The secondary outcome measures were change in blood markers of oxidative stress

proportion of patients were ineligible (n = 59) for the study because they did not meet the strict inclusion criteria. The remaining 61 patients were randomized, 31 to antioxidant group and 30 to placebo group. There were no dropouts in the study, so all 61 patients were included in the final intention-to-treat analysis. Mean treatment compliance in the antioxidant and placebo groups was 95.2% and 96.1%, respectively. **Recruitung Phase:** February 2010 to July 2011 **Inclusion Criteria:** Patients who had provided written informed consent were eligible if they had confirmed CP. The diagnosis of CP was made if there was evidence of pancreatic duct dilatation and/or irregularity and/or pancreatic calcification on imaging studies (ultrasonography, endosopic retrograde cholangiopancreatography, contrast-enhanced computed tomography, and/or magnetic resonance imaging with magnetic resonance cholangiopancreatography).40 **Exclusion Criteria:** Patients with the following conditions were excluded: (a) complications such as pseudocyst, pancreatic abscess, pseudoaneurysm, pancreatic fistula; (b) comorbid conditions such asliver diseases, renal failure, pulmonary fibrosis; (c) patient with adenocarcinoma of pancreas, acute on CP; (d) pregnant and lactating female; (e) age less than 12 years; (f) inability to give informed consent; and (g) having received earlier or taking at present antioxidant therapy.	received an inert material (starch). Both the groups received 8 capsules of supplementation daily. The drug and placebo capsules were identical in appearance and provided in identical packaging, supplied free of cost by Osper Pharmanautics, India. The compliance of intervention were monitored at the visit of the patient by questioning the patient and relatives, evidence of the empty boxes of the drug/placebo, and capsule count. Intervention was given for a period of 3 months. **Comparison:**	(thiobarbituric acid-reactive substances [TBARS]) and antioxidant status (ferric-reducing ability of plasma [FRAP]) after intervention. The marker of oxidative stress estimated in the present study was TBARS, which indicate the degree of lipid peroxidation. The marker of antioxidant status studied was total antioxidant capacity (measured FRAP). The assessment of pain was performed in terms of the number of painful days per month and the requirement of oral/ parenteral analgesics. The patients were provided with a pain diary to keep a detailed record of pain and consumption of analgesics. Pain was assessed in terms of number of painful days requiring treatment such as analgesic. **Results:** Patients (n = 61; mean [SD] age, 35.2 [10.0]; male patients, 43) were assigned to AO (n = 31) and PL (n = 30) groups. The median (range) percent reduction from baseline to 3 months in levels of PDGFAA (17.1% [j25.3% to 88.7%] vs 2.8% [j243.1% to 30.2%]; P = 0.001), transforming growth factor A1 (P = 0.573), and thiobarbituric acidYreactive substances (P = 0.207) as well as percent increment from baseline to 3 months in ferric-reducing ability of plasma (P = 0.003) were higher in the AO group compared with the PL group. Proportion of patients who had both reduced PDGF-AA and reduced pain was greater in AO as compared with PL group (17/31 vs 9/30, P = 0.05) **Author's Conclusion:** Reduction in markers of fibrosis (PDGF-AA) translated into clinical outcome (reduction in pain and analgesic requirements) in those supplemented with AOs in CP
Methodical Notes		
Funding Sources:		

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes:

Reddy, Sagili Vijaya Bhaskar et al. Double blind randomized control study of intramuscular vitamin D3 supplementation in tropical calcific pancreatitis. Calcif. Tissue Int. 93. 48-54. 2013

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 1 **Study type:** RCT **Number of Patient:** 40 adult patients with tropical(!) pancreatitis, Of the 40 patients enrolled, four patients did not return for the initial 1-month visit and two patients did not complete the follow-up for 6 months due to migration. Thirty-four patients (all 13 in group 1, 11 of 14 in group 2, and 10 of 13 in group 3) completed the study. **Recruitung Phase:** **Inclusion Criteria:** Inclusion criteria included a diagnosis of TP and serum 25OHD \75 nmol/L. TP was diagnosed by a history of recurrent abdominal pain or diabetes mellitus and radiological evidence of pancreatic intraductal calculi. **Exclusion Criteria:** Patients with a history of alcohol intake were excluded, as were those with other known causes of CP.	**Intervention:** 40 patients so as to allow for a 25 % dropout rate. These were randomly distributed into three groups. Groups 1 and 2 received a single i.m. injection of 600,000 IU (15,000 lg) or 300,000 IU (7,500 lg) vitamin D3 in arachis oil (Injection Arachitol;Solvay Pharma, Mumbai, India), respectively, while group 3 received 1 ml normal saline i.m.All three groups were provided a daily allowance of oral calcium carbonate tablets (1,000 mg elemental calcium) and 500 IU vitaminD3 for the duration of the study. Patients were advised to take pancreatic enzyme as prescribed by their gastroenterologist. Each patient was studied for a period of 9 months after intervention. **Comparison:**	**Primary:** proportion of patients with vitamin D sufficiency ([75 nmol/L) 6 months after intervention in each treatment group. **Secondary:** secondary outcome measure was serum calcium at different time points S. V. B. Reddy et al.: Study of Vitamin D Supplementation 49 123during follow-up. In addition, the levels of 25OHD, the increment in 25OHD (D25OHD) from baseline, and PTH and ALP after intervention were studied. All patients were monitored for hypercalcemia (serum calcium[2.6 mmol/L), hypercalciuria (UCa/Cr[0.21), and hypervitaminosis D (25OHD[375 nmol/L). **Results:** Vitamin D sufficiency was significantly different in the three groups (85, 29, and 0 % in groups 1, 2, and 3, respectively; p\0.001). Mean 25OHD remained [75 nmol/L in months 1–6 in group 1 but reached a lower level (50–75 nmol/L) at these time points in group 2. At 6 months, serum alkaline phosphatase decreased significantly only in group 1 (230 ± 73 vs 165 ± 39 IU/L, p = 0.004). No patient in any group developed hypervitaminosis D or hypercalcemia. **Author's Conclusion:** in patients with CP, a single i.m. injection of 600,000 IU was more effective at achieving vitamin D sufficiency over 6 months compared with 300,000 IU vitamin D3.

Methodical Notes
Funding Sources:
COI:
Randomization:
Blinding:
Dropout Rate/ITT-Analysis:
Notes:

Whitcomb, David C et al. Pancrelipase delayed-release capsules (CREON) for exocrine pancreatic insufficiency due to chronic pancreatitis or pancreatic surgery: A double-blind randomized trial. Am. J. Gastroenterol. 105. 2276-86. 2010

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 1 **Study type:** double-blind, randomized, multicountry, placebo-controlled, parallel-group trial **Number of Patient:** In total, 180 patients provided consent, 179 entered the run-in period, and 54 were randomized (25 pancrelipase, 29 placebo) Overall, 52 patients completed the 1-week double-blind period **Recruitung Phase:** between 4 April 2007 and 18 August 2008. **Inclusion Criteria:** Patients ≥ 18 years of age who had provided written informed consent were eligible if they had confi rmed CP or total or partial pancreatectomy > 180 days before enrollment, and confi rmed EPI. CP was to be proven (in medical history) radiographically or histologically by at least one of the following criteria: imaging techniques (ultrasound, computed tomography, magnetic resonance imaging, or endoscopic ultrasound); endoscopic retrograde cholangiopancreatography; plain fi lm of the abdomen with pancreatic calcifi cation; or histology. EPI had to be proven by direct pancreatic function testing, e.g., abnormal-secretin test, or fecal elastase < 100 µ g / g, or fecal	**Intervention:** single-blind placebo run-in period followed by a double-blind randomized period, aft er which eligible patients could enter a 6-month open-label extension phase (open-label data to be reported separately). During both the run-in and randomized periods, all patients were actively monitored and treated in a strictly controlled inpatient setting such as a clinical research unit, clinic facility, or hospital. Site personnel monitored compliance with study procedures including dietary and stool collection requirements.Following the single-blind placebo run-in period, patients were discharged from study centers for up to 16 days while their eligibility for randomization to the double-blind phase was assessed. During this time there were no restrictions regarding pancreatic supplementation therapy. Th erefore patients could take their usual PERT and continue with their normal home diet. Patients who satisfi ed the following eligibility criteria were randomized to double-blind treatment with either pancrelipase or placebo: compliant with study procedures including diaries and stool collections, total stool fat content of ≥ 40 g, and coeffi cient of fat absorption (CFA) < 80 % during the run-in period. Patients eligible to enter the double-blind phase were randomized 1:1 to pancrelipase delayedrelease	**Primary:** primary outcome measure was the change in CFA from baseline to the end of the double-blind treatment period. **Secondary:** Secondary effi cacy outcomes included the coeffi cient of nitrogen absorption (CNA), stool fat, stool nitrogen, and clinical symptomatology. Safety measures included physical examination, assessment of vital signs, and safety laboratory values (hematology, biochemistry, and urinalysis), and recording of adverse events (AEs) according to the Medical Dictionary for Regulatory Activities version 8.1. AEs were considered treatment-emergent adverse events (TEAEs) if they had started during treatment, or if pre-existing AEs had worsened during treatment. **Results:** In total, 25 patients (median age of 54 years, 76 % male) received pancrelipase and 29 patients (median age of 50 years, 69 % male) received placebo. The mean ± s.d. change from baseline in CFA was signifi cantly greater with pancrelipase vs. placebo: 32.1 ± 18.5 % vs. 8.8 ± 12.5 % (P < 0.0001). Similarly, the mean ± s.d. change from baseline in CNA was greater for pancrelipase vs. placebo: 97.7 ± 82.3 % vs. 24.4 ± 101.0 % (P = 0.0013). Greater improvements from baseline in stool frequency, stool consistency, abdominal pain, and fl

fat > 15 g/ day (according to 72-h fecal fat test), or total pancreatectomy documented in medical history. A fecal fat threshold of > 15 g/ day characterized patients with severe EPI who had a high probability of meeting the interim inclusion criteria and thus would be eligible for randomization to the double-blind phase. If medical records for a patient did not include documentation of the above, a fecal-elastase test was performed during screening to confi rm subject eligibility (fecal elastase < 100 µ g/ g required). Women with child-bearing potential were required to agree to use adequate birth control throughout the study and for 30 days aft er the last dose of study drug. **Exclusion Criteria:** Exclusion criteria included severe medical conditions that might limit participation in or completion of the study, or recent (as per investigator ' s judgment) major surgery with the exception of appendectomy, PS for CP, abdominal surgery due to the underlying pancreatic disease that necessitated the surgery (e.g., pancreatectomy with additional abdominal surgery), or gall bladder removal. Also excluded were patients with ileus or acute abdomen, any type of malignancy in the digestive tract other than pancreatic cancer in the past 5 years, any type of malignancy not in remission, HIV, celiac disease, Crohn ' s disease, presence of a pancreatic pseudocyst ≥ 4 cm, continued excessive intake of alcohol or drug abuse, known allergy to pancrelipase (pancreatin) or the inactive ingredients of pancrelipase delayed-release capsules, or exposure to an experimental drug within 4 weeks of the start of the study.Any medications that could interfere with the study medication, such as other pancreatic enzyme preparations or antidiarrheals, were prohibited	capsules or placebo for 7 days, taken orally. Randomization was carried out centrally by telephone by the pharmaceutical supplies department of Solvay Pharmaceuticals, B.V. using blocks of pre-specifi ed size and stratifi ed by site. Patients in the pancrelipase group received 72,000 lipase units per main meal (six 12,000-lipase unit capsules) and 36,000 lipase units per snack (three 12,000-lipase unit capsules), to be taken during meals. Patients in the placebo group received placebo capsules as per the run-in period. **Comparison:**	atulence were observed with pancrelipase vs. placebo. Treatment-emergent adverse events (TEAEs) were reported in fi ve patients (20.0 %) in the pancrelipase group and in six (20.7 %) in the placebo group; the most common were gastrointestinal (GI) events and metabolism / nutrition disorders. There were no treatment discontinuations due to TEAEs. **Author's Conclusion:** Pancrelipase delayed-release 12,000-lipase unit capsules were effective in treating fat and nitrogen maldigestion with a TEAE rate similar to that of placebo in patients with EPI due to CP or PS.
Methodical Notes		
Funding Sources: **COI:**		

Randomization: **Blinding:** **Dropout Rate/ITT-Analysis:** **Notes:**

NEWCASTLE - OTTAWA Checklist: Case Control: *3 Bewertung(en)*

Castiñeira-Alvariño, M et al. The role of high fat diet in the development of complications of chronic pancreatitis. Clin Nutr. 32. 830-6. 2013			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 1 **Study type:** case-control (case-case) study, prospectively collected data, post hoc analysis?	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** A total of 193 patients from prospectively collected CP database fulfilled the inclusion criteriafinal cohort of 168 subjects **Patient characteristics:** **Inclusion criteria:** For the present study, patients with age <18 years at index visit to the CP outpatient clinic were included. **Exclusion criteria:** Patients who clearly modified the diet before the index visit were excluded. A modification of the diet was defined as the elimination of any type of food because of symptoms that the patient perceived as related to the disease.	**Interventions:** Demographic and clinical data were collected in a detailed questionnaire including sex, age, age from onset of symptoms, age at first episode of acute pancreatitis if any, body mass index (BMI), clinical presentations of the disease (pain, chronic diarrhea or jaundice), smoking and drinking habits, and results of diagnostic imaging.At inclusion, exocrine pancreatic functionwas investigated in all patients using the 13C-mixed trygliceryde (13C-MTG) breath test.Dietary data were obtained through a specific nutritional questionnaire presented to patients at diagnosis.24 The questionnaire assessed foods consumed during the preceding month. Daily fat and caloric intake was calculated based on standard nutritional contents of different foods and meals according to the Spanish Food Composition Database (Supplement 1). Fat intakewas

			classified as high when the daily caloric intake in fat exceeded 30% of the total daily intake of calories recommended by US Food and Nutrition Board (Table 1).25 In addition, we specifically asked if patients modified their diet from onset of CP symptoms. **Comparison:**
Notes:	**Author's conclusion:** In conclusion, an association between high fat diet and a low age at diagnosis and age at onset and continuous abdominal pain was observed in this cross-sectional caseecase study in a large cohort of patients with CP.		
Outcome Measures/results	**Primary** **Secondary**	**Results:** Based on the nutritional questionnaire, fat intake was classified as high in 24 (14.3%) patients and normal or low in 144 (85.7%) patients Mean age at diagnosis and age at disease onset was significantly lower in subjects reporting a high fat diet High fat diet was associated with continuous abdominal pain (OR 2.84 (95%CI 1.06e7.61), p ¼ 0.03) but not with PEI, chronic diarrhea, diabetes or morphological severity, after adjusting for sex, years from onset, alcohol and tobacco consumption, etiology and BMI	

Domínguez-Muñoz, J Enrique et al. Oral pancreatic enzyme substitution therapy in chronic pancreatitis: is clinical response an appropriate marker for evaluation of therapeutic efficacy?. JOP. 11. 158-62. 2010

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:** prospective case-control (case-case) study	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** 10 CP pts with moderate steatorrhea and no indication for enzyme replacement 21 pts with steatorrhea and enzyme replacement at a dose that successfully treats signs of steatorrhea **Patient characteristics:** not defined **Inclusion criteria:** a) the presence of severe chronic pancreatitis based on MRCP (Cambridge criteria) [11] and EUS (8 or more criteria of chronic pancreatitis) [12]; b) the presence of steatorrhea defined as a daily fecal excretion of more than 7.5 g of fat c) the absence of steatorrhea-related	**Interventions:** Based on generally accepted indications, enzyme substitution therapy had been prescribed to patients who developed either severe steatorrhea (daily excretion of more than 15 g fat) or steatorrhea-related diarrhea and/or weight loss during the evolution of chronic pancreatitis. On the contrary, patients with steatorrhea of less than 15 g/day and the absence of diarrhea and weight loss did not receive any enzyme therapy. Enzyme substitution therapy consisted of the oral administration of pancreatic enzymes in the form

		diarrhea and weight loss over a period of at least 12 months prior to study entry **Exclusion criteria:** not defined	of enteric-coated mini-microspheres (Kreon® , SolvayPharma, Hannover, Germany) at a dose capable of preventing diarrhea and weight loss. Enzyme therapy was started by giving 20,000 Eur.Ph.U lipase/meal (10,000 Eur.Ph.U lipase/snack). This dose was increased in intervals of 20,000 U lipase/meal if necessary to avoid diarrhea and weight loss. Patients who did not require enzyme therapy were seen at 6-month intervals for clinical follow-ups. In cases in which enzymes were prescribed, visits were made at 3-month intervals until relief of symptoms (diarrhea and weight loss), and at 6-month intervals thereafter **Comparison:**
Notes:	**Author's conclusion:** t oral pancreatic enzyme supplementation in patients with pancreatic exocrine insufficiency resulting from chronic pancreatitis cannot be correctly optimized based on the clinical evaluation of maldigestion-related symptoms and signs (diarrhea and weight loss). Serum levels of fat soluble vitamins frequently remain abnormally low despite a theoretically adequate oral enzyme substitution therapy. Thus there is a clear need for using objective methods evaluating digestion and absorption of nutrients in order to optimize oral pancreatic enzyme substitution therapy in patients with pancreatic exocrine insufficiency.		
Outcome Measures/results	**Primary** not defined **Secondary** not defined	**Results:** Ten out of ten patients with asymptomatic steatorrhea, who did not fulfill the criteria for enzyme substitution therapy, and 11 out of 21 patients (52.4%) with symptomatic or more severe steatorrhea, who were under enzyme substitution therapy, showed a deficient nutritional status.	

Olesen, Søren S et al. The prevalence of underweight is increased in chronic pancreatitis outpatients and associates with reduced life quality. Nutrition. 43-44. 1-7. 2017

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:** case-control study	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:**	**Total no. patients:** 166 outpatients with CP, 160 age- and sex-matched controls. **Patient characteristics:** m November 2010 through August 2015 **Inclusion criteria:** . The diagnosis of CP	**Interventions:** none **Comparison:**

	Dropout rates:	was based on the modified Mayo Clinic criteria (Lüneburg), and CP was defined as a score of 4 points **Exclusion criteria:**	
Notes:	**Author's conclusion:** One quarter of outpatients with CP are underweight and report reduced life quality compared with their normal-weight counterparts. EPI, alcoholic etiology, and pain-related symptoms are independent risk factors. Our findings emphasize the need for a multidisciplinary approach in the handling of patients with CP that focuses on alcohol cessation and the appropriate treatment of pain and EPI.		
Outcome Measures/results	**Primary** primary study outcome was underweight, defined as a BMI <20.0 kg/m2 **Secondary** Secondary outcomes included clinical and demographic risk factors for underweight and their interaction.	**Results:** Patients with CP had a decreased mean BMI compared with controls (22.9 4.2 kg/m2 versus 26.8 5.2 kg/m2 ; P < 0.0001). Of 166 patients with CP, 43 (26.0% [95% confidence interval: 19.8–33.1%]) were underweight compared with 15 of 160 controls (9.4% [95% confidence interval: 5.8–14.9%]; odds ratio: 3.38 [95% confidence interval: 1.79–6.38]; P ¼ 0.0001). Several QOL scales and items were associated with underweight, including physical functioning (P ¼ 0.024). Alcoholic etiology (P ¼ 0.002), EPI (P ¼ 0.004), and constant pain (P ¼ 0.026) were independently associated with low BMI.	

NEWCASTLE - OTTAWA Checklist: Cohort: *6 Bewertung(en)*

Girish, Banavara Narasimhamurthy et al. Chronic pancreatitis is associated with hyperhomocysteinemia and derangements in transsulfuration and transmethylation pathways. Pancreas. 39. e11-6. 2010			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 1 **Study type:** prospective cohort study	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** 28 **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Kataoka, Keisho et al. Effects of oral ingestion of the elemental diet in patients with painful chronic pancreatitis in the real-life setting in Japan. Pancreas. 43. 451-7. 2014

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:** multicenter, open-label, observational, postmarketing surveillance study conducted in 266 centers in Japan.	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** A total of 630 patients were enrolled at 266 centers in Japan, and follow-up study reports were available for 619 patients; of whom, 23 were excluded because of violations of inclusion criteria, no ingestion of test diet, or administration of the test diet by other routes than orally. Of the remaining 596 patients eligible for analysis, 595 were evaluated for safety (1 patient was excluded because of no recording on the absence/ presence of adverse events) and 594 were evaluated for efficacy (2 patients were excluded because of no recording on efficacy evaluation; Fig. 1) **Recruiting Phase:** first patient was enrolled in January 2009, and the last patient completed the study in January 2012. **Inclusion criteria:** Patients with chronic pancreatitis with symptoms of abdominal pain or discomfort who started an elemental diet were enrolled in the study, irrespective of age, sex, or coexisting disease. Chronic pancreatitis was diagnosed according to the diagnostic criteria established in 2001 by the Japan Pancreas Society.10 **Exclusion criteria:**	**Interventions:** In addition to meals, patients ingested 160 g (600 kcal) per day of an elemental diet at any time of the day for the 12 weeks of the study period, during which the daily amount was allowed to be modified within a range of 80 to 240 g/d, depending on patients' conditions. Patients were asked to separately indicate their abdominal pain and abdominal discomfort grades with a vertical line on a 100-mm horizontal visual analog scale (VAS). **Comparison:**
Notes:	**Author's conclusion:** An oral low-fat elemental diet composed of purified amino acids, which requires no special treatment procedures, may improve patients' quality of life.		
Outcome Measures/results	**Primary** **Secondary**	**Results:** On mean (SD), the patients received 137 (54) g of the elemental diet for a mean (SD) duration of 114 (115) days, and 87.6% of these patients received concomitant medications including oral protease inhibitors (63.3%), pancreatic enzyme preparations (39.6%), and analgesics (21.8%). In 448 patients with VAS pain data available, the mean VAS pain score decreased by 19.0 mm at 1 week (P G 0.001), a pain-relieving effect that persisted to 12W (Fig. 2). The abdominal discomfort VAS scores for the same 448 patients displayed the same trends, with a decrease of 16.0 mm after	

		1 week, which persisted to 12W (Fig. 2). To address the possibility that concomitant medications used for the treatment of pancreatitis (protease inhibitors, pancreatic enzyme preparations, and analgesics) may have served to alleviate pain, we analyzed these data after stratification for concomitant drug use and demonstrated significant decreases in VAS pain scores regardless of concomitant use of these drugs (Fig. 3). There were significant improvements in nutritional indices other than total cholesterol level, including BMI, serum total protein, serum Alb, red blood cell count, and hemoglobin level, as well as in CRP and blood levels of pancreatic Enzymes The most representative reactions included diarrhea (10 [1.68%] cases), diabetes mellitus/hyperglycemia (4 [0.67%] cases), and abdominal distention (3 [0.50%] cases).

Olesen, Søren S et al. Opioid treatment and hypoalbuminemia are associated with increased hospitalisation rates in chronic pancreatitis outpatients. Pancreatology. 16. 807-13. 2016

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:** prospective cohort study	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** 170 patients with CP **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** number of clinical and demographic parameters, including pain pattern and severity, opioid use and parameters related to the nutritional state, were analysed for their association with hospitalisation rate **Comparison:**
Notes:	**Author's conclusion:** One-third of CP outpatients account for the majority of hospital admissions and associated risk factors are high dose opioid treatment and hypoalbuminemia. This information should be implemented in outpatient monitoring strategies to identify risk patients and improve treatment.		
Outcome Measures/results	**Primary** time to first pancreatitis related hospitalisation **Secondary** annual hospitalisation frequency (hospitalisation burden) and causes of hospitalisation	**Results:** Of the 170 patients, 57 (33.5%) were hospitalised during the follow-up period (median 11.4 months [IQR 3.8e26.4]). The cumulative hospitalisation incidence was 7.6% (95% CI; 4.5e12.2) after 30 days and 28.8% (95% CI; 22.2e35.7) after 1 year. Eighteen of the hospitalised patients (32%) had three or more admissions per year. High dose opioid treatment (>100 mg per day) (Hazard Ratio 3.1 [95% CI; 1.1 e8.5]; P ¼ 0.03) and hypoalbuminemia (<36 g/l) (Hazard Ratio 3.8 [95% CI; 2.0e7.8]; P < 0.001) were identified as independent risk factors for hospitalisation. The most frequent causes of hospitalisations were pain exacerbation (40%) and common bile duct stenosis (28%).	

Rupasinghe, Sukitha Namal et al. Long-term outcome of patients with chronic pancreatitis treated with micronutrient antioxidant therapy. HBPD INT. 16. 209-214. 2017

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:** retrospective cohort study	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** total of 30 patients coded by the hospital records department as having a diagnosis of chronic pancreatitis were identified for the study period 1st January 1990 to 1st January 1998 **Recruiting Phase:** 1st January 1990 to 1st January 1998 !! **Inclusion criteria:** Patients were included in this study if they had a discharge diagnosis of chronic pancreatitis within the study time frame and were prescribed micronutrient antioxidant therapy and had at least 12 months of follow-up. Patients were excluded if they did not meet these criteria or if they were in contemporaneous trials of antioxidant therapy.The diagnosis of chronic pancreatitis was by the Cambridge classification of chronic pancreatitis (class 1 to 5).[11] For the purposes of the present study, case notes and the reports of radiological and endoscopic imaging were systematically reviewed for all patients in order to allocate category. **Exclusion criteria:**	**Interventions:** Patients were prescribed Antox (Pharma Nord). There were minor modifications of Antox over the study period, Antox version 1.2 contained the following: 38.5 mg selenium yeast, of which 50 g was L-selenomethionine; 113.4 mg d/L tocopherol acetate; 126.3 mg ascorbic acid; and 480 mg L-methionine, together with the following secondary ingredients: 285.6 mg microcrystalline cellulose, 14.0 mg croscarmellose sodium, 7.0 mg colloidal anhydrous silica, and 3.0 mg magnesium stearate. The coating included 4.2 mg carotene. In addition to oral micronutrient antioxidant therapy, patients admitted with exacerbations of pain were prescribed intravenous antioxidant therapy based on methionine, selenium and vitamin C. It is specifically disclosed that antioxidant therapy should be regarded as an investigational use of a product not yet approved by the United States Food and Drug Administration (USFDA) for any purpose. **Comparison:**
Notes:	**Author's conclusion:** This is the first study to report long-term disease-specific outcome in patients with chronic pancreatitis prescribed micronutrient antioxidant therapy. There appears to be no effect of intervention on outcome.		
Outcome Measures/results	**Primary** **Secondary**	**Results:** A group of 30 patients with a diagnosis of chronic pancreatitis constitute the study population. Median age at time of diagnosis was 40 years (range 14-66); 19 (63%) were male and the median duration of symptoms was 2 years (range 0-18). Alcohol was the dominant cause in 22 (73%) patients and 16 (53%) patients were Cambridge stage 1. Twenty-four (80%) patients had pain at presentation. During antioxidant treatment of 4 years (range 1-10), pain decreased but the proportion with abdominal pain compared to those who were pain-free remained constant (P=0.16; two-way ANOVA with Bonferroni correction). There was a significant increase in requirement for insulin (P=0.028) with time together with use of both endoscopic and surgical interventions.	

Sikkens, Edmée C M et al. Patients with exocrine insufficiency due to chronic pancreatitis are undertreated: a Dutch national survey. Pancreatology. 12. 71-3. 2011

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:** prospective, cross-sectional study, observational, not interventional	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** 161 **Recruiting Phase:** **Inclusion criteria:** Patients were eligible for this study if they had chronic pancreatitis and were using pancreatic enzymes to treat exocrine insufficiency. **Exclusion criteria:** There were no exclusion criteria.	**Interventions:** anonymous survey was distributed by mail among members of the Dutch Association of Patients with Pancreatic Disorders, a patient organization for pancreatic diseases. After 4 weeks, a reminder was sent out to members that had not responded. The survey contained free field and multiple-choice questions and took about 10 min to complete (Appendix). The questions focused on enzyme use, the presence of steatorrhea-related symptoms (abdominal cramps; bloating; voluminous, sticky, and greasy stools), referral to a dietician, and food restrictions. **Comparison:**
Notes:	**Author's conclusion:** Many patients with exocrine insufficiency caused by chronic pancreatitis are under-treated in the Netherlands, a country with a well-organized healthcare system. To improve treatment efficacy, patients should be educated in adjusting the enzyme dosage according to steatorrhea-related symptoms and dietary fat intake. Moreover, patients should be referred to a well-trained, specialized dietician.		
Outcome Measures/results	**Primary** The primary endpoint was the daily enzyme dose, recalculated as the number of capsules containing 25,000 FIP-E units of lipase. **Secondary** Secondary endpoints were: the presence of steatorrhea-related symptoms, referral to a dietician, and a restriction of fat (recommended by a dietician or self-imposed)	**Results:** Hundred-and-seventy-eight members suffering from chronic pancreatitis responded to this survey, of which 161 (90%) were using enzyme replacement therapy for exocrine insufficiency. Patients were prescribed a median of 4 capsules a day when treatment was commenced. At the time of completing this survey, the median treatment duration was 77 months. The median enzyme dose had increased to 6 capsules per day. However, 25% of cases used 3 or less capsules per day (Table 1). Furthermore, 70% of	

		the patients reported steatorrhea-related complaints, despite treatment, and 42% suffered from weight loss. Only 40 cases (25%) reported to have visited a dietician for their exocrine insufficiency. Remarkably, dietary consultation did not affect treatment efficacy. As summarized in Table 2, the enzyme dosage, restriction of fat, weight loss, and steatorrhea-related complaints did not improve. Nevertheless, patients who where referred to a dietician were significantly more satisfied with the information they received regarding enzyme use (p-value <0.005).

Skipworth, James Robert Anthony et al. The use of nasojejunal nutrition in patients with chronic pancreatitis. JOP. 12. 574-80. 2011			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 1 **Study type:** retrospective cohort study	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** January 2004 and December 2007 **Inclusion criteria:** diagnosis of chronic pancreatitis was made based upon the Marseille-Rome classification (1988) following assessment of symptom profile (including abdominal pain, weight loss, nausea and vomiting) and imaging characteristics of chronic pancreatitis (including calcification, duct dilatation and stricturing and glandular atrophy). **Exclusion criteria:**	**Interventions:** A standard, semielemental nasojejunal feeding regime was initiated in all patients at a rate of 30 mL/h. The feeding rate was subsequently increased by 10 mL/h every 12 hours until the patient was reviewed by a dietician; 1,200 mL of the standard feed provided 1,560 kcal (1.3 kcal/mL), 80 g protein, 52 mmol Na+ and 53 mmol K+. All patients were reviewed by a dietician within 48 hours and an individualised feeding regimen established with the goal of reaching full caloric requirement on day 3 (30 mL/kg/day of 1 kcal/mL feed). The regimen was subsequently altered according to the patient's clinical course and physical activity. Patients were allowed to consume oral liquids as their clinical course improved and their tolerance increased; they were also allowed to take oral medications. All patients were discharged with a nasojejunal tube in situ only once their analgesic provision was adequate or their pain had settled; they were capable of

			managing their nasojejunal catheter and nutrition; they had no active or acute complications of chronic pancreatitis; and a home care package had been established.Upon review, patients were routinely asked about complications associated with the feeding technique and also to crudely rate their tolerance of the feed as 'excellent', 'good', 'average', or 'poor'. **Comparison:**
Notes:	**Author's conclusion:** Nasojejunal nutrition, commenced in hospital and continued at home, is safe, efficacious and well tolerated in patients with severe chronic pancreatitis and is effective in helping to relieve pain and diminish analgesic requirements.		
Outcome Measures/results	**Primary** **Secondary**	**Results:** Fifty-eight chronic pancreatitis patients (35 males, 23 females; median age 46 years) were included. Patients were discharged after a median of 14 days and nasojejunal nutrition continued for a median of 47 days. Forty-six patients (79.3%) reported resolution of their abdominal pain and cessation of opioid analgesia intake over the study period and median weight gain at 6 weeks following nutritional cessation was +1 kg (range -24 to +27 kg; P=0.454). Twelve (20.7%) patients reported recurrence of their pain during the follow-up period and complications were both minor and infrequent. Significant improvements were noted in most blood parameters measured, including: sodium (from 134.8 to 138.1 mEq/L; P<0.001); urea (from 3.4 to 5.1 mmol/L; P<0.001); creatinine (from 58.3 to 60.3 µmol/L; P<0.001); corrected calcium (from 2.24 to 2.35 mmol/L; P=0.018); albumin (from 34.5 to 38.7 g/L; P=0.002); CRP (from 73.0 to 25.5 mg/L; P=0.006); and haemoglobin (from 11.8 to 12.4 g/dL; P=0.036).	

Literatursammlung:

AG4-AP Handsuche

Inhalt: *9 Literaturstellen*

Literaturstelle	Evidenzlevel	Studientyp
Gardner, T. B. 2009	3	Retrospective cohort study
Gardner, T. B. 2008	2	Review
Mao, E. Q. 2010	2	RCT
Mao, E. Q. 2009	2	RCT
Marcos-Neira, P. 2017	3	prospektive multizentrische Beobachtungsstudie
Smit, M. 2016	1	retrospektive deskriptive Beobachtungsstudie, ein Zentrum
Wang, M. D. 2013	3	RCT
Wu, B. U. 2011	2	Open label RCT, 4-arm (2 by 2) factorial design, parallel group, randomized controlled pilot trial; interrupted after interim analysis
Xu, J. 2017	1	

OXFORD (2011) Appraisal Sheet: Systematic Reviews: *1 Bewertung(en)*

Gardner, T. B. et al. Fluid resuscitation in acute pancreatitis. Clin Gastroenterol Hepatol. 6. 1070-6. 2008

Evidence level/Study Types	P - I - C	Outcomes/Results	Literature References
Evidence level: 2 **Study type:** Review **Databases:** A Medline/Pubmed search was performed with manual cross-referencing (January 1966–July 2007). Search topics included "fluid resuscitation and acute pancreatitis," "fluids and acute pancreatitis," "pancreatic microcirculation," "vascular anatomy of the pancreas," "pancreatic necrosis," "hemoconcentration and acute pancreatitis," and "acute pancreatitis." Recent technical guidelines from the major gastroenterology societies also were evaluated. Original articles	**Population:** See 3.1 **Intervention:** See 3.1 **Comparison:** See 3.1	**Primary:** Various **Secondary:** Various **Results:** See manuscript. Potential harm by limited as well as by too aggressive resuscitation. **Author's Conclusion:** Aggressive fluid resuscitation in acute pancreatitis is a universally recommended and accepted paradigm. However, as this review highlights, there remains a paucity of data to support current clinical recommendations. Several significant questions remain including the type and amount of fluids, the role	See mansucript

and reviews were included. The English translation of all foreign language articles was used. **Search period:** January 1966–July 2007 **Inclusion Criteria:** See 3.1 **Exclusion Criteria:** See 3.1		of colloid solutions, and issues of patient tolerability.	
Methodical Notes			
Funding Sources: Not given **COI:** "The authors disclose no conflicts." **Study Quality:** High quality Review **Heterogeneity:** Substantial **Publication Bias:** Must be assumed **Notes:** Study Dates from 2008 and does not include most of the few RCTs on fluid resuscitation. Study includes a comprehensive review on animal studies, also on the type of fluid resuscitation.			

OXFORD (2011) Appraisal Sheet: RCT: *4 Bewertung(en)*

Mao, E. Q. et al. Rapid hemodilution is associated with increased sepsis and mortality among patients with severe acute pancreatitis. Chin Med J (Engl). 123. 1639-44. 2010		
Population	**Intervention - Comparison**	**Outcomes/Results**
Evidence level: 2 **Study type:** RCT **Number of Patient:** 115 **Recruitung Phase:** 9/06 to 12/08 **Inclusion Criteria:** Eligible patients meeting the Atlanta criteria for diagnosis of SAP were enrolled within 24 hours after onset of the disease from September 2006 through December 2008. Criteria for inclusion included having the first acute episode,consciousness, APACHE II score more than 8 and HCT ≥44%. **Exclusion Criteria:** less than 18 or more than 70 years of age, pregnant, chronic heart disease, pacemaker installed, chronic renal failure and SAP with	**Intervention:** rapid hemodilution (hematocrit (HCT) <35%, n=56) or slow hemodilution (HCT ≥35%, n=59) within 48 hours of onset **Comparison:**	**Primary:** No specification of Primary and secondary Outcomes. Major Outcomes were: **Secondary:** Amount of fluids given. Changes in haematocrit and APACHE-II over time. P/F-Ratio, CVP, pH, AST, ALT, MAP over time Balthazar CT Scores; Time interval for sepsis presented; Incidence of Sepsis; In-hospital Survival rate **Results:** The amount of fluid used in rapid hemodilution was significantly more than that used in slow hemodilution (P<0.05) on the admission day, the first day, and the second day. There were significant differences between the rapid and slow hemodilution group in terms of hematocrit, oxygenation index, pH values, APACHE II scores and organ dysfunction at different time during the first week. There were significant differences in the time interval to sepsis in rapid hemodilution ((7.4±1.9) days) compared with the slow

unknown etiology		hemodilution group ((10.2±2.3) days), and the incidence of sepsis (78.6%) was higher in the rapid group compared to the slow (57.6%) in the first 28 days. The survival rate of the slow hemodilution group (84.7%) was better than the rapid hemodilution (66.1%. P <0.05). **Author's Conclusion:** Rapid hemodilution can increase the incidence of sepsis within 28 days and in-hospital mortality. Hematocrit should be maintained between 30%–40% in the acute response stage.

Methodical Notes

Funding Sources: Not given

COI: Not given

Randomization: Patients were
randomly assigned based on their age (odd or even number) to rapid hemodilution (HCT <35%, n=56) and slow hemodilution (HCT ≥35%, n=59)

Blinding: No

Dropout Rate/ITT-Analysis: Not given

Notes:
Weakness of randomization procedure. No power calculation. Recruitment overlap with other RCT of the same group. 1/3 of fluid Expansion was given as 6% HAES which might have had negative Impact on outcome.

Mao, E. Q. et al. Fluid therapy for severe acute pancreatitis in acute response stage. Chin Med J (Engl). 122. 169-73. 2009

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 2 **Study type:** RCT **Number of Patient:** 76 **Recruitung Phase:** 3/2001 to 12/2007 (certain overlap with second RCT of same Group (Recruitment from 9/06 to 12/08) **Inclusion Criteria:** Eligible patients meeting the Atlanta criteria of diagnosis for SAP were included, if at least three of the followings criteria were fulfilled: heart rate (HR) ≥120 beats/min, mean arterial pressure (MAP) ≥85 mm Hg or ≤60 mm Hg, blood lactate concentration (BLC) ≥4 mmol/L, urine output (UO) ≤0.5 ml·kg-1·h-1 and hematocrit	**Intervention:** To regimens of fluid expansion group (Group I, n=36) and a controlled fluid expansion group (Group II). Fluid infusion rate was 10–15 ml·kg-1·h-1 (Group I) or 5–10 ml·kg-1·h-1 (Group II) **Comparison:** See 3.6	**Primary:** No clear discrimination of primary and secondary outcomes. Major Outcomes: Time to fulfillment of volume Expansion; amount of fluids applied for 4 days; Decrease in haematocrit; time course of APACHE II; rate of mechanical Ventilation; incidence of abdominal compartment Syndrome (ACS); incidence of Sepsis within 2 weeks; Survival rate **Secondary:** see 3.7 **Results:** The two groups had statistically different (P <0.05) time intervals to meet fluid expansion criteria (Group I, 13.5±6.6 hours; Group II, (24.0±5.4) hours). Blood lactate concentrations were both remarkably lower as compared to the level upon admission (P <0.05) and reached the normal level in both groups upon treatment. It was only at day 1 that hematocrit was significantly lower in Group I (35.6%±6.8%) than in Group II (38.5%±5.4%) (P<0.01). Amount of crystalloid and colloid in group I ((4028±1980)ml and (1336±816)ml) on admission day was more than those

(HCT) ≥44%. **Exclusion Criteria:** Criteria for exclusion included any of the followings: Less than 18 or more than 70 years of age, pregnancy, chronic heart disease, pacemaker installation, chronic renal failure and SAP with uncertain etiology. Seventy -six patients were enrolled in the study.		of group II ((2472±1871)ml and (970±633)ml). No significant difference was found in the total amount of fluids within four days of admission between the two groups (P>0.05). Total amount of fluid sequestration within 4 days was higher in Group I ((5378±2751)ml) than in Group II ((4215±1998)ml, P <0.05). APACHE II scores were higher in Group I on days 1, 2, and 3 (P <0.05). Rate of mechanical ventilation was higher in group I (94.4%) than in group II (65%, P <0.05). The incidences of abdominal compartment syndrome (ACS) and sepsis were significantly lower in Group II (P <0.05). Survival rate was remarkably lower in Group I (69.4%) than in Group II (90%, P <0.05). **Author's Conclusion:** Controlled fluid resuscitation offers better prognosis in patients with severe volume deficit within 72 hours of SAP onset.

Methodical Notes

Funding Sources: Not given

COI: Not given

Randomization: 1:1; mode not given

Blinding: no

Dropout Rate/ITT-Analysis: No drop-outs

Notes:
Mode of randomization not given.
1/3 of fluid given by HAES 6% which might have had negative impact on the outcome of the aggressive hydration Group.
The treatment response to fluid administration was evaluated every 4 hours on the restoration of circulatory function, which was objectified by heart rate, central venous pressure (CVP) and blood pressure.
So CVP seems to have played a certian role to guide fluid support.

Wang, M. D. et al. Early goal-directed fluid therapy with fresh frozen plasma reduces severe acute pancreatitis mortality in the intensive care unit. Chin Med J (Engl). 126. 1987-8. 2013

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 3 **Study type:** RCT **Number of Patient:** 200 **Recruitung Phase:** From September 2008 to September 2012 **Inclusion Criteria:**	**Intervention:** The Control group (n=68)was treated with crystalloid resuscitation (Ringer's lactate and normal saline) and 6% hydroxyethyl starch130/0.42. The adequacy of fluid resuscitation should be monitored by vital signs, urinary output and a decrease of the hematocrit at 12 hours after admission. The EGDT group 1 (n=64) were resuscitated with crystalloid solution (Ringer's lactate and normal saline)	**Primary:** 28-days-outcomes: Days of ventilation (within 28 days); days in ICU (within 28 days); abdominaal compartment syndrome (ACS) (within 28 days); MODS (within 28 days); mortality (within 28 days) **Secondary:** 72h-outcomes: APACHE II; PaO2/FiO2 ratio **Results:** "Patients in the control group had a higher rate of in-hospital mortality than was seen in EGDT group 1 and group 2 (23.5 vs. 21.9 and 17.6%, P<0.05), abdominal compartment syndrome (ACS) (26.5 vs. 21.9 and 17.6%, P<0.03) and multiple organ dysfunction syndrome (MODS)(29.4 vs. 26.5 and 23.5%,

All patients meeting the Atlanta criteria of diagnosis for SAP **Exclusion Criteria:** Sepsis, less than 18 or more than 70 years of age, pregnant, chronic heart disease, pacemaker installed, chronic renal failure and SAP with unknown etiology. Two hundred patients were enrolled in the study.	and 6% hydroxyethyl starch 130/0.42 according to EGDT protocol. The EGDT group 2 (n=68) were resuscitated with crystalloid volume (Ringer's lactate and normal saline), 6% hydroxyethyl starch 130/0.42 and two units of frozen plasma according to EGDT protocol, two units of frozen plasma was used as well as daily in next two days. Two units of frozen plasma were infused within 6 hours. Crystalloid and colloid were infused simultaneously at a 2:1 ratio. The objective of fluid therapy in the EGDT groups according to protocol: During the first 6 hours of resuscitation, the goals of initial resuscitation should include all of the following; central venous pressure (CVP) 8-12 mmHg, mean arterial pressure ≥65 mmHg, urine output ≥0.5ml • kg-1 • h-1, and central venous (superior vena cava) or mixed venous oxygen saturation ≥70%. **Comparison:** See 3.5	P<0.05) were also higher in the control Group than in the EGDT groups. Patients in the EGDT group 1 had a higher rate of in-hospital mortality than patients in EGDT group 2 (21.9 vs. 17.6%, P<0.05), and significantly higher rates of ACS (21.9 vs. 17.6%, P<0.03) and MODS (26.5 vs.23.5%, P<0.05) within the first 28 days of hospitalization. The days of ventilation and hospitalization in the ICU was longer in the control group than in EGDT groups 1 and 2 (15.3±5.2 vs.12.3±4.2 and 10.3±4.4, P<0.05 and 20.6±6.8 vs. 18.6±6.3, 15.4±4.7, P<0.05) and ventilation and hospitalization days were significantly longer in EGDT group 1 than in EGDT group 2 (12.3±4.2 vs. 10.3±4.4, P<0.05 and 18.6±6.3 vs. 15.4±4.7 P<0.05). Secondary outcomes: Patients in the control group had a higher APACHE II scores than patients in EGDT groups 1 and 2 (15.5±2.2 vs. 14.9±2.6 and 10.3±4.4, P<0.05) and a lower PaO2/FiO2 ratio (258±8.2 vs. 272±9.3 and 305±10.0 P<0.05). Patients in the EGDT group 1 had significantly higher APACHE II scores (14.9±2.6 vs. 10.3±4.4, P<0.05) and a significantly lower PaO2/FiO2 ratio (272±9.3 vs. 305±10.0, P<0.05) than patients in EGDT group 2. **Author's Conclusion:** Early goal-directed therapy with fresh frozen plasma shortens the duration of positive fluid balance, decreases the amount of positive fluid balance within 72 hours, reduces the duration of mechanical ventilation and admissions to the ICU, and improves PaO2/FiO2 and mortality in severe acute pancreatitis.

Methodical Notes

Funding Sources: Not given

COI: Not given

Randomization: 1:1:1.
Modality of randmozation not given

Blinding: No

Dropout Rate/ITT-Analysis: No drop-out; follow-up to 28 days after discharge

Notes:
Substantial short-comings: No baseline comparisons are given. This markedly impedes the interpreation of the follow-up results.
Statistics in part questionable (after recalculation)

Wu, B. U. et al. Lactated Ringer's solution reduces systemic inflammation compared with saline in patients with acute pancreatitis. Clin Gastroenterol Hepatol. 9. 710-717 e1. 2011

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 2 **Study type:** Open label RCT, 4-arm (2 by 2) factorial design, parallel group, randomized controlled pilot trial; interrupted after interim analysis	**Intervention:** Participants were randomized to 1 of 4 treatment arms: (1) goal-directed fluid resuscitation with LR, (2) goal-directed fluid resuscitation with NS, (3) standard resuscitation with LR, or (4) standard resuscitation with NS.	**Primary:** The primary study outcome was systemic inflammation measured clinically as the change in prevalence of SIRS at 24 hours post-randomization.

Number of Patient: 40 **Recruitung Phase:** 5/2009 to 2/2010 **Inclusion Criteria:** "Patients aged 18 years or older who were admitted with a diagnosis of acute pancreatitis were eligible for study participation. Diagnosis was confirmed by the presence of 2 or more of the following criteria: (1) epigastric abdominal pain, (2) elevation in serum amylase and/or lipase level greater than 3 times the upper limit of normal, (3) confirmatory findings cross-sectional imaging." **Exclusion Criteria:** "Patients were excluded from participation if they met any of the following criteria: known history of severe cardiovascular, respiratory, renal, hepatic, hematologic, or immunologic disease defined as (1) greater than New York Heart Association class II heart failure, (2) active myocardial ischemia or (3) cardiovascular intervention within previous 60 days, (4) history of cirrhosis or (5) chronic kidney disease with creatinine clearance 40 mL/min, or (6) chronic obstructive pulmonary disease with requirement for home oxygen. Individuals were also excluded from participation if they had evidence of a concurrent metabolic or physiological derangement that required specific fluid management including (7) sepsis (presence of suspected or confirmed infection in the setting of SIRS), (8) hypernatremia (serum sodium 150 mEq/L) or hyponatremia (serum sodium 135 mEq/L), or (9) rhabdomyolysis. Patients transferred from an outside hospital were excluded from participation. Patients with a history of metastatic malignancy, active inflammatory bowel disease, autoimmune conditions	"In goal-directed fluid resuscitation, study investigators managed fluid parameters according to protocol for all participants randomized to goal-directed fluid resuscitation. Each participant received an initial fluid challenge with 20 mL/kg (eg, 1400 mL for 70-kg individual) of either LR solution or NS during a period of 30 minutes in accordance with current critical care treatment guidelines.18 Participants then received continuous infusion of 3.0 mL/kg/h (for example, 210 mL/h for 70-kg individual) of intravenous hydration for volume maintenance. After 8–12 hours (checkpoint 1), study physicians reassessed patients with a bedside clinical examination as well as a repeat BUN measurement. Participants were considered refractory to initial fluid challenge if the BUN level remained unchanged or increased from its previous value. Participants who were refractory to initial volume challenge received a second fluid challenge of 20 mL/kg to be administered during 30 minutes. They then continued to receive volume replacement at a rate of 3 mL/kg/h. An additional bolus of 20 mL/kg during a period of 30 minutes was initiated at 16–20 hours (checkpoint 2) for participants who remained refractory to volume resuscitation. Participants were considered responsive to initial fluid challenge if the BUN level decreased or normalized at the first checkpoint. Participants who responded to initial volume challenge did not receive further volume challenge but continued to receive weight-based maintenance fluid replacement at a reduced rate of 1.5 mL/kg/h (for example, 105 mL/h for 70-kg individual). **Comparison:** 1.) Groups with EGDT vs. standard resuscitation. 2.) Groups with Ringer vs. groups with saline	SIRS was defined as the presence of >=2 of the following criteria within 4 hours of assessment (incorporating most extreme value for vital signs or laboratory tests): pulse >90 beats/min; respirations >20/min or PaCO2 <32 mm Hg; temperature <6°C or >38°C; white blood cell count <4000 cells/mm3 or >12,000 cells/mm3 or >10% bands. **Secondary:** The secondary outcome was CRP level at 24 hours. Systemic inflammation is a major intermediate pathway in the development of complications such as organ failure in acute pancreatitis. Both SIRS and CRP have been established as important early prognostic markers related to mortality in acute pancreatitis. **Results:** "The volumes of fluid administered during a 24-hour period were similar among patients given goal-directed or standard fluid resuscitation (mean, 4300 vs 4600 mL, respectively; P = .87). Goal-directed resuscitation did not significantly reduce incidence of SIRS, compared with standard resuscitation (11.8% vs 13.0%, respectively; P = .85) or levels of CRP after 24 hours (87.1 vs 69.2 mg/dL, respectively; P = .75). By contrast, there was a significant reduction in SIRS after 24 hours among subjects resuscitated with lactated Ringer's solution, compared with normal saline (84% reduction vs 0%, respectively; P = .035); administration of lactated Ringer's solution also reduced levels of CRP, compared with normal

such as systemic lupus erythematosus, autoimmune pancreatitis, giant cell arteritis, rheumatoid arthritis, or chronic infectious disease including human immunodeficiency virus or tuberculosis were excluded because of potential confounding related to markers of systemic inflammation."		saline (51.5 vs 104 mg/dL, respectively; P = .02)." **Author's Conclusion:** "Patients with acute pancreatitis who were resuscitated with lactated Ringer's solution had reduced systemic inflammation compared with those who received saline."

Methodical Notes

Funding Sources: "There was no external funding source for this study."

COI: The authors disclose no conflicts.

Randomization: After completion of enrollment, randomization was performed in real time by using a centralized web-based data repository. A computer random number generator was used to select treatment assignment on the basis of random permuted blocks. Randomization was stratified according to site and initial SIRS status of the patient at the time of enrollment. Study investigators were blinded with respect to the randomization sequence and blocking intervals. However, because of the nature of the investigation, study investigators and participants were not blinded with respect to intervention during the 24-hour study period.

Blinding: See 3.14

Dropout Rate/ITT-Analysis: ITT; one protocol violation

Notes:
Study was stopped after interim analysis after 40 of planned 92 patients due major deviation of the results from power calculation resukting in a number required of 320 (!) Patients per arm.

Consequently,statistical power is very low regrading all endpoints.
Furthermore, the early-goal-directed algorithm did not result in different amounts of fluid given in this limited number of patients.

NEWCASTLE - OTTAWA Checklist: Case Control: *3 Bewertung(en)*

Marcos-Neira, P. et al. Relationship between intra-abdominal hypertension, outcome and the revised Atlanta and determinant-based classifications in acute pancreatitis. BJS Open. 1. 175-181. 2017

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 3 **Study type:** prospektive multizentrische Beobachtungsstudie	**Funding sources:** kein funding **Conflict of Interests:** unbekannt **Randomization:** nein **Blinding:** nein **Dropout rates:** 19,5% der Patienten	**Total no. patients:** 374 aus 46 Kliniken **Patient characteristics:** 1.Jan bis 31. Dez. 20131 Jahr **Inclusion criteria:** 1. Patienten über 18 Jahre 2. ICU-Aufnahme mit der Diagnose	**Interventions:** IAP Messung (Methode nach consensus definition der World Society of the Abdominal Compartment Syndrome von 2013) alle 6 h während

	ohne IAP-Messung. gingen nicht in die ITT-Analyse ein.	Akute Pankreatitis(AP) und mindestens einem Organversagen Definition AP durch 2 der folgenden Kriterien: Oberbauchschmerzen, Se.Amylase/oder Lipasewerte bei Aufnahme dreifach oder höher über Normalwert, entsprechende Befunde in der Bildgebung. Definition Organversagen: ensprechend AntlantaKlassifikation 2012 und Determinanten-basierte Classification (DBC) angepasst für die ICU entsprechend der SEMICYUC consensus conference Kriterien (Spanische Gesellschaft für Intensivmedizin, Kriterien für Organversagen wurden auch von ESICM übernomen). definitionen in der Arbeit detailliert nachvollziehbar,. 3. intraabdomineller Hypertonus (IAH) (wiederholter pathologischer IAP von 12 mmHg oder größer) und 4.abd. Kompartmentsyndrom (IAP über 20 mmHg mit oder ohne abd. Perfusionsdruck unter 60 mmHg und assoziiert mit einem Organversagen (cardiovaskulär, respiratorisch oder renal) **Exclusion criteria:** keine	ICU. **Comparison:** IAP (Maximum IAP während ICU-Aufenthalt) mit outcome-Parametern der akuten Pankreatitis
Notes:	Schweregrad der akuten Pankreatitis bewertet u.a. nach Atlanta Klassifikation von 2012 Saubere transparente Statistik **Author's conclusion:** Die Höhe des IAP war prädiktiv für das outcome von Patienten mit akuter Pankreatitis während des ICU-Aufenthaltes. Der Wert liegt vor allem in der Prädiktion von Organversagen und Mortalität. Manko der Studie ist der Datenpool, aus dem die Patienten kamen (EPAMI.study, epidemiol. Beobachtungsstudie und klassifikation der Pankreatitis), in der IAP und IAH nur sekundäre Variable waren. Der Zeitpunkt für höchsten IAP wurde nicht erfasst.		
Outcome Measures/results	**Primary** Mortalität, Organversagen (Schock, Nierenversagen, kontinuierliche Nierenersatztherapie, respiratorisches Versagen, Beatmung), infizierte Nekrosen, , Chirurgie, Dekompressive Laparotomie, Ernährung, Krankenhausverweildauer, ICU-Verweildauer, Todesursachen. **Secondary** ROC-Kurven-Analyse für die Fähigkeit des IAP, Organversagen und Mortalität vorherzusagen.	**Results:** Alle 374 Patienten waren kritisch krank mit mean(SD) APACHE-II-Score von 16,1 (8,2) und SOFA 6,6 (4,5). Gesamt-Mortalitätsrate 28,9%. IAP wurde gemessen bei 301 Patienten (80,5%).Nur von diesem Patienten wurden die outcome-Daten erhoben. Mean Maximum IAP 19,2 (5,8). 274 /301 (91%) Parienten entwickelten ein IAH, von denen 110 (34,2% einen IAP >20mmHg hatten und somit ein Risiko für ein abd. Konpartmentsyndrom (ACS). Ein ACS entwickelten 103 Patienten, von denen 9 eine dekompressive Laparotomie bekamen (sieben dieser 9 Pat. verstarben). direkte signifikante Beziehung zwischen den graduierten IAHs für die Entwickung von Schock (p<0,001) , Organversagen respiratorisch (p=0,007), renal (p<0,001), Einsatz von Beatmung (p=0,007) und Nierenersatzverfahren (p<0,001= ROC-Kurven:	

		Area unter the curve des IAP für die Vorhersage Schock 0,79 (95%CI 0,73-0,84) für die Vorhersage respiratorisches Versagen 0,82 (95%CI 0,77-0,87), für Prediktion von Nierenversagen 0,93 (95%CI 0,89-0,96), für die Vorhersage der Mortalität 0,89 (95%CI 0,86-0,93)- alle P<0,001) ROC -Analyse für besten Cut-off point des IAP/Sensitivität /Spezifität/positiver Vorhersagewert, negativer Vorhersagewert für die Vorhersage von: Schock IAP 15,5 mmHg/ 89,9%/55,8%/77,2%/ 76,8% resp. Versagen cut-off IAP 17,5 mmHg/ 82,7%/70,1%/ 82,7%/ 70,1%. Nierenversagen cut-off IAP 18,5 mmHg/ 81,5%/88,7%/90,1%/ 79,2%. Mortalität cut-off IAP 19,5 mmHg/ 81,4%/ 72,1%/ 59,1%, 89,1%.

Smit, M. et al. Abdominal Compartment Syndrome and Intra-abdominal Ischemia in Patients with Severe Acute Pancreatitis. World J Surg. 40. 1454-61. 2016

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:** retrospektive deskriptive Beobachtungsstudie, ein Zentrum	**Funding sources:** keine **Conflict of Interests:** keine **Randomization:** keine **Blinding:** entfällt **Dropout rates:** entfällt	**Total no. patients:** 59 Patienten mit schwerer akuter Pankreatitis (definition Atlanta 2012) **Patient characteristics:** Jan 2005 bis Mai 2011 **Inclusion criteria:** Aufnahme auf die ICU Diagnose schwere akute Pankreatitis **Exclusion criteria:** unter 18 Jahre, chronische Pankreatitis in der Anamnese, Aufnahme nach Reanimation wegen cardiac arrest, post mortem diagnostizierte Pankreatitis	**Interventions:** keine **Comparison:** Vergleich der Patienten mit akuter schwerer Pankreatitis mit und ohne Messung des intraabd. Drucks (IAP) und mit und ohne abd. Kpmpartmentsyndrom (ACS). Auftreten intestinaler Ischämie bei den Patienten
Notes:	Nur retrospektive Beobachtungsstudie, rein deskriptiv **Author's conclusion:** Die Autoren konstatieren eine hohe anzahl von instestinalen Ischämien bei ihren Patienten mit schwere akuter Pankreatitis und ACS. Ein Abfall des mesenterialen Blutflusses bei ACS ist zu erwarten (tierexperimentelle Studien)		
Outcome Measures/results	**Primary** Unterschiede der Patienten mit und ohne IAP für Komplikationen der schweren akuten Pankreatitis, Mortalität, IAP und ACS-Daten **Secondary** Auftreten intestinaler Ischämie	**Results:** signifikante Unterschiede zwischen den Gruppen mit (n=29) und ohne (n=30) IAP-Messung bezüglich einzelner Organversagen (mehr in der Gruppe mit IAP-Messung) , keine Unterschiede für APACHE-II-Score oder Mortalität. 13/29 Patienten mit IAP-Messung entwickelten ein Abd. Kompartmentsyndrom (ACS). Dekompressionslaparotomien 2/16 Pat. ohne ACS und 10/13 Patienten mit ACS (p<0,001). Eine Gastrointestinale Nekrose oder Ischämie hatten 1/16 Patienten ohne ACS und 8 von 13 Patienten mit ACS (p=0,003). Von den 8 Patienten mit ACS und gastrointestinaler Ischämie verstarben 6 Patienten; einer wurde 16 Tage und einer 134 Tage nach Dekompressionslaparotomie auf die	

		Normalstation verlegt. Die Ischämien betrafen sigma, Jejunum, Ileum und in einem Fall den linken Leberlappen. In 6 von 8 Fällen transmurale Nekrosen am Darm (makroskopisch). Von den 8 Patienten mit ACS und intestinaler ischämie hatten präoperativ nur 5 ein Se- Laktat >2,5 mmol/L

Xu, J. et al. Early Continuous Veno-Venous Hemofiltration Is Effective in Decreasing Intra-Abdominal Pressure and Serum Interleukin-8 Level in Severe Acute Pancreatitis Patients with Abdominal Compartment Syndrome. Blood Purif. 44. 276-282. 2017

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:**	**Funding sources:** technischer Support durch das Zentral-Labor **Conflict of Interests:** no conflict to declare **Randomization:** nein **Blinding:** nein **Dropout rates:** entfällt	**Total no. patients:** 25 Patienten mit schwerer akuter Pankreatitis mit ICU-Aufnahme und CVVH, 11 Patienten als Kontrolle ohne CVVH **Patient characteristics:** Jan 2013 bis Dez 2015 **Inclusion criteria:** schwere akute Pankreatitis (Bestimmung mit Ranson-Score, APACHE-II-Score und CT-Befund Schweregradbestimmung nach Atlanta-Kriterien von 2012) , ICU-Aufnahme innerhalb 72 h nach Krankheitsbeginn. alle Patienten mit intraabd. Druck bei Aufnahme von über 20 mmHg (Kriterien für Abd. Kompartment-Syndrom (ACS) erfüllt) **Exclusion criteria:** nicht definiert	**Interventions:** Kontinuierliche veno-venöse Hämidiafiltration (CVVHDF) in der Studiengruppe). IAP-Messung über 7 Tage bei allen Patienten und IL-8-Messung tägl. bis Entlassung von ICU. **Comparison:** Patientengruppen mit und ohne CVVHDF bei schwerer akuter Pankreatitis
Notes:	Patienten mit schwerer akuter Pankreatitis. "Kontrollgruppe" nur 11 Patienten (ohne CVVH und ohne Chirurgische Therapie aus ökonomischen oder anderen Gründen, wobei letztere nicht genannt werden ! . Therapiegruppe 25 Patienten(mit CVVH). kein informed consent, sondern "in agreement with the guidelines of the Ethics Committee at our hospital" Studie ist m.E. aus ethischen Günden nicht zitierbar **Author's conclusion:** Die Studie bestätigt, daß CVVHDF den IAP signifikant vermindern kann und ebenso den IL-8Spiegel bei Patienten mit abdominellem Kompartmentsyndrom und schwerer akuter Pankreatitis		
Outcome Measures/results	**Primary** Effekt der CVVHDF auf IAP-Veränderungen und auf IL-8-Verlauf **Secondary** Korrelation zwischen IL-8 und simultan gemessenem IAP Mortalität bei Patienten mit und ohne CVVHDF	**Results:** In der CVVHDF-Gruppe verstarben 2 von 23 Patienten (1x im Multioorganversagen MO, einaml in der Sepsis) , in der Gruppe ohne CVVHDF verstarben 4 von 11 Patienten im MOV. IAP und IL-8 fallen rascher und deutlicher in der CVVHDF-Gruppe. IL-8Spiegel sind signifikant positiv korreliert mit dem IAP (r= 0,62, p<0,01) Die autoren berichten keine korrelation zwischen der Flüssigkeitsbilanz und IAP. Es finden sich hierzu aber keine Zahlen in der Arbeit.	

NEWCASTLE - OTTAWA Checklist: Cohort: *1 Bewertung(en)*

Gardner, T. B. et al. Faster rate of initial fluid resuscitation in severe acute pancreatitis diminishes in-hospital

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 3 **Study type:** Retrospective cohort study	**Funding sources:** Not given **Conflict of Interests:** Not given **Randomization:** Not applicable **Blinding:** Not applicable **Dropout rates:** Not applicable	**Total no. patients:** n=45 **Recruiting Phase:** March 1, 1992, and March 1, 2007 **Inclusion criteria:** Patients having each of the following parameters: (1) age 6 18 years, (2) acute pancreatitis as the primary admitting diagnosis, (3) diagnosis of acute pancreatitis based on at least 2 of the following: admitting serum amylase and/or lipase activity greater than 3* the upper limit of normal, symptoms consistent with acute pancreatitis, or supportive cross-sectional imaging, and diagnosis of severe acute pancreatitis as per the Atlanta Classification. **Exclusion criteria:** See 3.3	**Interventions:** Fluid resuscitation; observational study. **Comparison:** Patients were divided into two groups – those who received >=33% ('early resuscitation') and <33% ('late resuscitation') of their cumulative 72-hour intravenous fluid volume within the first 24 h of presentation.

Notes:	Small retrospective study, but pragmatic design with high clinical importance. **Author's conclusion:** Patients with severe acute pancreatitis who do not receive at least one third of their initial 72-hour cumulative intravenous fluid volume during the first 24 h are at risk for greater mortality than those who are initially resuscitated more aggressively.

Outcome Measures/results	**Primary** The primary clinical outcomes were in-hospital mortality, development of persistent organ failure, and duration of hospitalization. **Secondary** Necrosis, operative interventions, SIRS, pseudocyst, 24h-haematocrit	**Results:** 17 patients were identified in the 'early resuscitation' group and 28 in the 'late resuscitation' group and there were no baseline differences in clinical characteristics between groups. Patients in the 'late resuscitation' group experienced greater mortality than those in the 'early resuscitation' group (18 vs. 0%, p ! 0.04) and demonstrated a trend toward greater rates of persistent organ failure (43 vs. 35%, p = 0.31). There was no difference in the total amount of fluid given during the first 72 h. There were no differences in secondary outcomes.

Literatursammlung:

AG4-AP: Volumen- und Schmerztherapie, Intensivmedizinische Therapie _Literatursuche

Inhalt: *98 Literaturstellen*

Literaturstelle	Evidenzlevel	Studientyp
Acevedo-Piedra, Nelly G 2014	1	
Al-Humoud, Hani 2008	1	
Ammori, B J 2003	3	
Anand, Gobind 2014	2	Retrospective Population-based cohort
Baxter, K A 2018	3	Retrospective cohort
Beduschi, Murilo Gamba 2016	1	
Bezmarevic, Mihailo 2012	2	Prospective
Bhandari, Vimal 2013	2	Prospective cohort
Boskovic, Aleksandra 2014	1	
Bulyez, Stéphanie 2017	1	
Buxbaum, James L 2017	1	RCT
Capurso, Gabriele 2012	1	
Chang, Chiz-Tzung 2016	1	
Chen, Hong 2008	2	Prognostic study; cohort with and without IAH
Chen, Yizhe 2016	1	
Cheon, Young Koog 2007	1	
Cho, Joon Hyun 2015	1	
Dambrauskas, Zilvinas 2009	3	retrospective analysis

de-Madaria, E 2010	1	
de-Madaria, Enrique 2011	3	prospective cohort
Dellinger, E Patchen 2007	1	
Eachempati, Soumitra R 2002	1	
Eatock, F C 2005	1	
Eckerwall, Gunilla 2006	5	Retrospective Analysis.
Fan, S T 1989	1	
Farkas, Gyula 2014	1	
Farrell, James J 2004	1	
Fernandes, Samuel R 2016	1	
Fischer, A J 2017	2	Retrospective cohort. Study comparing several prognostic scores
Gasparovi?, Vladimir 2014	1	
Gillick, K 2016	1	
Gomercic, Cécile 2016	1	
Gou, Shanmiao 2015	3	Retrospective case-control study
Gougol, Amir 2017	2	prospective cohort
Gregori?, Pavle 2014	1	
Gubensek, Jakob 2009	1	
Gupta, R 2003	1	
Güldo?an, Cem Emir 2017	1	
Harrison, David A 2007	1	
He, Wen-Hua 2016	1	
Horibe, Masayasu 2017	1	

Huber, Wolfgang 2008	2	Prospective study
Iwashita, Takuji 2012	1	
Ji, Liang 2016	2	Retrospective prognostic cohort study.
Jin, Tao 2014	1	
Jin, Yin 2013	1	
Juneja, Deven 2010	1	
Kadiyala, Vivek 2016	3	Single center, retrospective analysis of a prospective acute pancreatitis database
Kanno, Atsushi 2012	1	
Kanno, Atsushi 2016	1	
Kapoor, Karan 2013	3	During a five-year period, all patients presenting directly to our hospital with their first episode of acute pancreatitis were enrolled in a cohort study. We analyzed data obtained from records of all such patients and performed a separate analysis on those with hemoconcentration (hematocrit equal to, or greater than, 44%) at presentation to determine whether duration of abdominal pain prior to presentation was associated with severity of acute pancreatitis.
Ke, Lu 2012	3	observational study
Ke, Lu 2011	3	prospective, observational stud
Kitamura, Katsuya 2017	3	post hoc analysis of a multicenter, retrospective study
Kolber, Witold 2018	4	prospective, observational study
Koutroumpakis, Efstratios 2016	3	prospective data collection
Kusnierz-Cabala, Beata 2013	4	observal study
Lakhey, Paleswan Joshi 2014	3	prospective observational study
Lin, Suhan 2017	2	observational
Lipinski, Michal 2015	3	retrospective
Mentula, P 2005	3	
Mole, Damian J 2011	1	
Morishima, Tomomasa 2016	2	Ja, Einschluss prospektiv nach Screening von 50 Patienten mit V.a. Autoimmunpancreatitis und nach Überspürung der Ausschlusskriterien. AIP eingeschlossen wurden von denen 45 eine AIP hatten und eingeschlossen wurden

Mortele, Koenraad J 2011	5	Fallkontrollstudie
Ou, Xilong 2015	3	Experimental animal study in mice. prospective
Papapanagiotou, Angeliki 2018	2	Ja. Pilotstudie
Pedersen, Simon B 2016	3	Prospektive Kohortenstudie
Petrov, Maxim S 2013	1	Randomized controlled trial, interventions randomisiert kontrollierte Studie, ein Zentrum .
Pintado, María-Consuelo 2016	4	prospektive Beobachtungsstudie
Pynnönen, Lauri 2012	5	Kohorten studie
Rahman, Sakhawat H 2003	4	Prospektive analytische Fallkontrollstudie
Rebours, Vinciane 2012	2	prospektive Fallkontrollstudie immunhistochemischer Nachweis von Immunglobulin IgG4-positiven Plasmazellen bei Patienten mit Autoimmunpankreatitis (AIP) ohne (n=19, Gruppe 1) oder AIP-Typ2 mit entzündliche Darmerkrankung (n=4, Gruppe 2) , im Vergleich zu Patienten mit entzündlicher Darmerkrankung ohne Autoimmunpankreatitis (n=20, 15x ulzerative Kolitis und 5 x M.Crohn = Gruppe 3) und Kontrollgruppe ohne AIP und ohne entzüngliche Darmerkrankung (n= 26,= Gruppe4). Alle Patienten mit Endoskopie des oberen und unteren GI-Trakts und multiplen PEs
Ribeiro, M Dinis 2002	1	Fallkontrollstudie
Rosas, Jose Manuel Hidalgo 2007	3	prospektive Beobachtungsstudie, Fall-Kontroll-Studie
Sadowski, Samira M 2015	5	prospective Randomized controlled clinical Trial
Sangha Brar, Jaspreet Singh 2018	1	Übersicht (über die bekannten vielfältigen Erkrankungen, die mit IgG4 assoziiert sind
Shah, Azhar 2012	3	Fallkontrollstudie prospektiv
Sharma, Vishal 2016	5	prospective open-label randomized controlled pilot trial
Shen, Hsiu-Nien 2012	3	retrospektive Fallkontrollstudie
Shen, Yinfeng 2014	3	Review und Meta-Analyse von RCTs mit Pharmakonutrition parenteral bei schwere akuter Pankreatitis . Alle RCTs sind single-Center-Studien
Shiokawa, Masahiro 2013	3	multizentrische retrospektive Fallkontrollstudie

Singh, Namrata 2014	4	randomized controlled trial , single center study, placebo-kontrolliert
Sun, Jia-Kui 2013	3	prospektiv randomisierte klinische Pilot Studie, ein Zentrum
Sun, Yun 2015	2	Prospektive Fallkontrollstudie, retrospektive historische Kontrollgruppe
Surbatovic, Maja 2013	3	Fallkontrollstudie. prospektive Vergleichsstudie von PAtienten mit schwerer akuter Pankreatitis (SAP) (nach Atlanta-Klassifikation von 1992) und SAP-induziertem assoziiertem MODS. Testung von TNF-alpha als prognostischer Parameter für Erkrankungsschwere
Szabo, Flora K 2015	2	retrospektive Fall-Kontrollstudie
Takeda, Kazunori 2006	2	Leitlinie
Takeda, Kazunori 2010	1	keine Studie, kein systematisches Review. systematik zumindest nicht zu erkennen
Wu, Bechien U 2010	3	
Xu, Jianmin 2013	4	
Yu, Pengfei 2016	4	
Yuzbasioglu, Mehmet Fatih 2008	5	
Zhang, Min-Jie 2008	5	
Zhao, Bing 2016	4	
Zhao, Gang 2013	4	
Zheng, Wei 2018	4	
Zhu, YiLin 2011	3	
Zubia-Olaskoaga, Felix 2016	1	

OXFORD (2011) Appraisal Sheet: Systematic Reviews: *4 Bewertung(en)*

Capurso, Gabriele et al. Role of the gut barrier in acute pancreatitis. J. Clin. Gastroenterol. 46 Suppl. S46-51. 2012			
Evidence level/Study Types	**P - I - C**	**Outcomes/Results**	**Literature References**
Evidence level: 1 **Study type:** **Databases:** **Search period:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** **Author's Conclusion:**	

Inclusion Criteria: **Exclusion Criteria:**			

Methodical Notes

Funding Sources:

COI:

Study Quality:

Heterogeneity:

Publication Bias:

Notes:
Not a systematic review.
Assessment of quqlity and Level of evidence not applicable

Sangha Brar, Jaspreet Singh et al. The pancreatic and extrapancreatic manifestations of IgG4-related disease. Diagn Interv Radiol. 24. 83-88. 2018

Evidence level/Study Types	P - I - C	Outcomes/Results	Literature References
Evidence level: 1 **Study type:** Übersicht (über die bekannten vielfältigen Erkrankungen, die mit IgG4 assoziiert sind **Databases:** nicht genannt **Search period:** nicht genannt **Inclusion Criteria:** nicht genannt **Exclusion Criteria:** nicht genannt	**Population:** unbekannt **Intervention:** keine **Comparison:** kein Vergleich	**Primary:** entfällt **Secondary:** entfällt **Results:** entfällt **Author's Conclusion:** IgG4-related diseases ist eine relativ neue Entität und IgG4 ein Marker, der auf Steroid-Therape anspricht. PET zusätzlich zu MRT und CT, wird als indiziert angesehen, um die zugehörige Erkrankung zu lokalisieren , deren Manifestation in CT und MRT nicht sichtbar ist.	19 Arbeiten von 2002 bis 2017

Methodical Notes

Funding Sources: nein

COI: unbekannt

Study Quality: extremely poor

Heterogeneity:

Publication Bias: Ja, Radiologe publiziert in radiologischem Journal und promoted die - nicht erweisene - Bedeutung von PET

Notes:
Es handelt sich um eine Übersicht aller IgG4-related-diseases, zu denen auch die Autoimmunpankreatitis zählt. Der Marker ist aber extrem unspezifisch - das zumindest zeigt die Arbeit. Erkrankungen an Hals und Kopf, der Lungen, der Nieren,

sklerosierende Cholangitis und eben Typ1 Pankreatitis = Autoimmunpankreatitis. Die Evidenttabelle erübrigt sich eigentlich in diesem Fall. Die Arbeit kann man ausschliessen, es sei denn, wir wollen erwähnen in der LL , daß IgG4 ein extrem unspezifischer Parameter ist.

Takeda, Kazunori et al. JPN Guidelines for the management of acute pancreatitis: medical management of acute pancreatitis. J Hepatobiliary Pancreat Surg. 13. 42-7. 2006

Evidence level/Study Types	P - I - C	Outcomes/Results	Literature References
Evidence level: 2 **Study type:** Leitlinie **Databases:** Leitlinien-Prozess nicht erläutert. **Search period:** unklar, Veröffentlicht 2006 **Inclusion Criteria:** Literatur zu medical, nicht chirurgischer Therapie der akuten Pankreatits (eklektisch) **Exclusion Criteria:** entfällt	**Population:** akute Pankreatits **Intervention:** keine **Comparison:** Leitlinie zur Therapie der akuten Pamkreatitis (AP) stellt folgende Fragen nach: adaequater Flüssigkeitszufuhr, Analgesie, Erfordernis nasogastraler sonde und H2-Blocker, Nutzen kontinuierlicher i.v. Gabe eines hochdosierten Protease-Inhibitors, enterale Ernährung besser als Total parenterale Ernährung, sinn prophylaktischer Gabe von Antibiotika zur Vermeidung von Infektionen bei schwerer akuter Pankreatitis, blood- purification therapy (CHDF und CHDF mit PMMA) bei schwerer AP. Und es wird die Frage gestellt ob eine regionale arterielle infusion von Antibiotika und proteaseinhibitoren die Mortalität und infektiöse Komplikationen bei der akuten nekrotisierenden Pankreatitis vermindern kann.	**Primary:** für die verschiedenen Fragen unterschiedlich. Der Grad der Empfehlungen ist überhaupt nicht nachvollziehbar. (A-D), keine Definition der Empfehlungsgrade. **Secondary:** entfällt **Results:** Emfehlungen der Leitlinie (in Klammern Anmerkungen der Gutachtern) 1. Fluid-Management: (keine ohne Angabe von Zielparametern) Subsitution von Fluid-Defiziten und basalem Bedarf empfohlen (A) 2. Schmerz: Schmerztherapie ist entscheiden (A) Buprenorphin empfohlen statt Procain, (differenziertes Schmerzmanagement, Messverfahren, PCA-Verfahren oder andere Medikamente werden nicht erwähnt) 3. nasogastrale Sonde und H2-Blocker: nasogastrale Sonde sei unnötig außer bei paralystischem Ileus oder anhaltendem Erbrechen; H2-seien unnötig, außer wenn ein Stressulkus auftritt. (D) 4. kontinuierliche Hochdosis i.v. eines Protease-Inhibitors: wird mit Grad B empfohlen, zur Reduktion von Komplikationen in der frühen Phase der schweren akuten Pankreatitis: Gabexate mesilat und Nafamostat mesilate. (keine für diese substanzen negative Studie wird hier erwähnt, von den nicht vorhandenen Zulassungen für die akute Pankreatitis in Eurpoa ganz zu schweigen) 5. enteraler Ernährungsbeginn in der Frühphase der schweren akuten Pankreatitis wird Empfohlen anstatt total parenter Ernährung, auß wenn ein Ileus vorhanden ist. , Grad A) Die Vorteile der nasogastralen Ernährung werden hervorgehoben gegenüber der	siehe 1.13. Literaturverzeichnis spiegelt keine systematische Recherche wider.

		nasojejunalen Ernährung - sollte nach Ansicht der Autoren weiter untersucht werden. 6. prophylaktische Antibiotika-Gabe - Breitspektrum-Antibiotikum) sei notwendig, um einer Infektion bei nekrotisierender Pankreatitis vorzubeugen - Grad A-Empfehlung. 7. Blood purification mit C(VV?)HDF bekommt eine Grad C Empfehlung als Maßnahme zur Vorbeugung eines Multiorgaversagens bei der schweren akuten Pankreatitis, da die Fähigkeit des Verfahrens zur Reduktion der Mortalität nicht erwiesen ist bislang. 8. Die kontinuierliche arterielle (!) regionale Infusion von Proteaseinhibitoren und auch von Antibiotika bekommt eine Grad C-Empfehlung , weil möglicherweise die Mortalitätsrate und die Rate infektiöser Komplikationen reduziert werden könne (nur japanische Autoren in der Literatur) **Author's Conclusion:** entfällt. (Anmerkung der Gutachterin: diese Japanischen Leitlinien sollte man aus dem Literaturverzeichnis unserer Leitlinie ausschliessen)	

Methodical Notes

Funding Sources: keine

COI: es werden viele Arbeiten der Leitlinienautoren zitiert.
Das Literatur verzeichnis ist extrem eklektisch

Study Quality: entfällt

Heterogeneity: entfällt

Publication Bias: siehe 3.13

Notes:
Leitlinie zur Therapie der akuten Pamkreatitis (AP) stellt folgende Fragen nach: adaequater Flüssigkeitszufuhr, Analgesie, Erfordernis nasogastraler sonde und H2-Blocker, Nutzen kontinuierlicher i.v. Gabe eines hochdosierten Protease-Inhibitors, enterale Ernährung besser als Total parenterale Ernährung, sinn prophylaktischer Gabe von Antibiotika zur Vermeidung von Infektionen bei schwerer akuter Pankreatitis, blood- purification therapy (CHDF und CHDF mit PMMA) bei schwerer AP. Und es wird die Frage gestellt ob eine regionale arterielle infusion von Antibiotika und proteaseinhibitoren die Mortalität und infektiöse Komplikationen bei der akuten nekrotisierenden Pankreatitis vermindern kann.

Takeda, Kazunori et al. Assessment of severity of acute pancreatitis according to new prognostic factors and CT grading. J Hepatobiliary Pancreat Sci. 17. 37-44. 2010

Evidence level/Study Types	P - I - C	Outcomes/Results	Literature References

Evidence level: 1 **Study type:** keine Studie, kein systematisches Review. systematik zumindest nicht zu erkennen **Databases:** 47 Literaturstellen zu verschiedenen Fragen der Schweregradbestminnung der Pankreatitis von 1978 (Imrie) bis 2009 **Search period:** **Inclusion Criteria:** akute Pankreatitis (Literatur)mit Schwerpunkt auf das Grading nach kontrastmittel-verstärkter CT. **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** Die Ergenisse sind folgende Empfehlungen der Autoren mit Empfehlungsgraden: 1. Klinische Zeichen und Symptome allein sind nicht verläßlich für das Assessment einer akuten Pankreatitis und sollten durch objektive Messungen unterstützt werden (Grad A) 2. Eine akkurate Diagnose für Vorhandensein und Ausmaß von pankreatischer Ischämie und Nekrosen erfordert eine KM-CT oder MRT (Grad A) 3. Ein Score-System zur Bestimmung des Schweregrads einer akuten Pankreatitis ist sinnvoll auch für die Behandlungsstrategie und die Erfordernis eines Transfers des Patienten in eine Spezial-Krankenhausabteilung. (Grad A) 4. Das neue Japanische Schweregrad-Scoring System (von 1999) ist nützlich für das Assessment des Schweregrads einer akuten Pankreatitis (Empfehlungsgrad A) 5.Patienten mit schwerer akuter Pankreatitis (prognostischer Faktor >=3) bestimmt nach den neuen japanischen Kriterien sollten promt in eine spezialisierte medizinische Institution verlegt werden. **Author's Conclusion:** siehe results	von 1978 (Imrie) -2009. Literaturverzeichnis enthält 47 Arbeiten, davon 11 von japanischen Arbeitsgruppen
Methodical Notes			
Funding Sources: keine **COI:** nicht angegeben **Study Quality:** keine Studie **Heterogeneity:** entfällt **Publication Bias:** **Notes:** kein systematisches Review. Review und Beantwortung einer Liste von Fragen zur Schweregrad-Definition der Pankreatitis bzw, Prognose mit Empfehlungen. Zugrunde liegt das japanische Schweregrad Assessment für die akute Pankreatitis von 1990 und 1999 in der Revision von 2008.Die Arbeit ist durch Atlanta 2012 völlig überholt.			

OXFORD (2011) Appraisal Sheet: RCT: *13 Bewertung(en)*

Bulyez, Stéphanie et al. Epidural analgesia in critically ill patients with acute pancreatitis: the multicentre randomised controlled EPIPAN study protocol. BMJ Open. 7. e015280. 2017		
Population	**Intervention - Comparison**	**Outcomes/Results**

Evidence level: 1 **Study type:** **Number of Patient:** **Recruitung Phase:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** **Author's Conclusion:**

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes:
Manuscript presents the study protocol.
No dat yet reported.
No assessment of Quality or evidence done

Buxbaum, James L et al. Early Aggressive Hydration Hastens Clinical Improvement in Mild Acute Pancreatitis. Am. J. Gastroenterol. 112. 797-803. 2017

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 1 **Study type:** RCT **Number of Patient:** 60 **Recruitung Phase:** between April 2013 and November 2015 **Inclusion Criteria:** Patients were eligible for inclusion if they presented to the emergency department at Los Angeles County+University of Southern California Medical Center with acute pancreatitis as defi ned by two of three criteria: epigastric abdominal pain; elevated amylase or lipase >3 times the upper limit of normal; or imaging consistent with acute pancreatitis. Eligible patients were required to be evaluated, consented, and randomized within 4 h of diagnosis. **Exclusion Criteria:** systemic infl ammatory response	**Intervention:** Patients were randomly assigned in a 1:1 ratio to standard vs. aggressive intravenous hydration with Lactated Ringer's solution (LR). A computer-generated randomization sequence in block sizes of 12 with concealed allocation was used, and patients were blinded to treatment assignment. A total of 72 randomization slots (6 blocks of 12) were provided by a statistician uninvolved in conduct of the study. Two assignments were inadvertently skipped during the study (but remained concealed), leading to use of the fi rst 2 assignments from the sixth block of randomization slots. Th is resulted in a slight imbalance in the number of patients assigned to the two study groups. Th ose in the aggressive hydration arm received a 20 ml/kg bolus followed by infusion at3 ml/kg/h. Patients randomized to standard hydration were given a 10 ml/kg bolus followed	**Primary:** The primary outcome, clinical improvement within 36 h, was a composite outcome which required all of the following to be fulfilled: decrease in hematocrit, BUN, and creatinine from baseline, decrease in epigastric pain level (as measured on a visual analog scale 0–10); and tolerance of oral nutrition. **Secondary:** Secondary outcomes included the rate of clinical improvement over the entire hospitalization, development of SIRS (at least two of the following four criteria: heart rate >90; white blood count >12,000 or <4,000 cells/mm 3 ; respiratory rate >20 or partial pressure of carbon dioxide <32 mm Hg on room air; T>38 °C or <36 °C) 9 , persistent SIRS (>48 h duration), development of severe pancreatitis (Revision of the Atlanta Classifi cation (RAC) (19), and volume overload (development of peripheral edema, pulmonary rales, or

syndrome (SIRS) (13); New York Heart Association Class II or greater heart failure; decompensated cirrhosis (Child's Class B or C); hypotension (systolic blood pressure <90 mm Hg); renal insuffi ciency (Cr>2 mg/dl at time of randomization) or dialysis requirement; respiratory insufficiency (oxygen saturation <90% on roomair); hyponatremia (sodium <135 meq/l); clinical signs of volume overload (peripheral edema, pulmonary rales, and ascites); gastrointestinal bleeding; pregnancy; and pancreatitis following an endoscopic, radiographic, or surgical procedure.	by infusion at 1.5 ml/kg/h. The aggressive rate was based on a randomized trial of goal-directed vs. standard fl uids for pancreatitis and standard rate based on a discussion with the authors of this prior trial (16). At 12 (±4) h aft er randomization the subjects were examined by the study team and laboratory testing was performed. Th is included a complete blood count, BUN, creatinine, and electrolytes. If the hematocrit, BUN, or creatinine level had increased above its baseline value, the patient, regardless of study assignment, was given a 20 ml/kg LR bolus followed by LR at 3 ml/kg/h; this was done if any one of the three laboratory tests increased even if the others stayed the same or decreased If these laboratory tests did not increase no bolus was given and LR was infused at 1.5 ml/kg/h. If labs did not increase and abdominal pain decreased on the visual analogue scale a clear liquid diet also was initiated. Patients were reassessed and fl uid management was determined in the same way at subsequent checkpoints at 24(±4) and 36(±4) h. If patients initially improved and then worsened at a subsequent checkpoint, the patients were managed at the discretion of their treating physician. Management beyond 36 h also was at the discretion of the treating physician. **Comparison:** See 3.5.	ascites). Hemoconcentration, defi ned as an increase in hematocrit as compared to baseline, was also assessed. Patients were followed throughout their hospitalization by study personnel. **Results:** A higher proportion of patients treated with aggressive vs. standard hydration showed clinical improvement at 36 h: 70 vs. 42% (P =0.03). The rate of clinical improvement was greater with aggressive vs. standard hydration by Cox regression analysis: adjusted hazard ratio=2.32, 95% confi dence interval 1.21–4.45. Persistent SIRS occurred less commonly with aggressive hydration (7.4 vs. 21.1%; adjusted odds ratio (OR)=0.12, 0.02–0.94) as did hemoconcentration (11.1 vs. 36.4%, adjusted OR=0.08, 0.01–0.49). No patients developed signs of volume overload. **Author's Conclusion:** Early aggressive intravenous hydration with Lactated Ringer's solution hastens clinical improvement in patients with mild acute pancreatitis.

Methodical Notes

Funding Sources: Th is publication was supported by NIH/NCRR SC CTSI Grant Number UL1TR000130. Its contents are solely the responsibility of the authors and do not necessarily represent the offi cial views of the NIH.

COI: Potential competing interests: None.

Randomization: 1:1; computer program

Blinding: Blindling of treatment unlikely

Dropout Rate/ITT-Analysis: No drop-outs. ITT-analysis

Notes:

Cheon, Young Koog et al. Efficacy of diclofenac in the prevention of post-ERCP pancreatitis in predominantly

high-risk patients: a randomized double-blind prospective trial. Gastrointest. Endosc. 66. 1126-32. 2007		
Population	**Intervention - Comparison**	**Outcomes/Results**
Evidence level: 1 **Study type:** **Number of Patient:** **Recruitung Phase:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** **Author's Conclusion:**
Methodical Notes		
Funding Sources: **COI:** **Randomization:** **Blinding:** **Dropout Rate/ITT-Analysis:** **Notes:** Study not related to Questions to AG4-AP. Assessment of Quality and Level of evidence not valid		

Dellinger, E Patchen et al. Early antibiotic treatment for severe acute necrotizing pancreatitis: a randomized, double-blind, placebo-controlled study. Ann. Surg. 245. 674-83. 2007		
Population	**Intervention - Comparison**	**Outcomes/Results**
Evidence level: 1 **Study type:** **Number of Patient:** **Recruitung Phase:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** **Author's Conclusion:**
Methodical Notes		
Funding Sources: **COI:** **Randomization:** **Blinding:** **Dropout Rate/ITT-Analysis:**		

Notes:
Study not related to the Questions for AG4-AP.
Assessment of Quality and Level of evidence not applicable

Eatock, F C et al. A randomized study of early nasogastric versus nasojejunal feeding in severe acute pancreatitis. Am. J. Gastroenterol. 100. 432-9. 2005

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 1 **Study type:** **Number of Patient:** **Recruitung Phase:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** **Author's Conclusion:**

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes:
Study not related to the Questions for AG4-AP.
Assessment of Quality and Levels of evidence not feasible.

Gupta, R et al. A randomised clinical trial to assess the effect of total enteral and total parenteral nutritional support on metabolic, inflammatory and oxidative markers in patients with predicted severe acute pancreatitis (APACHE II > or =6). Pancreatology. 3. 406-13. 2003

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 1 **Study type:** **Number of Patient:** **Recruitung Phase:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** **Author's Conclusion:**

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes:
Small RCT not related to the Questions to AG4-AP.
Assessment of Quality and evidence not applicable.

He, Wen-Hua et al. Emergent Triglyceride-lowering Therapy With Early High-volume Hemofiltration Against Low-Molecular-Weight Heparin Combined With Insulin in Hypertriglyceridemic Pancreatitis: A Prospective Randomized Controlled Trial. J. Clin. Gastroenterol. 50. 772-8. 2016

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 1 **Study type:** **Number of Patient:** **Recruitung Phase:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** **Author's Conclusion:**

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes:
Study not related to the Questions to AG4-AP.
Assessment of Quality and evidence not applicable.

Petrov, Maxim S et al. Early nasogastric tube feeding versus nil per os in mild to moderate acute pancreatitis: a randomized controlled trial. Clin Nutr. 32. 697-703. 2013

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 1 **Study type:** Randomized controlled trial, interventions randomisiert kontrollierte Studie, ein Zentrum .	**Intervention:** in der Interventionsgruppe 10Fr. nasogastrale Sonde und Beginn der sondenernährung innerhalb 24 Stunden nach stat. Aufnahme. Ernährung mit Peptisorb-Sondenkost, Fa. Nutricia) , Beginn mit 25 ml/h, und schrittweise Erhöhung bis 100 ml/h erreicht sind in 24-48	**Primary:** Primärer Endpunkt: Gesamt-Krankenhausverweildauer **Secondary:** Sekundätre Endpunkte: Vorhandensein von oraler Nahrungsintolerant (Dauer), Zeit von der stat. Aufnahme bis Toleranz oraler Ernährung, Zeit von erneuter oraler Ernährung bis Krankenhausentlassung, Zeit von stat. Aufnahme bis minimale oder keine Schmerzen, Opiat-Bedarf, Veränderungen der Schmerzintensität, Zunahme

Number of Patient: Intenventionsgruppe NGT (Nasogastrale Ernährung innerhalb von 24 h nach Krankenhausaufnahme) n=17, Kontrollgruppe ohne orale Ernährung NPO n=18. **Recruitung Phase:** Screening von 78 konsekutiven Patienten mit akuter Pankreatitis in der Studienperiode von 12 Monaten, von Mai 2010 bis April 2011. **Inclusion Criteria:** Diagnose akute Pankreatitis, Alter über 18 Jahre, written informed consent. Für die Diagnose Pankreatitis mindestens zwei der folgenden Kriterien: typische abdominelle Schmerzen, Amylase mindestens dreifach erhöht und Pankreatitiszeichen in der CT **Exclusion Criteria:** Symptome länger als 96 Stunden, schwere oder kritische akute Pankreatitis, chronische Pankreatitis (Verkalkungen/ Gangveränderungen), post-ERCP Pankreatitis, intraoperative diagnose, Schwangerschaft, Malignom, Ernährung bekommen vor Studieneinschluss (künstlich oder oral), kürzlich in Studie eingeschlossen	Stunden. Fortsetzung de Ernährung, bis das Behandlungsteam orale Nahrungsaufnahme ansetzt. **Comparison:** Kontrollgruppe: Nichts per os, keine Nahrung. Bis das Behandlungsteam orale Nahrungsaufnahme ansetzt.	deds Schweregrades der akuten Pankreatitis, Zahl und Art der Interventionen während der stat. Behandlung, Krankenhaus-Mortalität, Krankenhaus-Wiederaufnahmre. **Results: Prämärer Endpunkt**: Kein Unterschied zwischen der Krankenhausverweildauer zwischen Interventionsgruppe und Kontrollgruppe (9 (5-12) Tage vs. 8,5 (6-13) Tage, p= 0.91. Die enterale Ernäöhrung wurde an gesetzt in der NGT-Gruppe an Tag 4 nach stat. Aufnahme (3,5-6,5). in der NPO-Gruppe ebenfalls an Tag 4 (3-5,5) (p=0,52). **Sekundäre Endpunkte:** Die nasogastrale Sondenernährung wird gut toleriert von Patienten mit milder bis moderater Pankreatits. Intoleranz für orale Ernährung hatten 1 von 17 Patienten in der NGT-Gruppe und 9 von 18 in der NPO-Gruppe (p= 0.004)Die orale Nahrungsintoleranz war verbunden mit erneutem Schmerz und erforderte einen Stop der oralen Ernährung bei 1 Patienten in der NGT-Gruppe und bei 8 Patienten in der NPO-Gruppe (p=0.009). Übelkeit und Erbrechen führte in der NGT-Gruppe in 1 Fall zum Stop der oralen Ernährung und in der NPO-Gruppe in 6 Fällen (p=0,02). Die Zeit von der stationären Aufnahme bis zur Toleranz oraler Ernährung war mit 5 (4-7) Tagen in der NGT-Gruppe und 7 (5-9)Tagen in der NPO-Gruppe nicht signifikant unterschiedlich (p= 0,162). Der VAS-Schmerz-Score sank in beiden Gruppen signifikant während der ersten 72 Stunden (p=0,001), in signifikant höherem Ausmass in der NGT-Gruppe (p= 0,036).NAch 48 h nach Randomisierung brauchten 9 Patienten in der NGT-Gruppe und 3 Patienten in der NPO-Gruppe kein Opiat. (p=0,024). Die Zeit von der stat. Aufnahme bis nur noch minimale oder keine Schmerzen mehr vorhanden waren betrug in der NGT-Gruppe 4 (95% CI 3,1-4,9) Tage, in der NPO-Gruppe 6 (95%CI 5,3-6,7) Tage (p= 0,023). Keine sign. Unterschiede in den Gruppen für die Anzahl von Interventionen (8 Patienten mit 9 Interventionen in der NGT-Gruppe und 8 Patienten mit 10 Interventionen insgesamt in der NPO-Gruppe (p=0,981). Der Schweregrade der Pankreatitis nahm in beiden Gruppen bei 2 Patienten zu (p=0,95). Keine Krankenhausmortalität, kein sign. Unterschied in der Wiederaufnahmerate (1 Patient in der NGT-Gruppe und 2 Patienten in der NPO-Gruppe (p= 0,58)Mortalität **Author's Conclusion:** Nasogastrale Sondenernährung (NGT) mit Beginn innerhalb 24 Stunden wird gut toleriert bei Patienten mit milder bis moderater akuter Pankreatitis. Verglichen mit der NPO-Gruppe reduzierte die NGT signifikant die Intensität und Dauer der Schmerzen, den Opiatbedarf und das Risiko der Nahrungintoleranz. Weder NGt noch NPO beeinflussen die Erkrankungsschwere, die Zahl der Interventionen oder die

		Krankenhausverweildauer.

Methodical Notes

Funding Sources: Unterstützung durch New Zealand Lottery Grants Board. Keine Einflußnahme des Sponsors auf die tudie.

COI: keine

Randomization: Ja, verschlossene numerierte Umschläge. computer-erzeugtes Assignment.

Blinding: nein

Dropout Rate/ITT-Analysis: Keine drop-outs

Notes:

Sadowski, Samira M et al. Epidural anesthesia improves pancreatic perfusion and decreases the severity of acute pancreatitis. World J. Gastroenterol. 21. 12448-56. 2015

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 5 **Study type:** prospective Randomized controlled clinical Trial **Number of Patient:** 35 **Recruitung Phase:** 2005- August 2010 **Inclusion Criteria:** Patienten mit KH-Aufnahme wegen akuter Pankreatitis. Ranson-Score >=2. CRP >10 mg/L. und oder Nekrosen im Pankreas in der CT. **Exclusion Criteria:** Fehlen einer schweren Pankreatitis, wie in den einschlusskriterien definiert. Patienten mit Kontraindikationen gegen eine Epiduralanästhesie (EA), keine einwilligung oder Teilnahme an einer anderen Studie.	**Intervention:** Interventionsgruppe: EA etabliert nach der initialen CT. EA lief für diese Patienten über 5 Tage nach Randomisation Kontrollgruppe: standardisierte i.v. Analgesie als PCA. Beginn nach der initialen CT. **Comparison:** komplikationen durch EA? Vergleich der VAS-Werte (gemessen alle 8 Stunden) in beiden Gruppen. Vergleich der CT-Scans bei Aufnahme und nach 72 Stunden bezüglich Perfusion des Pankreas.	**Primary:** Safety of EA bei Patienten mit schwerer akuter Pankreatitis **Secondary:** Pankreasperfusion in der CT-Analyse Parameter des klinischen Verlaufs: Krankenhausverweildauer, Antibiotikabedarf, Aufnahme auf die ICU, systemische und d lokoregionale Komplikationen (Clavien-klassifikation), Erfordernis einer chirurgischen Nekrosektomie. Entwicklung der Schmerzsymptomatik in beiden Gruppen (gemessen mit VAS alle 8h) **Results:** 13 Patienten in der EA-Gruppe, 22 in der Kontrollgruppe mit PCA. Gute Vergleichbarkeit der Gruppen für Alter, Schlecht, Komirbiditäten, Ätiologie der Pankreatitis. Ranson Score in der Kontrollgruppe tendenziell niedriger: EA-Gruppe Mean/ SD 3,38/ 1,12. Kontrollgruppe PCA 2,68 / 0,945 (p= 0,056) Epiduralkatheter konnte im im Median 5,7 Tage genutzt werden. Keine Komplikationen durch die EA. Verbesserung der Perfusion im Pankreas:: Es wurden 57 comparative Perfusionsmessungen in der CT durchgeführt in derselben Pankrearegion in beiden Gruppen. Vergleich der Befunde bei Aufnahme und nach 72 Stunden. Ergebnisse: in der EA Gruppe bei 13// 43 Messungen (43%) messbare Perfusionsverbesserung, indder Kontrollgruppe bei 2 von 27 Messungen (7%)messbare Perfusionsverbesserung (p=0,0025) Nekrosektomie erfolgte in der EA-Gruppe bei 1/13 Patienten und in der Kontrollgruppe bei 4/22 Patienten (p=0,63)

		VAS-SchmerzScore an Tag 10: EA vs Kontrollgruppe: 0,2 vs 2,33, p= 0,034 Keine Unterschiede für Mortalität und Krankenhausverweildauer. **Author's Conclusion:** Die Epiduralanästhesie bei Patienten mit schwerer Pankreatitis ist sicher (keine Infektionen, keine hämodynamischen Komplikationen) Die EA verbessert die pankreatische Perfusion und verbessert das Schmerzmanagement.

Methodical Notes

Funding Sources: Forschungpreis-Geld der Universitätsklinik Genf (an Prof. Bühler)

COI: Bezahlung für Vorträge an Bühler und Frossard an Universitätsklinik Genf. Bei den anderen Autoren: nothing to disclose

Randomization: ja,
Anmerkung: Studie wurde nach 49 Patienten geschlossen wegen extremer Schwierigkeiten, in der Notfallsituation Patienten einzuschliessen. Weitere einschränlung: Resultierende ungleiche Patientenzahl in den beiden Gruppen mit möglichem Bias.

Blinding: nein

Dropout Rate/ITT-Analysis: In der EA-Gruppe bekamen 2 Patienten keinen Periduralkatheter wg. Katheterproblem und ein mal wegen Iod-Allergie). In der Kontrollgruppe war ein Patient in einer anderen Studie und wurde ausgeschlossen. Alle drei Patienten fielen aus der Datenauswertung.

Notes:
wichtige Studie mit wichtigem Ergebnis: EA sicher (i.e. ohne Komplikationen) bei Patienten mit schwerer Pankreatitis. Zudem Verbesserung der Schmerzen im Verlauf von 10 Tagen im VAS-Score im Vergleich zu Kontrollgruppe. Zudem bessere Durchblutung des Pankreas nach EA.

Sharma, Vishal et al. Naso-jejunal fluid resuscitation in predicted severe acute pancreatitis: Randomized comparative study with intravenous Ringer's lactate. J. Gastroenterol. Hepatol. 31. 265-9. 2016

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 5 **Study type:** prospective open-label randomized controlled pilot trial **Number of Patient:** 49 patienten randomisiert, 25 in IV-GRuppe, 24 in NJ-Gruppe **Recruitung Phase:** nicht bekannt **Inclusion Criteria:** stationäre Aufnahme mit der Diagnose akute Pankreatitis, typische Schmerzsymptomatik, Amylase/Lipase mehr als 3-fach erhöht, Evidenz in der Bildgebung für akute Pankreatitis.	**Intervention:** Nach Randomisierung Aufnahme auf die ICU. Guppe mit nasojejunale sonde : endoskopisch wird Sonde gelegt und fluoroskopisch kontrolliert. Alle Patienten beider Gruppen bekommen einen zentralen Venenkatheter (ZVK). , einen Blasenkatheter und Messung des intraabd. Drucks (IAP). Messung ZVD, mean arterial Pressure, Urin-output stündlich. Elektrolytkontrollen alle 4-6h. klinische Kontrollen für fluid-overload alle 4-6 h. Volumen Management (Ziele siehe Checklist in den	**Primary:** Mortalität, persistierendes Organversagen, Pankreatische Nekrose, lokale Komplikationen, intra-abdomineller Druck, Bedarf für Interventionen incl Chirurgie und Nebenwirkungen **Secondary:** **Results:** Von den 24 Patienten im NJ-Arm hatten 2 abd. Beschwerden mit Abd. distension nach nasojejunaler distension. Sie wurden dann weiter i.v. behandelt und wurden in die intension-to-treat-Analyse eingeschlossen, aber nicht in die per Protokoll-Analyse. Es fanden sich keine sign. Unterschiede

Randomisierung der Patienten mit BISAP-Score >2 (Vorhersage einer schweren Pankreatitis) **Exclusion Criteria:** mehr als 5 Tage bestehende Schmerzsymptomatik, Schock, Herzinsuffizienz, Vorgeschichte mit Mycard-Ischämie, Cirrhose, chronische Niereninsuffizienz (Krea-Clearance =40ml/h), COPD, aktuelle metabolische oder physiologische Störung mit Erfordernis eines spezifischen Volumen-Managements wie Hypo- oder Hypernatriämie oder diabetische Ketoazidose etc., Übernahme aus anderem Krankenhaus nach Initialbehandlung, Verdacht einer zugrundeliegenden chronischen Pankreatitis, Patienten im Schock, biliäre Pankreatitis (wenn ERCP erforderlich) bei Cholangitis, Schwangerschaft, Patienten mit schwerem lung injury (das Endoskopie und Legen einer nasojejunalen Sonde ausschliesst), Ablehnung der Studienteilnahme oder des Legens einer nasojejunalen Sonde.	abschliessenden notes): Gruppe 1 = IV-Gruppe): Ringer-Laktat a (Osmolarität 273 mmol/L)ls Initialbolus von 20 ml/kg über 30 Minuten, gefolgt von einer Infusion von 3 ml/kg/h. Gruppe II = Nasojejunal, NJ-Gruppe):WHO-Oral-Hydratationslösung (Osmolaität 245mmol/L) , initial 20 ml/kg gefolgt von kontinuierlicher Gabe von 3 ml/kg/h via nasojejunale Sonde. **Comparison:** Vergleich beider Gruppen für outcomeparameter s.u.	IV vs NJ-Gruppe nach der Hydratation für Veränderungen des Hämatokrits 6,24&plusmn 4,6% / 4,58±3,1% (p=0,148);, für die Änderungen des intra-abd. Drucks 2,6±5,9 /2,3±4,5 cm H2O (p=0,751), Organversagen 88% vs 93,5% (p=0,32), persistierendes Organversagen 68% vs 66,7% (p=1,00), akute Flüssigkeits-Collection 100% vs 91,7%(p=0,235), Percutane Interventionen 20% vs 20,8% (p=1,0), chirurgische Interventionen 4% vs 4,2% (p=1) und Mortalität 8% vs 16,5%(p=0,417). Die per Protokoll-Analyse ergab nach Ausschluss der zwei Patienten weiterhin keine Unterschciede in den outcome-Parametern. **Author's Conclusion:** NJ Flüssigkeits-Resuscitation ist machbar, sicher und effektive in einer ausgewählten Gruppe von Patienten mit schwerer akuter Pankreatitis. Weitere Studien mit höherer Fallzahl sind erforderlich.

Methodical Notes

Funding Sources: nicht genannt

COI: nicht erwähnt

Randomization: ja

Blinding: Verblindung der Untersucher des für den Behandlungsarm.

Dropout Rate/ITT-Analysis: 2 Patienten aus NJ Gruppe mit Abbruch der NJ-Zufuhr und Forsetzung iv. Einschluss der beiden Patienten in Intention -to-treat Analyse, aber nicht in die per Protokoll-Analyse

Notes:
wichtige und ganz gut gemachte Studie, Ergebnis klinisch relevant (Nasojejunale Fluid-Resuscitation mit oraler Hydratationslösung ist machbar und gleich effektiv wie i.V. Gabe von Ringer-Lösung bei vorhergesagt schwerer Pankreatitis.
Grosses Manko der Studie: a. Ziele der volumensubstitution waren ZVD von 8-12mmHg, Mean arterial Pressure >65mmHg, und Urinproduktion von 0,5 ml/kg(h.
b. Alle Patienten bekamen die gleichen volumen-Mengen appliziert.Dauer des Versuchs 48 Stunden. c. Ausschluss aller Patienten mit bekannter Herzinsuffizienz, mit Schock und vieles mehr, so daß die Patientenauswahl nicht "lebensecht" ist. Das "klinische Assessment of volume overload" alle 4-6 Stunden ist nicht beschrieben. Keine Echokardiographie, kein erweitertes Monitoring.

Shen, Yinfeng et al. Effect of pharmaconutrition-supplemented parenteral nutrition for severe acute pancreatitis: a meta-analysis of randomized controlled trials. JOP. 15. 371-7. 2014

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 3 **Study type:** Review und Meta-Analyse von RCTs mit Pharmakonutrition parenteral bei schwere akuter Pankreatitis . Alle RCTs sind single-Center-Studien	**Intervention:** **Comparison:** Pharmakonutrition parenteral (mit in allen 4 RCTS anderen Supplementen: Fisch-Öl, L-alanyl-L-Glutamin, Omega-3-Fettsäuren und Glutamin) versus "normale" parenterale	**Primary:** Mortalität (in 4 der RCTs) **Secondary:** ICU-Verweildauer (in 2 der RCTs), Krankenhausverweildauer (in 2 der RCTs) und Veränderung der Leukozytenzahlen (in 2 der 4 RCTs) **Results:** Kein signifikanter Unterschied für die

Number of Patient: Totale Patientenzahl aus 4 RCTs 76 mit Pharmako-Nutrition perenteral und 77 Patienten mit nur parenteraler Ernährung **Recruitung Phase:** Publikationen gescreent von Jan 19990 bis Ende April 2013 (23 Jahre) Die letztlich untersuchten 4 RCTs stammen aus den Jahren 1998, , 2x aus 2008 und einal 2009 **Inclusion Criteria:** schwere akute Pankreatitis, Atlanta-kriterien verwendet. Schweregrad nach APACHE-II und/oder Ranson und/oder Balthazar. . Vergleich parenteraler Ernährung bei diesen Patienten mit oder ohne Pharmakonutrition und outcome. Outcomeparameter (mindestens einer der folgenden); Infektion, Mortalität, ICU-Aufenthalt, Leukozytenzahl-Veränderungen **Exclusion Criteria:** kein der in den Einschlusskriterien erwähnten outcome-Parameter.	Ernährung (nicht genau definiert)	Mortalität zwischen den Ernährungsregimes. 2/76= 2,6% verstorben in Pharmako-Nutrition-Gruppe und 8/77 = 10,4% in der nur mit parenteraler Ernährung (nicht signifikant OR 0,3; 95% CI 0,07-1,19, p=0,09). Für ICU- und Krankenhausverweildauer ebenfalls keine signifikanten Unterschiede. Eine größere Veränderung der Leukozytenzahl (Mean difference MD 0,93; 95%CI 0,21-1,65; p= 0,01) und eine Verminderung der Leukozytenzahl (MD -0,77; 95% CI -1,47--0,08; p= 0,03) unter Pharmakonutrition war feststellbar um Vergleich zu einfacher parenteraler Ernährung. **Author's Conclusion:** Potentialle Vorzüge bezüglich Veränderung der Infektion und der Leukozytenzahl werden gesehen bei Patienten mit schwerer akuter Pankreatitis. RCTs mit höheren Patienten zahlen, hoher qualität und als Multicenter-Studie durchgeführte Studien werden gefordert zum Thema Pharmanutrition in diesem Krankengut

Methodical Notes

Funding Sources: aus College Students challen´ge fund und dem Wissenschafts.Fond der Universität Hubei in Chian und aus Etchnology Research Programm der Provinz Hubei.

COI: keine

Randomization: ja

Blinding: nein

Dropout Rate/ITT-Analysis: unbekannt

Notes:
Standard-parenterale Ernährung in den Vergleichsgruppen der 4 RCTs wird nicht berichtet und könnte sehr unterschiedlich sein. und nur ein RCT erwähnt den Ernährungsstatus der Patienten und Stickstoffbilanz.
Publication-Bias zu vermuten

Singh, Namrata et al. Effect of oral glutamine supplementation on gut permeability and endotoxemia in patients with severe acute pancreatitis: a randomized controlled trial. Pancreas. 43. 867-73. 2014

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 4 **Study type:** randomized controlled trial , single center study, placebo-kontrolliert **Number of Patient:** 41 Patienten in der Glutamingruppe, 39 Patienten in	**Intervention:** für 7 Tage orale Gabe von Glutamin oder Placebo. Glutamin-Gruppe 20 g täglich in zwei Dosen (Kabimmune, Fa. Fresenius Kabi)	**Primary:** Effekt auf Darm Permeabilität gemessen mit Laktulose/Mannitol-Exkretion im Urin und Effekt auf Endotoxinämie, gemessen mit Messung von EndoCab-IgG und -IgM **Secondary:** infektiöse Komplikationen, Mortalität

Placebo-Gruppe **Recruitung Phase:** Nov. 2009 bis Dezember 2012 = 3 Jahre **Inclusion Criteria:** alle konsekutiv aufgenommenen Patienten innerhalb 7 Tagen nach Schmerzbeginn mit der Diagnose einer akuten Pankreatitis (typische Schmerzen, wenigstens 3-fach erhöhte Amylase und sonografische Zeichen der Pancreatitis, ggfs CT. und mindestens eines der folgenden 3 Zeichen für eine schwere Pankreatitis: : 1. 1 oder mehr Organversagen, wie in der Atlanta-Klassifikation definiert. 2. APACHE-II-Score 8 oder größer. 3. CT-Severitiy-Index größer als 7. Und informed consent **Exclusion Criteria:** Unter 18 Jahre oder älter 80 Jahre, kein informed consent, Schwangerschaft, Einnahme von NSAR, großer operativer Eingriff, cystische Fibrose, chronische Lebererkrankung, inflammatorische Darmerkrankung, paralytischer Ileus (keine enterale zufuhr möglich)	Kontrollgruppe 20 g Molke-Protein täglich in zwei Dosen **Comparison:** Glutamin vs. Placebo bei schwerer akuter Pankreatitis werdeb verlichen für Darm Permeabilität und sekunär weiteren outcome -Daten s.u.	Krankenhaus- und ICU-Verweildauer, CRP und Pre-Albumin-Spiegel **Results:** Marker der intestinalen Permeabilität (Laktose/ Mannitol und EndoCab IgG und endoCab IgM in beiden Gruppen nicht signifikant unterschiedlich. Ebenso finden sich keine Untrschiede in beiden Gruppen für CRP, Präalumin, Krankenhaus- und ICU-Verweildauer, Mortalität und für infektiöse Komplikationen. Mortalität in der Glutamingruppe 5/41, in der kontrollgruppe 6/39. **Author's Conclusion:** Für den primären Endpunkt postulieren die Autoren, daß eine längere Dauer für die Studienmedikation möglicherweise einen Effekt zeigen würde. Eine adequate gepowerte Multicenterstudie ist erforderlich.

Methodical Notes

Funding Sources: Freserius-Kabi lieferte die Studienmedikation kostenfrei.
durch Indian Council of MEdical Research, New Delhi (Forschungsmittel des Autors Anoop Saraya.

COI: keine genannt

Randomization: ja

Blinding: nein

Dropout Rate/ITT-Analysis: keine drop outs

Notes:
Fallzahlen underpowered

Zhao, Gang et al. Effects of different resuscitation fluid on severe acute pancreatitis. World J. Gastroenterol. 19. 2044-52. 2013

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 4 **Study type:** **Number of Patient:** **Recruitung Phase:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** **Author's Conclusion:**

Methodical Notes
Funding Sources: **COI:** **Randomization:** **Blinding:** **Dropout Rate/ITT-Analysis:** **Notes:** low quality study, interpret with caution

OXFORD (2011) Appraisal Sheet: Diagnostic Studies: *9 Bewertung(en)*

Ammori, B J et al. Calcitonin precursors in the prediction of severity of acute pancreatitis on the day of admission. Br J Surg. 90. 197-204. 2003		
Evidence level/Study Types	**Population**	**Outcomes/Results**
Evidence level: 3 **Study type:**	**Number of patients / samples:** **Reference standard:** **Validation:** **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	**Results:** **Author conclusions:**
Methodical Notes		
Funding Sources: **COI:** **Notes:** Study not elated to Questions for AG4-AP		

Bezmarevic, Mihailo et al. Correlation between procalcitonin and intra-abdominal pressure and their role in prediction of the severity of acute pancreatitis. Pancreatology. 12. 337-43. 2012		
Evidence level/Study Types	**Population**	**Outcomes/Results**
Evidence level: 2 **Study type:** Prospective	**Number of patients / samples:** 51 patients **Reference standard:** Yes; IAP and PCT were compared to Acute Physiology And Chronic Health Evaluation (APACHE II) score, C-reactive protein (CRP) **Validation:** Sensitivity/specificity for	**Results:** PCT, IAP, CRP values and APACHE II score at 24 h after hospital admission were significantly elevated in patients with SAP. There was significant correlation between PCT and IAP values measured at 24 h of admission, and between maximal PCT and IAP values. **Author conclusions:** Increased IAP was accompanied by increased PCT serum concentration in patients with AP.

	predicting AP severity at 24 h after admission was 89%/69% for APACHE II score, 75%/86% for CRP, 86%/63% for PCT and 75%/77% for IAP. **Blinding:** Not given **Inclusion of clinical information:** Yes **Dealing with ambiguous clinical findings:** No	PCT and IAP can both be used as early markers of AP severity.
Methodical Notes		
Funding Sources: Not given **COI:** Not given **Notes:** Only Abstract available (August 25, 2019)		

Huber, Wolfgang et al. Volume assessment in patients with necrotizing pancreatitis: a comparison of intrathoracic blood volume index, central venous pressure, and hematocrit, and their correlation to cardiac index and extravascular lung water index. Crit. Care Med. 36. 2348-54. 2008

Evidence level/Study Types	Population	Outcomes/Results
Evidence level: 2 **Study type:** Prospective study	**Number of patients / samples:** 96 samples in 24 patients **Reference standard:** Intrathoracic blood volume index measured with transpulmonary thermodilution (PiCCO) as reference vor Hydration state **Validation:** Given. E.g. low predictive caüacities of CVP to predict hypovolaemia according to PiCCO: "Sensitivity, specificity, positive (PPV) and negative predictive value (NPV) of CVP with regard to volume depletion (ITBI 850 mL/m2) were 0%, 100%, 0%, and 47%, respectively, and with regard to hypervolemia (ITBI 1000 mL/m2) were 75%, 37%, 14%, and 91%, respectively." **Blinding:** No **Inclusion of clinical information:** Yes **Dealing with ambiguous clinical findings:** No	**Results:** Mean CVP (12.11 5.97 mm Hg; median 11.5 normal: 1–9 mm Hg) was elevated, whereas mean ITBI (822.8 157.0 mL/m2; median 836 mL/m2; normal: 850–1000 mL/m2) was decreased. Fifty-one of 96 ITBI values were decreased (prevalence of hypovolemia of 53%). No CVP value was decreased. Fifty-three CVP measurements were elevated despite simultaneous ITBI levels indicating a normal or decreased preload. Sensitivity, specificity, positive predictive value, and negative predictive value of CVP with regard to volume depletion (ITBI<850 mL/m2), were 0%, 100%, 0%, and 47%, respectively. An increase in hematocrit (hematocrit >40% [female] or >44% [male]) was found in 11 of 51 measurements with decreased ITBI. Sensitivity, specificity, positive predictive value, and negative predictive value of an increase in hematocrit with regard to volume depletion according to ITBI were 22%, 82%, 58%, and 48%, respectively. ITBI and -ITBI significantly correlated to CI and -CI (r = .566, p < 0.001; r = .603, p < 0.001), respectively. CVP and -CVP did not correlate to CI and -CI,

		respectively. There was a significant correlation between ITBI and extravascular lung water index (r= .392; p < 0.001), but no correlation between CVP and extravascular lung water index (r = .074; p = 0.473). **Author conclusions:** Volume depletion according to ITBI was found in more than half the patients. The predictive values of CVP and hematocrit with regard to volume depletion were low. ITBI and its changes significantly correlated to CI and its changes, which was not observed for CVP and -CVP. Therefore, ITBI appears to be more appropriate for volume management in necrotizing pancreatitis than CVP or hematocrit.

Methodical Notes

Funding Sources: Not given.

COI: Not given.

Notes: Study on prediction of hypo- and hypervolaemia according to transpulmonray thermodilution (considered as gold-Standard) by central venous pressure (CVP), haematocrit.

Iwashita, Takuji et al. Use of samples from endoscopic ultrasound-guided 19-gauge fine-needle aspiration in diagnosis of autoimmune pancreatitis. Clin. Gastroenterol. Hepatol. 10. 316-22. 2012

Evidence level/Study Types	Population	Outcomes/Results
Evidence level: 1 **Study type:**	**Number of patients / samples:** **Reference standard:** **Validation:** **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	**Results:** **Author conclusions:**

Methodical Notes

Funding Sources:

COI:

Notes: Study not related to the Questions to AG4-AP.
Assessment of Quality and evidence not applicable.

Kanno, Atsushi et al. Diagnosis of autoimmune pancreatitis by EUS-FNA by using a 22-gauge needle based on the International Consensus Diagnostic Criteria. Gastrointest. Endosc. 76. 594-602. 2012

Evidence level/Study Types	Population	Outcomes/Results
Evidence level: 1 **Study type:**	**Number of patients / samples:** **Reference standard:** **Validation:** **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	**Results:** **Author conclusions:**
Methodical Notes		
Funding Sources: **COI:** **Notes:** Study not related to Questions to AG4-AP. Assessment of Quality and Level of evidence not valid.		

Morishima, Tomomasa et al. Prospective multicenter study on the usefulness of EUS-guided FNA biopsy for the diagnosis of autoimmune pancreatitis. Gastrointest. Endosc. 84. 241-8. 2016

Evidence level/Study Types	Population	Outcomes/Results
Evidence level: 2 **Study type:** Ja, Einschluss prospektiv nach Screening von 50 Patienten mit V.a. Autoimmunpancreatitis und nach Überspürung der Ausschlusskriterien. AIP eingeschlossen wurden von denen 45 eine AIP hatten und eingeschlossen wurden	**Number of patients / samples:** nein **Reference standard:** Referenz waren histologische Befunde zur Klassifizierung einer AIP Typ I oder II nach den internationalen consensus diagnostik Kriterien für die AIP von der International Assiciation of Pancreatology 2011 und die klinischen und laborchemischen diagnostischen Kriterien für die Diagnose einer AIP **Validation:** Ja, Sensitivität 7,9% (3/38), Spezifität 100% (12/12) , positiv prediktiver Wert 100% (3/3), negativ pediktiver Wert 25,5% (12/47) **Blinding:** Ja. Die bewertenden 2 Pathologen für die Bewertungen der ultraschall-endoskopischen Feinnadelpunktionen (aus derselben klinik) kannten nicht die klinischen und laborchemischen Daten der Patienten (die für die Diagnose AIP bedeutsam sind). Sie bewerteten die Feinnadelpunktate unanhängig voneinander. **Inclusion of clinical information:** Ja **Dealing with ambiguous clinical findings:** Bei inkonsistenten Befunden der beiden Pathologen haben sie sich	**Results:** Die pathologische Untersuchung des per Endosonografie gewonnenen Feinnadelpunktates verbesserte die diagnostische Genauigkeit bei 8 (16%) der 50 Patienten **Author conclusions:** Die endosonografisch gesteuerte Feinnadelaspiration von ist für die meisten PAtienten keine effektive diagnostische Methode. Auch in Kombination mit der Kenntnis weiterer Befunde entsprechend der Definition der AIP bleibt die Methode für den klinischen Routine-Gebrauch unzureichend genau.

	beraten und einigten sich auf die finale Diagnose	

Methodical Notes

Funding Sources: unklar

COI: nicht erkennbar. Alle Autoren verneinten für die Studie relevante finanzielle Beziehungen

Notes: Fallzahl zu gering. Negatives Ergebnis

Ou, Xilong et al. Circulating Histone Levels Reflect Disease Severity in Animal Models of Acute Pancreatitis. Pancreas. 44. 1089-95. 2015

Evidence level/Study Types	Population	Outcomes/Results
Evidence level: 3 **Study type:** Experimental animal study in mice. prospective	**Number of patients / samples:** Ja. 5 gruops of mice. 10 Mäuse für Kontrollgruppe (Kochsalzinfusion, Menge entsprechend dem Cerulein). Pankreatitisinduktion: 10 Mäuse mit 4 cerulein-Injektionen intraperitoneal, 20 Mäuse mit 12 Creulein-Injektionen (jeweils 10 getötet 22 bzw. 36 h nach der ersten Injektion), Weitere Gruppen mit Taurocholat-induzierter Pankreatitis in den Gallen/ Pankreasgang (nach operativer Darstellung des _Gangs zur Induktion einer Pankreatitis. 10 Kontrolltiere ohne Operation und ohne Injektion in den Gallen/Pankreasgang. **Reference standard:** Kochsalzinjektionen statt Cerulein (keine Induktion einer Pankreatitis), bzw. statt Injektion von Taurocholat. Bestimmung der Histone-Spiegel im Plasma. **Validation:** Keine Validierung erfolgt. **Blinding:** Nein **Inclusion of clinical information:** Ja. Ausmaß der Pankreatitis wurde histologisch gesichert. **Dealing with ambiguous clinical findings:** entfällt	**Results:** Vier Cerulein-Injektionen intraperitoneal erzeugten eine ödematöse Pankreatitis, 12 Infektionen eine nekrotisierende Pankreatitis. Die intraduktale Taurocholate-Gabe erzeugte ebenfalls eine nekrotisierende Pankreatitis. Zirkulierende Histone bei der ödematösen Pankreatitis kaum nachweisbar. Bei der nekrotisierenden Pankreatitis korrelierten die Spiegel der zirkulierenden Histone mit dem Ausmaß der Pankreasnekrosen (Pankreas-Nkrose-Score) **Author conclusions:** Zirkulierende Histone steigen signifikant an bei nekrotisierender Pankreatitis entsprechend dem Ausmaß der Nekrosen. Die Spiegel zirkulierender Histone könnten ein translationales Potential als Biomarker der Erkrankungsschwere bei derr Pankreatitis haben.

Methodical Notes

Funding Sources: Grants des Institute of Infection and Global health der Universität Liverpool, der British Society for Hematology und der National Natural Science foundation of chian.

COI: Die Autoren erklären, daß sie keine Interessenkonflikte haben.

Notes:

Papapanagiotou, Angeliki et al. Potential Prediction of Acute Biliary Pancreatitis Outcome on Admission.

Pancreas. 47. 454-458. 2018

Evidence level/Study Types	Population	Outcomes/Results
Evidence level: 2 **Study type:** Ja. Pilotstudie	**Number of patients / samples:** 45 Patienten mit frisch diagnostizierter Pankreatitis - davon 40 mit allen Werten - , 30 gesunde Kontrollpatiente. - Beide Gruppen gematcht für Alter, Geschlecht, Größe, Diabetes, Rauchen, Alkoholkonsum. **Reference standard:** Klassifikation der Pankreatitis-Patienten mit der revidiertren Atlanta-Klassifikation von 2012. Plus 2 von 3 der folgenden Zeichen: typische abdominelle Schmerzen, Amylase 3- oder mehrfach erhöht über der Norm, ensprechender CT-Befund. Die kontrollgruppe hatte Normalbefund in der Endoskopie, im Abdomen CT und MRT (gemacht wegen Ausschluss Pankreaskarzinom) **Validation:** nein, Pilotstudie **Blinding:** nein **Inclusion of clinical information:** Ja, Pankreasnekrosen in CT/ MRT, OP (Necrosectomy 1x) , Mortalität 2/40 - 4,4%. ICU und Krankenhausverweildauer, SIRS Score, APACHE-II-Score. **Dealing with ambiguous clinical findings:** entfällt	**Results:** APACHE-II-Score und SIRS-Score korrelierten nicht mit den Werten eines der 4 Parameter. Für Osteonectin betrug der median-wert bei Patienten mit akuter Pankreatitis (n=40) 263,51 ng/ml (IQR 110,355-490,36) und für die gesunden Kontrollen 63,26 ng/ml (IQR 46,093-87,25). Für die anderen Parameter ergaben sich keine signifikanten Unterschiede. Osteonectin war der einzige unabhängige Prediktor für das klinische Outcome p= 0,007 (für Adiponecton p=0,629, für TGFß1 0.888 und für Neurotensin 0,971 **Author conclusions:** Osteonectin diskriminiert streng Patienten mit akuter Pankreatitis von Gesunden. Osteonectin könnte sich als Vorhersage-Parameter erweisen für die Notwendigkeit einer chir. Intervention, verlängerten ICU/Krankenhausaufenthalt und Mortalität (Sollte nach Ansicht der autoren untersucht werden) .

Methodical Notes

Funding Sources: nicht bekannt

COI: Autoren geben an, keine Interessenkonflikte zu haben

Notes: Wichtig ist er NAchweis, daß Osteonectin im Serum - im Gegensatz zu Adiponectin, TGF-ß1 und Neurotensin - hochsignifikant diskriminiert zwischen Patienten mit akuter Pankreatitis und gesunden Individuen (p=0,0001). Und daß der Marker möglicherweise ein Potential für die outcome-Prognose haben kann (bislang nicht dafür validiert) - Tendenz aber gezeigt (p=0,007). .

Rebours, Vinciane et al. Immunoglobulin G4 immunostaining of gastric, duodenal, or colonic biopsies is not helpful for the diagnosis of autoimmune pancreatitis. Clin. Gastroenterol. Hepatol. 10. 91-4. 2012

Evidence level/Study Types	Population	Outcomes/Results
Evidence level: 2 **Study type:** prospektive Fallkontrollstudie immunhistochemischer Nachweis von Immunglobulin IgG4-positiven Plasmazellen bei Patienten mit Autoimmunpankreatitis (AIP) ohne (n=19, Gruppe 1) oder AIP-Typ2 mit entzündliche Darmerkrankung (n=4, Gruppe 2) , im Vergleich zu Patienten mit entzündlicher Darmerkrankung ohne Autoimmunpankreatitis	**Number of patients / samples:** Insgesamt 69 Patienten. Gruppenaufteilung in 4 Gruppen siehe unter 3.0. Ausschluss von Patienten mit Helicobacter pylori assoziierter Gastritis. **Reference standard:** bei	**Results:** Bei Autoimmunpankreatitis Typ 1 (vs. Kontrollgruppe) CD138+Plasmazellen höher im gastralen PEs (p=0,02). Ansonsten keine signifikanten Unterschiede für CD138+ oder IgG4+Plasmazellen. Bei den entzündlichen Darmerkrankungen waren war die Gesamtzahl CD138+Zellen und IgG4+Plasmazellen signifikant höher im Ileum und Colon im Vergleich zur Kontrollgruppe

(n=20, 15x ulzerative Kolitis und 5 x M.Crohn = Gruppe 3) und Kontrollgruppe ohne AIP und ohne entzüngliche Darmerkrankung (n= 26,= Gruppe4). Alle Patienten mit Endoskopie des oberen und unteren GI-Trakts und multiplen PEs	allen Patienten standardisierte Färbung der PE's zum Nachweis IgG4-positiver Plasmazellen un. d Markierung mit monoklonalen Antikörpern gegen CD138 zur Bestimmung der Plasma-Zell- Infiltration **Validation:** nein **Blinding:** nein **Inclusion of clinical information:** ja **Dealing with ambiguous clinical findings:** entfällt	**Author conclusions:** IgG4-positive Plasmazellen sind ein nützliches diagnostisches Kriterium für die autoimmunpankreatitis bei Untersuchung von Biopsien an der Major-papille oder aus Pankreasgewebe (nicht in dieser Studie untersucht, aber gute Literatur - die Bewerterin). An entfernteren Stellen des Gastrointestinaltrakts scheinen IgG4-positive Zellen nicht speziifisch zu sein fpr die diagnose Autoimmunpankreatitis. IgG4 scheint allerdings ein relevanter Marker des inflammatorischen Prozesses am Darm zu sein.
Methodical Notes		
Funding Sources: nicht bekannt **COI:** Autoren haben keine conflicts of interest angegeben **Notes:** negatives Studienergebnis, Geringe Fallzahlen		

OXFORD (2011) Appraisal Sheet: Prognostic Studies: *40 Bewertung(en)*

Beduschi, Murilo Gamba et al. THE PANC 3 SCORE PREDICTING SEVERITY OF ACUTE PANCREATITIS. Arq Bras Cir Dig. 29. 5-8. 2016		
Population	**Intervention**	**Outcomes/Results**
Evidence level: 1 **Study type:** **Number of Patient:** **Recruitung Phase:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** **Author's Conclusion:**
Methodical Notes		
Funding Sources: **COI:** **Randomization:** **Blinding:** **Dropout Rate/ITT-Analysis:**		

Notes: Study not related to the Questions for AG4-AP
No Rating regarding Quality and evidence

Boskovic, Aleksandra et al. The role of D-dimer in prediction of the course and outcome in pediatric acute pancreatitis. Pancreatology. 14. 330-4. 2014

Population	Intervention	Outcomes/Results
Evidence level: 1 **Study type:** **Number of Patient:** **Recruitung Phase:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** **Author's Conclusion:**

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes: Study not related to the questions for AG4-AP.
No assessment of Quality and evidence level done

Chen, Hong et al. Abdominal compartment syndrome in patients with severe acute pancreatitis in early stage. World J. Gastroenterol. 14. 3541-8. 2008

Population	Intervention	Outcomes/Results
Evidence level: 2 **Study type:** Prognostic study; cohort with and without IAH **Number of Patient:** 74 **Recruitung Phase:** May 2002 to May 2006 **Inclusion Criteria:** (1) a time interval between onset of typical abdominal symptoms and study inclusion of 72 h and less; (2) the presence of systemic inflammatory response syndrome (SIRS) manifested by two or more of the following conditions: temperature > 38℃ or	**Intervention:** No systematic intervention. Decompression laparotomy in subgroup (n=13) **Comparison:** Patients (n = 44) with IAP ≥ 12 mmHg were assigned in IAH group, and the remaining patients (n = 30) with IAP < 12 mmHg in normal IAP group. 20 patients of the IAH Group had ICS.	**Primary:** For analysis of the influence of IAH/ACS on organ function and outcome, the physiological parameters and the occurrence of organ dysfunction during intensive care unit (ICU) stay were recorded, as were the incidences of pancreatic infection and in-hospital mortality. **Secondary:** See 3.7 No clear Differentiation between Primary and secondary outcome **Results:** IAH within the first week after admission was found in 44 patients (59.46%). Although the APACHE II scores on admission and the Ranson scores within 48 h after hospitalization were elevated in IAH patients in early stage, they did not show the statistically significant differences from patients with

< 36℃; heart rate (HR) > 90 beats/min; respiratory rate >20 breaths/min or PaCO2 < 32 mmHg; WBC count > 12 000/mm3 or < 4000/mm3, or > 10% immature(band) forms; and (3) at least 3-fold elevated serum amylase or lipase levels, or a APACHE II score > 8, or a C-reactive protein (CRP) of ≥ 250 mg/L. **Exclusion Criteria:** see 3.3		normal IAP within a week after admission (16.18 ± 3.90 vs 15.70 ± 4.25, P = 0.616; 3.70 ± 0.93 vs 3.47 ± 0.94, P = 0.285, respectively). ACS in early AP was recorded in 20 patients (27.03%). During any 24-h period of the first week after admission, the recorded mean IAP correlated significantly with the Marshall score calculated at the same time interval in IAH group (r = 0.635, P < 0.001). Although ACS patients had obvious amelioration in physiological variables within 24 h after decompression, the incidences of pancreatitic infection, septic shock, multiple organ dysfunction syndrome (MODS) and death in the patients with ACS were significantly higher than that in other patients without ACS (pancreatitic infection: 60.0% vs 7.4%, P < 0.001; septic shock: 70.0% vs 11.1%, P < 0.001; MODS: 90.0% vs 31.5%, P < 0.001; mortality: 75.0% vs 3.7%, P < 0.001). **Author's Conclusion:** IAH/ACS is a frequent finding in patients admitted to the ICU because of AP. Patients with IAP at approximately 10-12 mmHg and early signs of changes in physiologic variables should be seriously considered for urgent decompression to improve survival.

Methodical Notes

Funding Sources: Not given

COI: Not given

Randomization: No

Blinding: No

Dropout Rate/ITT-Analysis: No data about drop-out given

Notes:

Cho, Joon Hyun et al. Comparison of scoring systems in predicting the severity of acute pancreatitis. World J. Gastroenterol. 21. 2387-94. 2015

Population	Intervention	Outcomes/Results
Evidence level: 1 **Study type:** **Number of Patient:** **Recruitung Phase:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** **Author's Conclusion:**

Inclusion Criteria: **Exclusion Criteria:**		
Methodical Notes		
Funding Sources: **COI:** **Randomization:** **Blinding:** **Dropout Rate/ITT-Analysis:** **Notes:** Study not related to Questions to AG4-AP. Assessment of Quality and Levels of evidence not valid.		

Dambrauskas, Zilvinas et al. Early recognition of abdominal compartment syndrome in patients with acute pancreatitis. World J. Gastroenterol. 15. 717-21. 2009

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** retrospective analysis **Number of Patient:** 44 **Recruitung Phase:** March 2006 and January 2015, **Inclusion Criteria:** Acute pancreatitis was defined as 2 or more of the following: (1) sudden onset of upper abdominal pain, (2) elevated serum amylase or lipase (more than three times the upper limit of the reference range), and (3) characteristic findings of AP on cross-sectional imaging of the abdomen. Patients who exhibit radiographic evidence of chronic pancreatitis (multiple parenchymal calcifications, pancreatic stone,	**Intervention:** Measurement of IAP **Comparison:** Comparison of patients with an without ICS regarding APACHE-II, Glasgow-Imrie, MODS score	**Primary:** Comparison of several score between patients with and without ACS **Secondary:** Prediction of ACS by APACHE-II, Imrie, MODS-score, 1st IAP **Results:** three classification systems. The RAC and DBC were comparable, but performed better than OAC in predicting mortality (AUC 0.92 and 0.95 vs. 0.66, p < 0.001), ICU admission (AUC 0.92 and 0.96 vs. 0.68, p < 0.001), ICU LOS (AUC 0.73 and 0.76 vs. 0.50, p < 0.001), and hospital stay (AUC 0.81 and 0.83 vs. 0.70, p < 0.001). The DBC performed better than the RAC and OAC in predicting the need for intervention (AUC 0.87 vs. 0.79 and 0.68, p < 0.05). The mortality rate in patients with critical DBC category was higher than that in those with severe RAC category (42.1% vs. 24.7%; p ¼ 0.008). POF (OR 19.4, p ¼ 0.001) and IN (OR 11.0, p ¼ 0.025) were independent risk factors for mortality. **Author's Conclusion:** In tertiary referral setting, patients in the critical category are at the greatest risk for death and should be managed in an intensive care unit. Although IN itself may be less influential on mortality than POF, IN as well as POF should be considered as the key determinants for severity stratification.

parenchymal atrophy or irregular dilatation of main pancreatic duct) were excluded. Patients who were transferred from another hospital after a stay of 24 h or longer were also excluded from the study. **Exclusion Criteria:** See 3.3		

Methodical Notes

Funding Sources: Not reported

COI: The authors disclose no conflicts.

Randomization: N.a.

Blinding: No

Dropout Rate/ITT-Analysis: Not reported

Notes:

de-Madaria, E et al. Update of the Atlanta Classification of severity of acute pancreatitis: should a moderate category be included?. Pancreatology. 10. 613-9. 2010

Population	Intervention	Outcomes/Results
Evidence level: 1 **Study type:** **Number of Patient:** **Recruitung Phase:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** **Author's Conclusion:**

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes: Study not related to Questions for AG4-AP.
Assessment for quqlity and Level of evidence not applicable.

de-Madaria, Enrique et al. Influence of fluid therapy on the prognosis of acute pancreatitis: a prospective cohort study. Am. J. Gastroenterol. 106. 1843-50. 2011

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** prospective cohort **Number of Patient:** 247 **Recruitung Phase:** December 2007 and April 2010 **Inclusion Criteria:** adult patients admitted with AP **Exclusion Criteria:** see 3.3	**Intervention:** Resuscitation according to severity of disease: "The usual regimen of fluid administration in our unit is a 24-h intravenous continuous infusion of 0.9 % NaCl plus 5 – 10 % dextrose (basal infusion between 3,000 and 4,000 cm 3 is generally administered). In case of hematocrit > 44 % , diuresis <50 ml / h, low systolic blood pressure, dehydration, or increased creatinine, serum boluses (generally 500 – 1,000 cm 3 in 30 – 60 min) are administered for resuscitation. In such refractory cases, 24-h perfusion is increased". **Comparison:** > Patients were divided into three groups according to the amount of fluid administered during the initial 24 h: group A: <3.1 l (less than the fi rst quartile) group B: 3.1 – 4.1 l (between the fi rst and third quartiles) group C: >4.1 l (more than the third quartile)	**Primary:** Persistent organ failure >48h **Secondary:** Mortality **Results:** Administration of > 4.1 l during the initial 24 h was significantly and independently associated with persistent OF, acute collections, respiratory insufficiency, and renal insufficiency. Administration of < 3.1 l during the initial 24 h was not associated with OF, local complications, or mortality. Patients who received between 3.1 and 4.1l during the initial 24 h had an excellent outcome. Multivariate analysis was not performed because of low incidence of mortality. BUN > 25 mg / dl and previous hemodialysis were significantly associated with mortality in the bivariate analysis. **Author's Conclusion:** "In our study, administration of a small amount of fl uid during the initial 24 h was not associated with a poor outcome. The need for a great amount of fl uid during the initial 24 h was associated with a poor outcome; therefore, this group of patients must be carefully monitored"

Methodical Notes

Funding Sources: None

COI: None

Randomization: N.a.

Blinding: N.a.

Dropout Rate/ITT-Analysis: Not reported

Notes: Strong conclusions are based on a study design with several flaws.
Based on the General Management of the patients included, it is very likely that patients who were a priori more seriously ill, received more fluid per protocol. Consequently, it is not surprising that patients receiving most fluid had a worse Outcome than patients receiving less fluid.
It must be acknowledged that the authors tried to control for confounding by multivariate analysis. However, as stated in the limitations, although multivariate analysis can help control for potential confounding, it is difficult to address the issue of reverse causation. For example, patients with more severe disease are likely to receive greater fl uid resuscitation based on clinical judgment. Th e converse may also be true: patients with mild disease may receive less fl uid. Th e best method of addressing this particular issue is a randomized controlled study comparing pre-specifi ed fl uid resuscitation protocols.

Eachempati, Soumitra R et al. Severity scoring for prognostication in patients with severe acute pancreatitis: comparative analysis of the Ranson score and the APACHE III score. Arch Surg. 137. 730-6. 2002

Population	Intervention	Outcomes/Results
Evidence level: 1 **Study type:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:**

Number of Patient: **Recruitung Phase:** **Inclusion Criteria:** **Exclusion Criteria:**		**Results:** **Author's Conclusion:**
Methodical Notes		
Funding Sources: **COI:** **Randomization:** **Blinding:** **Dropout Rate/ITT-Analysis:** **Notes:** Study not related to the Questions for AG4-AP. Assessment of Quality and Levels of evidence not feasible.		

Eckerwall, Gunilla et al. Fluid resuscitation and nutritional support during severe acute pancreatitis in the past: what have we learned and how can we do better?. Clin Nutr. 25. 497-504. 2006

Population	Intervention	Outcomes/Results
Evidence level: 5 **Study type:** Retrospective Analysis. **Number of Patient:** Subgroup of 99 patients with SAP out of 843 patients admitted **Recruitung Phase:** 1994-2003 **Inclusion Criteria:** Severe acute pancreatitis **Exclusion Criteria:** Mild acute pancreatitis	**Intervention:** n.a. **Comparison:** Aggressive resusciation (>4000mL/d) ICU-admission	**Primary:** Hospital mortality **Secondary:** Use of Enteral nutrition and TPE **Results:** **Author's Conclusion:** A nutritional treatment regime in severe acute pancreatitis including a moderate and hypocaloric initial fluid resuscitation, parental nutrition as the preferred route for nutritional support and a non-strict glucose control, with an associated mortality of 17%, indicates several modes of improving outcome.
Methodical Notes		
Funding Sources: Not given **COI:** Not given **Randomization:** N.a. **Blinding:** N.a. **Dropout Rate/ITT-Analysis:** N.a. **Notes:** Retrospective study with weak conclusions. No multivariate analyses which would have been urgently required. Causative mechanisms very unclear. E.g. patients with ICU-Admission and requiriung aggressive resuscitation were more likely to die.		

It can be assumed that These patients were more seriously ill...

Fan, S T et al. Prediction of severity of acute pancreatitis: an alternative approach. Gut. 30. 1591-5. 1989

Population	Intervention	Outcomes/Results
Evidence level: 1 **Study type:** **Number of Patient:** **Recruitung Phase:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** **Author's Conclusion:**

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes: Study not related to Questions to AG4-AP.
Assessment of Quality and Level of evidence not applicable.

Farkas, Gyula et al. Analysis of plasma levels and polymorphisms of S100A8/9 and S100A12 in patients with acute pancreatitis. Pancreas. 43. 485-7. 2014

Population	Intervention	Outcomes/Results
Evidence level: 1 **Study type:** **Number of Patient:** **Recruitung Phase:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** **Author's Conclusion:**

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes: Study not related to Questions to AG4-AP.
Assessment of Quality and Level of evidence not applicable.

Fernandes, Samuel R et al. Atlanta, revised Atlanta, and Determinant-based classification--application in a cohort of Portuguese patients with acute pancreatitis. Eur J Gastroenterol Hepatol. 28. 20-4. 2016

Population	Intervention	Outcomes/Results
Evidence level: 1 **Study type:** **Number of Patient:** **Recruitung Phase:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** **Author's Conclusion:**

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes: Study not related to questions to AG4-AP.
Assessment of quality and level of evidence not applicable.

Fischer, A J et al. [Acute pancreatitis in intensive care medicine : Which risk score is useful?]. Med Klin Intensivmed Notfmed. 112. 717-723. 2017

Population	Intervention	Outcomes/Results
Evidence level: 2 **Study type:** Retrospective cohort. Study comparing several prognostic scores **Number of Patient:** 91 **Recruitung Phase:** 2002 to 2013 **Inclusion Criteria:** SAP AND ICU-therapy **Exclusion Criteria:** See 3.3	**Intervention:** N.a. **Comparison:** Several score, single Parameters and organ failures	**Primary:** Prediction of mortality **Secondary:** Multivariate Analysis regarding mortality **Results:** Only Need vor vasopressor, elevated Lactate on Admission and maximjm SAPS-II independently associated with mortality. **Author's Conclusion:** Critically ill patients with severe pancreatitis have high mortality rates that can be estimated using risk scores. Weighting of risk factors may differ depending on region and severity of disease. For patients included in our study, the Ranson Criteria and the APACHE II Score may be most applicable.

Methodical Notes

Funding Sources: Not given

COI: Not given

Randomization: N.a.

Blinding: N.a.

Dropout Rate/ITT-Analysis: N.a.

Notes: Only ICU-patients. Mortality 32%

Gasparovi?, Vladimir et al. Severe acute pancreatitis as a part of multiple dysfunction syndrome. Coll Antropol. 38. 125-8. 2014

Population	Intervention	Outcomes/Results
Evidence level: 1	**Intervention:**	**Primary:**
Study type:	**Comparison:**	**Secondary:**
Number of Patient:		**Results:**
Recruitung Phase:		**Author's Conclusion:**
Inclusion Criteria:		
Exclusion Criteria:		

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes: Study not related to Questions to AG4-AP.
Assessment of Quality and Levels of evidence not applicable.

Gillick, K et al. Waterlow score as a surrogate marker for predicting adverse outcome in acute pancreatitis. Ann R Coll Surg Engl. 98. 61-6. 2016

Population	Intervention	Outcomes/Results
Evidence level: 1	**Intervention:**	**Primary:**
Study type:	**Comparison:**	**Secondary:**
Number of Patient:		**Results:**
Recruitung Phase:		**Author's Conclusion:**
Inclusion Criteria:		
Exclusion Criteria:		

Methodical Notes
Funding Sources: **COI:** **Randomization:** **Blinding:** **Dropout Rate/ITT-Analysis:** **Notes:** Study not related to Questions to AG4-AP. Assessment of Quality and Levels of evidence not valid.

Gomercic, Cécile et al. Assessment of D-Dimers for the Early Prediction of Complications in Acute Pancreatitis. Pancreas. 45. 980-5. 2016

Population	Intervention	Outcomes/Results
Evidence level: 1 **Study type:** **Number of Patient:** **Recruitung Phase:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** **Author's Conclusion:**

Methodical Notes
Funding Sources: **COI:** **Randomization:** **Blinding:** **Dropout Rate/ITT-Analysis:** **Notes:** Study not related to Questions to AG4-AP. Assessment of Quality and Levels of evidence not valid.

Gougol, Amir et al. Clinical outcomes of isolated renal failure compared to other forms of organ failure in patients with severe acute pancreatitis. World J. Gastroenterol. 23. 5431-5437. 2017

Population	Intervention	Outcomes/Results
Evidence level: 2 **Study type:** prospective cohort **Number of Patient:** 111 **Recruitung Phase:**	**Intervention:** n.a. **Comparison:** Patients with isoltaed renal failure vs. other or multi-organ failure	**Primary:** Comparison of differnet Outcomes between patients with isolated renal failure compared to other organ failures **Secondary:** see results **Results:** Forty-three patients had isolated OF: 17 (15.3%) renal, 25 (21.6%)

between 2003 and 2016 **Inclusion Criteria:** persistent organ failure **Exclusion Criteria:** no persistent organ failure		respiratory, and 1 (0.9%) patient with cardiovascular failure. No differences in demographics, etiology of acute pancreatitis, systemic inflammatory response syndrome scores, or development of pancreatic necrosis were seen between patients with isolated RF vs isolated respiratory failure. Patients with isolated RF were less likely to require nutritional support (76.5% vs 96%, P = 0.001), ICU admission (58.8% vs 100%, P = 0.001), and had shorter mean ICU stay (2.4 d vs 15.7 d, P < 0.001), compared to isolated respiratory failure. None of the patients with isolated RF or isolated respiratory failure died. **Author's Conclusion:** Among patients with SAP per the Revised Atlanta Classification, approximately 15% develop isolated RF. This subgroup seems to have a less protracted clinical course compared to other forms of OF. Isolated RF might be weighed less than isolated respiratory failure in risk predictive modeling of acute pancreatitis.
Methodical Notes		
Funding Sources: Not given **COI:** No **Randomization:** N.a. **Blinding:** No **Dropout Rate/ITT-Analysis:** Not given **Notes:** Primaray finding: Better prognosis of patientes with isolated renal failure compared to isolated respiratory failure or multi-organ-failure.		

Gregori?, Pavle et al. Interleukin-12 as a predictor of outcome in patients with severe acute pancreatitis. Hepatogastroenterology. 61. 208-11. 2014		
Population	**Intervention**	**Outcomes/Results**
Evidence level: 1 **Study type:** **Number of Patient:** **Recruitung Phase:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** **Author's Conclusion:**
Methodical Notes		
Funding Sources: **COI:** **Randomization:**		

Blinding:

Dropout Rate/ITT-Analysis:

Notes: Study not related to the Questions to AG4-AP.
Assessment of Quality and evidence not applicable.

Gubensek, Jakob et al. Treatment of hyperlipidemic acute pancreatitis with plasma exchange: a single-center experience. Ther Apher Dial. 13. 314-7. 2009

Population	Intervention	Outcomes/Results
Evidence level: 1 **Study type:** **Number of Patient:** **Recruitung Phase:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** **Author's Conclusion:**

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes: Study not related to the Questions to AG4-AP.
Assessment of Quality and evidence not applicable.

Güldo?an, Cem Emir et al. Correlation between ischemia-modified albumin and Ranson score in acute pancreatitis. Ulus Travma Acil Cerrahi Derg. 23. 472-476. 2017

Population	Intervention	Outcomes/Results
Evidence level: 1 **Study type:** **Number of Patient:** **Recruitung Phase:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** **Author's Conclusion:**

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes: Study not related to the Questions to AG4-AP.
Assessment of Quality and evidence not applicable.

Harrison, David A et al. Case mix, outcome, and activity for admissions to UK critical care units with severe acute pancreatitis: a secondary analysis of the ICNARC Case Mix Programme Database. Crit Care. 11 Suppl 1. S1. 2007

Population	Intervention	Outcomes/Results
Evidence level: 1 **Study type:** **Number of Patient:** **Recruitung Phase:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** **Author's Conclusion:**

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes: Study not related to the Questions to AG4-AP.
Assessment of Quality and evidence not applicable.

Ji, Liang et al. Risk factors of infected pancreatic necrosis secondary to severe acute pancreatitis. HBPD INT. 15. 428-33. 2016

Population	Intervention	Outcomes/Results
Evidence level: 2 **Study type:** Retrospective prognostic cohort study. **Number of Patient:** 115 **Recruitung Phase:** January 2009 u til December 2013	**Intervention:** None **Comparison:** Patients with and without infected pancreatic necrosis (IPN).	**Primary:** Development of IPN (univariate Analysis) **Secondary:** Development of IPN (multivariate Analysis) **Results:** Of the 115 eligible patients, 39 (33.9%) progressed to IPN, and the overall in-hospital mortality

Inclusion Criteria: Consecutive adult patients with SAP (age ≥18 years old) admitted to the Department of Pancreatic and Biliary Surgery, First Affiliated Hospital of Harbin Medical University between January 2009 and December 2013 were enrolled. The exclusion criteria for patients are shown in a flow chart (Fig. 1), and the included patients were followed up for 90 days after discharge. **Exclusion Criteria:** See 3.3		was 11.3% (13/115). The early enteral nutrition (EEN) (P=0.0092, OR=0.264), maximum intra-abdominal pressure (IAP) (P=0.0398, OR=1.131) and maximum D-dimer level (P=0.0001, OR=1.006) in the first three consecutive days were independent risk factors associated with IPN secondary to SAP. The area under ROC curve (AUC) was 0.774 for the maximum D-dimer level in the first three consecutive days and the sensitivity was 90% and the specificity was 58% at a cut-off value of 933.5 μg/L; the AUC was 0.831 for the maximum IAP in the first three consecutive days and the sensitivity was 95% and specificity was 58% at a cut-off value of 13.5 mmHg. **Author's Conclusion:** The present study suggested that the maximum D-dimer level and/or maximum IAP in the first three consecutive days after admission were risk factors of IPN secondary to SAP; an EEN might be helpful to prevent the progression of IPN secondary to SAP. (Hepatobiliary Pancreat

Methodical Notes

Funding Sources: This study was supported by grants from the National Natural Science Foundation of China (81372613 and 81170431), Doctoral Fund of Ministry of Education of China (21022307110012) and Special Fund of Ministry of Public Health of China (210202007).

COI: Not given

Randomization: N.a.

Blinding: N.a.

Dropout Rate/ITT-Analysis: N.a.

Notes: Retrospective prognostic study; n=115.
Well-structured description of IAP-measurement ansd classification and clinical mangement protocol.

Jin, Tao et al. Validation of the moderate severity category of acute pancreatitis defined by determinant-based classification. HBPD INT. 13. 323-7. 2014

Population	Intervention	Outcomes/Results
Evidence level: 1 **Study type:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:**

Number of Patient: **Recruitung Phase:** **Inclusion Criteria:** **Exclusion Criteria:**		**Results:** **Author's Conclusion:**
Methodical Notes		
Funding Sources: **COI:** **Randomization:** **Blinding:** **Dropout Rate/ITT-Analysis:** **Notes:** Study not related to Questions to AG4-AP. Assessment of Quality and Level of evidence not valid.		

Jin, Yin et al. Clinical significance of melatonin concentrations in predicting the severity of acute pancreatitis. World J. Gastroenterol. 19. 4066-71. 2013

Population	Intervention	Outcomes/Results
Evidence level: 1 **Study type:** **Number of Patient:** **Recruitung Phase:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** **Author's Conclusion:**
Methodical Notes		
Funding Sources: **COI:** **Randomization:** **Blinding:** **Dropout Rate/ITT-Analysis:** **Notes:** Study not related to Questions to AG4-AP. Assessment of Quality and Level of evidence not valid.		

Juneja, Deven et al. Scoring systems in acute pancreatitis: which one to use in intensive care units?. J Crit Care. 25. 358.e9-358.e15. 2010

Population	Intervention	Outcomes/Results

Evidence level: 1 **Study type:** **Number of Patient:** **Recruitung Phase:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** **Author's Conclusion:**

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes: Study not related to Questions to AG4-AP.
Assessment of Quality and Level of evidence not valid.

Kadiyala, Vivek et al. The Atlanta Classification, Revised Atlanta Classification, and Determinant-Based Classification of Acute Pancreatitis: Which Is Best at Stratifying Outcomes?. Pancreas. 45. 510-5. 2016

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** Single center, retrospective analysis of a prospective acute pancreatitis database **Number of Patient:** 338 **Recruitung Phase:** june 2005-december 2007 **Inclusion Criteria:** all patients directly admitted to our institution with a diagnosis of AP between June 2005 and December 2007 were collected for this study. Among patients who were admitted more than once to our institution, only the data from the first admission were included. Acute pancreatitis was defined as 2 or more of the following: characteristic abdominal pain, serum amylase and/or lipase levels 3 or more times the upper limit of normal, and/or a	**Intervention:** none **Comparison:** Acute pancreatitis se- verity was stratified according to the Atlanta classification (AC) 1992, the revised Atlanta classification (RAC) 2012, and the determinant-based classification (DBC) 2012. Receiver operating characteristic analysis (area under the curve) compared the accuracy of each classification. Logistic re- gression identified predictors of mortality.	**Primary:** The primary outcome was mortality. The secondary out- comes were admission to the ICU, ICU length of stay, and hospital length of stay (including outside hospital before transfer). **Secondary:** none defined **Results:** 338 patients were analyzed: 13% had persistent organ failure (POF) (>48 hours), of whom 37% had multisystem POF, and 11% had pan- creatic necrosis, of whom 19% had infected necrosis. Mortality was 4.1%. For predicting mortality (area under the curve), the RAC (0.91) and DBC (0.92) were comparable (P = 0.404); both outperformed the AC (0.81) (P < 0.001). For intensive care unit admission, the RAC (0.85) and DBC (0.85) were comparable (P = 0.949); both outperformed the AC (0.79) (P < 0.05). There were 2 patients in the critical category of the DBC. Mul- tisystem POF was an independent predictor of mortality (odds ratio, 75.0; 95% confidence interval, 13.7–410.6; P < 0.001), whereas single-system POF, sterile necrosis, and infected necrosis were not. **Author's Conclusion:** The RAC and DBC were generally comparable in stratify- ing severity. The paucity of patients in the critical category in the DBC limits its utility. Neither classification accounts for the impact of multisys- tem POF, which was the strongest predictor of mortality.

contrast- enhanced computer tomography scan or magnetic resonance im- aging within the first 7 days of hospitalization demonstrating characteristic changes of AP. **Exclusion Criteria:**		

Methodical Notes

Funding Sources: This study was supported by a clinical research grant from the National Pancreas Foundation (P.A.B. and V.K.S.).

COI: none declared

Randomization: none

Blinding: none

Dropout Rate/ITT-Analysis: not given

Notes: Single center, retrospective analysis of a prospective acute pancreatitis database (June 2005–December 2007). Acute pancreatitis se- verity was stratified according to the Atlanta classification (AC) 1992, the revised Atlanta classification (RAC) 2012, and the determinant-based classification (DBC) 2012.

Kanno, Atsushi et al. Diagnosis of autoimmune pancreatitis by EUS-guided FNA using a 22-gauge needle: a prospective multicenter study. Gastrointest. Endosc. 84. 797-804.e1. 2016

Population	Intervention	Outcomes/Results
Evidence level: 1 **Study type:** **Number of Patient:** **Recruitung Phase:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** **Author's Conclusion:**

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes: Study not related to Questions to AG4-AP.
Assessment of Quality and Level of evidence not valid.

Ke, Lu et al. Risk factors and outcome of intra-abdominal hypertension in patients with severe acute pancreatitis. World J Surg. 36. 171-8. 2012

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** observational study **Number of Patient:** 58 patients **Recruitung Phase:** January 2009 to March 2011 **Inclusion Criteria:** severe acute pancreatitis. (1) presence of organ failure (systolic blood pressure \90 mmHg, paO2 \60 mmHg, or serum creatinine [200 lmol/l); (2) an Acute Physiology and Chronic Health Evaluation (APACHE) II score of 8 or higher or a Ranson score of 3 or higher; (3) local complications, such as necrosis, abscess, or pseudocyst. **Exclusion Criteria:** none defined	**Intervention:** All patients received standard medical therapy, including contrast-enhanced computed tomography (CECT), within 24 h of admission and were followed until discharge from the hospital or hospital mortality [10]. Patients with IAH/ ACS were treated by lowering IAP with evacuating intra- luminal contents, and/or percutaneous abdominal drainage, and/or decompressive emergency laparotomy. **Comparison:** age, gender, cause of illness, CLI on admission, MAP, 24 h fluid balance (first day), number of fluid collections on CT, APACHE II scores, serum amy- lase, hematocrit, white blood cell count, serum calcium, glucose, international normalized ratio (INR), C-reactive protein (CRP) level, and albumin levels	**Primary:** risk factors for IAH **Secondary:** Clinical prognosis such as mortality, hospital duration, of SAP patients with or without IAH **Results:** First 24 h fluid balance (Odds Ratio [OR], 1.003; 95% Confidence Interval [CI], 1.001–1.006), number of fluid collections (OR, 1.652; 95% CI, 1.023–2.956), and serum calcium level (OR, 0.132; 95% CI, 0.012–0.775) were found to be independent risk factors for IAH in patients with SAP. Moreover, patients with SAP and IAH had significantly longer average length of stay, both in the hospital and in the intensive care unit, higher rates of systemic and local complications, and more invasive treatments. **Author's Conclusion:** The significant risk factors for IAH in patients with SAP include 24 h fluid balance (first day), number of fluid collections, and serum calcium level.
Methodical Notes		
Funding Sources: none declared **COI:** none declared **Randomization:** no **Blinding:** no **Dropout Rate/ITT-Analysis:** none **Notes:**		

Ke, Lu et al. Intra-abdominal pressure and abdominal perfusion pressure: which is a better marker of severity in patients with severe acute pancreatitis. J. Gastrointest. Surg. 15. 1426-32. 2011

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** prospective, observational stud **Number of Patient:** 50 **Recruitung Phase:** January 2009 andFebruary 2011	**Intervention:** none **Comparison:** none	**Primary:** The intra-abdominal pressure and abdominal perfusion pressure level **Secondary:** MODS and secondary infection **Results:** Both the maximum and mean levels of intra-abdominal pressure were significantly different between patients withor without kinds of clinical variables. But for abdominal perfusion pressure, difference could only be detected in terms ofneed of vasoactive drugs. Besides that, different from abdominal perfusion pressure, intra-abdominal pressure is associatedwith high incidence rates of MODS and secondary infection **Author's Conclusion:**

Inclusion Criteria: Severe acute pancreatitis **Exclusion Criteria:** age under 18		

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes:

Kitamura, Katsuya et al. The Prognosis of Severe Acute Pancreatitis Varies According to the Segment Presenting With Low Enhanced Pancreatic Parenchyma on Early Contrast-Enhanced Computed Tomography: A Multicenter Cohort Study. Pancreas. 46. 867-873. 2017

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** post hoc analysis of a multicenter, retrospective study **Number of Patient:** 1097 **Recruitung Phase:** January 2009 andDecember 2013 **Inclusion Criteria:** severe acute pancreatitis **Exclusion Criteria:** not specified	**Intervention:** none **Comparison:** outcomes of severe acute pancreatitis (SAP) according to the segment presenting withlow enhanced pancreatic parenchyma (LEPP) on early contrast-enhancedcomputed tomography	**Primary:** hospital mortality according to the segment with LEPP **Secondary:** incidence of infection, and requirement for surgical intervention according to thepresence or absence of LEPP **Results:** Presence of LEPP in Ph and Pt on early contrast-enhancedcomputed tomography was independently associated with increasedmortality in SAP. **Author's Conclusion:** Patients with LEPP in Ph and Pt require close observation to ensure timely and adequate intervention.

Methodical Notes

Funding Sources: none

COI: none

Randomization: none

Blinding: none

Dropout Rate/ITT-Analysis: none

Notes:

Kolber, Witold et al. Does the Automatic Measurement of Interleukin 6 Allow for Prediction of Complications during the First 48 h of Acute Pancreatitis?. Int J Mol Sci. 19. . 2018

Population	Intervention	Outcomes/Results
Evidence level: 4 **Study type:** prospective, observational study **Number of Patient:** 95 **Recruitung Phase:** January 2014 until December 2015 **Inclusion Criteria:** acute pancreatitis based on the revised 2012 Atlanta classification system **Exclusion Criteria:** under 18 years	**Intervention:** none **Comparison:** Interleukin 6 levels in different severity	**Primary:** severity of pancreatitis **Secondary:** vital organ failure, and the need for intensive care or death **Results:** IL-6 correlated with other markers and predicted severity of pancreatitis **Author's Conclusion:** IL-6 on admission significantly predicted SAP, vital organ failure, and the need for intensive care or death

Methodical Notes

Funding Sources: none

COI: none

Randomization: none

Blinding: none

Dropout Rate/ITT-Analysis: none

Notes:

Koutroumpakis, Efstratios et al. Isolated Peripancreatic Necrosis in Acute Pancreatitis Is Infrequent and Leads to Severe Clinical Course Only When Extensive: A Prospective Study From a US Tertiary Center. J. Clin. Gastroenterol. 50. 589-95. 2016

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** prospective data collection **Number of Patient:** 201 **Recruitung Phase:** three chronologic periods; 2004-05, 2006-07 and 2008-14 **Inclusion Criteria:** pancreatitis patients which received a Contrast-enhanced CT (CECT) **Exclusion Criteria:** under 18	**Intervention:** none **Comparison:** patients with intrapancreatic vs. pancreatic necrosis	**Primary:** clinical outcome intrapancreatic vs. pancreatic necrosis **Secondary:** not defined **Results:** Limited PPN required no intervention and had similar persistent organ failure rates and hospitalization length with interstitial pancreatitis **Author's Conclusion:** PPN rarely required intervention. Utilizing the extent of involvement has the potential to classify PPN and PN with escalating clinical significance and guide management

Methodical Notes
Funding Sources: none **COI:** none **Randomization:** none **Blinding:** **Dropout Rate/ITT-Analysis:** none **Notes:**

Kusnierz-Cabala, Beata et al. Plasma pentraxin 3 concentrations in patients with acute pancreatitis. Clin. Lab. 59. 1003-8. 2013

Population	Intervention	Outcomes/Results
Evidence level: 4 **Study type:** observal study **Number of Patient:** 40 **Recruitung Phase:** n.a. **Inclusion Criteria:** acute pancreatitis **Exclusion Criteria:** under 18	**Intervention:** none **Comparison:** Concentrations of PTX3, serum amyloid A (SAA), C-reactive protein (CRP), hepatocyte growth factor (HGF), procalcitonin (PCT), polymorphonuclear elastase (PMN-elastase), interleukin 6 (IL-6), interleukin 18 (IL-18), and soluble receptor for TNFalpha (sTNFR75) were measured in samples collected on the 1st, 3rd, and 5th day of the hospital stay	**Primary:** correlation of PTX3 with severity **Secondary:** n.a. **Results:** The highest concentrations of PTX3 were noted on the first day after admission. The concentrations were higher in patients with the severe compared to those with the mild form of AP **Author's Conclusion:** he pattern of changes in PTX3 concentration in the early phase of AP is similar to that of IL-6, and its peak levels are achieved earlier compared to CRP. Our findings suggest that PTX3 may be useful in early evaluation and prediction of the severity of AP

Methodical Notes
Funding Sources: n.a. **COI:** n.a. **Randomization:** no **Blinding:** no **Dropout Rate/ITT-Analysis:** n.a. **Notes:**

Lakhey, Paleswan Joshi et al. Validation of 'moderately severe acute pancreatitis' in patients with acute pancreatitis. JNMA J Nepal Med Assoc. 52. 580-5. 2014

Population	Intervention	Outcomes/Results

Evidence level: 3 **Study type:** prospective observational study **Number of Patient:** 172 **Recruitung Phase:** unclear **Inclusion Criteria:** Acute pancreatitis over 18y **Exclusion Criteria:** under 18	**Intervention:** none **Comparison:** severity groups according to Atlanta Class. and comparission in terms of need for ICU, length of ICU stay, need for intervention, length of hospital stay and mortality	**Primary:** need for ICU, length of ICU stay, need for intervention, length of **Secondary:** **Results:** moderately severe pancreatitis has better outcome than severe **Author's Conclusion:** MSAP exists as an exclusive group different from MAP and SAP having both local complications and organ failure in terms of outcome. However, morbidity was not comparable to that of SAP
Methodical Notes		
Funding Sources: not declared **COI:** not declared **Randomization:** not declared **Blinding:** not declared **Dropout Rate/ITT-Analysis:** not declared **Notes:**		

Lin, Suhan et al. Blood Urea Nitrogen as a Predictor of Severe Acute Pancreatitis Based on the Revised Atlanta Criteria: Timing of Measurement and Cutoff Points. Can J Gastroenterol Hepatol. 2017. 9592831. 2017

Population	Intervention	Outcomes/Results
Evidence level: 2 **Study type:** observational **Number of Patient:** 671 **Recruitung Phase:** January 2013 and December 2015 **Inclusion Criteria:** acute pancreatitis **Exclusion Criteria:** onset time > 3 days (515 cases), not-first- time pancreatitis (194 cases), therapeutic operations (23 cases), organ failure before data collection (including history	**Intervention:** none **Comparison:** The ability of BUN in predicting the SAP and the occurrence of IHM were assessed using the area under the receiver-operating characteristic (ROC) curve	**Primary:** assess BUN as predictor of SAP at initial admission and 24 hrs after patient admission **Secondary:** assess BUN as predictor of IHM at initial admission and 24 hrs after patient admission in the hospital **Results:** For SAP, AUC of BUN at admission and 24 hrs after hospital admission was 0.75 and 0.80, respectively. For IHM in acute pancreatitis, it was 0.86 at admission and 0.84 after 24 hrs of hospital admission, respectively. The optimal cutoff point of BUN 24 hrs after hospital admission for SAP and at admission for IHM was 8.3 mmol/L and 13.3 mmol/L, respectively **Author's Conclusion:** BUN determination after 24 hrs of hospital admission has high accuracy for prediction of SAP while BUN at initial admission has high accuracy for prediction of IHM

of cirrhosis/chronic kidney disease with creatinine clearance < 40 mL/min/pulmonary disease) (7 cases), malignant gastrointestinal tumors (19 cases), gestation (7 cases), intoxication (5 cases), and merging the above conditions (27 cases)		

Methodical Notes

Funding Sources: na

COI: na

Randomization: na

Blinding: na

Dropout Rate/ITT-Analysis: na

Notes:

Lipinski, Michal et al. Fluid resuscitation in acute pancreatitis: Normal saline or lactated Ringer's solution?. World J. Gastroenterol. 21. 9367-72. 2015

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** retrospective **Number of Patient:** 103 **Recruitung Phase:** 2011-2012 **Inclusion Criteria:** acute pancreatitis **Exclusion Criteria:** under 18	**Intervention:** ringer lactate against normal saline **Comparison:** ringer lactate against normal saline	**Primary:** distribution of AP severity, mortality and pancreatic necrosis **Secondary:** percentage of patients requiring enteral nutrition and the duration of hospital stay **Results:** **Author's Conclusion:** study failed to find any evidence that the administration of RL in the first days of AP leads to improved clinical outcomes

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes:

Surbatovic, Maja et al. Tumor necrosis factor-? levels early in severe acute pancreatitis: is there predictive value regarding severity and outcome?. J. Clin. Gastroenterol. 47. 637-43. 2013

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** Fallkontrollstudie. prospektive Vergleichsstudie von PAtienten mit schwerer akuter Pankreatitis (SAP) (nach Atlanta-Klassifikation von 1992) und SAP-induziertem assoziiertem MODS. Testung von TNF-alpha als prognostischer Parameter für Erkrankungsschwere **Number of Patient:** 100 davon n=69 SAP und n=31 SAP induziertes MODS **Recruitung Phase:** nicht genannt **Inclusion Criteria:** über 18 Jahre Erstdiagnose akute Pankreatitis Kriterien für SAP bei Aufnahme in die Klinik nach Atlanta 1992. mit lokalen Komplikationen (Nekrose, Abszess, Pseudocyste) **Exclusion Criteria:** unter 18 Jahre	**Intervention:** Bestimmung TNF-alpha bei Aufnahme kontrastmittel- CT bei Aufnahme Nachbeobachtung bis Tod oder für Survivors für 90 Tage nach Cytokin-Blutabnahme. **Comparison:** TNF alpha und Schweregrad der Pankreatitis, Überleben in den zwei Gruppen: SAP und SAP induziertes MODS	**Primary:** Überleben **Secondary:** ROC (Sensitivität und spezifität) für TNF-alpha und Schweregrad der SAP ROC (Sensitivität und spezifität) für TNF-alpha und Mortalität subgruppenuntersuchung (Alkoholiker und biliäre Pankreatitis) **Results:** Die Gesamtmortalität gal bei 47%. In der SAP-Gruppe verstarben 27,5%, in der SAP-MODS-Gruppe 90%. TNF-alpha- Konzentrationen bei Aufnahme war waren mit in beiden Gruppen hochsignifikant unterschiedlich (p<0,01). Mean TNF-alpha-Werte bei Aufnahme 191,5-fach niedriger in der SAP-MODS-Gruppe. Im Vergleich aller Nichtüberlebenden mit den Überlebenden war TNF-alpha bei den Überlebenden 63-fach höher. Receiver-operator curves: Area unter the curve für TNF-alpha-Plots und Schweregrad der Pankreatitis war 0,813. Area under the curve für outcome (mortality) war 0,834. TNF-alpha ist somit ein guter Prediktor für Schwere der Pankreatitis und das outcome.. Bei einem cut-off-level von 7,95 pg/ml (TNF-alpha als Prediktor für Schwere der Pankreatitis) liegt die Sensitivität bei 83,9%, die Spezifität bei 72,5%. Patienten mit einem TNF-alpha von weniger als 7,95 pg/ml hatten eine 3,2-fach höhere Wahrscheinlichkeit eine SAP mit MODS zu entwicklen, als die Patienten mit höheren Werten. In der Subgruppenanlyse: Im Vergleich der überlebenden in den beiden subgruppen (Alkoholiker und biliäre Pankreatitis) fanden sich 2,4-fach erhöhte Werte für TNF-alpha bei der Gruppe der Patienten mit schwerer biliärer Pankreatitis. In der biliären subgruppe waren die TNF.alpha-Werte 4,7-fach niedriger bei den Nichtüberlebenden. Die Mortalität war in der Subruppe mit biliäer schwerer Pankreatitis höher als in der Alkoholiker-Subgruppe 61,7% vs.44% **Author's Conclusion:** Niedriges TNF-alpha bei Aufnahme ist assoziiert mit SAP-induziertem MODS und mit tödlichem Ausgang der Erkrankung.

Methodical Notes

Funding Sources: nein

COI: authors declare nothing to disclose

Randomization: nein

Blinding: nein

Dropout Rate/ITT-Analysis: entfällt

Notes: TNF-alpha bei Aufnahme als Prediktor für schwere Pankreatitis und die mit schwerer Pankreatitis assoziierte Multiorgandysfunktion(MODS - mit 2 oder mehr Organdysfunktionen im SOFA-Score)

Im Ergebnis hohe Korrelation, erwähnenswerte Studie

Wu, Bechien U et al. Early hemoconcentration is associated with pancreatic necrosis only among transferred patients. Pancreas. 39. 572-6. 2010

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** **Number of Patient:** **Recruitung Phase:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** **Author's Conclusion:**

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes: sollte mit einbezogen werden, allerdings relativ alte Studie

Zhu, YiLin et al. Adjunctive continuous high-volume hemofiltration in patients with acute severe pancreatitis: a prospective nonrandomized study. Pancreas. 40. 109-13. 2011

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** **Number of Patient:** **Recruitung Phase:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** **Author's Conclusion:**

Methodical Notes

Funding Sources:
COI:
Randomization:
Blinding:
Dropout Rate/ITT-Analysis:
Notes:

Zubia-Olaskoaga, Felix et al. Comparison Between Revised Atlanta Classification and Determinant-Based Classification for Acute Pancreatitis in Intensive Care Medicine. Why Do Not Use a Modified Determinant-Based Classification?. Crit. Care Med. 44. 910-7. 2016		
Population	**Intervention**	**Outcomes/Results**
Evidence level: 1 **Study type:** **Number of Patient:** **Recruitung Phase:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** **Author's Conclusion:**
Methodical Notes		
Funding Sources: **COI:** **Randomization:** **Blinding:** **Dropout Rate/ITT-Analysis:** **Notes:**		

NEWCASTLE - OTTAWA Checklist: Case Control: *16 Bewertung(en)*

Chang, Chiz-Tzung et al. Double Filtration Plasma Apheresis Shortens Hospital Admission Duration of Patients With Severe Hypertriglyceridemia-Associated Acute Pancreatitis. Pancreas. 45. 606-12. 2016			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 1 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:**	**Total no. patients:** **Patient characteristics:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**

	Dropout rates:		
Notes:	Study not related to Questions for AG4-AP. Assessment of Quality and Level of evidence not applicable **Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Gou, Shanmiao et al. Percutaneous Catheter Drainage of Pancreatitis-Associated Ascitic Fluid in Early-Stage Severe Acute Pancreatitis. Pancreas. 44. 1161-2. 2015

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 3 **Study type:** Retrospective case-control study	**Funding sources:** Not given **Conflict of Interests:** Not given **Randomization:** N.a. **Blinding:** N.a. **Dropout rates:** Not reported	**Total no. patients:** 17 vs. 17 patients **Patient characteristics:** from November 1, 2009, to October 31, 2010 **Inclusion criteria:** The inclusion criteria were as follows: 18 years or older and hospitalization within 72 hours of disease onset. **Exclusion criteria:** See 3.4	**Interventions:** Percutaneous drainage **Comparison:** 17 patients with drianage vs. 17 controls
Notes:	Retrospective analysis of patients with and and without percutaneous drainage. Measurement of IAP. Stronger decrease in IAP in patients with drainage compared to controls. **Author's conclusion:** In conclusion, this study showed the role of PCD of PAAF in decreasing IAP and decreasing serum hs-CRP and inflammatory cytokines. This procedure may benefit patients with SAP. However, the exact role of the procedure in early-stage SAP requires further investigation in randomized controlled trials with more enrolled cases.		
Outcome Measures/results	**Primary** Intraabdmonal pressure **Secondary** Time course in cytokines	**Results:** The IAP decrease in the PCD group at day 0 was significantly higher than that of the control group (2.14 ± 0.51 vs 0.26 ± 0.51 mm Hg). The patients in PCD group showed a trend of less increase or greater decrease in serum hs-CRP and all the measured inflammatory cytokines except IL-8 (Fig. 1).	

Mentula, P et al. Early prediction of organ failure by combined markers in patients with acute pancreatitis. Br J Surg. 92. 68-75. 2005

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 3 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:**	**Total no. patients:** **Patient characteristics:** **Inclusion criteria:**	**Interventions:** **Comparison:**

	Blinding: **Dropout rates:**	**Exclusion criteria:**	
Notes:	**Author's conclusion:** Organ failure in acute pancreatitis can be predicted with high accuracy at hospital admission using a combination of plasma interleuk in 10 and serum calcium measurements.		
Outcome Measures/results	**Primary** **Secondary**	**Results:** Plasma interleukin 10, serum glucose and s erum calcium were identified as independent predictors of organ failure by logistic regression anal ysis. Calcium level correlated with clinical onset of organ failure. The combination of interleukin 10 (more than 50 pg/ml) or calcium (less than 1 . 65 mmol/l) was a significantly better predictor than any singl e marker or APACHE II score, with a sensitivity of 88 per cent, specificity 93 per cent and diagnostic odds ratio 94.	

Mole, Damian J et al. Detailed fluid resuscitation profiles in patients with severe acute pancreatitis. HPB (Oxford). 13. 51-8. 2011

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Patient characteristics:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Mortele, Koenraad J et al. Acute pancreatitis: imaging utilization practices in an urban teaching hospital--analysis of trends with assessment of independent predictors in correlation with patient outcomes. Radiology. 258. 174-81. 2011

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 5 **Study type:** Fallkontrollstudie	**Funding sources:** nicht bekannt **Conflict of Interests:** nicht bekannt	**Total no. patients:** 252 Patienten mit akuter Pankreatitis und Pankreatitis-bezogenen bildgebenden Verfahren unabhängig von der Erkrankungsschwere.	**Interventions:** bildgebende Verfahren bis zu einem Jahr nach Krankenhausaufnahme **Comparison:** Art und Anzahl

	Randomization: nein **Blinding:** nein **Dropout rates:** entfällt	**Patient characteristics:** 2,5 Jahre **Inclusion criteria:** alle Patienten in dem Zeitraum mit der Aufnahmediagnose akute Pankreatitis . Definition der akuten Pankreatitis: charakteristische abd. Schmerzen, Serum Amylase und/oder Lipase mindestens dreifach über der Norm, und/oder CT oder MRT-mit Veränderungen im sinne einer Pankreatitis. **Exclusion criteria:** Sekundärverlegungen, chronische Pankreatitis	und Zeitpunkt der bildgebenden Untersuchungen mit Erkrankungsschwere und outcome-Parametern
Notes:	Die Fallzahl von 252 Patienten (aus einem Zentrum) ist völlig unzureichend für die Beantwortung der Frage nach der der Korrelation von Anzahl und Art radiologischer Studien bei PAtienten mit akuter Pankreatitis mit dem outcome der Patienten (i.e. Mortalität, Operation, persistierendes SIRS, Organversagen, Intensivstationsaufenthaltsdauer. Da eine logistische Regression zu rechnen ohne Berücksichtigung anderer wichtiger einflussfaktoren auf die outcomedaten ist schlicht unzulässig. **Author's conclusion:** Ein höherer Schweregrad der Pankreatitis ist assoziiert mit vermehrter Anwendung von Bildgebungsverfahren. Die Autoren konstatieren die Zunahme an Untersuchungen über die 2,5 Jahre der Studiendauer ohne feststellbare Verbesserung des outcomes. Die Autoren bemerken, daß die Evaluation der Angemessenheit der jeweiligen Bildgebung , die korrekte Indikation, nicht Gegenstand der Untersuchung war und vermuten hier Optimierungsbedarf.		
Outcome Measures/results	**Primary** Mortalität, Aufnahme und Aufenthaltsdauer auf ICU, Vorhandensein von Organversagen Kürzer oder länger als 48 Stunden, persistierendes SIRS , und Erfordernis einer Operation **Secondary**	**Results:** von der 252 Patienten (mittlerer Apache-II-Score 8,2) verstarben 3,6%, 18,7% wurden operiert. 14,7% hatten ein Organversagen und nur 11,9% wurden auf die Intensivstation aufgenommen. Mean radiol Untersuchungen 9,9. Nach Rö-Thorax aufnahmen (36%) waren CTs von Abdomen und Becken mit 32 % am häufigsten, Abd. MR oder angio-MR nur 1%. Im beobachteten Zeitraum von Juni 2005 bis Dezember 2007 hat die Anzahl der CT-Untersuchungen sich um das 2,5-fache erhöht, die Ultraschalluntersuchungen des Abdomens vervierfacht. Die Kosten für Bildgebungsverfahren haben sich fast verdreifacht. Patienten mit höherem Schmerz-Level, höherem APACHE-II-Score, längerem aufenthalt und mit höherr anzahl früherer Ereignisse mit Pankreatitis hatten mehr Bildgebungsverfahren. Ob und welche Bildgebungsverfahren entscheidungsrelevant waren für die Therapie der Patienten war nicht Gegenstand der untersuhcung und wird nicht berichtet.	

Pintado, María-Consuelo et al. New Atlanta Classification of acute pancreatitis in intensive care unit: Complications and prognosis. Eur. J. Intern. Med. 30. 82-87. 2016

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 4 **Study type:** prospektive	**Funding sources:** keine **Conflict of Interests:** keine	**Total no. patients:** 56 konsekutive Patienten einer Intensivstation: 12 mit moderat schwerer Pankreatitis, 44 mit schwerer Pankreatitis (nach update der Atlanta-Klassifikation von 2012)	**Interventions:** keine

Beobachtungsstudie	**Randomization:** nein **Blinding:** nein **Dropout rates:** entfällt	**Patient characteristics:** 5 Jahre (2010-2014) **Inclusion criteria:** konsekutiv aufgenommene Patienten einer Intensivstation mit akuter Pankreatitis (Definition:2 der drei folgenden Zeichen - typische Schmerzsymptomatik mit akutem Beginn, Erhöhung der Se-Amylase oder Lipase auf mindestens das dreifache der Norm und charakteristische Befunde in der Bildgebung mittel Ultraschall oder CT) , klassifiziert nach update der Atlanta-Klassifikation von 2012 (z.T. also wohl nachträglich, wenn der Einschluss doch 2010 beginnt). **Exclusion criteria:** keine	**Comparison:** moderat schwere und schwere Pankreatitis nach Atlanta-Klassifikation
Notes:	Studie bekräftigt die Unterscheidung zwischen moderat schwerer (n=12) und schwerer (n=44) Pankreatitis durch die Atlanta - Klassifikation der akuten Pankreatitis - alle Patienten mit ICU-Aufnahme). Die hohe Komplikationsrate - vor allem nicht-infektöser Art wie akutes respiratorisches Versagen oder hämodynamisches Versagen - war nicht unterschiedlich in den Gruppen, aber: Keine Mortalität in der Gruppe der moderat schweren Pankreatitis, aber 29,5% in der Gruppe mit schwerer Pankreatitis (P=0,049). Die kleine Fallzahl, die großen Unterschiede in der Patientenzahl in beiden Gruppen und die Rekrutierungszeit von 5 Jahren mindert den Wert der Studie. **Author's conclusion:** ICU Mortalität bei moderat schwerer Pankreatitis ist niedriger als bei schwerer Pankreatitis, was die Tatsache stützt, daß die Existenz dieser neuen Gruppe in der Atlanta Klassifikation berechtigt ist. und dies obwohl beide Gruppen eine hohe Rate an nicht-infektiösen systemischen Komplikationen und an infektiösen nicht pankreatischen Komplikationen aufweisen		
Outcome Measures/results	**Primary** signifikante Unterschiede in Komplikationsraten zwischen moderat schwerer und schwerer Pankreatitis **Secondary** Häufigkeit einzelner Komplikationen wie Infektionen, Beatmung (incl Dauer), Liegedauer, chir. Interventionen, Organversagen in den beiden Patienten-Gruppen.	**Results:** Beide Gruppen unterscheiden sich bei stat Aufnahme signifikant im APACHE-II-Score (p=0,002)), im SOFA-Score (p=0,01) und in dem Vorhandensein von Organversagen bei Aufnahme auf die ICU (moderat schwer: 0; schwer 16, p= 0,012) ICU-Mortalität: moderat schwer 0/12) vs. schwere Pankreatitis (13/44):p=0,049 Höhere Mortalität für Patienten, die OP brauchten :42,3% vs.6,7%: p= 0,002 ICU-stay schwere Pankreatitis 28,4 +/- 29,0 Tage. moderat schwer 7,58 +/- 9,3 Tage. p=0,002 keine signifikanten Unterschiede in den nicht-infektiösen Komplikationen und in den infektiösen nicht-pankreatischen Komplikationen. Signifikante Unterschiede in lokalen Komplikationen wie infizierte Nekrosen, Abdominaler Abszess, Pankreaspseudozyste, Pankreasfistel, Milzvenenthrombose: moderat schwere Pankreatitis 1/12, schwere Pankreatitis 26/44 (p=0,002= Signifikante Unterschiede in Komplikationen, die Chir. Intervention brauchten: moderat schwere Panskreatitis2/12, schwereP 23/44; p= 0,028	

Rahman, Sakhawat H et al. Intestinal hypoperfusion contributes to gut barrier failure in severe acute pancreatitis. J. Gastrointest. Surg. 7. 26-36. 2003

Evidence level	Methodical Notes	Patient characteristics	Interventions

<table>
<tr>
<td>Evidence level: 4

Study type: Prospektive analytische Fallkontrollstudie</td>
<td>Funding sources: nicht erwähnt in der Publikation

Conflict of Interests: nicht erwähnt in der Publikation

Randomization: nein

Blinding: nein

Dropout rates: entfällt</td>
<td>Total no. patients: 61 Patienten konsekutiv aufgenommene Patienten mit Pankreatitis, davon schwer n=19 und mild n=42
12 gesunde freiwillige Probanden als Kontrollgruppe

Patient characteristics: unbekannt

Inclusion criteria: Pankreatitis jeder Genese mit stationärer Aufnahme und Einwilligung in die Studienteilnahme

Exclusion criteria: Vorhandensein einer entzündlichen Darmerkrankung, Darmresektion in der Vorgeschichte, Niereninsuffizienz (Oligure oder anurie mit Urinporoduktion von unter 400 ml/Tag) und bereits bestehendes Organversagen zum Zeitpunkt der stat. Aufnahme.</td>
<td>Interventions: Messung APACHE-II-Score innerhalb 24h nach Aufnahme, täglich CRP über 5 Tage. Messung innerhalb 72 h nach Beginn der Schmerz-Symptomatik: 1. inestinal fatty acid protein IFABP im Urin als Marker intestinaler Ischämie (ELISA im 24h-Urin) 2. Messung der intestinalen Permeabilität durch Messung der 24h-Urinexkretion von 2 Polyethylen-Molekülen (PEG) (3350/300) (HPLC). 3. Zusätzlich Messung IgM Anti-Endotoxin Core Antikörper (ELISA) - Normalwerte bekannt aus Proben von 1024 gesunden Blutspendern) 4. CRP täglich über 5 Tage (Standard-ELISA)

Comparison: Vergleich von Patienten mit schwerer Pamkreatitis, milder Pankreatitis und gesunden Kontrollen. Gruppen waren vergleichbar bezüglich Alter und Geschlecht und Genese der Pankreatitis Der APACHE-II-Score in der Gruppe mit schwerer Pankreatitis war signifikant höher im Vergleich zur milden Pankreatitis-Gruppe (p=0,002)</td>
</tr>
<tr>
<td>Notes:</td>
<td colspan="3">Author's conclusion: die erhöhten Spiegel von IFABP unterstützen die Hypothese, daß ischämie/Reperfusions-Schaden oder mukosale Minderperfusion für den Verlust der mukosalen Integrität verantwortlich sind, auch wenn der kausale zusammenhang weiter unklar ist. Die Ergebnisse deuten darauf hin ("suggest") , daß Minderperusion im Splanchikusgebiet und Verlust der Mukossa-Integrität des Dünndarms mit dem schweren Verlauf einer Pankreatis assoziiert sind.</td>
</tr>
<tr>
<td>Outcome Measures/results</td>
<td>Primary Korralation der unter 3.5 beschriebenen Werte mit Schweregrad der Pankreatitis im Verlauf (klinischem outcome) und Kontrollprobanden.
Korrelation von IFABP mit PEG-Exkretion.

Secondary</td>
<td colspan="2">Results: Die 19 Patienten mit schwerer Pankreatitis hatten ein entsprechend schlechtes outcome : 5 Todesfälle, 9 Multiorganversagen, 6 x 1-Organversagen, 8 x Pankreasnekrosen und 4 Pseudocysten. APACHE-II-Score bei schwerer Pankreatitis signifikant höher in den ersten 24 Stunden.
Urin IFABP-Spiegel waren bei milder Pankreatitis signifikant höher als bei den Kontrollprobanden. und signifikant niedriger als bei den Patienten mit schwerem Verlauf der Pankreatitis. (p für beide Vergleiche = 0,001). Patienten mit Multiorganversagen hatten signifikant höhere IFABP-Werte als Patienten ohne MOV.
Die Urinexkretionsrate der beiden PEG-Moleküle (3350 Da vs 400 Da) war hoch signifikant erhöht bei Patienten mit schwerer Pankreatits (median 0,072(range 0,02-0,36)) im Vergleich zur milden Form (median 0,007 (range 0,001-0,026) und im Vergleich zu den Kontrollprobanden (median 0,009 (range 0,005-0,012) (p<0,00001)
.
Die IFABP Konzentrationen wiesen eine streng lineare Korrelation auf mit der PEG 3350 Exkretionrate r=0,56; p<0,001. Urin IFABP-Konzentration und Serum IgM EndoCAb Konzentration zeigten eine signifikant inverse Korreltation (r=0,32, p=0,02). Zudem bestand eine signifikante positive Korrelation zwischen Urin-IFABP und CRP-spiegeln</td>
</tr>
</table>

Ribeiro, M Dinis et al. Patients with severe acute pancreatitis should be more often treated in an Intensive Care Department. Rev Esp Enferm Dig. 94. 523-32. 2002

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:** Fallkontrollstudie	**Funding sources:** keine **Conflict of Interests:** keine **Randomization:** nein **Blinding:** nein **Dropout rates:** nein	**Total no. patients:** 44 **Patient characteristics:** 8 Jahre (Jan 1993 bis Dezember 1999) **Inclusion criteria:** Aufnahme auf die Intensivstation mit Diagnose akute Pankreatitis **Exclusion criteria:** falsche Diagnose (unklar wieviele Patienten das waren)	**Interventions:** keine **Comparison:** Aufnahme auf die Intensivstation 2 Tage oder mehr nach Aufnahme in die Klinik oder frühere ICU-Aufnahme
Notes:	Fallkontrollstudie von 44 Patienten mit Aufnahme ICU und Pankreatitis (in 8 Jahren!,45% dieser 44 Patienten wurden operiert; Die 44 Patienten waren nur 3% aller stationären Aufnahmen mit Pankreatitis in dem Krankenhaus in dem Zeitraum von 8 Jahren.). Mortalität verglichen für Patienten die später als 2 Tage nach stat. Aufnahme auf die Intensivstation kamen und die früher aufgenommen werden konnten. KH-Mortalität der 44 Patienten: n=23 (52%), ICU-Mortalität 37%. z.T. fehlende Daten z.B. u.a. zu Organversagen werden von den Autoren berichtet. **Author's conclusion:** Die Autoren berichten, daß nach dieser Auswertung ein definiertes Protokoll für die Diagnose, Monitoring und Behandlung von Patienten mit akuter Pankreatitis implementiert wird.		
Outcome Measures/results	**Primary** Überleben und Risikoassessment **Secondary**	**Results:** Daten zur Organinsuffizienz laut Autoren unzureichend, nicht vollständig. Von den 44 Patienten verstarben im Krankenhaus 23 = 52%. Die Patientenwurden im Median 2 Tage nach der Krankenhausaufnahme auf die ICU aufgenommen, in 25% warteten die Patienten mehr als 3 Tage. Patienten (45%) wurden operiert wegen der Pankreatitis, im Median am 6. Tag. Die Patienten, die im Median erst drei Tage nach der Krankenhausaufnahme auf die ICU kamen, hatten die höchste Mortalität im Vergleich zu denen, die kürzer als 2 Tage auf die ICU-Aufnahme warteten (p=0,035) Die Berechnung der Mortalität nach den "alten" Atlanta-Krieterien ergab für die Patienten, die 1 Atlanta-Kriterium erfüllten (n=16) und diejenigen, die 2 Kriterien erfüllten (n=28) keine signifikanten Unterschiede.	

Rosas, Jose Manuel Hidalgo et al. Intra-abdominal pressure as a marker of severity in acute pancreatitis. Surgery. 141. 173-8. 2007

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 3 **Study type:** prospektive Beobachtungsstudie, Fall-Kontroll-Studie	**Funding sources:** nicht erwähnt **Conflict of Interests:** nicht erwähnt **Randomization:** nein **Blinding:** nein **Dropout rates:** entfällt	**Total no. patients:** 45 Patienten mit akuter Pankreatitis **Patient characteristics:** Juli 2002 bis Januar 2004 **Inclusion criteria:** Alle Aufnahmen im genannten Zeitraum mit der Diagnose akute Pankreatitis. Definition: mit Pankreatitis vereinbare klinische	**Interventions:** Messung IAP via Blasenkatheter nach standardisierter Methode. Bestimmung alle 12 Stunden während dees stationären Aufenthaltes. Maximun IAP definiert höchster erreichter Druck von allen Mesungen. Mean IAP definiert als mean-value aller gemessenen Drucke. **Comparison:** IAP wurde verglichen mit folgenden Variablen: Ranson-Kriterien, CT-Severity Index nach Balthazar, APACHE-II-Score bei Aufnahme und nach 72 Stunden, Serum-CRP-Werte, Imrie-Kriterien, Gabe von vasoaktiven

		Zeichen, mindestens 3-fach erhöhte Se-Amylase-Werte. Schwere Pankreatitis definiert als APACHE-II-Score >/= 8. **Exclusion criteria:** nicht benannt	Medikamenten oder Antibiotika, Erfordernis für parenterale Ernährung, Krankenhausverweildauer und Verweildauer auf ICU, Erfordernis operativer Eingriffe wegen pankreatitis-assoziierter Komplikationen oder Re-Operationen, Vorhandensein septischer Komplikationen; intraabdominelle Flüssigkeitsansammlungen, die punktiert oder drainiert werden mussten; Entwicklung eines SIRS, Entwicklung eines Multiorganversagen (MOV).
Notes:	Berechnung der Sensitivität und Spezifität des intraabdominellen Drucks (IAP) für die Detektion des Schweregrads der Pankreatitis **Author's conclusion:** IAP-Messung ist eine nützliche, kostengünstige und leicht zu messender Marker für den Verlauf und die Komplikationen der akuten Pankreatitis.		
Outcome Measures/results	**Primary** Maximum IAP in Beziehung zu den unter 3.6 genannten Variablen plus positive Kulturen aus Punktat/ Drainagen, positive Blutkulturen. **Secondary** Bestimmung eines cut-off-points für den IAP und Sensitivität, Spezifität und positiv prädiktiven Wert für die unter 3.6 genannten Vergleichsvariablen	**Results:** In der einfachen linearen Regression zeigte eine signifikante Beziehung zwischen dem maximalen IAP und den initialen Prognosefaktoren für die akute Pankreatitis, die da waren: APACHE-II-Score bei Aufnahme, APACHE-II-Score nach 72 Stunden, Imrie-Kriterien, , Ranson Kriterien nach 48h, CRP, Balthazar-Index, beim 1. CT und beim 2. Scan und Krankenhausverweildauer. Der maximale IAP-Wert war signifikant höher bei den Markern der Schwere der Pankreatitis: APACHE II >8 und CRP >/= 150 mg/dl.. Auch die Patienten die verstarben hatten einen höheren maximalen IAP-Wert. Die Autoren konnten zeigen, daß bei einem IAP unter 13 mmHg die Patienten eher eine milde Pankreatitis hatten. Bei einem IAP über 14 mmHg aber eine schwere Pankreatitis entwickelten. Sensitivität/ Spezifität und/ positiv prädiktiver Wert der folgenden Variablen bei einem IAP >14 mmg lagen für Tod bei 83%/82%/ 42% für intraabdominell positive Kulturen aus Punktion/Drainae bei 83%/82%/42% für den Bedarf an vasoaktiven Medikamenten bei80%/ 89/ 67% für Bedarf für total parenterale Ernährung bei 62%/ 88% 67% für Notwendigkeit einer OP 88%/ 86%58% für MOF 86%/ 84%/ 50% für SIRS 75%/ 91%/ 75%	

Shah, Azhar et al. Role of simplified admission criteria for predicting severe complications of gall stone pancreatitis. J Ayub Med Coll Abbottabad. 22. 165-9. 2012

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 3 **Study type:** Fallkontrollstudie prospektiv	**Funding sources:** nicht genannt **Conflict of Interests:** nicht genannt **Randomization:** nein **Blinding:** nein **Dropout rates:** Ja. 4 Patienten mit diabetes mellitus ais ITT Analyse herausgenommen	**Total no. patients:** 52 **Patient characteristics:** Mitte Juli 2016 bis Ende November 2008 = 16,5 Monate **Inclusion criteria:** biliäre Pankreatitis und informed consent **Exclusion criteria:** nicht definiert	**Interventions:** keine **Comparison:** Laborwerte bei Aufnahme für Leuozyten >14500/dl, BUN >12 mg/dl, Herzfrequenz >100/min und Se-Blutzucker >150 mg/dl im Vergleich zu APACHE-II-Score, mod. Imrie Score und Ranson Score als MArker für schwere Komplikationen der biliären Pankreatitis

Notes:	BZ als Prognose-Parameter identifiziert, der besser als die bekannten Scores, die Erfordernis einer ICU-Aufnahme in der Notfallaufnahme bahnen kann **Author's conclusion:** Ein Se- Blutzucker von >= 150 mg/dl war der beste einzelne und einfache Prediktor für schwere Komplikationen bei akuter biliärer Pankreatitis. Der Parameter war besser als APACHE II, mod. Imrie und biliärer Ranson Score. Dr Parameter in der Notfallaufnahme die Triage für ein angemessenes Monitoring und Therapie-Level erleichtern (z.B. ICU-Aufnahme)	
Outcome Measures/results	**Primary** schwere lokale und systemische Komplikationen,die ICU-Behandlung erforderten. Mortalität **Secondary** entfällt	**Results:** 4/52 (2%) Patienten hatten schwere systemische Komplikationen (resp. Insuffizienz, Sepsis, DIC, neurol Probleme mit Glasgow-Koma-Scale <9. 3 Patienten hatten insgesamt 6 lokale schwere Komplikationen (alle Pat. mit schweren Komplikationen ICU-behandlungsbedürftig. Lokal: 1x Pankreasabszess mit ooperativem Debridement, Sepsis und ARDS; 1x sterile Pankreasnekrose mit pulmonalem Versagen und längerer Beatmung, 1x nekrotisierende Pankreatitis mit MOV und Tod (einziger Todesfall, Moartalität des Gesamtkollektivs somit 2%). In der univariaten Analyse waren die Scores und die Laborparameter Leukozytose und Blutzucker statistisch signifikant assoziiert mit schweren Komplikationen. In der multivariaten Analyse war von den 4 Laborparametern nur der Blutzucker als Vorhersagewert statistisch signifikant (p>0,001). 4 Patienten mit Diabetes wurden dann in der Analyse ausgeschlossen. Danach ergab sich für die 48 Patienten ohne Diabetes eine Komplikationsrate von 42% (9 von 22 mit einem Blutzucker >=150 mg/dl) und eine Komplikationsrate von 8% (2 von 26 Patienten mit einem Se-BZ <150 mg/dl (p<0,001). Sensitivität, Spezifität, positiver und negativer Vorhersagewert für einen Blutzuckerwert >=150 mg/dl bei Aufnahme für die Vorhersage schwerer Komplikationen der biliären Pankreatitis betrugen 82%, 85%, 45%, 97%.

Shen, Hsiu-Nien et al. The effect of gastrointestinal bleeding on outcomes of patients with acute pancreatitis: a national population-based study. Pancreatology. 12. 331-6. 2012

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 3 **Study type:** retrospektive Fallkontrollstudie	**Funding sources:** Research grant der Klinik, **Conflict of Interests:** no conflicts of interesr **Randomization:** no **Blinding:** no **Dropout rates:** entfällt	**Total no. patients:** 107 349 Patienten mit AP, davon 6847 (6,4%) mit Gastrointestinaler Blutung (GIB) und 13 604 (12,7%) mit Organversagen (OF) **Patient characteristics:** 2000-2009 **Inclusion criteria:** erste stationäre Krankenhausaufnahme wegen akuter Pankreatitis (Entlassdiagnose, ICD-9) . keine Patienten mit früherer Behandlung wegen Pankreatitis **Exclusion criteria:** frühere Hospitalisierung wegen akuter Pankreatitis chronische Pankreatitis Wiederaufnahme Patienten, bei denen das Geschlecht nicht bekannt war	**Interventions:** keine **Comparison:** Komplikationen der Patienten und Mortalität mit GIB und OF 4 Gruppen von Patienten mit akuter Pankreatitis 1. keine GIB und kein OF n= 88 561 2. GIB und kein OF n=5184 3. keine GIB, aber OF n=11 941 4. GIB und OF n= 1663

Notes:	**Author's conclusion:**	
Outcome Measures/results	**Primary** Mortalität innerhalb von 14 Tagen und im Krankenhaus **Secondary** septische Komplikationen (definiert als Bateriämie oder Septikämie) und verlängerte KH-Verweildauer (>18 Tage)	**Results:**

Shiokawa, Masahiro et al. Risk of cancer in patients with autoimmune pancreatitis. Am. J. Gastroenterol. 108. 610-7. 2013

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 3 **Study type:** multizentrische retrospektive Fallkontrollstudie	**Funding sources:** vom Gesundheitsministerium in Japan **Conflict of Interests:** keine **Randomization:** nein **Blinding:** nein **Dropout rates:** entfällt	**Total no. patients:** 118 Patienten mit Autoimmunpankreatitis (Asian Diagnostic Criteria) **Patient characteristics:** 2001-2011, 11 Jahre **Inclusion criteria:** akute Autoimmunpankreatitis nach Asian Diagnostic Criteria) **Exclusion criteria:** chronische Pankreatitis	**Interventions:** keine **Comparison:** standardized Incidence Ration von Krebserkrankungen bei Patienten mit Autoimmunpankreatitis (AIP) und 216 KontrollPatienten (ohne AIP) . Beide Gruppen vergleichbar für Alter, Geschlecht, Familienanamnese für Karzinome, Rauchen und Alkoholgenuss, wobei in der Gruppe der AIP Patienten für die letzten drei Items bei um die 20 % der Patienten keine Daten vorhanden waren.
Notes:	AIP mit und ohne Karzinom, Vergleichsgruppe ohne AIP (für die Karzinom-Inzidenz) Retrospektive Analyse **Author's conclusion:** Patienten mit AIP haben ein hohes Karzinomrisiko, am höchsten ist dies im 1. Jahr nahc AIP-Diagnose. Das Fehlen von erneuter AIP nach erfolgreicher Behandlung eines zeitgleich vorhandenen Karzinoms läßt vermuten, daß die AIP ein paraneoplastisches Syndrom bei manchen Patienten ist.		
Outcome Measures/results	**Primary** Anzahl und Lokalisation der Karzinome bei Patienten mit AIP, NAchbeobachtungst´zeit 3,3 Jahre. **Secondary** IgG4-positive Plasmazellinfiltrate in Karzinomen bei Patienten mit Autoimmunpankreatitis (AIP) und Korrelation zu Rezidiverkrankung an AIP nach Therapie	**Results:** 18 Karzinome bei 15 Patienten in dem Kollektiv der 108 Patienten mit AIP. (13,9%) in einer Nachbeobachtungszeit und 3,3 Jahren. Standard incidence ratio (SIR) 2,7 (95% CI 1,4-3,9); im 1. Jahr SIR 6,1 (95% CI 2,3-9,9), in den folgenden Jahren SIR 1,5 (95% CI 0,3-2,8) nach der AIP-Diagnose. Das relative Risiko einer Krebserkrankung bei Patienten mit AIP zum Zeitpunkt der AIP-Diagnosestellung errechnete sich mit 4,9 (95%CI 1,7-14.9) Bei 6 von 8 Patienten, deren Karzinom vor der Corticosteroidtherapie festgestellt wurde, fand sich Im Karzinom-Gewebe eine ausgedehnte IgG4-positive Plasmazellinfiltration. Nach erfolgreicher Behandlung des Karzinoms entwickelten diese Patienten kein Rezidiv ihrer AIP. entwickelten	

Sun, Jia-Kui et al. Early enteral nutrition prevents intra-abdominal hypertension and reduces the severity of severe acute pancreatitis compared with delayed enteral nutrition: a prospective pilot study. World J Surg. 37. 2053-60. 2013

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 3 **Study type:** prospektiv randomisierte klinische Pilot Studie, ein Zentrum	**Funding sources:** Grants aus Nanjing, China aus dem 5-Jahres-Plan (stattlich9 **Conflict of Interests:** keine **Randomization:** ja , "einfache" Randomisierung **Blinding:** nein **Dropout rates:** keine Drop outs	**Total no. patients:** 30 mit früher enteraler Ernährung (EEN) und 30 mit verspäteter enteraler Ernährung (DEN)(nach 8 Tagen) **Patient characteristics:** Sept. 2010 Sept. 2011 (1 Jahr) **Inclusion criteria:** Patienten mit schwerer akuter Pankreatitis (Atlanta-Kriterien von 1992) und Aufnahme auf die Intensivstation. **Exclusion criteria:** Dekompressions-Maßnahmen für das Abdomen oder künstliche Ernährung (enteral oder parenteral) vor stat Aufnahme, Patienten mit chronischer Organdysfunktion, Immunsuppression, oder Malnutrition, Patienten mit ileus, Schwangerschaft.	**Interventions:** Nasojejunale Sonde 10 French (Spitze distal des Tritz'schen Bandes plaziert, endoskopisch oder radiologisch.) Lagekontrolle fluoroskopisch. Bei der EEN-Gruppe Sondenanlage innerhalb 24 h und enteraler Ernährungsbeginn innerhalb der nächsten 24 Stunden. Patienten mit DEN wurde enterale Ernährung ab Tag 8 angeboten, nasojejunale Sondenanlage an Tag 7. DEN Gruppe bekam parenterale Ernährung in der ersten Woche. Beide Gruppen 20-25 KCal/kg/Tag. Protein 1,5 g/kgKG/Tag (EEN) und Kalorien/Stickstoff-Ratio bei DEN 120-150:1 plus vitamine, Spurenelemente Elektrolyte. IAP Monitoring in beiden Gruppen (technisch nach Empfehlungen der World society of Abd. Compartment Syndromm von 2006. Statt Blasenkatheter Percutane minimalinvasiv gelegter suprapubischer Katheter. **Comparison:** EEN und DEN verglichen für Veränderungen IAP und IAH und klinische outcome Variablen
Notes:	wichtige Studie für die frühe enterale Ern#ährung bei schwerer akuter Pankreatitis. **Author's conclusion:** EEn führte nicht zu Anstieg des IAP, evtl. könnte EEN sogar IAH vorbeugen.EEN ist mit einem IAP von 15 mmHg gut durchführbar. EEN führte zur Verbesserung der Erkrankungsschwere, aber nicht zur Verminderung der Mortalität.		
Outcome Measures/results	**Primary** IAP und IAH **Secondary** Mortalität, ICU-Stay, Mehrorgandysfunktion (MODS), Pankreatische Infektion.	**Results:** ICU stay DEN vs EEN (p=0,033), MODS (p=0,024)und pankreatische Infektionen (p=0.028)signifikant unterschiedlich mit besserem outcome für EEN. Krankenhausmortalität nicht signifikant verschieden. Die Erkrankungsschwere - inital nicht unterschiedlich in beiden Gruppen - war in der EEN-Gruppe an Tag 7 /Tag 14 (vs. DEN) signifikant besser: APACHE-II-Score p= 0,031/0.028; SOFA-Score p=0,021/ 0,012; CRP-level p=0,023/0,001. Für IAP in den ersten zwei Wochen keine Unterschiede in beiden Gruppen 39/60 (65%) Patienten entwickelten IAH bei Aufnahme, 14 Tage nach Aufnahme waren es 7 Patienten mit IAH 1/30 in EEN und 6/30 in DEN (nicht signifikant).	

Sun, Yun et al. The effects of fluid resuscitation according to PiCCO on the early stage of severe acute pancreatitis. Pancreatology. 15. 497-502. 2015

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 2 **Study type:** Prospektive Fallkontrollstudie, retrospektive historische Kontrollgruppe	**Funding sources:** Je zwei Grants der Anhui Universität und der Provinzregierung Anhui **Conflict of Interests:** nicht erwähnt **Randomization:** nein **Blinding:** nein **Dropout rates:** entfällt	**Total no. patients:** 43 **Patient characteristics:** Oct. 2011 bis Dez.2013 für PICCO-Gruppe, Jan 2009-Sept 2011 für Kontrollgruppe **Inclusion criteria:** Schwere akute Pankreatitis (Kriterien der Am Soc. of Gastroenterology.) nachträgliche klassifizierung der Ergebnisse nach Atlanta-Kriterien von 2012 (wo sich dann in beiden Gruppen andere Fallzahlen ergeben) , Kontrollgruppe: ebenfalls schwere akute Pankreatitis. **Exclusion criteria:** Organdysfunktion von Herz, Lunge, Niere oder andere Organdysfunktion bei Studienbeginn. "Nicht-normale" Flüssigkeitszufuhr für mehr als 12 Stunden nach der Diagnose der schweren Pankreatitis (Definition ????, normal0 Studienkriterien der Art der Flüssigkeitszufuhr? akutes obstruktive biliäre Pankreatitis Schwangerschaft	**Interventions:** Analge PICCO system und Monitoring innerhalb von 8 Stunden nach Aufnahme auf die Intensivstation in der PICCO-Gruppe . Kontrollgruppe ohne PICCO. In beiden Gruppen rasche i.v. Flüssigkeitssubstitution mit kristalloider Lösung und 20% Humanalbuminlösung mit einer Kristalliod/ Albumin-Ration von 1 bis 2:1. Keine Definition der Ziel-Parameter für die Menge der Flüssigkeitsgabe. Datenerhebung über 72 Stunden. **Comparison:** Vergleich der Gruppen für folgende Zeitfenster nach Aufnahme auf die Intensivstation :0-6h, 0-24h, 24-48h, 48-72h und 0-72h. PICCO-Gruppe und Kontrollgruppe für outcomeparameter und gegebener Flüssigkeit.
Notes:	Geringe Fallzahl - deutlich underpowered. Retrospektive ausgewählte historische Kontrollgruppe. Ungleiche Größe der Gruppen: PICCO n=18, Kontrolle n=25. Nicht deffinierte Ziel-Parameter mit die Flüssigkeitsgabe **Author's conclusion:** Studie under-powered. Keine Unterschiede der Gruppen in intraabd.- und retroperitonelaer Infektionsrate, auch nicht in der Mortalität. Frühe Flüssigkeits-Resuscitation kann die Gewebsperfusion verbessern (Laktatabfall stärker), die SIRS-Dauer reduzieren und die ICU-Behandlungsdauer verringern.		
Outcome Measures/results	**Primary** Mortalität? Primäres und sekundäres outcome nicht getrennt aufgeführt **Secondary** Anteil der Patienten mit vasoaktiver Medikation bis erreichen staviler Hämodynamik, Anteil der Patienten mit maschineller Beatmung Anteil von Patienten mit nierenersatztherapie	**Results:** In den Zeitfenstern 0-6h/ 0-24h/ 24-48h/ 0-72 h unterschieden sich die Mengen in ml der Flüssigkeitsgabe in der PICCO-Gruppe und der Kontrollgruppe signifikant: 2132,89±1593 ml vs 1024,28&plusmn 421,45 ;(p= 0,0018)/ 5960,39 &plusmn 2951,30 vs 3767,35 &plusmn854,57 (p=0,0010);4709,17&plusmn1549,78 vs 3861,95±1122,78 (p=0,0437) und 14600,94±5095,33 vs 11408,82±2667,13 (p=0,0108) Bei den klinischen outcome-Parametern: keine Unterschiede in der Mortalität.,in der Inzidenz sekundärer abdimineller und retroperitonealer Infektionen, in den abfallenden Werten des IAP, von BUN. kein Unterschied in den Prozentzahlen der Patienten mit der Apllikation vasoaktiver Medikamente oder mit Beatmung. Signifikant war die Inzidenz des Einsatz von Nierenersatz-Verfahren zugunsten der PICCO-Gruppe 5,56% vs 44% (p=0,0056) und Se-Laktat-abfall in 72h (p=0.0109). Der APACHE-II-Score nach 72 Stunden war in der PICCO-Gruppe niedriger als in der	

	(bei fluid-overload und Niereninsuffizienz) Anfall des Se- Laktats Veränderungen im APACHE-II-Score mean ICU-Tage Mortalität Moderat schwere akute pankreatitis nACH $(sTUNDEN Nachträgliche klassifizierung nach Altanta-Kriterien von 2012.	Kontrollgruppe (p=0,0091). ICU-Verweildauer 8,78±7,89 in der PICCO-Gruppe und 19,28±10,79 in der Kontrollgruppe (p=0,0011). Bei Anwendung der Atlanta-Klassifikation von 2012 ergaben sich nur 12 Patienten (statt 18) in der PICCO-Gruppe und 23 Patienten (statt 25) in der Kontrollgruppe. In der outcome-Berechnung waren jetzt signifikante Unterschiede nicht mehr nachweisbar für den %-Anteil der Patienten mit intraabd. Infektionen Signifikante Unterschiede im CT-severity Index waren ebenfalls nicht nahweisbar. Das Anhalten des SIRS war in der PICCO-Gruppe signifant geringer.

Szabo, Flora K et al. Early Enteral Nutrition and Aggressive Fluid Resuscitation are Associated with Improved Clinical Outcomes in Acute Pancreatitis. J. Pediatr. 167. 397-402.e1. 2015

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 2 **Study type:** retrospektive Fall-Kontrollstudie	**Funding sources:** nicht bekannt **Conflict of Interests:** nicht bekannt **Randomization:** nein **Blinding:** nein **Dropout rates:** entfällt	**Total no. patients:** 210 **Patient characteristics:** 30.11.2009 bis 30. Sept. 2014 **Inclusion criteria:** Klinikaufnahme der Kinder in Allgemeine päd. klinik oder Gastroenterologie. 0-21 Jahre bei Aufnahme Milde Pankreatitis entsprechend Atlanta-Kriterien (2012) **Exclusion criteria:** 1. Patienten mit akuter Pankreatitis (AP) und schwerer akuter Pankreatitis (SAP) mit einem der folgenden Befunde/Diagnosen: Multiorganversagen, SIRS, lokale Pankreatitis-Komplikationen wie Nekrose, Blutung, Pseudocyste), respiratorische Komplikationen. 2. Patienten mit Trauma-assooziierter Pankreatits, biliärer Pankreastitis oder nach Chirurgie und Aufnahme auf die chirurgische ICU.	**Interventions:** frühe enterale (orale) Ernährung (PO)innerhalb der ersten 48h nach Aufnahme versus Nil-per-os (NPO) und niedriger (IVF lo) oder hohe (IVF hi) Flüssigkeitssubstitution (das1,5-2-fache des Erhaltungsbedarfs) . 4-Gruppen: NPO+IVFlo (n=20), NPO+IVFhi (n=30), PO+IVFlo (n=55),PO+IVFhi (n=96). **Comparison:** Vergleich der 4 Gruppen (siehe Interventions) für Outcome
Notes:	Genaue Mengen der Flüssigkeitssubstitution in der den Gruppen IVFlo und IVFhi werden nicht mitgeteilt. **Author's conclusion:** Frühe enterale Ernährung und aggressives Fliud-management sind sicher für die Versorgung pädiatrischer Patienten mit milder akuter Pankreatitis. . Sie führen zu geringerer Rate an schwerer akuter Pankreatitis im Verlauf und zu verminderter Krankenhausverweildauer.		

	Prospektive Studien erforderlich	
Outcome Measures/results	**Primary** Krankenhausverweildauer, SIRS, multiorganversagen mit ICU-Aufnahme, respiratorische Komplikationen, Pankreaschirurgie, und Tod **Secondary**	**Results:** Baseline-Parameter : alle vier Gruppen ohne signifikante unterschiede in demografischen Daten wie Alter, Geschlecht, Körpergewicht und BMI. Unterschiede in den Leukozytenzahlen bei Aufnahme und in der Verteilung der Ätiologien der Pankreatitis. Die Autoren berichten, ihr Management der Patienten bezüglich Ernährung und Volumensubstitution war gleich für jede Ätiologie der Pankreatitis. Der einzige Faktor , der zu einem verbesserten outcome beitrug, war die frühe enterale Ernährung innerhalb 48h (PO) . Die Verweildauer der Patienten mit PO war 2,9 Tage vs 4,4 Tage in der NPO-Gruppe (p<0,0001). Die Rate an schwerer Pankreatitis im Verlauf war 6% in der PO-Gruppe und 24% in der NPO-Gruppe (p= 0,0025). Die ICU-Aufnahme betrug in der frühen PO-Gruppe 1,3%, in der NPO-Gruppe 16% (p=0,004). Die Krankenhausverweildauer war am niedrigsten in den bd. PO-Gruppen. Mit signifikanten Unterschieden zu den beiden NPO-Gruppen (p<0,01). Die niedrigere Verweildauer war nicht assoziiert mit vermehrten Wiederaufnahmen.

Zhang, Min-Jie et al. Treatment of abdominal compartment syndrome in severe acute pancreatitis patients with traditional Chinese medicine. World J. Gastroenterol. 14. 3574-8. 2008

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 5 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Patient characteristics:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	Therapie in Deutschland nicht verfügbar **Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

NEWCASTLE - OTTAWA Checklist: Cohort: *16 Bewertung(en)*

Acevedo-Piedra, Nelly G et al. Validation of the determinant-based classification and revision of the Atlanta classification systems for acute pancreatitis. Clin. Gastroenterol. Hepatol. 12. 311-6. 2014

Evidence level	Methodical Notes	Patient characteristics	Interventions

Evidence level: 1 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	Study not elated to Questions for AG4-AP. No Voting of Quality and evidence Level. **Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Al-Humoud, Hani et al. Therapeutic plasma exchange for acute hyperlipidemic pancreatitis: a case series. Ther Apher Dial. 12. 202-4. 2008

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	Study not related to questions for AG4-AP **Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Anand, Gobind et al. A population-based evaluation of severity and mortality among transferred patients with acute pancreatitis. Pancreas. 43. 1111-6. 2014

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 2 **Study type:** Retrospective Population-based cohort	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** 71035 **Recruiting Phase:** 17 years **Inclusion criteria:** Primary diagnosis of AP in the Maryland Health Services Cost Review Commission database **Exclusion criteria:**	**Interventions:** **Comparison:** Main comparison: Transfer; high-/low-volume center

Notes:	**Author's conclusion:** Transferred patientswithAP havemore severe disease and higher overall mortality. Mortality is similar after adjusting for disease severity. Disease severity, insurance status, race, and age all influence the decision to transfer patients with AP.	
Outcome Measures/results	**Primary** Mortality **Secondary** Organ failure(s)	**Results:** There were 71,035 discharges for AP, with 1657 (2.3%) patient transfers. Transferred patients had more multisystem OF (5.6% vs 1.2%), need for ICU (22.8% vs 4.3%), MV (13.1% vs 1.4%), hemodialysis (4.2% vs 2.7%), and higher mortality (6.1% vs 1.1%) compared with nontransferred patients (P < 0.0001). After adjusting for disease severity, mortality was similar between the transferred patients and the nontransferred patients (OR, 1.37; 95% confidence interval, 0.96–1.97). Younger (OR, 0.99), African American (OR, 0.55), and uninsured (OR, 0.46) patients were less likely to be transferred, whereas patients with multisystem OF (OR, 3.5), need for ICU (OR, 2.3), or MV (OR, 2.1) were more likely to be transferred (P < 0.0001).

Baxter, K A et al. The effect of non-steroidal anti-inflammatory drugs on severity of acute pancreatitis and pancreatic necrosis. Ann R Coll Surg Engl. 100. 199-202. 2018

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 3 **Study type:** Retrospective cohort	**Funding sources:** not given **Conflict of Interests:** not given **Randomization:** n-a- **Blinding:** no **Dropout rates:** not given	**Total no. patients:** 324 **Recruiting Phase:** 1 year **Inclusion criteria:** patients admitted as an emergency with a diagnosis of AP to two UK hospitals **Exclusion criteria:** Absence of AP	**Interventions:** NSAID use before Admission yes vs. no **Comparison:** see 3.5.
Notes:	**Author's conclusion:** Routine NSAID use may exert a protective effect on the development of AP, its severity, and complications. Therapeutic use of NSAIDs in acute presentations with pancreatitis should be further evaluated.		
Outcome Measures/results	**Primary** admission to a high dependency or intensive care unit; pancreatic necrosis; pseudocyst development; need for surgery; serum inflammatory markers; modified early warning scores on days 1, 3 and 5; length of stay; and mortality **Secondary**	**Results:** Patients not taking NSAIDs were more likely to have a C-reactive protein level of ≥150mg/l (p=0.007). Patients in the NSAID group experienced less pancreatic necrosis (p=0.019) and lower rates of pseudocyst formation (p=0.010). Other variables showed no difference between the two groups, specifically length of stay and mortality.	

Bhandari, Vimal et al. Intra-abdominal pressure in the early phase of severe acute pancreatitis: canary in a coal mine? Results from a rigorous validation protocol. Gut Liver. 7. 731-8. 2013

Evidence level	Methodical Notes	Patient characteristics	Interventions

Evidence level: 2 **Study type:** Prospective cohort	**Funding sources:** Not given **Conflict of Interests:** No potential conflict of interest relevant to this article was reported. **Randomization:** N.a. **Blinding:** No **Dropout rates:** No	**Total no. patients:** 40 **Recruiting Phase:** 15 months **Inclusion criteria:** all individuals more than 18 years of age and duration of symptoms less than 72 hours admitted to Safdarjung Hospital surgical emergency with diagnosis of acute pancreatitis were included in this prospective study carried from January 2009 till March 2010 **Exclusion criteria:** <18 years	**Interventions:** Measurement of IAP **Comparison:** n.a.
Notes:	**Author's conclusion:** IAH is reliable marker of severe disease, and patients who manifest organ failure, persistent SIRS, or an Acute Physiology and Chronic health Evaluation II score ≥8 should be offered IAP surveillance. Severe pancreatitis is not a homogenous entity.		
Outcome Measures/results	**Primary** Abdominal compartment syndrome **Secondary** Organ failure (Marshall-score)	**Results:** The development of IAH was exclusively associated with SAP with an APACHE II score ≥8 and/or persistent SIRS, identifying all patients who were going to develop abdominal compartment syndrome (ACS). The presence of ACS was associated with a significantly increased extent of pancreatic necrosis, multiple organ failure, and mortality. The mean admission IAP value did not differ significantly from the value obtained after pain control or the maximum IAP measured in the first 5 days.	

Chen, Yizhe et al. Endothelial markers are associated with pancreatic necrosis and overall prognosis in acute pancreatitis: A preliminary cohort study. Pancreatology. 17. 45-50. 2016

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	Study not related to qustions to AG4-AP. Only exception: Patients were mainly TRANSFERRED. Assessment of Quality of study and level of evidence not applicable. **Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Farrell, James J et al. EUS findings in patients with autoimmune pancreatitis. Gastrointest. Endosc. 60. 927-36. 2004

Evidence level	Methodical Notes	Patient characteristics	Interventions

Evidence level: 1 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	Study not related to Questions to AG4-AP. Assessment of Quality and leve of evidence not applicable. **Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Horibe, Masayasu et al. Continuous Regional Arterial Infusion of Protease Inhibitors Has No Efficacy in the Treatment of Severe Acute Pancreatitis: A Retrospective Multicenter Cohort Study. Pancreas. 46. 510-517. 2017

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	Study not related to the Questions to AG4-AP. Assessment of Quality and evidence not applicable. **Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Kapoor, Karan et al. Does the duration of abdominal pain prior to admission influence the severity of acute pancreatitis?. JOP. 14. 171-5. 2013

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 3 **Study type:** During a five-year period, all patients presenting directly to our hospital with their first episode of acute pancreatitis were enrolled in a cohort study. We analyzed data obtained from records of all such patients and performed a separate analysis on those with hemoconcentration	**Funding sources:** none **Conflict of Interests:** none **Randomization:** no **Blinding:** no **Dropout rates:** none	**Total no. patients:** 318 patients **Recruiting Phase:** five-year period **Inclusion criteria:** all patients presenting directly to our hospital with their first episode of acute pancreatitis	**Interventions:** none **Comparison:** hemoconcentration (hematocrit equal to, or greater than, 44%)

(hematocrit equal to, or greater than, 44%) at presentation to determine whether duration of abdominal pain prior to presentation was associated with severity of acute pancreatitis.		**Exclusion criteria:** none	
Notes:	**Author's conclusion:** Duration of abdominal pain prior to admission impacts the severity of acute pancreatitis only among patients with hemoconcentration at presentation.		
Outcome Measures/results	**Primary** Outcome measures included pancreatic necrosis based on contrast-enhanced CT scanning, need for intensive care, length of hospitalization, and death. Radiologic severity of peripancreatic inflammatory changes was assessed within 48 h of admission in accordance with the Balthazar-Ranson scoring system (A-E) **Secondary**	**Results:** Among a total of 318 patients, there were 62 (19.5%) with hemoconcentration at admission. Among the 318 patients, there was no significant difference in the prevalence of pancreatic necrosis when comparing the less than 12 h group to the 12 h or more group. Among the 62 patients with hemoconcentration, those admitted within 12 h compared to those admitted 12 h or more following the onset of abdominal pain had an increased radiologic severity of acute pancreatitis (Balthazar-Ranson grade D or E: 83.3% vs. 40.0%; P=0.006) and an increased prevalence of pancreatic necrosis (21.1% vs. 2.3%; P=0.028).	

Pedersen, Simon B et al. Nonfasting Mild-to-Moderate Hypertriglyceridemia and Risk of Acute Pancreatitis. JAMA Intern Med. 176. 1834-1842. 2016			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 3 **Study type:** Prospektive Kohortenstudie	**Funding sources:** keine **Conflict of Interests:** nicht bekannt **Randomization:** nein **Blinding:** nein **Dropout rates:** nein	**Total no. patients:** 116550 Patienten mit Triglyceridmessungen aus Kopenhagen general population study (98649) und Copenhaagen city Heart study 17901) . Prospektive staatliche Datensammlungen **Recruiting Phase:** 1976 bis 2003 für Kopenhagen City Heart study und 2003-Nov.2014 **Inclusion criteria:** Triglyceridmessung (98649 Pat), Median follow-up 6,7 Jahre für Diagnosen akute Pankreatitis, chronische Pankreatitis, Herzinfarkt. Lipase und Amylase nur in Kopenenhagen genrnal population stady) **Exclusion criteria:** keine	**Interventions:** keine **Comparison:** Trigyceride assoziiert mit akuter und chronischer Pankreatitis im Verlauf und mit Herinfarkt im Verlauf. Nachverfolgung bis event: Tod. emigration und Ende des follow-up 2014 (keine datenverluste!)

Notes:	Vorteil der Untersuchung: riesiger Datenpool, prospektiv erhoben und lange Nachbeobachtungszeit (median 6,7 Jahre) Nachteil, nicht überprüfbare mögliche Diagnosefehler **Author's conclusion:** Schon eine milde bis moderate Hypertrigyceridämie von 177 mg/dl und mehr war assoziiert mit einem hohen Risiko einer akuten Pankreatitis in der Bevölkerung in Dänemark. Die Hazard Ratio hierfür ist frößer als für den Herzinfarkt. Und hohe Plasma-Trigyceride sind assoziiert mit hohen Plasma-Lipase-Spiegeln.	
Outcome Measures/results	**Primary** Hazard ratio für akute Pankreatits und akuten Myokardinfarkt in Abhängigkeit von der Höhe der Trigyceridspiegel. 6 klinische Kategorien für Triglycerid-Werte: (<89,89-176, 177-265, 266-353, 354-442, >443 mg/dl; in mmol/L: <1, 1,00-199, 2,0-299, 3,00-399, 4,0-4,88 und >=5,00 **Secondary** subgruppenanalysen für Bestimmung des Risikos einer akuten Pankreatits erolgten entsprechend Alter, Geschlecht, Ausbildung, Rauchen. Bluthochdruck, Einnahme von Statinen, Studienkohorte, diabetes, BMI (<25 vs >25), Alkoholaufnahme bei Frauen (<14 niedrig vs >=14 hoch) und bei Männern (<21 niedrig vs >=21 hoch) und Gallensteinerkrankung	**Results:** Das absoluite risiko für eine akute Pankreatits durch Triglyceridspiegel (TG) warbei TG-Werten von <89 mg/dl zu TG-Werten 89-176 mg/dl erhöht um 1,6 events / 10 000 PersonenJahre. für TG von 177-265 mg/dl um 2,8 Events/ 10 000 Personen Jahre für TG von 266-353 mg/dl um 3,6 Events pro 10 000 Personenjahre für TG von 354-442 mg/dl um 4,8 Events pro 10 000 Personenjahe für TG von >443 und mehr um 9,3 Eventss pro 10 000 Patientenjahre. Für den Myokardinfarkt betrug das absolute Risiko für die entsprechenden TG-level 19,35, 50, 64, 56 events / 10 000 Personenjahre. NAch Stratifizierung für andere Fraktoren wie Geschlecht, Alter, Diabetes, BMI, Alkoholaufnahme, Rauchen, Hypertension, Statin-Einnahme blieb die Assoziation zwischen höheren TG-Spiegeln und dem Risiko einer akuten Pankreatitis weiterhin signifikant Höhere Spiegel von Triglyceriden waren assoziiert mit höheren Spiegeln von plasma-Lipase und niedrigeren Spiegeln von pankres-Amylase (Trend)

Pynnönen, Lauri et al. Luminal lactate in acute pancreatitis--validation and relation to disease severity. BMC Gastroenterol. 12. 40. 2012

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 5 **Study type:** Kohorten studie	**Funding sources:** institutional EVO funding (was ist das ???) und externes funding über einen Autoren **Conflict of Interests:** nicht studien-relevant **Randomization:** neinnein **Blinding:** **Dropout rates:** drop-outs primär aus analyse ausgeschlossen (3 von 30). Bei den verbleibenden 27 Patienten waren bei 7 Messungen nicht durchführbar (zu geringes Probenvolumen)	**Total no. patients:** 30, davon 1 Patient mit Verlust der Mess-sonde und 2 weitere Patienten mit unvollständigem Datensatz. Letztlich 27 Patienten eingeschlossen **Recruiting Phase:** unbekannt **Inclusion criteria:** akute Pankreatitis jedweder Genese und jedweden Schweregrads plus einwilligung Erfolgreiche Probengewinnung mittels Equilibrium-Dialyse über 10mm Durchmesser messende semipermeable Membran. Erfolgreiche Messung im Dialysat des Sauerstoff-Partialdrucks und L-Laktats vergleichend mit GEM-Gerät erfolgt am 1. Krankenhaustag	**Interventions:** rektale semipermeable Dialyse-Sonde und Messung Se- Laktat und pO2 im Rektum aus Dialysat. Messung mit 2 versch. Geräten und Vergleich der Ergebnisse **Comparison:** Korrelation zwischen pO2 und Se- Laktat im Rektum. Korrelation der beiden Messmethoden für das Laktat im Rektum.

		über 4 Stunden und mit CMA600 (was bei 7 von 27 Patienten nicht gelang wegen unzureichendem Probenvolumen). **Exclusion criteria:** nicht definiert	
Notes:	geringe klinische Bedeutung der Studie und schlechte Qualität. Keine Kontroll/ Vergleichsgruppe untersucht. Primärer Endpunkt: Rektale luminale Laktatspiegel Messung und SOFA-Score im Verlauf bei Patienten. Pankreatitis-Schweregrade nicht definiert und nicht dargestellt. Zudem klinische Validierung der Messmethoden (Microdialyse und equilibrium Dialyse) ist nicht vorhanden. Es wurden deswegen zwei Meßmethoden bei jedem Patienten parallel angewandt und verglichen.Sensitivität und Spezifität unbekannt. Diese Arbeit ist katastrophal und sollte ausgeschlossen werden! **Author's conclusion:** Eine Messung in den ersten 24 Stunden nach Krankenhausaufnahme ist nicht assoziiert mit der Schwere der Erkrankung (hier SOFA-Score) und auch nicht mit der Dauer des Krankenhausaufenthaltes. Das rektal gemessene Laktat kann die Schwere der Pankreatitis nicht vorhersagen. Die rektal gemessenen Laktatwerte korrelierten mit dem rektalen PO2.(Anmerkung der Bewerterin: Niemand weiss, was das bedeutet)		
Outcome Measures/results	**Primary** Rektal luminale Laktatspiegel und SOFA Score (Korrelation?) **Secondary** Sekundär 1. Labormessungen im Serum, , 2. Zeit zwischen Beginn der Symptome und Krankenhausaufnahme, Menge intravenös zugeführter Flüssigkeit vor der rektalen Untersuchung/ Messung und Dauer des Krankenhausaufenthaltes, . 3. Intensivtherapie und Krankenhausmortalität Zudem Korrelation multipler Laborparameter mit rektalem Laktat.	**Results:** Keine Korrelation des rektalen Laktat mit irgendeinem der gemessenen Laborparameter. Weder die Krankenhausverweildauer noch das Auftreten klinisch relevanter Komplikationen der Pankreatitis bei 8 von 27 Patienten korrelierte mit einem hohen rektalen Laktatspiegel. Der Vergleich der zwei Messmethoden mit Bland-Altman-Analyse zeigte eine schlechte Präzision der Messungen und einen hohen Bias zwischen den Methoden	

Xu, Jianmin et al. Management of abdominal compartment syndrome in severe acute pancreatitis patients with early continuous veno-venous hemofiltration. Hepatogastroenterology. 60. 1749-52. 2013			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	keine prospektive Randomisierung, Ergebnisse müssen sehr zurückhaltend interpretiert werden; keine harten Endpunkte **Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Yu, Pengfei et al. Efficacy of resistin and leptin in predicting persistent organ failure in patients with acute pancreatitis. Pancreatology. 16. 952-957. 2016			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	nicht hilfreich für unsere Fragestellung **Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Yuzbasioglu, Mehmet Fatih et al. Changes in plasma levels of homocysteine in patients with acute pancreatitis. JOP. 9. 357-61. 2008			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 5 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	irrelevant, da kleine Fallzahl **Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Zhao, Bing et al. Effect of S100A12 and soluble receptor for advanced glycation end products on the occurrence of severe acute pancreatitis. J Dig Dis. 17. 475-82. 2016			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**

Notes:	too preliminary, not helpful for our question **Author's conclusion:**	
Outcome Measures/results	**Primary** **Secondary**	**Results:**

Zheng, Wei et al. Amalgamation of systemic inflammatory response syndrome score with C-reactive protein level in evaluating acute pancreatitis severity in children. Scand. J. Gastroenterol. 53. 755-759. 2018			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	nicht relevant für unsere Fragestellung **Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Literatursammlung:

AG4-CP Handsuche

Inhalt: 8 Literaturstellen

Literaturstelle	Evidenzlevel	Studientyp
Bang, J. Y. 2015	1	Systematic Review
Gerges, C. 2019	1	retrospective cohort study
Han, S. 2019	1	single Center retrospective review
Khan, M. A. 2018	1	Systematic Review
Kumta, N. A. 2019	1	prospective, consecutive, multicenter, multinational. ClinicalTrials.gov NCT01522573).
Lang, G. D. 2018	1	retrospective cohort study
Siddiqui, A. A. 2017	1	consecutive cohort study
Tyberg, A. 2017	1	rertospective cohort study, four Centers, 3 countries, NCT01522573

OXFORD (2011) Appraisal Sheet: Systematic Reviews: 2 Bewertung(en)

Bang, J. Y. et al. Efficacy of metal and plastic stents for transmural drainage of pancreatic fluid collections: a systematic review. Dig Endosc. 27. 486-98. 2015

Evidence level/Study Types	P - I - C	Outcomes/Results	Literature References
Evidence level: 1 **Study type:** Systematic Review **Databases:** MEDLINE and EMBASE were searched to identify all published manuscripts that evaluated metal stents for endoscopic transmural drainage of PFC. **Search period:** No restrictions were placed on the study dates and the literature search was last done in January 2014. (2008-2014) **Inclusion Criteria:** efficacy of metal and/or plastic stents for endoscopic transmural drainage of all types of PFC (panpancreatic pseudocysts, WON) in patients over the age of 18 years **Exclusion Criteria:** Case reports on the use of metal stents for	**Intervention:** **Comparison:**	**Primary:** Outcome measures were: (i) treatment success defined as a decrease in PFC size and/or resolution of symptoms; (ii) adverse events associated with endoscopic transmural drainage; and (iii) recurrence of PFC following endoscopic transmural drainage. **Secondary:** **Results:** Seventeen studies (881 patients) met inclusion criteria. Therewas no difference in overall treatment success between patients treated with plastic and metal stents (81% [95% CI, 77–84%] vs 82% [95% CI, 74–88%]) for both pseudocysts (85% [95% CI, 81–89%] vs 83% [95% CI, 74–89%]) and walled-off necrosis (70% [95% CI, 62–76%] vs 78% [95% CI, 50–93%]). Also, there was no difference in the rates of adverse events (16% [95% CI, 14–39%] vs 23% [95% CI, 16–33%]) or recurrence (10% [95% CI, 8–13%] vs 9% [95% CI, 4–19%]) between plastic and metal	

endoscopic transmural drainage, studies reporting only on necrosectomy for WON, studies published before 2008 and non-English studies were excluded from the systematic review. Given the large number of publications involving plastic stents, we restricted selection to studies involving a minimum of 50 patients.		stents. **Author's Conclusion:** Current evidence does not support Routine placement of metal stents for transmural drainage of PFC. Randomized trials are needed to justify the use of metal stents for PFC drainage.	

Methodical Notes

Funding Sources:

COI:

Study Quality: Risk of bias in individual studies was assessed by one author (J.Y.B.) using standardized checklists for case series15 and cohort studies16,17 to ensure that participants were selected in an appropriate manner, steps were taken to control for confounders and that the results were analyzed and reported judiciously.

Heterogeneity:

Publication Bias:

Notes:

Khan, M. A. et al. Endoscopic versus percutaneous management for symptomatic pancreatic fluid collections: a systematic review and meta-analysis. Endosc Int Open. 6. E474-e483. 2018

Evidence level/Study Types	P - I - C	Outcomes/Results	Literature References
Evidence level: 1 **Study type:** Systematic Review **Databases:** Medline, Cochrane database, EMBASE, and Web of Science **Search period:** inception to August 2017 **Inclusion Criteria:** pancreatic pseudocyst", "walled off necrosis", "percutaneous drainage", and "endoscopic drainage".. reported clinical success (clinical and radiological resolution) and post-procedure adverse events **Exclusion Criteria:** Abstracts were excluded only if data presented initially were later published as a full peer reviewed journal article, in which case the fully published study was included.	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** Seven studies with 490 patients were included in the final analysis. Pooled RR for clinical success was 0.40 (0.26, 0.61), I2=42% in favor of endoscopic management. On sensitivity analysis, after excluding one study on patients with walled-off necrosis (WON), the clinical success was 0.43 (0.28, 0.66) with no heterogeneity. Pooled RR for technical success was 1.50 (0.52, 4.37) with no heterogeneity. Pooled RR for AE and rate of recurrence were 0.77 (0.46, 1.28) and 0.60 (0.29, 1.24), respectively. Pooled MD for length of stay in hospital and rate of re-intervention were – 8.97 (– 12.88, – 5.07) and – 0.66 (– 0.93, – 0.38), respectively, in favor of endoscopic drainage. **Author's Conclusion:** Endoscopic drainage should be the preferred therapeutic modality for PFCs compared to percutaneous drainage as it is associated with significantly better clinical success, a lower re-intervention rate, and a shorter hospital length of stay.	

Methodical Notes

Funding Sources:

COI:

Study Quality:

Heterogeneity:

Publication Bias:

Notes:

NEWCASTLE - OTTAWA Checklist: Cohort: 6 Bewertung(en)

Gerges, C. et al. SpyGlass DS-guided lithotripsy for pancreatic duct stones in symptomatic treatment-refractory chronic calcifying pancreatitis. Endosc Int Open. 7. E99-e103. 2019

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:** retrospective cohort study	**Funding sources:** **Conflict of Interests:** None reported **Randomization:** n.a. **Blinding:** n.a **Dropout rates:** not reported	**Total no. patients:** 20 **Recruiting Phase:** 2015-2017 **Inclusion criteria:** Inclusion criteria for SOVP were imaging-proven PD stones with upstream dilatation and pain attributable to CCP. Patients with prior unsuccessful ERCP or ESWL were included, as well as patients with asymptomatic pseudocysts and patients with prior pancreatic surgery. **Exclusion criteria:** Exclusion criteria included age less than 18, pregnancy, abdominal pain not attributable to CCP or unsuitability to receive sedation.	**Interventions:** digital single-operator digital video (SOV) pancreaticoscopy-guided interventions **Comparison:**
Notes:	**Author's conclusion:** Digital SOV-guided lithotripsy was found to be safe and effective in this highly selected population of CCP patients. PD decompression had a beneficial effect on pain reduction and QoL.		
Outcome Measures/results	**Primary** Clinical success was determined by assessing pain level score (NRS) and quality of life (QoL) using standardized questionnaires. **Secondary**	**Results:** Overall technical success rate (successful SOVpancreaticoscopy and PD drainage) was 95%. Adverse events occurred in 7 of 23 procedures (30%) and included extravasation from the PD (n = 1), self-limiting post-sphincterotomy bleeding (n = 1) and post-ERCP pancreatitis (PEP) (n = 6). At 3- to 6-month follow-up, 95% of patients reported improvement in symptoms and reduction in intake of analgesics. Mean NRS decreased from 5.4 (±1.6) to 2.8 (±1.8) (P < 0.01). Clinical success was achieved in 95% of patients.	

Han, S. et al. A Comparison of Endoscopic Retrograde Pancreatography With or Without Pancreatoscopy for Removal of Pancreatic Duct Stones. Pancreas. 48. 690-697. 2019

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:** single Center retrospective review	**Funding sources:** not reported **Conflict of Interests:** none **Randomization:** n.a. **Blinding:** n.a.	**Total no. patients:** 223 **Recruiting Phase:** January 2000 to June 2017. **Inclusion criteria:** patients with CP and symptomatic main PD	**Interventions:** Per-oral pancreatoscopy was typically performed in cases with stones refractory to

	Dropout rates: n.a.	stones diagnosed by cross-sectional imaging, endoscopic retrograde cholangiopancreatography (ERCP), or endoscopic ultrasound. Patients with prior endotherapy or extracorporeal shock-wave lithotripsy (ESWL) were included **Exclusion criteria:** Exclusion criteria included patients with prior pancreatic surgery.	standard ERP. **Comparison:** compared ERP with and without POP for treatment of main-duct pancreatic duct Stones.
Notes:	**Author's conclusion:** Per-oral pancreatoscopy–guided lithotripsy permits effective stone removal in cases not amenable to standard ERP techniques, including those with larger or more numerous stones.		
Outcome Measures/results	**Primary** technical success, defined as partial or complete clearance of main PD stones based on the attending endoscopist's interpretation of the final pancreatogramor POP. Complete clearance was defined as greater than 90% clearance of main PD stones and partial clearance as removal of 50% to 90%of main PD stones.15 Technical success included partial and complete clearance as both partial and complete ductal decompressions have been associated with improved clinical outcomes **Secondary** Secondary outcomes included clinical success, stone recurrence, and AE rates. Clinical success was defined as the absence of emergency room visits, hospitalizations for CP exacerbations, and pancreatic surgery during follow-up. Stone recurrence was defined as the presence of new, pancreatography-proven main PD stones associated with symptoms following complete stone clearance. Stone quantity and location were determined by the ERP report.	**Results:** In all, 223 patients underwent 549 ERPs with a technical success rate of 92.4% and complete stone clearance rate of 74.9%. Patients undergoing ERP with POP (n = 94) had higher technical success than patients undergoing ERP without POP (n = 129, 98.9% vs 87.6%, P < 0.001), but required more ERPs (3.1 vs 1.9, P = 0.02). Endoscopic retrograde pancreatography with POP was associated with larger stone size (8.9 vs 6.1 mm, P = 0.001), more stones per case (5+ stones: 33.8% vs 21.1%, P = 0.002), and more impacted stones (48.8% vs 10.3%, P < 0.001).	

Kumta, N. A. et al. EUS-guided drainage of pancreatic fluid collections using lumen apposing metal stents: An international, multicenter experience. Dig Liver Dis. . . 2019

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:** prospective, consecutive, multicenter, multinational. ClinicalTrials.gov NCT01522573).	**Funding sources:** not reported **Conflict of Interests:** none **Randomization:** n.a. **Blinding:** n.a. **Dropout rates:** not reported	**Total no. patients:** 192 **Recruiting Phase:** 2014-2015 **Inclusion criteria:** WOPN with persistent intractable abdominal pain,biliary or gastric obstruction, or infection. **Exclusion criteria:** Any patients	**Interventions:** LAMS placement for PFC **Comparison:**

		previously reported in otherpublications were excluded from this particular study.	
Notes:	**Author's conclusion:** LAMS has a high technical and clinical success rate with a low rate of AEs. PFC drainage viaLAMS provides a minimally invasive, safe, and efficacious procedure for PFC resolution.		
Outcome Measures/results	**Primary** Technical success (TS) was defined as successful deployment of the LAMS. clinical success (CS) was defined as complete PFC resolutionwith LAMS removal at a three-month follow-up period confirmedby repeat cross sectional imaging. Recurrence was defined, as re-accumulation of a fluid collection, after successful resolution ofWON seen on follow-up imaging. **Secondary**	**Results:** 192 patients were included (140 males (72.9%), mean-age 53.8 years), with mean follow-up of4.2 months ± 3.8. Mean PFC size was 11.9 cm (range 2–25). The median number of endoscopic interven-tions was 2 (range 1–14). Etiologies for PFC were gallstone (n = 82, 42.7%), alcohol (n = 50, 26%), idiopathic(n = 26, 13.5%), and other (n = 34, 17.7%). Technical success was achieved in 189 patients (98.4%). Clinicalsuccess was observed in 125 of 135 patients (92.6%).Adverse events included bleeding (n = 11, 5.7), infection (n = 2, 1%), and perforation (n = 2, 1%). Three ormore endoscopy sessions were a positive predictor for PFC resolution and the only significant predictorfor AEs.	

Lang, G. D. et al. EUS-guided drainage of peripancreatic fluid collections with lumen-apposing metal stents and plastic double-pigtail stents: comparison of efficacy and adverse event rates. Gastrointest Endosc. 87. 150-157. 2018

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:** retrospective cohort study	**Funding sources:** not reproted **Conflict of Interests:** none **Randomization:** n.a. **Blinding:** na. **Dropout rates:** not reported	**Total no. patients:** 103 **Recruiting Phase:** 2008-105 **Inclusion criteria:** All patients undergoing EUS-guided PPFC drainage for pancreatic pseudocyst (PP) or WON between 2008 and 2015 were considered eligible for inclusion **Exclusion criteria:**	**Interventions:** EUS-guided PPFC drainage **Comparison:**
Notes:	**Author's conclusion:** DPPSs and LAMSs are effective methods for treatment of PPFCs. In our cohort, use of LAMSs was associated with significantly higher rates of procedure-related bleeding and greater need for repeat endoscopic intervention.		
Outcome Measures/results	**Primary** radiographic Resolution of the fluid collection within 6 months of the index endoscopic procedure **Secondary** the occurrence of adverse events, including bleeding,	**Results:** A total of 103 patients met inclusion criteria (84 DPPSs, 19 LAMSs). PPFCs were classified as walled-off necrosis (WON) in 23 (14 DPPSs, 9 LAMSs). There were significantly more bleeding episodes in the LAMS Group (4 [19%]: 2 splenic artery pseudo-aneurysms, 1 collateral vessel bleed, 1 intracavitary variceal bleed; P Z .0003) than in the DPPS group (1 (1%]: stent erosion into the gastric wall). One perforation occurred in the DPPS group. Unplanned repeat endoscopy was more frequent in the LAMS group (10% vs 26%, PZ.07). Among retreated LAMS patients in withWON, 5 (56%) had obstruction by necrotic debris. In patients for whom follow-up was available, 67 of 70 (96%) with DPPSs and 16 of 17 (94%) with LAMSs had resolution of PPFCs within 6 months (P Z .78).	

	perforation, and unplanned endoscopic interventions. Bleeding was defined as that necessitating transfusion or requiring hospitalization, upper endoscopy, or a procedure by interventional radiology.	

Siddiqui, A. A. et al. Fully covered self-expanding metal stents versus lumen-apposing fully covered self-expanding metal stent versus plastic stents for endoscopic drainage of pancreatic walled-off necrosis: clinical outcomes and success. Gastrointest Endosc. 85. 758-765. 2017

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:** consecutive cohort study	**Funding sources:** not reported **Conflict of Interests:** none **Randomization:** n.a. **Blinding:** n.a. **Dropout rates:** not reporetd	**Total no. patients:** 313 **Recruiting Phase:** 2010-2015 **Inclusion criteria:** WON managed by EUS-guided debridement were divided into 3 groups: (1) those who underwent debridement using DP stents, (2) debridement using FCSEMSs, (3) debridement using LAMSs. **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:** EUS-guided drainage/debridement of WON using FCSEMSs and LAMSs is superior to DP stents in terms of overall treatment efficacy. The number of procedures required for WON resolution was significantly lower with LAMSs compared with FCSEMSs and DP stents		
Outcome Measures/results	**Primary** Technical success (ability to access and drain a WON by placement of transmural stents), early adverse events, number of procedures performed per patient to achieve WON resolution, and long-term success (complete resolution of the WON without need for further reintervention at 6 months after	**Results:** From 2010 to 2015, 313 patients (23.3% female; mean age, 53 years) underwent WON debridement, including 106 who were drained using DP stents, 121 using FCSEMSs, and 86 using LAMSs. The 3 groups were matched for age, cause of the pancreatitis, WON size, and location. The cause of the patients' pancreatitis was gallstones (40.6%), alcohol (30.7%), idiopathic (13.1%), and other causes (15.6%). The mean cyst size was 102 mm (range, 20-510 mm). The mean number of endoscopy sessions was 2.5 (range, 1-13). The technical success rate of stent placement was 99%. Early adverse events were noted in 27 of 313 (8.6%) patients (perforation in 6, bleeding in 8, suprainfection in 9, other in 7). Successful endoscopic therapy was noted in 277 of 313 (89.6%)patients. When comparing the 3 groups, there was no difference in the technical success (P Z .37). Early adverse events were significantly lower in the FCSEMS group compared with the DP and LAMS groups (1.6%, 7.5%, and 9.3%; P < .01). At 6-month follow-up, the rate of complete resolution of WON was lower with DP stents compared with FCSEMSs and LAMSs (81% vs 95% vs 90%; P Z .001). The mean number of procedures required for WON resolution was significantly lower in the LAMS group compared with the FCSEMS and DP groups (2.2 vs 3 vs 3.6, respectively; P Z .04). On multivariable analysis, DP stents remain the sole negative predictor for successful Resolution of WON (odds ratio [OR], 0.18; 95% confidence interval, 0.06-0.53; P Z .002) after adjusting for age, sex, and WON size. Although there was no significant difference between FCSEMSs and	

	treatment) were evaluated **Secondary**	LAMSs for WON resolution, the LAMS was more likely to have early adverse events (OR, 6.6; P Z .02).

Tyberg, A. et al. EUS-guided pancreatic drainage for pancreatic strictures after failed ERCP: a multicenter international collaborative study. Gastrointest Endosc. 85. 164-169. 2017			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 1 **Study type:** rertospective cohort study, four Centers, 3 countries, NCT01522573	**Funding sources:** not reported **Conflict of Interests:** none **Randomization:** n.a **Blinding:** n.a. **Dropout rates:** n.a.	**Total no. patients:** 80 **Recruiting Phase:** 2006-2015 **Inclusion criteria:** failed conventional ERP in symptomatic patients **Exclusion criteria:**	**Interventions:** successful PD drainage with stent placement **Comparison:** none
Notes:	**Author's conclusion:** With appropriate endoscopic expertise, EUS-PD offers a minimally invasive, more effective, and safer alternative to some surgical pancreatic drainage procedures. Prospective studies are needed to evaluate long-term outcomes.		
Outcome Measures/results	**Primary** Technical success, clinical success **Secondary**	**Results:** 80 patients (62.5% male, mean age 58.2 ± 15.5) were included. All patients had attempted ERP and/or extracorporeal lithotripsy if needed before EUS-PD. Technical success was achieved in 89% (n=71) of patients. Clinical success was achieved in 81% of patients overall (65/80) and in 92% of patients who achieved technical success (65/71). Immediate adverse events occurred in 20% (n=16) of patients and delayed AEs occurred in 11% (n=9).	

Literatursammlung:

AG4-CP

Inhalt: 84 Literaturstellen

Literaturstelle	Evidenzlevel	Studientyp
Ahmed Ali, Usama 2013	1	
Ahmed Ali, Usama 2012	1	cohort study
Ahmed Ali, Usama 2015	1	Systematic Review
Attwell, Augustin R 2014	1	Corhort study, case series
Attwell, Augustin R 2015	1	retrospective cohort
Baghdadi, Saleh 2008	1	Systemcatic review
Barkay, Olga 2010	1	retrospective cohort
Behm, B 2009	1	retrospective cohort
Bhasin, Deepak Kumar 2013	1	retrospective cohort study
Bhutiani, Neal 2017	1	retrospective cohort study
Bi, Yan 2016	4	Case-series
Binmoeller, K F 1995	1	retrospective cohort
Brown, Nicholas G 2017	1	retrospective cohort study
Burton, F 2011	1	retrospective analysis of data from prospective cohort study
Buscher, Hessel C J L 2008	1	retrospective Analysis of consecutive cases
Cahen, Djuna L 2011	1	RCT
Cahen, Djuna L 2007	1	RCT
Cahen, Djuna L 2018	1	proof of Concept, prospective cohort study
Catalano, Marc F 2004	1	prospective cohort study compared to histoic Control monocentric
Cheruvu, C V N 2003	1	retrospective cohort study
Clarke, Bridger 2012	1	prospective cohort, retrospective analysis
Cremer, M 1989	1	retrospective cohort study
D'Haese, Jan G 2014	1	systematic research
Devière, Jacques 2008	1	Systematic Review on RCT
Devière, Jacques 2014	1	non randomized multicenter, multinational prospective cohort study
Dumonceau, J-M 2012	1	guideline
Dumonceau, J-M 2012	1	The ESGE commissioned and funded these guidelines. The methodology was similar to that used for other ESGE guidelines
Dumonceau, Jean-Marc 2007	1	RCT

Eleftherladis, N 2005	1	retrospective cohort study
Ergun, M 2011	1	retrospective cohort, single center
Farnbacher, Michael J 2006	1	Retrospective cohort study
Farnbacher, Michael J 2006	1	retrospective study to identify prognsotic factors of stent clogging
Ford, Kathryn 2016	2	single-center, retrospective review of children
Giacino, C 2012	1	retrospective cohort
Glass, Lisa M 2014	1	prospective cohort study
Gurusamy, Kurinchi Selvan 2016	1	Systematic Review
Haapamäki, Carola 2015	1	prospective multicenter rendomized controlled trial
He, Yuan-Xiang 2014	1	retrospective cohort
Heinzow, Hauke Sebastian 2011	1	retrospective cohort
Hookey, Lawrence C 2006	1	retrospective cohort
Hu, Bing 2017	1	Consensus guideline
Hu, Liang-Hao 2016	1	prospective cohort
Issa, Yama 2014	1	Systematic review
Kahl, Stefan 2003	1	prospective cohort study
Kahl, Stefan 2002	1	retrospective cohort
Kawashima, Yohei 2018	1	retrospective cohort
Khan, Muhammad Ali 2017	1	meta-analysis
Kim, Kyeong Ok 2012	1	retrospective cohort
Korpela, Taija 2016	1	prospective cohort
Levy, Michael J 2008	1	retrospective cohort
Li, Bai-Rong 2016	1	prospective case Control study
Maruyama, Masahiro 2015	2	retrospective
Midha, Shallu 2017	2	restrospective analysis
Moole, Harsha 2015	4	systematic review
Moon, Sung-Hoon 2010	3	prospective study
Nykänen, Taina 2017	4	retrospecitve analysis
Oh, Dongwook 2018	2	retrospecitve analysis
Oh, Dongwook 2016	2	retrospecitve analysis
Olesen, Søren S 2016	4	RCT
Perri, Vincenzo 2012	1	retrospctive study
Rasch, Sebastian 2017	1	restrosepctive study
Regimbeau, Jean-Marc 2012	1	restrosepactive study

Sahai, Anand V 2009	1	restrospective study
Samuelson, Andrew 2016	1	retrospective study
Sasahira, Naoki 2007	1	retrospective study
Sato, Hideaki 2018	3	prospective cohort study
Sauer, Bryan G 2009	3	restrospective analysis
Seven, Gulseren 2012	3	retrospecitve study
Seza, Katsushi 2012	4	prospective cohort study
Shah, Raj J 2015	4	prospective MC study
Siiki, Antti 2014	4	Systematic revies
Stevens, Tyler 2012	5	RCT
Tandan, Manu 2013	3	retrospective study
Tantau, Alina 2017	2	retrosepective study
Troendle, David M 2017	2	retrospective analysis
Udd, Marianne 2007	3	restrospective study
Vaysse, Thibaut 2016	3	consecutive case series
Vitale, Gary C 2007	2	restrospective study
Wang, Dan 2018	3	restrosepctive
Weber, Andreas 2014	3	retrospective
Wilcox, C M 2009	1	only study proposal
Yang, Catherine J 2015	3	restrospective study
Yang, Xiu-Jiang 2009	3	restrospective analysis
Zheng, Ming-Wei 2011	3	Retrospective Case series

OXFORD (2011) Appraisal Sheet: Systematic Reviews: 12 Bewertung(en)

Ahmed Ali, Usama et al. Endoscopic or surgical intervention for painful obstructive chronic pancreatitis. Cochrane Database Syst Rev. . CD007884. 2015

Evidence level/Study Types	P - I - C	Outcomes/Results	Literature References
Evidence level: 1 **Study type:** Systematic Review **Databases:** The Cochrane Liberary. Central, DARE, MEDLINE, Embase, Conference Proceedings Citation Index, **Search**	**Population:** three eligible Trials. **Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** We identified three eligible trials. Two trials compared endoscopic intervention with surgical intervention and included a total of 111 participants: 55 in the endoscopic group and 56 in the surgical group. Compared with the endoscopic group, the surgical group had a higher proportion of participants with pain relief, both at middle/long-term follow-up (two to five years: risk ratio (RR) 1.62, 95% confidence interval (CI) 1.22 to 2.15) and long-term follow-up (≥ five years, RR 1.56, 95% CI 1.18 to 2.05). Surgical intervention resulted in improved quality of life and improved preservation of exocrine pancreatic function at middle/long-term follow-up (two to five years), but not at long-term follow-up (≥ 5 years). No differences were found in terms of major post-interventional complications or mortality, although the number of	

period: 1950 to 2012 **Inclusion Criteria:** RCT endoscopic surgical interventions, Trials comparing endoscopic or surgical Intervention versus conservative Treatment. **Exclusion Criteria:** non RCT		participants did not allow for this to be reliably evaluated. One trial, including 32 participants, compared surgical intervention with conservative treatment: 17 in the surgical group and 15 in the conservative group. The trial showed that surgical intervention resulted in a higher percentage of participants with pain relief and better preservation of pancreatic function. The trial had methodological limitations, and the number of participants was relatively small. **Author's Conclusion:** For patients with obstructive chronic pancreatitis and dilated pancreatic duct, this review shows that surgery is superior to endoscopy in terms of pain relief. Morbidity and mortality seem not to differ between the two intervention modalities, but the small trials identified do not provide sufficient power to detect the small differences expected in this outcome.Regarding the comparison of surgical intervention versus conservative treatment, this review has shown that surgical intervention in an early stage of chronic pancreatitis is a promising approach in terms of pain relief and pancreatic function. Other trials need to confirm these results because of the methodological limitations and limited number of participants assessed in the present evidence.	

Methodical Notes

Funding Sources:

COI:

Study Quality:

Heterogeneity:

Publication Bias:

Notes:

Baghdadi, Saleh et al. Systematic review of the role of thoracoscopic splanchnicectomy in palliating the pain of patients with chronic pancreatitis. Surg Endosc. 22. 580-8. 2008

Evidence level/Study Types	P - I - C	Outcomes/Results	Literature References
Evidence level: 1 **Study type:** Systemcatic review **Databases:** MEDLINE, EMBASE, and PREMEDLINE **Search period:** 1994-2006 **Inclusion Criteria:** role, saftey and efficacy of thoracoscopic splanchnicectomy **Exclusion Criteria:** non-english publications	**Population:** 302 patients in 16 reports **Intervention:** 202 procedures bilateral, 100 as unilateral. **Comparison:** none	**Primary:** morbidity, Hospital stay, complications, mortality. Sucess rate **Secondary:** **Results:** Between 1994 and 2006, 302 patients were featured in 16 reports. The reports described 202 procedures as bilateral and 100 as unilateral. These procedures were associated with rates of 16.6% for morbidity, 1.3% for conversion to thoracotomy, 1.3% for reoperation to manage complications, and 0% for mortality. The mean postoperative hospital stay was 2.7 days. The mean success rate was 90% up to 6 months of follow-up evaluation, 75% at >6 to 15 months of follow-up evaluation, and 49% at >15 months to 5.7 years of follow-up evaluation. Further intervention for pain relief was required for 12.9% of the patients. **Author's Conclusion:** Splanchnicectomy reduces pain and improves quality of life for patients with chronic pancreatitis. Patient selection determines success rates, but the early good results achieved decline with time elapsed after thoracoscopic splanchnicectomy.	

Methodical Notes

Funding Sources: not given

COI: none

Study Quality: n.a.

Heterogeneity: not given

Publication Bias: not given

Notes:

D'Haese, Jan G et al. Treatment options in painful chronic pancreatitis: a systematic review. HPB (Oxford). 16. 512-21. 2014

Evidence level/Study Types	P - I - C	Outcomes/Results	Literature References
Evidence level: 1 **Study type:** systematic research **Databases:** MEDLINE/PubMed Cochrane **Search period:** inception of database to 31.3.2013, reference list 1983-2012 **Inclusion Criteria:** search terms 'pain', 'treatment', 'analgesia', 'surgery' and 'endoscopy' and, alternatively, these Terms matched with 'chronic pancreatitis' randomized controlled trials (RCTs) and meta-analyses **Exclusion Criteria:**	**Population:** painful chronic pancreatitis **Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** A total of 416 abstracts were reviewed, of which 367 were excluded because they were obviously irrelevant or represented overlapping studies. Consequently, 49 full-text articles were systematically reviewed. **Author's Conclusion:** First-line medical options include the provision of pain medication, adjunctive agents and pancreatic enzymes, and abstinence from alcohol and tobacco. If medical treatment fails, endoscopic treatment offers pain relief in the majority of patients in the short term. However, current data suggest that surgical treatment seems to be superior to endoscopic intervention because it is significantly more effective and, especially, lasts longer.	

Methodical Notes

Funding Sources: not reported

COI: None reported

Study Quality: low

Heterogeneity:

Publication Bias:

Notes:

Devière, Jacques et al. Treatment of chronic pancreatitis with endotherapy or surgery: critical review of randomized control trials. J. Gastrointest. Surg. 12. 640-4. 2008

Evidence level/Study Types	P - I - C	Outcomes/Results	Literature References
Evidence level: 1 **Study type:** Systematic Review on RCT **Databases:** PubMed **Search period:** 1995-2008 **Inclusion Criteria:** pancreatitis, chronic, publication 1995-2005, RCT, humans, age>19 **Exclusion Criteria:**	**Population:** 8 RCT, 380 patients **Intervention:** comparison surgical techniques, comparison surgery versus endoscopy, endotherapy versus ESWL **Comparison:** comparison surgical techniques, comparison surgery versus endoscopy, endotherapy versus ESWL	**Primary:** Pain relief **Secondary:** **Results:** Surgery: same results for pain relief for all techniques Surgery vs endotherapy: Long term pain relief better in surgical Group ESWL and endoscopy versus surgery: surgery better or same. **Author's Conclusion:** All are from Europe. These eight RCTs utilized 380 patients to compare a diverse variety of surgical resections, surgical drainage vs. endotherapy (trans-ampullary pancreatic stents for drainage), or endotherapy with or without shock wave lithotripsy. Therefore, these trials contained a paucity of patients for each treatment compared. Heterogeneity was evident after analysis of the study designs because they used a diverse set of inclusion and exclusion criteria usually not based on objective criteria such as ductal anatomy. All but one had short follow-up. Because of the lack of homogeneity for these study designs that were somewhat underpowered, the RCTs on the treatment of chronic pancreatitis to relieve disabling abdominal pain must be read carefully. In addition to RCTs, the case series still remains a valuable part of our literature.	

Methodical Notes

Funding Sources: not reported

COI: none

Study Quality: n.a.

Heterogeneity: high heterogenity, difficult to compare

Publication Bias: huge

Notes:

Dumonceau, J-M et al. Endoscopic treatment of chronic pancreatitis: European Society of Gastrointestinal Endoscopy (ESGE) Clinical Guideline. Endoscopy. 44. 784-800. 2012

Evidence level/Study Types	P - I - C	Outcomes/Results	Literature References
Evidence level: 1 **Study type:** guideline **Databases:** The methodology, including assessment of evidence levels and recommendation grades, was similar to that used for other ESGE Guidelines [2]. Briefly, subgroups were formed, each charged with a series of clearly defined key questions (see Appendix e2, available online). The committee chair worked with subgroup leaders to identify pertinent search terms that always included “chronic pancreatitis” and words pertinent to specific key questions. Evidence tables were generated for each key question based on the best available evidence (see Appendix e3, available online). Subgroups agreed by online communication on draft proposals that were presented to the entire group for general discussion during a meeting held in Brussels in May 2011.The results of that discussionwere incorporated into the subsequent Guideline draft version and again discussed using online communication until unanimous agreement was reached. Searches were re-run in June 2011 (this date should be taken into account for future updates). All members of the Guideline development group approved the final draft; it was	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** Summary of selected recommendations For treating painful uncomplicated chronic pancreatitis, the ESGE recommends extracorporeal shockwave thotripsy/endoscopic retrograde cholangiopancreatography as the first-line interventional option. The clinical response should be evaluated at 6–8 weeks; if it appears unsatisfactory, the patient’s case should be discussed again in a multidisciplinary team. Surgical Options should be considered, in particular in patients with a predicted poor outcome following endoscopic therapy (Recommendation grade B). For treating chronic pancreatitis associated with radiopaque stones≥5mm that obstruct the main pancreatic duct, the ESGE recommends extracorporeal shockwave lithotripsy as a first step, combined or not with endoscopic extraction of Stone fragments depending on the expertise of the Center (Recommendation grade B). For treating chronic pancreatitis associated with a dominant stricture of the main pancreatic duct,the ESGE recommends inserting a single 10-Fr plastic stent, with stent exchange planned within 1 year (Recommendation grade C). In patients with ductal strictures persisting after 12 months of single plastic stenting, the ESGE recommends that available options (e. g., endoscopic Placement of multiple pancreatic stents, surgery) be discussed in a multidisciplinary team (Recommendation grade D). For treating uncomplicated chronic Pancreatic pseudocysts that are within endoscopic reach, the ESGE recommends endoscopic drainage as a first-line therapy (Recommendation grade A). For treating chronic pancreatitis-related biliary strictures, the choice between endoscopic and surgical therapy should rely on local expertise, patient co-morbidities and expected patient compliance with repeat endoscopic procedures (Recommendation grade D). If endoscopy is elected, the ESGE recommends temporary placement of multiple, side-by-side, plastic biliary stents (Recommendation grade A). **Author's Conclusion:**	

peer-reviewed and, after modifications, sent to all individual ESGE members in February 2012 for their comments. The final guideline was endorsed by the ESGE Governing Board. Evidence statements and recommendations are shown in italics for easier reference; key evidence statements and recommendations are in bold. This Guideline will be considered for revision in 2015, or sooner if important new evidence becomes available (any interim updates will be noted on the ESGE website: http://www.esge.com/esge-guidelines.html). 3. **Search period:** not reported **Inclusion Criteria:** **Exclusion Criteria:**			

Methodical Notes

Funding Sources: Funding by ESGE

COI: all reported

Study Quality: high

Heterogeneity:

Publication Bias:

Notes:

Dumonceau, J-M et al. Biliary stenting: indications, choice of stents and results: European Society of Gastrointestinal Endoscopy (ESGE) clinical guideline. Endoscopy. 44. 277-98. 2012

Evidence level/Study Types	P - I - C	Outcomes/Results	Literature References
Evidence level: 1 **Study type:** The ESGE commissioned and funded these guidelines. The methodology was similar to that used for other ESGE guidelines **Databases:** Briefly, subgroups were charged with a series of key questions (see Appendix e1, available online). Search terms included, at a minimum, “biliary” and “stent” as well as words pertinent to specific key questions. Searches were performed on Medline (via Pubmed), the Cochrane Library, Embase, and the internet. The number of articles retrieved and selected for each task force is indicated in the Evidence Table (see Appendix e2, available online). Evidence levels and recommendation grades used in these guidelines were slightly modified from those recommended by the Scottish Intercollegiate Guidelines Network (●" Table1) [4]. Subgroups agreed electronically on draft proposals that were presented to the entire group for	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** 3.1. Stent insertion Biliary sphincterotomy is not necessary for inserting a single plastic stent or a self-expandable metal stent (SEMS) (Evidence level 1+) but it may facilitate more complex stenting procedures (Evidence level 4). Results of randomized controlled trials (RCTs) comparing biliary stenting with or without biliary sphincterotomy are contradictory. The anticipated benefits of pre-	

general discussion during two meetings held in 2010 and 2011.The subsequent Guideline version was again discussed using electronic mail until unanimous agreement was reached. Searches were rerun in December 2010 (this date should be taken into account for future updates). The final draft was approved by all members of the guideline development group; it was sent to all individual ESGE members in April 2011 and, after incorporation of their comments, it was endorsed by the ESGE Governing Board prior to submission to Endoscopy for international peer review. It was also approved by the British Society of Gastroenterology and the Deutsche Gesellschaft für Verdauungs- und Stoffwechselkrankheiten. The final revised version was approved by all members of the Guideline development group before publication. **Search period:** **Inclusion Criteria:** **Exclusion Criteria:**		stenting biliary sphincterotomy should be weighed against its risks on a case-by-case basis (Recommendation grade B). If biliary sphincterotomy is performed, blended electrosurgical current should be used (Recommendation grade A). Endoscopic biliary stenting is technically successful in >90% of attempted cases. In the case of initial failure, multiple treatment options, including repeat endoscopic attempt, have provided technical success in >80% of cases (Evidence level 1++). In the case of initial failure at endoscopic biliary stenting, the indication for stenting should be re-evaluated and, if it is maintained, the best treatment option should be selected depending on the cause of failure, the anatomy, the degree of emergency, and available resources (Recommendation grade A). 3.2.Short-term (1-month) efficacy of stents for biliary drainage Plastic stents and SEMSs provide similar short-termresults with respect to clinical success, morbidity, mortality, and improvement in quality of life. Among plastic biliary stents, polyethylene models allow relief of obstruction more frequently than Teflon-made stents of the Tannenbaum or Amsterdam type; among currently available SEMS models no significant differences were reported at 30 days (Evidence level 1++). Patient-related factors associated with failure to resolve jaundice after biliary stenting include a high baseline bilirubin level, diffuse liver metastases, and International Normalized Ratio (INR) ≥1.5 (Evidence level 2+). Short-termconsiderations should not affect the choice between biliary plastic stents and SEMSs; among plastic stents,		

			Teflonmade models should be avoided if identical designs of polyethylene-made stents are available (Recommendation grade A). In the case of cholangitis or decrease in total bilirubin level of <20% from baseline at 7 days post stent insertion, biliary imaging or endoscopic revision should be considered (Recommendation grade D). In patients with a resectable malignant CBD stricture, insertion of a plastic biliary stent followed by delayed surgery is associated with a higher morbidity compared with surgery at 1 week (Evidence level 1++). Some models of biliary SEMSs (short intrapancreatic or covered) do not impede pancreatic resection and may be used for preoperative biliary drainage in patients with malignant CBD obstruction whose surgical status is uncertain (Evidence level 2+). We recommend preoperative drainage of potentially resectable malignant CBD obstruction only in patients who are candidates for neoadjuvant therapies, in patients with acute cholangitis, or in patients with intense pruritus and delayed surgery (Recommendation grade A). Plastic as well as short intrapancreatic or covered SEMSs may be used, with a preference for SEMSs in patients who are candidates for neoadjuvant therapies (Recommendation grade C). Early complications develop in approximately 5% of patients after attempted endoscopic biliary stenting and are not related to the type of stent used (Evidence level 1++). The reader is referred to other guidelines for detailed recommendations about the prevention of infection, pancreatitis, and bleeding.		

			Late complications of biliary stenting mostly consist of stent dysfunction, which is approximately twice as frequent with plastic stents compared with SEMSs, and, much less frequently, cholecystitis, duodenal perforation, and bleeding ulcer (Evidence level 1+). Approximately 5% of plastic stents and partially covered SEMSs migrate while 1% of uncovered SEMSs and 20% of fully covered SEMSs migrate. After distal migration, most plastic stents are spontaneously eliminated. (Evidence level 1+). Migration of plastic stents is more frequent in benign as compared with malignant biliary strictures, and with single as compared with multiple stents. Endoscopic treatment of stent migration is feasible in >90% of cases with low morbidity (Evidence level 2+). In patients with migrated stents, we recommend ERCP for removing stents that have not been spontaneously eliminated and for stenting potentially persistent strictures. In the case of persistent biliary stricture, we recommend inserting multiple plastic stents or, if a SEMS is indicated, an uncovered model (Recommendation grade C). Stent occlusion is caused by sludge (in plastic stents), or by tissue ingrowth/overgrowth or sludge (in SEMSs) (Evidence level 1–). Endoscopic restoration of biliary patency is successful in >95% of patients with stent obstruction and exceptionally gives rise to complications (Evidence level 2+). For occluded SEMSs, mechanical SEMS cleansing is poorly effective for restoring biliary patency; inserting a second SEMSwithin the occluded SEMS yields a longer biliary patency than inserting a plastic stent, particularly if one of the two SEMSs (initially		

			placed or placed for treating stent dysfunction) is a covered model (Evidence level 2–). We recommend ERCP in patients with biliary stent occlusion, except when this is considered futile in patients with advanced malignant disease. Plastic stents should be exchanged for plastic (single or multiple) stents or a SEMS, according to the criteria stated above. Occlusion of biliary SEMSs should be treated by inserting a second SEMS within the occlusion (a covered model should be selected if the first SEMS was uncovered) or, in the case of a life expectancy ≤3 months, by inserting a plastic stent (Recommendation grade C). Neoplastic involvement of the cystic duct and gallbladder stones are the key risk factors for SEMS-related cholecystitis (Evidence level 2+) In the case of benign CBD strictures, temporary simultaneous placement of multiple plastic stents is technically feasible in >90% of patients; it is the endoscopic technique that provides the highest long-term biliary patency rate (90% for postoperative biliary strictures and 65% for those complicating chronic pancreatitis); it requires a mean of approximately four ERCPs over a 12-month period. Possible stricture recurrences after this treatment are usually successfully re-treated by ERCP. Temporary placement of single plastic stents provides poorer patency rates; treatment with uncovered SEMSs is plagued by high long-term morbidity; temporary placement of covered SEMSs is an investigational option that needs to be carefully evaluated by long-term follow-up studies (Evidence level 1+). In patients with benign		

		CBD strictures, we recommend temporary placement of multiple plastic stents provided that the patient consents and is thought likely to be compliant with repeat interventions. The insertion of uncovered biliary SEMSs is strongly discouraged (Recommendation grade A). Covered SEMSs are a promising alternative for selected benign CBD strictures. Because of the risk of fatal septic complications, a recall system should be set up for the care of patients who do not present for ERCP at scheduled dates (Recommendation grade D). **Author's Conclusion:**	

Methodical Notes

Funding Sources: ESGE

COI: all reported

Study Quality:

Heterogeneity:

Publication Bias:

Notes:

Gurusamy, Kurinchi Selvan et al. Management strategies for pancreatic pseudocysts. Cochrane Database Syst Rev. 4. CD011392. 2016

Evidence level/Study Types	P - I - C	Outcomes/Results	Literature References
Evidence level: 1 **Study type:** Systematic Review **Databases:** Cochrane Central Register of Controlled Trials (CENTRAL) in The Cochrane Library 2015, Issue 9, andMEDLINE, EMBASE, Science Citation Index Expanded, and trials registers until September 2015 **Search period:** until 2015 **Inclusion Criteria:** randomised controlled trials (RCTs) of people with	**Population:** Patients with Pancreatic pseudocyst or WOPN **Intervention:** endoscopic or surgical intervention **Comparison:** different techniques of drainage	**Primary:** **Secondary:** **Results:** We included four RCTs, with 177 participants, in this review. After one participant was excluded, 176 participants were randomised to endoscopic ultrasound (EUS)-guided drainage (88 participants), endoscopic drainage (44 participants), EUS-guided drainage with nasocystic drainage (24 participants), and open surgical drainage (20 participants).The comparisons included endoscopic drainage versus EUS-guided drainage (two trials), EUS-guided drainage with nasocystic drainage versus EUS-guided drainage alone (one trial), and open surgical drainage versus EUS-guided drainage (one trial). The participants were mostly symptomatic, with pancreatic pseudocysts resulting from acute and chronic pancreatitis of varied aetiology. The mean size of the pseudocysts ranged between 70 mm and 155 mm across studies. Although the trials appeared to include similar types of participants for all comparisons, we were unable to assess this statistically, since there were no direct and indirect results for any of the comparisons. All the trials were at unclear or high risk of bias, and the overall quality of evidence was low or very low for all outcomes. One death occurred in the endoscopic drainage group (1/44; 2.3%), due to bleeding. There were no deaths in the other groups. The differences in the serious adverse events were imprecise. Short-term health-related quality of life (HRQoL; four weeks to three months) was worse (MD -21.00; 95% CI -33.21 to -8.79; participants = 40; studies = 1; range: 0 to 100; higher score indicates better) and the costs were higher in the open surgical	

pancreatic pseudocysts, regardless of size, presence of symptoms, or aetiology **Exclusion Criteria:**		drainage group than the EUS-guided drainage group (MD 8040 USD; 95% CI 3020 to 13,060; participants = 40; studies = 1). There were fewer adverse events in the EUS-guided drainage with nasocystic drainage group than in the EUS-guided drainage alone (OR 0.20; 95% CI 0.06 to 0.73; participants = 47; studies = 1), or the endoscopic drainage group (indirect comparison: OR 0.08; 95% CI 0.01 to 0.61). Participants with EUS-guided drainage with nasocystic drainage also had shorter Hospital stays compared to EUS-guided drainage alone (MD -8.10 days; 95% CI -9.79 to -6.41; participants = 47; studies = 1), endoscopic drainage (indirect comparison: MD -7.10 days; 95% CI -9.38 to -4.82), or open surgical drainage group (indirect comparison: MD -12.30 days; 95% CI -14.48 to -10.12). The open surgical drainage group had longer hospital stays than the EUS-guided Drainage group (MD 4.20 days; 95% CI 2.82 to 5.58; participants = 40; studies = 1); the endoscopic drainage group had longer hospital stays than the open drainage group (indirect comparison: -5.20 days; 95% CI -7.26 to -3.14). The need for additional invasive interventions was higher for the endoscopic drainage group than the EUS-guided drainage group (OR 11.13; 95% CI 2.85 to 43.44; participants = 89; studies = 2), and the open drainage group (indirect comparison: OR 23.69; 95% CI 1.40 to 400.71). The differences between groups were imprecise for the other comparisons that could be performed. None of the trials reported long-term mortality, mediumterm HRQoL (three months to one year), long-term HRQoL (longer than one year), time-to-return to normal activities, or time-to return to work. **Author's Conclusion:** Very low-quality evidence suggested that the differences in mortality and serious adverse events between treatments were imprecise. Low-quality evidence suggested that short-termHRQoL (four weeks to threemonths) was worse, and the costs were higher in the open surgical drainage group than in the EUS-guided drainage group. Low-quality or very low-quality evidence suggested that EUS-guided drainage with nasocystic drainage led to fewer adverse events than EUS-guided or endoscopic drainage, and shorter hospital stays when compared to EUS-guided drainage, endoscopic drainage, or open surgical drainage, while EUS-guided drainage led to shorter Hospital stays than open surgical drainage. Low-quality evidence suggested that there was a higher need for additional invasive procedures with endoscopic drainage than EUS-guided drainage, while it was lower in the open surgical drainage than in the endoscopic drainage group. FurtherRCTs are needed to compare EUS-guided drainage,with orwithout nasocystic drainage, in symptomatic patientswith Pancreatic pseudocysts that require treatment. Future trials should include patient-oriented outcomes such as mortality, serious adverse events, HRQoL, hospital stay, return-to-normal activity, number of work days lost, and the need for additional procedures, for a Minimum follow-up period of two to three years.	

Methodical Notes

Funding Sources: not reported

COI: none

Study Quality: low

Heterogeneity: high

Publication Bias:

Notes:

Hu, Bing et al. Asia-Pacific consensus guidelines for endoscopic management of benign biliary strictures. Gastrointest. Endosc. 86. 44-58. 2017

Evidence level/Study Types	P - I - C	Outcomes/Results	Literature References
Evidence level: 1 **Study type:** Consensus guideline **Databases:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:**	

Search period: **Inclusion Criteria:** **Exclusion Criteria:**		**Author's Conclusion:**	

Methodical Notes

Funding Sources:

COI:

Study Quality:

Heterogeneity:

Publication Bias:

Notes:

Issa, Yama et al. Preoperative opioid use and the outcome of thoracoscopic splanchnicectomy in chronic pancreatitis: a systematic review. Surg Endosc. 28. 405-12. 2014

Evidence level/Study Types	P - I - C	Outcomes/Results	Literature References
Evidence level: 1 **Study type:** Systematic review **Databases:** PubMed, EMBASE, and The Cochrane Library for studies on the outcome of TS in CP patients. **Search period:** **Inclusion Criteria:** Studies with > 5 patients and a follow-up of >12 months were included. Thoracoscopic splanchicectomy **Exclusion Criteria:** see above	**Intervention:** **Comparison:** none	**Primary:** Success was defined as the proportion of patients free of opioids or who had a reduction of C4 points on a pain scale. The effect of Opioid use on the success rate of TS was analyzed by uni- and multivariate regression. **Secondary:** **Results:** Sixteen studies with 484 patients were included in our review. The mean (±SD) age of the patients was 44 ± 4.3 years and 66 % were male. Median follow-up period was 21 months (IQR 14–35). Median preoperative opioid use was 85 % (IQR 54–100 %). After TS, a median of 49 % (IQR 22–75 %) of patients were free of opioids at end of follow-up. The median success rate was 62 % (IQR 48–86 %). Mean success rate in studies in which B50 % of the patients used opioids preoperatively was 81 % (SD ± 21) compared to 60 % (SD ± 15) for other studies (p = 0.049). Higher age, male gender, and lower rates of preoperative opioid use were associated with a higher success rate (p = 0.003, 0.047, and 0.017, respectively). Multivariate regression, including age, gender, preoperative opioid use, and duration of follow-up, identified age and preoperative opioid use as independent predictors of success after TS (both p = 0.002). **Author's Conclusion:** Preoperative opioid use is associated with a worse outcome after TS in CP patients. To optimize outcome, use of TS may be considered at an earlier stage in the treatment of patients with CP before prolonged Opioid therapy.	

Methodical Notes

Funding Sources: not reported

COI: none

Study Quality:

Heterogeneity:

Publication Bias:

Notes:

Khan, Muhammad Ali et al. Efficacy of self-expandable metal stents in management of benign biliary strictures and comparison with multiple plastic stents: a meta-analysis. Endoscopy. 49. 682-694. 2017

Evidence level/Study Types	P - I - C	Outcomes/Results	Literature References
Evidence level: 1	**Intervention:**	**Primary:** Weighted pooled rates were	

Study type: meta-analysis **Databases:** Ovid MEDLINE and translated to match the subject headings and Keywords for Ovid EMBASE, Cochrane database, ISI Web of Science and Scopus, **Search period:** from inception through May 26 2016. **Inclusion Criteria:** Searches in several databases identified studies including ≥ 10 patients that utilized CSEMSs for BBS treatment. **Exclusion Criteria:**	**Comparison:**	calculated for stricture resolution and recurrence. Pooled risk ratios (RRs) comparing CSEMSs with MPS were calculated for stricture resolution, stricture recurrence, and adverse events. Pooled difference in means was calculated to compare number of endoscopic retrograde cholangiopancreatographies (ERCPs) in each group. **Secondary:** **Results:** The meta-analysis included 22 studies with 1298 patients. Weighted pooled rate for BBS resolution with CSEMS was 83% (95% confidence limits [95 %CLs] 78%, 87 %; I2= 72%). On meta-regression analysis, resolution in chronic pancreatitis patients and post-orthotopic liver transplant patients were significant predictors of heterogeneity. Weighted pooled rate for stricture recurrence with CSEMSs was 16% (11%, 22%). Overall rate of adverse Events requiring intervention and/or hospitalization was 15%. Four randomized controlled trials with 213 patients compared CSEMSs with MPS: the pooled RRs for stricture resolution, recurrence, and adverse events were 1.07 (0.97, 1.18), 0.88 (0.48, 1.63), and 1.16 (0.71, 1.88), respectively with no heterogeneity. Pooled difference in means for number of ERCPs was – 1.71 (– 2.33, – 1.09) in favor of CSEMS. **Author's Conclusion:** CSEMSs appear to have excellent efficacy in BBS management. They are as effective as MPS but require fewer ERCPs to achieve clinical success.	

Methodical Notes

Funding Sources: not reported

COI: non reported

Study Quality:

Heterogeneity:

Publication Bias:

Notes:

Moole, Harsha et al. Success of Extracorporeal Shock Wave Lithotripsy in Chronic Calcific Pancreatitis Management: A Meta-Analysis and Systematic Review. Pancreas. 45. 651-8. 2015

Evidence level/Study Types	P - I - C	Outcomes/Results	Literature References
Evidence level: 4 **Study type:** systematic review **Databases:** Articles were searched in Medline, PubMed, Ovid journals,EMABSE, Cumulative Index for Nursing & Allied Health Litera-ture, ACP journal club, DARE, International PharmaceuticalAbstracts, old Medline, Medline nonindexed citations, OVIDHealthstar, and Cochrane Central Register of Controlled Trials.The search was performed for the years 1966 to April 2015. Ab-stracts were manually searched in the major gastroenterologyjournals for the past 3 years. Study authors for the abstracts included in this analysis were contacted when the required data for the outcome measures could not be determined from the publications.	**Population:** Initial search identified 1471 reference articles, in which 184 articles were selected and reviewed. Data was extracted from 27 studies(N = 3189) of ESWL in the managementof CCP, which met the inclusion criterion. All the studies are pub-lished as full text articles. None of teh studies were RCTs. **Intervention:** mix of patients whounderwent only ESWL and ESWL + endoscopic procedures.	**Primary:** Primary outcomes are pain relief, narcotic usage, ductal clearance, quality of life **Secondary:** Pancrreatic exocrine and endocrine function, weight, complications of ESWL **Results:** Data were extracted from 27 studies(N = 3189) which met the inclusion criterion. The pooled proportion of pa-tients with absence of pain at follow-up was 52.7% (95% confidence interval [95% CI], 50.85–54.56) and mild to moderate pain at follow-up was33.43% (95% CI, 31.40–35.50) Quality of life improved in 88.21%	andan M, Reddy DN, Santosh D, et al. Extracorporeal shock wavelithotripsy and endotherapy for pancreatic calculi—a large single centerexperience.Indian J Gastroenterol. 2010;29:143–148. Brand B, Kahl M, Sidhu S, et al. Prospective evaluation of morphology,function, and quality of life after extracorporeal shockwave lithotripsyand endoscopic treatment of chronic calcific pancreatitis.Am J Gastroenterol. 2000;95:3428–3438. Adamek HE, Jakobs R, Buttmann A, et al. Long term follow up ofpatients with chronic pancreatitis and pancreatic stones treated withextracorporeal shock wave lithotripsy.Gut. 1999;45:402–405. Karasawa Y, Kawa S, Aoki Y, et al. Extracorporeal shock wave lithotripsyof pancreatic duct stones and patient factors related to stone disintegration.J Gastroenterol. 2002;37:369–375. Tandan M, Reddy DN, Talukdar R, et al. Long-term clinical outcomes ofextracorporeal shockwave lithotripsy in painful chronic

None of the studies included in this analysis were randomized controlledtrials. So there were no control groups for comparison. **Search period:** 1966 - 2015 **Inclusion Criteria:** Studies using ESWL in the management of CCP were se-lected. Main PD (MPD) stones greaterthan 5 mm size Failed conservative management for paincontrol. **Exclusion Criteria:** isolated stones inthe pancreas tail; multiple stones in pancreatic head, body and tail; multiple strictures in pancreatic head, body and tail; pancre-atic head mass; pancreatic pseudocyst; pregnant; and pancreaticascites	Subgroup analysis for patients with only ESWL or ESWL + endoscopic procedures was not done in the individual studies. **Comparison:**	(95% CI, 85.43–90.73) and complete ductal clearance was 70.69% (95%CI, 68.97–72.38) Narcotic use was decreased in 79.7% (95% CI, 77.40–81.96)of the pooled proportion of patients. atient's weight was constant or increased in 81.45% (95%CI, 78.64–84.11) of the pooled proportion. Number of patients requiring decreased quantity of antidiabetic medications afterESWL management was 5.15% (95% CI, 3.88–6.58). The ESWL-associated pancreatitis was noted only in 4.2% (95% CI, 3.42–5.18) **Author's Conclusion:** The ESWL is an effective and safe management option inpatients with chronic calcific pancreatitis patients with main pancreaticduct stone size greater than 5 mm who did not get adequate pain relief withconservative management.	calcificpancreatitis.Gastrointest Endosc. 2013;78:726–733. Lawrence C, Siddiqi MF, Hamilton JN, et al. Chronic calcific pancreatitis:combination ERCP and extracorporeal shock wave lithotripsy forpancreatic duct stones.South Med J. 2010;103:505–508. Wolf JS Jr, Nakada SY, Aliperti G, et al. Washington University experiencewith extracorporeal shock-wave lithotripsy of pancreatic duct calculi.Urology. 1995;46:638–642. Inui K, Tazuma S, Yamaguchi T, et al. Treatment of pancreatic stones withextracorporeal shock wave lithotripsy: results of a multicenter survey.Pancreas.2005;30:26–30. Johanns W, Jakobeit C, Greiner L, et al. Ultrasound-guided extracorporealshock wave lithotripsy of pancreatic ductal stones: six years' experience.Can J Gastroenterol. 1996;10:471–475. Kozarek RA, Brandabur JJ, Ball TJ, et al. Clinical outcomes in patients whoundergo extracorporeal shock wave lithotripsy for chronic calcificpancreatitis.Gastrointest Endosc. 2002;56:496–500. Matthews K, Correa RJ, Gibbons RP, et al. Extracorporeal shock wavelithotripsy for obstructing pancreatic duct calculi.JUrol. 1997;158:522–525. Merrill JT, Mullady DK, Early DS, et al. Timing of endoscopy afterextracorporeal shock wave lithotripsy for chronic pancreatitis.Pancreas.2011;1087–1090. Milovic V, Wehrmann T, Dietrich CF, et al. Extracorporeal shock wavelithotripsy with a transportable mini-lithotripter and subsequent endoscopictreatment improves clinical outcome in obstructive calcific chronicpancreatitis.Gastrointest Endosc. 2011;74:1294–1299. Ohara H, Hoshino M, Hayakawa T, et al. Single application extracorporealshock wave lithotripsy is the first choice for patients with pancreatic ductstones.Am J Gastroenterol. 1996;91:1388–1394. Parsi MA, Stevens T, Lopez R, et al. Extracorporeal shock wave lithotripsyfor prevention of recurrent pancreatitis caused by obstructive pancreaticstones.Pancreas. 2010;39:153–155. Sauerbruch T, Holl J, Sackmann M, et al. Extracorporeal shock wavelithotripsy of pancreatic stones.Gut.1989;30:1406–1411. Sauerbruch T, Holl J, Sackmann M, et al. Extracorporeal lithotripsy ofpancreatic stones in patients with chronic pancreatitis and pain: aprospective follow up study.Gut. 1992;33:969–972. Schneider HT, May A, Benninger J, et al. Piezoelectric shock wavelithotripsy of pancreatic duct stones.Am J Gastroenterol.1994;89:2042–2048. Schreiber F, Gurakugi GC, Pristautz H, et al. Sonographically-guidedextracorporeal shockwave lithotripsy for pancreatic stones in patientswith chronic pancreatitis.J Gastroenterol Hepatol.

			1996;11:247–251. Seven G, Schreiner MA, Ross AS, et al. Long-term outcomes associatedwith pancreatic extracorporeal shock wave lithotripsy for chronic calcificpancreatitis.Gastrointest Endosc. 2012;75:997–1004. Tadenuma H, Ishihara T, Yamaguchi T, et al. Long-term results ofextracorporeal shockwave lithotripsy and endoscopic therapy for pancreaticstones.Clin Gastroenterol Hepatol. 2005;3:1128–1135. Toom Den, Nijs HG, van Blankenstein M, et al. Extracorporeal shock wavelithotripsy of pancreatic duct stones.Am J Gastroenterol.1991;86:1033–1036. Van der Hul R, Plaisier P, Jeekel J, et al. Extracorporeal shock-wavelithotripsy of pancreatic duct stones: immediate and long-term results.Endoscopy.1994;26:573–578.

Methodical Notes

Funding Sources: not declared

COI: not declared

Study Quality: no RCT,

Heterogeneity: The heterogeneity among studieswas tested using Cochran Q test based on inverse varianceweights. IfPvalue is greater than 0.10, it rejects the null hypoth-esis that the studies are heterogeneous.

Publication Bias: The effect of publicationand selection bias on the summary estimates was tested by both Harbord-Egger bias indicator and Begg-Mazumdar bias indica-tor.
Also, funnel plots were constructed to evaluate potentialpublication bias.

Notes:

Siiki, Antti et al. Covered self-expanding metal stents may be preferable to plastic stents in the treatment of chronic pancreatitis-related biliary strictures: a systematic review comparing 2 methods of stent therapy in benign biliary strictures. J. Clin. Gastroenterol. 48. 635-43. 2014

Evidence level/Study Types	P - I - C	Outcomes/Results	Literature References
Evidence level: 4 **Study type:** Systematic revies **Databases:** The review consisted of 9 retrospective and 16 pro-spective studies. No controlled studies comparing plasticand CSEMS treatment could be included. As the quality ofthe included studies was assessed using the Newcastle-Ottawa scale (NOS),61all 25 studies received 4 or 5 in theclassifications of maximum 9 points **Search period:** between January 1, 2000 and December31, 2012. search was performed with the followingkeywords combined with appropriate Medical SubjectHeadings terms: “biliary stricture, stenosis or constriction,bile duct diseases, cholestasis,	**Population:** The search retrieved 99 studies of possible relevance. Aflowchart of the search strategy is presented in Figure 1.Twenty-five studies met the final inclusion criteria forthe review: 13 studies on multiple PS and 12 studies on CSEMS. Of the 25 studies, a total of 946 patients were includedin the review: 376 underwent treatment with CSEMS	**Primary:** The primary outcome was sustained clinical successdefined as stricture resolution without unscheduled endo-scopic interventions or treatment failure during follow-up. **Secondary:** Secondary outcome parameters were technical success rateand complications. **Results: In CP strictures**, there was tendency to better clinical success in CSEMS treatment at 12 months after stentremoval: 77% versus 33% (95% CI, 61%-94% vs. 4%-63%,P= 0.06) in CSEMS and PS, respectively. In	Sakai Y, Tsuyuguchi T, Ishihara T, et al. Long-term prognosisof patients with endoscopically treated postoperative bile ductstricture and bile duct stricture due to chronic pancreatitis.JGastroenterol Hepatol. 2009;24:1191–1197 Kuzela L, Oltman M, Sutka J, et al. Prospective follow up ofpatients with bile duct strictures secondary to laparoscopiccholecystectomy, treated endscopically with multiple stents.Hepatogastroenterology. 2005;52:1357–1361. Tabibian J, Asham E, Han S, et al. Endoscopic treatment ofpost-orthotopic liver transplantation anastomotic biliary stric-tures with maximal stent therapy.Gastrointest Endosc.2010;71:505–512. Kulaksiz H, Weiss K, Gotthard D, et al. Is stenting necessaryafter balloon dilatation of post-transplantation biliary stric-tures? Results of a prospective comparative study.Endoscopy.2008;40:746–

jaundice, chronic pancreatitis, postoperative complications of liver trans-plantation and cholecystectomy or sclerosing cholangitis"and "endoscopy, cholangiopancreatography, or stents."The analysis was based on published results **Inclusion Criteria:** Studies on endoscopic treatment ofBBS with PS or CSEMS and with reported adequate dataabout stent type, stricture etiology, complications, andoutcome were considered to meet the inclusion criteria **Exclusion Criteria:** Case reports, publications about percutaneous, oper-ative, or vascular approaches, intestinal stenting, malignantstrictures, pancreatic duct strictures and bile leaks, as wellas strictures treated with only balloon dilatation orsphincterotomy were excluded. Whenever it was notpossible to exclude cases with neoplasm, biliary fistula(leakage) or combined operative and percutaneous treat-ment, the entire study was excluded.	and570 with multiple PS.was 57 years in the CSEMS group and 51 years in the PSgroup (P= 0.06). There were 67% men in the CSEMS group and 55% in the PS group (P= 0.5). The frequency of previous endoscopic treatment attempts was reported in 8 studiesin the CSEMS group and in 1 PSstudy. **Intervention:** **Comparison:** Biliary stenting with plastic stents versus SEMS in begnin biliary stenosis: Comparison of CP versus other etilogy	othertime points of follow-up, the difference was also observable:at stent removal, 80% versus 38% (95% CI, 62%-93% vs.12%-68%,P= 0.02) and at 6 months, 74% versus 33%(61%-86% vs. 4%-63%,P= 0.02); however, theP-valuesmight not be reliable because of the small numbers ofstudies in comparisons. In other etiologies except CP therewas no difference (P= 0.08-0.9) in the success rate. The overall clinical success of CSEMS and PS in all etiologies atstent removal was 87% versus 85% (P= 0.8) and at 12months 79% versus 77% (P= 0.9). **Author's Conclusion:** Improved clinical success with fewer endoscopic ses-sions and corresponding complication rate may be achieved withCSEMS treatment compared with PS in BBS secondary to CP	751.

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Chaput U, Scatton O, Bichard P, et al. Temporary placementof partially covered self-expandable metal stents for anasto-motic biliary strictures after liver transplantation: a prospectivemulticentre study.Gastrointest Endosc. 2010;72:1167–1174
Poley JW, Cahen D, Metselar H, et al. A prospective groupsequential study evaluating a new type of fully covered self-expandable metal stent for the treatment of benign biliarystrictures.Gastrointest Endosc. 2012;75:783–789.
Kahaleh M, Behm B, Clarke B, et al. Temporary placementof covered self-expandable metal stents in benign biliarystrictures: a new paradigm?Gastrointest Endosc. 2008;67:446–454
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Tarantino I, Mangiovillano B, Mitri

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Methodical Notes			
Funding Sources: Supported by Sigrid Juse´lius Foundation, Finland and the competitiveresearch fund of Pirkanmaa Hospital District, Finland **COI:** none **Study Quality:** not app **Heterogeneity:** no statistical heterogenety analysis undertaken **Publication Bias:** **Notes:**			

OXFORD (2011) Appraisal Sheet: RCT: 8 Bewertung(en)

Ahmed Ali, Usama et al. Early surgery versus optimal current step-up practice for chronic pancreatitis (ESCAPE): design and rationale of a randomized trial. BMC Gastroenterol. 13. 49. 2013

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 1 **Study type:** **Number of Patient:** **Recruitung Phase:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** **Author's Conclusion:**

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes:
Study protocol. Final results awaited. Data presented at DDW and UEG 2018.

Cahen, Djuna L et al. Long-term outcomes of endoscopic vs surgical drainage of the pancreatic duct in patients with chronic pancreatitis. Gastroenterology. 141. 1690-5. 2011

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 1 **Study type:** RCT **Number of Patient:** 39 **Recruitung Phase:** 2000-2004 **Inclusion Criteria:** CP, pancreatic duct obstruction with Dilatation of the duct > 5 mm, severe recurrent pancreatic pain requiring opiates **Exclusion Criteria:** enlargement of pancreatic head > 4 cm, previous pancreatic surgery, suspected malignancy, life expectancy < 2 yr	**Intervention:** endoscopic Treatment (ERP and lithotrypsia) and pancreaticojejunostomy **Comparison:** endoscopy versus surgery	**Primary:** Izbicki pain score, QoL SF36, **Secondary:** **Results:** During the 79-month follow-up period, one patient was lost and 7 died from unrelated causes. Of the patients treated by endoscopy, 68% required additional drainage compared with 5% in the surgery group (P = .001). Hospital stay and costs were comparable, but overall, patients assigned to endoscopy underwent more procedures (median, 12 vs 4; P = .001). Moreover, 47% of the patients in the endoscopy group eventually underwent surgery. Although the mean difference in Izbicki pain scores was no longer significant (39 vs 22; P = .12), surgery was still superior in terms of pain relief (80% vs 38%; P = .042). Levels of quality of life and pancreatic function were comparable. **Author's Conclusion:** In the long term, symptomatic patients with advanced chronic pancreatitis who underwent surgery as the initial treatment for pancreatic duct obstruction had more relief from pain, with fewer procedures, than patients who were treated endoscopically. Importantly, almost half of the patients who were treated with endoscopy eventually underwent surgery.

Methodical Notes

Funding Sources: Astra Zeneca

COI: None declared

Randomization: 1:1

Blinding: n.a.

Dropout Rate/ITT-Analysis:

Notes:

Cahen, Djuna L et al. Endoscopic versus surgical drainage of the pancreatic duct in chronic pancreatitis. N. Engl. J. Med. 356. 676-84. 2007

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 1 **Study type:** RCT **Number of Patient:** 39 **Recruitung Phase:** 2000 - 2004 **Inclusion Criteria:** see reference Gastroenterology 2011 Cahen DL **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** Thirty-nine patients underwent randomization: 19 to endoscopic treatment (16 of whom underwent lithotripsy) and 20 to operative pancreaticojejunostomy. During the 24 months of follow-up, patients who underwent surgery, as compared with those who were treated endoscopically, had lower Izbicki pain scores (25 vs. 51, P<0.001) and better physical health summary scores on the Medical Outcomes Study 36-Item Short-Form General Health Survey questionnaire (P=0.003). At the end of follow-up, complete or partial pain relief was achieved in 32% of patients assigned to endoscopic drainage as compared with 75% of patients assigned to surgical drainage (P=0.007). Rates of complications, length of hospital stay, and changes in pancreatic function were similar in the two treatment groups, but patients receiving endoscopic treatment required more procedures than did patients in the surgery group (a median of eight vs. three, P<0.001). **Author's Conclusion:** Surgical drainage of the pancreatic duct was more effective than endoscopic treatment in patients with obstruction of the pancreatic duct due to chronic pancreatitis.

Methodical Notes

Funding Sources: Astra Zeneca

COI: none

Randomization: 1:1

Blinding:

Dropout Rate/ITT-Analysis: ?

Notes:

Dumonceau, Jean-Marc et al. Treatment for painful calcified chronic pancreatitis: extracorporeal shock wave lithotripsy versus endoscopic treatment: a randomised controlled trial. Gut. 56. 545-52. 2007

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 1 **Study type:** RCT **Number of Patient:** 55 **Recruitung Phase:** 1198-2002 **Inclusion Criteria:** had painful chronic pancreatitis with at least one calcification .4 mm in the pancreatic head or body with upstream dilation of the MPD and no previous intervention on the pancreas. **Exclusion Criteria:** Exclusion criteria included the presence of a pancreatic fluid collection .2 cm, serum alkaline phosphatases greater than twice the normal value or cholangitis, age ,18 years or pregnancy or lactation, and unwillingness to participate.	**Intervention:** ESWL alone (n = 26) or ESWL combined with endoscopy (n = 29). **Comparison:**	**Primary:** pain relapse (primary outcome) **Secondary:** costs of Treatment, somparison with the natural history of chronic pancreatitis **Results:** 2 years after trial intervention, 10 (38%) and 13 (45%) patients of the ESWL alone and ESWL combined with endoscopy group, respectively, had presented pain relapse (primary outcome) (OR 0.77; 95% CI 0.23 to 2.57). In both groups, a similar decrease was seen after treatment in the MPD diameter (mean decrease 1.7 mm; 95% CI 0.9 to 2.6; p,0.001), and in the number of pain episodes/year (mean decrease, 3.7; 95% CI 2.6 to 4.9; p,0.001). Treatment costs per patient were three times higher in the ESWL combined with endoscopy group compared with the ESWL alone group (p = 0.001). The median delay between the onset of chronic pancreatitis and persistent pain relief for both groups was 1.1 year (95% CI 0.7 to 1.6), as compared with 4 years (95% CI 3 to 4) for the natural history of chronic pancreatitis in a reference cohort (p,0.001). **Author's Conclusion:** ESWL is a safe and effective preferred treatment for selected patients with painful calcified chronic pancreatitis. Combining systematic endoscopy with ESWL adds to the cost of patient care, without improving the outcome of pancreatic pain.

Methodical Notes

Funding Sources:

COI: non

Randomization: 1:1; block randomization of 6

Blinding: n.a.

Dropout Rate/ITT-Analysis:

Notes:

Haapamäki, Carola et al. Randomized multicenter study of multiple plastic stents vs. covered self-expandable metallic stent in the treatment of biliary stricture in chronic pancreatitis. Endoscopy. 47. 605-10. 2015

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 1 **Study type:** prospective multicenter rendomized controlled trial **Number of Patient:** 60 **Recruitung Phase:** 2008-2017 **Inclusion Criteria:** indication for biliary Drainage due to CP **Exclusion Criteria:**	**Intervention:** all patients received a plastic stent before randomization, at the second endoscopy either a fcSEMS or 3 plastic stents were placed. **Comparison:** fcSEMS vs plastic	**Primary:** stricture free success rate **Secondary:** **Results:** Two patients dropped out of the cSEMS group before stent removal. In April 2014, the median follow-up was 40 months (range 1–66 months). The 2-year, stricture-free success rate was 90% (95% confidence interval [CI] 72%–97%) in the plastic stent group and 92% (95 %CI 70%–98%) in the cSEMS group (P=0.405). There was one late recurrence in the plastic stent group 50 months after stent removal. Stent migration occurred three times (10 %) in the plastic stent Group and twice in the cSEMS group (7 %; P=1.000).Two patients dropped out of the cSEMS group before stent removal. In April 2014, the median follow-up was 40 months (range 1–66 months). The 2-year, stricture-free success rate was 90% (95% confidence interval [CI] 72%–97%)in the plastic stent group and 92% (95 %CI 70%–98%) in the cSEMS group (P=0.405). There was one late recurrence in the plastic stent group 50 months after stent removal. Stent migration occurred three times (10 %) in the plastic stent group and twice in the cSEMS group (7 %; P=1.000). **Author's Conclusion:** A 6-month treatment with either six 10-Fr plastic stents or with one 10-mm cSEMS produced good long-term relief of biliary stricture caused by chronic pancreatitis.

Methodical Notes

Funding Sources: not reported

COI: non reproted

Randomization: 1:1

Blinding: not possible

Dropout Rate/ITT-Analysis: 5/60

Notes:

Olesen, Søren S et al. Is Timing of Medical Therapy Related to Outcome in Painful Chronic Pancreatitis?. Pancreas. 45. 381-7. 2016

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 4 **Study type:** RCT **Number of Patient:** **Recruitung Phase:** **Inclusion Criteria:** Key inclusion criteria were a diagnosis of CP based on The Mayo Clinic Diagnostic Criteria and the presence of chronic ab-dominal pain (ie, pain≥3 days per week in at least 3 months).Patients taking concomitant analgesic medication were allowed to enter the study if they were expected to stay on a stable regimen during the trial. The prior analgesic regimen was continued throughout the trial.	**Intervention:** Patients with an obstructive component of pain were treated by endotherapy or surgery according to localclinical practice prior to enrolment. Baseline assessment of clinical pain scores for 1 week followed by a 3-week period ofpregabalin or placebo treatment. Patients received escalating doses of pregabalin (300–600 mg/d)or matching placebo capsules. Daily dosages were split into 2 equivalent doses. A daily pain score (ie, the intensity of pain for the	**Primary:** if timing of medical treatment is associated with the analgesic effect of pregabalin or placebo in patients with chronic pancreatitis **Secondary:** The following factors were included as supplementary fea-tures (not related to timing) in the prediction analysis: patient demographics (sex and age), etiology of CP, smoking and drinkinghabits, and diabetes.

Exclusion Criteria: patients with painful conditions other than CP were excluded from the study.	last24 hours) was collected by a pain diary based on a visual analogscale (VAS), where 0 = no pain and 10 = worst pain imaginable. Timing of Medical Therapy was investigated: Information on duration of CP and the use of pain medications including opioid equivalents was obtained from clinical in-terview at the baseline visit and through review of the individual patient records. **Comparison:**	**Results:** In the conventional statistical analysis duration of CP (odds ratio,0.9; 95% confidence interval, 0.8–1.1;P= 0.3) and opioid treatment (oddsratio, 1.0; 95% confidence interval, 0.9–1.1;P= 0.6) were not associatedwith pain relief. In addition, none of the supplementary factors were associated with treatment response (allP> 0.1). Likewise, in the individual patient-level analysis, none of the included variables reached classification accuracies greater than chance level (all P>0.1) **Author's Conclusion:** Pregabalin can be added as adjuvant analgesic at any timepoint during the disease course of CP

Methodical Notes

Funding Sources: no funding

COI: no conflict of interests

Randomization: RCT

Blinding: not declared

Dropout Rate/ITT-Analysis: not declared

Notes:

Stevens, Tyler et al. Adding triamcinolone to endoscopic ultrasound-guided celiac plexus blockade does not reduce pain in patients with chronic pancreatitis. Clin. Gastroenterol. Hepatol. 10. 186-91, 191.e1. 2012

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 5 **Study type:** RCT **Number of Patient:** 40 **Recruitung Phase:** 2008 - 2010 **Inclusion Criteria:** age more than 18 years, ability to give informed consent, and chronic pancreatic pain. patients with a baseline visual analogue scale (VAS) score of 3 or higher **Exclusion Criteria:** pregnancy, malignancy, acute pancreatitis within 2 months, increased international	**Intervention:** EUS-CPB was per-formed as previously described,1using a transgastric approach to injection of the celiac plexus. Bilateral injections were made (10 mLeach) to the right and left of the celiac origin using a 22-gaugeneedle. Based on the randomization allocation, patients received either a solution composed of 18 mL of bupivacaine 0.25% mixed with 2 mL of triamcinolone (80 mg) or 18 mL bupivacaine mixedwith 2 mL of saline. **Comparison:** EUS - CPB with triamcolon + bupivacain vs. bupivacain	**Primary:** differences in the primary end point, defined as a 10-point decrease in the PDI at 1 month. **Secondary:** difference in immediate pain relief, change in VASat 1 month, change in McGill pain score at 1 month, duration ofpain relief, change in opiate consumption, and change in quality oflife (mental and physical components of the SF-12 questionnaire). **Results:** There were no signifi-cant differences in primary outcomes between groups (14.3%for patients who received triamcinolone vs 15.8% for controls;P.64). The trial was stopped for futility. There was no signif-icant difference between groups in immediate response rates(85.7% for patients who received triamcinolone vs 68.4% forcontrol;P.10), or other secondary end points, includingchange in pain visual analogue scale (0.4 vs 1.0;P 0.83),treatment with morphine equivalents at 1 month (7.8 vs 0.0;P 0.35), change in quality of life at 1 month (SF-12 mentalcomponent: 1.3 vs 2.1;P 0.44; and physical component: 0.2 vs 1.7;P 0.54), or adverse events. The duration ofresponse was shorter in the triamcinolone group (mean, 5.3 vs0.6 mo;P 0.01). **Author's Conclusion:** no benefit of adding triamcolon

normalized ratio (<1.5) or low platelet count (<75 cells/mm3), orallergy to eggs or caine anesthetics		

Methodical Notes

Funding Sources: Supported by an American Society of Gastrointestinal Endoscopyand TAP Pharmaceuticals Endoscopic Research Award 200

COI: none

Randomization: yes

Blinding: yes

Dropout Rate/ITT-Analysis: none

Notes:

Wilcox, C M et al. A randomized trial comparing endoscopic stenting to a sham procedure for chronic pancreatitis. Clin Trials. 6. 455-63. 2009

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 1 **Study type:** only study proposal **Number of Patient:** **Recruitung Phase:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** **Author's Conclusion:**

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes:
Only study proposal

OXFORD (2011) Appraisal Sheet: Prognostic Studies: 3 Bewertung(en)

Farnbacher, Michael J et al. Pancreatic endoprostheses in chronic pancreatitis: criteria to predict stent occlusion. Gastrointest. Endosc. 63. 60-6. 2006

Population	Intervention	Outcomes/Results
Evidence level: 1 **Study type:** retrospective study to identify prognsotic factors of stent clogging **Number of Patient:** 100 stents 47 patients **Recruitung Phase:** 2000-2001 **Inclusion**	**Intervention:** measurement of stent occlusion in plastic endoprostheses simulating pathologically increased pancreatic-duct pressure. **Comparison:**	**Primary:** **Secondary:** **Results:** Occlusion took place in nearly all endoprostheses (97%). No significant association of occlusion with clinical or blood parameters was found. Multifactorial analysis proved 4 risk factors for major stent occlusion: (A) stent diameter O8.5F, (B) stent length O8 cm, (C) female gender, (D) exocrine pancreatic insufficiency that required regular oral enzyme supplementation. According to the relative risk, these factors were given the following scores: A, 3 points; B to D, 2 points. Stents in patients with a score sumO5 showed a significantly higher risk of major stent occlusion within 90 days. **Author's Conclusion:** Stent clogging in CP seems to be an inevitable phenomenon. Because clinical and laboratory data do not reliably indicate clogging, stent removal or exchange should be performed in high-risk patients (score sum O5) within 3 months.

Criteria: Pancreatic duct stent for CP after removal **Exclusion Criteria:** broken stent		

Methodical Notes

Funding Sources: intramural academic funding

COI: none

Randomization: n.a.

Blinding: n.a.

Dropout Rate/ITT-Analysis: not reported

Notes:

Ford, Kathryn et al. Surgical Success in Chronic Pancreatitis: Sequential Endoscopic Retrograde Cholangiopancreatography and Surgical Longitudinal Pancreatojejunostomy (Puestow Procedure). Eur J Pediatr Surg. 26. 232-9. 2016

Population	Intervention	Outcomes/Results
Evidence level: 2 **Study type:** single-center, retrospective review of children **Number of Patient:** 9 **Recruitung Phase:** 10 yrs **Inclusion Criteria:** chromnic pancreatitis, pain **Exclusion Criteria:** none	**Intervention:** ERCP and surgery with Puestow procedure **Comparison:** none	**Primary:** pain **Secondary:** lifestyle scoring **Results:** In this study, eight (M:F ratio of 4:4) children underwent an LPJ and one female child had a more limited pancreatojejunostomy anastomosis following preliminary ERCP and stent placement where possible. Diagnoses included hereditary pancreatitis (n ¼ 3), idiopathic or structural pancreatitis (n ¼ 5), and duct stricture following radiotherapy (n ¼ 1). Median duct diameter presurgery was 5 (4–11) mm. Endoscopic placement of a Zimmon pancreatic stent was possible in six with relief of symptoms in all. Median age at definitive surgery was 11 (range, 7–17) years with a median postoperative stay of 9 (range, 7–12) days and a follow-up of 6 (range, 0.5–12) years. All children reported markedly reduced episodes of pain postprocedure. One developed diabetes mellitus, while three had exocrine deficiency (fecal elastase < 200 µg/g) requiring enzyme supplementation. The child with limited LPJ had symptomatic recurrence and required restenting and further surgery to widen the anastomosis to become pain free. **Author's Conclusion:** ERCP and stenting provide a therapeutic trial to assess possible benefit of a definitive duct drainage procedure. LPJ—the modified Puestow operation was safe and complication-free with good medium-term relief of symptoms. We were not able to identify a consistent etiology-associated outcome.

Methodical Notes

Funding Sources: not indicated

COI: none

Randomization: no

Blinding: no

Dropout Rate/ITT-Analysis: n.a.

Notes:

Tantau, Alina et al. Prognostic factors of response to endoscopic treatment in painful chronic pancreatitis. World J. Gastroenterol. 23. 6884-6893. 2017

Population	Intervention	Outcomes/Results
Evidence level: 2 **Study type:** retrosepective study **Number of Patient:** 168 **Recruitung Phase:** 2010-2015	**Intervention:** ERCP with pancreatic drainage due to pancreatic strictures; pancreatic intraductal stones and pancreatic strictures and intraductal stones	**Primary:** The first parameter taken into account was abdominal pain relief in patients with pancreatic drainage. The pain character and intensity was quantified based on patients' medical records at study enrollment and at end of follow-up **Secondary:** Influence of age, smoking, alcohol consumption on the outcome of endo therapy **Results:** Among 168 patients 39 (23.21%) had optimal response to the medical therapy. 129 patients required endoscopic treatment. The median follow-up period was 15 mo (range, 0-60 mo). Technical success of endotherapy was achieved in 105 patients (81.39%). 82.78% had substantial improvement of pain

Inclusion Criteria: All patients with painful CP hospitalized for treatment during January 2010-January 2015 **Exclusion Criteria:** Patients with good response to medical therapy and without required endotherapy were excluded from the study (n = 39).	EUS guided Pseudocyst drainage, ESWL **Comparison:** Comparison of endohterapy groups: pancreatic strictures vs. pancreatic intraductal stones vs pancreatic strictures and intraductal stones	after the endoscopic treatment, including frequency and severity of the pain attacks. Patients younger than 40 years had significantly more successful endoscopic procedures (P= 0.041). Clinical success was higher in non-smoking patients (P = 0.003). The number and location of pancreatic stones and locations of strictures did not significantly influence the technical success (P > 0.05) or the clinical success (P > 0.05). **Author's Conclusion:** Younger age than 40 years can be considered an important factor positively influencing endoscopic treatment outcome in patients with painful chronic pancreatitis.

Methodical Notes

Funding Sources: none

COI: no conflict

Randomization: none

Blinding: none

Dropout Rate/ITT-Analysis: not app

Notes:

NEWCASTLE - OTTAWA Checklist: Case Control: 2 Bewertung(en)

Catalano, Marc F et al. Treatment of symptomatic distal common bile duct stenosis secondary to chronic pancreatitis: comparison of single vs. multiple simultaneous stents. Gastrointest. Endosc. 60. 945-52. 2004

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:** prospective cohort study compared to histoic Control monocentric	**Funding sources:** not reported **Conflict of Interests:** none **Randomization:** n.a. **Blinding:** n.a. **Dropout rates:** not reported	**Total no. patients:** 46 **Patient characteristics:** 1993-2002 **Inclusion criteria:** distal CBD stricture due to CP **Exclusion criteria:** Prior biliary surgery, Hepatitis, malignancy, duodenal stenosis	**Interventions:** Stent Placement, plastic in CBD **Comparison:** single stent versus multiple stents
Notes:	**Author's conclusion:** Distal common bile duct stenosis secondary to chronic pancreatitis can be treated long term by stent placement. Multiple, simultaneous stents appear to be superior to single stent placement and may provide good long-term benefit. The former resulted in near normalization of biochemical tests of liver function and an increase in distal common bile duct diameter. Multiple stent placement may obviate the need for surgical diversion procedures.		
Outcome Measures/results	**Primary** stricture Resolution, **Secondary**	**Results:** n Group I, (34 patients), a total of 162 single stent placement/exchanges were performed (mean 5/patient). In Group II (12 consecutive patients), 8 patients had 4 (10F) stents placed simultaneously, and 4 patients had 5 (10F) stents. At the end of the treatment period, near normalization of biochemical tests of liver function was observed for all patients in Group II, whereas only marginal benefit was noted for patients in Group I. Four patients in Group I had recurrent cholangitis (6 episodes), whereas no patient in Group II had post-procedure cholangitis. In the 12 patients with multiple stents, distal common bile duct stenosis diameter increased from a mean of 1.0 mm to 3.0 mm after treatment; no change in diameter was noted in patients treated with a single stent.	

Li, Bai-Rong et al. Extracorporeal shock wave lithotripsy is a safe and	**Total no. patients:** Primary outcomes were P-ESWL adverse events,	**Interventions:** not reporetd

effective treatment for pancreatic stones coexisting with pancreatic pseudocysts. Gastrointest. Endosc. 84. 69-78. 2016 5 mm). **Funding sources:** **Dropout rates: Patients were initially subjected to successive P-ESWL treatments, followed by ERCP.** **Study limitations: PPC group (stones coexisting with PPCs) or the control group (stones alone).**	**Recruiting Phase:** secondary outcomes were stone clearance, long-term pain relief, improved quality-of-life scores, and PPC regression. **Inclusion criteria:** A total of 849 patients (59 in the PPC group and 790 in the control group) was subjected to P-ESWL between March 2011 and October 2013. Occurrences of P-ESWL adverse events were similar between the PPC group and the control group (11.86% vs 12.41%, P Z .940). After the treatment of initial P-ESWL combined with ERCP, the complete, partial, and nonclearance of stones occurred in 67.24%, 20.69%, and 12.07%, respectively, of patients in PPC group, with no significant difference from the control group (complete, partial, and nonclearance: 83.17%, 10.40%, and 11.39%, respectively; P Z .106). Fifty-five of 59 patients (93.22%) with PPCs were followed for a median period of 21.9 months (range, 12.0-45.1). PPCs disappeared in 56.36% (31/55) and 76.36% (42/55) of patients after 3 months and 1 year of follow-up visits, respectively. Moreover, complete and partial pain relief were achieved in 63.64% (35/55) and 25.45% (14/55) of patients, respectively. The scores for quality of life (P < .001), physical health (P < .001), and weight loss (P < .001) improved. **Exclusion criteria:** In our multispecialty tertiary center, initial P-ESWL followed by ERCP was safe in patients with coexisting pancreatic stones and PPCs and effective for stone clearance, main pancreatic duct drainage, and pain relief.		

Notes:	**Author's conclusion:** none	
Outcome Measures/results	**Primary** n.a. **Secondary** n.a.	**Results:** n.a.

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Evidence level

Evidence level: 1

Study type: prospective case Control study

Notes:

Methodical Notes	**Patient characteristics**	**Interventions**
Funding sources: not reporetd **Conflict of Interests:** none **Randomization:** n.a. **Blinding:** n.a. **Dropout rates:** n.a.	**Total no. patients:** 849 **Patient characteristics:** 2011-2013 **Inclusion criteria:** CP patients with at least 1 stone (5 mm). **Exclusion criteria:**	**Interventions:** Patients were initially subjected to successive P-ESWL treatments, followed by ERCP. **Comparison:** PPC group (stones coexisting with PPCs) or the control group (stones alone).

Author's conclusion: In our multispecialty tertiary center, initial P-ESWL followed by ERCP was safe in patients with coexisting pancreatic stones and PPCs and effective for stone clearance, main pancreatic duct drainage, and pain relief.

Outcome Measures/results	**Primary** Primary outcomes were P-ESWL adverse events, **Secondary** secondary outcomes were stone clearance, long-term pain relief, improved quality-of-life scores, and PPC regression. **Results:** A total of 849 patients (59 in the PPC group and 790 in the control group) was subjected to P-ESWL between March 2011 and October 2013. Occurrences of P-ESWL adverse events were similar between the PPC group and the control group (11.86% vs 12.41%, P Z .940). After the treatment of initial P-ESWL combined with ERCP, the complete, partial, and nonclearance of stones occurred in 67.24%, 20.69%, and 12.07%, respectively, of patients in PPC group, with no significant difference from the control group (complete, partial, and nonclearance: 83.17%, 10.40%, and 11.39%, respectively; P Z .106). Fifty-five of 59 patients (93.22%) with PPCs were followed for a median period of 21.9 months (range, 12.0-45.1). PPCs disappeared in 56.36% (31/55) and 76.36% (42/55) of patients after 3 months and 1 year of follow-up visits, respectively. Moreover, complete and partial pain relief were achieved in 63.64% (35/55) and 25.45% (14/55) of patients, respectively. The scores for quality of life (P < .001), physical health (P < .001), and weight loss (P < .001) improved.

NEWCASTLE - OTTAWA Checklist: Cohort: 59 Bewertung(en)

Ahmed Ali, Usama et al. Clinical outcome in relation to timing of surgery in chronic pancreatitis: a nomogram to predict pain relief. Arch Surg. 147. 925-32. 2012

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:** cohort study	**Funding sources:** not reported **Conflict of Interests:** none **Randomization:** n.a. **Blinding:** n.a. **Dropout rates:** n.a.	**Total no. patients:** 266 **Recruiting Phase:** between 8 and 15 years **Inclusion criteria:** confirmed diagnosis of CP and pain as primary indication for surgery **Exclusion criteria:** other indications for surgery than pain, malignancy at time of surgery	**Interventions:** Drainage procedures, left sided pancreatic resection **Comparison:** surgery within 3 years of symptom onset or thereafter.
Notes:	**Author's conclusion:** Surgery may need to be considered at an earlier Phase. Preferably within 3 years of onset of symptomatic CP (Pain).		
Outcome Measures/results	**Primary** Pain relief (VAS), pancreatic function and QoL **Secondary**	**Results:** Pain relief in 149 patients. Earlier surgery better pain relief and less endocrine insufficiency. Better pain relief in patients not taking Opioids preoperatively or fewer than 5 endoscopic Treatments. probability achieving pain relief varied between 23 and 75%.	

Attwell, Augustin R et al. Endoscopic retrograde cholangiopancreatography with per oral pancreatoscopy for calcific chronic pancreatitis using endoscope and catheter-based pancreatoscopes: a 10-year single-center experience. Pancreas. 43. 268-74. 2014

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:** Corhort study, case series	**Funding sources:** Boston Scientific and Olympus **Conflict of Interests:** see above **Randomization:** none	**Total no. patients:** 46 **Recruiting Phase:** 2000-2011 **Inclusion criteria:** ? not given. Discussion on MDT **Exclusion criteria:** ?	**Interventions:** ERP with pancreaticoscopy and electrohydraulic lithotripsy. **Comparison:** none

	Blinding: n.a **Dropout rates:** one Patient lost to follow-up		
Notes:	**Author's conclusion:** Per oral pancreatoscopy-guided endotherapy leads to partial or complete stone clearance in most patients with PD stones. The technical success rates between POP-Endo versus POP-Cath systems appear similar and are associated with clinical improvement in most patients.		
Outcome Measures/results	**Primary** technical: complete or partial stone removal.clinical greater than 50% of reduction in opiate use, pain or hospitalization **Secondary**	**Results:** Forty-six patients underwent POP for PD stones using a 10F cholangioscope (POP-Endo) (n = 31) or catheter-based system (POP-Cath, n = 15). Electrohydraulic lithotripsy/LL was performed in 39 (85%) of 46 patients. Stone extraction without EHL or LL was performed in 7 (15%) of 46 patients. Technical success for POP-Endo versus POP-Cath was 27 (87%) of 31 versus 15 (100%) of 15 patients (P = 0.29). Complete clearance was achieved in 21 (68%) of 31 versus 11 (73%) of 15 patients, respectively (P = 0.519). Per oral pancreatoscopy-related complications were found in 10%. Follow-up in 43 (93%) of 46 patients was a median of 18 months (range, 1-60 months). Overall clinical success was 74%.	

Attwell, Augustin R et al. ERCP with per-oral pancreatoscopy-guided laser lithotripsy for calcific chronic pancreatitis: a multicenter U.S. experience. Gastrointest. Endosc. 82. 311-8. 2015

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:** retrospective cohort	**Funding sources:** industry **Conflict of Interests:** Consulting for industry **Randomization:** n.a. **Blinding:** n.a. **Dropout rates:** not given	**Total no. patients:** 28 **Recruiting Phase:** 2008-2011 **Inclusion criteria:** retrospectively identified **Exclusion criteria:** retrospectively identified, prior pancreatic surgery	**Interventions:** ERP plus pancreatoscopy and laser lithotrypsia **Comparison:** none
Notes:	**Author's conclusion:** POP-LL is feasible at expert centers in patients with accessible stones. Although intensive endotherapy is required, most patients achieve stone clearance and clinical improvement.		
Outcome Measures/results	**Primary** technical sucess rate: Stone clearance **Secondary** clinical success rate	**Results:** ver 3 years, 28 patients (16 men, 51 years [mean age]) underwent a median of 1 (range, 1-4) POP-LL for PD stones. Baseline parameters included pain requiring hospitalization (n=19, 68%), opiate use (n=14, 50%), or weight loss (n=11, 39%). Before POP-LL, 22 of 28 patients (79%) had a median of 1 (range, 1-5) ERCP, 9 of 28 (32%) underwent a median of 2 (range, 1-3) ESWL sessions, and 5 underwent a median of 1 (range, 1-3) POP-guided electrohydraulic lithotripsy with failed (n=2) or partial (n=3) fragmentation. A median of 2 (range, 1-3) stones sized 15 mm (range, 4-32 mm) were identified in the head (n=9, 32%), neck (n=3, 11%), body (n=9, 32%), tail (n=1, 4%), or multiple sites (n=6, 21%). Technical success occurred in 22 patients (79%) with complete clearance. Partial clearance occurred in 3 (11%). Clinical success at a median of 13 (range, 1-25) months of follow-up was noted in 25 of 28 patients (89%) by improvement in pain (n=25), decreased narcotic use (n=25), or reduced hospitalizations (n=19). Mild adverse events occurred in 8 of 28 (29%).	

Barkay, Olga et al. Therapeutic EUS-assisted endoscopic retrograde pancreatography after failed pancreatic duct cannulation at ERCP. Gastrointest. Endosc. 71. 1166-73. 2010

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:** retrospective cohort	**Funding sources:** not given **Conflict of Interests:** none **Randomization:** n.a. **Blinding:** n.a. **Dropout rates:** n.a.	**Total no. patients:** 21 **Recruiting Phase:** 1999-2009 **Inclusion criteria:** failed ERP because of failed Deep cannulation. **Exclusion criteria:** n.a.	**Interventions:** EUS guided pancreatography and endoscopic rendezvous **Comparison:** non, feasibility
Notes:	**Author's conclusion:** EUS-assisted ERP is a complex procedure that can provide access to the PD in selected cases after failed standard ERP.		
Outcome Measures/results	**Primary** Overall success rate **Secondary**	**Results:** The PD was of a normal diameter in 7 patients and was dilated in 14 patients. EUS-guided pancreatography was successfully done in all patients with a dilated PD but only in 4 of 7 patients (57%) with normal-diameter PDs. In 6 patients, ERP was successfully performed by using methylene blue flow as an indicator of the PD orifice. The rendezvous technique was successful in 4 of 12 cases (33%), and reasons for failure were either a tight stricture (n = 5) or a suboptimal angle of EUS needle insertion (n = 3). Overall, EUS-assisted ERP was successful in 10 of 21 patients (48%). Complications included peripancreatic abscess in 1 patient and mild pancreatitis in 1 patient.	

Behm, B et al. Partially covered self-expandable metallic stents for benign biliary strictures due to chronic pancreatitis. Endoscopy. 41. 547-51. 2009

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:** retrospective cohort	**Funding sources:** grant support Boston Scientific, Cook, Olympus. **Conflict of Interests:** see above **Randomization:** n.a. **Blinding:** n.a. **Dropout rates:** n.a.	**Total no. patients:** 20 **Recruiting Phase:** 2000-2006 **Inclusion criteria:** benign biliary stricture due to chronic pancreatitis **Exclusion criteria:** missing patients' consent, fcSEMS covering the cystic duct, failure of ERC, concern of malignant stricture.	**Interventions:** ERC with stent placement **Comparison:** non
Notes:	**Author's conclusion:** In this series of patients with BBS due to chronic pancreatitis, temporary PCMS placement achieved persistent stricture resolution in the majority of patients with acceptable complication rates. Comparative trials evaluating temporary PCMS placement and plastic stenting in patients with BBS due to chronic pancreatitis are needed.		
Outcome Measures/results	**Primary** The primary outcome of interest was the proportion of patients with stricture resolution persisting 6 months after stent removal. Secondary outcomes included the stent failure rate, number of endoscopic sessions required to achieve biliary drainage, total duration of stenting, and complication rate. **Secondary**	**Results:** dequate biliary drainage was achieved in 19 patients with PCMS (95%). Eighteen of the 20 patients (90%) had persistent stricture resolution 6 months after PCMS removal. In two of the 20 patients (10%), PCMS stenting failed and these patients underwent alternative therapies. Complications occurred in four patients (20%). Median duration of PCMS placement was 5 months, requiring a median of two endoscopic procedures.	

Bhasin, Deepak Kumar et al. Clinical presentation and outcome of endoscopic therapy in patients with symptomatic chronic pancreatitis associated with pancreas divisum. JOP. 14. 50-6. 2013

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:** retrospective cohort study	**Funding sources:** not reported **Conflict of Interests:** None reported **Randomization:** n.a. **Blinding:** n.a. **Dropout rates:** not reported	**Total no. patients:** 48 **Recruiting Phase:** 1996-2011 **Inclusion criteria:** chronic pancreatitis and pancreas divisum, abdominal pain **Exclusion criteria:** not reported	**Interventions:** Stenting of the dorsal duct (Santorini) **Comparison:** none
Notes:	**Author's conclusion:** Intensive pancreatic endotherapy is safe and effective both in patients with chronic calcific, as well as non-calcific, pancreatitis associated with pancreas divisum. It gives good long term response in patients having abdominal pain and/or dorsal ductal disruptions.		
Outcome Measures/results	**Primary** pain resolution **Secondary**	**Results:** All patients presented with abdominal pain and symptoms were present for 36.6 ± 40.5 months. Pseudocyst, diabetes, pancreatic ascites, pancreatic pleural effusion, segmental portal hypertension and steatorrhea were seen in 13 (27.1%), 6 (12.5%), 3 (6.3%), 2 (4.2%), 2 (4.2%) and 1 (2.1%) patients, respectively. Ductal calculi and strictures were noted in 3 (6.3%) and 2 (4.2%) patients, respectively. In 47 patients, an endoprosthesis (5 or 7 Fr) was successfully placed in the dorsal duct. Following pancreatic endotherapy, 45/47 (95.7%) patients had successful outcome. The mean number of stenting sessions required to have clinical success was 2.6 ± 0.9. One patient each had mild post ERCP pancreatitis, inward migration of stent and precipitation of diabetic ketoacidosis. Over a follow up of 2-174 months (median: 67 months), 12 out of 31 patients with pain only and no local complications (38.7%) required restenting for recurrence of pain and none of these patients required surgery.	

Bhutiani, Neal et al. Comparative Efficacy of Bilateral Thoracoscopic Splanchnicectomy for Intractable Pain Secondary to Pancreatic Cancer vs Chronic Pancreatitis. J. Am. Coll. Surg. 224. 566-571. 2017

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:** retrospective cohort study	**Funding sources:** not reported **Conflict of Interests:** None reported **Randomization:** n.a. **Blinding:** n.a. **Dropout rates:** not reported	**Total no. patients:** 75 **Recruiting Phase:** 1998-2016 **Inclusion criteria:** bilateral thoracoscopic splanchnicectomy **Exclusion criteria:**	**Interventions:** **Comparison:** bilateral thoracoscopic splanchnicectomy
Notes:	**Author's conclusion:** Bilateral thoracoscopic splanchnicectomy safely, effectively, and durably relieves abdominal pain in patients with both pancreatic cancer and chronic pancreatitis. However, it is more effective in providing pain relief and preventing pain-related hospitalizations in patients with pancreatic cancer compared with those with chronic pancreatitis.		

Outcome Measures/results	**Primary** reduction i pain, narcotic analgesic requirement, Hospital Admission. **Secondary**	**Results:** After bilateral thoracoscopic splanchnicectomy, 28% of pancreatic cancer patients continued to experience abdominal pain compared with 57% of chronic pancreatitis patients. Daily narcotic dose decreased for 74% of pancreatic cancer compared with 32% of chronic pancreatitis patients ($p < 0.001$). Sixty-seven percent of pancreatic cancer patients discontinued pain medications completely compared with 14% of chronic pancreatitis patients ($p < 0.001$). Hospitalizations decreased significantly in both groups ($p < 0.001$; $p = 0.001$), although mean number of postoperative hospitalizations was lower for pancreatic cancer (0.5) compared with chronic pancreatitis patients (2.80) ($p < 0.001$). Mean follow-up was significantly shorter for pancreatic cancer patients than for chronic pancreatitis patients (8 months vs 32 months; $p < 0.001$)

Bi, Yan et al. Obstructive jaundice in autoimmune pancreatitis can be safely treated with corticosteroids alone without biliary stenting. Pancreatology. 16. 391-6. 2016

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 4 **Study type:** Case-series	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Binmoeller, K F et al. Transpapillary and transmural drainage of pancreatic pseudocysts. Gastrointest. Endosc. 42. 219-24. 1995

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:** retrospective cohort	**Funding sources:** not reported **Conflict of Interests:** not reported **Randomization:** n.a. **Blinding:** n.a. **Dropout rates:** n.a.	**Total no. patients:** 53 **Recruiting Phase:** 1985-1992 **Inclusion criteria:** symptomatic pseudocyst with failed conservative management **Exclusion criteria:**	**Interventions:** transpapillary Drainage (33), transmural Drainage (20), four both **Comparison:** non, feasibility
Notes:	**Author's conclusion:** Both transpapillary and transmural pseudocyst drainage are highly effective in patients with pseudocysts demonstrating suitable anatomy for these endoscopic techniques.		
Outcome Measures/results	**Primary** technical success, clinical succuss: cyst Resolution, complications **Secondary**	**Results:** Endoscopic drainage was technically successful in 50 patients (94%), of whom 47 had complete pseudocyst resolution. Complications occurred in 11% and included gallbladder puncture (n = 1) and bleeding (n = 2) after transmural drainage, and pancreatitis (n = 1) after transpapillary drainage; stent clogging resulted in abscess formation in 2 patients. Mean follow-up was 22 months (range, 1 to 70); pseudocysts recurred in 11 patients (23%), of whom 7 were successfully re-treated endoscopically.	

Brown, Nicholas G et al. Minor papilla endotherapy in patients with ventral duct obstruction: identification and management. Gastrointest. Endosc. 85. 365-370. 2017

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:** retrospective cohort study	**Funding sources:** Consultants for Boston, Olympus and Cook **Conflict of Interests:** see above **Randomization:** n.a. **Blinding:** n.a. **Dropout rates:** not reported	**Total no. patients:** 464 **Recruiting Phase:** 1993-2015 **Inclusion criteria:** Minor papilla cannulation **Exclusion criteria:**	**Interventions:** minor papilla endotherapy including sphincterotomy, stricture Dilatation, stenting, Stone removal. **Comparison:** none
Notes:	**Author's conclusion:** In this multicenter experience, 15% of patients undergoing minor papilla cannulation had acquired a ventral PD		

	obstruction. Access via the minor papilla to the upstream main PD for endotherapy and clinical improvement was achieved in most patients. Increased and early recognition of these intensive therapeutic options may enhance treatment options for this complex group of patients.	
Outcome Measures/results	**Primary** > 50% reduction in pain or narcotic analgesia **Secondary**	**Results:** Over a 22-year period, 464 patients had minor papilla cannulation. Congenital and incomplete pancreas divisum were excluded, and 64 patients met study criteria. Technical success was achieved in 58 of 64 patients (91%). In patients with stones, 25 of 34 (74%) had clearance using endoscopic techniques. Median follow-up was 15.5 months. Twelve of 28 patients (43%) on chronic narcotic regimens reported a reduction in narcotic use by >50%, and 32 of 44 patients (73%) reached for discussion noted improved abdominal pain by >50%. Thirteen patients required surgery for symptom control.

Burton, F et al. Use and perceived effectiveness of non-analgesic medical therapies for chronic pancreatitis in the United States. Aliment. Pharmacol. Ther. 33. 149-59. 2011

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:** retrospective analysis of data from prospective cohort study	**Funding sources:** **Conflict of Interests:** **Randomization:** none **Blinding:** none **Dropout rates:**	**Total no. patients:** 516 chronic pancreatitis patients **Recruiting Phase:** 2000-2006 **Inclusion criteria:** entry criteria for CP included definitive evidence on computed tomography scan and/or endoscopic retrograde cholangiopancreatography with the Cambridge class II or more (83%) or documentation of CP using magnetic resonance cholangiopancreatography, endoscopic ultrasound (EUS) or pancreatic histology in other enrollees **Exclusion criteria:**	**Interventions:** detailed questionnaire on personal and family history, risk factors, symptoms and quality of life, and an additional questionnaire was completed by a physicianinvestigator with expertise in pancreatic diseases. The physician questionnaire contained questions relating to clinical phenotype, working diagnosis, risk factors, diagnostic and therapeutic interventions; physician was asked, 'Which therapies were attempted, and which of these were helpful', and given specific categories for medical (including PERT, AO, CPB and octreotide), endoscopic and surgical treatment **Comparison:**
Notes:	**Author's conclusion:** Pancreatic enzyme replacement therapy is commonly utilized, but is considered useful in only subsets of chronic pancreatitis patients. Other medical therapies are used infrequently and have limited efficacy		
Outcome Measures/results	**Primary** **Secondary**	**Results:** . At least one of the four medical therapies was tried in 383/516 (74%) patients. In 283 (55%), only one medical therapy was utilized, while two or more than two medical therapies were used in 89/516 (17%) and 11/516 (2%) patients respectively Physicians perceived PERT to be most effective in patients with EI without pain (19/24, 79%) followed by EI with pain (49/98, 50%), and least effective in either pain category without EI. In contrast to PERT, other therapies were used infrequently in patients with CP: the second most commonly used modality was AO, in 71/516 (14%), followed by CPB in 34/516 (7%) and octreotide in 28/516 (5%) patients. Similar to PERT, the usage of other therapies correlated with the presence of symptoms (P < 0.01).	

Buscher, Hessel C J L et al. Limited effect of thoracoscopic splanchnicectomy in the treatment of severe chronic pancreatitis pain: a prospective long-term analysis of 75 cases. Surgery. 143. 715-22. 2008

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:** retrospective Analysis of consecutive cases	**Funding sources:** not reported **Conflict of Interests:** not reported **Randomization:** n.a. **Blinding:** n.a. **Dropout rates:** not reported	**Total no. patients:** 75 **Recruiting Phase:** 1994-2005 **Inclusion criteria:** painful chronic pancreatitis **Exclusion criteria:** not reported	**Interventions:** bilateral thoracoscopic splanchnicectomy **Comparison:** pain relief < 1 year after bilateral thoracoscopic splanchnicectomy
Notes:	**Author's conclusion:** Splanchnicectomy offers prolonged (>4 years) benefit in 1 of 4 patients with severe chronic pancreatitis pain. Prior opioid use may adversely impact pain relief after splanchnicectomy.		
Outcome Measures/results	**Primary** Long term pain relief > 1 year **Secondary**	**Results:** A total of 66 patients (88%) were on continuous opioids; 47 (63%) had prior pancreatitis-related interventions. Treatment was successful in 52% of patients at 12 months, 38% at 24 months, and 28% at 48 months. At the end of follow-up, 21 patients (28%) reported pain relief, of whom 13 were completely pain free without any additional treatment. Pancreatic surgery after failed splanchnicectomy relieved pain in only 13% of patients. Technical success was the only independent factor significantly associated with successful splanchnicectomy outcome (P = .03). Preoperative opioid use showed a strong tendency to be associated with unsuccessful outcome (P = .07).	

Cahen, Djuna L et al. A biodegradable non-covered self-expandable stent to treat pancreatic duct strictures in chronic pancreatitis: a proof of principle. Gastrointest. Endosc. 87. 486-491. 2018

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:** proof of Concept, prospective cohort study	**Funding sources:** None given **Conflict of Interests:** non relevant **Randomization:** n.a. **Blinding:** n.a. **Dropout rates:** not reported	**Total no. patients:** 19 **Recruiting Phase:** 2013-2015 **Inclusion criteria:** CP, benign fibrotic pancreatic duct stricture, previous endoscopic plastic stent therapy with failed stricture Resolution. **Exclusion criteria:** previous surgery	**Interventions:** Placement of biodegradable pancreatic duct stent **Comparison:** none
Notes:	**Author's conclusion:** These preliminary results show that BD-SESs are safe to use and able to resolve fibrotic PD strictures in CP. These encouraging outcomes warrant further testing.		
Outcome Measures/results	**Primary** feasbility, stent patency, stricture Resolution, technical and clinical success rate **Secondary**	**Results:** BD-SESs were successfully placed in all 19 patients without adverse events. In 2 cases, stent occlusion with sludge and stones was treated by a balloon swipe. One stent disintegrated during this procedure, after which placement of the plastic stent was resumed. A hyperplastic response was observed in 2 patients but did not result in functional obstruction. Stricture resolution was accomplished in 11 patients (technical success rate 58%). Six patients required further treatment of their PD stricture, 4 endoscopically and 2 surgically. Three additional patients underwent surgery for other reasons: 2 Whipple procedures for CP-related adverse events and one tail resection for an intraductal papillary mucinous neoplasm. The remaining 10 patients did not require further PD drainage (clinical success rate 52%).	

Cheruvu, C V N et al. Conservative treatment as an option in the management of pancreatic pseudocyst. Ann R Coll Surg Engl. 85. 313-6. 2003

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:** retrospective cohort study	**Funding sources:** not reported **Conflict of Interests:** none **Randomization:** n.a. **Blinding:** n.a. **Dropout rates:** not reported	**Total no. patients:** 36 **Recruiting Phase:** 11 year period **Inclusion criteria:** pancreatic pseudocyst **Exclusion criteria:**	**Interventions:** Observation. In case of persistent Symptoms Drainage of pseudocyst **Comparison:** none
Notes:	**Author's conclusion:** These results suggest that many patients with pancreatic pseudocysts can be managed conservatively if presenting symptoms can be controlled.		
Outcome Measures/results	**Primary** complications. Cyst Resolution. **Secondary**	**Results:** ll patients were initially managed conservatively and intervention, either by radiological-assisted external drainage or cyst-enteric drainage (by surgery or endoscopy), was only performed for persisting symptoms or complications. Patients treated conservatively had 6 monthly follow-up abdominal ultrasound scans (USS) for 1 year. Fourteen of the 36 patients (39%) were successfully managed conservatively, whilst 22 patients required intervention either by percutaneous radiological drainage (12), by endoscopic cystogastrostomy (1) or by open surgical cyst-enteric anastomosis (9). Median size of the pancreatic pseudocysts in the 14 patients managed conservatively (7 cm) was nearly similar to that of the 22 patients requiring intervention (8 cm). The most common indications for invasive intervention in the 22 patients were persistent pain (16), gastric outlet obstruction (4), jaundice (1) and dyspepsia with weight loss (1). Although one patient required surgery for persistent pain, no other patients required urgent or scheduled surgery for complications of untreated pancreatic pseudocysts. Two of the 12 patients treated by percutaneous radiological drainage had recurrence of pancreatic pseudocysts requiring surgery. Two patients developed an intra-abdominal abscess following cyst-enteric drainage of pancreatic pseudocysts and one patient had a pulmonary embolism. On the mean follow-up of 37.3 months, one patient with alcoholic pancreatitis died 5 months after surgical cyst-enteric bypass.	

Clarke, Bridger et al. Endoscopic therapy is effective for patients with chronic pancreatitis. Clin. Gastroenterol. Hepatol. 10. 795-802. 2012

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:** prospective cohort, retrospective analysis	**Funding sources:** NIH **Conflict of Interests:** none **Randomization:** n.a. **Blinding:** n.a. **Dropout rates:** not reported	**Total no. patients:** 146 **Recruiting Phase:** 2000-2006 **Inclusion criteria:** chronic pancreatitis in NAPS Study **Exclusion criteria:**	**Interventions:** endoscopic therapy **Comparison:** medical Treatment versus endoscopic treatment

Notes:	**Author's conclusion:** ET is clinically successful for 50% of patients with symptomatic CP. When ET is not successful, surgery has successful outcomes in 50% of patients. Symptoms resolve in 31% of symptomatic patients who receive only medical therapy.		
Outcome Measures/results	**Primary** cessation of narcotic therapy, Resolution of episodes of acute pancreatitis **Secondary**	**Results:** Patients who underwent ET had more symptoms (pain, recurrent pancreatitis) and had more complex pancreatic morphology (based on imaging) than patients who received medical therapy. ET had a high rate of technical success (60 of 71 cases; 85%); its rates of clinical success were 51% for 28 of 55 patients for whom follow-up data were available (mean time, 4.8 ± 3.0 y) and 50% for 12 of 24 patients who underwent surgery after receiving ET. Patients who responded to ET were significantly older, had a shorter duration of disease before ET, had less constant pain, and required fewer daily narcotics than patients who did not respond to ET. Among the 36 symptomatic patients who received medical therapy and were followed up for a mean period of 5.7 ± 4.1 years, 31% improved and 53% had no change in symptoms; of these, 21% underwent surgery.	

Cremer, M et al. Endoscopic management of cysts and pseudocysts in chronic pancreatitis: long-term follow-up after 7 years of experience. Gastrointest. Endosc. 35. 1-9. 1989

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:** retrospective cohort study	**Funding sources:** not reported **Conflict of Interests:** non reported **Randomization:** n.a. **Blinding:** n.a. **Dropout rates:** not reported	**Total no. patients:** 33 **Recruiting Phase:** not reported **Inclusion criteria:** symptomatic pseudocyst **Exclusion criteria:**	**Interventions:** endoscopic cyst drainage **Comparison:** none
Notes:	**Author's conclusion:** When restricted to the precise morphological indication (paraintestinal cyst bulging into the duodenal or gastric lumen), ECD is the first choice for treatment of paraduodenal cysts, whereas ECG is an alternative procedure for the drainage of retrogastric pseudocysts, offering at least results as good as percutaneous drainage.		
Outcome Measures/results	**Primary** feasibility , success rates, relpase rate **Secondary**	**Results:** Endoscopic cystoenterostomy was performed in 33 patients with chronic pancreatitis. Endoscopic cystoduodenostomy (ECD) was done in 22 cases of symptomatic paraduodenal cysts and endoscopic cystogastrostomy (ECG) in 11 cases of retrogastric pseudocysts. The success rates were 96% for ECD and 100% for ECG. The relapse rate was 9% after ECD and 19% after ECG. No significant complications were observed after successful ECD and clinical relief of pain was achieved in 20 patients. ECD was an effective and definitive treatment for 19 of the 22 cases. Two complications of ECG were gastric hemorrhage and iatrogenic pseudocyst infection. In two ECG patients, percutaneous drainage was required. ECG alone was a definitive treatment for 8 of the 11 cases.	

Devière, Jacques et al. Successful management of benign biliary strictures with fully covered self-expanding metal stents. Gastroenterology. 147. 385-95; quiz e15. 2014

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:** non randomized multicenter, multinational prospective cohort study	**Funding sources:** Boston Scientific **Conflict of Interests:** reported **Randomization:** n.a. **Blinding:** n.a. **Dropout rates:** 5 lost to follow-up	**Total no. patients:** 187 **Recruiting Phase:** not reported **Inclusion criteria:** CP, OLT, and CCY patients aged 18 years and older could be enrolled if ERCP with stent placement was indicated for BBS of the common bile duct. Patients both with and without a history of previous plastic stent treatment were eligible. **Exclusion criteria:** Exclusion criteria were stricture Location within 2 cm of the hilum, prior biliary SEMS, suspected ischemia, bile duct perforation, known fistula, or symptomatic duodenal stenosis with gastric stasis.	**Interventions:** The fully covered WallFlex Biliary RX Stent is available in diameters of 8 or 10 mm and in lengths of 60 or 80 mm. An additional length of 40 mm is available for the 10-mm Diameter stent only. Composed of radiopaque wire in a cylindric mesh with flares at both ends and a translucent silicone polymer covering, the stent includes a retrieval loop to facilitate removal. Scheduled removal after 10-12 month. **Comparison:**
Notes:	**Author's conclusion:** In a large prospective multinational study,removal success of FCSEMS after extended indwell and stricture resolution were achieved for approximately 75% of patients. ClincialTrials.gov number, NCT01014390.		
Outcome Measures/results	**Primary** The primary outcome measure was removal success, defined as either scheduled endoscopic removal of the stent with no removal-related serious adverse events or spontaneous stent passage without the need for immediate restenting. Median follow up after stricture Resolution 20.3 month **Secondary**	**Results:** Endoscopic removal of FCSEMS was not performed for 10 patients because of death (from unrelated causes), withdrawal of consent, or switch to palliative treatment. For the remaining 177 patients, removal success was accomplished in 74.6% (95% confidence interval [CI], 67.5%–80.8%). Removal success was more frequent in the chronic pancreatitis group (80.5%) than in the liver ransplantation (63.4%) or cholecystectomy (61.1%) Groups (P ¼ .017). FCSEMS were removed by endoscopy from all patients in whom this procedure was attempted. Stricture resolution without restenting upon FCSEMS removal occurred in 76.3% of patients (95% CI, 69.3%–82.3%). The rate of resolution was lower in patients with FCSEMS migration (odds ratio, 0.22; 95% CI, 0.11–0.46). Over a median follow-up period of 20.3 months (interquartile range, 12.9–24.3 mo), the rate of stricture recurrence was 14.8% (95% CI, 8.2%–20.9%). Stent- or removal-related serious adverse events, most often cholangitis, occurred in 27.3% of patients. There was no stent- or removal-related mortality.	

Eleftherladis, N et al. Long-term outcome after pancreatic stenting in severe chronic pancreatitis. Endoscopy. 37. 223-30. 2005

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:** retrospective cohort study	**Funding sources:** not reported **Conflict of Interests:** non **Randomization:** n.a. **Blinding:** n.a. **Dropout rates:** not reported, retrospective design	**Total no. patients:** 100 **Recruiting Phase:** 1998-2002 **Inclusion criteria:** severe obstructive pancreatitis, dominant PD stricture, successfully treated with plastic stents, daily pain or recurrent attacks of pain with a frquency more than three severe episodes per year. Stent exchangeon demand **Exclusion criteria:** local complications, previous Pancreatic surgery, ductal disruption, malignacy, unable to follow up for 1 year	**Interventions:** ERP **Comparison:** none
Notes:	**Author's conclusion:** The majority (70 %) of patients with severe chronic pancreatitis who respond to pancreatic stenting maintain this response after definitive stent removal. However, a significantly higher re-stenting rate was observed in patients with chronic pancreatitis and pancreas divisum.		
Outcome Measures/results	**Primary** pain, Long term Outcome after stent removal **Secondary**	**Results:** A total of 100 patients (75 men, 25 women; median age 49) with severe chronic pancreatitis and pancreatic duct strictures were successfully treated for pancreatic pain using polyethylene pancreatic stents and were followed up for at least 1 year after stent removal. The stents were exchanged "on demand" (in cases of recurrence of pain) and a definitive stent removal was attempted on the basis of clinical and endoscopic findings. Clinical variables were retrospectively assessed as potential predictors of re-stenting. RESULTS: The etiology of the chronic pancreatitis was alcoholic (77 %), idiopathic (18 %), or hereditary (5 %). Patients were followed up for a median period of 69 months (range 14 - 163 months) after study entry, including a median period of 27 months (range 12 - 126 months) after stent removal. The median duration of pancreatic stenting before stent removal was 23 months (range 2 - 134 months). After attempted definitive stent removal, 30 patients (30 %) required re-stenting within the first year of follow-up, at a median time of 5.5 months after stent removal (range 1 - 12 months), while in 70 patients (70 %) pain control remained adequate during that period. By the end of the follow-up period a total of 38 patients had required re-stenting and four ultimately underwent pancreaticojejunostomy. Pancreas divisum was the only factor significantly associated with a higher risk of re-stenting (P = 0.002).	

Ergun, M et al. Endoscopic ultrasound-guided transluminal drainage of pancreatic duct obstruction: long-term outcome. Endoscopy. 43. 518-25. 2011

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:** retrospective cohort, single center	**Funding sources:** not reported **Conflict of Interests:** none **Randomization:** n.a. **Blinding:** n.a. **Dropout rates:** n.a.	**Total no. patients:** 20 **Recruiting Phase:** 2000-2009 **Inclusion criteria:** pancreatic drainage because of failed ERCP. Of the 31 patientFailure of ERCP was defined as follows: (i) inability to reach the papilla because of surgical diversions; (ii) impossibility of deep cannulation of the pancreatic duct due to chronic pancreatitis.s, 11 (33 %) underwent surgical drainage and 20 (77 %) underwent EUS-PD. **Exclusion criteria:**	**Interventions:** **Comparison:** EUS guided PD cannulation and rendezvous
Notes:	**Author's conclusion:** Technical success rate of EUS-PD and clinical long-term pain resolution were 90% and 72%, respectively. EUS-PD is a reliable procedure with a low complication rate. It might therefore replace surgery at expert centers		
Outcome Measures/results	**Primary** feasibility, pain **Secondary**	**Results:** We retrospectively analyzed our single-center experience over a 10-year period. Results: EUS-PD was attempted in 20 patients (24 interventions), with a median age of 64 years (range 36–78). Indications for the procedure were post-Whipple symptomatic anastomotic stricture (n = 10) and chronic pancreatitis (n = 10). EUS-PD was performed by a transgastric (n = 16) or transbulbar (n = 3) route or with a Rendezvous technique (n = 5). Wirsungography was performed in all interventions and successful drainage was achieved in 18/20 (90 %) patients. There were two minor procedure-related complications: bleeding that was treated endoscopically, and a perigastric collection that resolved spontaneously. Median follow up was 37 months (range 3–120 months), stent dysfunction occurred in 9/ 18 (50 %) patients. Out of 18 patients with successful EUS-PD, long-term pain resolution was observed in 13 (72 %). At the last follow-up visit, there were significant decreases in pain scores, from 7.5 to 1.6, and in MPD size from 8.1mm to 3.9 mm. Failure was associated with cancer presence or recurrence.	

Farnbacher, Michael J et al. Interventional endoscopic therapy in chronic pancreatitis including temporary stenting: a definitive treatment?. Scand. J. Gastroenterol. 41. 111-7. 2006

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:** Retrospective cohort study	**Funding sources:** not reported **Conflict of Interests:** none	**Total no. patients:** 98 **Recruiting Phase:** not reported **Inclusion criteria:** symptomatic CP (84 M, 14 F; 499/12, 23/87 years) limited endoscopic treatment including temporary stent placement in the pancreatic duct using standard techniques [1/7]. The indications for stent placement were MPD strictures and/or pancreatic duct	**Interventions:** ERP with stent Placement (5-12 Fr).

	Randomization: n.a. **Blinding:** n.a. **Dropout rates:** not given	stones not removable endoscopically combined with epigastric, typically belt-like pancreatic pain in the 12 months before treatment, which was stratified according to Amann's classification [20], as well as signs of exocrine pancreatic dysfunction. **Exclusion criteria:** n.a.	**Comparison:** na.a
Notes:	**Author's conclusion:** Temporary stent placement as a part of interventional endoscopic therapy in CP shows a high rate of technical and long-term clinical success, with no need for secondary treatment in a remarkable number of patients. Continued cessation of alcohol consumption supports the treatment benefit significantly		
Outcome Measures/results	**Primary** need for secondary intervention, further pain sensations **Secondary**	**Results:** In 98 patients suffering from symptomatic CP (84 M, 14 F, 499/12, age range 23/83 years) endotherapy including temporary stenting of the pancreatic duct was performed. After final stent removal, indicating the primary end-point of endotherapy, 96 patients were followed for 359/28 (8 days/111) months. All data were assessed retrospectively. Results. As well as other endoscopic procedures, a total of 358 prostheses were inserted in the pancreatic duct and left in place for 39/1 (1 day/11) months. Total stent treatment time was 109/10 (6 days/49) months. At 469/27 (4/111) months after limited endotherapy, 57 patients had no need for secondary intervention, two-thirds were even ithout further pain sensations. In 22 patients, surgical treatment and in 17 patients further endoscopic therapy became necessary, which was significantly correlated with continued alcohol consumption.	

Giacino, C et al. Fully covered self-expanding metal stents for refractory pancreatic duct strictures in chronic pancreatitis. Endoscopy. 44. 874-7. 2012

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:** retrospective cohort	**Funding sources:** not reported **Conflict of Interests:** None reported **Randomization:** n.a. **Blinding:** n.a. **Dropout rates:** not reported, retrospective design	**Total no. patients:** 10 **Recruiting Phase:** 2009-2010 **Inclusion criteria:** painful chronic pancreatitis with refractory pancreatic strictures **Exclusion criteria:**	**Interventions:** Placement of fcSEMS in dominant Pancreatic duct stricture in painful CP **Comparison:**
Notes:	**Author's conclusion:** Endoscopic Treatment of refractory MPD stricture in chronic pancreatitis by placement of an FC-SEMS appears feasible, safe, and potentially effective.		
Outcome Measures/results	**Primary** primary endpoints were technical success and procedure-related morbidity. **Secondary** Secondary endpointswere pain relief at the end of follow-up and resolution of the dominant pancreatic stricture at endoscopic retrograde pancreatography	**Results:** Over 5 months, 10 patients with painful chronic pancreatitis and refractory dominant pancreatic duct strictures were treated with FC-SEMSs. All FCSEMSs were successfully released and removed, although two stents were embedded in the MPD at their distal end and treated endoscopically without complications. Mild abdominal pain was noted in three patients after stent release. During treatment, pain relief was achieved in nine patients,but one continued to take morphine, because of addiction. Cholestasis developed in two patients and was treated endoscopically; no Patient developed acute pancreatitis or pancreatic sepsis. After stent removal, the diameter of the narrowest MPD stricture had increased significantly from 3.5mm to 5.8mm. Patients were followed up for amean of 19.8 months: two patients who continued drinking alcohol presented with mild acute pancreatitis; one patient developed further chronic pancreatic pain; and one had a transient pain episode. At the end of the study, nine patients no longer had chronic pain and no patients had required surgery.	

Glass, Lisa M et al. Spectrum of use and effectiveness of endoscopic and surgical therapies for chronic pancreatitis in the United States. Pancreas. 43. 539-43. 2014

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:** prospective cohort study	**Funding sources:** NIH **Conflict of Interests:** none **Randomization:** n.a. **Blinding:** n.a. **Dropout rates:** not reported	**Total no. patients:** 515 **Recruiting Phase:** 2000-2006, NAPS-2 cohort **Inclusion criteria:** CP patients with previous endotherapy **Exclusion criteria:**	**Interventions:** none **Comparison:** none
Notes:	**Author's conclusion:** Although surgical therapies were performed less frequently than endoscopic therapies, they were more often reported to be effective		
Outcome Measures/results	**Primary** **Secondary**	**Results:** Biliary and/or pancreatic sphincterotomy (42%) were the most commonly attempted endoscopic procedure (biliary stent, 14%; pancreatic stent, 36%; P<0.001). Endoscopic procedures were equally effective (biliary sphincterotomy, 40.0%; biliary stent, 40.8%; pancreatic stent, 47.0%; P=0.34). On multivariable analysis, the presence of abdominal pain (odds ratio, 1.82; 95% 95% confidence interval, 1.15–2.88) predicted endoscopy, whereas exocrine insufficiency (Odds ratio, 0.63; 95% confidence interval 0.42–0.94) deterred endoscopy. Surgical therapies were attempted equally (cyst removal, 7%; drainage procedure, 10%; resection procedure, 12%)	

		except for surgical sphincteroplasty (4%; P<0.001). Surgical sphincteroplasty was the least effective therapy (46%; P<0.001) versus cyst removal (76% drainage [71%] and resection [73%]).

He, Yuan-Xiang et al. Endoscopic management of early-stage chronic pancreatitis based on M-ANNHEIM classification system: a prospective study. Pancreas. 43. 829-33. 2014

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:** retrospective cohort	**Funding sources:** None reported **Conflict of Interests:** None reported **Randomization:** n.a. **Blinding:** n.a. **Dropout rates:** 1 patient lost to follow-up	**Total no. patients:** 89 **Recruiting Phase:** 2008-2009 **Inclusion criteria:** symptomatic chronic pancreatitis with available MRCP **Exclusion criteria:** asymptoamtic, None stage 1 after Mannheim Classification	**Interventions:** ERCP **Comparison:** Stage 1a und stage 1b
Notes:	**Author's conclusion:** We demonstrated that a sophisticated M-ANNHEIM classification system for CP will improve diagnosis by allowing for more timely intervention. Furthermore, prompt treatment of CP may achieve improved pain relief and patient outcomes.		
Outcome Measures/results	**Primary** pain during the 2-year follow-up period, expressed as the mean of the Izbicki pain scores obtained before endotherapy and at 24 months **Secondary** measureswere pain relief at the end of follow-up, morbidity, mortality, total number of procedures performed, and changes in exocrine and endocrine pancreatic functions. Pain relief at the end of follow-up was classified as complete (Izbicki pain score e 10) or partial (Izbicki pain score 9 10 after a decrease of 950%). Treatment was considered to have failed in patients who converted from endoscopic drainage to surgery and in those who died because of treatment.	**Results:** There was a significant improvement in mean (SD) Izbicki pain scores obtained at 24months among patients receiving endoscopic therapy at stage 1a compared with those at stage 1b (4.9 [3.0] vs 14.5 [6.9], P = 0.012). Furthermore, significantly more patients receiving endoscopic therapy at stage 1a achieved complete + partial pain relief after 2-year follow-up than those at stage 1b (95.2% vs 78.0%, P = 0.021). There was no exocrine or endocrine insufficiency, but a significantly greater number of patients treated at stage 1a had post-endoscopic retrograde cholangiopancreatography pancreatitis compared with those at stage 1b (10.5% vs 2.7%, P = 0.025).	

Heinzow, Hauke Sebastian et al. Single-step versus multi-step transmural drainage of pancreatic pseudocysts: the use of cystostome is effective and timesaving. Scand. J. Gastroenterol. 46. 1004-13. 2011

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:** retrospective cohort	**Funding sources:** non reported **Conflict of Interests:** non reported **Randomization:** n.a. **Blinding:** n.a. **Dropout rates:** not reported	**Total no. patients:** 38 **Recruiting Phase:** 2005-2010 **Inclusion criteria:** symptomatic pancreatic pseudocyst **Exclusion criteria:**	**Interventions:** single step or multistep transgastric Drainage with pigtails **Comparison:** single versus multistep
Notes:	**Author's conclusion:** The use of single-step cystostome appears useful in managing selected patients with symptomatic pancreatic pseudocysts as it is effective and timesaving		
Outcome Measures/results	**Primary** tecnical feasibility, clinical outcome **Secondary**	**Results:** The technical success rate for using the single-step procedure was 94% compared with multi-step procedure with 83% (n.s.). Primary clinical success rate was 88% for single-step drainage and 90% for the multi-step approach (n.s.). The mean procedure time was 36 ± 9 min in the singlestep group compared with 62 ± 12 min for the multi-step access (p < 0.001).	

Hookey, Lawrence C et al. Endoscopic drainage of pancreatic-fluid collections in 116 patients: a comparison of etiologies, drainage techniques, and outcomes. Gastrointest. Endosc. 63. 635-43. 2006

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:** retrospective cohort	**Funding sources:** None reported **Conflict of Interests:** None reported **Randomization:** n.a. **Blinding:** n.a. **Dropout rates:** 34	**Total no. patients:** 116 **Recruiting Phase:** 1999-2003 **Inclusion criteria:** All patients with a peripancreatic-fluid collection who were undergoing endoscopy with the intent of therapeutic drainage were considered for inclusion **Exclusion criteria:** Exclusion criteria included patients who were undergoing an examination for diagnostic purposes only, suspected neoplastic cysts, or dystrophic duodenal cysts (groove pancreatitis).	**Interventions:** underwent endoscopic drainage or puncture of PFCs **Comparison:** none
Notes:			

	Author's conclusion: Endoscopic drainage of pancreatic-fluid collections is successful in the majority of patients and is accompanied by an acceptable complication rate.	
Outcome Measures/results	**Primary** technical feasibility, clinical success, recurrence **Secondary**	**Results:** total of 116 patients presented with fluid collections classified as acute fluid collection (nZ 5), necrosis (nZ 8), acute pseudocyst (n Z 30), chronic pseudocyst (n Z 64), and pancreatic abscess (n Z 9). The median diameter of the collection drained was 60 mm (15-275 mm). Median follow-up after drainage was 21 months. The drainage technique was transpapillary in 15 patients, transmural in 60, and both in 41. Successful resolution of symptoms and collection occurred in 87.9% of cases. No difference in success rates was observed between patients with acute pancreatitis and those with chronic pancreatitis. However, drainage of organized necrosis was associated with a significantly higher failure rate than other collections. No significant differences were observed regarding success when disease, drainage technique, or site of drainage was considered. Complications occurred in 13 patients (11%), and there were 6 deaths in the 30 days after drainage, including one that was procedure related.

Hu, Liang-Hao et al. Extracorporeal Shock Wave Lithotripsy for Chinese Patients With Pancreatic Stones: A Prospective Study of 214 Cases. Pancreas. 45. 298-305. 2016

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:** prospective cohort	**Funding sources:** not reported **Conflict of Interests:** None reported **Randomization:** n.a. **Blinding:** n.a. **Dropout rates:** not reproted	**Total no. patients:** 214 **Recruiting Phase:** 2011-2012 **Inclusion criteria:** Chronic pancreatitis patients with pain as their major symptom were considered for interventional therapy.20Medical therapy was previously unsuccessful in relieving pain in CP patients. Extracorporeal shock wave lithotripsy was performed only if the pancreatic stones were more than 5 mm in diameter and if endoscopic pancreatic sphincterotomy, basket trawl, or balloon Trawl was not advisable. **Exclusion criteria:** Subjects with isolated pancreatic tail calculi, suspected malignancy, pancreatic ascites, and pregnancy were not considered for ESWL.	**Interventions:** ESWL and stone removal. **Comparison:** none

Notes:	**Author's conclusion:** Thus, ESWL is a safe and effectivemethod to treat Chinese patients with pancreatic stones. This procedure can significantly improve the success rate of endotherapy.	
Outcome Measures/results	**Primary** efficacy of MPD stone clearance as well as the success and complications of ESWL and ERCP.Demographic data, location, stone number and size, aswell as transient adverse events were also collected. **Secondary** A multivariate analysis of the possible factors related to pain relief was applied. In addition, quality-of-life scores were also documented before ESWL and during last follow-up. The quality-of-life scores were based on a scale of 1 to 10, in which 1 represents the lowest quality of life and 10 represents the best quality of life.13 In addition, quality-of-life scale scoreswere also assessed using theMedical Outcomes Study 36-Item Short-Form General Health Survey (SF-36) questionnaire.26,27 Physical and mental healthwas assessed according to the SF-36 questionnaire scores. Weight change, steatorrhea, and diabetes were also documented.	**Results:** A total of 473 ESWL procedures were performed in 214 patients. Stones were fragmented in all cases. Complete clearance of main pancreatic duct stones and successful endoscopic decompression were achieved in 155 (72.4%) and 188 (90.8%) of 214 patients, respectively. Complications were observed after 20 sessions (20 of 473, 4.23%). Follow-up (n = 195) after 18.5 ± 3.3 months showed that complete and partial pain relief were achieved in 71.3% and 24.0% of the patients, respectively. The scores for the quality of life (5.8 ± 1.7 vs 8.1 ± 1.2, P < 0.05) and mental health from the Medical Outcomes Study 36-Item Short-Form General Health Survey questionnaire (62.2 ± 21.5 vs 68.5 ± 16.4, P < 0.05) improved after ESWL.

Kahl, Stefan et al. Risk factors for failure of endoscopic stenting of biliary strictures in chronic pancreatitis: a prospective follow-up study. Am. J. Gastroenterol. 98. 2448-53. 2003

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:** prospective cohort study	**Funding sources:** not reported **Conflict of Interests:** n.a. **Randomization:** n.a. **Blinding:** n.a. **Dropout rates:** not reported	**Total no. patients:** 61 **Recruiting Phase:** 1996-1999 **Inclusion criteria:** symptomatic CBD stricture caused by chronic pancreatitis **Exclusion criteria:**	**Interventions:** CBD Stenting **Comparison:**

Notes:	**Author's conclusion:** Endoscopic drainage of biliary obstruction provides excellent short term but only moderate long term results. Patients without calcifications of the pancreatic head benefit from biliary stenting. Patients with calcifications were identified to have a 17-fold (95% CI 4–74) increased risk of failure of a 12 month course of endoscopic stenting.	
Outcome Measures/results	**Primary** identification of risk factors of failure of stenting	**Results:** Initial endoscopic drainage was successful in all cases, with complete resolution of obstructive jaundice. After 1 yr from the initial stent insertion, in 19 patients (31.1%) the obstruction was resolved, and stents were removed without any need of additional procedures. During a median follow-up of 40 months (range 18–66 months), 16 patients had no recurrence of symptomatic CBD stricture (long term success rate 26.2%). Of 45 patients who needed definitive therapy, 12 patients (19.7%) were treated with repeated plastic stent insertion and three (4.9%) with Insertion of a metal stent, and 30 patients (49.2%) underwent surgery. Among the variables tested, calcification of the pancreatic

	Secondary	head was the only factor that was found to be of prognostic value. Of 39 patients with calcification of the pancreatic head, only three (7.7%) were successfully treated by a 1-yr period of plastic stent therapy, whereas in 13 of 22 patients (59.1%) without calcification, this treatment was successful (p 0.001).

Kahl, Stefan et al. Treatment of benign biliary strictures in chronic pancreatitis by self-expandable metal stents. Dig Dis. 20. 199-203. 2002

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:** retrospective cohort	**Funding sources:** not reported **Conflict of Interests:** not reported **Randomization:** n.a. **Blinding:** n.a. **Dropout rates:** not reported	**Total no. patients:** 61 **Recruiting Phase:** 1996-1999 **Inclusion criteria:** CP and symptomatic CBD stenosis **Exclusion criteria:**	**Interventions:** endoscopic intervention **Comparison:**
Notes:	**Author's conclusion:** Endoscopic drainage of biliary obstruction by self-expandable metal stents provides excellent long-term results. To identify patients who benefit most from self-expandable metal stent insertion, further, prospective randomized studies are necessary.		
Outcome Measures/results	**Primary** Long term success, stricture resolution **Secondary**	**Results:** Initial endoscopic Drainage was successful in all cases, with complete resolution of obstructive jaundice. Of 45 patients who needed definitive therapy after a 12-months interval of interventional endoscopy, 12 patients were treated with repeated plastic stent insertion (19.7%) or by surgery (n = 30; 49.2%). In 3 patients a self-expandable metal stent was inserted into the common bile duct (4.9%). In patients treated with metal stents, no symptoms of biliary obstruction occurred during a mean follow-up period of 37 (range 18–53) months. The long-term success rate of Treatment with metal stents was 100%.	

Kawashima, Yohei et al. Comparison between Endoscopic Treatment and Surgical Drainage of the Pancreatic Duct in Chronic Pancreatitis. Tokai J. Exp. Clin. Med. 43. 117-121. 2018

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:** retrospective cohort	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:** Huge BIAS	**Total no. patients:** 51 **Recruiting Phase:** 2001-2010 **Inclusion criteria:** inclusion criteria endoscopic therapy.: (1) symptomatic or (2) asymptomatic patients in whom preservation of pancreatic function is required and (3) patients with alcoholic pancreatitis who are capable of abstaining from drinking. Inclusion criteria surgery: Surgical drainage is indicated for cases where EPS is difficult for severe stenosis of the pancreatic duct or is associated with duodenal stenosis as a comorbidity **Exclusion criteria:**	**Interventions:** **Comparison:** etrospectively compared the treatment course and medical cost of ospitalization between 41 patients who had undergone pancreatic stenting between 2006 and 2010 (EPS group) and 10 patients who had undergone surgery for poor control of pancreatitis between 2001 and 2005 (surgical drainage group).
Notes:	**Author's conclusion:** Although both endoscopic and surgical treatments achieved high symptom control and safety rates, re-hospitalization is required for stent replacement, which leads to poor cost-effectiveness, particularly in patients in whom stent removal is difficult. Endoscopic treatment for severe pancreatic duct stenosis will need to be advanced and evaluated in the future.		
Outcome Measures/results	**Primary** **Secondary**	**Results:** No intergroup differences were observed in causes, symptoms, disease duration, smoking history, or endocrine and exocrine functions. The technical success rate was 100% in both groups, and pain had improved in all of the patients in both groups. The incidences of complications did not differ significantly, and the mortality rate was 0% in both groups. The rehospitalization rate was significantly higher in the EPS group (78%) than that in the surgical drainage group (20%; P<0.01). This was considered attributable to rehospitalization for stent replacement. The effects to improve endocrine and exocrine functions were not different between the two groups before and after treatment, and the current condition was maintained in 80% or more of the patients. For the entire EPS group, the mean hospitalization period was 18 days and the mean medical cost of hospitalization was 2,133,330 yen. For the entire surgical drainage group, the mean hospitalization period was 23 days and the mean medical cost of hospitalization was 2,246,548 yen, thus indicating no significant differences between the two groups.	

Kim, Kyeong Ok et al. Acute pancreatic pseudocyst: incidence, risk factors, and clinical outcomes. Pancreas. 41. 577-81. 2012

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:** retrospective cohort	**Funding sources:** not reported **Conflict of Interests:** none **Randomization:** n.a. **Blinding:** n.a.	**Total no. patients:** 55 with chronic pancreatitis **Recruiting Phase:** 2000-2007 **Inclusion criteria:** medical records of 350 patients with acute pancreatitis and 55 patients with acute-onchronic pancreatitis at Yeungnam University Hospital from January 2000 to December 2007 **Exclusion criteria:**	**Interventions:** observation **Comparison:** acute versus chronic pancreatitis

	Dropout rates: not reported		
Notes:	**Author's conclusion:** Pseudocyst developed more frequently in patients with acute-on-chronic pancreatitis, and most pseudocysts improved spontaneously irrespective of underlying chronic pancreatitis. A longer period of a ‘‘wait-and-see’’ policy for more than 6 weeks is suggested for asymptomatic pseudocyst, especially for a single lesion.		
Outcome Measures/results	**Primary** **Secondary**	**Results:** Pancreatic pseudocyst developed in 14.6% of acute pancreatitis and in 41.8% of acute-on-chronic pancreatitis (P = 0.00). In the acute-on-chronic pancreatitis group, interval from symptom onset to hospital visit was longer, and the incidence of recurrent pancreatitis and alcoholic etiology was higher than that of the acute pancreatitis Group (P G 0.01). There was no significant difference in the spontaneous Resolution rate between both groups. Of the total 68 conservatively treated patients with pseudocyst, the pseudocyst decreased in size or disappeared in 77.9% and showed no change in 1.5%. The risk factors of pseudocyst were the presence of underlying chronic pancreatitis, the interval from symptom onset to visiting the hospital, and an alcoholic etiology. The factor-predicted spontaneous resolution was a single lesion.	

Korpela, Taija et al. Long-term results of combined ESWL and ERCP treatment of chronic calcific pancreatitis. Scand. J. Gastroenterol. 51. 866-71. 2016

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:** prospective cohort	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** 83 **Recruiting Phase:** 2004-2013 **Inclusion criteria:** Chronic pancreatitis with symptomatic Pancreatic duct stones. consecutively treated 83 patients with symptomatic PDS using ESWL and ET. **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:** For patients with CP and PDS ESWL combined with ET is an effective and safe Treatment giving favorable long-term results.		
Outcome Measures/results	**Primary** Success was defined (i) technically: PDS fragmentation and clearance obtained and (ii) clinically: improvement/resolution of pain. **Secondary** we conducted a phone Survey whereby we contacted 64 (89%) patients. The long-term results are presented in those patients with 2 years follow-up.	**Results:** Treated PDS with median size of 10 (5–25) mm were located in the head, body, or the tail of the pancreas in 78, 4, and 1 patients, respectively. The primary results were that technical success was achieved in 69 patients (83%) and clinical success in 66 patients (80%). Fourteen patients had technical failure, but eight of them became free of pain. Thus, clinical success can be considered to have been achieved in 74 of 83 patients (89%). In patients with persistent pseudocyst (PC) at the time of ESWL (n¼19), the PC disappeared in a year in 14 patients (74%). The long-term results were obtained from 61 (73%) ESWL- and ET-treated patients. The median follow-up for them was 53 months (range: 24–124) and 57 patients (93%) became pain-free or had less pain.	

Levy, Michael J et al. Initial evaluation of the efficacy and safety of endoscopic ultrasound-guided direct Ganglia neurolysis and block. Am. J. Gastroenterol. 103. 98-103. 2008

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:** retrospective cohort	**Funding sources:** not reported **Conflict of Interests:** none **Randomization:** n.a. **Blinding:** n.a. **Dropout rates:** n.a.	**Total no. patients:** 36 **Recruiting Phase:** not reported **Inclusion criteria:** EUS database was reviewed to identify patients undergoing CGN and CGB **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:** Initial experience suggests that EUS-guided direct celiac ganglion block or neurolysis is safe. Alcohol injection into ganglia appears to be effective in both cancer and chronic pancreatitis. Prospective trials are needed to confirm the efficacy of this new approach.		
Outcome Measures/results	**Primary** To determine the safety and initial efficacy (at 2-4 wk) of direct ganglia injection in patients with moderate to severe pain secondary to unresectable pancreatic carcinoma or chronic pancreatitis **Secondary**	**Results:** Thirty-three patients underwent 36 direct celiac ganglia injections for unresectable pancreatic cancer (CGN N = 17, CGB N = 1) or chronic pancreatitis (CGN N = 5, CGB N = 13) with bupivacaine (0.25%) and alcohol (99%) for CGN, or Depo-Medrol (80 mg/2 cc) for CGB. Cancer patients reported pain relief in 16/17 (94%) when alcohol was injected and 0/1 (00%) when steroid was injected. For chronic pancreatitis, 4/5 (80%) who received alcohol reported pain relief versus 5/13 (38%) receiving steroids. Thirteen (34%) patients experienced initial pain xacerbation, which correlated with improved therapeutic response (P < 0.05). Transient hypotension and diarrhea developed in 12 and 6 patients, respectively.	

Maruyama, Masahiro et al. Extracorporeal shock wave lithotripsy treatment of pancreatic stones complicated with advanced stage autoimmune pancreatitis. BMC Gastroenterol. 15. 28. 2015

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 2	**Funding sources:** no funding	**Total no. patients:** 8 patients with chronic stage AIP and 92 patients with ordinary CP	**Interventions:** Examination of the clinical records of 8 patients with chronic stage AIP and 92 patients with ordinary CP who received ESWL for pancreatic calculi.

Study type: retrospective	**Conflict of Interests:** no conflict **Randomization:** none **Blinding:** none **Dropout rates:** not declared	**Recruiting Phase:** 1996-2012 **Inclusion criteria:** Intraductal pancrreatic stones in CP with indication to endotherapy **Exclusion criteria:** not declared	**Comparison:** AIP vs ordinary CP
Notes:	**Author's conclusion:** Different approaches are needed for the treatment of pancreatic calculi in chronic stage AIP andordinary CP. Specifically, it appears that intensive ESWL therapy can be avoided or delayed in AIP if the patientdisplays: (1) advanced age, (2) little or no chronic pain or pancreatitis, and (3) pancreatic duct stenosis proximal topancreatic stones.		
Outcome Measures/results	**Primary** Effect of ESWL in AIP compared to ordinary CP **Secondary**	**Results:** The AIP group was significantly older than the CP group (69.0 vs. 56.5 years,P= 0.018). With regard to the indications for ESWL, chronic pain was significantly less frequent in the chronic stage AIP group (0% vs. 45.7%,P= 0.001), whereas preservation of pancreatic function was significantly more frequent (75% vs. 19.6%,P= 0.001).Compared with the CP group, the AIP group tended to exhibit pancreatic duct stenosis proximal to pancreaticcalculi and had a lower rate of complete extraction of stones from the main pancreatic duct.	

Midha, Shallu et al. Long-term pain relief with optimized medical treatment including antioxidants and step-up interventional therapy in patients with chronic pancreatitis. J. Gastroenterol. Hepatol. 32. 270-277. 2017

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 2 **Study type:** restrospective analysis	**Funding sources:** The study was supported by a grantfrom Indian Council of Medical Research. **Conflict of Interests:** no cinflict **Randomization:** none **Blinding:** none **Dropout rates:** not declared	**Total no. patients:** 313 pat with CP **Recruiting Phase:** 2008 - 2011 **Inclusion criteria:** All patients referred to the center with painful CP **Exclusion criteria:** not defined	**Interventions:** The step-up therapy meant scaling up the treatment from medical to interventional. Endoscopic and/or surgical treatment was offered if medical treatmentfailed. Endoscopic therapy consisted of pancreatic sphincterotomy,removal of calculi and/or pancreatic duct stenting. Extra-corporealshock wave lithotripsy was used to fragment large calculi. Surgery comprised of lateral pancreaticojejunostomy and the pancreatic headwas cored out if the pancreatic head was bulky with head predominant disease (Frey's procedure). **Comparison:**
Notes:	**Author's conclusion:** Significant pain relief is achieved in the majority of patients with optimizedmedical and interventional treatment		
Outcome Measures/results	**Primary** Pain relief in response tospecific therapy was the primary outcome measure. The criteria for response were as follows:Pain relief.It was assessed in those patients who had a prospective follow-up of>6 months. More than 50% reduction in painscore after intervention was taken as significant pain relief.Pain-free patients. Patients who had no pain for>1 year wereconsidered as being pain-free. Burnt-out CP.In patients with no pain for>1 year along with features of an atrophic pancreas and dilated pancreatic duct; thedisease was considered as having burnt-out **Secondary**	**Results:** A total of 313 patients (mean age 26.16 ± 12.17; 244 males) with CP were included;288 (92%) patients had abdominal pain. The etiology of CP was idiopathic in 224 (71.6%) andalcohol in 82 (26.2%). At 1-year follow-up, significant pain relief was achieved in 84.7% ofpatients: 52.1% with medical therapy, 16.7% with endoscopic therapy, 7.6% with surgery,and 8.3% spontaneously. The mean pain score decreased from 6.36± 1.92 to 1.62 ± 2.10(P<0.001). Of the 288 patients, 261, 218, 112, and 51 patients were followed up for 3, 5,10, and 15 years, respectively; 54.0%, 57.3%, 60.7%, and 68.8% of them became pain freeat those follow-up periods.	

Moon, Sung-Hoon et al. Modified fully covered self-expandable metal stents with antimigration features for benign pancreatic-duct strictures in advanced chronic pancreatitis, with a focus on the safety profile and reducing migration. Gastrointest. Endosc. 72. 86-91. 2010

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 3 **Study type:** prospective study	**Funding sources:** no funding **Conflict of Interests:** no conflict **Randomization:** none **Blinding:** none	**Total no. patients:** 32 **Recruiting Phase:** 2009 **Inclusion criteria:** Selection criteria for patients with chronic pancreatitis included (1) age 18 years orolder, (2) abdominal pain and dominant main pancreatic-duct stricture in the pancreatic head or body with up-stream dilation requiring plastic stenting at the beginningof	**Interventions:** previously undergone endoscopic pan-creatic sphincterotomy. The pancreatic stricture was dilated with a Soehendra stent retriever (8.5F; Wilson-Cook,Winston-Salem, NC) over a guidewire. Endoscopic biliary sphincterotomy wascompleted in all patients during the same procedure unless previous biliary sphincterotomy had been performed.

	Dropout rates: no drop out	endotherapy, (3) improvement of pancreatic symptomsduring previous placement of plastic stents, and (4) recurrent painful stricture after initial stricture resolution or persistent stricture despite plastic stenting. **Exclusion criteria:** not defined	FCSEMSs were placed across the pancreatic-duct strictures with approximately 1 cm of each stent distal end exposedto the duodenal lumen (Fig. 2). The diameter of the stent was tailored to the size of the dilated upstream duct proximal to the stricture. The length of the stent was determined by the location of the stricture and the ductal configuration. FCSEMSs were removed 3 months after placement, fol-lowed immediately by ERCP to evaluate the pancreatic-duct stricture. Short F-Up of 5 months after stent removal. **Comparison:** No comparison
Notes:	**Author's conclusion:** Temporary 3-month placement of FCSEMSs was effective in resolving pancreatic-duct strictures inchronic pancreatitis, with an acceptable morbidity profile. Modified FCSEMSs can prevent stent migration, butmay be associated with de novo duct strictures. Further trials are needed to assess long-term safety and efficacy.		
Outcome Measures/results	**Primary** FCSEMS with anti migration flaps (Niti-S Pancreatic Stent [bumpy type]; Taewoong Medical,Seoul, South Korea, 6, 8 or 10 mm diameter) FCSEMS placement outcomes were evaluated for (1)technical success; (2) functional success; (3) safety, such as procedure-related morbidity; and (4) short-term clinicaloutcomes, including stent migration, pancreas reintervention, and relapse of pain. **Secondary**	**Results:** FCSEMSs were successfully placed in all patients through the major (n27) or minor (n5) duodenal papilla. All patients achieved pain relief from stent placement. There was no occurrence of stent-induced pancreatitis or pancreatic sepsis. No stent migrated, and all stents were easily removed. Follow-up ERCP 3 months after stent placement showed resolution of duct strictures in all patients. Pancreatograms obtained atFCSEMS removal displayed de novo focal pancreatic duct strictures in 5 patients, but all were asymptomatic.	

Nykänen, Taina et al. Bleeding pancreatic pseudoaneurysms: management by angioembolization combined with therapeutic endoscopy. Surg Endosc. 31. 692-703. 2017

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 4 **Study type:** retrospecitve analysis	**Funding sources:** no funding **Conflict of Interests:** no conflict of interest **Randomization:** none **Blinding:** none **Dropout rates:** not declared	**Total no. patients:** 58 **Recruiting Phase:** 2004-2014 **Inclusion criteria:** atients who had a bleeding VAA or PPA as a consequence ofAP or CP, and who received TAE as their primary treatment,were included. **Exclusion criteria:** acute necrotizing pancreatitis, no underlying pancreatitis, or surgical treatment as primary treatment resulted in exclusion	**Interventions:** TAE on bleeding PPAs and VAAs with embolization using microcoils. Endoscopic treatment of PPZs took place a minimum of 2 weeks following TAE in order to avoid infection and rebleeding complications. Pancreatic duct strictures necessitatedpancreatic sphincterotomy followed by dilatation over guidewire and insertion of 1–4 (7–10 Fr) pancreatic stents. If follow-up CT scan in 2 months showed resolution of PPC, pseudocystoduodenostomies were removed usually 6 months after the procedure.Pseudocystogastrostomies were left in situ indefinitely **Comparison:**
Notes:	**Author's conclusion:** Bleeding pancreatic pseudoaneurysmsrequire non-surgical management. We need more data onthe optimal timing of therapeutic endoscopy and on the roleof empirical embolizations.		
Outcome Measures/results	**Primary** safety and efficacy of the combinationof TAE and therapeutic endoscopy in the treatment ofbleeding PPCs **Secondary**	**Results:** A total of 58 patients underwent TAE. Rebleedingrate (30 days) was 15.5 %, necessitating reembolizationon seven and surgical intervention on two patients. Overall,TAE success rate was 96.6 %. Mortality rate (30 days)was 3.4 %. Of the 58, 47 patients were followed up fortheir PPCs in our unit. PPCs resolved spontaneously in 13(27.1 %). The remaining 34 had an endoscopic treatment attempt with endoscopic draining performed on 32 and unsuccessful cannulation on two (5.9 %). Of the 32 patients with initially successful endoscopy, 7 (21.9 %)needed an additional drainage procedure (six non-surgicaland one surgical). Overall success rate of nonsurgical management was 91.5 %. Postendoscopy mortality rate(30 days) was 2.9 %. Our follow-up continued for 15(1–75) months. By the time of data retrieval, 35 of 58 patients had died with alcohol liver disease being the most common cause of death. Five-year survival estimate was 63 %	

Oh, Dongwook et al. Long-term outcomes of 6-mm diameter fully covered self-expandable metal stents in benign refractory pancreatic ductal stricture. Dig Endosc. 30. 508-515. 2018

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 2 **Study type:** retrospecitve analysis	**Funding sources:** not declared **Conflict of Interests:** not declared **Randomization:** none	**Total no. patients:** 18 **Recruiting Phase:** 2014-2015 **Inclusion criteria:** painful chronic pancreatitis witha single focal main pancreatic duct (MPD) stricture and upstream ductal dilatation of >6 mm; improvement ofsymptoms with plastic stenting; previous	**Interventions:** Endoscopic placing of a fcSEMS of pancreatic duct stricture. Outpatient follow up was scheduled at 1, 3, and 6 months while the stent was in place. After stent removal, follow upwas

	Blinding: none **Dropout rates:** not declared	placement ofplastic stents for at least 12 months with changes at regularintervals; recurrent pain and stricture within 6 months after plastic stent removal; age≥20 years. **Exclusion criteria:** upstream MPD dilatation above the stricture of less than 6 mm; multifocal MPD strictures or an MPD stricture located in the tail of thepancreas; obstructive pancreatic stones without a pancreatic ductal stricture; and age <20 years.	done every 6 months or whenever adverse events occurred. Abdominal pain and plain abdominal radiographs were assessed every 6 months, and abdominal computedtomography (CT) was carried out on patients who developed adverse events **Comparison:**
Notes:	**Author's conclusion:** FCSEMS placement appears to be safe andeffective for the treatment of benign refractory pancreaticductal strictures as it can provide persistent improvement in thestricture in long-term follow up		
Outcome Measures/results	**Primary** Endoscopic placing of a fcSEMS of pancreatic duct stricture. Outpatient follow up was scheduled at 1, 3, and 6 months while the stent was in place. After stent removal, follow upwas done every 6 months or whenever adverse events occurred. Abdominal pain and plain abdominal radiographs were assessed every 6 months, and abdominal computedtomography (CT) was carried out on patients who developed adverse events **Secondary**	**Results:** Stent placement was successful in all patients (technical success rate, 100%). Reduction in pain score of>50% was achieved in 15 of the 18 patients (clinical success rate, 83.3%). Stents could easily be removed at a median of 7.5 months (interquartile range [IQR], 6–13.6) after their insertion. FCSEMS migration did not develop in any patient. Ductalstricture was improved in 15 patients (radiological success rate,83.3%). After definite stent removal, 13 of the 15 (86.7%) patients who had responded to pancreatic stenting maintained the response during follow up (median of 47.3 months; IQR, 7.4–57.1).	

Oh, Dongwook et al. Feasibility and safety of a fully covered self-expandable metal stent with antimigration properties for EUS-guided pancreatic duct drainage: early and midterm outcomes (with video). Gastrointest. Endosc. 83. 366-73.e2. 2016

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 2 **Study type:** retrospecitve analysis	**Funding sources:** no funding declared **Conflict of Interests:** not declared **Randomization:** none **Blinding:** none **Dropout rates:** not declared	**Total no. patients:** 25 **Recruiting Phase:** July 2013 and December 2014 **Inclusion criteria:** failure of pancreatic ductdecompression through ERP including deep enteroscopybecause of a surgically altered anatomy or failure of anEUS-guided rendezvous caused by the inability of a guide-wire to traverse the anastomosis site stricture or major/mi-nor papilla in patients with painful obstructive pancreatitisthrough recurrent acute pancreatitis, chronic pancreatitis,and anastomotic site strictures. intermittentpain, induced by meals, and obstruction of the MPD withupstream dilation because of malignancy on CT scanwere also included,as were reattempted patients with amigrated transgastric plastic stent (7F single pigtail stent,Cook Medical, Bloomington, Ind) after previous EUS-PD. **Exclusion criteria:** refusal, pregnancy, age < 18 year	**Interventions:** EUS guided insertion of a fcSEMS of 6 - 8 mm in diameter in the dilated pancreatic duct **Comparison:** No comparison
Notes:	**Author's conclusion:** EUS-PD with an FCSEMS may be technically feasible and relatively safe for patients who fail conventional ERP. Further randomized trials comparing EUS-PD with long-term FCSEMS and plastic stents for patients with painful obstructive pancreatitis after failed ERCP should be encouraged		
Outcome Measures/results	**Primary** technical success and clinical success **Secondary**	**Results:** EUS-PD was successful in all 25 patients (technical success rate, 100%), and symptoms improved in allpatients (clinical success rate, 100%). EUS-guided pancreaticogastrostomy (nZ23), pancreaticoduodenostomy(nZ1), and pancreaticojejunostomy (nZ1) were performed. Pain scores improved significantly after FCSEMSplacement (PZ.001). Early mild grade adverse events occurred in 5 patients (20%), 4 with self-limited abdominalpain and 1 with minor bleeding. No other adverse events related to FCSEMS, including stent migration, stent clog-ging, pancreatic sepsis, and stent-induced ductal stricture, were observed during follow-up periods. Mean stentpatency duration was 126.9 days during mean follow-up periods (221.1 days)	

Perri, Vincenzo et al. Fully covered self-expandable metal stents in biliary strictures caused by chronic pancreatitis not responding to plastic stenting: a prospective study with 2 years of follow-up. Gastrointest. Endosc. 75. 1271-7. 2012

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:** retrospctive study	**Funding sources:** no funding **Conflict of Interests:** no conflict of interest **Randomization:** none **Blinding:** none **Dropout rates:** not defined	**Total no. patients:** 17 **Recruiting Phase:** 2007 - 2009 **Inclusion criteria:** age 18 years of age andolder, symptomatic common bile duct strictures sec-ondary to CP (leading to anicteric cholestasis, cholangitis,or jaundice) that persisted 3 months or more after place-ment of a single 10F plastic stent, and patients whowere unfit for surgery (cavernous transformation of theportal vein or significant comorbidities) or patient refusal of surgery. **Exclusion criteria:** BBS secondary to compression from a pancreatic pseudocyst, patients with associated pancreatic neoplasia, or ongoing alcohol abuse (ethanol consumption >80 g/day).	**Interventions:** Stenting of the bile duct stricture pc SEMS or FCSEMSs 10 mm Stent removal was planned after 6 months. Follow-up was done at 6-month intervals (LFT and tele-phone interview) for 24

			months. **Comparison:** no comparison
Notes:	**Author's conclusion:** Dilatation of bile dict stricture with fcSEMS results in 50 % stricture resolution after F-up of 24 months		
Outcome Measures/results	**Primary** Stricture recurrence during follow-up was defined as onset of jaundice, cholangitis,and abnormal LFT results together with cholangiographicevidence of BBS **Secondary**	**Results:** At SEMS removal stricture resolution in 70,6 % At 12 months of follow-up,persistent asymptomatic BBS resolution with normaliza-tion of LFT results was 43% and 80% for UE-SEMS and FE-SEMS, After 24 months, 8 of 15 patients (53%) had normal LFT result	

Rasch, Sebastian et al. Management of pancreatic pseudocysts-A retrospective analysis. PLoS ONE. 12. e0184374. 2017

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:** restrosepctive study	**Funding sources:** no funding **Conflict of Interests:** no conflict of interest **Randomization:** none **Blinding:** none **Dropout rates:** not declared	**Total no. patients:** 129 patients **Recruiting Phase:** 2004-2014 **Inclusion criteria:** pancreaticpseudocysts larger than 10mm who presented more than one time **Exclusion criteria:** WON, suspicion of dysplasia	**Interventions:** EUS guided cyst drainage, percutaneous drainage, surgical drainage (cystojejunostomy) **Comparison:**
Notes:	**Author's conclusion:** Conservative management is working in one third of patients		
Outcome Measures/results	**Primary** Efficacy of drainage procedures **Secondary** Complikcations	**Results:** 34.1%(44/129)of the patients were managed conservatively, 65.9%(85/129)required an intervention,respectively. 40.0%(22/55)the indication for drainage was suspected infection, most pat. were treated via EUS guided drainage (n 41). Surgically treated patients had a significantly lower re-intervention rate (0/6) than patients with percutaneous (4/8)or endoscopic drainage(9/41),p = 0.007).Apart from that,there were nostatistically significant differences considering length of hospital stay,complication rate,and reinterventionrate	

Regimbeau, Jean-Marc et al. A comparative study of surgery and endoscopy for the treatment of bile duct stricture in patients with chronic pancreatitis. Surg Endosc. 26. 2902-8. 2012

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:** restrosepactive study	**Funding sources:** no funding **Conflict of Interests:** none **Randomization:** none **Blinding:** none **Dropout rates:** not declared	**Total no. patients:** 39 **Recruiting Phase:** 2004-2009 **Inclusion criteria:** CBD strictures associated with clinical signs of obstruction due to CP **Exclusion criteria:** pancreatic malignancy, cirrhosis,primary sclerosing cholangitis, recent acute pancreatitis(i.e., in the previous 3 weeks), postsurgical stricture orsecondary stenosis caused by gallstones, or pseudocysts	**Interventions:** Endoscopic stenting for a minimum time of 12 months (with multiple plastic or metallic stents) Surgical treatment consisted of choledochoduodenostomy or choledochojejunostomy **Comparison:** endoscopic (ET) vs. surgical therapy (ST) of bile duct strictures
Notes:	**Author's conclusion:** For bile duct stricture in CP, surgery isassociated with better long-term outcomes than endoscopic therapy. After more than three endoscopic procedures, the success rate is low		
Outcome Measures/results	**Primary** Treatment success was defined in both groups as the absence of signs denoting recurrence, with normal serumbilirubin and alkaline phosphatase levels after permanentstent removal in ET group. **Secondary**	**Results:** 39 patients, 33(85 %) underwent primary ET, and 6 underwent primary ST. ET: the mean number of biliary procedures was 3 (range, 1–10) per patient including extractible metallic stents in 35 % and multiple plastic stents in 65 % of the patients. The mean duration of stent intubation was 11 months. The surgical procedure associated with biliary drainage (4 choledochoduodenostomies, 1 choledochojejunostomy, and 1 biliary decompression within the pancreatic head) was a Freyprocedure for five patients and a pancreaticojejunostomy for one patient. The overall morbidity rate was higher in the ST group. The total hospital length of stay was similarin the two groups (16 vs 24 days, respectively;p=0.21). In terms of intention to treat, the success rates for ST and ET did not differ significantly (83 % vs 76 %;p=0.08). Due to failure, 17 patients required ST after ET.	

		Event-freesurvival was significantly longer in the ST group (16.9 vs5.8 months;p=0.01). The actuarial success rates were 74 % at 6 months, 74 % at 12 months, and 65 % at 24 months in the ST group and respectively 75 %, 69 %,and 12 % in the ET group (p=0.01). After more than three endoscopic procedures, the success rates were 27 %at 6 months and 18 % at 18 months.

Sahai, Anand V et al. Central vs. bilateral endoscopic ultrasound-guided celiac plexus block or neurolysis: a comparative study of short-term effectiveness. Am. J. Gastroenterol. 104. 326-9. 2009

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:** restrospective study	**Funding sources:** none **Conflict of Interests:** not declared **Randomization:** none **Blinding:** none **Dropout rates:** 24 / 184	**Total no. patients:** 160 **Recruiting Phase:** 2001-2004 **Inclusion criteria:** patinets with chric pain due to CP, pancreatic cancer, other GI tumors **Exclusion criteria:** not defined	**Interventions:** Central celiac plexus block / neurolysis technique undertaken in the first study phase vs. Bilateral celiac plexus block / neurolysis technique undertaken in the second study phase **Comparison:** Central celiac plexus block / neurolysis technique vs. Bilateral celiac plexus block / neurolysis technique
Notes:	**Author's conclusion:** Bilateral CPB / N is more effective than central CPB / N		
Outcome Measures/results	**Primary** Reduction of pain from baseline **Secondary** secondary analysis, defined as a ≥ 50 % reduction in pain scores from baseline in each patient.	**Results:** 160 patients were left for analysis (71 central, 89 bilateral). Groups did not di+ er signiG cantly for demographics, initial pain level, diagnosis (cancer vs. chronic pancreatitis), tumor location (if cancer), or preintervention narcotic use. Bilateral CPB / N was clearly more effective than central CPB / N (mean percent pain reduction 70.4 % (61.0 – 80.0) vs. 45.9 % (32.7 – 57.4); P 0.0016 Only predictor of a positive response (>50 % pain reduction at day 7 after treatment) was the use of the bilateral technique (OR 3.55 (1.72 – 7.34)	

Samuelson, Andrew et al. Pancreatic Duct Changes in Patients With Chronic Pancreatitis Treated With Polyethylene and Sof-Flex Material Stents: A Blinded Comparison. Pancreas. 45. 281-5. 2016

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:** retrospective study	**Funding sources:** not declared **Conflict of Interests:** declared **Randomization:** none **Blinding:** none **Dropout rates:** not declared	**Total no. patients:** 99 **Recruiting Phase:** 2004 - 2011 **Inclusion criteria:** therapeutic pancreatic duct stenting in patients with painful chronic pancreatitis. **Exclusion criteria:** not defined	**Interventions:** that included therapeutic pancreaticduct stenting in patients with painful chronic pancreatitis. **Comparison:** polyethylene stents (PESs) versus Soft flex stent (SFS) due to stent-associated changes (SACs)
Notes:	**Author's conclusion:** In patients who have had polyethylene or SFSs of varyingsizes, approximately 1 in 4 have SACs. Despite the use of a softer stent ma-terial for therapeutic stenting, the rate of SACs in the 8.5F and 10F sub-groups seems similar between the 2 materials and design.		
Outcome Measures/results	**Primary** SAC after stenting of pancreatic duct **Secondary**	**Results:** Stent-associated changes were noted with 28% (13/47) of SFS and with 25% (13/52) of PES (P= 0.65). For 10F stent subgroups, SACs were seen with 25% (6/24) of the SFS compared with 50% (2/4) in the PES. Thirty percent (7/23) of the 8.5F SFS subgroup had SACs versus 29%(2/7) in the PES group (P= 0.887) for 8.5F + 10F combined comparison	

Sasahira, Naoki et al. Outcomes after clearance of pancreatic stones with or without pancreatic stenting. J. Gastroenterol. 42. 63-9. 2007

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:** retrospective study	**Funding sources:** none **Conflict of Interests:** not declared **Randomization:** none **Blinding:** none **Dropout rates:** not declared	**Total no. patients:** 40 treated with ESWL and/or endoscopic lithotripsy **Recruiting Phase:** **Inclusion criteria:** Patients with pancreatic duct stones treated endoscopically and remaining MDP stricture afer treatment with indication for stenting **Exclusion criteria:** not defined	**Interventions:** 40 treated with ESWL and/or endoscopic lithotripsy, MPD stricture was seen in 27 patients (68%), and a stent was inserted in 24 of them. In cases in which a pancreatic stent was inserted into the stricture, the stent was exchanged every 3 months (8,5 to 10 F). Final stent was removed after 1 year. Follow-up data were collected after final stent removal, 1 year after the initial treatment, and another ERCP was performed to evaluate the strictures and stones 1 year post-stent removal or at the time of recurring pain or pancreatitis. The diameter of the MPD, which might be a proxy for intraductal pressure, was also measured before and after the treatment. **Comparison:** MPD diameter before and one year after stent extraction subgroup analysis: Stenting group vs. non stenting group
Notes:			

	Author's conclusion: Additional stenting for MPD after extraction of pancre-atic stones may reduce the risk of recurrence of pancre-atic symptoms.	
Outcome Measures/results	**Primary** MPD diameter before stenting, after stent removal and one year after stent extraction **Secondary** Recurrence of pancreatic symptoms in the stenting group vs. non stenting group	**Results:** MPD stricture was seen in 27 patients, and a stent was successfully inserted in 24 of them. Pancreatic symptoms recurred in five patients (21%) in the stenting group and in three patients (23%) in the control group during a mean follow-up period of 1.5 and 1.2 years, respectively. The diameter of the MPD, before, just after, and 1 year after treatment, was 7.6, 5.4, and 5.8 mm, respectively. It was significantly decreased after 1 year of follow-up, as well as just after stent removal, compared with before treatment (P<0.05).

Sato, Hideaki et al. Frey's procedure for chronic pancreatitis improves the nutritional status of these patients. Surg. Today. 48. 80-86. 2018

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 3 **Study type:** prospective cohort study	**Funding sources:** no funding **Conflict of Interests:** no conflict of interests **Randomization:** none **Blinding:** none **Dropout rates:** 26 of 61 lost to F-up	**Total no. patients:** 61 pat **Recruiting Phase:** 2005-2014 **Inclusion criteria:** pat who underwent Frey procedure or pancreatoduodenectomy for CP **Exclusion criteria:** not eclared	**Interventions:** controlling nutritional status (CONUT) scoring before and 1 year after surgery All patients were given pancreatic enzymes after surgery. Perioperative data, including operation time, bleeding, postoperative hospital stay, morbidity and mortality were assessed. Morbidity was defined as grade IIIa or more in the Clavien–Dindo Classification, which is generally used for the assessment of postoperative complications. Nutritional status was assessed by body weight, CONUT scoring, and the occurrence of hepatic steatosis before and 1 year after surgery. Patients without postoperative follow-up were excluded from the analysis. **Comparison:** Nutitional status before vs. 1 year after surgery Subgroup anaylsis: Frey procedure vs pancreatoduodenectomy
Notes:	**Author's conclusion:** Frey's procedure is superior to pancreatoduo-denectomy for improving the nutritional status of CP patients.		
Outcome Measures/results	**Primary** Nutitional status before vs. 1 year after surgery **Secondary** Subgroup anaylsis: Frey procedure vs pancreatoduodenectomy	**Results:** The nutritional status improved after Frey's pro-cedure, but not after pancreatoduodenectomy. The median postoperative CONUT score after Frey's procedure was significantly lower than the preoperative score (1.0± 0.5 vs. 4.0± 2.5; p < 0.001).	

Sauer, Bryan G et al. Effect of pancreatic duct stent diameter on hospitalization in chronic pancreatitis: does size matter?. Pancreas. 38. 728-31. 2009

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 3 **Study type:** restrospective analysis	**Funding sources:** not declared **Conflict of Interests:** not declared **Randomization:** none **Blinding:** none **Dropout rates:** not declared	**Total no. patients:** 163 pat with MPD stenting in CP **Recruiting Phase:** 1995 - 2007 **Inclusion criteria:** patients with a diagnosis of chronic pancreatitis who had a MPD stent placed **Exclusion criteria:** not declared	**Interventions:** Each patient was placed into 1 of 2 groups based on the PD stent diameter used: 8.5F stents or smaller and 10F stents. Patients who underwent multiple PD stent sessions with different diameter stents, they were placed in the group according to the most frequently used diameter stent placed. Mean follow-up time of 3.0 (2.6) years **Comparison:** 10 F MPD stenting vs. 8,5 F or smaller MPD stenting
Notes:	**Author's conclusion:** Patients who received larger diameter PD stents had fewer hospitalizations for abdominal pain. Outcome-based prospectivestudies are needed.		
Outcome Measures/results	**Primary** primary outcome was the number of hospitalizationsfor abdominal pain per follow-up time of each subject using anegative binomial model to account for varying follow-up time **Secondary** secondary outcomes included the percentage of individualsrequiring a hospitalization and surgical therapy for chronicpancreatitis	**Results:** One hundred sixty-three patients underwent PD stent place-ment for chronic pancreatitis from October 1995 to September 2007.One hundred twenty-nine patients (79%) received predominantly PDstents 8.5F or smaller in diameter, and 34 patients (21%) received predominantly PD stents 10F in diameter. There was no statistically significant difference in population characteristics between the 2 groups.The 10F stent group had a statistically significant (P= 0.003) lower rate of hospitalization	

Seven, Gulseren et al. Long-term outcomes associated with pancreatic extracorporeal shock wave lithotripsy for chronic calcific pancreatitis. Gastrointest. Endosc. 75. 997-1004.e1. 2012

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 3	**Funding sources:** This study received live course support	**Total no. patients:** A total of 120	**Interventions:** The ques-tionnaire contained before–P-ESWL and after–P-ESWL or-dinal pain and quality-of-life scale scores as well asquestions on before and after P-ESWL narcotic pain med-ication use, cigarette smoking status (daily cigarette use),alcohol use (at least one alcoholic drink

Study type: retrospecitve study	and live endoscopycourse support from Olympus America, Boston Scientific Corporation,and Cook Medical as well as equipment donation to the Virginia MasonMedical Center. **Conflict of Interests:** none **Randomization:** none **Blinding:** none **Dropout rates:** 55 of 175	patients underwent P-ESWL followed by ERCP (SD follow-up 4.3 +/-3.7 years) and completed a survey. **Recruiting Phase:** 1990- 2010 all pat. who underwent ESWL followed by ERCP were followed up by questionaire **Inclusion criteria:** All patients wirth ESWL and ERCP for stone removal at the single center unit **Exclusion criteria:** death	per day), diabetesstatus, and pancreatic enzyme supplement requirement.Both the ordinal pain and quality-of-life scales were basedon a scale of 1 to 10. For the pain scale, 1 represented nopain, and 10 represented maximal pain. For the quality oflife scale, 1 represented the lowest quality of life, and 10represented the best quality of life. A section at the top ofthe questionnaire allowed participants to opt out of thestudy by checking a box and returning the survey uncom-pleted. If a participant did not opt out of the study within1 month after receiving the questionnaire, consent to becontacted by telephone to complete the survey was im-plied if they had not already returned a completed ques-tionnaire **Comparison:** Pain score before vs. after ESWL
Notes:	**Author's conclusion:** P-ESWL as the initial therapy for CCP may lead to more lifetime procedures; however, partial painrelief in 85%, complete pain relief with no narcotic use in 50%, and avoidance of surgery in 84% of patients maybe achieved. Quitting smoking after P-ESWL may improve outcomes.	
Outcome Measures/results	**Primary** Panin score before and after ESWL **Secondary** Quality of life, Diabeteas, pancreatic encyme substitution	**Results:** A total of 120 patients underwent P-ESWL followed by ERCP and completed a survey. The mean before-P-ESWL pain score was 7.9 compared with 2.9 after P-ESWL (P=.001). Improved pain was reported by 102 patients (85%); 60 (50%) reported complete pain relief and no narcotic use. The mean before-P-ESWL quality-of-life score was 3.7 compared with 7.3 after P-ESWL (P=.001). In patients with >4 years' follow-up, repeat procedures included P-ESWL (29%), ERCP (84%), and surgery (16%). Smokers who quit smoking after P-ESWL had improved narcotic requirements compared with those who continued smoking (95% vs 67%;P=.014), and a trend suggested a decreased need for repeat ERCPs (68% vs 84%;P=.071).

Seza, Katsushi et al. A long-term controlled trial of endoscopic pancreatic stenting for treatment of main pancreatic duct stricture in chronic pancreatitis. Hepatogastroenterology. 58. 2128-31. 2012

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 4 **Study type:** prospective cohort study	**Funding sources:** not declared **Conflict of Interests:** not declared **Randomization:** none **Blinding:** none **Dropout rates:** no drop out	**Total no. patients:** 42 **Recruiting Phase:** 2008 - 2011 **Inclusion criteria:** Complete removal of intraductal stones in the former endoscopic therapy, pain relief, dominant stricture of pancreatic duct in the head of the pancreas **Exclusion criteria:** previous endoscopic therapy of pancreatic duct stricture, ESWL, surgery, cancer	**Interventions:** patients choose for EPS N = 20 and control group n = 22 **Comparison:** Endoscopic stentign group vs. control group
Notes:	**Author's conclusion:** EPS reduces pain recurrance and slows down pancreatic exocrine insufficiency		
Outcome Measures/results	**Primary** Pain relief def as continous absence of pain during F-up **Secondary**	**Results:** Mean F-UP 62,5 month; Pain recurred in 15 % of EPS group and 50 % of control group p = sign; progression of exocrine insufficiency lower in EPS group, endocrin insufficiency no difference	

Shah, Raj J et al. Safety and efficacy of endoscopic ultrasound-guided drainage of pancreatic fluid collections with lumen-apposing covered self-expanding metal stents. Clin. Gastroenterol. Hepatol. 13. 747-52. 2015

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 4 **Study type:** prospective MC study	**Funding sources:** This study was funded by Xlumena, InC **Conflict of Interests:** given **Randomization:** none	**Total no. patients:** 33 **Recruiting Phase:** 2011 - 2013 **Inclusion criteria:** Adults (age, 18–75 y) with symptomatic PPs or WONmeeting all of the following criteria were included: 6 cmor greater diameter (based on the computed	**Interventions:** EUS guided drainage via LAMS (10 or 15 mm diameter) followed by necrosectomy if needed PFC resolution was defined as at least a 50% decrease in PP size, based on radiographic analysis at 30 days and/or 60 days. Technical success was defined asplacement of the LACSEMS and removal of the LACSEMSusing a standard endoscopic snare. The primary end points were evaluated through 1week

	Blinding: none **Dropout rates:** not described	tomographyscan or transabdominal ultrasound), adherence to bowelwall, and 70% or morefluid content. **Exclusion criteria:** Cystic neoplasmsand immature pseudocysts were excluded.	after stent removal; overall safety was captured asadverse events and continued until study termination.Evaluations were performed at baseline, the 30-dayand/or 60-day visits, 1 week after stent removal, and at 3 and/or 6 months after stent removal. **Comparison:**
Notes:	**Author's conclusion:** LACSEMS were placed successfully in 91% of subjects with PFCs. Overall, 93% had PFC reso-lution. Advantages of LACSEMSs over other stents include single-step deployment and theability to perform endoscopic debridement with minimal stent migration.		
Outcome Measures/results	**Primary** primary end point was achievement of PFC res-olution, defined as reduction in PFC size to 50% or lessthan initial size, after 30 or 60 days after LACSEMSplacement **Secondary**	**Results:** The mean size of the patients'PFCs was 9–3.3 cm. LACSEMSs were placed successfully viaendoscopic ultrasound guidance in 30 patients (91%); the remaining 3 patients received 2double-pigtail stents. One subject could not be evaluated because of a pseudoaneurysm. In thepatients receiving LACSEMS, PFCs resolved in 27 of 29 (93%). Overall, PFCs resolved in 30 of 33patients (91%). Endoscopic debridement through the LACSEMS was conducted in 11 subjects. Complications (15%) included abdominal pain (n[3), spontaneous stent migration, back pain(n[1), access-site infection, and stent dislodgement (n[1).	

Tandan, Manu et al. Long-term clinical outcomes of extracorporeal shockwave lithotripsy in painful chronic calcific pancreatitis. Gastrointest. Endosc. 78. 726-33. 2013

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 3 **Study type:** retrospective study	**Funding sources:** no funding **Conflict of Interests:** no conflict **Randomization:** none **Blinding:** none **Dropout rates:** 160 of 1006	**Total no. patients:** 636 patients with idiopathic CP who underwent ESWL and ERCP **Recruiting Phase:** 2004-2009 **Inclusion criteria:** CP Pain and calculi that were not amenable to a standard endoscopic procedure of sphincterotomyand basketing. **Exclusion criteria:** not defined	**Interventions:** The patients underwent plain abdominal radiographs or MRCP to map out the stones, and ESWL was performed. Fragmentation was considered successful when calculi were broken to 3 mm in size. They were extracted at asubsequent endoscopic procedure. Stents were placed inpatients when clearance was incomplete or an associated stricture was present. **Comparison:** follow-up was divided into 2 periods: inter-mediate, which was for 24 to 60 months (2-5 years) after the first ESWL procedure, and long-term, which was 60 months (5 years).
Notes:	**Author's conclusion:** ESWL for large PD calculi offers good results in patients of idiopathic CP on intermediate and long-term follow-up.		
Outcome Measures/results	**Primary** primary outcome was anoverall improvement in pain (defined as a significantreduction in a visual analogue scale pain score afterESWL **Secondary** analgesic use, hospitalization for pain, and need for additional surgical intervention, duct clearance,stone recurrence, improvement in exocrine and endo-crine function	**Results:** 364 patients in the intermediate follow-up group and 272 in the long-term follow-up group.After ESWL and ERCP, absence of pain was seen in 250 patients (68.7%), mild-to-moderate pain in 94 patients (25.4%),and severe pain in 20 patients (5.5%) of the intermediate group. In the long-term group, 164 patients (60.3%) had no pain, 97 patients (35.7%) had mild or moderate episodes of pain, where as 11 patients (4.04%) had episodic severe pain. Recurrence of calculi was seen in 51 patients (14.01%) in the intermediate follow-up group and in 62 patients(22.8%) in the long-term group. Quality of life improved in a significant number of patients in both groups.	

Troendle, David M et al. Therapeutic Endoscopic Retrograde Cholangiopancreatography in Pediatric Patients With Acute Recurrent and Chronic Pancreatitis: Data From the INSPPIRE (INternational Study group of Pediatric Pancreatitis: In search for a cuRE) Study. Pancreas. 46. 764-769. 2017

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 2 **Study type:** retrospective analysis	**Funding sources:** not declared **Conflict of Interests:** DSF is a consultant for Pentax Medical Imaging, Cook Medical, Norgine Pharmaceuticals, and UpToDate. TKJ receives research funding from Vertex Pharmaceuticals and is a consultant for Glaxo Smith Kline Inc., Pfizer and the Cystic Fibrosis Foundation. MBH is an editor for the Journal of Pediatric Gastroenterology and Nutrition and receives royalties from UpToDate. MEL is on the board for the National Pancreas Foundation and a consultant for AbbVie, Inc and Nordmark. MDB in on the board for ARIEL, is a consultant for AbbVie, and receives grant funding from Dompe. JFP is on the editorial board for Practical Gastroenterology and a member of the Speaker's bureau for Medical Education Resources Inc. SJS is a consultant for the Cystic Fibrosis Foundation and AbbVie and receives grant support from the Cystic Fibrosis Therapeutic Network. AU is a board member for the American Board of Pediatrics, Sub-board of Pediatric Gastroenterology. **Randomization:** Nine **Blinding:** none	**Total no. patients:** 301 children with ARP or CP were enrolled in the INSPPIRE study. **Recruiting Phase:** August 2012 to February 2015 **Inclusion criteria:** Indication for therapeutic ERCP **Exclusion**	**Interventions:** ERCP intervention **Comparison:** no comparison

	Dropout rates: not declared	**criteria:** not defined	
Notes:	**Author's conclusion:** ERCP in children is feasable especially if duct obstruction is present. Long term studies are needed.		
Outcome Measures/results	**Primary** Therapeutic intervention during ERCP in acute and cronic pancreatitis in children **Secondary** Predictors of Therapeutic Endoscopy Utilization in Pediatric AP and CP	**Results:** Of the 155 children with ARP, 21 (13.5%) underwent therapeutic ERCP.Of the 146 patients with CP, 96 (65.8%) underwent therapeutic ERCP. Patients with CP were more likely to undergo therapeutic ERCP compared with ARP (65.8% vs 13.5%, p<0.0001). Children who were of Hispanic ethnicity, white race, and those who were suspected to have obstructive factors contributing to their disease process were significantly more likely to have therapeutic ERCP.	

Udd, Marianne et al. Treatment of bleeding pseudoaneurysms in patients with chronic pancreatitis. World J Surg. 31. 504-10. 2007

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 3 **Study type:** restrospective study	**Funding sources:** not app **Conflict of Interests:** none **Randomization:** none **Blinding:** none **Dropout rates:** not app	**Total no. patients:** 33 **Recruiting Phase:** 1993-2005 **Inclusion criteria:** chronic pancreatitis with bleeding pancreatic pseudoaneurysms. **Exclusion criteria:** Not defined	**Interventions:** angioembolisation of bleeding Peudoaneursym if not sucessful followed by surgery **Comparison:** uccessfully controlled with the initial angioembolization (EMB) compared to the group with need to surgery (OPER)
Notes:	**Author's conclusion:** Angioembolisation is the first step therapy for bleeding peudoaneurysmn in CP		
Outcome Measures/results	**Primary** Success rate of angioembolisation in blleeding pancreatic peudoaneurysmn **Secondary** Comparance of angioembolisation group and need for surgery group	**Results:** Bleeding artery was a main trunk or branch of the gastroduodenal/pancreaticoduodenal arterial complex in 19 patients (58%) and the splenic artery or one of its branches in the remaining 14 patients Overall success rate of angioembolization was 22 out of 33 (67%). Success rate was 16 out of 20 (80%) when the pseudocyst was in thehead of the pancreas, and only 50%when the splenic artery was the source of bleeding 10 patients, bleeding could not be stopped during initial angiographic evaluation, either due to technicalfailure (7 cases) or to the inability to visualize or access the bleeding vessel (3 cases). he overall mortality and morbidity rates were 2 out of 33 (6%) and 7 out of 33 (21%) respectively, with no significant differences between embolized and operated patients. Angioembolization was associated with a significantly lower need for total blood transfusions and length of hospital stay. During the years 2000–2005, the overall success rate of angioembolization was 95%	

Vaysse, Thibaut et al. Efficacy and safety of extracorporeal shock wave lithotripsy for chronic pancreatitis. Scand. J. Gastroenterol. 51. 1380-5. 2016

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 3 **Study type:** consecutive case series	**Funding sources:** not app **Conflict of Interests:** not app **Randomization:** none **Blinding:** none **Dropout rates:** 14 of 146 lost to F-up	**Total no. patients:** 146 patients with symptomatic chronic-calcified pancreatitis underwent ESWL between January 2001 and September 2012. A 6-month follow-up was completed in 132 patients (90%). The median follow-up was 23 months [6–90]. **Recruiting Phase:** 2001-2012 **Inclusion criteria:** The indication for ESWL was obstructive stone(s) of the main pancreatic ductresulting in either painful chronic pancreatitis or recurrentacute pancreatitis **Exclusion criteria:** Not declared	**Interventions:** The ESWL was performed in the prone position, under IVanalgesia, in outpatient care or an inpatient setting. A third-generation electromagnetic lithotripter (Delta Compact;Dornier Inc., Dornier Medtach, Munich, Germany) was used.Stones were targeted in line using fluoroscopy. Power andnumber of shocks delivered per session were decided bythe physician who performed the procedure (IB). Tolerance ofthe procedure by the patient was noted on the report of theESWL, and listed as good, fair or poor. In addition, ESWL com-plications were collected from medical records.Association with ERCP following the ESWL (adjuvant ERCP)was systematic before 2008 and decided by the physicianwho referred the patient after 2008. **Comparison:** No comparison of groups. Predictive factors for the success of ESWL were determined inpatients whose follow-up was more than 6 months.
Notes:	**Author's conclusion:** This study shows that the ESWL is a safe and effective treatment for patients with chronicpancreatitis and obstructive stones within the main pancreatic duct. Systematic association with thera-peutic ERCP appears to provide no additional benefit and is therefore not recommended		

Outcome Measures/results	**Primary** Success was defined by resolution of pain, no analgesictreatment, no acute pancreatitis and no surgical treatment forchronic pancreatitis 6 months after the ESWL. **Secondary**	**Results:** After 6 months of follow-up 100/132 (76%) patients achieved success. In univariate analysis, factors associated with success of ESWL (p<0.20), and, therefore,selected in a multivariate model, were chronic pain at inclusion (with or without analgesic consumption including or not opioids) (p 0.07), and the year of ESWL (before or after2008) (p 0.16). In multivariate analysis, the single significant predictive factor of the success of the ESWL treatment was chronic pain (p 0.03). Patients who had chronic pain and needed opioid treatment had less chances of success than patients without chronic pain (OR 95%CI 0.31 [0.07–1.14]).No difference in the success rates between patients who underwent adjuvant ERCP and those who had ESWL only (p 0.93) After a median follow up of 23 months (6–90), the successwas maintained in 85 of the 100 patients who met the primary endpoint at 6 months.

Vitale, Gary C et al. Long-term follow-up of endoscopic stenting in patients with chronic pancreatitis secondary to pancreas divisum. Surg Endosc. 21. 2199-202. 2007

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 2 **Study type:** restrospective study	**Funding sources:** not app. **Conflict of Interests:** not app **Randomization:** none **Blinding:** none **Dropout rates:** 8 of 32 pat lost to F-up	**Total no. patients:** 32 patients with chronic pancreatitis due to pancreas divisum were treated with endoscopic stenting. **Recruiting Phase:** 1993 and 2005 **Inclusion criteria:** CP due to pancreas divisum **Exclusion criteria:** not defined	**Interventions:** 117 ERCPs were performed in these patients with an average of 3.6 per patient during thestudy period. ERCP demonstrated that 30 patients had complete pancreasdivisum and two patients had incomplete pancreas div-isum. Minor papilla sphincterotomy was performed inthe 30 patients (93.8%) with complete pancreas divisum.Stenting was performed through the minor papilla and/or major papilla. Stents were placed in the duct that was obstructed. **Comparison:** Pain level before and after stenting
Notes:	**Author's conclusion:** Endoscopic stenting of the pancreatic ductis a safe and effective first treatment for patients withpancreatitis secondary to pancreas divisum. Surgery,when performed for endoscopic stenting failure, is effective as an adjunctive treatment		
Outcome Measures/results	**Primary** Pain level before and after ERCP stenting **Secondary** Hospital admissions befre and after stenting	**Results:** Twenty-four patients were followed up for aperiod of 59.6 months. The overall pain level average inthe 24 patients decreased significantly from 8.9 ± 0.4 pre-stenting to 3.9 ± 0.7 post-stenting (P< 0.05) on ascale of 1 to 10. The number of hospital admissions peryear in these patients decreased significantly from 7.3 ± 2.1 pre-stenting to 2.1 ± 0.4 post-stenting(P< 0.05). Pain medication usage reported by the patients found a decrease in 58% of patients, 21% remained the same, and 13% increased their usage.	

Wang, Dan et al. Extracorporeal Shock Wave Lithotripsy for Chronic Pancreatitis Patients With Stones After Pancreatic Surgery. Pancreas. 47. 609-616. 2018

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 3 **Study type:** restrosepctive	**Funding sources:** not app **Conflict of Interests:** not app **Randomization:** none **Blinding:** none **Dropout rates:** Two patients in the decompression subgroup and one in the 50 matched controls werelost during follow-up.	**Total no. patients:** P-ESWL was performedon a total of 1017 patients (50 in the psotop. group and 967 in the control group) **Recruiting Phase:** 2011-2014 **Inclusion criteria:** patients who had painful CP and radiopaque stones of greater than or equal to 5 mm. **Exclusion criteria:** suspected or established ma-lignant mass,pancreatic ascites, or pregnancy were not	**Interventions:** atients were treated in a supine position with the hockhead touching the abdomen from above. Patients received intrave-nous sedation analgesia using a combination of flurbiprofen andremifentanil. For an individual patient, the P-ESWL session wasrepeated over consecutive days until the stone was fragmentedto less than or equal to 3 mm in diameter. All stones greater thanor equal to 5 mm in diameter in the pancreas were treated. Nomore than 5000 shocks were delivered during the therapeutic ses-sion at an intensity of 6 (16,000 kV) on a scale of 1 to 6 with a fre-quency of 120 shocks/min. The duration of each session was 60to 90 minutes.11,2 atients in the decompression and debridement subgroups,along with the control group, received ERCP 48 hours after thelast P-ESWL, whereas patients in the resection subgroup received only P-ESWL **Comparison:** P-ESWL was performedon a total of 1017 patients (50 in the PSH group and 967 in thecontrol group). In the PSH group, the decompression, resection,and debridement subgroups enrolled 36, 6, and 8 patients, respec-tively. Fifty patients in the control group were matched for long-term follow-up.

		consideredfor P-ESWL.	
Notes:	**Author's conclusion:** For CP patients who develop painful stones after pancre-atic surgery, P-ESWL safely achieves significant pain relief and stoneclearance, preventing the need for a repeat surgery.		
Outcome Measures/results	**Primary** primary outcomes were complications of P-ESWL and pain relief.Pain relief at the end of follow-up was classified as complete (Izbickipain score,≤10) or partial (Izbicki pain score, >10 after a decreaseof >50%). **Secondary** Pain re-lief at the end of follow-up was classified as complete (Izbickipain score,≤10) or partial (Izbicki pain score, >10 after a decreaseof >50%).	**Results:** The median follow-up period was 2.6 years (range,1.0–4.5 years) for patients in the PSH group and 2.4 years(range, 1.1–4.2 years) for their matched controls. Two patients in the decompression subgroup and one in the 50 matched controls werelost during follow-up. Among the 48 patients (96.0%) in thePSH group at follow-up, complete pain relief was achieved in 29 patients (29/48, 60.4%), resulting in no significant differences when compared with their matched controls (37/49, 75.5%,P= 0.146). Complete clearance of stones was achieved in 77.1% (37/48) patients in the PSH group and 89.8% (44/49) ofthe matched controls (P= 0.197). There were no significant differences in complete pain relief (P= 0.986) or stone clear-ance (P= 0.840) among the PSH subgroups	

Weber, Andreas et al. Long-term follow-up after endoscopic stent therapy for benign biliary strictures. J. Clin. Gastroenterol. 48. 88-93. 2014

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 3 **Study type:** retrospective	**Funding sources:** not app **Conflict of Interests:** not app **Randomization:** none **Blinding:** none **Dropout rates:** not app	**Total no. patients:** 228 patients with benignbiliary strictures, 61 of them with biliary structure due to CP **Recruiting Phase:** 1992-2008 **Inclusion criteria:** begnin biliary stricutes **Exclusion criteria:** primary sclerosing cholangitis,bilioenterostomy stricture,mirizzi syndrome,bile duct compression through echinococcus cyst orpancreatic pseudocyst adenoma of papilla Vateri,duodenal diverticula,malignant origin of strictures,stenting because of incomplete bile stone extractionwithout stricture.	**Interventions:** All biliary plastic stents consisted of polyethylene: polyethylene stent(Pflugbeil, Zorneding, Germany) or polyethylene pigtailstent (COOK Europe, Limerick, Ireland). In case of suffi-cient stricture dilation, 10 or 11.5 Fr stents were placed.Otherwise, a 7 Fr stent or 7 Fr pigtail was placed. In somepatients with severe cholangitis, a nasobiliary tube wasinserted (range, 1 to 5 d) and subsequently replaced by alarger stent or pigtail. **Comparison:** comparison success of endoscopic stenting between 4 indication groups (stone-associated, postoperative, chronic pan-creatitis, and idiopathic groups)
Notes:	**Author's conclusion:** Long-term outcome of endoscopic therapy for benignstrictures was significantly dependent on the underlying cause ofthe stricture. In particular, patients with biliary strictures due tochronic pancreatitis benefit least from endoscopic therapy, whereaspatients with stone-associated strictures had the highest therapeuticsuccess rate.		
Outcome Measures/results	**Primary** complete success:completion of stent therapy at the time of datacollection, cholangiogram at the time of stent extraction showed complete recovery of stenosis,the absence or clear improvement of clinical signs(jaundice, pruritus, and fever),recovery of cholestasis parameters,no subsequent requirement for the interventionalendoscopic procedure during the follow-up period **Secondary**	**Results:** Biliary Stricture Due to Chronic PancreatitisAt the time of data collection, only 31% of patientsshowed therapeutic response after a median duration of 12months of therapy (Table 5). Nearly one third of patients(30%) had ongoing endoscopic treatment during data col-lection (median follow-up time 31 mo). Thirty-nine percentof patients were considered as treatment failure: 28% ofpatients were converted to surgery and 11% of patientswere treated with SEMS. This difference in treatment fail-ure was statistically significant compared with the post-operative group (P<10 4) and the stone-associated group(P<10 4) with an overallP<10 4for comparison of all4 groups (stone-associated, postoperative, chronic pan-creatitis, and idiopathic groups) simultaneously	

Yang, Catherine J et al. Surgery for chronic pancreatitis: the role of early surgery in pain management. Pancreas. 44. 819-23. 2015

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 3 **Study type:** restrospective study	**Funding sources:** not app. **Conflict of Interests:** not app **Randomization:** none **Blinding:** none **Dropout rates:** 383 pat operated: 317excluded for	**Total no. patients:** 2,642 patients were admitted withthe diagnosis of CP. 383 of these patients (14.5%) received a de-finitive surgical procedure. Of these, 66 patients were eligibleper stringent criteria for inclusion in the study **Recruiting Phase:** 2003-2011 **Inclusion criteria:** Diagnosis of recurrent acute or CP, pat. who received a definitive surgical procedure in this same period. only inclusion of patients whose operative indication was pain. Diagnosis of CP was confirmed on chart review:	**Interventions:** Definitive surgical procedures were defined as lateralpancreaticojejunostomy (Puestow procedure); Frey procedure;pancreaticoduodenectomy, including the Whipple procedure;total pancreatectomy; distal pancreatectomy; and duodenum-preserving pancreatic head resection (Beger procedure). **Comparison:**

	diffenet reasons (lost to f-Up, exclusion criteria etc)	either by pathol-ogy, imaging, or both. **Exclusion criteria:** neoplasm in-cluding pancreatic adenocarcinoma and cholangiocarcinoma, ifpatients died before 3-year follow-up postoperatively, if therewas inadequate information at 3 years follow-up, or if patientswere lost to follow-up before 3 years postoperatively.	
Notes:	**Author's conclusion:** early surgical intervention of 26.5 months or less of diagnosis is associated with improved pain control surgery for pain control effective if undertaken earlier in the clinical course of CP		
Outcome Measures/results	**Primary** Primary outcome was pain-free status at 3 years follow-up. **Secondary** Secondary outcomes were need for opioid pain relief, exocrinepancreatic function, and endocrine pancreatic function.	**Results:** Twenty-six patients (39.4%) were free of pain at the 3-year follow-up. Thirty-four patients (51.5%) were opioid users at follow-up. Postoperatively, 34 patients(51.5%) demonstrated endocrine, and 32 patients (48.5%) demonstratedexocrine insufficiency. The optimal cutoff point for preoperative CP dura-tion was 26.5 months (area under the curve, 0.66). Shorter duration of CP before surgery was a predictor of pain-free status and reduced postopera-tive opioid use at follow-up	

Yang, Xiu-Jiang et al. A minimally invasive alternative for managing large pancreatic duct stones using a modified expandable metal mesh stent. Pancreatology. 9. 111-5. 2009

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 3 **Study type:** restrospective analysis	**Funding sources:** not app. **Conflict of Interests:** not app. **Randomization:** no randomization **Blinding:** no blindig **Dropout rates:** 383 pat operated: 317excluded for diffenet reasons (lost to f-Up, exclusion criteria etc)	**Total no. patients:** 2,642 patients were admitted withthe diagnosis of CP. 383 of these patients (14.5%) received a de-finitive surgical procedure. Of these, 66 patients were eligibleper stringent criteria for inclusion in the study **Recruiting Phase:** 2003-2011 **Inclusion criteria:** Diagnosis of recurrent acute or CP, pat. who received a definitive surgical procedure in this same period. only inclusion of patients whose operative indication was pain. Diagnosis of CP was confirmed on chart review: either by pathol-ogy, imaging, or both. **Exclusion criteria:** neoplasm in-cluding pancreatic adenocarcinoma and cholangiocarcinoma, ifpatients died before 3-year follow-up postoperatively, if therewas inadequate information at 3 years follow-up, or if patientswere lost to follow-up before 3 years postoperatively.	**Interventions:** Definitive surgical procedures were defined as lateralpancreaticojejunostomy (Puestow procedure); Frey procedure;pancreaticoduodenectomy, including the Whipple procedure;total pancreatectomy; distal pancreatectomy; and duodenum-preserving pancreatic head resection (Beger procedure). **Comparison:**
Notes:	**Author's conclusion:** early surgical intervention of 26.5 months or less of diagnosis is associated with improved pain control surgery for pain control effective if undertaken earlier in the clinical course of CP		
Outcome Measures/results	**Primary** Primary outcome was pain-free status at 3 years follow-up. **Secondary** Secondary outcomes were need for opioid pain relief, exocrinepancreatic function, and endocrine pancreatic function.	**Results:** Twenty-six patients (39.4%) were free of pain at the 3-year follow-up. Thirty-four patients (51.5%) were opioid users at follow-up. Postoperatively, 34 patients(51.5%) demonstrated endocrine, and 32 patients (48.5%) demonstratedexocrine insufficiency. The optimal cutoff point for preoperative CP dura-tion was 26.5 months (area under the curve, 0.66). Shorter duration of CP before surgery was a predictor of pain-free status and reduced postopera-tive opioid use at follow-up	

Zheng, Ming-Wei et al. Endoscopic pancreatic duct and biliary duct stenting in treatment of chronic pancreatitis with distal benign biliary stricture: a single-center experience. HBPD INT. 10. 539-43. 2011

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 3 **Study type:** Retrospective Case series	**Funding sources:** Not defined **Conflict of Interests:** not defined **Randomization:** None **Blinding:** None	**Total no. patients:** 68 ERCPs were performed in 21 patients a **Recruiting Phase:** 2004 - 2010 **Inclusion criteria:** The diagnostic criteria were typical manifestations (abdominal pain, pancreaticexocrine insufficiency) and/or definite pathologicalfindings, supporting imaging findings [endoscopicretrograde cholangiopancreatography (ERCP), magneticresonance cholangiopancreatography (MRCP), computedtomography (CT)], and exclusion of pancreatic tumors. **Exclusion criteria:** not defined	**Interventions:** Endoscopic stenting of bile duct and pancreatic duct. Extraction of pancreatic duct stones. **Comparison:** No comparison

	Dropout rates: not appl		
Notes:	**Author's conclusion:** ndoscopic stent drainage of the pancreatic duct and biliary duct for chronic pancreatitis with distal biliary benign stricture can be selected as a safe, effective and minimally invasive therapeutic method.		
Outcome Measures/results	**Primary** follow-up time was 28.4 (range 4-68): Bilirubin level, pain score, BMI **Secondary**	**Results:** Sixty-eight ERCPs were performed for these 21 patients with an average of 3.2 ERCPs per patient. A total of 47 pancreatic duct stents and 39 biliary duct stents were inserted. The average duration of stenting was 11.3 months. Up to the end of follow-up, there were still 3 pancreatic duct stents and 2 biliary duct stents not removed. Significant improvement of pain score and BMI 3 months after ERCP, significant improvement of builirubin value.	

Literatursammlung:

AG5-AP: Prävention infektiöser Komplikationen_Literatursuche

Inhalt: *144 Literaturstellen*

Literaturstelle	Evidenzlevel	Studientyp
Abdelhafez, Mohamed 2013	4	yes
Abou-Assi, Souheil 2002	1	
Austrums, Edmunds 2003	1	
Bakker, Olaf J 2014	2	
Bakker, Olaf J 2014	1	
Bakker, Olaf J 2011	5	
Baltatzis, Minas 2016	1	
Bassi, C 1998	1	
Bassi, C 2001	1	
Behrman, Stephen W 2011	1	
Besselink, Marc G H 2004	1	
Besselink, Marc G 2009	1	
Besselink, Marc Gh 2008	4	
Bongaerts, Ger P A 2016	1	
Bourgaux, Jean-François 2007	1	
Chang, Yu-sui 2013	1	
Connor, S 2004	3	retrospective design
Davies, Andrew R 2011	1	
de Vries, Annemarie C 2007	1	
De Waele, Jan J	1	

2014		
De Waele, Jan J 2003	1	
Delcenserie, R 1996	1	
Doley, Rudra Prasad 2009	2	
Eckerwall, Gunilla E 2006	2	
Eckerwall, Gunilla E 2007	2	
Ellery, Kate M 2017	1	
Fuentes-Orozco, Clotilde 2008	1	
Garg, P K 2001	3	prospective cohort study. Descriptive
Gloor, B 2001	1	
Golub, R 1999	1	
González-López, Jaime 2016	1	
Gougol, Amir 2017	2	prospective cohort
Gupta, R 2003	1	
Hallay, J 2001	1	
Hamada, Yukihiro 2012	1	
Hamvas, J 2001	2	
Hart, Phil A 2008	2	
He, Juan 2016	2	
He, Yue-Ming 2003	1	
Hegazi, Refaat 2011	1	
Hongyin, Liang 2017	3	single-center, randomized, and controlled trial
Ignatavicius, Povilas 2012	2	prospective, non-randomized, single-centre, cohort study
Isenmann, Rainer 2004	2	RCT
Jacobson, Brian C 2007	2	Prospective, Randomized Trial
Jin, Meng 2017	3	A propensity score matched cohort study
Karakan, Tarkan 2007	1	randomized prospective double-blind controlled clinical trial

Kochhar, Rakesh 2009	3	observational cohort study
Kumar, Ajay 2006	2	Prospective Randomized Controlled Trial
Lariño-Noia, J 2014	2	randomized, parallel, factorial four-way open-Label trial
Li, Jie-Yao 2013	2	Meta-Analysis
Li, Juan 2013	2	prospective, randomized, controlled trial
Li, Xueping 2014	2	Meta-analysis
Ma, Jiemin 2016	3	Randomized Controlled Trial
Manes, Gianpiero 2003	2	RCT
Manes, Gianpiero 2006	2	Controlled Randomized Study
Maraví-Poma, Enrique 2003	2	RCT unblinded
Márta, Katalin 2016	3	Meta-Analysis
McGovern, Paul C 2014	2	Subject data from Phase 3 and 4 comparative tigecycline studies as case control study
Nakaharai, Kazuhiko 2018	2	retrospective population-based cohort study using the nationwide Japanese Diagnosis Procedure Combination
Nordback, I 2001	4	Single-Center Randomized Study
Nørgaard, M 2005	2	retrospective case control study
Ockenga, Johann 2002	3	randomized, controlled study
Otsuki, Makoto 2006	3	consensus guideline
Pascual, Isabel 2013	4	retrospective cohort study/ case series
Patel, Krutika S 2014	2	
Pearce, Callum B 2006	3	randomized controlled
Petrov, Maxim S 2008	2	meta-analysis
Petrov, Maxim S 2006	1	
Petrov, Maxim S 2013	2	randomized controlled trial
Pezzilli, R 2007	2	descriptive study
Pezzilli, Raffaele 2006	3	
Pia?cik, Marta	2	prospective randomized

2010		
Piciucchi, Matteo 2010	3	prospective
Plaudis, H 2012	2	controlled study, system of randomization not clear
Pupelis, G 2014	2	retrospective study of two cohorts
Pupelis, G 2001	2	randomized controlled study
Pupelis, G 2006	3	feasibility study
Qin, H-L 2008	3	prospective, randomized
Qu, Rong 2012	3	randomized controlled
Rana, Surinder S 2015	4	single arm prospective study
Rayes, Nada 2010	3	
Ren, Tingting 2015	2	retrospective, descriptive, observational study
Ribeiro, M Dinis 2002	1	Fallkontrollstudie
Riché, Florence C 2003	2	
Runzi, Michael 2005	3	retrospective
Russell, Peter S 2017	3	retrosepctive observational study
Räty, S 2002	3	prospective randomized
Røkke, Ola 2007	2	
Sadowski, Samira M 2015	5	prospective Randomized controlled clinical Trial
Sahar, Nadav 2018	3	retrospective
Sahar, Nadav 2018	4	retrospective case series
Sahin, H 2007	3	prospective randomized
Sathiaraj, E 2008	2	prospective randomized
Sawa, Hidehiro 2007	2	retrospectively analyzed
Schmidt, Palle N 2014	3	retrosepctive study
Schwender, Brian J 2015	3	retrospective cohort study
Seminerio, Jennifer 2014	3	review
Sharma, Brij 2010	2	randomized controlle double-blind
Sharma, V K	1	metaanalysis

2001		
Shen, Q-X 2017	4	70 cases of patients with severe acute pancreatitis were cured in our hospital from April 2015 to January 2016.
Shi, Dun 2002	3	retrospective
Singh, Namrata 2014	4	randomized controlled trial , single center study, placebo-kontrolliert
Singh, Namrata 2012	4	A Noninferiority Randomized Controlled Trial
Spanier, B W M 2008	3	Observational study in 18 hospitals
Spanier, B W M 2010	3	Multicenter observational study. Etiology, disease course, CT timing, Balthazar CT score, and clinical manage- ment were evaluate
Stanga, Zeno 2005	3	rom January 1999 to October 2002, 57 patients receiving enteral nutrition by PEG/J or DPEJ were retrospectively analyzed during a follow-up period of 6 months.
Stimac, D 2016	4	A randomized clinical trial
Stuecklin-Utsch, A 2002	3	We performed a retrospective analysis of all 31 patients who had received liposomal amphotericin B by 1999
Sun, Edward 2013	4	20 question survey regarding practice patterns in the management of acute pancreatitis was distributed to physicians at multiple internal medicine and gastroenterology conferences in North America between 2009 and 2010. Responses were analyzed using the chi-square test and multivariate logistic regression.
Sun, Jia-Kui 2013	3	prospektiv randomisierte klinische Pilot Studie, ein Zentrum
Sun, Jia-Kui 2013	4	single-center, prospective, and randomized con- trolled clinical trial
Sun, Shaoliang 2009	3	Probiotics in patients with severe acute pancreatitis: a meta-analysis
Takeda, K 2001	3	Retrospective
Takeda, K 2001	3	Benefit of Continuous Regional Arterial Infusion of Protease Inhibitor and Antibiotic in the Management of Acute Necrotizing Pancreatitis
Takeda, Kazunori 2006	2	Leitlinie
Talukdar, Rupjyoti 2014	3	observational study
Targarona Modena, Javier 2006	3	
van Baal, M C 2012	3	Retrospective
van Grinsven, Janneke 2016	3	an international expert survey and case vignette study
van Santvoort, Hjalmar C 2011	4	Retrospective Analysis
Vieira, Josiel Paiva 2010	2	
Wacke, Rainer	2	

2006		
Wada, Keita 2010	4	
Wang, Gang 2007	1	
Wang, Guiliang 2013	4	prospective double-blind study, and a total of 183 patients diagnosed with SAP who were admitted to the intensive care
Wang, Xinying 2008	4	A Randomized and Controlled Study
Wang, Xinying 2009	4	RCT Pilot
Wereszczynska-Siemiatkowska, Urszula 2013	3	A retrospective analysis was performed on 420 consecutive patients hospitalized from 2001 to 2010 with a diagnosis of AP.
Windsor, A C 1998	4	Patients were stratified according to disease severity and randomised to receive either TPN or TEN for seven days and then re-evaluated.
Wittau, Mathias 2009	4	
Wu, Xing-Mao 2010	4	first week of hospitalization, they were randomized
Xiong, Guang-Su 2006	4	A Meta-Analysis
Xiong, Jiongxin 2009	4	prospective, randomized and controlled tria
Xu, Tao 2008	3	meta-analysis
Xue, Ping 2009	4	randomized, controlled trial
Yao, Linhua 2010	3	
Yasuda, Takeo 2007	3	
Zeng, Yan Bo 2014	3	
Zhang, Ming-Ming 2010	4	
Zhang, Shao-Yang 2014	3	
Zhao, Gang 2003	1	
Zhao, Xian L 2015	1	
Zhou, Mengtao 2013	3	
Zou, L 2014	3	

OXFORD (2011) Appraisal Sheet: Systematic Reviews: *25 Bewertung(en)*

Bakker, Olaf J et al. Timing of enteral nutrition in acute pancreatitis: meta-analysis of individuals using a single-arm of randomised trials. Pancreatology. 14. 340-6. 2014

Evidence level/Study Types	P - I - C	Outcomes/Results	Literature References
Evidence level: 2 **Study type:** **Databases:** **Search period:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** **Author's Conclusion:**	

Methodical Notes

Funding Sources:

COI:

Study Quality:

Heterogeneity:

Publication Bias:

Notes:

Bassi, C et al. Prophylaxis for septic complications in acute necrotizing pancreatitis. J Hepatobiliary Pancreat Surg. 8. 211-5. 2001

Evidence level/Study Types	P - I - C	Outcomes/Results	Literature References
Evidence level: 1 **Study type:** **Databases:** **Search period:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** **Author's Conclusion:**	

Methodical Notes

Funding Sources:

COI:

Study Quality:

Heterogeneity:

Publication Bias:

Notes:

Chang, Yu-sui et al. Nasogastric or nasojejunal feeding in predicted severe acute pancreatitis: a meta-analysis. Crit Care. 17. R118. 2013

Evidence level/Study Types	P - I - C	Outcomes/Results	Literature References
Evidence level: 1	**Intervention:**	**Primary:**	

Study type: **Databases:** **Search period:** **Inclusion Criteria:** **Exclusion Criteria:**	**Comparison:**	**Secondary:** **Results:** **Author's Conclusion:**	

Methodical Notes

Funding Sources:

COI:

Study Quality:

Heterogeneity:

Publication Bias:

Notes:

de Vries, Annemarie C et al. Randomized controlled trials of antibiotic prophylaxis in severe acute pancreatitis: relationship between methodological quality and outcome. Pancreatology. 7. 531-8. 2007

Evidence level/Study Types	P - I - C	Outcomes/Results	Literature References
Evidence level: 1 **Study type:** **Databases:** **Search period:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** **Author's Conclusion:**	

Methodical Notes

Funding Sources:

COI:

Study Quality:

Heterogeneity:

Publication Bias:

Notes:

Golub, R et al. Role of antibiotics in acute pancreatitis: A meta-analysis. J. Gastrointest. Surg. 2. 496-503. 1999

Evidence level/Study Types	P - I - C	Outcomes/Results	Literature References
Evidence level: 1 **Study type:** **Databases:** **Search period:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:**	

Inclusion Criteria: **Exclusion Criteria:**		**Author's Conclusion:**	

Methodical Notes

Funding Sources:

COI:

Study Quality:

Heterogeneity:

Publication Bias:

Notes:

Hart, Phil A et al. Prophylactic antibiotics in necrotizing pancreatitis: a meta-analysis. South. Med. J. 101. 1126-31. 2008

Evidence level/Study Types	P - I - C	Outcomes/Results	Literature References
Evidence level: 2 **Study type:** **Databases:** **Search period:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** **Author's Conclusion:**	

Methodical Notes

Funding Sources:

COI:

Study Quality:

Heterogeneity:

Publication Bias:

Notes:

Li, Jie-Yao et al. Enteral nutrition within 48 hours of admission improves clinical outcomes of acute pancreatitis by reducing complications: a meta-analysis. PLoS ONE. 8. e64926. 2013

Evidence level/Study Types	P - I - C	Outcomes/Results	Literature References
Evidence level: 2 **Study type:** Meta-Analysis **Databases:** PubMed, EMBASE Databases, Web of Science, the Cochrane library, and scholar.google.com **Search period:** from inception to December	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** Eleven studies containing 775 patients with acute pancreatitis were analyzed. Results from a pooled analysis of all the studies demonstrated that early enteral nutrition was associated with significant reductions in all the infections as a whole (OR 0.38; 95%CI 0.21–0.68, P,0.05), in catheter-related septic complications (OR 0.26; 95%CI 0.11–0.58, P,0.05), in	

2012 **Inclusion Criteria:** Available randomized comparative trials (RCT) or retrospective comparative trials fully reported with detailed information; (ii) population: patients with AP; (iii) intervention: EN initiated within 48 hours of admission and controlled by TPN or EN outside 48 hours. **Exclusion Criteria:** Studies were exclude if they were: (i) duplicate publications; (ii) case report, review, meta-analysis, or guideline; (iii) not reporting clinical relevant outcomes; (iv) not providing enough details.		pancreatic infection (OR 0.49; 95%CI 0.31–0.78, P,0.05), in hyperglycemia (OR 0.24; 95%CI 0.11–0.52, P,0.05), in the length of hospitalization (mean difference 22.18; 95%CI 23.482(20.87); P,0.05), and in mortality (OR 0.31; 95%CI 0.14–0.71, P,0.05), but no difference was found in pulmonary complications (P.0.05). **Author's Conclusion:** Enteral nutrition within 48 hours of admission is feasible and improves the clinical outcomes in acute pancreatitis as well as in predicted severe or severe acute pancreatitis by reducing complications.	
Methodical Notes			
Funding Sources: **COI:** **Study Quality:** **Heterogeneity:** **Publication Bias:** **Notes:**			

Li, Xueping et al. Early enteral nutrition within 24 hours or between 24 and 72 hours for acute pancreatitis: evidence based on 12 RCTs. Med. Sci. Monit. 20. 2327-35. 2014

Evidence level/Study Types	P - I - C	Outcomes/Results	Literature References
Evidence level: 2 **Study type:** Meta-analysis **Databases:** PubMed, EMBASE, MEDLINE, the Cochrane Library, and ClinicalTrials.com **Search period:** Jan 1990 to May 2014 **Inclusion Criteria:** ("enteral nutrition" OR "nasojejunal" OR "nasogastric") AND ("acute pancreatitis) AND ("randomized controlled trial" OR "RCT" OR "clinical trial" OR "trial") **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** Pooled analysis showed that EEN, but not TPN or delayed enteral nutrition (DEN), is associated with reduced risk of pancreatic infection, mortality, organ failure, hyperglycemia, and catheter-related septic complications. EEN within 24 h of admission presented significantly better outcome in morality than EEN between 24 and 72 h. **Author's Conclusion:** If the patients are reasonably expected to have high compliance to EN therapy, it could be considered as early as possible.	
Methodical Notes			

Funding Sources:

COI:

Study Quality:

Heterogeneity:

Publication Bias:

Notes:

Márta, Katalin et al. Meta-Analysis of Early Nutrition: The Benefits of Enteral Feeding Compared to a Nil Per Os Diet Not Only in Severe, but Also in Mild and Moderate Acute Pancreatitis. Int J Mol Sci. 17. . 2016

Evidence level/Study Types	P - I - C	Outcomes/Results	Literature References
Evidence level: 3 **Study type:** Meta-Analysis **Databases:** Embase, PubMed, and Cochrane database. **Search period:** **Inclusion Criteria:** A manual search was performed to find the relevant articles. Only articles in English and with relevant data in the early phase treatment of AP were included. **Exclusion Criteria:** Duplications were excluded.	**Intervention:** **Comparison:**	**Primary:** Analyses of the primary endpoints(P: nutrition in AP; I: enteral nutrition (EN); C: nil per os diet (NPO); and O: outcome) did not show significant differences between the groups **Secondary:** **Results:** **Author's Conclusion:**	

Methodical Notes

Funding Sources: This study was supported by the Hungarian Scientific Research Fund (K116634 to PH) and the Momentum Grant of the Hungarian Academy of Sciences (LP2014-10/2014 to PH).

COI: The authors declare no conflict of interest.

Study Quality:

Heterogeneity:

Publication Bias:

Notes:
small number of studies included

Otsuki, Makoto et al. Consensus of primary care in acute pancreatitis in Japan. World J. Gastroenterol. 12. 3314-23. 2006

Evidence level/Study Types	P - I - C	Outcomes/Results	Literature References
Evidence level: 3 **Study type:** consensus guideline **Databases:** **Search period:** **Inclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** **Author's Conclusion:**	

Exclusion Criteria:			

Methodical Notes

Funding Sources:

COI:

Study Quality:

Heterogeneity:

Publication Bias:

Notes:
consensus guideline on acute pancreatitis is a review of literatures and experts' opinions in Japan

Patel, Krutika S et al. Potential influence of intravenous lipids on the outcomes of acute pancreatitis. Nutr Clin Pract. 29. 291-4. 2014

Evidence level/Study Types	P - I - C	Outcomes/Results	Literature References
Evidence level: 2 **Study type:** **Databases:** **Search period:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** **Author's Conclusion:**	

Methodical Notes

Funding Sources:

COI:

Study Quality:

Heterogeneity:

Publication Bias:

Notes:

Petrov, Maxim S et al. Nasogastric tube feeding in predicted severe acute pancreatitis. A systematic review of the literature to determine safety and tolerance. JOP. 9. 440-8. 2008

Evidence level/Study Types	P - I - C	Outcomes/Results	Literature References
Evidence level: 2 **Study type:** meta-analysis **Databases:** Cochrane Central Register of Controlled Trials, EMBASE and MEDLINE **Search period:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** **Author's Conclusion:**	

Methodical Notes
Funding Sources: **COI:** **Study Quality:** **Heterogeneity:** **Publication Bias:** **Notes:**

Pezzilli, Raffaele et al. New approaches for the treatment of acute pancreatitis. JOP. 7. 79-91. 2006			
Evidence level/Study Types	**P - I - C**	**Outcomes/Results**	**Literature References**
Evidence level: 3 **Study type:** **Databases:** **Search period:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** **Author's Conclusion:**	
Methodical Notes			
Funding Sources: **COI:** **Study Quality:** **Heterogeneity:** **Publication Bias:** **Notes:** This paper is a compilation of slides held at a meeting (European Society of Pancreatology, Lisbon 2005)			

Rayes, Nada et al. Probiotics in surgical and critically ill patients. Ann. Nutr. Metab. 57 Suppl. 29-31. 2010			
Evidence level/Study Types	**P - I - C**	**Outcomes/Results**	**Literature References**
Evidence level: 3 **Study type:** **Databases:** **Search period:** **Inclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** occurrence of bacterial infections **Secondary:** **Results:** in the studies with acute pancreatitis patients: conflicting results. In 2 of the trials, probiotics had a beneficial effect, whereas in the third study, the probiotic group had a significantly higher mortality, largely related to bowel ischemia. **Author's Conclusion:** Bacterial strains and their mode of administration should be extensively tested before using them in clinical trials, especially in patients with acute necrotizing pancreatitis and multiple organ failure	

Exclusion Criteria:			

Methodical Notes

Funding Sources:

COI:

Study Quality:

Heterogeneity:

Publication Bias:

Notes:
only 3 (out of 12) studies with acute pancreatitis

Seminerio, Jennifer et al. Jejunal feeding in patients with pancreatitis. Nutr Clin Pract. 29. 283-6. 2014

Evidence level/Study Types	P - I - C	Outcomes/Results	Literature References
Evidence level: 3 **Study type:** review **Databases:** not stated **Search period:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** **Author's Conclusion:** Early enteral feeding can prevent ileus, suppress further organ failure, and ultimately restore gut function if continued in an uninterrupted manner. The patient population with jejunal feeding will benefit from pancreatic rest and jejunal feeding specifically when compared with patients using nasogastric feeding tubes.	

Methodical Notes

Funding Sources:

COI:

Study Quality:

Heterogeneity:

Publication Bias:

Notes:

Sharma, V K et al. Prophylactic antibiotic administration reduces sepsis and mortality in acute necrotizing pancreatitis: a meta-analysis. Pancreas. 22. 28-31. 2001

Evidence level/Study Types	P - I - C	Outcomes/Results	Literature References
Evidence level: 1 **Study type:** metaanalysis **Databases:**	**Intervention:** Antibiotics	**Primary:** complications, superinfection **Secondary:**	

Search period: January 1966 until January 2000 **Inclusion Criteria:** 3 RCTs were included Keywords for the searchwerepancreatitis; pancreatitis, acute necrotizing; andtext wordacute pancreatitiscombined withantibiotics(keyword and text word). We searched for publicationsin abstract form using the article references and officialproceedings of all major North American and Europeanmeetings. **Exclusion Criteria:**	**Comparison:** no antibiosis	**Results:** Antibiotic prophylaxis sig-nificantly reduced sepsis by 21.1% (NNT5) and mortalityby 12.3% (NNT8) compared with no prophylaxis. Therewas also a nonsignificant trend toward a decrease in local pan-creatic infections (ARR12%; NNT8). **Author's Conclusion:** All patients with ANP should be given prophylaxis with anantibiotic with proven efficacy in necrotic pancreatic tissue.	

Methodical Notes

Funding Sources: none

COI: none

Study Quality:

Heterogeneity:

Publication Bias:

Notes:
older studies

Sun, Edward et al. Poor compliance with ACG guidelines for nutrition and antibiotics in the management of acute pancreatitis: a North American survey of gastrointestinal specialists and primary care physicians. JOP. 14. 221-7. 2013

Evidence level/Study Types	P - I - C	Outcomes/Results	Literature References
Evidence level: 4 **Study type:** 20 question survey regarding practice patterns in the management of acute pancreatitis was distributed to physicians at multiple internal medicine and gastroenterology conferences in North America between 2009 and 2010. Responses were analyzed using the chi-square test and multivariate logistic regression. **Databases:** **Search period:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** Out of 406 available respondents, 43.3% of physicians utilize total parenteral nutrition/peripheral parenteral nutrition (TPN/PPN) and 36.5% utilize nasojejunal (NJ) feedings. The preferred route of nutrition was significantly related to practice type (P<0.001): academic physicians were more likely to use NJ tube feeding than private practice physicians (52.1% vs. 19.9%) while private practitioners were more likely to utilize TPN/PPN than academic physicians (70.2% vs. 20.5%). Gastroenterologists and primary care physicians were equally non-compliant as both groups favored parenteral nutrition. Multivariate logistic regression demonstrated that practice type (P<0.001) was the only independent predictor of route of nutrition. Most survey respondents appropriately do not routinely utilize antibiotics for acute pancreatitis, but when antibiotics are initiated, they are for inappropriate indications such as fever and infection prophylaxis. **Author's Conclusion:** Many North American physicians are noncompliant with current ACG practice guidelines for the use of artificial nutrition in the management of acute pancreatitis, with overuse of TPN/PPN and underutilization of jejunal feedings. Antibiotics are initiated in acute pancreatitis for inappropriate indications, although there are conflicting	

		recommendations for antibiotics in severe acute pancreatitis. Improved compliance with guidelines is needed to improve patient outcomes.	

Methodical Notes

Funding Sources:

COI:

Study Quality:

Heterogeneity:

Publication Bias:

Notes:

Sun, Shaoliang et al. Probiotics in patients with severe acute pancreatitis: a meta-analysis. Langenbecks Arch Surg. 394. 171-7. 2009

Evidence level/Study Types	P - I - C	Outcomes/Results	Literature References
Evidence level: 3 **Study type:** Probiotics in patients with severe acute pancreatitis: a meta-analysis **Databases:** We searched the Cochrane Library, Medline, Embase, and Chinese Biomedicine Database. **Search period:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** The statistical analysis was per- formed by RevMan4.2.10 software. The result was expressed with odds ratio (OR) for the categorical variable. Results Four studies were included. The result showed that using probiotics could not reduce the risk of infection pancreatic necrosis (OR=0.56, 95% CI [0.13, 2.35]). There is no significant difference between the two groups in mortality (OR = 0.83, 95% CI [0.14, 4.83]), the mean duration of hospital (WMD = −1.20, 95% CI [−13.13, 10.92]) and the required operation (OR=0.59, 95% CI [0.11, 3.07]). **Author's Conclusion:** The present study showed the enteral feeding with probiotic could not reduce the infected necrosis and mortality. Future large-scale, high-quality, placebo-controlled, double-blind trials are needed.	

Methodical Notes

Funding Sources:

COI:

Study Quality:

Heterogeneity:

Publication Bias:

Notes:

Takeda, Kazunori et al. JPN Guidelines for the management of acute pancreatitis: medical management of acute pancreatitis. J Hepatobiliary Pancreat Surg. 13. 42-7. 2006

Evidence level/Study Types	P - I - C	Outcomes/Results	Literature References
Evidence level: 2 **Study type:** Leitlinie **Databases:** Leitlinien-Prozess nicht erläutert. **Search period:** unklar, Veröffentlicht 2006 **Inclusion Criteria:** Literatur zu medical, nicht chirurgischer Therapie der akuten Pankreatits (eklektisch) **Exclusion Criteria:** entfällt	**Population:** akute Pankreatits **Intervention:** keine **Comparison:** Leitlinie zur Therapie der akuten Pamkreatitis (AP) stellt folgende Fragen nach: adaequater Flüssigkeitszufuhr, Analgesie, Erfordernis nasogastraler sonde und H2-Blocker, Nutzen kontinuierlicher i.v. Gabe eines hochdosierten Protease-Inhibitors, enterale Ernährung besser als Total parenterale Ernährung, sinn prophylaktischer Gabe von Antibiotika zur Vermeidung von Infektionen bei schwerer akuter Pankreatitis, blood- purification therapy (CHDF und CHDF mit PMMA) bei schwerer AP. Und es wird die Frage gestellt ob eine regionale arterielle infusion von Antibiotika und proteaseinhibitoren die Mortalität und infektiöse Komplikationen bei der akuten nekrotisierenden Pankreatitis vermindern kann.	**Primary:** für die verschiedenen Fragen unterschiedlich. Der Grad der Empfehlungen ist überhaupt nicht nachvollziehbar. (A-D), keine Definition der Empfehlungsgrade. **Secondary:** entfällt **Results:** Emfehlungen der Leitlinie (in Klammern Anmerkungen der Gutachtern) 1. Fluid-Management: (keine ohne Angabe von Zielparametern) Subsitution von Fluid-Defiziten und basalem Bedarf empfohlen (A) 2. Schmerz: Schmerztherapie ist entscheiden (A) Buprenorphin empfohlen statt Procain, (differenziertes Schmerzmanagement, Messverfahren, PCA-Verfahren oder andere Medikamente werden nicht erwähnt) 3. nasogastrale Sonde und H2-Blocker: nasogastrale Sonde sei unnötig außer bei paralystischem Ileus oder anhaltendem Erbrechen; H2-seien unnötig, außer wenn ein Stressulkus auftritt. (D) 4. kontinuierliche Hochdosis i.v. eines Protease-Inhibitors: wird mit Grad B empfohlen, zur Reduktion von Komplikationen in der frühen Phase der schweren akuten Pankreatitis: Gabexate mesilat und Nafamostat mesilate. (keine für diese substanzen negative Studie wird hier erwähnt, von den nicht vorhandenen Zulassungen für die akute Pankreatitis in Eurpoa ganz zu schweigen) 5. enteraler Ernährungsbeginn in der Frühphase der schweren akuten Pankreatitis wird Empfohlen anstatt total parenter Ernährung, auß	siehe 1.13. Literaturverzeichnis spiegelt keine systematische Recherche wider.

		wenn ein Ileus vorhanden ist. , Grad A) Die Vorteile der nasogastralen Ernährung werden hervorgehoben gegenüber der nasojejunalen Ernährung - sollte nach Ansicht der Autoren weiter untersucht werden. 6. prophylaktische Antibiotika-Gabe - Breitspektrum-Antibiotikum) sei notwendig, um einer Infektion bei nekrotisierender Pankreatitis vorzubeugen - Grad A-Empfehlung. 7. Blood purification mit C(VV?)HDF bekommt eine Grad C Empfehlung als Maßnahme zur Vorbeugung eines Multiorgaversagens bei der schweren akuten Pankreatitis, da die Fähigkeit des Verfahrens zur Reduktion der Mortalität nicht erwiesen ist bislang. 8. Die kontinuierliche arterielle (!) regionale Infusion von Proteaseinhibitoren und auch von Antibiotika bekommt eine Grad C-Empfehlung , weil möglicherweise die Mortalitätsrate und die Rate infektiöser Komplikationen reduziert werden könne (nur japanische Autoren in der Literatur) **Author's Conclusion:** entfällt. (Anmerkung der Gutachterin: diese Japanischen Leitlinien sollte man aus dem Literaturverzeichnis unserer Leitlinie ausschliessen)	

Methodical Notes

Funding Sources: keine

COI: es werden viele Arbeiten der Leitlinienautoren zitiert.
Das Literatur verzeichnis ist extrem eklektisch

Study Quality: entfällt

Heterogeneity: entfällt

Publication Bias: siehe 3.13

Notes:
Leitlinie zur Therapie der akuten Pamkreatitis (AP) stellt folgende Fragen nach: adaequater Flüssigkeitszufuhr, Analgesie, Erfordernis nasogastraler sonde und H2-Blocker, Nutzen kontinuierlicher i.v. Gabe eines hochdosierten Protease-Inhibitors, enterale Ernährung besser als Total parenterale Ernährung, sinn prophylaktischer Gabe von Antibiotika zur Vermeidung von Infektionen bei schwerer akuter Pankreatitis, blood- purification therapy (CHDF und CHDF mit PMMA) bei schwerer AP. Und es wird die Frage gestellt ob eine regionale arterielle infusion von

Antibiotika und proteaseinhibitoren die Mortalität und infektiöse Komplikationen bei der akuten nekrotisierenden Pankreatitis vermindern kann.

Wada, Keita et al. Treatment strategy for acute pancreatitis. J Hepatobiliary Pancreat Sci. 17. 79-86. 2010

Evidence level/Study Types	P - I - C	Outcomes/Results	Literature References
Evidence level: 4 **Study type:** **Databases:** **Search period:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** **Author's Conclusion:**	

Methodical Notes

Funding Sources:

COI:

Study Quality:

Heterogeneity:

Publication Bias:

Notes:

Wittau, Mathias et al. The weak evidence base for antibiotic prophylaxis in severe acute pancreatitis. Hepatogastroenterology. 55. 2233-7. 2009

Evidence level/Study Types	P - I - C	Outcomes/Results	Literature References
Evidence level: 4 **Study type:** **Databases:** **Search period:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** One trial demonstrated that antibiotic prophylaxis reduces mortality, but the statistical design of this trial was questionable. Another impor- tant trial, showing an effect of antibiotic prophylaxis on the incidence of pancreatic sepsis, used the wrong statistical test to analyze their data. An analysis with the correct test could not confirm this effect. Three randomized clinical trials demonstrated thatantibiotic prophylaxis in severe acute pancreatitis could reduce the incidence of extrapancreatic infec- tions. Two trials showed a significant reduction of the overall infection rate; while in one of them peri- pancreatic and extrapancreatic infections alone were not significantly different. Two double blinded studies could not demonstrate a significant effect of antibiotic prophylaxis on pancreatic/peripancreatic infection, extrapancreatic infection or mortality. **Author's Conclusion:** Our analysis shows that some of the reported significant effects of prophylactic antibiotic treatment are either questionable or less clinically relevant. With regards to reduction in mortality and the incidence of infected pancreatic necrosis, no convincing evidence exists which supports the routine administration of prophylactic antibiotics in severe acute pancreatitis.	

Methodical Notes
Funding Sources: **COI:** **Study Quality:** **Heterogeneity:** **Publication Bias:** **Notes:**

Xiong, Guang-Su et al. Role of prophylactic antibiotic administration in severe acute pancreatitis: a meta-analysis. Med Princ Pract. 15. 106-10. 2006

Evidence level/Study Types	P - I - C	Outcomes/Results	Literature References
Evidence level: 4 **Study type:** A Meta-Analysis **Databases:** MEDLINE, China Biological Medicine, Embase and Cochrane Data Base for Systematic Reviews **Search period:** 1966 to 2004 **Inclusion Criteria:** randomized controlled trials on the efficacy of prophylactic antibiotics in patients with SAP **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** In pa- tients with SAP, prophylactic antibiotics, including broad- spectrum antibiotics that usually achieve therapeutic pancreatic tissue levels, did not reduce pancreatic infec- tion (relative risk, RR, 0.77, 95% confidence interval 0.48– 1.24, p = 0.28), surgical intervention (RR 0.84, 95% confi- dence interval 0.40–1.74, p = 0.64) and mortality rate (RR 0.54, 95% confidence interval 0.28–1.04, p = 0.07). **Author's Conclusion:** Prophylactic antibiotic administration is not an appropriate treatment strategy in patients with SAP, it should be limited in patients with pancreatic necrosis, as demonstrated by computerized tomography.	

Methodical Notes
Funding Sources: **COI:** **Study Quality:** **Heterogeneity:** **Publication Bias:** **Notes:**

Xu, Tao et al. Prophylactic antibiotic treatment in acute necrotizing pancreatitis: results from a meta-analysis. Scand. J. Gastroenterol. 43. 1249-58. 2008

Evidence level/Study Types	P - I - C	Outcomes/Results	Literature

			References
Evidence level: 3 **Study type:** meta-analysis **Databases:** **Search period:** updated to December 2007 **Inclusion Criteria:** A meta-analysis of all randomized controlled trials (RCTs) comparing prophylactic antibiotic treatment with placebo or no treatment was performed **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** The outcomes included infected necrosis, death, non-pancreatic infection, surgical intervention, and length of hospital stay. **Secondary:** **Results:** rophylactic antibiotic use leads to a significant reduction of infected necrosis (relative risk (RR) 0.69, 95% CI, 0.50 **Author's Conclusion:** Prophylactic antibiotic treatment is associated with a significant reduction of pancreatic or peripancreatic infection, non-pancreatic infection, and length of hospital stay, but cannot prevent death and surgical intervention in acute necrotizing pancreatitis	
Methodical Notes			
Funding Sources: **COI:** **Study Quality:** **Heterogeneity:** **Publication Bias:** **Notes:**			

Yao, Linhua et al. Prophylactic antibiotics reduce pancreatic necrosis in acute necrotizing pancreatitis: a meta-analysis of randomized trials. Dig Surg. 27. 442-9. 2010

Evidence level/Study Types	P - I - C	Outcomes/Results	Literature References
Evidence level: 3 **Study type:** **Databases:** **Search period:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** **Author's Conclusion:**	
Methodical Notes			
Funding Sources: **COI:** **Study Quality:** **Heterogeneity:** **Publication Bias:** **Notes:**			

Zhang, Ming-Ming et al. Use of pre-, pro- and synbiotics in patients with acute pancreatitis: a meta-

analysis. World J. Gastroenterol. 16. 3970-8. 2010			
Evidence level/Study Types	**P - I - C**	**Outcomes/Results**	**Literature References**
Evidence level: 4 **Study type:** **Databases:** **Search period:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** **Author's Conclusion:**	
Methodical Notes			
Funding Sources: **COI:** **Study Quality:** **Heterogeneity:** **Publication Bias:** **Notes:**			

OXFORD (2011) Appraisal Sheet: RCT: *59 Bewertung(en)*

Austrums, Edmunds et al. Postoperative enteral stimulation by gut feeding improves outcomes in severe acute pancreatitis. Nutrition. 19. 487-91. 2003		
Population	**Intervention - Comparison**	**Outcomes/Results**
Evidence level: 1 **Study type:** **Number of Patient:** **Recruitung Phase:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** **Author's Conclusion:**
Methodical Notes		
Funding Sources: **COI:** **Randomization:** **Blinding:** **Dropout Rate/ITT-Analysis:** **Notes:**		

Bakker, Olaf J et al. Early versus on-demand nasoenteric tube feeding in acute pancreatitis. N. Engl. J. Med. 371. 1983-93. 2014

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 1	**Intervention:**	**Primary:**
Study type:	**Comparison:**	**Secondary:**
Number of Patient:		**Results:**
Recruitung Phase:		**Author's Conclusion:**
Inclusion Criteria:		
Exclusion Criteria:		

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes:

Bakker, Olaf J et al. Pancreatitis, very early compared with normal start of enteral feeding (PYTHON trial): design and rationale of a randomised controlled multicenter trial. Trials. 12. 73. 2011

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 5	**Intervention:**	**Primary:**
Study type:	**Comparison:**	**Secondary:**
Number of Patient:		**Results:**
Recruitung Phase:		**Author's Conclusion:**
Inclusion Criteria:		
Exclusion Criteria:		

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes:

Baltatzis, Minas et al. Antibiotic use in acute pancreatitis: An audit of current practice in a tertiary centre. Pancreatology. 16. 946-951. 2016

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 1	**Intervention:**	**Primary:**

Study type:	Comparison:	Secondary:
Number of Patient:		Results:
Recruitung Phase:		Author's Conclusion:
Inclusion Criteria:		
Exclusion Criteria:		

Methodical Notes

Funding Sources:
COI:
Randomization:
Blinding:
Dropout Rate/ITT-Analysis:
Notes:

Bassi, C et al. Controlled clinical trial of pefloxacin versus imipenem in severe acute pancreatitis. Gastroenterology. 115. 1513-7. 1998

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 1	Intervention:	Primary:
Study type:	Comparison:	Secondary:
Number of Patient:		Results:
Recruitung Phase:		Author's Conclusion:
Inclusion Criteria:		
Exclusion Criteria:		

Methodical Notes

Funding Sources:
COI:
Randomization:
Blinding:
Dropout Rate/ITT-Analysis:
Notes:

Besselink, Marc G H et al. Probiotic prophylaxis in patients with predicted severe acute pancreatitis (PROPATRIA): design and rationale of a double-blind, placebo-controlled randomised multicenter trial [ISRCTN38327949]. BMC Surg. 4. 12. 2004

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 1	Intervention:	Primary:
Study type:	Comparison:	Secondary:
Number of Patient:		Results:

Recruitung Phase: **Inclusion Criteria:** **Exclusion Criteria:**		**Author's Conclusion:**

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes:

Besselink, Marc G et al. Intestinal barrier dysfunction in a randomized trial of a specific probiotic composition in acute pancreatitis. Ann. Surg. 250. 712-9. 2009

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 1 **Study type:** **Number of Patient:** **Recruitung Phase:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** **Author's Conclusion:**

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes:

Besselink, Marc Gh et al. Probiotic prophylaxis in predicted severe acute pancreatitis: a randomised, double-blind, placebo-controlled trial. Lancet. 371. 651-659. 2008

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 4 **Study type:** **Number of Patient:** **Recruitung Phase:** **Inclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** **Author's Conclusion:**

Exclusion Criteria:		

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes:

Doley, Rudra Prasad et al. Enteral nutrition in severe acute pancreatitis. JOP. 10. 157-62. 2009

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 2	**Intervention:**	**Primary:**
Study type:	**Comparison:**	**Secondary:**
Number of Patient:		**Results:**
Recruitung Phase:		**Author's Conclusion:**
Inclusion Criteria:		
Exclusion Criteria:		

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes:

Eckerwall, Gunilla E et al. Early nasogastric feeding in predicted severe acute pancreatitis: A clinical, randomized study. Ann. Surg. 244. 959-65; discussion 965-7. 2006

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 2	**Intervention:**	**Primary:**
Study type:	**Comparison:**	**Secondary:**
Number of Patient:		**Results:**
Recruitung Phase:		**Author's Conclusion:**
Inclusion Criteria:		
Exclusion Criteria:		

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes:

Eckerwall, Gunilla E et al. Immediate oral feeding in patients with mild acute pancreatitis is safe and may accelerate recovery--a randomized clinical study. Clin Nutr. 26. 758-63. 2007

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 2	**Intervention:**	**Primary:**
Study type:	**Comparison:**	**Secondary:**
Number of Patient:		**Results:**
Recruitung Phase:		**Author's Conclusion:**
Inclusion Criteria:		
Exclusion Criteria:		

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes:

Fuentes-Orozco, Clotilde et al. L-alanyl-L-glutamine-supplemented parenteral nutrition decreases infectious morbidity rate in patients with severe acute pancreatitis. JPEN J Parenter Enteral Nutr. 32. 403-11. 2008

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 1	**Intervention:**	**Primary:**
Study type:	**Comparison:**	**Secondary:**
Number of Patient:		**Results:**
Recruitung Phase:		**Author's Conclusion:**
Inclusion Criteria:		
Exclusion Criteria:		

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes:

Gupta, R et al. A randomised clinical trial to assess the effect of total enteral and total parenteral nutritional support on metabolic, inflammatory and oxidative markers in patients with predicted severe acute pancreatitis (APACHE II > or =6). Pancreatology. 3. 406-13. 2003

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 1	**Intervention:**	**Primary:**
Study type:	**Comparison:**	**Secondary:**
Number of Patient:		**Results:**
Recruitung Phase:		**Author's Conclusion:**
Inclusion Criteria:		
Exclusion Criteria:		

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes:
Small RCT not related to the Questions to AG4-AP.
Assessment of Quality and evidence not applicable.

He, Yue-Ming et al. Prevention and therapy of fungal infection in severe acute pancreatitis: A prospective clinical study. World J. Gastroenterol. 9. 2619-21. 2003

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 1	**Intervention:**	**Primary:**
Study type:	**Comparison:**	**Secondary:**
Number of Patient:		**Results:**
Recruitung Phase:		**Author's Conclusion:**
Inclusion Criteria:		
Exclusion Criteria:		

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes:

Hongyin, Liang et al. Abdominal paracentesis drainage improves tolerance of enteral nutrition in acute pancreatitis: a randomized controlled trial. Scand. J. Gastroenterol. 52. 389-395. 2017

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 3 **Study type:** single-center, randomized, and controlled trial **Number of Patient:** 83 patients in the APD group and 78 patients in the non-APD group **Recruitung Phase:** January 2015 and April 2016 **Inclusion Criteria:** **Exclusion Criteria:** Ages between 18 and 70 years The onset of symptoms consistent with AP within 72 h before admission to the hospital Patients admitted to the hospital with a first episode of AP and predicted as MSAP or SAP	**Intervention:** abdominal paracentesis **Comparison:**	**Primary:** The mortality in the non-APD group (6.4%) was a litter higher than that in the APD group (3.6%; p<.05 there was no significant difference in the frequency of organ failure between two groups>.05); 67 patients (80.7%) in the APD Group and 63 patients (80.8%) in the non-APD group had at least one organ failure. However, the frequency of multiple organ failures was higher in the non-APD group compared with the APD group (p<.05 the mean duration of organ failure in non-apd group was also higher than apd although> the difference did not reach statistical significance (p>.05). **Secondary:** **Results:** **Author's Conclusion:** this randomized controlled trial demonstrated that APD could improve the administration of EN in acute pancreatitis. Given the positive effects of EN on clinical outcomes, this phenomenon possibly explains why APD could improve clinical outcomes in acute pancreatitis patients in some respects.

Abdominal or pelvic cavity fluid collections >100 mL were diagnosed by ultrasound and favorable puncture pathway was available		

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes:

Isenmann, Rainer et al. Prophylactic antibiotic treatment in patients with predicted severe acute pancreatitis: a placebo-controlled, double-blind trial. Gastroenterology. 126. 997-1004. 2004

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 2 **Study type:** RCT **Number of Patient:** 190 **Recruitung Phase:** January1999 and June 2002 **Inclusion Criteria:** AP undergoing surgery intraoperative smears, follow-up **Exclusion Criteria:**	**Intervention:** Metronidazol or cirpofloxicin **Comparison:** placebo	**Primary:** to demonstrate that prophy-lactic intravenous ciprofloxacin/metronidazole is efficacious inreducing the incidence of infected pancreatic necrosis (primaryend point). Infected pancreatic necrosis was defined as thepresence of bacteria in intraoperative smears taken from thepancreas or assumed if computed tomography-guided or ul-trasound-guided,fine-needle aspiration from necrotic area re-vealed bacterial infection. **Secondary:** death, extrapancre-atic infection, surgical treatment for necrotizing pancreatitis,duration of stay in the intensive care unit, and hospitalizationas well as systemic complications of the disease. **Results:** Fifty-eight patients received CIP/MET and 56patients PLA. Twenty-eight percent in the CIP/METgroup required open antibiotic treatment vs. 46% withPLA. Twelve percent of the CIP/MET group developedinfected pancreatic necrosis compared with 9% of thePLA group (P0.585). Mortality was 5% in theCIP/MET and 7% in the PLA group. In 76 patients withpancreatic necrosis on contrast-enhanced CT scan, nodifferences in the rate of infected pancreatic necrosis,systemic complications, or mortality were observed. **Author's Conclusion:** This study detected no benefit of antibi-otic prophylaxis with respect to the risk of developinginfected pancreatic necrosis.

Methodical Notes

Funding Sources: None

COI: None

Randomization: yes

Blinding: yes

Dropout Rate/ITT-Analysis: yes

Notes:

Jacobson, Brian C et al. A prospective, randomized trial of clear liquids versus low-fat solid diet as the initial meal in mild acute pancreatitis. Clin. Gastroenterol. Hepatol. 5. 946-51; quiz 886. 2007

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 2 **Study type:** Prospective, Randomized Trial **Number of Patient:** 121 patients: 66 to clear liquid diet (CLD), 55 to ow-fat solid diet (LFSD) **Recruitung Phase:** **Inclusion Criteria:** 1. Amylase and/or lipase >3x the upper limit of normal or >2x the upper limit of normal and a CT scan demonstrating unequivocal acute pancreatitis with peri-pancreatic inflammation (a Balthazar-Ranson score ≥C).9 2. Mild acute pancreatitis (absence of pancreatic necrosis if an abdominal CT scan was obtained with intravenous contrast and absence of organ dysfunction at any time after hospital admission including hypoxemia [oxygen saturation <90%], Hypotension [systolic blood pressure <90mmHg], and renal insufficiency [creatinine >2mg/dl without pre-existing renal disease]). 3. Ability to be contacted by phone after hospital discharge. 4. Leukocyte count <16,000/mm and temperature <101.6 degrees Fahrenheit on the day of study enrollment. **Exclusion Criteria:** 1. Received any enteral nutrition prior to randomization; 2. Received parenteral narcotics for abdominal pain <6 hours prior to randomization; 3. Were considered likely to have poor oral intake or prolonged hospitalization for reasons other than pancreatitis (e.g. severe comorbidities, a pre-existing problem with oral feeding such as gastroparesis, or a likely surgical intervention during the Hospital admission); 4. Had a pancreatic neoplasm; 5. Were under the direct care of a study team member, enrolled in another pancreasrelated clinical trial, or enrolled previously in this study.	**Intervention:** **Comparison:**	**Primary:** The primary outcome of the study was the length of hospitalization (LOH) from the time of refeeding until discharge. **Secondary:** Secondary outcomes included the frequency that subjects were made NPO because of pain, nausea or vomiting after refeeding, and the need for hospital eadmission within 28 days of refeeding. **Results:** The median LOH after refeeding was identical in both Groups. Patients in the LFSD arm consumed significantly more calories and grams of fat than those in the CLD arm during their first meal and on study day #1. **Author's Conclusion:** Initiating oral nutrition after mild acute pancreatitis with a LFSD appeared safe and provided more calories than a CLD, but did not result in a shorter LOH.

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes:

Jin, Meng et al. The optimal timing of enteral nutrition and its effect on the prognosis of acute pancreatitis: A propensity score matched cohort study. Pancreatology. 17. 651-657. 2017

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 3 **Study type:** A propensity score matched cohort study **Number of Patient:** 104 **Recruitung Phase:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** The ROC curve analysis showed that the third day after hospital admission was the best cut-off time of early EN.After PS matching, the proportion of secondary infection in the early EN group was significantly lower than the late EN Group. **Author's Conclusion:** Early EN initiated within three days could reduce the risk of secondary infection and improve the nutritional status of patients with acute pancreatitis, with a better tolerance.

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes:

Karakan, Tarkan et al. Comparison of early enteral nutrition in severe acute pancreatitis with prebiotic fiber supplementation versus standard enteral solution: a prospective randomized double-blind study. World J. Gastroenterol. 13. 2733-7. 2007

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 1 **Study type:** randomized prospective double-blind controlled clinical trial **Number of Patient:** 30 **Recruitung Phase:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** Comparison of early enteral nutrition in severe acute pancreatitis with prebiotic fiber supplementation versus standard enteral solution **Comparison:**	**Primary:** **Secondary:** **Results:** The median duration of hospital stay was shorter in the study Group. The mean duration of APACHE II normalization (APACHE II score < 8) was shorter in the study group than in the control group (4 ± 2 d vs 6.5 ± 3 d, P < 0.05). The mean duration of CRP normalization was also shorter in the study group than in the control group (7 ± 2 d vs 10 ± 3 d, P < 0.05). **Author's Conclusion:** Nasojejunal EN with prebiotic fiber supplementation in severe AP improves hospital stay, duration nutrition therapy, acute phase response and overall complications compared to standard EN therapy.

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes:

Kumar, Ajay et al. Early enteral nutrition in severe acute pancreatitis: a prospective randomized controlled trial comparing nasojejunal and nasogastric routes. J. Clin. Gastroenterol. 40. 431-4. 2006

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 2 **Study type:** Prospective Randomized Controlled Trial **Number of Patient:** 31 (15 vs. 16) **Recruitung Phase:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** A total of 31 patients with SAP were randomized to feeding by either NG (15 patients) or NJ (16 patients). A semi-elemental formula was used through an enteral tube in both groups. **Comparison:**	**Primary:** **Secondary:** **Results:** There was no difference in the outcome measures (ie, discharge, surgery, and death). **Author's Conclusion:** EN at a slow infusion is well tolerated by both NJ and NG routes in patients with SAP.

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes:

Lariño-Noia, J et al. Early and/or immediately full caloric diet versus standard refeeding in mild acute pancreatitis: a randomized open-label trial. Pancreatology. 14. 167-73. 2014

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 2 **Study type:** randomized, parallel, factorial four-	**Intervention:** 4 groups. Group 1 and 2 received a stepwise increasing diet during three days while 3 and 4 received an immediately full caloric, low fat diet. Group 2 and 4 started refeeding early (once bowel sounds returned) and 1 and 3 started at standard time (bowel sounds present, no abdominal pain, no fever,	**Primary:** **Secondary:** **Results:** There was no difference in refeeding tolerance comparing immediately full caloric diet versus stepwise increasing

way open-Label trial **Number of Patient:** 72 **Recruitung Phase:** **Inclusion Criteria:** **Exclusion Criteria:**	leucocytes and pancreatic enzymes decreasing). **Comparison:**	diet (31/35 (89%) versus 33/37 (89%) patients tolerating the treatment, p ¼ 1.00) or early versus standard time for refeeding (33/37 (89%) versus 31/35 (89%), (p ¼ 1.00)). **Author's Conclusion:** Refeeding after AP when bowel sounds are present with immediately full caloric diet is safe and well tolerated. Early refeeding shortens LOHS.

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes:

Li, Juan et al. Early oral refeeding wisdom in patients with mild acute pancreatitis. Pancreas. 42. 88-91. 2013

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 2 **Study type:** prospective, randomized, controlled trial **Number of Patient:** 75 and 74 patients in the EORF group and the RORF group **Recruitung Phase:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:** Patients with EORF (started oral feeding once they subjectively felt hungry) were compared with patients receiving Routine oral refeeding (RORF) for time interval between disease onset and Initiation of oral refeeding, total length of hospitalization (LOH), postrefeeding LOH, and adverse gastrointestinal events.	**Primary:** **Secondary:** **Results:** Patients in the EORF group had significantly shorter total (6.8 T 2.1 vs 10.4 T 4.1 days; P G 0.01) and post refeeding LOH (2.24 T 0.52 vs 3.27 T 0.61 days; P G 0.01). Therewas no significant difference in adverse gastrointestinal events between the 2 groups. **Author's Conclusion:** In patients with mild AP, EORF, with the subjective feeling of hunger, is safe, feasible, and reduces LOH.

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes:

Ma, Jiemin et al. Effect of Nasogastric Tube Feeding vs Nil per Os on Dysmotility in Acute Pancreatitis: Results of a Randomized Controlled Trial. Nutr Clin Pract. 31. 99-104. 2016

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 3 **Study type:** Randomized Controlled Trial **Number of Patient:** 35 **Recruitung Phase:** **Inclusion Criteria:** diagnosed with AP, were at least 18 years of age, and had given informed consent **Exclusion Criteria:** Patients were excluded if they had severe or critical AP (as defined by the determinant-based classification of acute pancreatitis severity),20–22 had chronic pancreatitis, had symptoms for >96 hours, had a diagnosis of AP during an operation, had post– endoscopic retrograde cholangiopancreatography pancreatitis, had a malignancy, were pregnant, received nutrition before randomization, or previously were enrolled in the trial.	**Intervention:** patients in this group received NTF within 24 hours of hospital admission. They were explained that placement of a nasogastric tube is not part of routine management (according to the current inter- national guidelines23) but an experimental intervention. Gastric feeding tube placement was confirmed by an aspirate pH of 4 or less. EN (Peptisorb; Nutricia Clinical, Auckland, New Zealand) was administered initially at a rate of 25 mL/h and then increased stepwise to 100 mL/h after 24–48 hours. It was continued until the deci- sion of the treating teams to introduce oral feeding. **Comparison:** Control group: patients in this group were on NPO. It was continued until the decision of the treating teams to introduce oral feeding.	**Primary:** The difference in total Gastroparesis Cardinal Symptom Index (GCSI) score between the 2 study groups **Secondary:** The difference in individual GCSI domains between the 2 study groups **Results:** seventeen of these 35 patients were allocated to the NTF group and 18 to the NPO group. The GCSI score decreased significantly in the entire cohort during the study period (F = 8.537; P = .001). The GCSI score did not differ significantly between the 2 study groups during the study period (F = 1.159; P = .322). **Author's Conclusion:** The GCSI is a reliable tool to evaluate dysmotility symptoms in patients with AP and is useful in defining the prevalence of individual symptoms. The total GSCI was not differ- ent between the 2 study groups, but those patients receiving EN had a significantly better appetite.

Methodical Notes

Funding Sources: None declared.

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes:

Manes, Gianpiero et al. Prophylaxis with meropenem of septic complications in acute pancreatitis: a randomized, controlled trial versus imipenem. Pancreas. 27. e79-83. 2003

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 2 **Study type:** RCT **Number of Patient:** 176 **Recruitung Phase:** From January 1996 to December 2001 **Inclusion Criteria:** necrotizing pancreatitis **Exclusion Criteria:** Referred patients,immunocompromised patients, and patients with underlyingchronic pancreatitis were excluded from the study	**Intervention:** Meropenem to avoid septic complication **Comparison:** Imipenem	**Primary:** avoidance of MOV, bacterial infection **Secondary:** **Results:** No difference was observed between patients treatedwith meropenem and those treated with imipenem in terms of inci-dence of pancreatic infection (11.4% versus 13.6%) and extrapancre-atic infections (21.6% versus 23.9%) and clinical outcome. **Author's Conclusion:** Mero-penem is as effective as imipenem in preventing septic complicationsof patients with severe acute pancreatitis.

Methodical Notes

Funding Sources: none

COI: none

Randomization: 1:1

Blinding: no

Dropout Rate/ITT-Analysis: no

Notes:

Manes, Gianpiero et al. Timing of antibiotic prophylaxis in acute pancreatitis: a controlled randomized study with meropenem. Am. J. Gastroenterol. 101. 1348-53. 2006

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 2 **Study type:** Controlled Randomized Study **Number of Patient:** 215 **Recruitung Phase:** 02/2002 - 11/2005 **Inclusion Criteria:** age >18 yr, diagnosis of AP, admission within 48 h of onset of symptoms, and no intake of antibiotics in the 3 days before admission **Exclusion Criteria:**	**Intervention:** Group A, 108 patients who started antibiotic treatment as soon as the diagnosis of AP was obtained **Comparison:** Group B, 107 patients in whom antibiotic treatment was started immediately after the demonstration of pancreatic necrosis on CECT	**Primary:** Of the 215 patients with AP randomized in the two study groups, 59 (27.4%), 30 in Group A and 29 in Group B, showed pancreatic necrosis on CECT and were considered for the final analysis. **Secondary:** **Results:** Antibiotic prophylaxis prevents septic complications in acute necrotizing pancreatitis and reduces the incidence of both pancreatic and extrapancreatic infections. The beneficial effect of antibiotic treatment is greatest if the treatment is started early. n patients who develop pancreatic infection despite antibiotic therapy the prognosis is usually poor, with high mortality rates and longer hospitalization. Computed tomography (CT) of the abdomen is the gold standard to recognize pancreatic necrosis. Elevated serum C-reactive protein (CRP) is an useful marker of severe disease and an indication for early antibiotic treatment. **Author's Conclusion:** he present randomized clinical trial demon-strates that early antibiotic treatment reduces the occurrence of septic complications and improves the prognosis of AP. Accurate selection of

referred patients, immunocompromised patients, and patients with underlying chronic pancreatitis		patients to be treated with antibiotics is crucial, because only necrotizing forms of the disease may benefit from the treatment. CRP assessment could be a valu- able method to recognize these patients, allowing a significant cost saving by a reduction in the use of CECT in those patients with low CRP levels.

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes:

Maraví-Poma, Enrique et al. Early antibiotic treatment (prophylaxis) of septic complications in severe acute necrotizing pancreatitis: a prospective, randomized, multicenter study comparing two regimens with imipenem-cilastatin. Intensive Care Med. 29. 1974-80. 2003

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 2 **Study type:** RCT unblinded **Number of Patient:** 92 **Recruitung Phase:** **Inclusion Criteria:** severe ANP (CT severity index high-er than 4) were considered for the study. **Exclusion Criteria:** documented hypersensitivity to imipenem/cilastatin or to ra-diological contrast medium, gravidity, chronic renal insufficiency,and antibiotic therapy previous to the admission to the ICU. More-over, patients in whom the antibiotic prophylaxis could not bestarted within the first 96 h of disease were also excluded.	**Intervention:** Imipenem for 14 days **Comparison:** at least for 14 days and as long as any major system-ic complication of the disease was present	**Primary:** Local and systemic complications of acute pancreatitis **Secondary:** **Results:** The incidence of in-fected pancreatic necrosis, pancreaticabscess, and extrapancreatic infectionswas 11%, 17%, and 28% in group 1and 17.4%, 13%, and 35% in group 2(n.s.). Pancreatic or extrapancreatic in-fection byCandida albicansoccurredin 7% and 22% of patients. Global mortality was 18.5% (10.9% secondary to septic complications), without differences between groups. **Author's Conclusion:** Compared to a 14-day imipenem pro-phylaxis, a longer antibiotic adminis-tration in patients with ANP is not associated with a reduction in the incidence of septic complications ofthe disease.

Methodical Notes

Funding Sources: none

COI:

Randomization: 1:1

Blinding: no

Dropout Rate/ITT-Analysis: no

Notes:

Nordback, I et al. Early treatment with antibiotics reduces the need for surgery in acute necrotizing pancreatitis--a single-center randomized study. J. Gastrointest. Surg. 5. 113-8; discussion 118-20.

2001

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 4 **Study type:** Single-Center Randomized Study **Number of Patient:** 90 **Recruitung Phase:** September 1995 to May 1999 **Inclusion Criteria:** diagnosis of acute pancreatitis based on clinical criteria, an increase in serum amylase activity by at least three times the upper normal range, and CT verification of pancreatitis **Exclusion Criteria:** Not included were those who had been started on antibiotics at the referring clinic, those admitted directly to the intensive care unit because of early multiorgan failure, and those with frequent early need of antibiotics for other reasons. Also excluded were those who refused to participate in the study and those suspected of having a reaction to any of the study drugs.	**Intervention:** imipenem group (imipenem, 1.0 g, plus cilastatin) **Comparison:** no antibiotics	**Primary:** The mortality rate was 8% in the imipenem group and 15% in the control group. This 50% decrease in mortality was not statistically significant in a series of this size **Secondary:** **Results:** **Author's Conclusion:** The authors believe that the sixpreviousstudiesTM and the present study in its current scope strongly suggest that early broad-spectrum antibiotics are beneficial in treating patients with severe acute necrotizing pancreatitis.

Methodical Notes

Funding Sources: ?

COI: ?

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes:

Ockenga, Johann et al. Effect of glutamine-enriched total parenteral nutrition in patients with acute pancreatitis. Clin Nutr. 21. 409-16. 2002

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 3 **Study type:** randomized, controlled study **Number of Patient:** 28 **Recruitung Phase:** **Inclusion Criteria:** patients with acute pancreatitis **Exclusion Criteria:** Patients not consenting to the study, pregnant patients, patients intended to eat within 1 week or those patients with renal failure (creatinine 4150mmol/l) were excluded. In addition, those patients who had received parenteral nutrition within the 2 weeks before the study were excluded.	**Intervention:** glutamine-supplemented parenteral nutrition group **Comparison:** standard parenteral nutrition without glutamine	**Primary:** Patients were assessed for nutritional and in£ammatory parameters, infectious complications, length of TPN, length of hospital stay (LOS) and costofTPN. **Secondary:** **Results:** Glutamine supplementation resulted in a reduced length of parenteral feeding, an increase in serum proteins indicatinganimprovedanabolicresponsetoTPN, and a trend in reduced LOS and decreased occurrence of infectious complications. **Author's Conclusion:** the results indicate a beneficial effect of glutamine supplementation in patients with AP scheduled for TPN.

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes:

Pearce, Callum B et al. A double-blind, randomised, controlled trial to study the effects of an enteral feed supplemented with glutamine, arginine, and omega-3 fatty acid in predicted acute severe pancreatitis. JOP. 7. 361-71. 2006

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 3 **Study type:** randomized controlled **Number of Patient:** 31 **Recruitung Phase:** **Inclusion Criteria:** clinical evidence of AP, serum amylase three times ULN. APACHE II score of 8 or greater **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** reduction in CRP value **Secondary:** **Results:** **Author's Conclusion:**

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes:

Petrov, Maxim S et al. A randomized controlled trial of enteral versus parenteral feeding in patients with predicted severe acute pancreatitis shows a significant reduction in mortality and in infected pancreatic complications with total enteral nutrition. Dig Surg. 23. 336-44; discussion 344-5. 2006

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 1 **Study type:** **Number of Patient:** **Recruitung Phase:** **Inclusion**	**Intervention:** **Comparison:**	**Primary:** incidence of pancreatic infectious complications **Secondary:** incidence of noninfectious complications, frequency of organ failure, need for operative intervention, CRP concentration, APACHE II score, mortality. **Results:**

Criteria: **Exclusion Criteria:**		**Author's Conclusion:** Early TEN could be used as prophylactic therapy for infected pancreatic necrosis

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes:

Petrov, Maxim S et al. Early nasogastric tube feeding versus nil per os in mild to moderate acute pancreatitis: a randomized controlled trial. Clin Nutr. 32. 697-703. 2013

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 2 **Study type:** randomized controlled trial **Number of Patient:** 17 patients with NGT, 18 patients with NPO **Recruitung Phase:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** total length of hospital stay **Secondary:** Oral food intolerance, pain and need for opiates **Results:** **Author's Conclusion:**

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes:

Pia?cik, Marta et al. The results of severe acute pancreatitis treatment with continuous regional arterial infusion of protease inhibitor and antibiotic: a randomized controlled study. Pancreas. 39. 863-7. 2010

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 2 **Study type:** prospective randomized **Number of**	**Intervention:** **Comparison:** CRAI patients: nafamostat mesylate 240 mg/d and imipenem 1 g/d for 5 days via one of the arteries perfusing the pancreas. non-CRAI patients: imipenem (0.5 g every8 hours) intravenously for 14 days.	**Primary:** mortality **Secondary:** septic complications, surgical interventions **Results:** Mortality rate was 5.1% in CRAI and 23.1% in non-CRAI group (ITT,P= 0.02).

Patient: 78 **Recruitung Phase:** **Inclusion Criteria:** severe acute pancreatitis **Exclusion Criteria:**		Urgent surgical intervention was necessary in 10.3% CRAI patients and in 33.3% non-CRAI (ITT,P= 0.01) **Author's Conclusion:** CRAI of protease inhibitor andantibiotic: effective in preventing complications and in reducing mor-tality rate in SAP

Methodical Notes

Funding Sources:

COI: no

Randomization: yes

Blinding: no

Dropout Rate/ITT-Analysis:

Notes:

Piciucchi, Matteo et al. Nasogastric or nasointestinal feeding in severe acute pancreatitis. World J. Gastroenterol. 16. 3692-6. 2010

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 3 **Study type:** prospective **Number of Patient:** 25 **Recruitung Phase:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** enteral nutrion in severe acute pancreatitis **Comparison:** naso-gastric vs. naso-intestinal tube feeding	**Primary:** **Secondary:** **Results:** **Author's Conclusion:** enteral nutrition by NG tubes seems to provide a pragmatic alternative opportunity with similar outcome

Methodical Notes

Funding Sources:

COI: no

Randomization: no

Blinding: no

Dropout Rate/ITT-Analysis:

Notes:

Plaudis, H et al. Early low volume oral synbiotic/prebiotic supplemented enteral stimulation of the gut in patients with severe acute pancreatitis: a prospective feasibility study. Acta Chir. Belg. 112.

131-8. 2012

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 2 **Study type:** controlled study, system of randomization not clear **Number of Patient:** 90 patients **Recruitung Phase:** between 2005 and 2008 **Inclusion Criteria:** patients with severe acute pancreatitis **Exclusion Criteria:**	**Intervention:** synbiotic or prebiotic supplementation **Comparison:** standard protein formula	**Primary:** not clearly defined **Secondary:** **Results:** lower infection rate under synbiotic/prebiotic treatment compared to control lower rate of surgical interventions, ICU hospital stay, reduced mortality compared to control **Author's Conclusion:** early low volume enteral synbiotic/prebiotic treatment seems to be an option for treatment of severe acute pancreatitis

Methodical Notes

Funding Sources:

COI: none

Randomization: not clearly decribed in the study

Blinding: no

Dropout Rate/ITT-Analysis: no

Notes:

Pupelis, G et al. Jejunal feeding, even when instituted late, improves outcomes in patients with severe pancreatitis and peritonitis. Nutrition. 17. 91-4. 2001

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 2 **Study type:** randomized controlled study **Number of Patient:** 60 **Recruitung Phase:** 01/1997-04/1999 **Inclusion Criteria:** patients with secondary peritonitis or SP who underwent surgery **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** fewer complications in the JF (jejunal feeding) patients, with no significant difference; length of stay in the intensive care unit and in the hospital did not differ. The frequency of systemic inflammatory response syndrome was similar in both groups, but outcomes differed. The first surgical intervention resulted in 3.3% of relaparotomies in JF patients, caused by unresolved peritonitis, versus 26.7% in the control subjects (P = 0.03). Recovery of bowel transit took significantly less time in the JF patients (mean: 54.6 h versus 76.8 hin control subjects, P = 0.01). JF resulted in 3.3% mortality as opposed to 23.3% in the control group(P = 0.05). **Author's Conclusion:** JF is feasible and effective in postoperative treatment of patients due tosecondary peritonitis or severe pancreatitis

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes:

Pupelis, G et al. Early oral feeding in acute pancreatitis: an alternative approach to tube feeding. Preliminary report. Acta Chir. Belg. 106. 181-6. 2006

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 3 **Study type:** feasibility study **Number of Patient:** 29 **Recruitung Phase:** 9/2001-1/2003 **Inclusion Criteria:** acute pancreatitis (according to Atlanta 1992 classification), no severe impairment of gastro-enteric transit **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** EOF (enteral oral feeding) was started on average 3.27 days after admission providing 571 ml (280.0-1115.0 ml) of enteral formula daily for 10.38 days. Median lipase activity was 690 U/l (90-10175 U/l) and CRP concentration reached 91.25 mg/dL (3.5-210 mg/dL) before EOF. Progressive decrease of lipase activity and CRP concentration was observed during the EOF course, reaching median CRP 18.6 mg/L (4.6-96.7mg/L) by discharge. Two patients underwent surgical intervention. Minor side effects of EOF were successfully managed in 4 patients. No mortality was observed. **Author's Conclusion:** Early oral feeding could be a safe and effective alternative of nutritional support in AP patients when gastro-enteric transit is not severely impaired.

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes:

Qin, H-L et al. Effect of Lactobacillus plantarum enteral feeding on the gut permeability and septic complications in the patients with acute pancreatitis. Eur J Clin Nutr. 62. 923-30. 2008

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 3 **Study type:** prospective, randomized **Number of Patient:** 76	**Intervention:** **Comparison:**	**Primary:** development of infectivec omplication. **Secondary:** non-infective complication, mortality and duration of hospital stay **Results:** Following 7 days treatment, 38.9% patients in the ecoimmunonutrition group were colonized with multiple organisms

Recruitung Phase: **Inclusion Criteria:** 1. Age between 25 and 75 years 2. Serum amylase was greater than 1000 IU with clinicalevidence of AP 3. The score of the second acute physiology and chronic health evaluation (APACHE II) was evaluated for allpatients. APACHE II was over 8, the average score was8.870.6. The Balthazar's CT score were over grade II, the average score was 4.670.5 4. Administration of the study product is started within48 h after onset of abdominal pain **Exclusion Criteria:** (1) Post-ERCP pancreatitis, (2) Malignancy, (3) Infection/sepsis caused by a second disease, intra-operative diagnosis of pancreatitis, (4) Use of probiotics during the study. (5) Hypertriglyceridemia410 mmol/l on the day of admis-sion. (6) Life-threatening intercurrent disease.		compared to 73.7% in the PN (parenteral nutrition) group (P < 0.01), and 30.6% patients in the EIN grew potentially pathogenic organisms compared to 50% patients in PN group (P <0.05). The fecal bacterial DNA fingerprint profiles were less, the amount of lactobacteria andbifydobacteria decreased, and the amount of enterococci increased in PN group as compared with EIN group,Po0.05. By day8, the lactulose/rhamnose ratio in EIN group were lower than that in PN group at days 5 and 8,P < 0.05. The patients with Lactobacillus plantarum got a better clinical outcomes as compared with the patients with PN **Author's Conclusion:** EcoImmunonution enteral feeding can attenuate disease severity, improve the intestinal permeability and clinical outcomes

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes:

Qu, Rong et al. Procalcitonin is a good tool to guide duration of antibiotic therapy in patients with severe acute pancreatitis. A randomized prospective single-center controlled trial. Saudi Med J. 33. 382-7. 2012

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 3 **Study type:** randomized controlled	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** In the study group (35 patients), the duration of antibiotic therapy and hospitalization was significantly shorter than the control group (36

Number of Patient: 71 **Recruitung Phase:** 3/2009-9/2011 **Inclusion Criteria:** 1. onset of severe acute pancreatitis was less than 24 hours 2. age was over 18 years **Exclusion Criteria:** 1. the time interval between diagnosis and study inclusion >24 hours 2. age of less than 18 years 3. thyroid disease (such as thyroid adenoma) 4. shock (such as hypovolemic shock) 5. need of surgical interventions (such as surgery of cleaning necrosis of pancreas)		patients) (10.89±2.85 versus 16.06±2.48 days, p<0.001, and 16.66±4.02 days versus 23.81±7.56 days, p<0.001) without negative clinical effects and the cost of hospitalization was significantly lower. **Author's Conclusion:** Procalcitonin is helpful for guiding duration of antibiotic treatment in patients with severe acute pancreatitis

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes:

Räty, S et al. Post-ERCP pancreatitis: reduction by routine antibiotics. J. Gastrointest. Surg. 5. 339-45; discussion 345. 2002

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 3 **Study type:** prospective randomized **Number of Patient:** 321 **Recruitung Phase:** 1993-1996 **Inclusion Criteria:** patients undergoing ERCP, who did not get antibiotics during the preceding week were	**Intervention:** 2g Ceftazidim 30 min before ERCP **Comparison:** control group	**Primary:** **Secondary:** **Results:** The control group had significantly more patients with post-ERCP pancreatitis (15 of 160 in the prophylaxis group vs. 4 of 155 in the control group; P = 0.009) and cholangitis (7 of 160 vs. 0 of 155; P = 0.009) compared to the prophylaxis group. Nine patients in the prophylaxis group (6%) and 15 patients in the control group (9%) had remarkably increased serum amylase levels after ERCP, but clinical signs of acute pancreatitis with leukocytosis, CRP reaction, and pain developed in four of nine patients in the prophylaxis group compared to 15 of 15 patients with hyperamylasemia in the control group (P = 0.003). In a multivariate analysis, the lack of antibiotic prophylaxis (odds ratio

included. **Exclusion Criteria:** allergy to cephalosporins, those with immune deficiency or any other condition requiring mandatory antibiotic prophylaxis patients with clinical jaundice and pregnant patients were excluded		6.63, P = 0.03) and sphincterotomy (odds ratio 5.60, P = 0.05) were independent risk factors for the development of post-ERCP pancreatitis. **Author's Conclusion:** antibiotic prophylaxis effectively decreases the risk of pancreatitis, in addition to cholangitis after ERCP, and can thus be routinely recommended prior to ERCP

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes:

Røkke, Ola et al. Early treatment of severe pancreatitis with imipenem: a prospective randomized clinical trial. Scand. J. Gastroenterol. 42. 771-6. 2007

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 2 **Study type:** **Number of Patient:** **Recruitung Phase:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** **Author's Conclusion:**

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes:

Sadowski, Samira M et al. Epidural anesthesia improves pancreatic perfusion and decreases the severity of acute pancreatitis. World J. Gastroenterol. 21. 12448-56. 2015

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 5	**Intervention:** Interventionsgruppe: EA	**Primary:** Safety of EA bei Patienten mit schwerer akuter Pankreatitis

Study type: prospective Randomized controlled clinical Trial **Number of Patient:** 35 **Recruitung Phase:** 2005-August 2010 **Inclusion Criteria:** Patienten mit KH-Aufnahme wegen akuter Pankreatitis. Ranson-Score >=2. CRP >10 mg/L. und oder Nekrosen im Pankreas in der CT. **Exclusion Criteria:** Fehlen einer schweren Pankreatitis, wie in den einschlusskriterien definiert. Patienten mit Kontraindikationen gegen eine Epiduralanästhesie (EA), keine einwilligung oder Teilnahme an einer anderen Studie.	etabliert nach der initialen CT. EA lief für diese Patienten über 5 Tage nach Randomisation Kontrollgruppe: standardisierte i.v. Analgesie als PCA. Beginn nach der initialen CT. **Comparison:** komplikationen durch EA? Vergleich der VAS-Werte (gemessen alle 8 Stunden) in beiden Gruppen. Vergleich der CT-Scans bei Aufnahme und nach 72 Stunden bezüglich Perfusion des Pankreas.	**Secondary:** Pankreasperfusion in der CT-Analyse Parameter des klinischen Verlaufs: Krankenhausverweildauer, Antibiotikabedarf, Aufnahme auf die ICU, systemische und d lokoregionale Komplikationen (Clavien-klassifikation), Erfordernis einer chirurgischen Nekrosektomie. Entwicklung der Schmerzsymptomatik in beiden Gruppen (gemessen mit VAS alle 8h) **Results:** 13 Patienten in der EA-Gruppe, 22 in der Kontrollgruppe mit PCA. Gute Vergleichbarkeit der Gruppen für Alter, Schlecht, Komirbiditäten, Ätiologie der Pankreatitis. Ranson Score in der Kontrollgruppe tendenziell niedriger: EA-Gruppe Mean/ SD 3,38/ 1,12. Kontrollgruppe PCA 2,68 / 0,945 (p= 0,056) Epiduralkatheter konnte im im Median 5,7 Tage genutzt werden. Keine Komplikationen durch die EA. Verbesserung der Perfusion im Pankreas:: Es wurden 57 comparative Perfusionsmessungen in der CT durchgeführt in derselben Pankrearegion in beiden Gruppen. Vergleich der Befunde bei Aufnahme und nach 72 Stunden. Ergebnisse: in der EA Gruppe bei 13// 43 Messungen (43%) messbare Perfusionsverbesserung, indder Kontrollgruppe bei 2 von 27 Messungen (7%)messbare Perfusionsverbesserung (p=0,0025) Nekrosektomie erfolgte in der EA-Gruppe bei 1/13 Patienten und in der Kontrollgruppe bei 4/22 Patienten (p=0,63) VAS-SchmerzScore an Tag 10: EA vs Kontrollgruppe: 0,2 vs 2,33, p= 0,034 Keine Unterschiede für Mortalität und Krankenhausverweildauer. **Author's Conclusion:** Die Epiduralanästhesie bei Patienten mit schwerer Pankreatitis ist sicher (keine Infektionen, keine hämodynamischen Komplikationen) Die EA verbessert die pankreatische Perfusion und verbessert das Schmerzmanagement.

Methodical Notes

Funding Sources: Forschungpreis-Geld der Universitätsklinik Genf (an Prof. Bühler)

COI: Bezahlung für Vorträge an Bühler und Frossard an Universitätsklinik Genf. Bei den anderen Autoren: nothing to disclose

Randomization: ja,
Anmerkung: Studie wurde nach 49 Patienten geschlossen wegen extremer Schwierigkeiten, in der Notfallsituation Patienten einzuschliessen. Weitere einschränlung: Resultierende ungleiche Patientenzahl in den beiden Gruppen mit möglichem Bias.

Blinding: nein

Dropout Rate/ITT-Analysis: In der EA-Gruppe bekamen 2 Patienten keinen Periduralkatheter wg. Katheterproblem und ein mal wegen Iod-Allergie). In der Kontrollgruppe war ein Patient in einer anderen Studie und wurde ausgeschlossen. Alle drei Patienten fielen aus der Datenauswertung.

Notes:
wichtige Studie mit wichtigem Ergebnis: EA sicher (i.e. ohne Komplikationen) bei Patienten mit schwerer Pankreatitis. Zudem Verbesserung der Schmerzen im Verlauf von 10 Tagen im VAS-Score im Vergleich zu Kontrollgruppe. Zudem bessere Durchblutung des Pankreas nach EA.

Sahin, H et al. Effects of glutamine-enriched total parenteral nutrition on acute pancreatitis. Eur J Clin Nutr. 61. 1429-34. 2007

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 3 **Study type:** prospective randomized **Number of Patient:** 40 **Recruitung Phase:** **Inclusion Criteria:** patients with acute pancreatitis **Exclusion Criteria:**	**Intervention:** total parenteral nutrition with 0.3 g/kg/days glutamine (Dipeptiven, Fresenius, Germany). **Comparison:** only total parenteral nutrition	**Primary:** not stated **Secondary:** not stated **Results:** the length of total parenteral nutrition (TPN) applications were 10.573.6 days and 11.672.5 days, and the length of hospital stays were14.274.4 and 16.473.9 days for the treatment and control groups (NS), and the complication rates in the treatment andcontrol groups were 10 and 40%, respectively (Po0.05). The transferrin level increased by 11.7% in the group that receivedglutamine-enriched TPN (Po0.05), whereas the transferrin level decreased by 12.1% in the control group (NS). At the end ofthe study, slight but not significant changes were determined in both groups in fasting blood sugar, albumin, blood ureanitrogen (BUN), creatinine, total cholesterol concentrations, aspartate aminotransferase (AST), alanine transaminase (ALT) andlactate dehydrogenase (LDH) activities, leukocytes, CD4,CD8, serum Zn, Ca and P levels compare to the baseline levels (NS).Significant decreases were determined in serum lipase, amylase activities and C-reactive protein (CRP) levels in both groups(Po0.05) **Author's Conclusion:** glutamine supplementation to TPN have beneficial effects on theprevention of complications in patients with AP.

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes:

Sathiaraj, E et al. Clinical trial: oral feeding with a soft diet compared with clear liquid diet as initial meal in mild acute pancreatitis. Aliment. Pharmacol. Ther. 28. 777-81. 2008

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 2 **Study type:** prospective randomized	**Intervention:** clear liquid diet	**Primary:** LOH from the time of refeeding until discharge **Secondary:** frequency that the subjects discontinued

Number of Patient: 101 **Recruitung Phase:** 9/2007-2/2008 **Inclusion Criteria:** 1. Amylase and⁄or lipase greater than three timesthe upper limit of normal or greater than two times the upper limit and a computerized tomography scanshowing unequivocal acute pancreatitis and peri-pancreatic inflammation 2.Mild acute pancreatitis [absence of pancreaticnecrosis, abscess and pseudocyst, absence of organ failure **Exclusion Criteria:** 1. Patients with organ dysfunction and neoplasms,postsurgical patients, pregnant women, patients withinfections such as TB, HIV⁄AIDS, severe acute pancreatitis. 2. Patients with acute pancreatitis who received enteral support via tube feeding or parenteral nutritionand who received parenteral narcotics for abdominal pain on the day of refeeding. 3. Patients with acute on chronic pancreatitis whowere on enzyme supplementation.	**Comparison:** soft diet	oral feeding because of intolerance such as pain, nausea and vomiting **Results:** A statistically significant decrease in the length of hospitalization (total and postrefeeding) of a median of 2 days was seen in patients receiving a soft diet (P< 0.001). No significant difference in the need for cessation of diet because of pain was observed between the two groups. Patients initiated on a soft diet consumed significantly more caloriesand fats on study day 1 (P< 0.001) **Author's Conclusion:** Oral refeeding with a soft diet in patients with mild acute pancreatitis canbe considered safe and can result in shorter length of hospitalization.

Methodical Notes

Funding Sources:

COI:

Randomization: randomization was done using a computer-generated random number

Blinding:

Dropout Rate/ITT-Analysis:

Notes:
this is a well designed study investigating optimal diet in mild acute pancreatitis

Sawa, Hidehiro et al. Treatment outcome of selective digestive decontamination and enteral nutrition in patients with severe acute pancreatitis. J Hepatobiliary Pancreat Surg. 14. 503-8. 2007

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 2 **Study type:** retrospectively analyzed **Number of Patient:** 90 **Recruitung Phase:** 1991 to 2004	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** SDD reduced the incidence of organ dysfunction (from 70% to 59%) and the mortality rate (from 40% to 28%), but the differences were not significant.EN reduced the incidence of infected pancreatic necrosis (from 31% to 24%) and the frequency of surgery for pancreas (from 28% to 18%), and further reduced the mortality rate (from 28% for SDD to 16%), but the differences were not signifi cant. **Author's Conclusion:** SDD and EN did not signifi cantly affect the treatment outcome in SAP. However, the results in this study raise the possibility that SDD

Inclusion Criteria: **Exclusion Criteria:**		and EN may decrease the complications and reduce the mortality rate in SAP. The efficacy of SDD and EN for SAP should be evaluated in a randomized controlled trial.

Methodical Notes

Funding Sources: supported by
Grants-in-Aid for Scientifi c Research from the Ministry of Education, Science, Sports, and Culture of Japan and from the Ministry of Health, Labor, and Welfare of Japan

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes:

Sharma, Brij et al. Role of probiotics on gut permeability and endotoxemia in patients with acute pancreatitis: a double-blind randomized controlled trial. J. Clin. Gastroenterol. 45. 442-8. 2010

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 2 **Study type:** randomized controlle double-blind **Number of Patient:** 50 **Recruitung Phase:** 3/2007-5/2008 **Inclusion Criteria:** patients with AP presenting within the first 72 hours after the onset of abdominal pain or had been nil orally at the time of presentation for up to 5 days **Exclusion Criteria:** 1. Malignancy 2. Infection or sepsis related to sourceother than pancreatic bed 3. Intraoperative diagnosis ofAP, 4. Immunodeficiency, 5. Earlier use of probiotics orprebiotics 6. Pregnant ladies	**Intervention:** 4 sachets of Probiotics (2.5 billionbacteria per sachet) **Comparison:** 4 sachets of placebo	**Primary:** Effect on gut permeability and endotoxemia byprevention of BT and restoring the intestinal permeability **Secondary:** Mortality, total hospital stay, duration of intensivecare unit (ICU) stay, side effects, abdominal discomfort,and organ failure **Results:** no difference after intervention in gut permeability, whereas values of C-reactive protein and immunoglobulins decreased significantly [IgG: 140 (20–920) to 90 (20–600) GGU/mL and IgM:65 (13–230) to 51 (9–240) GMU/mL] in the probiotic group. No difference was observed in prealbumin values, duration of hospital/intensive care unit stay, and mortality in both the groups **Author's Conclusion:** No significant trend was identified for an effect ofprobiotics on gut permeability or endotoxemia in AP. However, the study was underpowered owing to premature study termination.

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes:
well designed study, however this study had to be abandoned after the publication of the PROPATRIA trial -> underpowered tudy

Shen, Q-X et al. Effect of early enteral nutrition (EN) on endotoxin in serum and intestinal permeability in patients with severe acute pancreatitis. Eur Rev Med Pharmacol Sci. 21. 2764-2768. 2017

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 4 **Study type:** 70 cases of patients with severe acute pancreatitis were cured in our hospital from April 2015 to January 2016. **Number of Patient:** **Recruitung Phase:** **Inclusion Criteria:** Pa- tients selected were randomly divided into two groups including a group of patients having par- enteral nutrition (group PN) and that had enteral nutrition (group EN). The results were assessed by: 1) the differences of serum endotoxin level; 2) the differences of the lactulose/mannitol ratio of urine, before intervention and one and two weeks after the intervention. **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** Before the intervention, both groups had similar levels of serum endotoxin and the same lactulose/mannitol excretion rate of urine ($p>0.05$). One and two weeks after the intervention, the serum endotoxin level and the lactulose/mannitol excre- tion rate of urine of the group PN were significantly higher than the group EN ($p<0.05$). **Author's Conclusion:** Compared with PN, EN has a bigger effect on serum endotoxin and intestinal permeability in patients with severe acute pancre- atitis. EN can better promote the elimination of se- rum endotoxin and reduce intestinal permeability. Therefore, EN deserves clinical expansion.

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes:

Singh, Namrata et al. Effect of oral glutamine supplementation on gut permeability and endotoxemia in patients with severe acute pancreatitis: a randomized controlled trial. Pancreas. 43. 867-73. 2014

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 4 **Study type:** randomized controlled trial , single center study, placebo-kontrolliert	**Intervention:** für 7 Tage orale Gabe von Glutamin oder Placebo. Glutamin-Gruppe	**Primary:** Effekt auf Darm Permeabilität gemessen mit Laktulose/Mannitol-Exkretion im Urin und Effekt auf Endotoxinämie, gemessen mit Messung von EndoCab-IgG und -IgM

Number of Patient: 41 Patienten in der Glutamingruppe, 39 Patienten in Placebo-Gruppe **Recruitung Phase:** Nov. 2009 bis Dezember 2012 = 3 Jahre **Inclusion Criteria:** alle konsekutiv aufgenommenen Patienten innerhalb 7 Tagen nach Schmerzbeginn mit der Diagnose einer akuten Pankreatitis (typische Schmerzen, wenigstens 3-fach erhöhte Amylase und sonografische Zeichen der Pancreatitis, ggfs CT. und mindestens eines der folgenden 3 Zeichen für eine schwere Pankreatitis: : 1. 1 oder mehr Organversagen, wie in der Atlanta-Klassifikation definiert. 2. APACHE-II-Score 8 oder größer. 3. CT-Severitiy-Index größer als 7. Und informed consent **Exclusion Criteria:** Unter 18 Jahre oder älter 80 Jahre, kein informed consent, Schwangerschaft, Einnahme von NSAR, großer operativer Eingriff, cystische Fibrose, chronische Lebererkrankung, inflammatorische Darmerkrankung, paralytischer Ileus (keine enterale zufuhr möglich)	20 g täglich in zwei Dosen (Kabimmune, Fa. Fresenius Kabi) Kontrollgruppe 20 g Molke-Protein täglich in zwei Dosen **Comparison:** Glutamin vs. Placebo bei schwerer akuter Pankreatitis werdeb verlichen für Darm Permeabilität und sekunär weiteren outcome -Daten s.u.	**Secondary:** infektiöse Komplikationen, Mortalität Krankenhaus- und ICU-Verweildauer, CRP und Pre-Albumin-Spiegel **Results:** Marker der intestinalen Permeabilität (Laktose/ Mannitol und EndoCab IgG und endoCab IgM in beiden Gruppen nicht signifikant unterschiedlich. Ebenso finden sich keine Untrschiede in beiden Gruppen für CRP, Präalumin, Krankenhaus- und ICU-Verweildauer, Mortalität und für infektiöse Komplikationen. Mortalität in der Glutamingruppe 5/41, in der kontrollgruppe 6/39. **Author's Conclusion:** Für den primären Endpunkt postulieren die Autoren, daß eine längere Dauer für die Studienmedikation möglicherweise einen Effekt zeigen würde. Eine adequate gepowerte Multicenterstudie ist erforderlich.

Methodical Notes

Funding Sources: Freserius-Kabi lieferte die Studienmedikation kostenfrei.
durch Indian Council of MEdical Research, New Delhi (Forschungsmittel des Autors Anoop Saraya.

COI: keine genannt

Randomization: ja

Blinding: nein

Dropout Rate/ITT-Analysis: keine drop outs

Notes:
Fallzahlen underpowered

Singh, Namrata et al. Evaluation of early enteral feeding through nasogastric and nasojejunal tube in severe acute pancreatitis: a noninferiority randomized controlled trial. Pancreas. 41. 153-9. 2012

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 4 **Study type:** A Noninferiority Randomized Controlled Trial **Number of Patient:** Seventy-eight	**Intervention:** atients with SAP were fed via NG (candidate) or NJ (comparative) route. The primary outcome was the occurrence of any infectious complication in blood, pancreatic tissue, bile, or tracheal aspirate. Secondary end points were pain in refeeding, duration of hospital stay, intestinal permeability assessed by lactulose/mannitol excretion, and endotoxemia assessed by endotoxin core antibody types immunoglobulin G and M.	**Primary:** **Secondary:** **Results:** Seventy-eight patients were randomized to feeding by either the NG or the NJ route. During the hospital stay, the presence of any infectious complication in the NG and NJ groups was 23.1% and 35.9% (significantly different), respectively. The effect size of the difference of infectious complications was j12.8 (95% confidence interval, j29.6 to 4.0). The upper limit of the 95% confidence interval was 4.0 and was within the 5% limit set for noninferiority. The value of 8.0 for the number needed to treat implies that 8 patients should be treated

Recruitung Phase: **Inclusion Criteria:** **Exclusion Criteria:**	**Comparison:**	with NG compared with the NJ group to prevent 1 patient from any of the infectious complications. **Author's Conclusion:** Early enteral feeding through NG was not inferior to NJ in patients with SAP. Infectious complications were within the non- inferiority limit. Pain in refeeding, intestinal permeability, and endo- toxemia were comparable in both groups.

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes:

Stimac, D et al. Early nasojejunal tube feeding versus nil-by-mouth in acute pancreatitis: A randomized clinical trial. Pancreatology. 16. 523-8. 2016

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 4 **Study type:** A randomized clinical trial **Number of Patient:** **Recruitung Phase:** **Inclusion Criteria:** Patients with AP were randomized to receive either EN via a nasojejunal tube initiated within 24 h of admission or no nutritional support. Systemic inflammatory response syndrome (SIRS) was assessed as the primary outcome. Secondary outcomes included mortality, organ failure, local compli- cations, infected pancreatic necrosis, surgical interventions, length of hospital stay, adverse events and inflammatory response intensity. Outcomes were compared using Student's t-test and ManneWhitney U test as appropriate. **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** 214 patients were randomized in total, 107 to each group. SIRS occurrence was similar between groups, with 48 (45%) versus 51 (48%), respectively (RR 0.94; 95% CI 0.71e1.26). No significant reduction of persistent organ failure (RR 0.81; 95% CI 0.52e1.27) and mortality (RR 0.59; 95% CI 0.28e1.23) was present in the EN group. There were no significant differences in other outcomes between the groups. When analyzing the occurrence of SIRS and mortality in subgroup of patients with severe disease no significant differences were noted. **Author's Conclusion:** Our results showed no significant reduction of persistent organ failure and mortality in patients with AP receiving early EN compared to patients treated with no nutritional support (NCT01965873).

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes:

Sun, Jia-Kui et al. Effects of early enteral nutrition on immune function of severe acute pancreatitis patients. World J. Gastroenterol. 19. 917-22. 2013

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 4 **Study type:** single-center, prospective, and randomized con- trolled clinical trial **Number of Patient:** 60 **Recruitung Phase:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** Patients were randomly allocated to re- ceive EEN or delayed enteral nutrition (DEN). Enteral nutrition was started within 48 h after admission in EEN group, whereas from the 8th day in DEN group. All the immunologic parameters and C-reactive protein (CRP) levels were collected on days 1, 3, 7 and 14 af- ter admission. The clinical outcome variables were also recorded. **Comparison:**	**Primary:** **Secondary:** **Results:** Sixty SAP patients were enrolled to this study. The CD4+ T-lymphocyte percentage, CD4+/ CD8+ ratio, and the CRP levels in EEN group became significantly lower than in DEN group from the 7th day after admission. In contrast, the immunoglobulin G (IgG) levels and human leukocyte antigen-DR expres- sion in EEN group became significantly higher than in DEN group from the 7th day after admission. No dif- ference of CD8+ T-lymphocyte percentage, IgM and IgA levels was found between the two groups. The incidences of multiple organ dysfunction syndrome, systemic inflammatory response syndrome, and pan- creatic infection as well as the duration of intensive care unit stay were significantly lower in EEN group than in DEN group. However, there was no difference of hospital mortality between the two groups. **Author's Conclusion:** EEN moderates the excessive immune response during the early stage of SAP without leading to subsequent immunosuppression. EEN can improve the clinical outcome, but not decrease the hospital mortality of SAP patients.

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes:

Wang, Guiliang et al. Effect of enteral nutrition and ecoimmunonutrition on bacterial translocation and cytokine production in patients with severe acute pancreatitis. J. Surg. Res. 183. 592-7. 2013

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 4 **Study type:** prospective double-blind study, and a total of 183 patients	**Intervention:** One hundred eighty-three SAP patients were randomly divided into three groups receiving PN, EN, or EN þ EIN. Acute Physiology and Chronic Health Evaluation II scores, complications (systemic inflammatory response syndrome, multiorgan failure, and infec- tions), intestinal bacterial strains of stool, and plasma concentrations of endotoxin,	**Primary:** **Secondary:** **Results:** The percentage of pancreatic sepsis, multiple organ dysfunction syndrome, and mortality was significantly lower in the EN group and was further lower in the EN þ EIN group than that in the PN group. The plasma concentrations of TNF-a and IL-6

diagnosed with SAP who were admitted to the intensive care **Number of Patient:** **Recruitung Phase:** **Inclusion Criteria:** **Exclusion Criteria:**	tumor necrosis factor a (TNF-a), and interleukin (IL) 6 and IL-10 were evaluated. **Comparison:**	and APACHE II scores were significantly decreased in the EN group and were further lowered in the EN þ EIN group than those in the PN group. The plasma concentration of IL-10 was higher in the EN group and was further increased in the EN þ EIN group than that in the PN group. **Author's Conclusion:** EN plays effective roles in the treatment of SAP by decreasing the expression of endotoxin, TNF-a, and IL-6 and the bacterial translocation, enhancing the expression of IL-10, and the combination of EIN with EN results in more therapeutic benefits than EN alone.

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes:

Wang, Xinying et al. Omega-3 fatty acids-supplemented parenteral nutrition decreases hyperinflammatory response and attenuates systemic disease sequelae in severe acute pancreatitis: a randomized and controlled study. JPEN J Parenter Enteral Nutr. 32. 236-41. 2008

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 4 **Study type:** A Randomized and Controlled Study **Number of Patient:** Forty severe acute pancreatitis patients were enrolled and randomly assigned to receive parenteral nutrition (PN) for 5 days in a double-blind manner. **Recruitung Phase:**	**Intervention:** Forty severe acute pancreatitis patients were enrolled and randomly assigned to receive parenteral nutrition (PN) for 5 days in a double-blind manner.Patients received PN with identical amounts of amino acids (1.25 g/kg/d), glucose (3 g/kg/d), and fat (1 g/kg/d) but dif- ferent lipid compositions: the control group received a soybean oil (SO; Lipovenos 20%; Fresenius, Germany)–based fat solu- tion and the ω-3 FA group was supplemented with 0.15 - 0.2 g/kg/d fish oil (FO; Omegaven 10%; Fresenius, Germany). **Comparison:**	**Primary:** Serum concentrations of eicosapentaenoic acid (EPA), inter- leukin-6, C-reactive protein (CRP), white blood cell count, and routine respiratory and renal parameters were measured before PN, and again on day 6 after starting PN. Outcomes such as infection morbidity, mortality, intensive care unit time, and length of hospital stay were recorded **Secondary:** **Results:** Patients treated with FO had a significantly higher EPA concentration (P < .01), lower CRP level (P < .05), and better oxygenation index (P < .05) after 5 days of PN. Moreover, the number of days of continuous renal replacement therapy (CRRT) in the ω-3 FAs group was signifi- cantly less than that in the control group (P < .05). Conclusions: PN supplemented with ω-3 FAs diminishes the hyperinflam- matory response by the EPA increase and the proinflamma- tory cytokine decrease in severe acute pancreatitis. **Author's Conclusion:** This, together with improved respiratory function and shortened CRRT time, suggests that the systemic

Inclusion Criteria: **Exclusion Criteria:**		response to pancreatic and organ injury is attenuated.

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes:

Wang, Xinying et al. Fish oil-supplemented parenteral nutrition in severe acute pancreatitis patients and effects on immune function and infectious risk: a randomized controlled trial. Inflammation. 32. 304-9. 2009

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 4 **Study type:** RCT Pilot **Number of Patient:** Fifty-six SAP patients were enrolled (28 patients in each group) **Recruitung Phase:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** received isocaloric and isonitrogenous parenteral nutrition, providing 1.0 g/kg/day standard soybean-oil based fat (ω−6 FAs group) or 0.8 g/kg/day soybean oil +0.2 g/kg/day ω−3 FAs based fat (ω−3 FAs group). **Comparison:**	**Primary:** **Secondary:** **Results:** IL-10, HLA-DR and the ratio of CD4+ to CD8+ were determined before PN treatment and on day 6 after starting PN. The infection and surgery rates were recorded until hospital discharge. A significant IL-10 increase was associated with the administration of ω−3 FAs (p=0.04, vs ω−6 FAs group). Monocyte HLA-DR expression improved in both groups after 5 days of PN treatment. This increase was significantly higher in the ω−3 FAs group compared to ω−6 FAs (p=0.01). There was no significant difference of CD4+/CD8+, infection and surgery rates between the two groups. In conclusion, ω−3 FAs supplemented PN can elevate the IL-10 level and HLA-DR expression in SAP patients. **Author's Conclusion:** A larger trial is required to see whether ω−3 FAs supplemented PN treatment in SAP patients would result in better clinical outcomes than ω−6 FAs.

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes:

Windsor, A C et al. Compared with parenteral nutrition, enteral feeding attenuates the acute phase response and improves disease severity in acute pancreatitis. Gut. 42. 431-5. 1998

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 4 **Study type:** Patients were stratified according to disease severity and randomised to receive either TPN or TEN for seven days and then re-evaluated. **Number of Patient:** 34 **Recruitung Phase:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** TPN or TEN for seven days and then re-evaluated **Comparison:**	**Primary:** **Secondary:** **Results:** SIRS, sepsis, organ failure, and ITU stay, were globally improved in the enterally fed patients. The acute phase response and disease severity scores were significantly improved following enteral nutrition (CRP: 156 (117–222) to 84 (50– 141), p<0.005; APACHE II scores 8 (6–10) to 6 (4–8), p<0.0001) without change in the CT scan scores. In parenterally fed patients these parameters did not change but there was an increase in EndoCAb anti- body levels and a fall in TAC. Enterally fed patients showed no change in the level of EndoCAb antibodies and an increase in TAC. **Author's Conclusion:** TEN moderates the acute phase response, and improves disease severity and clinical outcome despite unchanged pancreatic injury on CT scan. Reduced systemic exposure to endotoxin and reduced oxidant stress also occurred in the TEN group. Enteral feeding modu- lates the inflammatory and sepsis re- sponse in acute pancreatitis and is clinically beneficial.

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes:

Wu, Xing-Mao et al. Total enteral nutrition in prevention of pancreatic necrotic infection in severe acute pancreatitis. Pancreas. 39. 248-51. 2010

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 4 **Study type:** first week of hospitalization, they were randomized **Number of Patient:** total parenteral nutrition (54 patients) or total enteral	**Intervention:** they were randomized to feeding by either total parenteral nutrition (54 patients) or total enteral nutrition (53 patients). **Comparison:**	**Primary:** **Secondary:** **Results:** Eighty percent of the patients developed organ failure in the group with total parenteral nutrition, which was higher than that in the group with total enteral nutrition (21%). Eighty percent and 22% (P G 0.05) of the patients in the total parenteral nutrition and total en- teral nutrition groups, respectively, underwent surgical intervention. The incidence of pancreatic septic necroses in the group with total enteral nutrition (23%) was lower than that in the group with total parenteral nutrition (72%, P G 0.05). Mortality in the total parenteral nutrition group (43%) was higher than in the total enteral nutrition group (11%, P G 0.05). **Author's Conclusion:** Total enteral nutrition is better than total parenteral nu-

nutrition (53 patients). **Recruitung Phase:** 2003 and 2007 **Inclusion Criteria:** severe acute pancreatitis. **Exclusion Criteria:**		trition in the prevention of pancreatic necrotic infection in severe acute pancreatitis.

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes:

Xiong, Jiongxin et al. Regulation of omega-3 fish oil emulsion on the SIRS during the initial stage of severe acute pancreatitis. J. Huazhong Univ. Sci. Technol. Med. Sci. 29. 35-8. 2009

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 4 **Study type:** prospective, randomized and controlled tria **Number of Patient:** 60 **Recruitung Phase:** **Inclusion Criteria:** SAP **Exclusion Criteria:**	**Intervention:** conventional therapy plus intravenous supplementation with ω-3 fish oil emulsion 0.2 g/kg every day **Comparison:**	**Primary:** 1.3.1 Clinical Security The effects of ω-3 fish oil emulsion on digestion, circulation system and body states of SAP patients during management were observed. 1.3.2 APACH II Scores After admission, APACH II scores were quantified every 24 h to assess the acute phase response. The score was based on the worst states in that day, and were calculated immediately at any times. 1.3.3 Negative Fluid Balance Time Fluid negative balance time, that indirectly represents the magnitude of the SIRS, was recorded. The total capacity of input and output was recorded every day to evaluate the appear- ance time of negative fluid balance. [5] 1.3.4 SIRS Score The procedures were as follows : temperature >38°C or <36°C, heart rate >90/min, respi- ratory rate >20 breaths/min or PaCO2 <4.3 kPa, white blood cell count >12 000 cells/mm3, <4000 cells/mm3, or >10 immature (band) forms. SIRS score used a combina- tion of simple laboratory and clinical measurements (temperature, heart rate, respiratory rate, and leukocyte count) to give a score of 0–4, with a score of 2 or more declaring the patient in a “SIRS state”. 1.3.5 Pro-/Anti-inflammatory Cytokines To evaluate the balance of pro-/anti-inflammatory cytokines, the changes of TNF-α and IL-10 were detected in SAP pa- tients at different time points (before and 4, 7 days after treatment). Peripheral blood was collected at different time points and centrifuged at 2000 r/min for 10 min below 4oC, and blood plasma was isolated and frozen at –80oC. After all specimens were collected completely, ELISA was used to detect the levels of plasma TNF-α and IL-10 at different time points in SAP patients (ELISA kit was purchased from Wuhan Boster Co. (China). **Secondary:** **Results:** The results showed that APACHE-II scores in FO group were significantly lower, and the gap increased much farther after the 4th day than those in Con group (P<0.05). Fluid equilibrium time became shorter markedly in FO group than in Con group (5.1±2.2 days vs 8.4±2.3 days). In FO group, SIRS scores were markedly decreased and the SIRS state vanished after the 4th day; Plasma level of TNF-α was significantly re- duced, while IL-10 decreased

		markedly, most prominently between the 4th and 7th day, and the ratio of IL-10/TNF-α raised as compared with Con group (P<0.05). **Author's Conclusion:** During the initial stage of SAP, par- enteral supplementation with ω-3 fish oil emulsion could efficiently lower the magnitude and persis- tence time of the SIRS, markedly retrieve the unbalance of the pro-/anti-inflammatory cytokines, im- prove severe condition of illness and may provide a new way to regulate the SIRS.

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes:

Xue, Ping et al. Effect of antibiotic prophylaxis on acute necrotizing pancreatitis: results of a randomized controlled trial. J. Gastroenterol. Hepatol. 24. 736-42. 2009

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 4 **Study type:** randomized, controlled trial **Number of Patient:** 276 **Recruitung Phase:** **Inclusion Criteria:** severe acute pancreatitis. **Exclusion Criteria:**	**Intervention:** i.v. imipenem–cilastatin (3 ¥ 500 mg/day) within 72 h of the onset of symptoms for 7–14 days **Comparison:** no antibiotic prophylaxis	**Primary:** The primary end-point was the incidence of infectious complication **Secondary:** The secondary end- points were mortality, the incidence of necrosectomy for infected necrosis, the incidence of organ complication and hospital courses. **Results:** Characteristics of baseline data were similar in the two groups. No significant differences were found in the incidence of infected pancreatic necrosis (37% vs 27.6%), mortality (10.3% vs 14.8%) and the incidence of operative necrosectomy (29.6% vs 34.6%) between the study group and the control group (P > 0.05). The incidence of extrapancreatic infections, organ complications and hospital courses between the groups were also not significantly different. However, a significantly increased incidence of fungal infection was observed in the study group versus the control group (36.1% vs 14.2%, P < 0.05). **Author's Conclusion:** There was no benefit in the outcomes when antibiotic prophylaxis was routinely used in patients with acute necrotizing pancreatitis.

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes:

Zhao, Gang et al. Clinical study on nutrition support in patients with severe acute pancreatitis. World J. Gastroenterol. 9. 2105-8. 2003

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 1	**Intervention:**	**Primary:**
Study type:	**Comparison:**	**Secondary:**
Number of Patient:		**Results:**
Recruitung Phase:		**Author's Conclusion:**
Inclusion Criteria:		
Exclusion Criteria:		

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes:

Zhao, Xian L et al. Early oral refeeding based on hunger in moderate and severe acute pancreatitis: a prospective controlled, randomized clinical trial. Nutrition. 31. 171-5. 2015

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 1	**Intervention:**	**Primary:**
Study type:	**Comparison:**	**Secondary:**
Number of Patient:		**Results:**
Recruitung Phase:		**Author's Conclusion:**
Inclusion Criteria:		
Exclusion Criteria:		

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes:

OXFORD (2011) Appraisal Sheet: Diagnostic Studies: *9 Bewertung(en)*

Abdelhafez, Mohamed et al. Transluminal retroperitoneal endoscopic necrosectomy with the use of hydrogen peroxide and without external irrigation: a novel approach for the treatment of walled-off pancreatic necrosis. Surg Endosc. 27. 3911-20. 2013

Evidence level/Study Types	Population	Outcomes/Results
Evidence level: 4 **Study type:** yes	**Number of patients / samples:** case series **Reference standard:** No **Validation:** No **Blinding:** No **Inclusion of clinical information:** Yes **Dealing with ambiguous clinical findings:** Yes	**Results:** H2O2 feasible **Author conclusions:** H2=2 promising approach

Methodical Notes

Funding Sources: None

COI: None

Notes: does not fit into our field....it deals with necrosectomy

Bongaerts, Ger P A et al. A reassessment of the PROPATRIA study and its implications for probiotic therapy. Nat. Biotechnol. 34. 55-63. 2016

Evidence level/Study Types	Population	Outcomes/Results
Evidence level: 1 **Study type:**	**Number of patients / samples:** **Reference standard:** **Validation:** **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	**Results:** **Author conclusions:**

Methodical Notes

Funding Sources:

COI:

Notes:

Connor, S et al. Fungal infection but not type of bacterial infection is associated with a high mortality in primary and secondary infected pancreatic necrosis. Dig Surg. 21. 297-304. 2004

Evidence level/Study Types	Population	Outcomes/Results
Evidence level: 3 **Study type:**	**Number of patients / samples:** 73 patients **Reference standard:** not available **Validation:**	**Results:** A considerable number of patients had resistant bacteria to prophylactic antibiosis. In patients with fungal infection: higher APACHE II score, higher mortality.

retrospective design	**Blinding:** not applicable **Inclusion of clinical information:** clinical information (age, APACHE II score, CT findings, prophylactic antibiotics) were included **Dealing with ambiguous clinical findings:**	In secondary infections: 32% of patients had fungal infection with 48% deaths **Author conclusions:** fungal but not bacterial infection was associated with a high mortality

Methodical Notes

Funding Sources: not available

COI:

Notes:

González-López, Jaime et al. Theoretical approach to local infusion of antibiotics for infected pancreatic necrosis. Pancreatology. 16. 719-25. 2016

Evidence level/Study Types	Population	Outcomes/Results
Evidence level: 1 **Study type:**	**Number of patients / samples:** **Reference standard:** **Validation:** **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	**Results:** **Author conclusions:**

Methodical Notes

Funding Sources:

COI:

Notes:

Hamada, Yukihiro et al. Compatibility of carbapenem antibiotics with nafamostat mesilate in arterial infusion therapy for severe acute pancreatitis: stabilities of carbapenem antibiotics. Jpn J Antibiot. 65. 235-49. 2012

Evidence level/Study Types	Population	Outcomes/Results
Evidence level: 1 **Study type:**	**Number of patients / samples:** **Reference standard:** **Validation:** **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	**Results:** **Author conclusions:**

Methodical Notes

Funding Sources:

COI:

Notes:

He, Juan et al. The pharmacokinetics of vancomycin in patients with severe acute pancreatitis. Eur. J. Clin. Pharmacol. 72. 697-702. 2016

Evidence level/Study Types	Population	Outcomes/Results
Evidence level: 2 **Study type:**	**Number of patients / samples:** **Reference standard:** **Validation:** **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	**Results:** **Author conclusions:**

Methodical Notes

Funding Sources:

COI:

Notes:

Spanier, B W M et al. Practice and yield of early CT scan in acute pancreatitis: a Dutch Observational Multicenter Study. Pancreatology. 10. 222-8. 2010

Evidence level/Study Types	Population	Outcomes/Results
Evidence level: 3 **Study type:** Multicenter observational study. Etiology, disease course, CT timing, Balthazar CT score, and clinical manage- ment were evaluate	**Number of patients / samples:** **Reference standard:** **Validation:** **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	**Results:** First documented hospital admissions of 166 patients were analyzed. Etiology was bili- ary (42.8%), unknown (20.5%), alcoholic (18.1%), post-endo- scopic retrograde cholangiopancreatography (11.4%), and miscellaneous (7.2%). In 89.2% (148/166), the disease course was mild. Out of 18 patients with severe AP, 11 eventually developed (peri)pancreatic necrosis. At least one CT (range 1–12) was performed in 47% (78/166) of all patients and in 62.8% (49/78) it was acquired within 4 full days after symp- tom onset. Practice, timing, and Balthazar CT score of early CTs were not significantly different between mild and severe AP. None of the early CTs showed necrosis and no alternative diagnoses were established. In 89.8% (44/49), clinical man- agement was not altered after early CT. In 10.2% (5/49), pro- phylactic antibiotics were started, but in absence of necrosis. **Author conclusions:** A CT scan was frequently acquired early in the course of AP, but its yield was low and had no implications with regard to clinical management. It seems prudent that clinicians should be more restrictive in the use of early CT, in particular in mildA P,to prevent unnecessary radiation exposure and to save costs.

Methodical Notes

Funding Sources:

COI:

Notes:

van Grinsven, Janneke et al. Diagnostic strategy and timing of intervention in infected necrotizing

pancreatitis: an international expert survey and case vignette study. HPB (Oxford). 18. 49-56. 2016

Evidence level/Study Types	Population	Outcomes/Results
Evidence level: 3 **Study type:** an international expert survey and case vignette study	**Number of patients / samples:** **Reference standard:** **Validation:** **Blinding:** **Inclusion of clinical information:** An online survey including case vignettes was sent to 118 international pancreatologists. We evaluated the use and timing of fine needle aspiration (FNA), antibiotics, catheter drainage and (minimally invasive) necrosectomy. **Dealing with ambiguous clinical findings:**	**Results:** The response rate was 74% (N = 87). None of the respondents use FNA routinely, 85% selectively and 15% never. Most respondents (87%) use a step-up approach in patients with infected necrosis. Walled-off necrosis (WON) is considered a prerequisite for endoscopic drainage and percu- taneous drainage by 66% and 12%, respectively. After diagnosing infected necrosis, 55% routinely postpone invasive interventions, whereas 45% proceed immediately to intervention. Lack of consensus about timing of intervention was apparent on day 14 with proven infected necrosis (58% intervention vs. 42% non-invasive) as well as on day 20 with only clinically suspected infected necrosis (59% intervention vs. 41% non-invasive). **Author conclusions:** The step-up approach is the preferred treatment strategy in infected necrotizing pancre- atitis amongst expert pancreatologists. There is no uniformity regarding the use of FNA and timing of intervention in the first 2–3 weeks of infected necrotizing pancreatitis.

Methodical Notes

Funding Sources:

COI:

Notes:

Wacke, Rainer et al. Penetration of moxifloxacin into the human pancreas following a single intravenous or oral dose. J. Antimicrob. Chemother. 58. 994-9. 2006

Evidence level/Study Types	Population	Outcomes/Results
Evidence level: 2 **Study type:**	**Number of patients / samples:** **Reference standard:** **Validation:** **Blinding:** **Inclusion of clinical information:** Patients and methods: In this prospective, non-comparative clinical trial, 60 patients undergoing elective pancreas resection received a single oral or intravenous (iv) dose of 400 mg moxifloxacin for perioperative antimicrobial prophylaxis. The concentration of moxifloxacin was measured in samples taken	**Results:** Mean moxifloxacin concentrations in pancreatic tissue following iv or oral administration were 3.1 – 0.9 and 2.7 – 1.4 mg/kg at 3–3.7 h post-dose (first sampling) and 3.6 – 1.5 and 3.1 – 1.8 mg/kg at 4.3–5.3 h post-dose (second sampling), respectively. Corresponding mean plasma concentrations of moxifloxacin were 1.8 – 0.5 and 1.2 – 0.6 mg/L (first sampling) and 1.5 – 0.4 and 1.0 – 0.5 mg/L (second sampling), respectively. From first to second sampling, the mean tissue-to-plasma ratios varied from 1.8 – 0.6 to 2.6 – 1.2 (iv) and from 2.4 – 0.8 to 3.1 – 1.2 (oral). Pancreatic tissue concentrations of moxifloxacin exceeded the MIC90 for the relevant pathogens covered by moxifloxacin for at least 5 h after dosing. **Author conclusions:** Moxifloxacin has been demonstrated to penetrate efficiently into human pancreatic tissue following iv or oral administration. From a pharmacological perspective, moxifloxacin appears to be promising for prophylaxis and treatment of local pancreas infections. Whether it is beneficial in the prevention and therapy of infectious complications in patients with ANP should be investigated in a controlled clinical trial.

	from blood and from pancreatic tissue at the beginning and at the end of resection **Dealing with ambiguous clinical findings:**	

Methodical Notes

Funding Sources:

COI:

Notes:

OXFORD (2011) Appraisal Sheet: Prognostic Studies: *26 Bewertung(en)*

Abou-Assi, Souheil et al. Hypocaloric jejunal feeding is better than total parenteral nutrition in acute pancreatitis: results of a randomized comparative study. Am. J. Gastroenterol. 97. 2255-62. 2002

Population	Intervention	Outcomes/Results
Evidence level: 1 **Study type:** **Number of Patient:** **Recruitung Phase:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** **Author's Conclusion:**

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes:

Bourgaux, Jean-François et al. Infectious complications, prognostic factors and assessment of anti-infectious management of 212 consecutive patients with acute pancreatitis. Gastroenterol. Clin. Biol. 31. 431-5. 2007

Population	Intervention	Outcomes/Results
Evidence level: 1 **Study type:** **Number of Patient:** **Recruitung Phase:** **Inclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** **Author's Conclusion:**

Exclusion Criteria:		

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes:

Garg, P K et al. Incidence, spectrum and antibiotic sensitivity pattern of bacterial infections among patients with acute pancreatitis. J. Gastroenterol. Hepatol. 16. 1055-9. 2001

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** prospective cohort study. Descriptive **Number of Patient:** 169 **Recruitung Phase:** January1997 and June 2000 **Inclusion Criteria:** If a patient developed fever or leukocyto-sis, the following investigations were done: cultures ofblood, urine sputum, bile (in some cases), throat swab,intravenous cannula and urinary catheter tip. Cultureswere repeated in patients with continuing fever until thepresence of infection was established or excluded. Pan-creatic tissue was obtained either by using US-guidedaspiration of pancreatic necrotic material/peripancreaticcollection or obtained during surgery for bacteriologi-cal culture and Gram's stain in patients with suspectedpancreatic infection. **Exclusion Criteria:**	**Intervention:** No **Comparison:** none	**Primary:** presence of bacteria **Secondary:** **Results:** Of the 169 patients, 63 hadinfections at various sites. A total of 80 cultures were positive, and 12 different bacterial isolates werecultured from samples taken from these 63 patients. Polymicrobial infection was seen in 32% of patients.Twenty-four patients had a confirmed pancreatic infection. Blood cultures had a growth of organismsin 19 patients, with evidence of ongoing or worsening pancreatitis, thus raising a strong suspicion ofinfected necrosis in them. The commonest organisms were Escherichia colifrom 20 cultures andPseudomonas aeruginosafrom 18 cultures. The antibiotic sensitivity pattern showed that most bacteriawere sensitive to third generation cephalosporins and quinolones; notably among them were cefotaxime,ceftazidime, and ciprofloxacin. **Author's Conclusion:** Bacterial infections were seen in 37% of patients with acute pancreatitis. The common-est organisms were Pseudomonas aeruginosaand Escherichia coli. Most bacterial isolates were sensitive tothird generation cephalosporins and quinolones.

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes:

Gougol, Amir et al. Clinical outcomes of isolated renal failure compared to other forms of organ

failure in patients with severe acute pancreatitis. World J. Gastroenterol. 23. 5431-5437. 2017

Population	Intervention	Outcomes/Results
Evidence level: 2 **Study type:** prospective cohort **Number of Patient:** 111 **Recruitung Phase:** between 2003 and 2016 **Inclusion Criteria:** persistent organ failure **Exclusion Criteria:** no persistent organ failure	**Intervention:** n.a. **Comparison:** Patients with isoltaed renal failure vs. other or multi-organ failure	**Primary:** Comparison of differnet Outcomes between patients with isolated renal failure compared to other organ failures **Secondary:** see results **Results:** Forty-three patients had isolated OF: 17 (15.3%) renal, 25 (21.6%) respiratory, and 1 (0.9%) patient with cardiovascular failure. No differences in demographics, etiology of acute pancreatitis, systemic inflammatory response syndrome scores, or development of pancreatic necrosis were seen between patients with isolated RF vs isolated respiratory failure. Patients with isolated RF were less likely to require nutritional support (76.5% vs 96%, P = 0.001), ICU admission (58.8% vs 100%, P = 0.001), and had shorter mean ICU stay (2.4 d vs 15.7 d, P < 0.001), compared to isolated respiratory failure. None of the patients with isolated RF or isolated respiratory failure died. **Author's Conclusion:** Among patients with SAP per the Revised Atlanta Classification, approximately 15% develop isolated RF. This subgroup seems to have a less protracted clinical course compared to other forms of OF. Isolated RF might be weighed less than isolated respiratory failure in risk predictive modeling of acute pancreatitis.

Methodical Notes

Funding Sources: Not given

COI: No

Randomization: N.a.

Blinding: No

Dropout Rate/ITT-Analysis: Not given

Notes: Primaray finding: Better prognosis of patientes with isolated renal failure compared to isolated respiratory failure or multi-organ-failure.

Hallay, J et al. Early jejunal nutrition and changes in the immunological parameters of patients with acute pancreatitis. Hepatogastroenterology. 48. 1488-92. 2001

Population	Intervention	Outcomes/Results
Evidence level: 1 **Study type:** **Number of Patient:** **Recruitung Phase:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** **Author's Conclusion:**

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes:

Kochhar, Rakesh et al. Prevalence and outcome of fungal infection in patients with severe acute pancreatitis. J. Gastroenterol. Hepatol. 24. 743-7. 2009

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** observational cohort study **Number of Patient:** 50 **Recruitung Phase:** January 2006 until April 2007 **Inclusion Criteria:** ANP **Exclusion Criteria:**	**Intervention:** none **Comparison:** none	**Primary:** Presence of fungal infection **Secondary:** risk factors for infection **Results:** GASTROENTEROLOGYjgh_5712 743..747Prevalence and outcome of fungal infection in patients withsevere acute pancreatitisRakesh Kochhar,*SKMahiuddin Ahammed,* Arunaloke Chakrabarti,†Pallab Ray,†Saroj K Sinha,*Usha Dutta,* Jai Dev Wig ‡ and Kartar Singh*Departments of†Gastroenterology,‡Microbiology and *General Surgery, Postgraduate Institute of Medical Education and Research, Chandigarh,IndiaAbstractBackground and Aim:To study the prevalence of risk factors and outcome of fungalinfections in patients with severe acute pancreatitis.Methods:Fifty consecutive patients with severe acute pancreatitis were investigated forevidence of fungal infection by weekly culture of body fluids and aspirate from pancreatic/peripancreatic tissue and samples collected at necrosectomy. All patients were managed asper a standard protocol. Patients with documented fungal infection were treated withintravenous amphotericin or fluconazole. Data were analyzed using SPSS software (version13), and risk factors for fungal infection and mortality were determined.Results:Fungal infection was documented in 18 (36%) of 50 patients withCandidaalbicans(the commonest species). The incidence of fungal infection steadily increasedwith increasing duration of hospital stay. Those with fungal infection more often hadevidence of respiratory failure (P=0.031) and hypotension (P=0.031) at admission,prolonged hospital stay>4 weeks (P=0.034), longer duration of antibiotics (P=0.003),received total parenteral nutrition (P=0.005), and required mechanical ventilation(P=0.001) in contrast to those without fungal infection. The logistic regression analysisfound the independent risk factors for fungal infection to be antibiotic therapy for>4 weeks and hypotension at hospitalization. **Author's Conclusion:** Fungal infection was detected in 36% of our patients. The independent riskfactors associated with it were hypotension at hospitalization and prolonged antibiotictherapy. Antifungal therapy improved their chances of survival.

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes:

Pascual, Isabel et al. Surgical versus nonsurgical treatment of infected pancreatic necrosis: more arguments to change the paradigm. J. Gastrointest. Surg. 17. 1627-33. 2013

Population	Intervention	Outcomes/Results
Evidence level: 4 **Study type:** retrospective cohort study/ case series **Number of Patient:** 38 **Recruitung Phase:** between 1998 and 2010 **Inclusion Criteria:** Patients with infected pancreatic necrosis **Exclusion Criteria:**	**Intervention:** Drainage **Comparison:** open surgery	**Primary:** differences in mor-tality, morbidity (in-hospital infections, intraabdominalbleeding, pancreatic fistula, new onset organ failure definedas organ failure not present 24 h before treatment of IPN),and length of hospital stay, between the initially conservativeand initially surgical groups, according to an intention to treat analysis **Secondary:** pancreatic exocrine and endocrine function **Results:** Mortality occurred in 16.7 % of cases in the nonsurgical group versus 42.9 % in the surgical group. In the primarynonsurgical group, seven were operated on due to failure of initial conservative treatment. In this latter group, mortality was28.6 % and was performed significantly later than in the primary surgical group. The group of primary surgical treatment wasassociated with a significant higher rate of multiple organ failure (MOF) at IPN diagnosis, new onset or worsening of organfailure, and MOF and nosocomial infection after surgery. **Author's Conclusion:** Initial nonsurgical approach in IPN is associated with better results both in cases which respond to this treatmentas well as in those who, failing this conservative approach, have to be operated on after a delayed period. Primary surgicallytreated patients had a more severe disease at the time of IPN.

Methodical Notes

Funding Sources: none

COI: none

Randomization: no

Blinding: no

Dropout Rate/ITT-Analysis: yes

Notes:

Rana, Surinder S et al. Impact of Nasojejunal Feeding on Outcome of Patients with Walled Off Pancreatic Necrosis (WOPN) Presenting with Pain: a Pilot Study. J. Gastrointest. Surg. 19. 1621-4. 2015

Population	Intervention	Outcomes/Results
Evidence level: 4 **Study type:** single arm prospective study **Number of Patient:** 21 **Recruitung Phase:** **Inclusion Criteria:** Patients with necrotizing AP and WOPN **Exclusion Criteria:**	**Intervention:** naso-jejunal tube feeding **Comparison:** no control group	**Primary:** pain relief and long-term outcome **Secondary:** **Results:** 81 % patients had symptomatic relief in 1–4 days (mean 2±1 days) following NJ feeding 61 % patients remained pain free and follow-up imaging (1–8months)revealed complete resolution or decrease in size of WOPN **Author's Conclusion:** Nasojejunal feeding improves pain in the majority of patients with WOPN and thus obviates or delays drainage.

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes:

Ren, Tingting et al. Risk factors of refeeding intolerance in mild acute interstitial pancreatitis: a retrospective study of 323 patients. Pancreatology. 15. 111-4. 2015

Population	Intervention	Outcomes/Results
Evidence level: 2 **Study type:** retrospective, descriptive, observational study **Number of Patient:** 323 **Recruitung Phase:** 9/2009-8/2012 **Inclusion Criteria:** 1. mild AP (Ranson's score <3, Balthazar CT classification = C, with no organ dysfunction and no local or systemic complication) 2. only thefirst episode during a 3 year period **Exclusion Criteria:** 1. patients with biliary pancreatitis requiring emergent endoscopic treatment 2. patients undergone surgical operation within 60-day period prior to this admission	**Intervention:** **Comparison:**	**Primary:** to assess the frequency and identify independent risk factors of refeeding intolerance in patients with mild acute interstitial pancreatitis **Secondary:** **Results:** 12.4% developed refeeding intolerance hypertriglyceridemia-induced AP,elevated serum lipase before refeeding, and immediate feeding were critical riskfactors of refeeding intolerance **Author's Conclusion:** Refeeding intolerance occurs in 12.4% patients with mild AP and appears more often in thosewith hypertriglyceridemia-induced AP, elevated serum lipase (>2-fold of the upper limit of normal)before refeeding, and immediate feeding

Methodical Notes

Funding Sources: none

COI: no

Randomization: no

Blinding: no

Dropout Rate/ITT-Analysis:

Notes:

Sahar, Nadav et al. Duration of antibiotic treatment after endoscopic ultrasound-guided drainage of walled-off pancreatic necrosis not affecting outcomes. J. Gastroenterol. Hepatol. 33. 1548-1552. 2018

Population	Intervention	Outcomes/Results
Evidence level: 4 **Study type:** retrospective case series	**Intervention:** antibiotics < 5 days **Comparison:** antibiotics > 5 days	**Primary:** effectiveness of prophylactic an-tibiotics given before DMD of WON in minimizing pancreatic in-fections related to the procedur **Secondary:** **Results:** Patients in the SD group were treated with antibiotics for a median of 3 dayscompared with 8.5 days in the LD group. There were no differences in

Number of Patient: 61 **Recruitung Phase:** January 1, 2008, and March 31, 2017 **Inclusion Criteria:** endoscopic drainage of walled-off-necrosis **Exclusion Criteria:**		recurrent febrileepisodes within 30 days of procedure—44% of SD groupversus39% of LD (P= 0.69).There was also no difference in time to resolution of WON (64 days for both groups,P= 0.72) or duration of hospitalization post-DMD (SD 7.7 daysversusLD 7.5 days,P= 0.42). Three cases ofClostridium difficilecolitis were observed in the LD group. **Author's Conclusion:** Longer course of antibiotics seems to have similar outcomes compared with shorter courses in patients with WON treated with DMD. Prolonged-course therapy maypredispose to secondary infections likeC. difficilecolitis

Methodical Notes

Funding Sources: Boston Sci

COI: none

Randomization: none

Blinding: no

Dropout Rate/ITT-Analysis: no

Notes: this is a good study that shows that short term antibiotic treatment is as effective as long term antibiotic treatment after drainage of WON

Schwender, Brian J et al. Risk factors for the development of intra-abdominal fungal infections in acute pancreatitis. Pancreas. 44. 805-7. 2015

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** retrospective cohort study **Number of Patient:** 479 **Recruitung Phase:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** Out of 479 patients admitted with acute pancreatitis, 17 patients were subsequently found to have an AFI and 3 of these patients expired. The mean length of stay for patients with an AFI was 24 days and 76% were admitted to the intensive care unit. Patients with AFI were more likely to have received prophylactic antibiotics on admission (OR 1.7, 95% C.I. 1.2–2.3), TPN within 7 days of admission (OR 1.4, 95% C.I. 1.1–1.7) or to have necrosis on CT scan within 7 days of admission (OR 1.4, 95% C.I. 1.1–1.7). Multivariable regression models identified admission antibiotic use (OR 1.6, 95% C.I. 1.4–1.8) as the strongest predictor of AFI **Author's Conclusion:** Admission antibiotics are the biggest risk factor for the development of intra-abdominal fungal infections in acute pancreatitis. Prophylactic antibiotics to prevent infected necrosis should therefore be discouraged.

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes:

Shi, Dun et al. Enteral nutrition in treatment of severe acute pancreatitis. HBPD INT. 1. 146-9. 2002

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** retrospective **Number of Patient:** 11 **Recruitung Phase:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** **Author's Conclusion:**

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes:

Stanga, Zeno et al. Effect of jejunal long-term feeding in chronic pancreatitis. JPEN J Parenter Enteral Nutr. 29. 12-20. 2005

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** rom January 1999 to October 2002, 57 patients receiving enteral nutrition by PEG/J or DPEJ were retrospectively analyzed during a follow-up period of 6 months. **Number of Patient:** **Recruitung Phase:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** Small-bowel access was obtained by PEG/J in 53 patients and by DPEJ in 4. Duration of enteral feeding was 113 days. Average body weight significantly increased from 64.8 kg at day 1 to 69.1 kg at day 180 (p **Author's Conclusion:** Long-term nutrition support by PEG/J or DPEJ in patients with symptomatic, chronic pancreatitis increases patients' body weight and decreases the degree of malnutrition, abdominal pain, and other gastrointestinal symptoms. The underlying mechanisms for these observations are unclear and require further investigation. Small- bowel rest with reduced pancreatic gland stimulation might be a key component. Moderately to severely malnourished patients who do not respond to oral dietary interventions and who are candidates for elective pancreatic surgery might also be candidates for long-term preoperative jejunal feeding to reduce malnutrition-associated perioperative complications. In experienced hands, we feel that long-term jejunal feeding is safe, with minimal major complications.

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes:

Stuecklin-Utsch, A et al. Pancreatic toxicity after liposomal amphotericin B. Mycoses. 45. 170-3. 2002

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** We performed a retrospective analysis of all 31 patients who had received liposomal amphotericin B by 1999 **Number of Patient:** **Recruitung Phase:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** In five patients, an isolated transient elevation of the serum lipase level during, or shortly after, the therapy with liposomal amphotericin B was detected. Three of these patients showed clinical signs of pancreatitis, with one patient displaying slightly elevated trans- aminases. So far, elevated levels of serum lipase have not been described as a possible side-effect of a liposomal amphotericin B therapy. The pathogen- esis of this elevation is unclear. As possible reasons, an enzyme induction due to fat overload or a toxic damage of the pancreatic tissue by the liposomes or amphotericin B itself are discussed. **Author's Conclusion:**

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes:

Takeda, K et al. Continuous regional arterial infusion (CRAI) therapy reduces the mortality rate of acute necrotizing pancreatitis: results of a cooperative survey in Japan. J Hepatobiliary Pancreat Surg. 8. 216-20. 2001

Population	Intervention	Outcomes/Results
Evidence level: 3	**Intervention:**	**Primary:**

Study type: Retrospective **Number of Patient:** Continuous regional arterial infusion (CRAI) therapy reduces the mortality rate of acute necrotizing pancreatitis: results of a cooperative survey in Japan **Recruitung Phase:** **Inclusion Criteria:** 156 patients with acute necrotizing pancreatitis (ANP) **Exclusion Criteria:**	**Comparison:**	**Secondary:** **Results:** The overall mortality rate was 18.6%, and the frequency of infected pancreatic necrosis was 12.8%. There was no significant difference in mortality rates between patients who received the protease inhibitor via CRAI and the antibiotics intravenously (group A) and patients who received both the protease inhibitor and the antibiotics via CRAI (group B), but the frequency of infected pancreatic necrosis was significantly lower in group B (7.6%) than in group A (23.5%). The mor- tality rate in patients in whom CRAI therapy was initiated within 48h after the onset of ANP (11.9%) was significantly lower than that in patients in whom CRAI therapy was initi- ated more than 48h after the onset (23.6%). **Author's Conclusion:** These results suggested that CRAI of both protease inhibitors and antibiot- ics was effective in reducing mortality and preventing the development of pancreatic infection in ANP when initiated within 48h after the onset of ANP.

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes:

Takeda, K et al. Benefit of continuous regional arterial infusion of protease inhibitor and antibiotic in the management of acute necrotizing pancreatitis. Pancreatology. 1. 668-73. 2001

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** Benefit of Continuous Regional Arterial Infusion of Protease Inhibitor and Antibiotic in the Management of Acute Necrotizing Pancreatitis **Number of Patient:** **Recruitung Phase:** 73 patients with ANP were stratified into three groups according to the interval between the onset and initiation of CRAI therapy as follows: **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** group I (32 patients in whom CRAI therapy was initiated within 48 h after the onset); group II (22 patients in whom CRAI therapy was initiated between 48 and 72 h after the onset), and group III (19 patients in whom CRAI was initiated more than 72 h after the onset). The mortality rate was 3.2% in group I, 9.1% in group II, and 26.3% in group III. The mortality rate was significantly low in group I com- pared with that in group III. The frequency of respiratory failure in group I was also significantly low compared Based on a lecture at the combined meeting of the International Association of Pancreatology and the American Pancreatic Association, Chicago, 2000. with that in group III. CRP and APACHE II score were reduced rapidly i **Author's Conclusion:** These results suggested that the opti- mal timing of CRAI therapy in ANP should be considered to be within 72 h after the onset.

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes:

Talukdar, Rupjyoti et al. Antibiotic use in acute pancreatitis: an Indian multicenter observational study. Indian J Gastroenterol. 33. 458-65. 2014

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** observational study **Number of Patient:** **Recruitung Phase:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** In the period between October 1998 and September 2003, 87 patients met the inclusion criteria and took part in this research. Within the first week from their admission, 43 patients received TPN and 44 patients received total en- teral nutrition (TEN). An adequate prophylactic antibi- otic therapy was used in both groups. The severity of the manifestations was similar for both groups having a to- mographic 'severity index' of 8 and an entry C-reactive protein of 208 and 203 mg/l, respectively. **Results:** The group that received TPN suffered an organ failure in 79% of the cases, while the percentage showed by the group that received TEN was 31%; 88 and 25% of the patients in each group requiring a surgical intervention, respec- tively (p ! 0.001). There was decreased presence of pan- creatic necrosis infection in the group of patients that was supplied with TEN (20%) than in the group receiving TPN, where it reached 74% (p ! 0.001). The death rate was significantly higher among the patients who re- ceived TPN, (35%), while for the patients who received TEN it was only 5% (p ! 0.001). **Author's Conclusion:** TEN could be used as a prophylactic therapy for infected pancre- atic necrosis since it significantly diminished the necro- sis infection as well as the mortality.

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes:

Targarona Modena, Javier et al. Total enteral nutrition as prophylactic therapy for pancreatic necrosis infection in severe acute pancreatitis. Pancreatology. 6. 58-64. 2006

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:**	**Intervention:** **Comparison:** In the period between October 1998 and September 2003, 87 patients met the inclusion criteria and took part in this research. Within the first week from their	**Primary:** **Secondary:** **Results:** The group that received

Number of Patient: **Recruitung Phase:** **Inclusion Criteria:** **Exclusion Criteria:**	admission, 43 patients received TPN and 44 patients received total en- teral nutrition (TEN). An adequate prophylactic antibi- otic therapy was used in both groups. The severity of the manifestations was similar for both groups having a to- mographic 'severity index' of 8 and an entry C-reactive protein of 208 and 203 mg/l, respectively.	TPN suffered an organ failure in 79% of the cases, while the percentage showed by the group that received TEN was 31%; 88 and 25% of the patients in each group requiring a surgical intervention, respec- tively (p ! 0.001). There was decreased presence of pan-creatic necrosis infection in the group of patients that was supplied with TEN (20%) than in the group receiving TPN, where it reached 74% (p ! 0.001). The death rate was significantly higher among the patients who re- ceived TPN, (35%), while for the patients who received TEN it was only 5% (p ! 0.001). **Author's Conclusion:** EN could be used as a prophylactic therapy for infected pancre- atic necrosis since it significantly diminished the necro-sis infection as well as the mortality.

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes:

van Baal, M C et al. Probiotic treatment with Probioflora in patients with predicted severe acute pancreatitis without organ failure. Pancreatology. 12. 458-62. 2012

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** Retrospective **Number of Patient:** 99 **Recruitung Phase:** 2003-2010 **Inclusion Criteria:** predicted severe w/o OF **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** prophylactiv probiotic **Secondary:** **Results:** no positive no negative effect **Author's Conclusion:**

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes:

van Santvoort, Hjalmar C et al. A conservative and minimally invasive approach to necrotizing pancreatitis improves outcome. Gastroenterology. 141. 1254-63. 2011

Population	Intervention	Outcomes/Results
Evidence level: 4 **Study type:** Retrospective Analysis **Number of Patient:** We collected data from 639 consecutive patients with necrotizing pancreatitis, from 2004 to 2008, treated at 21 Dutch hospi- tals. Data were analyzed for disease severity, interventions (radiologic, endoscopic, surgical), and outcome. **Recruitung Phase:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** Overall mortality was 15% (n **Author's Conclusion:** Approx- imately 62% of patients with necrotizing pancreatitis can be treated without an intervention and with low mortal- ity. In patients with infected necrosis, delayed interven- tion and catheter drainage as first treatment improves outcome.

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes:

Vieira, Josiel Paiva et al. Parenteral nutrition versus enteral nutrition in severe acute pancreatitis. Acta Cir Bras. 25. 449-54. 2010

Population	Intervention	Outcomes/Results
Evidence level: 2 **Study type:** **Number of Patient:** **Recruitung Phase:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** **Author's Conclusion:**

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes:

Wang, Gang et al. The effect of emodin-assisted early enteral nutrition on severe acute pancreatitis and secondary hepatic injury. Mediators Inflamm. 2007. 29638. 2007

Population	Intervention	Outcomes/Results
Evidence level: 1 **Study type:** **Number of Patient:** **Recruitung Phase:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** **Author's Conclusion:**

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes:

Wereszczynska-Siemiatkowska, Urszula et al. Early enteral nutrition is superior to delayed enteral nutrition for the prevention of infected necrosis and mortality in acute pancreatitis. Pancreas. 42. 640-6. 2013

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** A retrospective analysis was performed on 420 consecutive patients hospitalized from 2001 to 2010 with a diagnosis of AP. **Number of Patient:** **Recruitung Phase:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** group A (n = 97), early TEN (started within the first 48 hours after admission to hospital); and group B (n = 100), delayed TEN (started after 48 hours). **Comparison:**	**Primary:** **Secondary:** **Results:** Infection of necrosis/fluid collections occurred in 4 patients in group A and 18 patients in group B (P G 0.05). Respiratory failure and transfer to intensive care unit occurred more frequently in group B than in group A (15 vs 5 and 15 vs 3 patients; P G 0.05). Multiple-organ failure was observed in 9 patients in group A and 16 patients in group B (P 9 0.05). Seven patients in group A and 11 patients in group B underwent surgery (P 9 0.05). All 9 reported deaths occurred in group B (P G 0.05). The time to start TEN was a predictor of infected necrosis/ fluid collection (odds ratio, 4.09; P = 0.028). **Author's Conclusion:** Delayed compared to early TEN is associated with higher mortality, increased frequency of infected necrosis/fluid collec- tions, respiratory failure, and a need for intensive care unit hospitaliza- tion. Enteral nutrition in SAP should be started within 48 hours after admission to hospital.

Methodical Notes

Funding Sources:
COI:
Randomization:
Blinding:
Dropout Rate/ITT-Analysis:
Notes:

Yasuda, Takeo et al. Treatment strategy against infection: clinical outcome of continuous regional arterial infusion, enteral nutrition, and surgery in severe acute pancreatitis. J. Gastroenterol. 42. 681-9. 2007

Population	Intervention	Outcomes/Results
Evidence level: 3	**Intervention:**	**Primary:**
Study type:	**Comparison:**	**Secondary:**
Number of Patient:		**Results:**
Recruitung Phase:		**Author's Conclusion:**
Inclusion Criteria:		
Exclusion Criteria:		

Methodical Notes
Funding Sources:
COI:
Randomization:
Blinding:
Dropout Rate/ITT-Analysis:
Notes:

Zeng, Yan Bo et al. Risk factors for pancreatic infection in patients with severe acute pancreatitis: an analysis of 163 cases. J Dig Dis. 15. 377-85. 2014

Population	Intervention	Outcomes/Results
Evidence level: 3	**Intervention:**	**Primary:**
Study type:	**Comparison:**	**Secondary:**
Number of Patient:		**Results:**
Recruitung Phase:		**Author's Conclusion:**
Inclusion Criteria:		
Exclusion Criteria:		

Methodical Notes
Funding Sources:
COI:

Randomization:
Blinding:
Dropout Rate/ITT-Analysis:
Notes:

Zhang, Shao-Yang et al. Early enteral nutrition with polymeric feeds was associated with chylous ascites in patients with severe acute pancreatitis. Pancreas. 43. 553-8. 2014

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** **Number of Patient:** **Recruitung Phase:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** **Author's Conclusion:**

Methodical Notes
Funding Sources:
COI:
Randomization:
Blinding:
Dropout Rate/ITT-Analysis:
Notes:

NEWCASTLE - OTTAWA Checklist: Case Control: *9 Bewertung(en)*

Ellery, Kate M et al. The Benefits of Early Oral Nutrition in Mild Acute Pancreatitis. J. Pediatr. 191. 164-169. 2017

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Patient characteristics:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Hamvas, J et al. Jejunal feeding in chronic pancreatitis with severe necrosis. JOP. 2. 112-6. 2001			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 2 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Patient characteristics:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Hegazi, Refaat et al. Early jejunal feeding initiation and clinical outcomes in patients with severe acute pancreatitis. JPEN J Parenter Enteral Nutr. 35. 91-6. 2011			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 1 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Patient characteristics:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Nørgaard, M et al. Metronidazole and risk of acute pancreatitis: a population-based case-control study. Aliment. Pharmacol. Ther. 21. 415-20. 2005			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 2 **Study type:** retrospective case control study	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** 3083 patients with AP and 30830 controls **Patient characteristics:** 1991-2003 (retrospective, 3 databases) **Inclusion criteria:** codes for acute pancreatitis were 577.00–577.09 in ICD-8and K85.9 in ICD-10 **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:** Metronidazole may increase the risk of acute pancreatitis. However, the risk seems mainly to increase when metronidazole is used in combination with other drugs used for Helicobacter pylori eradication		

Outcome Measures/results	**Primary** to assess whether the use of metronidazole is associated with an increased risk of acute pancreatitis in case reports. **Secondary**	**Results:** Adjusted odds ratios for acute pancreatitis in study subjects who redeemed a prescription for metronidazole within 30, 31–180, or 181–365 days before hospitalization or index date among controls were 3.0 [95% confidence interval (CI): 1.4–6.6], 1.8 (95% CI:1.2–2.9) and 1.1 (95% CI: 0.6–1.8), respectively. Among subjects with a concomitant prescription for protonpump inhibitors and/or amoxicillin, macrolidesor tetracycline within 30, 31–180, or 181–365 days before hospitalization, or index date among controls,adjusted odds ratios were 8.3 (95% CI: 2.6–26.4), 2.7(95%CI:1.4–5.5, and 1.7(95%CI:0.6–4.8), respectively

Ribeiro, M Dinis et al. Patients with severe acute pancreatitis should be more often treated in an Intensive Care Department. Rev Esp Enferm Dig. 94. 523-32. 2002

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:** Fallkontrollstudie	**Funding sources:** keine **Conflict of Interests:** keine **Randomization:** nein **Blinding:** nein **Dropout rates:** nein	**Total no. patients:** 44 **Patient characteristics:** 8 Jahre (Jan 1993 bis Dezember 1999) **Inclusion criteria:** Aufnahme auf die Intensivstation mit Diagnose akute Pankreatitis **Exclusion criteria:** falsche Diagnose (unklar wieviele Patienten das waren)	**Interventions:** keine **Comparison:** Aufnahme auf die Intensivstation 2 Tage oder mehr nach Aufnahme in die Klinik oder frühere ICU-Aufnahme
Notes:	Fallkontrollstudie von 44 Patienten mit Aufnahme ICU und Pankreatitis (in 8 Jahren!,45% dieser 44 Patienten wurden operiert; Die 44 Patienten waren nur 3% aller stationären Aufnahmen mit Pankreatitis in dem Krankenhaus in dem Zeitraum von 8 Jahren.). Mortalität verglichen für Patienten die später als 2 Tage nach stat. Aufnahme auf die Intensivstation kamen und die früher aufgenommen werden konnten. KH-Mortalität der 44 Patienten: n=23 (52%), ICU-Mortalität 37%. z.T. fehlende Daten z.B. u.a. zu Organversagen werden von den Autoren berichtet. **Author's conclusion:** Die Autoren berichten, daß nach dieser Auswertung ein definiertes Protokoll für die Diagnose, Monitoring und Behandlung von Patienten mit akuter Pankreatitis implementiert wird.		
Outcome Measures/results	**Primary** Überleben und Risikoassessment **Secondary**	**Results:** Daten zur Organinsuffizienz laut Autoren unzureichend, nicht vollständig. Von den 44 Patienten verstarben im Krankenhaus 23 = 52%. Die Patientenwurden im Median 2 Tage nach der Krankenhausaufnahme auf die ICU aufgenommen, in 25% warteten die Patienten mehr als 3 Tage. Patienten (45%) wurden operiert wegen der Pankreatitis, im Median am 6. Tag. Die Patienten, die im Median erst drei Tage nach der Krankenhausaufnahme auf die ICU kamen, hatten die höchste Mortalität im Vergleich zu denen, die kürzer als 2 Tage auf die ICU-Aufnahme warteten (p=0,035) Die Berechnung der Mortalität nach den "alten" Atlanta-Krieterien ergab für die Patienten, die 1 Atlanta-Kriterium erfüllten (n=16) und diejenigen, die 2 Kriterien erfüllten (n=28) keine signifikanten Unterschiede.	

Riché, Florence C et al. Inflammatory cytokines, C reactive protein, and procalcitonin as early predictors of necrosis infection in acute necrotizing pancreatitis. Surgery. 133. 257-62. 2003

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 2 **Study type:**	**Funding sources:** **Conflict of Interests:**	**Total no. patients:** **Patient characteristics:**	**Interventions:** **Comparison:**

	Randomization: **Blinding:** **Dropout rates:**	**Inclusion criteria:** **Exclusion criteria:**	
Notes:	**Author's conclusion:** A combination serum PCT and IL6 can helpt for identification of patients with infected necrosis		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Russell, Peter S et al. Admission, management and outcomes of acute pancreatitis in intensive care. ANZ J Surg. 87. E266-E270. 2017

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 3 **Study type:** retrosepctive observational study	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** 84 patients (compared to 112 patients in a previous study) **Patient characteristics:** 2003-2014 **Inclusion criteria:** patients with AP admitted to an ICU **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:** there have been changes to the admission criteria and management in line with evolving guidelines and, overall, outcomes have improved during the time		
Outcome Measures/results	**Primary** **Secondary**	**Results:** 85 patients from 2003 to 2014 were compared with 112 patients in the previous study. Maori were over-represented. Median duration of symptoms prior to admission to ICU decreased from 7 to 3 days. The proportion of total AP patients admitted to ICU halved and the mean Acute Physiology and Chronic Health Evaluation II score on admission decreased from mean 19.9 to 15.4 (P< 0.001). Two thirds of patients had persistentorgan failure. The use of enteral feeding doubled from 46/112 (41%) to 71/85 (84%)(P< 0.001). The use of primary percutaneous drainage increased from 14/112 (13%) to 24/85 (28%) (P= 0.007). Rate of necrosectomy was similar (36/112 (32%) versus 20/85(24%),P= 0.205), although minimally invasive necrosectomy was introduced. Overall hos-pital mortality decreased by 29% (P= 0.198).	

Sun, Jia-Kui et al. Early enteral nutrition prevents intra-abdominal hypertension and reduces the severity of severe acute pancreatitis compared with delayed enteral nutrition: a prospective pilot study. World J Surg. 37. 2053-60. 2013

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 3 **Study type:** prospektiv randomisierte klinische Pilot Studie, ein Zentrum	**Funding sources:** Grants aus Nanjing, China aus dem 5-Jahres-Plan (stattlich9 **Conflict of Interests:** keine **Randomization:** ja ,	**Total no. patients:** 30 mit früher enteraler Ernährung (EEN) und 30 mit verspäteter enteraler Ernährung (DEN)(nach 8 Tagen) **Patient characteristics:** Sept. 2010 Sept. 2011 (1	**Interventions:** Nasojejunale Sonde 10 French (Spitze distal des Tritz'schen Bandes plaziert, endoskopisch oder radiologisch.) Lagekontrolle fluoroskopisch. Bei der EEN-Gruppe Sondenanlage innerhalb 24 h und enteraler Ernährungsbeginn innerhalb der nächsten 24 Stunden. Patienten mit DEN wurde enterale Ernährung ab Tag 8

	"einfache" Randomisierung **Blinding:** nein **Dropout rates:** keine Drop outs	Jahr) **Inclusion criteria:** Patienten mit schwerer akuter Pankreatitis (Atlanta-Kriterien von 1992) und Aufnahme auf die Intensivstation. **Exclusion criteria:** Dekompressions-Maßnahmen für das Abdomen oder künstliche Ernährung (enteral oder parenteral) vor stat Aufnahme, Patienten mit chronischer Organdysfunktion, Immunsuppression, oder Malnutrition, Patienten mit ileus, Schwangerschaft.	angeboten, nasojejunale Sondenanlage an Tag 7. DEN Gruppe bekam parenterale Ernährung in der ersten Woche. Beide Gruppen 20-25 KCal/kg/Tag. Protein 1,5 g/kgKG/Tag (EEN) und Kalorien/Stickstoff-Ratio bei DEN 120-150:1 plus vitamine, Spurenelemente Elektrolyte. IAP Monitoring in beiden Gruppen (technisch nach Empfehlungen der World society of Abd. Compartment Syndromm von 2006. Statt Blasenkatheter Percutane minimalinvasiv gelegter suprapubischer Katheter. **Comparison:** EEN und DEN verglichen für Veränderungen IAP und IAH und klinische outcome Variablen
Notes:	wichtige Studie für die frühe enterale Ern#ährung bei schwerer akuter Pankreatitis. **Author's conclusion:** EEn führte nicht zu Anstieg des IAP, evtl. könnte EEN sogar IAH vorbeugen.EEN ist mit einem IAP von 15 mmHg gut durchführbar. EEN führte zur Verbesserung der Erkrankungsschwere, aber nicht zur Verminderung der Mortalität.		
Outcome Measures/results	**Primary** IAP und IAH **Secondary** Mortalität, ICU-Stay, Mehrorgandysfunktion (MODS), Pankreatische Infektion.	**Results:** ICU stay DEN vs EEN (p=0,033), MODS (p=0,024)und pankreatische Infektionen (p=0.028)signifikant unterschiedlich mit besserem outcome für EEN. Krankenhausmortalität nicht signifikant verschieden. Die Erkrankungsschwere - inital nicht unterschiedlich in beiden Gruppen - war in der EEN-Gruppe an Tag 7 /Tag 14 (vs. DEN) signifikant besser: APACHE-II-Score p= 0,031/0.028; SOFA-Score p=0,021/ 0,012; CRP-level p=0,023/0,001. Für IAP in den ersten zwei Wochen keine Unterschiede in beiden Gruppen 39/60 (65%) Patienten entwickelten IAH bei Aufnahme, 14 Tage nach Aufnahme waren es 7 Patienten mit IAH 1/30 in EEN und 6/30 in DEN (nicht signifikant).	

Zhou, Mengtao et al. The efficiency of continuous regional intra-arterial infusion in the treatment of infected pancreatic necrosis. Pancreatology. 13. 212-5. 2013

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 3 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Patient characteristics:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

NEWCASTLE - OTTAWA Checklist: Cohort: *16 Bewertung(en)*

Behrman, Stephen W et al. The microbiology of secondary and postoperative pancreatic infections: implications for antimicrobial management. Arch Surg. 146. 613-9. 2011			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 1 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Davies, Andrew R et al. Nutritional therapy in patients with acute pancreatitis requiring critical care unit management: a prospective observational study in Australia and New Zealand. Crit. Care Med. 39. 462-8. 2011			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 1 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

De Waele, Jan J et al. Infections and use of antibiotics in patients admitted for severe acute pancreatitis: data from the EPIC II study. Surg Infect (Larchmt). 15. 394-8. 2014			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 1 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**

Notes:	**Author's conclusion:**	
Outcome Measures/results	**Primary** **Secondary**	**Results:**

De Waele, Jan J et al. Fungal infections in patients with severe acute pancreatitis and the use of prophylactic therapy. Clin. Infect. Dis. 37. 208-13. 2003			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 1 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Delcenserie, R et al. Prophylactic antibiotics in treatment of severe acute alcoholic pancreatitis. Pancreas. 13. 198-201. 1996			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 1 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Gloor, B et al. Pancreatic infection in severe pancreatitis: the role of fungus and multiresistant organisms. Arch Surg. 136. 592-6. 2001			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 1 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**

	Dropout rates:		
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Ignatavicius, Povilas et al. Effects of prophylactic antibiotics in acute pancreatitis. HPB (Oxford). 14. 396-402. 2012

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 2 **Study type:** prospective, non-randomized, single-centre, cohort study	**Funding sources:** None declared. **Conflict of Interests:** None declared. **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** 210 **Recruiting Phase:** 01/2005 - 03/2010 **Inclusion criteria:** predicted severe and/or necrotizing severe acute pancreatitis (SAP) **Exclusion criteria:** -	**Interventions:** Vgl. zweier Kohorten. 1. Kohorte: alle behandelt mit prophylaktischer Abx 2. Kohorte: Abx nur bei Bedarf in Abhängigkeit vom MiBi-Befund **Comparison:**
Notes:	**Author's conclusion:** In conclusion, whether or not prophylactic antibiotics are effective in preventing infection in SAP remains controversial.		
Outcome Measures/results	**Primary** use of prophylactic antibiotics (Group 1) (ciprofloxacin, metronidazole) had no significant positive effect on primary endpoints, such as the incidence of infectious complications and overall mortality rate, compared with treatment on demand (Group 2). **Secondary** prophylactic antibiotic management in SAP seems to have some indirect positive effects in that it may lower the number of image-guided and surgical interventions (percutaneous drainage, necrosectomy, repeated debridement) required, without increasing the risk for occurrence of nosocomial and multidrug-resistant infections.	**Results:**	

McGovern, Paul C et al. Pancreatitis in tigecycline Phase 3 and 4 clinical studies. J. Antimicrob. Chemother. 69. 773-8. 2014

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 2 **Study type:** Subject data from Phase 3 and 4 comparative tigecycline studies as case control study	**Funding sources:** Programming support was provided by Jeff Goodrich of Pfizer Inc. **Conflict of Interests:**	**Total no. patients:** included 3788 subjects treated with tigecycline and 3646 subjects treated with a comparator. **Recruiting Phase:**	**Interventions:** **Comparison:** 3646 subjects treated with a comparator.

	Randomization: **Blinding:** **Dropout rates:**	**Inclusion criteria:** **Exclusion criteria:**	
Notes:	**Author's conclusion:** Pancreatitis was uncommon in subjects treated with tigecycline, with an occurrence of ,1%. Con- comitant medications known to cause pancreatitis should be considered when prescribing tigecycline, but may not identify those at risk of developing pancreatitis.		
Outcome Measures/results	**Primary** AP **Secondary**	**Results:** There were 9 cases identified among the tigecycline-treated subjects [9 of 3788 (0.24%; 95% CI, 0.11–0.45)] and 10 cases among the comparator-treated subjects [10 of 3646 (0.27%; 95% CI, 0.13 – 0.50)].	

Nakaharai, Kazuhiko et al. Early prophylactic antibiotics for severe acute pancreatitis: A population-based cohort study using a nationwide database in Japan. J. Infect. Chemother. 24. 753-758. 2018

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 2 **Study type:** retrospective population-based cohort study using the nationwide Japanese Diagnosis Procedure Combination	**Funding sources:** This work was supported by grants from the Ministry of Health, Labour and Welfare, Japan (H29-Policy-Designated-009 and H29-ICT-Genral-004); Ministry of Education, Culture, Sports, Science and Technology, Japan (17H04141); and the Japan Agency for Medical Research and Development. **Conflict of Interests:** The authors have no conflicts of interest to disclose. **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** 3354 eligible patients, including 2493 in the prophylaxis group and 861 in the control group **Recruiting Phase:** July 2010 and 31 March 2016 **Inclusion criteria:** ll adult patients (**Exclusion criteria:** excluding acute exacerbation of chronic pancreatitis and gallstone pancreatitis patients who underwent surgical or endoscopic procedures for pancrea- titis (drainage or necrosectomy) within 2 days after admission; patients who received antibiotics other than prophylactic antibi- otics within 2 days after admission; and patients who underwent regional arterial infusion within 2 days after admission	**Interventions:** “early prophylactic antibiotic use” as administration of carbapenems (imipenem/cilastatin, meropenem, doripenem, biapenem, or panipenem) started within 2 days after admission **Comparison:** compared clinical outcomes be- tween patients administered prophylactic carbapenems within 2 days after admission (prophylaxis group) and those not admin- istered any antibiotics within 2 days after admission (control group).
Notes:	**Author's conclusion:** early prophylactic antibiotic use has no significant clinical benefit in terms of mortality and infectious complications in patients with SAP. prophylactic antibiotic use may increase the risk of hospital-acquired infections These results suggest that routine early prophylactic antibiotic use is not supported for patients with SAP.		
Outcome Measures/results	**Primary** n-hospital mortality of any cause **Secondary** surgical or endoscopic interventions for infectious complications after the third day of hospitalization, use of oral vancomycin after the third day of hospitalization, and use of	**Results:** comparisons between the groups indicated that patients in the prophylaxis group were older and more likely to have severe disease, use protease inhibitors, and receive intensive care, including central venous catheter insertion, mechanical ventilation, vasopressors, and continuous hemodiafiltration. There was no significant difference in the survival curves between the prophylaxis and control groups there was no significant association between early	

	an antifungal drug (fluconazole, itraconazole, voriconazole, micafungin, caspofungin, and/or amphotericin B) after the third day of hospitalization.	prophylactic antibiotic use and surgical interventions for infectious complications or antifungal drug use after the third day of hospitalization in competing- risk models; however, antibiotic prophylaxis was significantly associated with increased use of oral vancomycin after the third day of hospitalization

Pezzilli, R et al. A prospective multicentre survey on the treatment of acute pancreatitis in Italy. Dig Liver Dis. 39. 838-46. 2007

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 2 **Study type:** descriptive study	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** 1173 **Recruiting Phase:** 12/2001 until 11/2003 **Inclusion criteria:** patients with acute pancreatitis, classified accorrding to Atlanta classification (Bradley EL, Arch Surg 1993) **Exclusion criteria:** not applicable	**Interventions:** observation study: observation of conservative, interventional and surgical treatment in acute pancreatitis **Comparison:**
Notes:	**Author's conclusion:** lack of compliance with the guidelines which regard the indications mainly for interventional endoscopy and surgery		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Pupelis, G et al. Oral feeding in necrotizing pancreatitis. Acta Chir. Belg. 114. 34-9. 2014

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 2 **Study type:** retrospective study of two cohorts	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** 129 **Recruiting Phase:** 09/20011-12/201 **Inclusion criteria:** necrotizing severe acute pancreatitis, patients were admitted with the first or a new episode within a 72-hour period from the onset of the disease **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:** Early low volume oral feeding provides physiologic stimulation and promotes recovery of bowel function, preparing the gastrointestinal tract for low-fat hospital food in patients with necrotizing SAP. The majority of patients required no additional nutritional support		
Outcome Measures/results	**Primary** **Secondary**	**Results:** mean CRP level on day 7 was 160 ± 77.6 mg/l in Group I (early low volume feeding within 72 hours) compared to 200.2 ± 103.2 mg/l in Group II (early low volume feeding after 72 hours), p = 0.043. rate of infection and the need for surgical intervention (46.8% vs. 26%) were significantly higher in Group II (p = 0.026). Group II also had longer ICU/ hospital stays (p = 0.039/p = 0.002). Overall mortality was 10%	

Runzi, Michael et al. Severe acute pancreatitis: nonsurgical treatment of infected necroses. Pancreas. 30. 195-9. 2005			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 3 **Study type:** retrospective	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** 28 (out of 88 evaluated patients) **Recruiting Phase:** 7/1987-12/1999 **Inclusion criteria:** acute necrotizing pancreatitis **Exclusion criteria:**	**Interventions:** conservative treatment in infected necrosis **Comparison:**
Notes:	**Author's conclusion:** in patients with acute necrotizing pancreatitis and infected necroses, surgery can be avoided without compromising prognosis and outcome		
Outcome Measures/results	**Primary** **Secondary**	**Results:** 16 (out of 28) were managed with medical treatment alone. Six patients recovered without further complications; 10 patients (62%) developed single or multiple organ failure, and 2 died (mortality, 12%	

Sahar, Nadav et al. The microbiology of infected pancreatic necrosis in the era of minimally invasive therapy. Eur. J. Clin. Microbiol. Infect. Dis. 37. 1353-1359. 2018			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 3 **Study type:** retrospective	**Funding sources:** **Conflict of Interests:** no **Randomization:** not applicable **Blinding:** not applicable **Dropout rates:**	**Total no. patients:** 182 **Recruiting Phase:** 01/2008-02/2017 **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:** We provide data to further support the guidelines stating that WON can be followed conservatively limiting antibiotic treatment. For patients withsigns of active infection, selection of antibiotics can be tai-lored based on culture results, limiting the use of broad-spectrum therapy, and utilizing antifungal medication earlyand carefully when needed.		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Schmidt, Palle N et al. Spectrum of microorganisms in infected walled-off pancreatic necrosis - impact on organ failure and mortality. Pancreatology. 14. 444-9. 2014			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 3 **Study type:** retrosepctive study	**Funding sources:** **Conflict of Interests:** **Randomization:**	**Total no. patients:** 78 **Recruiting Phase:** 11/2005-11/2011 **Inclusion criteria:**	**Interventions:** **Comparison:**

	Blinding: **Dropout rates:**	**Exclusion criteria:**	
Notes:	**Author's conclusion:** different micrbial colonization may affect the prognosis in acute pancreatitis		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Spanier, B W M et al. Nutritional management of patients with acute pancreatitis: a Dutch observational multicentre study. Aliment. Pharmacol. Ther. 28. 1159-65. 2008

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 3 **Study type:** Observational study in 18 hospitals	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** To evaluate the nutritional management of patients with AP in a Dutch cohort (EARL study). **Comparison:**
Notes:	**Author's conclusion:** The total time of starvation was limited in a majority of patients admitted for AP. According to international guidelines, additional nutritional inter- ventions were quickly undertaken with enteral feeding via the jejunum as the preferred route.		
Outcome Measures/results	**Primary** Observational study in 18 hospitals. Total days of NPO, tube feeding (TF) with/without oral feeding, total parenteral nutrition (TPN) and total starvation time were analysed. **Secondary**	**Results:** In mild AP, a majority of cases (80.7%, ¹¹⁷⁄₁₄₅) were managed with an NPO regimen only. Twenty-seven patients (18.6%) with mild AP additionally received TF; one received TPN. Of those with severe AP, more than half of the patients (56.2%, nine of 16) were treated with TF besides an NPO regimen; four received TPN. TF was delivered preferably via the jejunal route. The median period of total starvation was 2 days for both mild and severe AP. Only 5.5% (nine of 164) of patients had a prolonged starvation time of more than 5 days.	

Zou, L et al. Enteral nutrition within 72?h after onset of acute pancreatitis vs delayed initiation. Eur J Clin Nutr. 68. 1288-93. 2014

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 3 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**

Notes:	**Author's conclusion:**	
Outcome Measures/results	**Primary** **Secondary**	**Results:**

Literatursammlung:

AG5-CP

Inhalt: 66 Literaturstellen

Literaturstelle	Evidenzlevel	Studientyp
Agarwal, Jaya 2014	2	
Ahmed Ali, Usama 2013	1	
Amudhan, Anbalagan 2008	4	
Andersen, Dana K 2010	5	
Bachmann, Kai 2014	1	
Bachmann, Kai 2013	2	
Beger, H G 1989	4	
Beger, H G 1990	4	
Beger, H G 1989	1	
Beger, H G 1999	4	
Belina, Frantisek 2005	1	
Bellin, Melena D 2011	1	
Bellon, Eugen 2019	1	
Bhutiani, Neal 2017	4	retrospective cohort study
Bockman, D E 1988	5	
Bradley, Edward L 2003	1	
Buscher, H C J L 2002	4	
Büchler, M W 1997	4	
Büchler, M W 1995	2	
Cataldegirmen, G 2008	4	
Cauchy, F 2013	4	
Chinnakotla, Srinath 2014	3	retrospective cohort study
Cooper, Michol A 2013	4	
Croome, Kristopher P 2015	4	
Davis, Brian R 2008	4	
Egawa, Shinichi 2010	4	
Falconi, Massimo 2006	4	
Frey, C F 1994	4	
Frey, C F 1987	5	

Gurusamy, Kurinchi Selvan 2016	1	
Hildebrand, Philipp 2010	4	
Howard, Thomas J 2002	4	
Ihse, I 1999	4	
Issa, Yama 2014	1	Systematic review
Izbicki, J R 1995	2	
Izbicki, Jakob R 2002	4	
Jawad, Zaynab A R 2016	1	
Ke, Nengwen 2018	3	
Keck, Tobias 2012	1	
Keck, Tobias 2010	4	
Kilburn, Daniel J 2017	4	
Klaiber, Ulla 2016	1	
Kocher, Hemant M 2011	3	
Liu, Bo-Nan 2010	4	
Malec-Milewska, Malgorzata B 2013	4	
Merdrignac, Aude 2016	4	
Müller, M W 2008	4	
Möbius, C 2007	2	
Nealon, W H 2001	4	
Pessaux, Patrick 2006	4	
Ramesh, H 2008	4	
Ray, Sukanta 2015	1	
Sinha, Amitasha 2016	4	
Sohn, T A 2000	1	
Strate, Tim 2008	4	
Strate, Tim 2005	3	
Sutherland, David E R 2012	4	
Tan, Chun-Lu 2015	4	
Teh, Swee H 2006	4	
Waldthaler, Alexander 2013	4	
Wilson, Gregory C 2015	4	
Witzigmann, Helmut 2002	4	
Witzigmann, Helmut 2003	4	
Yin, Zi 2012	1	Meta Analysis
Zhao, Xin 2017	1	meta Analysis
Zhou, Yanming 2015	1	Meta Analysis

OXFORD (2011) Appraisal Sheet: Systematic Reviews: 9 Bewertung(en)

Andersen, Dana K et al. The evolution of the surgical treatment of chronic pancreatitis. Ann. Surg. 251. 18-32. 2010			
Evidence level/Study Types	**P - I - C**	**Outcomes/Results**	**Literature References**
Evidence level: 5 **Study type:** **Databases:** **Search period:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** **Author's Conclusion:**	
Methodical Notes			
Funding Sources: **COI:** **Study Quality:** **Heterogeneity:** **Publication Bias:** **Notes:** NON-systematic Review, expertenmeinung!			

Bradley, Edward L et al. Nerve blocks and neuroablative surgery for chronic pancreatitis. World J Surg. 27. 1241-8. 2003			
Evidence level/Study Types	**P - I - C**	**Outcomes/Results**	**Literature References**
Evidence level: 1 **Study type:** **Databases:** **Search period:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** **Author's Conclusion:**	
Methodical Notes			
Funding Sources: **COI:** **Study Quality:** **Heterogeneity:** **Publication Bias:** **Notes:** NON-systematic Review -> Expert Opinion			

Gurusamy, Kurinchi Selvan et al. Duodenum-preserving pancreatic resection versus pancreaticoduodenectomy for chronic pancreatitis. Cochrane Database Syst Rev. 2. CD011521. 2016

Evidence level/Study Types	P - I - C	Outcomes/Results	Literature References
Evidence level: 1 **Study type:** **Databases:** **Search period:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** **Author's Conclusion:**	

Methodical Notes

Funding Sources:

COI:

Study Quality:

Heterogeneity:

Publication Bias:

Notes:
systematic Cochrane Review: evidence low or very low

Issa, Yama et al. Preoperative opioid use and the outcome of thoracoscopic splanchnicectomy in chronic pancreatitis: a systematic review. Surg Endosc. 28. 405-12. 2014

Evidence level/Study Types	P - I - C	Outcomes/Results	Literature References
Evidence level: 1 **Study type:** Systematic review **Databases:** PubMed, EMBASE, and The Cochrane Library for studies on the outcome of TS in CP patients. **Search period:** **Inclusion Criteria:** Studies with > 5 patients and a follow-up of >12 months were included. Thoracoscopic splanchicectomy **Exclusion Criteria:** see above	**Intervention:** **Comparison:** none	**Primary:** Success was defined as the proportion of patients free of opioids or who had a reduction of C4 points on a pain scale. The effect of Opioid use on the success rate of TS was analyzed by uni- and multivariate regression. **Secondary:** **Results:** Sixteen studies with 484 patients were included in our review. The mean (±SD) age of the patients was 44 ± 4.3 years and 66 % were male. Median follow-up period was 21 months (IQR 14–35). Median preoperative opioid use was 85 % (IQR 54–100 %). After TS, a median of 49 % (IQR 22–75 %) of patients were free of opioids at end of follow-up. The median success rate was 62 % (IQR 48–86 %). Mean success rate in studies in which B50 % of the patients used opioids preoperatively was 81 % (SD ± 21) compared to 60 % (SD ± 15) for other studies (p = 0.049). Higher age, male gender, and lower rates of preoperative opioid use were associated with a higher success rate (p = 0.003, 0.047, and 0.017, respectively). Multivariate regression, including age, gender, preoperative opioid use, and duration of follow-up, identified age and preoperative opioid use as independent predictors of success after TS (both p = 0.002). **Author's Conclusion:** Preoperative opioid use is associated with a worse outcome after TS in CP patients. To optimize outcome, use of TS may be considered at an	

		earlier stage in the treatment of patients with CP before prolonged Opioid therapy.	

Methodical Notes

Funding Sources: not reported

COI: none

Study Quality:

Heterogeneity:

Publication Bias:

Notes:

Jawad, Zaynab A R et al. Short and long-term post-operative outcomes of duodenum preserving pancreatic head resection for chronic pancreatitis affecting the head of pancreas: a systematic review and meta-analysis. HPB (Oxford). 18. 121-128. 2016

Evidence level/Study Types	P - I - C	Outcomes/Results	Literature References
Evidence level: 1 **Study type:** **Databases:** **Search period:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** **Author's Conclusion:**	

Methodical Notes

Funding Sources:

COI:

Study Quality:

Heterogeneity:

Publication Bias:

Notes:
systematic Review of DPPHR Outcomes (FRey vs. Beger vs. Bern) -> equally effective

Kocher, Hemant M et al. Chronic pancreatitis. BMJ Clin Evid. 2011. . 2011

Evidence level/Study Types	P - I - C	Outcomes/Results	Literature References
Evidence level: 3 **Study type:** **Databases:** **Search period:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** **Author's Conclusion:**	

Methodical Notes

Funding Sources:

COI:

Study Quality:

Heterogeneity:

Publication Bias:

Notes:
systematic Review!

Yin, Zi et al. Surgical treatment strategies in chronic pancreatitis: a meta-analysis. Arch Surg. 147. 961-8. 2012

Evidence level/Study Types	P - I - C	Outcomes/Results	Literature References
Evidence level: 1 **Study type:** Meta Analysis **Databases:** Pubmed, Embase, Science Citation Index, SpringerLink **Search period:** till 31.12.2011 **Inclusion Criteria:** All controlled experimental (randomized and nonrandomized) studies in which duodenumpreserving pancreatic head resection was compared with pancreaticoduodenectomy in chronic pancreatitis. **Exclusion Criteria:**	**Intervention:** **Comparison:** Surgery	**Primary:** **Secondary:** **Results:** A total of 1007 patients from 15 studies were included in the meta-analysis. The relative risks for postoperative pain relief and postoperative morbidity in the Beger procedure were 1.29 (95% CI, 1.03-1.61; P=.03) and 0.55 (0.21-1.39; P=.20), respectively, compared with pancreaticoduodenectomy. These results are just the opposite in the Frey procedure, in which a significantly better outcome was shown in postoperative morbidity compared with resection (relative risk,0.60; 95% CI, 0.46-0.78; P.01) but not in postoperative pain relief (1.03; 0.90-1.17; P=.67). In terms of quality of life, pancreatic exocrine function, and delayed gastric emptying, the results also favored duodenum-preserving strategies. **Author's Conclusion:** For the duodenum-preserving strategy of the Beger procedure, complete pain relief is achieved in most patients, but there is no evidence that it has a better result in postoperative morbidity. For the Frey procedure, a significantly lower postoperative morbidity is demonstrated, but complete pain relief is not provided in most cases. Thus, compared with conventional pancreaticoduodenectomy, both new strategies should be recommended on the basis of the patients' appropriate individual preferences.	

Methodical Notes
Funding Sources:
COI:
Study Quality:
Heterogeneity:
Publication Bias:
Notes:

Zhao, Xin et al. Surgical strategies in the treatment of chronic pancreatitis: An updated systematic review and meta-analysis of randomized controlled trials. Medicine (Baltimore). 96. e6220. 2017

Evidence level/Study Types	P - I - C	Outcomes/Results	Literature References
Evidence level: 1 **Study type:** meta Analysis **Databases:** (PubMed, Medline, SinoMed, Embase, and Cochrane Library) **Search period:** til June 2016 **Inclusion Criteria:** The inclusion criteria were as follows: (1) the studypopulations were patients diagnosed with CP who wererandomly allocated to undergo either a DPPHR or a PDprocedure; (2) the aims of the trial were to compare theeffectiveness of DPPHR (described by Beger, Frey, or Bern et al)with either a PD or Whipple procedure or the Beger versus theFrey procedure; (3) the trial was a randomized controlled trial;and (4) the postoperative follow-up time was not less than 12months. If a study generated multiple publications, but themedian follow-up time was different, then the relevantparameters of the follow-up interval	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** Seven studies involving a total of 385 patients who underwent the surgical treatments were assessed. Themethodological quality of the trials ranged from low to moderate and included PD (n=134) and DPPHR (n=251 [Begerprocedure=100; Frey procedure=109; Beger or Frey procedure=42]). There were no significant differences between DPPHRand PD in post-operation mortality (RR=2.89, 95% CI=0.31–26.87,P=0.36), pain relief (RR=1.09, 95% CI=0.94–1.25,P=0.26), exocrine insufficiency (follow-up time>60 months: RR=0.91, 95% CI=0.72–1.15,P=0.41), and endocrine insufficiency(RR=0.75, 95% CI=0.52–1.08,P=0.12). Concerning the follow-up time<60 months, the DPPHR group had better results ofexocrine insufficiency (RR=0.22, 95% CI=0.08–0.62,P=0.04). However, operation time (P<0.0001), blood transfusion (P=0.02), hospital stay (P=0.0002), postoperation morbidity (P=0.0007), weight gain (P<0.00001), quality of life (P=0.01), andoccupational rehabilitation (P=0.007) were significantly better for patients who underwenttheDPPHRprocedurecomparedwiththe PD procedure. The comparison results of the Frey procedureand PD showed that both procedures had an equal effect in thepain relief, postoperation mortality, exocrine and endocrine function, and quality of life (QoL) (P>0.05), whereas patients whounderwent the Frey procedure had significantly reduced operative times (P<0.05) and less blood transfusions (P<0.05).Comparing the Beger procedure to the PD procedure, there were no significant differences in hospital stay, blood transfusion,postoperation morbidity or mortality,pain relief, weight gain, exocrine insufficiency, and occupational rehabilitation (P>0.05).Two studies comparing the Beger and Frey procedures showed no differences in postoperative morbidity, pain relief, exocrineinsufficiency, and quality of life (P>0.05). In terms of operative time, blood transfusion, hospital stay, postoperation morbidity,weight gain, quality of life, and occupational rehabilitation, the results also favored duodenum-preserving pancreatic headresection (DPPHR) strategies. **Author's Conclusion:** All procedures are equally effective for the management of pain, postoperation morbidity,	

were compared **Exclusion Criteria:**		exocrine insufficiency, andendocrine insufficiency for chronic pancreatitis. Improved short- and long-term outcomes, including operative time, bloodtransfusion, hospital stay, quality of life, weight gain, and occupational rehabilitation make DPPHR a more favorable surgical strategyfor patients with chronic pancreatitis. Further, relevant trails are eager to prove thesefindings	

Methodical Notes

Funding Sources:

COI:

Study Quality:

Heterogeneity:

Publication Bias:

Notes:

Zhou, Yanming et al. Frey procedure for chronic pancreatitis: Evidence-based assessment of short- and long-term results in comparison to pancreatoduodenectomy and Beger procedure: A meta-analysis. Pancreatology. 15. 372-9. 2015

Evidence level/Study Types	P - I - C	Outcomes/Results	Literature References
Evidence level: 1 **Study type:** Meta Analysis **Databases:** PubMed (MEDLINE) and EMBASE databas **Search period:** til february 2015 **Inclusion Criteria:** nclusion criteria for meta-analysis: (1) non-randomized studiesor randomized controlled trials (RCT) comparing Frey procedurewith pancreatoduodenectomy or Beger procedure; (2) the studypopulation consisted of patients with chronic pancreatitis whounderwent surgical resection. **Exclusion Criteria:** Animal studies, case reports, case series of less thanfive pa-tients, reviews, studies dealing with benign or low-grade malignanttumors, studies that focused on laparoscopic surgery, and studiespresenting insufficient information were excluded.	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** Twenty-three studies comprising a total of 800 patients were reviewed. The postoperativemorbidity and mortality were 23.2% and 0.4% respectively. The percentage of postoperative pain-reliefpatients was 89.4%. New onset of diabetes and exocrine insufficiency was present in 17.3% and 30.7%of patients, respectively. Compared with pancreatoduodenectomy, Frey procedure had favorable out-comes in terms of operation time, blood transfusion, overall morbidity, length of hospital and intensivecare unit stay, pancreatic function and quality of life. Compared with Beger procedure, Frey procedurehad shorter operation time and lower morbidity. **Author's Conclusion:** Frey procedure is a safe and effective surgical procedure for chronic pancreatitis withdilated duct in the absence of neoplasia	

Methodical Notes

Funding Sources:

COI:

Study Quality:

Heterogeneity:

Publication Bias:

Notes:

OXFORD (2011) Appraisal Sheet: RCT: 10 Bewertung(en)

Ahmed Ali, Usama et al. Early surgery versus optimal current step-up practice for chronic pancreatitis (ESCAPE): design and rationale of a randomized trial. BMC Gastroenterol. 13. 49. 2013

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 1	**Intervention:**	**Primary:**
Study type:	**Comparison:**	**Secondary:**
Number of Patient:		**Results:**
Recruitung Phase:		**Author's Conclusion:**
Inclusion Criteria:		
Exclusion Criteria:		

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes:
Study protocol. Final results awaited. Data presented at DDW and UEG 2018.
Introduction: Surgery for chronic pancreatitis is currently used as last resort treatment when the first steps of the step-up approach, medical and endoscopic treatment, have failed. It has been suggested that early surgery may lead to better pain relief and preservation of pancreatic function, as compared to the current step-up approach of medical and endoscopic treatment, and surgical therapy if all else fails. We conducted a multicenter randomized controlled trial to compare early surgery with the current step-up approach.

Aims and Methods: We included patients with chronic pancreatitis according to the MANNHEIM criteria with a dilated pancreatic duct (≥ 5 mm) and severe continuous or intermittent pain attacks, who had only recently started treatment with opioids. Patients who used strong opioids for more than 2 months or weak opioids for more than 6 months in the last 2 years were excluded. Patients were randomly assigned to early surgery (6 weeks after randomization; if pancreatic head
Results: 88 patients were randomized according to calculated sample size; 44 to early surgery (41 indeed underwent surgery) and 44 to the step-up approach (44 underwent medical treatment, 39 endoscopic intervention, and 13 surgical intervention thereafter). During 18 months' follow-up patients in the early surgery group had a lower mean Izbicki pain score as compared to patients in the step-up approach (35 vs. 48, p = 0.018). Taken into account the baseline pain score, early surgery showed a larger decrease in Izbicki pain score during follow-up (-26 vs. -16, p = 0.04). Complete or partial pain relief during follow-up was achieved in 54% of patients in early surgery and in 33% of patients in the step-up approach (RR: 1.52 [1.40-1.66], p
Conclusion: Early surgery, within the first months of need for opioid use, for patients with chronic pancreatitis and a dilated pancreatic duct provides better pain relief with less interventions than the current step-up approach including endoscopy first, but quality of life is comparable.

Bachmann, Kai et al. Beger and Frey procedures for treatment of chronic pancreatitis: comparison of outcomes at 16-year follow-up. J. Am. Coll. Surg. 219. 208-16. 2014

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 1 **Study type:** **Number of Patient:** **Recruitung Phase:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** **Author's Conclusion:**

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes:
16 year follow up of RCT

Bachmann, Kai et al. Is the Whipple procedure harmful for long-term outcome in treatment of chronic pancreatitis? 15-years follow-up comparing the outcome after pylorus-preserving pancreatoduodenectomy and Frey procedure in chronic pancreatitis. Ann. Surg. 258. 815-20; discussion 820-1. 2013

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 2 **Study type:** **Number of Patient:** **Recruitung Phase:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** **Author's Conclusion:**

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes:
15 year follow up Whipple vs. Frey, Frey Little better

Büchler, M W et al. Randomized trial of duodenum-preserving pancreatic head resection versus pylorus-preserving Whipple in chronic pancreatitis. Am. J. Surg. 169. 65-9; discussion 69-70. 1995

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 2 **Study type:** **Number of Patient:** **Recruitung Phase:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** **Author's Conclusion:**

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes:
small, single Center randomized controlled Trial (20 vs.20 patients)

Izbicki, J R et al. Duodenum-preserving resection of the head of the pancreas in chronic pancreatitis. A prospective, randomized trial. Ann. Surg. 221. 350-8. 1995

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 2 **Study type:** **Number of Patient:** **Recruitung Phase:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** **Author's Conclusion:**

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes:
small single Center RCT Beger vs. Frey (n=20vs.22) -> no difference

Keck, Tobias et al. Short- and long-term results of duodenum preservation versus resection for the management of chronic pancreatitis: a prospective, randomized study. Surgery. 152. S95-S102. 2012

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 1 **Study type:** **Number of Patient:** **Recruitung Phase:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** **Author's Conclusion:**

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes:
single Center RCT PPPD vs. DPPHR 85 patients -> no difference

Klaiber, Ulla et al. Duodenum-preserving pancreatic head resection: 10-year follow-up of a randomized controlled trial comparing the Beger procedure with the Berne modification. Surgery. 160. 127-135. 2016

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 1 **Study type:** **Number of Patient:** **Recruitung Phase:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** **Author's Conclusion:**

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes:
10 year follow up of 40 patients berne vs. beger. no difference

Möbius, C et al. Five-year follow-up of a prospective non-randomised study comparing duodenum-preserving pancreatic head resection with classic Whipple procedure in the treatment of chronic pancreatitis. Langenbecks Arch Surg. 392. 359-64. 2007

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 2 **Study type:** **Number of Patient:** **Recruitung Phase:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** **Author's Conclusion:**

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes:
5 year follow up of randomized trial beger vs. whipple. Advantage for Beger QoL and Pain

Strate, Tim et al. Resection vs drainage in treatment of chronic pancreatitis: long-term results of a randomized trial. Gastroenterology. 134. 1406-11. 2008

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 4 **Study type:** **Number of Patient:** **Recruitung Phase:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** **Author's Conclusion:**

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes:
Long term results 27 vs.30 patients single Center Whipple vs. Frey -> no difference

Strate, Tim et al. Long-term follow-up of a randomized trial comparing the beger and frey procedures for patients suffering from chronic pancreatitis. Ann. Surg. 241. 591-8. 2005

Population	Intervention - Comparison	Outcomes/Results

Evidence level: 3 **Study type:** **Number of Patient:** **Recruitung Phase:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** **Author's Conclusion:**

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes:
Long term results single Center Beger vs. Frey, -> no difference

OXFORD (2011) Appraisal Sheet: Prognostic Studies: 1 Bewertung(en)

Chinnakotla, Srinath et al. Total pancreatectomy and islet autotransplantation in children for chronic pancreatitis: indication, surgical techniques, postoperative management, and long-term outcomes. Ann. Surg. 260. 56-64. 2014

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** retrospective cohort study **Number of Patient:** 75 pediatric patients **Recruitung Phase:** 24 yrs **Inclusion Criteria:** children with chronic pancreatitis for pancreatectomy and islet autotransplantatiomn **Exclusion Criteria:** none	**Intervention:** see above **Comparison:** no	**Primary:** pain **Secondary:** Indication, Surgical Techniques, Post Operative Management and Long-Term Outcomes **Results:** Pancreatitis pain and the severity of pain statistically improved in 90% of patients after TP-IAT (p =<0.001). The relief from narcotics was sustained. Of the 75 patients undergoing TP- IAT, 31 (41.3%) achieved insulin independence. Younger age (p=0.032), lack of prior Puestow (p=0.018), lower body surface area (p=0.048), IEQ per Kg Body Weight (p=0.001) and total IEQ (100,000) (0.004) were associated with insulin independence. By multivariate analysis, 3 factors were associated with insulin independence after TP-IAT:(1) male gender, (2) lower body surface area and the (3) higher total IEQ per kilogram body weight. Total IEQ (100,000) was the single factor most strongly associated with insulin independence (OR = 2.62; p value < 0.001). **Author's Conclusion:** TP-IAT provides sustained pain relief and improved quality of life. The β cell function is dependent on islet yield. TP-IAT is an effective therapy for children with painful pancreatitis that fail medical and or endoscopic management

Methodical Notes

Funding Sources: not indicated

COI: not indicated

Randomization: no

Blinding: no

Dropout Rate/ITT-Analysis: no

Notes: This patient cohort is repeatedly published each with a different focus

NEWCASTLE - OTTAWA Checklist: Case Control: 2 Bewertung(en)

Cauchy, F et al. Influence of bile duct obstruction on the results of Frey's procedure for chronic pancreatitis. Pancreatology. 14. 21-6. 2013			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Patient characteristics:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	case control study on outcome of Frey procedure + bilidigestive Anastomosis vs. Frey without **Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Ke, Nengwen et al. Earlier surgery improves outcomes from painful chronic pancreatitis. Medicine (Baltimore). 97. e0651. 2018			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 3 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Patient characteristics:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	single center case control early (25months from diagnosis) vs. late (81 months from diagnosis) surgery. significantly better outcome for early surgery (pain, endocrine + exocrine function, QoL) **Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

NEWCASTLE - OTTAWA Checklist: Cohort: 44 Bewertung(en)

Agarwal, Jaya et al. ERCP in the management of pancreatic diseases in children. Gastrointest. Endosc. 79. 271-8. 2014

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 2 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	ERPC in Children generally safe **Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Amudhan, Anbalagan et al. Factors affecting outcome after Frey procedure for chronic pancreatitis. HPB (Oxford). 10. 477-82. 2008

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 4 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	single center cohorte, 14 Monate Follow-up **Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Beger, H G et al. [Cephalic pancreatectomy with conservation of the duodenum in chronic pancreatitis with inflammatory lesions of the head of pancreas. Results of 15 years' experience]. Chirurgie. 115. 193-201. 1989

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 4 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	Erstbeschreibung Beger **Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Beger, H G et al. Duodenum-preserving resection of the head of the pancreas in chronic pancreatitis with inflammatory mass in the head. World J Surg. 14. 83-7. 1990			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	Erstbeschreibung Beger Englisch **Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Beger, H G et al. Duodenum-preserving resection of the head of the pancreas in severe chronic pancreatitis. Early and late results. Ann. Surg. 209. 273-8. 1989			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 1 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	Erstcohorte Beger Ann SUrg **Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Beger, H G et al. Duodenum-preserving head resection in chronic pancreatitis changes the natural course of the disease: a single-center 26-year experience. Ann. Surg. 230. 512-9; discussion 519-23. 1999			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	case series über 500 Patienten Ulm **Author's conclusion:**		

Outcome Measures/results	**Primary** **Secondary**	**Results:**

Belina, Frantisek et al. Duodenopancreatectomy versus duodenum-preserving pancreatic head excision for chronic pancreatitis. Pancreatology. 5. 547-52. 2005			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 1 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	nicht randomisierte Kohorten Whipple vs. Duodenumerhalt **Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Bellin, Melena D et al. Quality of life improves for pediatric patients after total pancreatectomy and islet autotransplant for chronic pancreatitis. Clin. Gastroenterol. Hepatol. 9. 793-9. 2011			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 1 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	Erste cohorte mit wenigen Kindern **Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Bellon, Eugen et al. Duodenum-preserving pancreatic head resection: A retrospective analysis of the Hamburg Modification. Surgery. . . 2019			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 1 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	cohorte von 500 mit Hamburg modification vs. 100 BEger/Frey		

	Author's conclusion:	
Outcome Measures/results	**Primary** **Secondary**	**Results:**

Bhutiani, Neal et al. Comparative Efficacy of Bilateral Thoracoscopic Splanchnicectomy for Intractable Pain Secondary to Pancreatic Cancer vs Chronic Pancreatitis. J. Am. Coll. Surg. 224. 566-571. 2017

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 4 **Study type:** retrospective cohort study	**Funding sources:** not reported **Conflict of Interests:** None reported **Randomization:** n.a. **Blinding:** n.a. **Dropout rates:** not reported	**Total no. patients:** 75 **Recruiting Phase:** 1998-2016 **Inclusion criteria:** bilateral thoracoscopic splanchnicectomy **Exclusion criteria:**	**Interventions:** **Comparison:** bilateral thoracoscopic splanchnicectomy
Notes:	**Author's conclusion:** Bilateral thoracoscopic splanchnicectomy safely, effectively, and durably relieves abdominal pain in patients with both pancreatic cancer and chronic pancreatitis. However, it is more effective in providing pain relief and preventing pain-related hospitalizations in patients with pancreatic cancer compared with those with chronic pancreatitis.		
Outcome Measures/results	**Primary** reduction i pain, narcotic analgesic requirement, Hospital Admission. **Secondary**	**Results:** After bilateral thoracoscopic splanchnicectomy, 28% of pancreatic cancer patients continued to experience abdominal pain compared with 57% of chronic pancreatitis patients. Daily narcotic dose decreased for 74% of pancreatic cancer compared with 32% of chronic pancreatitis patients ($p < 0.001$). Sixty-seven percent of pancreatic cancer patients discontinued pain medications completely compared with 14% of chronic pancreatitis patients ($p < 0.001$). Hospitalizations decreased significantly in both groups ($p < 0.001$; $p = 0.001$), although mean number of postoperative hospitalizations was lower for pancreatic cancer (0.5) compared with chronic pancreatitis patients (2.80) ($p < 0.001$). Mean follow-up was significantly shorter for pancreatic cancer patients than for chronic pancreatitis patients (8 months vs 32 months; $p < 0.001$)	

Bockman, D E et al. Analysis of nerves in chronic pancreatitis. Gastroenterology. 94. 1459-69. 1988

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 5 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	histological data underlining neural changes		

	Author's conclusion:	
Outcome Measures/results	**Primary** **Secondary**	**Results:**

Buscher, H C J L et al. Long-term results of bilateral thoracoscopic splanchnicectomy in patients with chronic pancreatitis. Br J Surg. 89. 158-62. 2002

Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	single Center cohort **Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Büchler, M W et al. Duodenum-preserving pancreatic head resection: Long-term results. J. Gastrointest. Surg. 1. 13-9. 1997

Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	single Center cohorte von 298 Patienten **Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Cataldegirmen, G et al. Late morbidity after duodenum-preserving pancreatic head resection with bile duct reinsertion into the resection cavity. Br J Surg. 95. 447-52. 2008

Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**

Notes:	single Center experience with reinsertion of the CBD into the pancreatic cavity -> very high rate of strictures **Author's conclusion:**	
Outcome Measures/results	**Primary** **Secondary**	**Results:**

Cooper, Michol A et al. Extent of pancreatic fibrosis as a determinant of symptom resolution after the Frey procedure: a clinico-pathologic analysis. J. Gastrointest. Surg. 17. 682-7. 2013

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 4 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	case series with 35 patients -> more severe fibrosis -> better pain relief after operation **Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Croome, Kristopher P et al. Pancreatoduodenectomy for Chronic Pancreatitis-Results of a Pain Relief and Quality of Life Survey 15 Years Following Operation. J. Gastrointest. Surg. 19. 2146-53. 2015

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 4 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	single Center cohort of PD for CP. good pain control **Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Davis, Brian R et al. An objective study of pain relief in chronic pancreatitis from bilateral thoracoscopic splanchnicectomy. Am Surg. 74. 510-4; discussion 514-5. 2008

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 4 **Study type:**	**Funding sources:** **Conflict of Interests:**	**Total no. patients:** **Recruiting Phase:**	**Interventions:**

	Randomization: **Blinding:** **Dropout rates:**	**Inclusion criteria:** **Exclusion criteria:**	**Comparison:**
Notes:	single Center experience **Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Egawa, Shinichi et al. Assessment of Frey procedures: Japanese experience. J Hepatobiliary Pancreat Sci. 17. 745-51. 2010

Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	single Center cohort study **Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Falconi, Massimo et al. Long-term results of Frey's procedure for chronic pancreatitis: a longitudinal prospective study on 40 patients. J. Gastrointest. Surg. 10. 504-10. 2006

Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	single Center cohort of 40 Patients. good short and Long term pain relief **Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Frey, C F et al. Local resection of the head of the pancreas combined with longitudinal pancreaticojejunostomy in the management of patients with chronic pancreatitis. Ann. Surg. 220. 492-504; discussion 504-7. 1994

Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**

Evidence level: 4 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	single Center cohort. Frey procedure effective **Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Frey, C F et al. Description and rationale of a new operation for chronic pancreatitis. Pancreas. 2. 701-7. 1987

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 5 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	First description of Freys Procedure. Expert Opinion **Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Hildebrand, Philipp et al. Different surgical strategies for chronic pancreatitis significantly improve long-term outcome: a comparative single center study. Eur. J. Med. Res. 15. 351-6. 2010

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 4 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	single Center cohort. good pain relief **Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Howard, Thomas J et al. Quality of life after bilateral thoracoscopic splanchnicectomy: long-term

evaluation in patients with chronic pancreatitis. J. Gastrointest. Surg. 6. 845-52; discussion 853-4. 2002

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 4 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	single Center experience. good pain relief **Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Ihse, I et al. Bilateral thoracoscopic splanchnicectomy: effects on pancreatic pain and function. Ann. Surg. 230. 785-90; discussion 790-1. 1999

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 4 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	single Center cohort 20 cancer 20 CP **Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Izbicki, Jakob R et al. Extrahepatic portal hypertension in chronic pancreatitis: an old problem revisited. Ann. Surg. 236. 82-9. 2002

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 4 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	single Center cohort: Portal Hypertension increases operative risk for bleeding **Author's conclusion:**		
Outcome Measures/results	**Primary**	**Results:**	

	Secondary	

Keck, Tobias et al. Long-term outcome after 92 duodenum-preserving pancreatic head resections for chronic pancreatitis: comparison of Beger and Frey procedures. J. Gastrointest. Surg. 14. 549-56. 2010			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	single Center cohort. Frey vs. Beger. Frey better pain control **Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Kilburn, Daniel J et al. Early Experience with Laparoscopic Frey Procedure for Chronic Pancreatitis: a Case Series and Review of Literature. J. Gastrointest. Surg. 21. 904-909. 2017			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	only 4 cases of laparoscopic Frey procedure **Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Liu, Bo-Nan et al. Pancreatic duct stones in patients with chronic pancreatitis: surgical outcomes. HBPD INT. 9. 423-7. 2010			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	single center cohort of 35 patients, -> surgery is safe		

	Author's conclusion:	
Outcome Measures/results	**Primary** **Secondary**	**Results:**

Malec-Milewska, Malgorzata B et al. Prospective evaluation of pain control and quality of life in patients with chronic pancreatitis following bilateral thoracoscopic splanchnicectomy. Surg Endosc. 27. 3639-45. 2013

Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	single center prospective Cohort 30 patients **Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Merdrignac, Aude et al. Frey procedure combined with biliary diversion in chronic pancreatitis. Surgery. 160. 1264-1270. 2016

Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	cohort of frey patients with or without biliodigestive diversion -> bilienteric anastomosis better than reinsertion of the CBD **Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Müller, M W et al. Long-term follow-up of a randomized clinical trial comparing Beger with pylorus-preserving Whipple procedure for chronic pancreatitis. Br J Surg. 95. 350-6. 2008

Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**

	Dropout rates:		
Notes:	long term follow up of small single center trial whipple vs. Beger **Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Nealon, W H et al. Analysis of surgical success in preventing recurrent acute exacerbations in chronic pancreatitis. Ann. Surg. 233. 793-800. 2001

Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	large cohort >200 patients with recurrent attacks. -> surgery can prevent these **Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Pessaux, Patrick et al. Frey procedure in the treatment of chronic pancreatitis: short-term results. Pancreas. 33. 354-8. 2006

Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	cohort with 35 patients after Frey out of 4 centers **Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Ramesh, H et al. Surgical management of chronic pancreatitis with portal hypertension--a 19-year experience. Surgery. 143. 252-8. 2008

Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 **Study type:**	**Funding sources:** **Conflict of Interests:**	**Total no. patients:** **Recruiting Phase:**	**Interventions:** **Comparison:**

	Randomization: **Blinding:** **Dropout rates:**	**Inclusion criteria:** **Exclusion criteria:**	
Notes:	surgical case series of 55 patients with Portal hypertension **Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Ray, Sukanta et al. Frey procedure for chronic pancreatitis in children: A single center experience. J. Pediatr. Surg. 50. 1850-3. 2015

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	cohort of 24 children with Frey procedure **Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Sinha, Amitasha et al. Predictors of Post-Operative Pain Relief in Patients with Chronic Pancreatitis Undergoing the Frey or Whipple Procedure. J. Gastrointest. Surg. 20. 734-40. 2016

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 4 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	cohort of 60 patients, alcoholic etiology only predictive factor for good outcome (pain relief) after surgery **Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Sohn, T A et al. Quality of life and long-term survival after surgery for chronic pancreatitis. J. Gastrointest. Surg. 4. 355-64; discussion 364-5. 2000

Evidence level	Methodical Notes	Patient characteristics	Interventions

Evidence level: 1 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	John Hopkins Experience of 255 surgical patients **Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Sutherland, David E R et al. Total pancreatectomy and islet autotransplantation for chronic pancreatitis. J. Am. Coll. Surg. 214. 409-24; discussion 424-6. 2012

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 4 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	large cohort of TP and islet cell transplantation **Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Tan, Chun-Lu et al. Single center experience in selecting the laparoscopic Frey procedure for chronic pancreatitis. World J. Gastroenterol. 21. 12644-52. 2015

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 4 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	series of 9 cases laparoscopic Frey procedure, conversion in 2 cases, Long operating time **Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Teh, Swee H et al. Pancreatic pseudocyst in children: the impact of management strategies on

outcome. J. Pediatr. Surg. 41. 1889-93. 2006

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 4 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	case series of 24 children with pseudocysts. traumatic etiology may be treated nonsurgically **Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Waldthaler, Alexander et al. Long-term outcome of self expandable metal stents for biliary obstruction in chronic pancreatitis. JOP. 14. 57-62. 2013

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 4 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	case series of 20 patients **Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Wilson, Gregory C et al. Completion pancreatectomy and islet cell autotransplantation as salvage therapy for patients failing previous operative interventions for chronic pancreatitis. Surgery. 158. 872-8; discussion 879-80. 2015

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 4 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	case series of 64 patients. good pain control. Insulin Independence in 20% **Author's conclusion:**		
Outcome Measures/results	**Primary**	**Results:**	

	Secondary	

Witzigmann, Helmut et al. Quality of life in chronic pancreatitis: a prospective trial comparing classical whipple procedure and duodenum-preserving pancreatic head resection. J. Gastrointest. Surg. 6. 173-9; discussion 179-80. 2002

Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	cohort 30 whipple vs. 35 DPPHR with better outcome for DPPHR **Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Witzigmann, Helmut et al. Outcome after duodenum-preserving pancreatic head resection is improved compared with classic Whipple procedure in the treatment of chronic pancreatitis. Surgery. 134. 53-62. 2003

Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	prospective non randomized study Whipple vs. DPPHR **Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Literatursammlung:

AG6-AP Handsuche

Inhalt: *4 Literaturstellen*

Literaturstelle	Evidenzlevel	Studientyp
Gurusamy, K. S. 2015	1	Systematic review
Gurusamy, K. S. 2013	2	Systematic review
Tse, F. 2012	1	Systematic review
van Baal, M. C. 2012	1	Systematic review

OXFORD (2011) Appraisal Sheet: Systematic Reviews: *4 Bewertung(en)*

Gurusamy, K. S. et al. Endoscopic retrograde cholangiopancreatography versus intraoperative cholangiography for diagnosis of common bile duct stones. Cochrane Database Syst Rev. . CD010339. 2015

Evidence level/Study Types	P - I - C	Outcomes/Results	Literature References
Evidence level: 1 **Study type:** Systematic review **Databases:** MEDLINE, EMBASE, Science Citation Index Expanded,BIOSIS, and Clinicaltrials.gov **Search period:** to September 2012 **Inclusion Criteria:** studies that provided the number of true positives, false positives, false negatives, and true negatives forERCP or IOC only studies were included that confirmed the presence of common bile duct stones by extraction of the stones (irrespective of whether this was done by surgical or endoscopic methods) for a positive test, and absence of common bile duct stones by surgical or endoscopic negative exploration of the common bile duct, or symptom-free follow-up for at least six months for a negative test as the reference standard **Exclusion Criteria:** not specifically mentioned	**Population:** 318 participants (180 participants with and 138 participants without common bile duct stones **Intervention:** Intra-operative cholangiography (IOC) or ERCP **Comparison:** Intra-operative cholangiography (IOC) versus ERCP	**Primary:** To determine and compare the accuracy of ERCP and IOC forthe diagnosis of common bile duct stones. **Secondary:** various endpoints not relevant for the key questions addressed **Results:** Detection of CBD Stones for ERCP: sensitivity was 0.83 (95% CI 0.72 to 0.90) and the summary specificity was 0.99 (95% CI 0.94 to 1.00) For IOC: 0.99 (95% CI 0.83 to 1.00) and the summary specificity was 0.99 (95% CI 0.95 to 1.00). **Author's Conclusion:** Although the sensitivity of IOC appeared to be better than that of ERCP, this finding may be unreliable because none of the studiescompared both tests in the same study populations and most of the studies were methodologically flawed. It appears that bothtests werefairly accurate in guiding further invasive treatment as mostpeople diagnosed with common bile duct stones by these tests had common bile duct stones.	ERCP: Fezel et al.2002 Katz et al. 2004 Ney et al. 2005 Norton et al. 1997 Prat et al. 1996 IOC: Fenton et al. 1989 Li et al. 2009 Montariol et al. 1998 Silverstein et al. 1998 Wu et al. 2005
Methodical Notes			

Funding Sources: not mentioned

COI: none declared

Study Quality: None of the included studies was of high methodological quality as evaluated by the QUADAS-2 tool
the majority of patients had symptoms such as pancreatitis or jaundice, but not all of them

Heterogeneity: All the studies were of low methodological quality, which may question the validity of our findings.

Publication Bias:

Notes:

Gurusamy, K. S. et al. Early versus delayed laparoscopic cholecystectomy for acute gallstone pancreatitis. Cochrane Database Syst Rev. . Cd010326. 2013

Evidence level/Study Types	P - I - C	Outcomes/Results	Literature References
Evidence level: 2 **Study type:** Systematic review **Databases:** Cochrane Central Register of Controlled Trials (CENTRAL) (The Cochrane Library 2012, issue 12), MEDLINE, EMBASE, Science Citation Index Expanded, and trial registers **Search period:** until January 2013 **Inclusion Criteria:** randomised controlled trials, irrespective of language or publication status, comparing early versus delayed laparoscopic cholecystectomy for people with acute biliary pancreatitis. **Exclusion Criteria:** exclude quasi-randomised studies or other study designs.	**Population:** 50 patients with mild biliary pancreatitis **Intervention:** laparoscopic CHE in patients with mild biliary pancreatitis **Comparison:** early versus delayed laparoscopic CHE	**Primary:** mortality serious adverse events **Secondary:** Conversion to open cholecystectomy (because of inability to complete the operation laparoscopically or because of injury to important structures requiring open operation). Total hospital stay. **Results:** There was no significant difference between the groups in the proportion of participants who developed serious adverse events (RR 0.33; 95% CI 0.01 to 7.81). There were no conversions to open cholecystectomy in either group. The total hospital stay was significantly shorter in the early laparoscopic cholecystectomy group than in the delayed laparoscopic cholecystectomy group (MD -2.30 days; 95% CI -4.40 to -0.20) **Author's Conclusion:** There is no evidence of increased risk of complications after early laparoscopic cholecystectomy.	

Methodical Notes

Funding Sources: not mentioned

COI: none declared

Study Quality: This trial is at high risk of bias
small study population, only 1 randomized trial assessed for a systematic review!!

Heterogeneity:

Publication Bias:

Notes:

Tse, F. et al. Early routine endoscopic retrograde cholangiopancreatography strategy versus early conservative management strategy in acute gallstone pancreatitis. Cochrane Database Syst Rev. . Cd009779. 2012

Evidence level/Study Types	P - I - C	Outcomes/Results	Literature References
Evidence level: 1 **Study type:** Systematic review **Databases:** CENTRAL (The Cochrane Library), MEDLINE, EMBASE, and LILACS databases and major conference proceedings **Search period:** up to January 2012 **Inclusion Criteria:** RCTs comparing the early routine ERCP strategy versus the early conservative management with or without selective use of ERCP strategy in patients with suspected acute gallstone pancreatitis. **Exclusion Criteria:** full text not available	**Population:** 5 RCTs 644 participants were included in the main analyses. **Intervention:** early ERCP **Comparison:** early ERCP versus conservative treatment	**Primary:** mortality systemic and local complications as defined by Atlanta classification **Secondary:** **Results:** no statistically significant differences between the two strategies in mortality (RR 0.74, 95% CI 0.18 to 3.03), local and systemic complications as defined by the Atlanta Classification (RR 0.86, 95% CI 0.52 to 1.43; and RR 0.59, 95% CI 0.31 to 1.11 respectively) and by authors of the primary study (RR 0.80, 95% CI 0.51 to 1.26; and RR 0.76, 95% CI 0.53 to 1.09 respectively) **Author's Conclusion:** In patients with acute gallstone pancreatitis, there is no evidence that early routine ERCP significantly affects mortality, and local or systemic complications of pancreatitis, regardless of predicted severity. Our results, however, provide support for current recommendations that early ERCP should be considered in patients with co-existing cholangitis or biliary obstruction.	5 RCTs

Methodical Notes

Funding Sources: full text not available

COI: full text not available

Study Quality:

Heterogeneity:

Publication Bias:

Notes:

van Baal, M. C. et al. Timing of cholecystectomy after mild biliary pancreatitis: a systematic review. Ann Surg. 255. 860-6. 2012

Evidence level/Study Types	P - I - C	Outcomes/Results	Literature References
Evidence level: 1 **Study type:** Systematic review **Databases:** PubMed, Embase and Cochrane **Search period:** from January	**Population:** 998 patients 8 cohort studies, 1 randomized trial **Intervention:** Cholecystectomy **Comparison:** early CHE versus interval CHE	**Primary:** **Secondary:** **Results:** readmission rate for interval CHE for recurrent biliary events (0% vs 18%, P < 0.0001). no differences in operative complications, conversion rate (7%), and mortality (0%) between index and interval cholecystectomy. **Author's Conclusion:** interval cholecystectomy after mild biliary pancreatitis is associated with a high risk of readmission for recurrent biliary events, especially recurrent	full text not available

1992 to July 2010 **Inclusion Criteria:** cohort studies of patients with mild biliary pancreatitis **Exclusion Criteria:**		biliary pancreatitis. Cholecystectomy during index admission for mild biliary pancreatitis appears safe, but selection bias could not be excluded.	

Methodical Notes

Funding Sources: full text not available

COI: full text not available

Study Quality: full text not available

Heterogeneity: 1 randomized study and 8 cohort studies

Publication Bias: selection bias could not be excluded.

Notes:

Literatursammlung:

AG6-AP: Therapie biliärer Komplikationen inklusive Cholezystektomie_Literatursuche

Inhalt: *36 Literaturstellen*

Literaturstelle	Evidenzlevel	Studientyp
Abdelaal, Abdelrahman 2017	1	retrospektive study
Aboulian, Armen 2010	2	RCT
Acosta, J M 2000	1	Retrospective study
Acosta, Juan M 2006	4	Prospective comparative trial
Ammori, B J 2003	2	Retrospective study: Investigation of the role of biochemical detection of a biliary etiology of acute pancreatitis
Anderloni, Andrea 2015	3	Prospective design: outcome: reliability of EUS, as an early approach in patients with ABP, to correctly identify the presence of CBD stones and consequent need of early ERCP with respect to the risk stratification based on clinical criteria
Ardengh, José Celso 2008	3	Prospective evalution of EUS in the diagnosis of microlithiais of the gallbladder in unexplained acute pankreatitis
Bakker, O J 2011	2	non-randomized cohort study
Bang, Ki Bae 2015	2	Retrospective cohort study
Besselink, M G H 2005	2	retrospecitive
Bignell, Mark 2011	2	Restrospective study
Burstow, Matthew J 2015	4	Metaanalysis
Chang, L 2000	2	prospective randomized singel center
da Costa, D W 2016	1	
da Costa, David W 2015	1	multicentre, parallel-group, assessor-masked, randomised controlled superiority trial
Fan, S T 1993	2	randomized single center study
Fölsch, U R 1997	2	Randomized multicenter study
Hallal, Ali H 2005	3	yes
Jee, Shir Li 2018	1	open-label, prospective randomized controlled study

Lee, Hee Seung 2018	4	retrospective data analysis
Lee, Su-Lim 2018	4	retrospective
Li, Ang 2012	5	
Liu, C L 2001	1	prospective
Liu, Chi Leung 2005	2	open label prospective randomized study, singel center
Mayer, A D 1985	4	unclear
Oría, Alejandro 2007	2	prospective randomised single center
Ortega, Alejandro Repiso 2011	3	prospective study
Sharma, V K 1999	1	Metaanalysis of Randomized Controlled Trials
Stabuc, Borut 2008	3	prospective single center
Teoh, Anthony Y B 2007	3	retrospective
Uomo, G 1997	2	prospective observational
Uy, Manley C 2009	1	Meta-analysis of RCTs with biliary pancreatitis without cholangitis
van Santvoort, H C 2011	3	prospective cohort study
van Santvoort, Hjalmar C 2009	2	prospective, observational multicenter study
Yang, P 2012	1	prospective randomized controlled trial
Zhou, Wen-Ce 2011	2	RCT

OXFORD (2011) Appraisal Sheet: Systematic Reviews: *3 Bewertung(en)*

Burstow, Matthew J et al. Meta-Analysis of Early Endoscopic Retrograde Cholangiopancreatography (ERCP) ± Endoscopic Sphincterotomy (ES) Versus Conservative Management for Gallstone Pancreatitis (GSP). Surg Laparosc Endosc Percutan Tech. 25. 185-203. 2015

Evidence level/Study Types	P - I - C	Outcomes/Results	Literature References
Evidence level: 4 **Study type:** Metaanalysis **Databases:** 11 RCTs consisting of 1314 patients (conservative management = 662, ERCP = 652) **Search period:**	**Population:** Eleven prospective RCTs were identified by theauthors as meeting the eligibility criteria for this meta-analysis The studies include 1314 patients (662treated conservatively and 652 ERCP ± ES) Patientdemographics and selection methods were detailed in all of the	**Primary:** Mortalitiy and morbiditiy beween early ERC/EST group and conservative group **Secondary:** subgroup analysis of mortality and complications based on severity of GSP (mild vs. severe) **Results:** Statistical analysis	Neoptolemos JP, Carr-Locke DL, London NJ, et al. Con-trolled trial of urgent endoscopic retrograde cholangicipan-creatography and endoscopic sphincterotomy versus conserva-tive treatment for acute pancreatitis due to gallstones.Lancet.1988;2:979–983. Fan ST, Lai EC, Mok FP, et al. Early treatment of acutebiliary pancreatitis by endoscopic papillotomy.N Engl J Med.1993;328:228–232.

1970 - 2014 **Inclusion Criteria:** CTs that compared early ERCP ± ES with conservative management, and were published both in fullpeer reviewed journals and abstract forms between January 1970 and January 2014 **Exclusion Criteria:** Published studies that contained insufficient information were excluded only after multiple attempts had failed to obtain unpublished ormissing data from the original authors. Also excluded werethe previously presented abstracts of full peer-reviewedpublished articles and duplicate publications.	available studies. The design of each RCT was lightly different, namely timing of ERCP in the treatmentgroup (varying from 24 to 72 h), and in the specific aspects of systemic complications (renal, cardiac, respiratory,coagulation abnormalities and biliary sepsis, and localcomplications pseudocyst and pancreatic abscess formation) reported **Intervention:** **Comparison:**	revealed no significant decrease in mortality between the ERCP ± ES and conservative man-agement groups in the studies included [OR 0.47; 95%confidence interval (CI), 0.20, 1.09;P= 0.08] (Fig. 3),however, overall complications were significantly reducedin the ERCP ± ES group (OR 0.43; 95% CI, 0.27, 0.68;P= 0.00) A subgroup analysis of mortality and complications based on severity of GSP (mild vs. severe)was performed on 11 and 10 studies, respectively. There was no significant decrease in mortality even in severe GSP patients treated with early ERCP ± ES compared with the group treated conservatively (OR 0.45; 95% CI, 0.19, 1.09;P= 0.08) Complications were significantly decreased in patients with severe GSP (OR 0.32; 95% CI,0.17, 0.61;P= 0.00), but not in mild GSP cohort whounderwent ERCP (OR 0.67; 95% CI, 0.43, 1.03;P= 0.06). **Author's Conclusion:** Early ERCP / EST (within 48 to 72 hours) reduces morbidity but not mortality in patients with severe acute biliary pancreatitis	Fo¨lsch UR, Nitsche R, Lu¨dtke R, et al. Early ERCP andpapillotomy compared with conservative treatment for acutebiliary pancreatitis. The German Study Group on AcuteBiliary Pancreatitis.N Engl J Med. 1997;336:237–242. Nowak A, Nowakowska-Dulawa E, Marek TA, et al. Finalresults of the prospective, randomized controlled study onendoscopic sphincterotomy versus conventional managementin acute biliary pancreatitis.Gastroenterol. 1995;108:A380,(AGA abstract). Zhou MQ, Li NP, Lu RD. Duodenoscopy in treatment ofacute gallstone pancreatitis.Hepatobiliary Pancreat Dis Int.2002;1:608–610. Acosta JM, Katkhouda N, Debian KA, et al. Early ductaldecompression versus conservative management for gallstonepancreatitis with ampullary obstruction: a prospective random-ized clinical trial.Ann Surg. 2006;243:33–40. Orı´a A, Cimmino D, Ocampo C, et al. Early endoscopicintervention versus early conservative management in patientswith acute gallstonepancreatitis and biliopancreatic obstruc-tion a randomized clinical trial.Ann Surg. 2007;245:10–17. Chen P, Hu B, Wang C, et al. Pilot study of urgent endoscopicintervention without fluoroscopy on patients with severe acutebiliary pancreatitis in the intensive care unit.Pancreas.2010;39:398–402.21. Tang Y, Xu Y, Liao G. Effect of early endoscopic treatmentfor patients with severe acute biliary pancreatitis.Chin J GenSurg. 2010;19:801–804. Zhou WC, Li YM, Zhang H, et al. Therapeutic effects ofendoscopic therapy combined with enteral nutrition on acutesevere biliary pancreatitis.Chin Med J. 2011;124:2993–2996. Yang P, Feng KX, Luo H, et al. Acute biliary pancreatitistreated by early endoscopic intervention.Panminerva Med.2012;54:65–69. Sharma VK, Howden CW. Meta-analysis of randomizedcontrolled trials of endoscopic retrograde cholangiographyand endoscopic sphincterotomy for the treatment of acutebiliary pancreatitis.Am J Gastroenterol. 1999;94:3211–3214. Ayub K, Imada R, Slavin J. Endoscopic retrograde cholangio-pancreatography in gallstone-associated acute pancreatitis.Cochrane Database Syst Rev. 2004;25:CD003630. Review.

			Updatein:Cochrane Database Syst Rev. 2010;1:CD003630. Moretti A, Papi C, Aratari A, et al. Is early endoscopicretrograde cholangiopancreatography useful in the manage-ment of acute biliary pancreatitis? A meta-analysis ofrandomized controlled trials.Dig Liver Dis. 2008;40:379–385. Petrov MS, van Santvoort HC, Besselink MG, et al. Earlyendoscopic retrograde cholangiopancreatography versus con-servative management in acute biliary pancreatitis withoutcholangitis: a meta-analysis of randomized trials.Ann Surg.2008;247:250–257. Petrov MS, Uchugina AF, Kukosh MV. Does endoscopicretrograde cholangiopancreatography reduce the risk of localpancreatic complications in acute pancreatitis? A systematicreview and meta-analysis.Surg Endosc. 2008;22:2338–2343. Uy MC, Daez ML, Sy PP, et al. Early ERCP in acute gallstonepancreatitis without cholangitis: a meta-analysis.J Pancreas.2009;10:299–305. Tse F, Yuan Y. Early routine endoscopic retrograde chol-angiopancreatography strategy versus early conservative man-agement strategy in acute gallstone pancreatitis.CochraneDatabase Syst Rev. 2012;5:CD009779

Methodical Notes

Funding Sources: Not declared

COI: Not declared

Study Quality: Metaanalysis of Randomized controled trials. The quality of the RCTs was assessed using Jadad'sscoring system (Table 1) and the metaanalysis prepared inaccordance with the PRISMA (Preferred Reporting Itemsfor Systematic Reviews and Meta-analyses) statement.

Heterogeneity: Heterogeneity among studies wasassessed using the Q statistic proposed by Cochran and I2 index introduced by Higgins and Thompson.If theobserved value of Q was larger than the associated x2 critical value at a given significant level, in this case 0.05, weconclude the presence of statistically significant between studies variation

declared in table 2 of the publ.

Publication Bias:

Notes:

Sharma, V K et al. Metaanalysis of randomized controlled trials of endoscopic retrograde cholangiography and endoscopic sphincterotomy for the treatment of acute biliary pancreatitis. Am. J. Gastroenterol. 94. 3211-4. 1999

Evidence level/Study Types	P - I - C	Outcomes/Results	Literature References
Evidence level: 1 **Study type:** Metaanalysis of Randomized Controlled Trials **Databases:** MEDLINE **Search period:** not mentioned - probably until 1999 **Inclusion Criteria:** RCTs of ERC +ES in gallstone-related acute pancreatitis. **Exclusion Criteria:** Non randomized trials	**Population:** gallstone-related acute pancreatitis **Intervention:** ERC +ES **Comparison:** ERC +ES versus conservative treatment	**Primary:** Individual and overall mortality and complication rates with their 95% confidence intervals (CI), absolute risk reduction(ARR), relative risk reduction (RRR), and numbers neededto treat (NNT) for avoidance of complications or death **Secondary:** not mentioned **Results:** Complications occurred in 115 (25.0%) treated patients and 143 (38.2%) controls p,0.001. Twenty-four treated patients (5.2%) and 34 controls (9.1%) died (p,0.05). ERC+ES had a 34.6% RRR for complications and a 42.9% RRR for death; ARR for complications and death was 13.2% (95% CI: 6.9 –19.5%) and 3.9% (95%CI: 0.35–7.45%), respectively. The NNT for avoidance of complications and death was 7.6 and 25.6, respectively. **Author's Conclusion:** ERC+ES is safe and effective in reducing the morbidity and mortality from acute biliary pancreatitis. This should be recommended for all patients with acute biliary pancreatitis and may be particularly beneficial in those with severe disease.	Neoptolemos JR, et al. Lancet 1988;2:979 –83.12. Fan S-T, et al. N Engl J Med 1993;328:228 –32.13. Fölsch UR, et al. N Engl J Med 1997;336:237–42.14. Nowak A, et al. Gastroenterol 1995;108: A380(abstract).

Methodical Notes

Funding Sources: not mentioned

COI: not mentioned

Study Quality:

Heterogeneity: heterogenous study population in terms of severity of pancreatitis and also in regard to inclusion criteria (not only biliary pancreatitis in the Fan et al. study), and 1 RCT only as anbstract available (Nowak et al.)
different time point of ERCP 24-72h

Publication Bias: 1 RCT only as anbstract available (Nowak et al.) full data not available
Not exclusively biliary pancreatitis included (Fan et al)

Notes:
one of the trials inlcuded in the analysis (Nowak et al.)is not fully published and only reported as abstract!

Uy, Manley C et al. Early ERCP in acute gallstone pancreatitis without cholangitis: a meta-analysis. JOP. 10. 299-305. 2009

Evidence level/Study Types	P - I - C	Outcomes/Results	Literature References
Evidence level: 1 **Study type:** Meta-analysis of RCTs with biliary pancreatitis without cholangitis **Databases:** the Cochrane Library, MEDLINE, EMBASE, the Australasian Medical Index (AMI), Latin American Caribbean Health Sciences Literature (LILACS), and the Health Research and Development Information Network (HERDIN) **Search period:** up to January 11th, 2008	**Population:** 77 treated patients and 163 control **Intervention:** ERCP + EST **Comparison:** ERCP versus conservative treatment	**Primary:** morbidity and mortality **Secondary:** not mentioned **Results:** morbidity was inconclusive (RR=0.95, 95% CI: 0.74-1.22). mortality only showed a trend in favor of conservative management (RR=1.92, 95% CI: 0.86-4.32) for both mild and severe pancreatitis.	Fölsch et al., 1997 NEJM Oría et al., 2007 Ann Surg

Inclusion Criteria: study population: gallstone acute pancreatitis patients without cholangitis; 2) intervention: early ERCP with or without endoscopic sphincterotomy vs. conservative treatment within at most 72 h of admission; 3) outcome measures: incidence of morbidity and mortality; 4) study design: randomized controlled trial to guarantee control of selection bias. **Exclusion Criteria:** cholangitis		**Author's Conclusion:** There is a trend towards more mortality from early ERCP with or without sphincterotomy in the setting of acute gallstone pancreatitis without cholangitis.	

Methodical Notes

Funding Sources: not mentioned

COI: not declared

Study Quality: rigorous study inclusions, only 2 RCT were finally included with biliray pancreatitis

Heterogeneity: multicenter trial (Fölsch) versus single center (Oria et al)
different time points 48h or 72h after symptom onset

Publication Bias:

Notes:

OXFORD (2011) Appraisal Sheet: RCT: *12 Bewertung(en)*

Aboulian, Armen et al. Early cholecystectomy safely decreases hospital stay in patients with mild gallstone pancreatitis: a randomized prospective study. Ann. Surg. 251. 615-9. 2010

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 2 **Study type:** RCT **Number of Patient:** 50 **Recruitung Phase:** November 2007 to November 2008, **Inclusion Criteria:** adults between the age of 18 and 100 with mild gallstone pancreatitis were included **Exclusion Criteria:** (a) severe pancreatitis (as defined by the presence of more than 3 Ranson criteria on admission); (b) suspected concomitant acute cholangitis; (c) high suspicion for retained CBD stone (total bilirubin 4 mg/dL on admission or ultrasound demonstration of CBD stone); (d) patient refusal to participate; (e) severe preexisting medical comorbidities contraindicating	**Intervention:** In the patients randomized to the early group, LC with intraoperative cholangiography (IOC) was performed within 48 hours of admission, regardless of whether or not abdominal pain and tenderness were still present and laboratory values had normalized. In the control group, LC with IOC was performed only after resolution of abdominal pain and normalization of laboratory values **Comparison:** early vs late CCE	**Primary:** length of hospital stay **Secondary:** (1) need for conversion to an open cholecystectomy, (2) need for ERC, and (3) perioperative complications including bile duct injury, bleeding requiring transfusion or reoperation, wound infection, pneumonia, and need for readmission within 30 days **Results:** The overall length of hospital stay was shorter for the early cholecystectomy group (mean: 3.5 95% CI, 2.7–4.3, median: 3 IQR, 2– 4) compared with the control group (mean: 5.8 95% CI, 3.8 –7.9, median: 4 IQR, 4 – 6, P 0.0016). There were no patients in either group that required conversion to open cholecystectomy and no bleeding requiring transfusion, postoperative complications, or readmissions. In the early group, there were 6 secondary endpoints in 6 patients (24%) versus 4 secondary endpoints in 4 patients (17%) in the control group. This difference was not

cholecystectomy (as determined by the primary physicians); (f) pregnancy; (g) prior gastric bypass surgery (making ERC difficult); (h) admission to a monitored unit. The need for admission to a monitored unit was determined by the admitting surgeon and was guided primarily by a need for aggressive fluid administration as demonstrated by severe volume depletion (eg, on admission tachycardia 110 beats/min, blood urea nitrogen 15 mg/dL) or evidence of cholangitis.		statistically significant (P 0.48, OR: 1.66, 95% CI: 0.41– 6.78) **Author's Conclusion:** : In mild gallstone pancreatitis, laparoscopic cholecystectomy performed within 48 hours of admission, regardless of the resolution of abdominal pain or laboratory abnormalities, results in a shorter hospital length of stay with no apparent impact on the technical difficulty of the procedure or perioperative complication rate

Methodical Notes

Funding Sources: no information

COI: not stated

Randomization: drawing a sealed, unlabeled, unordered envelope from a container by an independent party immediately after informed consent was obtained

Blinding: no

Dropout Rate/ITT-Analysis: non

Notes:

Acosta, Juan M et al. Early ductal decompression versus conservative management for gallstone pancreatitis with ampullary obstruction: a prospective randomized clinical trial. Ann. Surg. 243. 33-40. 2006

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 4 **Study type:** Prospective comparative trial **Number of Patient:** 61: Control 31 vs study 30 **Recruitung Phase:** hospital admission with acute biliary pancreatitis **Inclusion Criteria:** Age over 18 years, Symptoms consistent with gallstone pancreatitis, ampullary obstruction, Admission within 48 hours from the onset of symptoms, Serum amylase or lipase levels of at least two times the upper normal limits, Serum bilirubin level of at least 1.4 mg/dL, Objective demonstration of gallstones **Exclusion Criteria:** pregnancy, No provision of written informed consent, alcoholism or other cause of pancreatitis, severe cholangitis, coagulation disorder, liver cirrhosis, contraindication to general anesthesia, previous Billroth II procedure	**Intervention:** control group (conservative treatment selective ERCP + ES after 48 hours) vs study group (initial conservative treatment and ERCP + ES within 48 hours if obstruction persisted for 24 hours or longer) **Comparison:** early (<48 h) vs late (<48 h) ERC +/- EST in acute biliary pancreatitis	**Primary:** Outcome measures were mortality and morbidity related to pancreatitis and to ERC + ES during hospitalization and within 30 days after discharge. Morbidity related topancreatitis was classified according to a modified Atlantacriteria. **Secondary:** **Results:** Patients in the study group (early inervention) showed a shorter period of obstruction (P<0.016) and a lower rate of immediate complications (P< 0.026) than controls. Patients with obstruction lasting < 48 hours regardless of the treatment group had fewer immediate complications than those whose obstruction persisted longer (P<0.001) **Author's Conclusion:** This was the first RCT showing an advantage (minor morbiditiy) of early invervention (ERC andd EST) in patients with acute bil. pancreatitis and obstruction persisting

		after 24 hours of symtpom onset.

Methodical Notes

Funding Sources: No funding declared

COI: Not declared

Randomization: Randomized by a computergenerated list and sealed envelopes, to one of the 2 treatmentgroups:

Blinding: Not blinded

Dropout Rate/ITT-Analysis: No drop out described

Notes:

Chang, L et al. Preoperative versus postoperative endoscopic retrograde cholangiopancreatography in mild to moderate gallstone pancreatitis: a prospective randomized trial. Ann. Surg. 231. 82-7. 2000

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 2 **Study type:** prospective randomized singel center **Number of Patient:** 59 **Recruitung Phase:** from July 1994 through September 1996 **Inclusion Criteria:** biliary pancreatitis CBD dilatation >8 mm on admission ultrasonography; elevation of the serum total bilirubin >1.7 mg/dL on hospital day 4;or serum amylase > 150/L on hospital day 4 **Exclusion Criteria:** Patients with cholangitis or necrotizing pancreatitis wereexcluded.	**Intervention:** ERCP **Comparison:** ERCP preoperatively or postoperatively in cases of biliary pancreatitis	**Primary:** length of hospitalstay, and combined treatment failure rate (failure of IOCand diagnostic ERCP, complications of surgery, and com-plications of therapeutic ERCP with ES and stone extraction). **Secondary:** not mentioned **Results:** In the postoperative ERCP group, ERCP was necessary in only 7 of 29 patients (24%). Mean hospital stay was significantly longer in the routine preoperative ERCP group (11.7 days)than in the selective postoperative ERCP group (9.0 days). Mean total cost was higher in the preoperative ERCP group($9,426) than in the postoperative ERCP group ($7,798). The combined treatment failure rate was 10% in both groups **Author's Conclusion:** ERCP and stone retrieval can be performed after surgery in selected patients with CBD stones on IOC.

Methodical Notes

Funding Sources: not mentioned

COI: not mentioned

Randomization: sealed envelopes

Blinding: no

Dropout Rate/ITT-Analysis: 1 patient declined to be randomized
There was one failure of IOC, for which a postoperative ERCP was performed;

Notes:

da Costa, D W et al. Cost-effectiveness of same-admission versus interval cholecystectomy after mild gallstone pancreatitis in the PONCHO trial. Br J Surg. 103. 1695-1703. 2016

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 1 **Study type:** **Number of Patient:** **Recruitung Phase:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** All 264 trial participants were included in the present analysis, 128 randomized to same-admission cholecystectomy and 136 to interval cholecystectomy. Same-admission cholecystectomy reduced the risk of acute readmission for recurrent gallstone-related complications from 16·9 to 4·7 per cent (P = 0·002). Mean total costs from a societal perspective were €234 (95 per cent c.i. –1249 to 738) less per patient in the same-admission cholecystectomy group. Same-admission cholecystectomy was superior to interval cholecystectomy, with a societal incremental cost-effectiveness ratio of –€1918 to prevent one readmission for gallstone-related complications **Author's Conclusion:** In mild biliary pancreatitis, same-admission cholecystectomy was more effective and less costly than interval cholecystectomy

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes:
for study assessment, see evaluation sheet of Da Costa et al., Lancet 2015

da Costa, David W et al. Same-admission versus interval cholecystectomy for mild gallstone pancreatitis (PONCHO): a multicentre randomised controlled trial. Lancet. 386. 1261-1268. 2015

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 1 **Study type:** multicentre, parallel-group, assessor-masked, randomised controlled superiority trial **Number of Patient:** 266 **Recruitung Phase:** Between Dec 22, 2010, and Aug 19, 2013 **Inclusion Criteria:** inpatients recovering from mild gallstone	**Intervention:** cholecystectomy within 3 days of randomisation (same-admission cholecystectomy) discharge and cholecystectomy 25–30 days after randomisation (interval cholecystectomy) **Comparison:** discharge and cholecystectomy 25–30 days after randomisation (interval cholecystectomy)	**Primary:** composite of readmission for recurrent gallstone-related complications (pancreatitis, cholangitis, cholecystitis, choledocholithiasis needing endoscopic intervention, or gallstone colic) or mortality within 6 months after randomisation **Secondary:** Safety endpoints included bile duct leakage and other complications necessitating re-intervention **Results:** The primary endpoint occurred

pancreatitis **Exclusion Criteria:** Patients with American Society of Anesthesiologists (ASA) class III physical status who were older than 75 years of age, all ASA class IV patients, those with chronic pancreatitis, and those with ongoing alcohol misuse		in 23 (17%) of 136 patients in the interval group and in six (5%) of 128 patients in the same-admission group (risk ratio 0·28, 95% CI 0·12–0·66; p=0·002). Safety endpoints occurred in four patients: one case of bile duct leakage and one case of postoperative bleeding in each group. All of these were serious adverse events and were judged to be treatment related, but none led to death. **Author's Conclusion:** Compared with interval cholecystectomy, same-admission cholecystectomy reduced the rate of recurrent gallstone-related complications in patients with mild gallstone pancreatitis, with a very low risk of cholecystectomyrelated complications.

Methodical Notes

Funding Sources: Dutch Digestive Disease Foundation

COI: MABo has received grants from Baxter, Ipsen, LifeCell, KCI, Johnson & Johnson, and Abbot. MJB has received lectures and consultancy fees from Cook Medical and Boston Scientifi c. IHdH has received grants from Roche. NJS has received grants from Fonds NutsOhra and ZonMw. HCvS received a career development grant from the Dutch Digestive Disease Foundation. All reported grants are outside of the submitted work. All other authors declare no competing interest

Randomization: A central study coordinator randomly assigned eligible patients (1:1) by computer-based randomisation, with varying
block sizes of two and four patients

Blinding: Neither
investigators nor participants were masked to group assignment

Dropout Rate/ITT-Analysis: ITT, drop out n=2

Notes:
1b, high quality multicenter RCT

Fan, S T et al. Early treatment of acute biliary pancreatitis by endoscopic papillotomy. N. Engl. J. Med. 328. 228-32. 1993

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 2 **Study type:** randomized single center study **Number of Patient:** 198 **Recruitung Phase:** 1988-1991 **Inclusion Criteria:** all patients with pancreatitis, not exclusively with biliary pancreatitis **Exclusion Criteria:** billroth II	**Intervention:** ERCP + EPT if biliary stones were present conservative treatment, ERCP+EPT only if condition detoriated, e.g. sepsis **Comparison:** ERCP+EPT versus conservative treatment	**Primary:** local and systemic complications (e.g. abcess or biliary sepsis) **Secondary:** **Results:** overall no major difference between the two groups in biliary pancreatitis predicted to be severe, ERCP+EPT had less complications compared to conservative treatment (13% versus 54%) **Author's Conclusion:** ERCP + EPT within 24h is safe and should be performed

situation etc.		

Methodical Notes

Funding Sources: n.a.

COI: n.a.

Randomization: yes

Blinding: no

Dropout Rate/ITT-Analysis: not mentioned

Notes:

Fölsch, U R et al. Early ERCP and papillotomy compared with conservative treatment for acute biliary pancreatitis. The German Study Group on Acute Biliary Pancreatitis. N. Engl. J. Med. 336. 237-42. 1997

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 2 **Study type:** Randomized multicenter study **Number of Patient:** 339 **Recruitung Phase:** 1989-1994 **Inclusion Criteria:** acute biliary pancreatitis, bilirubin lower than 5mg/dl **Exclusion Criteria:** -	**Intervention:** ERCP+EPT **Comparison:** ERCP+EPT within 72h versus conservative treatment	**Primary:** mortality **Secondary:** local and systemic complications **Results:** mortality: no difference in both cohorts overall complications similar, more severe complications in ERCP group, respiratory failure jaundic more frequent in conservative treatment group **Author's Conclusion:** no advantage of ERCP within 72h in acute biliary pancreatitis without obstructive jaundice

Methodical Notes

Funding Sources: Olympus Optical

COI: not mentioned

Randomization: yes

Blinding: no

Dropout Rate/ITT-Analysis: not mentioned

Notes:

Jee, Shir Li et al. Outcomes of early versus delayed cholecystectomy in patients with mild to moderate acute biliary pancreatitis: A randomized prospective study. Asian J Surg. 41. 47-54. 2018

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 1 **Study type:** open-label, prospective randomized	**Intervention:** In patients randomized to the early group, cholecystectomy	**Primary:** recurrent biliary events **Secondary:** peri-operative

controlled study **Number of Patient:** A total of 72 patients were enrolled at a single public hospital. Of them, 38 were randomized to the early group and 34 patients to the delayed group **Recruitung Phase:** November 2013 to November 2014 **Inclusion Criteria:** All patients aged 18 years and older who were admitted to Selayang Hospital with mild to moderate ABP and consented to participate in this study were included. The classification of mild to moderate pancreatitis was defined by the presence of the following20: (1) no pancreatic necrosis and/or peripancreatic collections; (2) no persistent (>48 hours) organ failure; (3) clinical stability with hospital admission not requiring intensive care unit (ICU) or high dependency unit (HDU) care; and (4) absence of concomitant acute cholangitis. **Exclusion Criteria:** (1) severe pancreatitis (as defined by the presence of 3 or more of Ranson's or Imrie criteria on admission); (2) admission to ICU or HDU; (3) suspected concomitant acute cholangitis; (4) severe preexisting medical comorbidity contraindicating cholecystectomy (as determined by the primary physician); (5) pregnancy; and (6) prior gastric bypass surgery (rendering ERCP difficult).	with IOC was performed within the index admission when patients no longer required opioid analgesics, could tolerate a normal oral diet and had serum C-reactive protein concentration < 100 mg/L. **Comparison:** In the delayed group, interval cholecystectomy with IOC was performed on an elective basis after hospital discharge from the index admission, at approximately 6 weeks after the pancreatitis episode	complications, conversion rate, length of surgery and total hospital length of stay **Results:** . There were no differences regarding peri-operative complications (7.78% vs 11.76%; p Z 0.700), conversion rate to open surgery (10.53% vs 11.76%; p Z 1.000) and duration of surgery performed (80 vs 85 minutes, p Z 0.752). Nevertheless, a greater rate of recurrent biliary events was found in the delayed group (44.12% vs 0%; p 0.0001) and the hospital length of stay was longer in the delayed group (9 vs 8 days, p Z 0.002). **Author's Conclusion:** : In mild to moderate ABP, early laparoscopic cholecystectomy reduces the risk of recurrent biliary events without an increase in operative difficulty or perioperative morbidity

Methodical Notes

Funding Sources: none

COI: none

Randomization: Random assignment was performed by drawing a sealed, unlabeled, unordered envelope from a container by an independent party immediately after informed consent was obtained

Blinding: none

Dropout Rate/ITT-Analysis: of initially 82 randomized patients, 10 patients drop out after randomization, no ITT

Notes:
several flaws, no ITT, not of high quality, small sample size

Liu, Chi Leung et al. Comparison of early endoscopic ultrasonography and endoscopic retrograde cholangiopancreatography in the management of acute biliary pancreatitis: a prospective randomized study.

Clin. Gastroenterol. Hepatol. 3. 1238-44. 2005

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 2 **Study type:** open label prospective randomized study, singel center **Number of Patient:** 140 **Recruitung Phase:** July 2001–December 2003 **Inclusion Criteria:** patients with suspected biliary pancreatitis **Exclusion Criteria:** recurrent pancreatitis, concomitant severe cholangitis withs eptic shock that warranted emergency ERCP documented clinical causes other than biliary stones for acute pancreatitis, including post-ERCP pancreatitis hy-perlipidemia, chronic alcoholism patients with delayed diagnosis of acute pancreatitis for more than 24hours from admission	**Intervention:** EUS and ERCP **Comparison:** EUS + subsequent ERCP if stones detected versus ERCP (+US transcutaneous)	**Primary:** Detection of cholelithiasis Morbidity and mortality **Secondary:** hospital stay **Results:** examination of biliary tree sucess rate: 100& EUS, 86% ERCP + US morbidity rate EUS: 7%, ERCP 14% (p=.17, not significant) no difference in hospital and mortality **Author's Conclusion:** In selectedpatients with acute biliary pancreatitis, EUS could safely replace diagnostic ERCP in the management for selecting patients with choledocholithiasis for therapeuticERCP with a higher successful examination rate, a higher sensitivity in the detection of cholelithiasis, and acomparable morbidity rate.

Methodical Notes

Funding Sources: Sun C.Y. Research Foundation for Hepatobiliary and Pancreatic Surgery of the University of Hong Kong

COI: not mentioned

Randomization: yes

Blinding: no

Dropout Rate/ITT-Analysis: not reported

Notes:

Oría, Alejandro et al. Early endoscopic intervention versus early conservative management in patients with acute gallstone pancreatitis and biliopancreatic obstruction: a randomized clinical trial. Ann. Surg. 245. 10-7. 2007

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 2 **Study type:** prospective randomised single center **Number of Patient:** 103	**Intervention:** ERCP + EST **Comparison:** Conservative treatment versus ERCP+EST within 72h of onset of	**Primary:** organ failure scores during the first week after admission extension of pancreatic and peripancreatic lesions **Secondary:** incidence of local complications overall morbidity and mortality.

Recruitung Phase: May 2000 and September 2005 **Inclusion Criteria:** Patients with a distal main bile duct diameter measuring >8 mm on admission US, combined with a total serum bilirubin 1.20 mg/dL **Exclusion Criteria:** serious comorbid conditions that precluded ERCP; 2) age <18 years; 3) pregnancy; or 4) acute cholangitis. 5) ERCP could not be performed within 72 hours after onset of the attack	pancreatitis attack	**Results:** No significant differences were found between the early ERCP and conservative treatment groups regarding changes in mean organ failure score mean CT severity index, incidence of local complications, overall morbidity, and mortality **Author's Conclusion:** early endoscopic intervention does not reduce systemic and local inflammation in patients with acute gallstone pancreatitis and biliopancreatic obstruction.

Methodical Notes

Funding Sources: not mentioned

COI: not mentioned

Randomization: yes

Blinding: no

Dropout Rate/ITT-Analysis: n.a.

Notes:

Yang, P et al. Acute biliary pancreatitis treated by early endoscopic intervention. Panminerva Med. 54. 65-9. 2012

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 1 **Study type:** prospective randomized controlled trial **Number of Patient:** 120 **Recruitung Phase:** 2004-2010 **Inclusion Criteria:** age>18 hospital admission <72 hours after onset of pain lipase>3 times normal value biliruibin>36µmol/l cholelithiasis or cbd>8mm APACHE>7 or Balthazar CT score D or E temperaure >=38.5°C signed informed consent **Exclusion Criteria:** patients not fit for ERCP pregnancy blood coagulation disorder cirrhosis status post Billroth II	**Intervention:** conservative treatment AND ERCP within 72 hours **Comparison:** conservative treatment	**Primary:** mortality complication rate time of hospitalization costs **Secondary:** time of pain relief time of temperature recovery time of bellyache relief **Results:** codmplication rate, time of pain relief, time of temperature recovery, time of hospitalization were significantly shorter in ERCP group mortality, time of amylase recovery, hospital costs not statistical significantly different. **Author's Conclusion:** early endoscopic internvention can improve the efficacy and reduce the incidence of complications.

status post ERCP between onset of pain and admission		

Methodical Notes

Funding Sources: not stated

COI: not stated

Randomization: computer generated

Blinding: Physicians and endoscopy nurses did not participate in collection of the endoscopic observation indices.

Dropout Rate/ITT-Analysis: 1 drop out in the control group
1 patient in the control group was treated with ERCP

Notes:

Zhou, Wen-Ce et al. Therapeutic effects of endoscopic therapy combined with enteral nutrition on acute severe biliary pancreatitis. Chin. Med. J. 124. 2993-6. 2011

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 2 **Study type:** RCT **Number of Patient:** 105 **Recruitung Phase:** 2004-2009 **Inclusion Criteria:** Biliary acute pancreatitis **Exclusion Criteria:** contraindications for endoscopy	**Intervention:** ERCP **Comparison:** no ERCP	**Primary:** subjective symptoms, signs, biochemical analysis, serum endotoxin, tumor necrosis factor α, grades by computed tomography (CT), cost of hospitalization and length of stay **Secondary:** **Results:** complication rate, hospitalization time and expenditure in the ERCP group were significantly lower than in the control group (P <0.05) **Author's Conclusion:** Endoscopic therapy combined with enteral nutrition is an effective, safe and economic therapeutic regimen of ASBP

Methodical Notes

Funding Sources: not stated

COI: not stated

Randomization: random numbers table

Blinding: none

Dropout Rate/ITT-Analysis: not stated

Notes:

OXFORD (2011) Appraisal Sheet: Diagnostic Studies: *12 Bewertung(en)*

Abdelaal, Abdelrahman et al. Role of intraoperative cholangiography for detecting residual stones after biliary pancreatitis: still useful? A retrospective study. World J Emerg Surg. 12. 18. 2017

Evidence level/Study Types	Population	Outcomes/Results
Evidence level: 1 **Study type:** retrospektive study	**Number of patients / samples:** Complete data aonly in 113 of 268 patients **Reference standard:** Intraoperative ERC as reference standard **Validation:** Not done **Blinding:** not done **Inclusion of clinical information:** Yes **Dealing with ambiguous clinical findings:**	**Results:** The group of the patients without stones in the CBD diagnosed by IOC was also divided in patients with diameters <0.8 mm and with diameters≥0.8 mm of the CBD. Also in these two groups, the statistical analysis of the laboratory tests does not demonstrate significative difference. OC showed stones in 84/113 patients (74.3%) **Author conclusions:** At the time of Lap-CHE after biliary pancreatits still 74 % of patients were positive for CBD stones independent of lab values and CBD diameter. This points out to an early evaluation for residual CBD stones after biliary pancreatitis using EUS or MRCP with consecutive ERC.

Methodical Notes

Funding Sources: No funding declared

COI: None

Notes:

Acosta, J M et al. Ampullary obstruction monitoring in acute gallstone pancreatitis: a safe, accurate, and reliable method to detect pancreatic ductal obstruction. Am. J. Gastroenterol. 95. 122-7. 2000

Evidence level/Study Types	Population	Outcomes/Results
Evidence level: 1 **Study type:** Retrospective study	**Number of patients / samples:** 132 patients with acute biliary pancreatitis investigated for pain, lab values, bile flow via nasogastric draining tube due to the diangosis of ampullary obstruction **Reference standard:** Not in all patients at the same time point. Group A received elective intervention for the associated cholelithiasis once the attack subsided, between 1 and 17 days (mean, 4.3 days)after the onset of symptoms. The 23 patients in Group Bwere operated on urgently, between 18 and 48 h (mean,37 h) from the onset of symptoms. **Validation:** Detection of spontaneous ampullary decompression correct in 100% of the patients, and that of ampullary obstruction, in 61%. The accuracy of this test was sensitivity, 1.0; specificity, 0.92; positive predictive value, 0.61; andnegative predictive value, 1.0. **Blinding:** None	**Results:** Clinical parameters are able to predict ampullary decompression **Author conclusions:** Clinical parameters are able to predict ampullary decompression but there are some weaknesses: Parameters are not declared in detail,reference standard of stone extraction / detection is not unique and current standard (minor cases ERC, mostly intraoperative stone extraction).

	Inclusion of clinical information: An excact description of clinical parameters in the groups leading to the diagnosis ampullary decompression is missing e.g. as a scoring model **Dealing with ambiguous clinical findings:** Not found	

Methodical Notes

Funding Sources: Not declared

COI: Not declared

Notes:

Ammori, B J et al. The biochemical detection of biliary etiology of acute pancreatitis on admission: a revisit in the modern era of biliary imaging. Pancreas. 26. e32-5. 2003

Evidence level/Study Types	Population	Outcomes/Results
Evidence level: 2 **Study type:** Retrospective study: Investigation of the role of biochemical detection of a biliary etiology of acute pancreatitis	**Number of patients / samples:** 68 patients with acute pancreatitis between October 2000 and December 2001 **Reference standard:** Ultrasound and if negative Endoultrasound performed **Validation:** biochemical detection of cholelithiasis was based on an increase in serum alanine transaminase of > 80IU/L (normal range, 0–45 IU/L) within 24 hours of admission Validiation calculated Sens, spec, ppV and NPV **Blinding:** No blinding **Inclusion of clinical information:** Yes **Dealing with ambiguous clinical findings:** No	**Results:** sensitivity, specificity, and positive and negative predictive values for USS were 86%, 100%, 100%, and 80% respectively; for LFT, they were 91%, 100%, 100%, and 86%; and for USS and LFT combined, they were 98%, 100%, 100%, and 96%, respectively. **Author conclusions:** Liver value elevation in the early phase of acute pancreatitis has a high PPV for biliary pancreatitis, sensitivity is higher than transabdominal ultrasound. to my opinion liver value elevation is still a useful diangostic tool, ultrasound can miss CDL in this situation. Value of EUS was not really investigated in this restrosp. study.

Methodical Notes

Funding Sources: None

COI: Not declared

Notes:

Anderloni, Andrea et al. Early endoscopic ultrasonography in acute biliary pancreatitis: A prospective pilot study. World J. Gastroenterol. 21. 10427-34. 2015

Evidence level/Study Types	Population	Outcomes/Results

Evidence level: 3 **Study type:** Prospective design: outcome: reliability of EUS, as an early approach in patients with ABP, to correctly identify the presence of CBD stones and consequent need of early ERCP with respect to the risk stratification based on clinical criteria	**Number of patients / samples:** A total of 181 patients with pancreatitis were admitted to the emergency department between January 2010 and December 2012. After exclusion criteria a total of 71 patients (38 females, 53.5%, mean age 58 ± 20.12 years, range 27-89 years; 33 males, 46.5%, mean age 65 ± 11.86 years, range 41-91 years) were included in the present study.Patients with bile duct stones detected in transabdominal US were excluded. at transabdominal US, as previously described[9]. We therefore have considered patient at low risk if bilirubin level was < 2 mg/dL and CBD not dilated, high risk if bilirubin level was > 4 or > 2 with concomitant CBD dilation, intermediate risk any of the other combination.Diagnosis of acute pancreatitis required two of the following three features: (1) abdominal pain characteristic of acute pancreatitis; (2) serum amylase and/or lipase ≥ 3 times the upper limit of normal; and (3) characteristic findings of acute pancreatitis on computed tomography (CT) scan, according to the guidelines[10]. The severity of acute pancreatitis was classified according to the Glasgow criteria[11]. A biliary etiology was defined as the presence of dilated CBD on ultrasonography (US) or CT or two of the following three laboratory abnormalities: (1) serum bilirubin concentration > 1.9 mg/dL; (2) alanine aminotransferase (ALT) activity > 100 U/L with an ALT activity higher than the aspartate aminotransferase (AST) activity; and (3) alkaline phosphatase activity > 195 U/L with a γ-glutamyltransferase (GGT) activity > 45 U/L. **Reference standard:** Al patients with suspicion for bile duct stones underwent Endoultrasound within 48 hours of admission and if positive followed by ERC in the same session serving as a gold standard **Validation:** nOt done **Blinding:** No Blinding **Inclusion of clinical information:** Yes **Dealing with ambiguous clinical findings:** No	**Results:** The overall CBD stone frequency detected in EUS was 44% (31 of 71), with a significant increase from the group at low pretest probability to that at moderate (OR = 5.79, P = 0.01) and high (OR = 4.25, P = 0.03) pretest probability. 3 patients (2 at moderate, 1 at high risk for CBD stones)with positive EUS CBD stones were not found after in ERC. 40 patients wer tested negative for CBD stones at EUS, these were closely monitored for 1 wk after the EUS procedure. Once discharged, these patients were followed for a 6-mo period with telephone calls at 1, 3, and 6 mo after EUS. none of the patients with negative EUS had new episodes of biliary or cholic pancreatitis in the follow-up. **Author conclusions:** This study points out the the diagnostic relevance of EUS in detecting suspected CBD Stones in acute pancreatits after negative transabdominal US (44 %).
Methodical Notes		
Funding Sources: Not declared **COI:** Not declared **Notes:**		

Ardengh, José Celso et al. Microlithiasis of the gallbladder: role of endoscopic ultrasonography in patients with idiopathic acute pancreatitis. Rev Assoc Med Bras (1992). 56. 27-31. 2008

Evidence level/Study Types	Population	Outcomes/Results
Evidence level: 3 **Study type:**	**Number of patients / samples:** 36 pat with unexplained acute pancreatitis over a 5 year period	**Results:** EUS Sensitivity, specificity and positive and negative predictive values to identify gallbladder microlithiasis (with 95% confidence

Prospective evalution of EUS in the diagnosis of microlithiais of the gallbladder in unexplained acute pankreatitis	**Reference standard:** Cholecystecotmy **Validation:** EUS Sensitivity, specificity and positive and negative predictive values to identify gallbladder microlithiasis (with 95% confidence interval) were 92.6% (74.2-98.7%), 55.6% (22.7-84.7%), 86.2% (67.4-95.5%) and 71.4% (30.3-94.9%), respectively. Overall EUS accuracy was 83.2% **Blinding:** No becahse CHE took place later **Inclusion of clinical information:** Yes **Dealing with ambiguous clinical findings:** NO	interval) were 92.6% (74.2-98.7%), 55.6% (22.7-84.7%), 86.2% (67.4-95.5%) and 71.4% (30.3-94.9%), respectively. Overall EUS accuracy was 83.2% **Author conclusions:** In case of unexmplained acute pancreatitis EUS after work up including transabdominal US has an accuracy of 83 % to diagnose sludge in the gallbladder indicating a biliary pncreatitis resulting in lap CHE.
Methodical Notes		
Funding Sources: Not declared **COI:** Not declared **Notes:**		

Hallal, Ali H et al. Magnetic resonance cholangiopancreatography accurately detects common bile duct stones in resolving gallstone pancreatitis. J. Am. Coll. Surg. 200. 869-75. 2005

Evidence level/Study Types	Population	Outcomes/Results
Evidence level: 3 **Study type:** yes	**Number of patients / samples:** 63 patients **Reference standard:** yes **Validation:** The MRCP sensitivity for detecting gallstones was 100% (95% CI, 16–100%), specificity 91% (95% CI, 72–99%), posi-tive predictive value 50% (95% CI, 7–93%), negative predictive value 100% (95% CI, 84–100%), and accuracy 92% (95% CI, 74–99%). **Blinding:** yes, MRCP eas performed prior to the gold-standard **Inclusion of clinical information:** yes **Dealing with ambiguous clinical findings:** n.a.	**Results:** In patients with suspected biliary pancretitis, MRCP sensitivity for detecting gallstones was 100% (95% CI, 16–100%), specificity 91% (95% CI, 72–99%), positive predictive value 50% (95% CI, 7–93%), negative predictive value 100% (95% CI, 84–100%), and accuracy 92% (95% CI, 74–99%). **Author conclusions:** Patients with resolving gallstone pancreatitis and a negative MRCP do not need preoperativeERCP or IOC. Only patients with a positive MRCP will require preoperative ERCP.
Methodical Notes		
Funding Sources: none declared **COI:** none declared **Notes:**		

Lee, Su-Lim et al. Diagnostic value of magnetic resonance cholangiopancreatography to detect bile duct stones in acute biliary pancreatitis. Pancreatology. 18. 22-28. 2018

Evidence level/Study Types	Population	Outcomes/Results
Evidence level: 4 **Study type:** retrospective	**Number of patients / samples:** 78 **Reference standard:** ERCP but only in patients where CBD stones were detected on MRCP **Validation:** sensitivity of MRCP indetecting CBD stones in ABP was 93.3% The overall accuracy of MRCP in detecting choledocholithiasis was 85.9% the sensitivity and negative predictive value of MRCP in detecting CBD stones were both 100% regardless of the dilatation of the bile duct (> 7mm versus<7 mm). **Blinding:** no **Inclusion of clinical information:** yes **Dealing with ambiguous clinical findings:** n.a.	**Results:** MRCP is more sensitive than abdominal CT in detecting CBD stones **Author conclusions:** only patients with a positive MRCP may require ERCP, allowing for the selective use of ERCP.

Methodical Notes

Funding Sources: none declared

COI: none declared

Notes:

Liu, C L et al. Detection of choledocholithiasis by EUS in acute pancreatitis: a prospective evaluation in 100 consecutive patients. Gastrointest. Endosc. 54. 325-30. 2001

Evidence level/Study Types	Population	Outcomes/Results
Evidence level: 1 **Study type:** prospective	**Number of patients / samples:** 100 **Reference standard:** yes **Validation:** Detection of CBD stones Sensitivity, specificity, overall accuracy for ERCP: 97%, 95%, 96% Sensitivity, specificity, overall accuracy for EUS: 97%, 98%, 98% Sensitivity, specificity, overall accuracy for US: 26%, 100%, 75% **Blinding:** yes	**Results:** ERCP and EUS are comparable for CBD stone detection US is significantly worse **Author conclusions:** EUS can be used to selectpatients with acute pancreatitis who require therapeutic ERCP, thus avoiding diagnostic ERCP andits associated potential for complications in the majority of patients

	Inclusion of clinical information: yes **Dealing with ambiguous clinical findings:** n.a.	

Methodical Notes

Funding Sources: not mentioned

COI: not mentioned

Notes:

Mayer, A D et al. Biochemical identification of patients with gallstones associated with acute pancreatitis on the day of admission to hospital. Ann. Surg. 201. 68-75. 1985

Evidence level/Study Types	Population	Outcomes/Results
Evidence level: 4 **Study type:** unclear	**Number of patients / samples:** 318 **Reference standard:** yes **Validation:** Best values for AST>60IU/l sensitivity: 84% specificty 85.5% postove rpedictive value 90% overall accuracy 84.7% **Blinding:** not mentioned **Inclusion of clinical information:** yes **Dealing with ambiguous clinical findings:** not mentioned	**Results:** AST elevation has best diagnostic accuracy to predict biliary origin of pancreatitis **Author conclusions:** elevation of AST above 60IU/l on the day of admission to hospital provides a useful method for the identification of gallstones in patients with acute pancreatitis

Methodical Notes

Funding Sources: Amelie WaringFoundation,the West Riding Medical Research Trust and the Special Trustees of the General Infirmary

COI: not mentioned

Notes:

Ortega, Alejandro Repiso et al. Prospective comparison of endoscopic ultrasonography and magnetic resonance cholangiopancreatography in the etiological diagnosis of "idiopathic" acute pancreatitis. Pancreas. 40. 289-94. 2011

Evidence level/Study Types	Population	Outcomes/Results
Evidence level: 3 **Study type:**	**Number of patients / samples:** 49 **Reference standard:** no Comparative diagnostic study bewteen EUS	**Results:** diagnostic yield of EUS was higher than MRCP (51% vs 20%;P<0.001). EUS yield was lower in patients with previous

prospective study	and MRCP in patients with ideopathatic pancreatitis **Validation:** EUS for CBD stones: 85%; specificity, 97%; positive predictive value,92%; negative predictive value, 94%, diagnostic accuracy,94% for MRCP not mentioned **Blinding:** yes **Inclusion of clinical information:** yes **Dealing with ambiguous clinical findings:** n.a.	cholecystectomy(11% vs 60%;P= 0.008), whereas the MRCP yield was no different (33% vs 17%;P= 0.28). **Author conclusions:** Endoscopic ultrasonography should be preferred for establishing a possible biliary etiology in patients who have not had a cholecystectomy.
Methodical Notes		
Funding Sources: not mentioned **COI:** not mentioned **Notes:**		

Stabuc, Borut et al. Acute biliary pancreatitis: detection of common bile duct stones with endoscopic ultrasound. Eur J Gastroenterol Hepatol. 20. 1171-5. 2008

Evidence level/Study Types	Population	Outcomes/Results
Evidence level: 3 **Study type:** prospective single center	**Number of patients / samples:** 38 **Reference standard:** ERCP was reference standard **Validation:** Sensitivity: 96% for ERCP and EUS for detection of CBD stones Specificity: 85% for EUS, 92% ERCP positive predictive value EUS: 92%; ERCP: 96% negative predictive value: EUS 92%, ERCP 92% Accuracy: EUS: 92%, ERCP 95% **Blinding:** yes **Inclusion of clinical information:** yes **Dealing with**	**Results:** Sensitivity: 96% for ERCP and EUS for detection of CBD stones Specificity: 85% for EUS, 92% ERCP positive predictive value EUS: 92%; ERCP: 96% negative predictive value: EUS 92%, ERCP 92% Accuracy: EUS: 92%, ERCP 95% **Author conclusions:** EUS proved to be as sensitive as ERCP for detection of CBS in patients with acute biliarypancreatitis. Therefore, EUS could be used as the first-line procedure in patients with acute biliary pancreatitis when therapeutic ERCP is not needed. By this approach asubstantial number of unnecessary diagnostic ERCP procedures could be avoided

	ambiguous clinical findings: not mentioned	

Methodical Notes

Funding Sources: not mentioned

COI: not mentioned

Notes:

van Santvoort, H C et al. Prediction of common bile duct stones in the earliest stages of acute biliary pancreatitis. Endoscopy. 43. 8-13. 2011

Evidence level/Study Types	Population	Outcomes/Results
Evidence level: 3 **Study type:** prospective cohort study	**Number of patients / samples:** 167 patients **Reference standard:** ERCP **Validation:** Sensitivity, specificity, positive predictivevalues, and negative predictive values were calculated for all pre-dictors. For the biochemical predictors, cut-off points were basedon the 25th, 50th, and 75th percentiles. **Blinding:** no **Inclusion of clinical information:** all patients with acute biliary pancreatitis who underwent ERCP within 72 hours after admission (i.e., early ERCP) were included in the study. **Dealing with ambiguous clinical findings:** not mentioned	**Results:** the only parameters significantly associated with CBD stones were GGT (per 10 units increase: odds ratio 1.02, 95% CI 1.01–1.03,P= 0.001) and alkaline phosphatase (per 10 units increase: odds ratio 1.03, 95% CI 1.00–1.05,P= 0.028). These and all other tested parameters,however, showed poor positive predictive value(ranging from 0.53 to 0.69) and poor negative predictive value (ranging from 0.46 to 0.67). **Author conclusions:** the results of the study suggest that commonly used biochemical and radiological predictors for CBD stones are unreliable in the earliest stages of acute biliary pancreatitis.

Methodical Notes

Funding Sources: not mentioned

COI: none declared

Notes:

OXFORD (2011) Appraisal Sheet: Prognostic Studies: *5 Bewertung(en)*

Besselink, M G H et al. Beneficial effects of ERCP and papillotomy in predicted severe biliary pancreatitis. Hepatogastroenterology. 52. 37-9. 2005

Population	Intervention	Outcomes/Results

Evidence level: 2 **Study type:** retrospecitive **Number of Patient:** 80 patients admitted with ABP were included. 35 of them had a predicted severe attack (three or more Ranson criteria). Only in 24 of these 35 patients was an ERC/PT performed. **Recruitung Phase:** only abstract information available **Inclusion Criteria:** acute biliary pancreatitis with three or more Ranson criteria **Exclusion Criteria:** only abstract information available	**Intervention:** In 24 of these 35 patients was an ERC/PT performed.No information of the selection for ERCP available due to missing access to the full paper **Comparison:** Morbidity and mortality of severe ACP in the group with ERCP / EST vs. no ERCP	**Primary:** only abstract information available **Secondary:** only abstract information available **Results:** In the ERC/EST group, significantly less pancreatic necrosis (8 vs. 64%, p<0.001) occurred, hospital stay was shorter (median 22 +/- 5 vs. 51 +/- 19 days, P=0.08) and mortality was lower (8 vs. 36%, P=0.01). Twenty-three patients (66%) underwent cholecystectomy after a median period of 10 weeks (range 0-26 weeks) after discharge. During the waiting period, in the ERC/EST group, two patients developed acute cholecystitis whereas recurrent ABP and common bile duct stones occurred in one patient each. **Author's Conclusion:** These retrospective data support the early ERCP with EST in patients with a severe acute bil pancreatitis
Methodical Notes		
Funding Sources: Nor declared **COI:** Not declared **Randomization:** NOne **Blinding:** None **Dropout Rate/ITT-Analysis:** only abstract information available **Notes:**		

Lee, Hee Seung et al. Urgent endoscopic retrograde cholangiopancreatography is not superior to early ERCP in acute biliary pancreatitis with biliary obstruction without cholangitis. PLoS ONE. 13. e0190835. 2018

Population	Intervention	Outcomes/Results
Evidence level: 4 **Study type:** retrospective data analysis **Number of Patient:** 73 **Recruitung Phase:** January 1, 2005to December31,2014 **Inclusion Criteria:** biliary pancreatitis and a bile duct obstruction without cholangitis **Exclusion Criteria:** cholangitis known bleeding disorder or	**Intervention:** ERCP **Comparison:** ERCP <24h versus ERCP between 24 and 72h	**Primary:** total length of hospitalization and ERCP-related complications **Secondary:** mortality,technical success rate,and clinical success rate **Results:** The timing of ERCP within 72h was notassociated with ERCP-related complications,and the total length of hospital stay was not different between urgent and early ERCP.Nsignificandifferencewerfounin tota length of hospitalization or procedural-related complications **Author's Conclusion:** urgent ERCP is not superior to early ERCP in patients with biliary pancreatitis without cholangitis.

severe coagulopathy age <20 and >90 CHE during hospital stay time to ERCP >72h		

Methodical Notes

Funding Sources: non declared

COI: non declared

Randomization: retrospective comparison of 2 groups

Blinding: n.a.

Dropout Rate/ITT-Analysis: n.a.

Notes:

Teoh, Anthony Y B et al. Role of prophylactic endoscopic sphincterotomy in patients with acute biliary pancreatitis due to transient common bile duct obstruction. J. Gastroenterol. Hepatol. 22. 1415-8. 2007

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** retrospective **Number of Patient:** 88 **Recruitung Phase:** Between January 2000 and January 2005 **Inclusion Criteria:** patients with acute biliary pancreatitis and absence of CBD stones on ERCP within 72 hours after onset of symptoms **Exclusion Criteria:** Patients were excluded if there was evidence of concomitant intrahepatic ductal stones and/or radiological evi- dence of recurrent pyogenic cholangitis.	**Intervention:** EPT in patients without CBD stones **Comparison:** no EPT in patients without CBD stones	**Primary:** Recurrent acute pancreatitis; recurrent biliary complications including cholangitis, obstructive jaundice and cholecystitis; local and systemic complications from pancreatitis (end-organ failure and death); other adverse events. **Secondary:** **Results:** There was no significant difference in recurrent pancreatitis rates (1.4% vs 5.8%, P = 0.35), recurrent biliary complication rates (5.6% vs 5.9%, P = 1) or mortality rates (5.8% vs 1.5%, P=0.35). **Author's Conclusion:** Prophylactic endoscopic sphincterotomy is not recommended in patients with transient common bile duct obstruction or as an option to cholecystectomy in elderly patients. Early cholecystectomy should be performed.

Methodical Notes

Funding Sources: not stated

COI: not stated

Randomization: none

Blinding: none

Dropout Rate/ITT-Analysis: not reported

Notes: small number of patients, e.g. 3 patients without EPT and without CHE

Uomo, G et al. Endoscopic sphincterotomy and recurrence of acute pancreatitis in gallstone patients considered unfit for surgery. Pancreas. 14. 28-31. 1997

Population	Intervention	Outcomes/Results
Evidence level: 2 **Study type:** prospective observational **Number of Patient:** 26 **Recruitung Phase:** 08/89-12/93 **Inclusion Criteria:** acute biliary pancreatitis unfit for surgery (CHE) **Exclusion Criteria:**	**Intervention:** ERCP with endoscopic papillotomy (EPT) **Comparison:** No ERCP/EPT	**Primary:** biliary pain without pancreatic enzyme elevation during follow up recurrence of acute biliary pancreatitis during follow up **Secondary:** **Results:** statistically significantly more patients with biliary pain without pancreatic enzyme elevation and recurrence of acute biliary pancreatitis during follow up in patients without ERCP/EPT compared to patients who received ERCP/EPT. **Author's Conclusion:** endoscopic sphincterotomy may be considered a very useful option in reducing the recurrence of acute biliary pancreatitis in elderly patients with gallstones and a high an- esthesiological risk of cholecystectomy

Methodical Notes

Funding Sources: not stated

COI: not stated

Randomization: no randomization. Allocation by failed ERCP/EPT

Blinding: no

Dropout Rate/ITT-Analysis: Ten patients (seven in group A, three in group B; ns.) died during the follow-up period because of cerebrovas- cular and cardiopulmonary complications.

Notes: allocation by failed ERCP

van Santvoort, Hjalmar C et al. Early endoscopic retrograde cholangiopancreatography in predicted severe acute biliary pancreatitis: a prospective multicenter study. Ann. Surg. 250. 68-75. 2009

Population	Intervention	Outcomes/Results
Evidence level: 2 **Study type:** prospective, observational multicenter study **Number of Patient:** 153 **Recruitung Phase:** March 2004 to March 2007 **Inclusion Criteria:** predicted severe	**Intervention:** Early ERCP within 72 hours after onset of symptoms **Comparison:** conservative treatment or ERCP later than 72 hours after onset of symptoms	**Primary:** mortality and overall complications Complications: • Pancreatic necrosis: pancreatic non-enhancement on contrast en- hanced CT scan performed 7 days after admission. • Infected pancreatic necrosis: positive fine needle aspiration culture of peripancreatic fluid or positive culture of necrosis removed during first surgical intervention. • Bacteremia: positive blood culture: for bacteria that are usual non- pathogens like coagulase-negative staphylococci at least two samples had to be positive. • Infected ascites: bacteria detected in aspirate of intraperitoneal fluid or abdominal fluid sampled during surgical exploration. • Pneumonia: coughing, in combination with dyspnea, chest film showing infiltrative abnormalities, or lowered arterial blood gas with positive sputum culture. If on the intensive care unit a positive endotracheal culture is mandatory.

ABP without cholangitis **Exclusion Criteria:** potential cholangitis		• New onset organ failure: initial (for the first time) onset of organ failure after the day of ERCP in the early ERCP group (usually performed on day of admission) from the second day of admission in patients in the conservative treatment group. **Secondary:** CT severity index,18 the need for percutaneous drainage or operative intervention because of (documented or suspected) infected necrosis, hospital stay, and intensive care stay. **Results:** Of the 153 patients, 81 (53%) underwent ERCP and 72 (47%) conservative treatment. Groups were highly comparable at baseline. Seventy- eight patients (51%) had cholestasis. In patients with cholestasis, ERCP (52/78 patients: 67%), as compared with conservative treatment, was asso- ciated with fewer complications (25% vs. 54%, P **Author's Conclusion:** Early ERCP is associated with fewer complications in pre- dicted severe ABP if cholestasis is present.
Methodical Notes		
Funding Sources: Supported by a grant from Senter, an agency of the Dutch Ministry of Economic Affairs (grant number: TSGE3109). Sponsored by the The Netherlands Organization for Health Research and Development (ZonMw; grant number: 945-06-910) to perform clinical studies on the treatment of (infected) necro- tizing pancreatitis (to H.C.v.S.). Both sponsors had no involvement in any stage of the study design, data collection, data-analysis and interpretation of the study results. **COI:** not stated **Randomization:** none **Blinding:** none **Dropout Rate/ITT-Analysis:** no drop outs **Notes:** surrogate parameters for biliary etiology		

NEWCASTLE - OTTAWA Checklist: Cohort: *4 Bewertung(en)*

Bakker, O J et al. Timing of cholecystectomy after mild biliary pancreatitis. Br J Surg. 98. 1446-54. 2011			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 2 **Study type:** non-randomized cohort study	**Funding sources:** This study was supported by a grant from Senter, an agency of the Dutch Ministry of Economic Affairs (grant no. TSGE3109). O.J.B. is sponsored by the Netherlands Organization for Health Research and Development (ZonMw, grant no. 17099.2902) to perform clinical studies on the prevention and treatment of necrotizing pancreatitis **Conflict of Interests:** The	**Total no. patients:** 308 **Recruiting Phase:** Between 2004 and 2007 **Inclusion criteria:** mild biliary pancreatitis **Exclusion criteria:** previous cholecystectomy, unfit for surgery, died during index admission	**Interventions:** cholecystectomy **Comparison:** cholecystctomy during admission vs. cholecystectomy after discharge

	authors declare no conflict of interest **Randomization:** none **Blinding:** none **Dropout rates:** none		
Notes:	, the population consisted of consecutive prospectively registered patients with a primary attack of acute pancreatitis **Author's conclusion:** A delay in cholecystectomy after mild biliary pancreatitis carries a substantial risk of recurrent biliary events. ES reduces the risk of recurrent pancreatitis but not of other biliary events		
Outcome Measures/results	**Primary** recurrent biliary events **Secondary** role of endoscopic sphincterectomy during index admission	**Results:** Cholecystectomy was performed after a median of 6 weeks in 188 patients (75·5 per cent). Before cholecystectomy, 34 patients (13·7 per cent) were readmitted for biliary events, including 24 with recurrent biliary pancreatitis. ES was performed in 108 patients during the initial admission. Eight (7·4 per cent) of these patients suffered from biliary events after ES and before cholecystectomy, compared with 26 (18·4 per cent) of 141 patients who did not have ES (risk ratio 0·51, 95 per cent confidence interval 0·27 to 0·94; P = 0·015). Following cholecystectomy, eight (3·9 per cent) of 206 patients developed biliary events after a median of 31 weeks. Only 142 (53·2 per cent) of 267 patients were treated in accordance with the Dutch guideline, which recommends cholecystectomy or ES during the index admission or within 3 weeks thereafter.	

Bang, Ki Bae et al. Does Endoscopic Sphincterotomy and/or Cholecystectomy Reduce Recurrence Rate of Acute Biliary Pancreatitis?. Korean J Gastroenterol. 65. 297-305. 2015

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 2 **Study type:** Retrospective cohort study	**Funding sources:** Not declares **Conflict of Interests:** Not declared **Randomization:** Bone **Blinding:** None **Dropout rates:** 37 of 156 lost to F-up	**Total no. patients:** 119 **Recruiting Phase:** 2005-2010 **Inclusion criteria:** 119 patients with acute pancreatitis who showed clinical symptoms and signs of cholangitis and/or CBD obstruction and had complete follow-up data until May 2012 **Exclusion criteria:** Patients who fulfilled any of the following criteria were excluded: 1) age < 19 years; 2) positive urine pregnancy test; 3) prior history of hospital admission due to acute pancreatitis; 4) previous cholecystectomy due to any	**Interventions:** ERCP with EST was performed within 72 hours after the index admission. Laparoscopic or open cholecystectomies were also performed in the standard manner. During laparoscopic or open cholecystectomies, a surgeon routinely performed intraoperative choledochoscopy via cystic duct stump site for detection of undiscovered choledocholithiasis. **Comparison:** The primary end points of the study were to compare the recurrence rates of ABP between EST and non-EST groups and among the EST plus cholecystectomy group, EST

		etiology; and 5) previous EST due to any etiology.	only group, cholecystectomy only group, and conservative treatment group.
Notes:	**Author's conclusion:** in case of acute bil pancreatitis with CBD obstruction and or Cholangitis ERC with EST results in minor complication rate and lower recurrence rate for ABP.		
Outcome Measures/results	**Primary** The primary end points of the study were to compare the recurrence rates of ABP between EST and non-EST groups and among the EST plus cholecystectomy group, EST only group, cholecystectomy only group, and conservative treat-ment group. **Secondary** The secondary end points of the study were to compare the length of hospital stay, time to recovery from ABP, the frequency of occurrence of complications due to ABP, and overall survival between EST and non-EST groups and among the EST plus cholecystectomy group, EST only group, cholecystectomy only group, and conservative treat-ment group.	**Results:** In Kaplan-Meier analyses, significantly higher recurrence rates of ABP were observed in the non-EST group compared to the EST group ($p < 0.01$), and in the conservative treatment group compared to other intervention groups ($p < 0.01$). The frequency of complications from ABP was significantly higher in the conservative treatment group (35.7%) and lowest in the EST plus cholecystectomy group (5.0%, p=0.008). In multivariate analysis, conservative treatment without EST and/or cholecystectomy, and non-EST group were independent risk factors for recurrence after the initial attack of AB	

Bignell, Mark et al. ERCP and endoscopic sphincterotomy (ES): a safe and definitive management of gallstone pancreatitis with the gallbladder left in situ. J. Gastrointest. Surg. 15. 2205-10. 2011			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 2 **Study type:** Restrospective study	**Funding sources:** Not declared **Conflict of Interests:** not declared **Randomization:** None **Blinding:** None **Dropout rates:** none of the ERC+EST only pat.	**Total no. patients:** 536 patients with ABP thereof 101 patients with ERCP/EST only **Recruiting Phase:** 1999-2009 **Inclusion criteria:** ABP The 101 patients who underwent ERCP and ES as a definitive treatment for gallstone pancreatitis had a mean age of 76±9.5 years and a median American Society of Anesthesiologists (ASA) grade of 2 (range, 1–4; IQR, 2–3).The median Imrie score was 2 (0–5). **Exclusion criteria:** Not declared	**Interventions:** ERCP and EST without CHE in acute bil. pancreatitis **Comparison:** No comparison only decribtion of outcome
Notes:	**Author's conclusion:** In elderly patients with significant comorbidities and contraindications to surgery ERCP and EST may be a sufficient treatment to prevent recurrent acute bil pancreatitis		
Outcome Measures/results	**Primary** Recurrence of ABP	**Results:** 89 / 101 patients were successfully treated with an ERCP alone. 84 patients (94%) had no recurrence of pancreatitis with a median follow-up of 29 months (range, 4–118;IQR, 12–60). The total patient follow-up was 3,260	

	Secondary Mortality of ABP	months.3 of 101 pat died from ABP.

Li, Ang et al. Early or delayed cholecystectomy (LC) for acute gallstone pancreatitis? An experience and review. Hepatogastroenterology. 59. 2327-9. 2012			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 5 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Literatursammlung:

AG6-CP

Inhalt: *15 Literaturstellen*

Literaturstelle	Evidenzlevel	Studientyp
Aghdassi, Ali A 2017	1	retrospective case-control study
Bachmann, Jeannine 2013	1	retrospective cohort analysis
Bang, Ulrich Christian 2014	1	retrospective cohort study using the Danish National Patient Register
Bang, Ulrich Christian 2014	1	retrospective cohort study using Danish nationwide registries
Chen, Chien-Hua 2018	1	retrospective cohort study
Chen, Yu-Long 2017	1	
Chung, W-S 2016	1	retrospective cohort study
Frulloni, L 2009	4	
Goldacre, Michael J 2008	1	retrospectice cohort study
Lai, Shih-Wei 2018	1	retrospetive case control study
Lankisch, P G 1993	1	retrospective study
Liao, Kuan-Fu 2012	1	population-based cohort study
McWilliams, Robert R 2016	1	
Schnelldorfer, Thomas 2007	1	
Wang, Wei 2011	1	retrospective single center study

NEWCASTLE - OTTAWA Checklist: Case Control: *10 Bewertung(en)*

Aghdassi, Ali A et al. Analysis of lifestyle factors in patients with concomitant chronic pancreatitis and liver cirrhosis. Pancreatology. 17. 698-705. 2017

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:** retrospective case-control study	**Funding sources:** no **Conflict of Interests:** no **Randomization:** no **Blinding:** no **Dropout rates:**	**Total no. patients:** 417 **Patient characteristics:** 2000 and 2005 2006 and 2012 **Inclusion criteria:** ICD-10 codes for CP (K86.0 alcohol-induced CP,K86.1 CP by other origin) ICD-10 codes for LC (K70.3 alcoholic LC, K71.7 toxicliver disease withfibrosis or cirrhosis and K74.3-K74.6) **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:** findings indicate that certain lifestyle factors might be important for the development of concomitant CP and LC. More studies will be needed to identify additional genetic and envi-ronmental factors underlying this association.		

Outcome Measures/results	**Primary** This study was designed to identifylifestyle factors that are associated with the development of concomitant LC in patients with CP **Secondary**	**Results:** Alcoholism was most commonly regarded as aetiology for both CP (82.2%; 95% confidence in-terval (CI): 75.0e88.0%) and LC (79.5%; 95% CI: 72.0e85.7%) as compared to controls with CP only (68.6%;95% CI: 62.7e74.1%). The preferred type of alcoholic beverage and pattern of alcohol intake were the onlysignificant lifestyle factors in multivariate analysis. Frequency of alcohol intake (p¼0.105) and smokingstatus (p¼0.099) were not significant in bivariate analysis and dropped out of the multivariate model.Recurrent and chronic pancreatic pain was observed more often in patients with only CP, whereasgallstones were more common in individuals with both chronic disorders

Bang, Ulrich Christian et al. The risk of fractures among patients with cirrhosis or chronic pancreatitis. Clin. Gastroenterol. Hepatol. 12. 320-6. 2014

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:** retrospective cohort study using the Danish National Patient Register	**Funding sources:** no **Conflict of Interests:** no **Randomization:** no **Blinding:** no **Dropout rates:**	**Total no. patients:** The cohort consisted of 360,151 persons 20,769 patients (35.5% women) with cirrhosis and 11,972 patients (33.5% women) with CP **Patient characteristics:** January 1,1995, to December 31, 2010 **Inclusion criteria:** Fractures were identified usingthe following International Classification of Diseases, 10thedition codes: S02 (skull and facial bones), S12 (cervicalspine), S22.0/1/2 (thoracic spine), S22.3/4 (ribs), S32.1/2/3/4/5/7/8 (pelvis), S32.2 (lumbar spine), S42.0/1 /7/8/9(shoulder), S42.2/3/4 (humerus), S52.0/1/2/3/4/7/9 (up-per forearm), S52.5/6/8 (lower forearm), S62 (wrist andhand), S72.0/1/2 (proximal femur), S72.3/4/7/8/9 (lowerfemur),S82(lowerleg,ankle),S92(foot), and,finally,M80.1/2/3/4/5/8/9 (osteoporotic fracture). **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:** Patients, especially younger patients, with cirrhosis or CP have an increased risk of fractures of all types.		
Outcome Measures/results	**Primary** **Secondary**	**Results:** During the study period, bone fractures occurred in 3954 patients with cirrhosis and 2594patients with CP. The adjusted hazard ratio (HR) for any fracture was 2.4 in patients withcirrhosis (95% confidence interval [CI], 2.2–2.5) and 1.7 in patients with CP (95% CI, 1.6–1.8).The relative risk of low-trauma fractures was highest among individuals younger than 50 yearsold. Alcohol as an etiology was associated with an increased risk of fracture compared withpatients with nonalcoholic cirrhosis (HR, 2.4 vs 1.5;P<.0001 and cp vs with receiving pes for fat malabsorption had a lower risk of fractures than other cppatients ci however increasing the duration treatment wasassociated an increased fracture.>	

Bang, Ulrich Christian et al. Mortality, cancer, and comorbidities associated with chronic pancreatitis: a Danish nationwide matched-cohort study. Gastroenterology. 146. 989-94. 2014

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:**	**Funding sources:** no	**Total no. patients:** The cohort consisted of 360,151	**Interventions:**

retrospective cohort study using Danish nationwide registries	**Conflict of Interests:** no **Randomization:** no **Blinding:** no **Dropout rates:**	persons with a total of 41,666 fractures. Cirrhosis was diagnosed in 20,769 patients CP was diagnosed in 11,972 patients **Patient characteristics:** January 1, 1995, to December 31, 2010 **Inclusion criteria:** International Classification of Diseases, 10th edition codes: K86.0 (alcohol induced CP), K86.1(other CP), K70.2 (alcoholic fibrosis and sclerosis of liver), K70.3 (alcoholic cirrhosis), K74.3 (primary biliary cirrhosis), K74.4 (secondary biliary cirrhosis), K75.4(biliary cirrhosis, unspecified), K75.4 (autoimmune hepatitis), and K75.8 (other specified inflammatory liverdisease). **Exclusion criteria:**	**Comparison:** bone fracture rate
Notes:	**Author's conclusion:** Patients, especially younger patients, with cirrhosis or CP have an increased risk of fractures of all types		
Outcome Measures/results	**Primary** **Secondary**	**Results:** During the study period, bone fractures occurred in 3954 patients with cirrhosis and 2594patients with CP. The adjusted hazard ratio (HR) for any fracture was 2.4 in patients with cirrhosis (95% confidence interval [CI], 2.2–2.5) and 1.7 in patients with CP (95% CI, 1.6–1.8).The relative risk of low-trauma fractures was highest among individuals younger than 50 years old. Alcohol as an etiology was associated with an increased risk of fracture compared withpatients with nonalcoholic cirrhosis (HR, 2.4 vs 1.5;P<.0001 and cp vs patients with receiving pes for fat malabsorption had a lower risk of fractures than other ci however increasing the duration treatment was associated an increased fracture.>	

Chen, Chien-Hua et al. Association between chronic pancreatitis and urolithiasis: A population-based cohort study. PLoS ONE. 13. e0194019. 2018 49years:aHR= 2.00,95%CI= 1.81–2.22; 50–64years:aHR= 1.71,95%CI= 1.40–2.09;65years:aHR= 1.54,95%CI= 1.20–1.98)andeachsex(women:aHR= 2.10,95%CI= 1.67–2.66;men;aHR= 1.86,95%CI= 1.70– 2.04). Among the patients without comorbidities, the rate of urolithiasis increased from 2.93/1,000 person-years in non-CP patients to 8.28/1,000 person-years in CP patients. Among the patients with comorbidities, the rate of urolithiasis increased from 6.12/1,000 person-years in non-CP patients to 10.9/1,000 person-years in CP patients. The contribution of CP to the relative risk of urolithiasis was greater in patients without comorbidities (without comorbidities:aHR= 2.81,95%CI= 2.30–3.44)than in those with comorbidities (aHR=1.76, 95%CI= 1.61–1.94). Exclusion criteria: CP is associated wit hurolithiasis in this population-based ohort study. Thecontribution of CP to the relative risk of urolithiasis was even greater in patients with a lower risk of urolithiasis, such as those without other comorbidities. Our findings warrant a survey and education on urolithiasis for patients with CP.			**Interventions:** no
Notes:	**Author's conclusion:** no		
Outcome Measures/results	**Primary** no **Secondary** no	**Results:**	

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Evidence level

Evidence level: 1

Study type: retrospective cohort study

Methodical Notes	**Patient characteristics**	**Interventions**
Funding sources: no **Conflict of Interests:** no	**Total no. patients:** CP and non-CP cohorts comprising 15,848 and 62,158 patients,respectively	**Interventions:** **Comparison:**

Randomization: no

Blinding: no

Dropout rates:

Patient characteristics: January 1,2000 and December 31,2010

Inclusion criteria: CP(ICD-9-CM:577.1)

Exclusion criteria:

Notes:

Author's conclusion: CP is associated wit hurolithiasis in this population-based ohort study. Thecontribution of CP to the relative risk of urolithiasis was even greater in patients with a lower risk of urolithiasis, such as those without other comorbidities. Our findings warrant a survey and education on urolithiasis for patients with CP.

Outcome Measures/results

Primary incidence of urolithiasis

Secondary

Results: The cumulative incidence of urolithiasis was higher in the CP cohort than that in the non-CP cohort (log-rank test,P<0.001)with a 1.89-fold risk of urolithiasis (95% confidence interval[CI]= 1.74–2.06). The prevalence of CP was higher in men(81.9%) and in patients younger than 49 years (63.5%; mean age:48.5±15.3 years).CP wasassociated with the development of urolithiasis in each age group(49years:aHR= 2.00,95%CI= 1.81–2.22; 50–64years:aHR= 1.71,95%CI= 1.40–2.09;65years:aHR= 1.54,95%CI= 1.20–1.98)andeachsex(women:aHR= 2.10,95%CI= 1.67–2.66;men;aHR= 1.86,95%CI= 1.70–2.04). Among the patients without comorbidities, the rate of urolithiasis increased from 2.93/1,000 person-years in non-CP patients to 8.28/1,000 person-years in CP patients. Among the patients with comorbidities, the rate of urolithiasis increased from 6.12/1,000 person-years in non-CP patients to 10.9/1,000 person-years in CP patients. The contribution of CP to the relative risk of urolithiasis was greater in patients without comorbidities (without comorbidities:aHR= 2.81,95%CI= 2.30–3.44)than in those with comorbidities (aHR=1.76, 95%CI= 1.61–1.94).

Chen, Yu-Long et al. Increased subsequent risk of inflammatory bowel disease association in patients with chronic pancreatitis: a nationwide population-based cohort study. Curr Med Res Opin. 33. 1077-1082. 2017

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:**	**Funding sources:** no **Conflict of Interests:** no **Randomization:** no **Blinding:** no **Dropout rates:**	**Total no. patients:** 17,796 patients with newly diagnosed CP as the CP cohort and 71,164 patients without CP as the comparison cohort **Patient characteristics:** between 2000 and 2010 **Inclusion criteria:** International Classification of Diseases, NinthRevision, Clinical Modification (ICD-9-CM) code 577.1. Patientswith a history of inflammatory bowel disease (IBD; ICD-9-CMcodes555 and 556) **Exclusion criteria:** patients diagnosed with IBD before the index date.	**Interventions:** **Comparison:**
Notes:			

	Author's conclusion: This nationwide population-based cohort study revealed a significantly higher risk of IBD in patients with CP compared with control group. Clinicians should notice this association to avoid delayed diagnosis of IBD in patients with CP	
Outcome Measures/results	**Primary** The outcome of interest was the development of IBD. **Secondary**	**Results:** When examined with a mean follow-up period of 4.87 and 6.04 years for the CP and compari-son cohorts, respectively, the overall incidence of IBD was 10.3 times higher in the CP cohort than inthe comparison cohort (5.75 vs. 0.56 per 10,000 person-years). Compared with the comparison cohort,the CP cohort exhibited a higher risk of IBD, irrespective of age, sex, and presence or absence ofcomorbidities. Moreover, the CP cohort was associated with a significantly higher risk of Crohn'sdis-ease (adjusted hazard ratio [aHR]¼12.9, 95% confidence interval [CI]¼5.15–32.5) and ulcerative colitis(aHR¼2.80, 95% CI¼1.00–7.86)

Chung, W-S et al. Comorbid risks of deep vein thrombosis and pulmonary thromboembolism in patients with chronic pancreatitis: a nationwide cohort study. J. Thromb. Haemost. 14. 98-104. 2016

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:** retrospective cohort study	**Funding sources:** no **Conflict of Interests:** no **Randomization:** no **Blinding:** no **Dropout rates:**	**Total no. patients:** 17 778 patients with CP and 71 106 patients without CP **Patient characteristics:** 1 January 2000 and 31 December 2010 **Inclusion criteria:** new diagnosis of CP (ICD-9-CM code 577.1),those aged≥20 years and those with complete information about age and sex **Exclusion criteria:** Patients with a previous diagnosis of pancreatic cancer(ICD-9-CM code 157), DVT (ICD-9-CM code 453.8),and PE (ICD 9-CM code 415.1, excluding ICD-9-CMvcode 415.11) were excluded	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:** The risks of DVT and PE are signifi-antly higher in CP patients than in the general population.		
Outcome Measures/results	**Primary** Risks of deep vein thrombosis (DVT) and pulmonary embolism (PE) in chronic pancreatitis (CP) **Secondary**	**Results:** Patients with CP had a 2.95-fold increased rate of DVTand a 4.51-fold increased rate of PE	

Goldacre, Michael J et al. Liver cirrhosis, other liver diseases, pancreatitis and subsequent cancer: record linkage study. Eur J Gastroenterol Hepatol. 20. 384-92. 2008

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:** retrospectice cohort study	**Funding sources:** no **Conflict of Interests:** no **Randomization:** no **Blinding:** no **Dropout rates:**	**Total no. patients:** controls: 599308 CP patients: 1496 AP patients: 6076 **Patient characteristics:** January 1963 to March 1999 **Inclusion criteria:** acute pancreatitis (587.0 in ICD7,577.0 in ICD8, 577.0 in ICD9 and K85 in ICD10) and chronic pancreatitis (587.1 in ICD7, 577.1 in ICD8, 577.1in ICD9 and K86.1, K86.2 in ICD10) **Exclusion criteria:** We excluded from the analysis allpeople in the exposure and reference cohorts who had arecord of cancer before or at the time of admission for theexposure or reference condition	**Interventions:** no **Comparison:** to determine the risk of cancer in cohorts of patients with acute pancreatitis and chronic pancreatitis and in patients with liver disease
Notes:	**Author's conclusion:** Thus, as the confidence intervals confirm, therisk of pancreatic cancer was significantly and substan-tially higher in patients with chronic than acutepancreatitis. Lung cancer was significantly high in peoplewith acute pancreatitis (1.3; 1.0–1.6) and in chronicpancreatitis (2.3; 1.5–3.3).		
Outcome Measures/results	**Primary** We calculated rates of each cancer based on person-years at risk. **Secondary**	**Results:** The rate ratios for cancer overall were 1.3 (1.1–1.4) inpeople who had acute pancreatitis and 2.5 (2.1–2.8) inpeople who had chronic pancreatitis. As the nonoverlap-ping confidence limits show, the higher cancer rate inchronic than acute pancreatitis was statistically signifi-cant. The rate ratios for liver cancer were 2.3 (1.3–4.0)associated with acute pancreatitis and 5.6 (2.1–12.4) associated with chronic pancreatitis. The risk, however,was not significant after omitting liver cancer casesdiagnosed within a year of admission for pancreatitis;omitting them the rate ratio was 0.6 (0.1–1.7) in peoplewith acute pancreatitis and 1.6 (0.2–6.0) in people withchronic pancreatitis. The rate ratios for pancreatic cancerwere 5.7 (4.5–7.1) associated with acute pancreatitis and27.0 (21.4–33.8) associated with chronic pancreatitis.They dropped, but remained significantly high afteromitting the first year cases: they were 3.0 (2.2–4.0) inacute pancreatitis and 10.7 (7.3–15.3) in chronic pan-creatitis. Thus, as the confidence intervals confirm, therisk of pancreatic cancer was significantly and substan-tially higher in patients with chronic than acutepancreatitis. Lung cancer was significantly high in peoplewith acute pancreatitis (1.3; 1.0–1.6) and in chronic pancreatitis (2.3; 1.5–3.3).	

Lai, Shih-Wei et al. Chronic pancreatitis correlates with increased risk of herpes zoster in a population-based retrospective cohort study. J Hepatobiliary Pancreat Sci. 25. 412-417. 2018

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:** retrospetive case control study	**Funding sources:** no **Conflict of Interests:** no **Randomization:** no **Blinding:** no **Dropout rates:**	**Total no. patients:** 1,545 participants aged 20–84 years with a new diagnosis of chronic pancreatitis. We selected 6,022 sex-matched andage-matched participants without chronic pancreatitis as the non-chronic pancreatitis group **Patient characteristics:** 2000 to 2012 **Inclusion criteria:** International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9code 577.1) **Exclusion criteria:** In both groups, participants who had a previous diagnosis of herpes zoster (ICD-9 code 053) or pancreatic cancer (ICD-9code 157) were excluded from the study.	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:** Chronic pancreatitis correlates with 1.35-fold increased risk of herpes zoster. From a view of primary prevention, we suggest that patients with chronic pancreatitis should receive herpes zoster vaccination.		
Outcome Measures/results	**Primary** The association between chronic pancreatitisand herpes zoster **Secondary**	**Results:** The overall incidence of herpes zoster was 1.34-fold greater in the chronic pancreatitis group than thenon-chronic pancreatitis group (6.22 vs. 4.63 per 1,000person-years, 95% CI 1.16–1.57). After controlling forconfounding factors, the adjusted HR of herpes zoster was1.35 (95% CI 1.01–1.82) for the chronic pancreatitisgroup, compared with the non-chronic pancreatitis group	

Liao, Kuan-Fu et al. Diabetes mellitus correlates with increased risk of pancreatic cancer: a population-based cohort study in Taiwan. J. Gastroenterol. Hepatol. 27. 709-13. 2012

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:** population-based cohort study	**Funding sources:** no **Conflict of Interests:** no **Randomization:** no **Blinding:** no **Dropout rates:**	**Total no. patients:** 49 803 patients aged 20 years and older with newly diagnosed DM as the diabetic group and 199 212 people without DM as the non-diabetic group. **Patient characteristics:** 1998–2007. **Inclusion criteria:** Patients aged 20 and older, newly diagnosed with DM (ICD-9codes 250 and A181) **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:** chronic pancreatitis is a risk factors for pancreatic cancer. Old age, chronic pancreatitis, gallstones and hepatitis C infection are other risk factors for pancreatic cancer. These high-risk patients should undergo close follow-up programs for pancreatic cancer.		
Outcome Measures/results	**Primary** **Secondary**	**Results:** chronic pancreatitis is a risk factors for pancreatic cancer Chronic pancreatitis (yes vs no): Crude HR: 28.12; 95% CI: 15.27–51.76 Adjusted HR: 19.40; 95% CI: 10.36–36.30 Subjects comorbid with DM and chronic pancreatitis had the highest HR of pancreatic cancer, as compared with subjects without these comorbidities (HR=33.52, 95%CI=10.61–105.94)	

McWilliams, Robert R et al. Risk Factors for Early-Onset and Very-Early-Onset Pancreatic Adenocarcinoma: A Pancreatic Cancer Case-Control Consortium (PanC4) Analysis. Pancreas. 45. 311-6. 2016

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:**	**Funding sources:** no **Conflict of Interests:** no **Randomization:** no **Blinding:** no	**Total no. patients:** cohort study **Patient characteristics:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**

	Dropout rates:		
Notes:	**Author's conclusion:** Pancreatitis is a risk factor for pancreatic cancer		
Outcome Measures/results	**Primary** **Secondary**	**Results:** Pancreatitis is a risk factor for early onset of pancreatic cancer (EOPC) Alcohol use ≥26 g daily also was associated with increased risk for EOPC (OR 1.49, 95% CI 1.21-1.84), and there appeared to be a dose-and age-dependent effect of alcohol on risk. The point estimate for risk for VEOPC was OR 2.18, (95% CI 1.17-4.09).	

NEWCASTLE - OTTAWA Checklist: Cohort: *5 Bewertung(en)*

Bachmann, Jeannine et al. Cachexia in patients with chronic pancreatitis and pancreatic cancer: impact on survival and outcome. Nutr Cancer. 65. 827-33. 2013			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 1 **Study type:** retrospective cohort analysis	**Funding sources:** no **Conflict of Interests:** no **Randomization:** no **Blinding:** no **Dropout rates:**	**Total no. patients:** 382 **Recruiting Phase:** 6/2004 to 12/2006 **Inclusion criteria:** consecutive patients with surgery for CP and pancreatic cancer **Exclusion criteria:**	**Interventions:** resection **Comparison:** cachectic versus non-cachectic
Notes:	**Author's conclusion:** Therefore, tumor cachexia should be considered as a different entity than cachexia in CP		
Outcome Measures/results	**Primary** body weight, albumin, hemoglobin, C-reactive protein, 30-day mortality, perioperative morbidity rate, lon term postoperative survival **Secondary**	**Results:** Cachexia was present in 41.4% of CP and 31% of cancer patients. Authors could demonstrate more pronounced systemic effects of cachexia in patients with PDAC. Weight loss was faster in PDAC patients, the amount of weight loss did not differ significantly between the groups. Cachexia had a significant impact on survival and the postoperative course in patients with PDAC and tumor re-section. The development of cachexia is faster in patients with a malignant disease and the systemic effects are more pronounced.	

Frulloni, L et al. Chronic pancreatitis: report from a multicenter Italian survey (PanCroInfAISP) on 893 patients. Dig Liver Dis. 41. 311-7. 2009			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Lankisch, P G et al. Natural course in chronic pancreatitis. Pain, exocrine and endocrine pancreatic insufficiency and prognosis of the disease. Digestion. 54. 148-55. 1993			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 1 **Study type:** retrospective study	**Funding sources:** no **Conflict of Interests:** no **Randomization:** n0 **Blinding:** no **Dropout rates:**	**Total no. patients:** 335 patients follow up: mean of 11.3 ± 8.3 years (median 9.8 years) **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**

Notes:	**Author's conclusion:**	
Outcome Measures/results	**Primary** **Secondary**	**Results:** Pain relief was not obtained in the majority of patients, even after a long-term observation of >IO years, and severe excocrine/endocrine insufficiency, severe duct abnor- malities and pancreatic calcifications developed. Alcohol abstinence failed to have a significant beneficial effect on pain. Pancreatic surgery led to pain relief immediately after operation, but later on the pain course between operated and nonoperated patients was not significantly different. Repeated exocrine pancreatic function tests in 143 patients showed that functional exocrine impairment came to a standstill (46°/41), or improved (I I%). At the end of observation, 22% of 335 patients still had normal endocrine function and only 40%> required insulin treatment. Alcohol abstinence had a significant benefi- cial effect on endocrine, but not on exocrine pancreatic insufficiency. Chronic pancreatitis led to a sharp increase in unemployment and retirement. Pancreatic carcinoma occurred in 3% and extrapancreatic carcinoma in 4%. The mortality rate within the observation period was 22%, pancreatitis-induced complications accounted for 13% of these deaths.

Schnelldorfer, Thomas et al. Operative management of chronic pancreatitis: longterm results in 372 patients. J. Am. Coll. Surg. 204. 1039-45; discussion 1045-7. 2007

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:**	**Funding sources:** no **Conflict of Interests:** no **Randomization:** no **Blinding:** no **Dropout rates:**	**Total no. patients:** 372 consecutive patients who underwent operation for chronic pancreatitis **Recruiting Phase:** 1995 to 2003 **Inclusion criteria:** 372 consecutive patients who underwent operation for chronic pancreatitis **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:** Patients with operated CP have a higher risk of mortality compared to the normal population		
Outcome Measures/results	**Primary** **Secondary**	**Results:** Longterm outcomes were assessed by patient survey. Of 367 patients surviving the perioperative period, 229 patients (62%) were available for longterm follow up. Median duration of follow up was 5.560.2 years. During the followup period, 58 patients (25%) died. One-year, 3-year, and 5-year survival was 97%, 87%, and 82%, respectively. Using data from the Na-tional Center for Health Statistics, the age-adjusted deathrate in a US standard population was predicted to be 535deaths per 100,000 population per year. This number ap-pears much lower than the observed rate of longtermdeaths in patients after operative treatment for chronicpancreatitis (Fig. 1). Survival did not depend on the type ofoperation performed. Cause of death was unknown in 59%of patients, cardiovascular disease in 21% of patients, suicide or drug overdose in 9% of patients, cancer in 7% ofpatients, and sepsis in 5% of patients. This included 1patient who was discovered to have pancreatic adenocarcinoma 5 months after LPJ.	

Wang, Wei et al. Incidence of pancreatic cancer in chinese patients with chronic pancreatitis. Pancreatology. 11. 16-23. 2011

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:** retrospective single center study	**Funding sources:** no **Conflict of Interests:** no **Randomization:** no **Blinding:** no **Dropout rates:**	**Total no. patients:** 420 consecutive CP patients **Recruiting Phase:** 1997 - 2007 **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:** The risk of pancreatic can-cer is markedly increased in CP patients in China compared with the general population, especially in older patients.		
Outcome Measures/results	**Primary** **Secondary**	**Results:** it has been clearly demonstrated that CP patients in China have a high risk of pancreatic cancer, regardless of their status of smoking or alcohol consumption. About 1% of our CP patients developed pancreatic cancer and the overall 10-year cumulative frequency of pancreatic cancer in these patients was 1.6%.	

Literatursammlung:

AG7-AP: Indikation, Zeitpunkt und Therapieverfahren bei infizierter Nekrose_Literatursuche

Inhalt: *55 Literaturstellen*

Literaturstelle	Evidenzlevel	Studientyp
Abdelhafez, Mohamed 2013	4	yes
Abu Dayyeh, Barham K 2018	3	Cohort study
Adam, U 2001	4	no,
Ahmed, Ola 2017	2	observational study
Attam, Rajeev 2014	3	Observational study, retrospective, small number of patients
Bakker, Olaf J 2012	2	prospective multicenter RCT
Bang, J Y 2014	3	observational study
Bapaye, Amol 2017	3	retrospective observational study of two different cohorts
Bassi, C 1998	2	RCT unblinded
Bausch, Dirk 2012	3	retrospective observational study
Berzin, Tyler M 2007	3	observational study, single-center retrospective
Besselink, M G 2009	3	cohort study
Besselink, Marc G H 2007	1	systematic review
Cacopardo, Bruno 2013	3	observational cohort study
Cardoso, Filipe S 2015	3	single-center retrospective cohort study
Chandrasekaran, Prasanna 2015	3	observational cohort study
Chen, Hong-Ze 2017	3	Retrospective analyses of consecutive patients with sever a ute pancreatitis.
Dellinger, E Patchen 2007	2	RCT
Dong, Xin 2008	3	retrospective cohort study
Finkelmeier, Fabian 2017	3	No, retrospective analysis
García-Barrasa, A 2009	2	RCT
Gardner, Timothy B 2009	3	Retrospective, comparative study
Garg, P K 2001	3	prospective cohort study. Descriptive
Garg, Pramod Kumar 2010	3	retrospective comparative (with prospectively acquiredd atabase) and prospective observational studies

Gluck, Michael 2010	3	retrospective cohort study comparing two appraoches
Gomatos, Ilias P 2016	3	cohort study
González-López, Jaime 2016	5	heoretical framework
Gornals, Joan B 2016	4	case series
Isenmann, Rainer 2004	2	RCT
Islim, Filiz 2014	3	Unclear
Ji, Liang 2018	3	retrospective cohort study
Kochhar, Rakesh 2009	3	onbservational cohort study
Kumar, Nitin 2014	3	matched cohort study
Lang, Gabriel D 2018	3	retrospective cohort study
Li, Ang 2016	3	prospective cohort study
Manes, Gianpiero 2003	2	RCT
Maraví-Poma, Enrique 2003	2	RCT unblinded
Mier, J 1997	2	RCT
Mukai, Shuntaro 2015	3	cohort study
Pascual, Isabel 2013	4	retrospective cohort study/ case series
Paye, F 1998	2	no
Rana, Surinder S 2017	4	retrospective case series
Rana, Surinder Singh 2013	4	retrospective case series
Rau, B 1998	2	prospective cohort study
Rau, Bettina M 2006	3	cohort study
Rodriguez, J Ruben 2008	3	retrospective cohort sudy
Sahar, Nadav 2018	4	retrospective case series
Sarathi Patra, P 2014	3	prospective cohort study
Schwender, Brian J 2015	3	retrospective cohort study
Senn, Laurence 2009	3	prospective cohort study
Sharaiha, Reem Z 2016	4	retrospective case series
Sharma, V K 2001	1	metaanalysis
Stiles, G M 1990	3	chart review
van Baal, Mark C 2014	1	post hoc analysis from a prospective, multicenter database
van Brunschot, Sandra 2018	1	Systemqatic metaanalysis

OXFORD (2011) Appraisal Sheet: Systematic Reviews: *3 Bewertung(en)*

Besselink, Marc G H et al. Timing of surgical intervention in necrotizing pancreatitis. Arch Surg. 142. 1194-201. 2007

Evidence level/Study Types	P - I - C	Outcomes/Results	Literature References
Evidence level: 1 **Study type:** systematic review **Databases:** medline **Search period:** 1996 to 2006 **Inclusion Criteria:** studies that had at least 25 consecutive patients who under-went surgical intervention for ANP were included. Further-more, the studies had to contain data on time of surgical in-tervention for the entire study population and mortality; **Exclusion Criteria:**	**Population:** 1136 **Intervention:** Surgery before or after 30 days **Comparison:**	**Primary:** Mortality related to time of surgery **Secondary:** **Results:** Negative correlation between mortality and time of surgery **Author's Conclusion:** necrosec-tomy for documented or suspected infected ANP per-formed after 29 days is associated with lower mortality.However, an increase in fungal colonization and resis-tant microorganisms is to be expected owing to the in-creased use of antibiotics. Whenever possible, surgical intervention should bepostponed until day 30	

Methodical Notes

Funding Sources: none

COI: none

Study Quality: unclear

Heterogeneity: Unclear

Publication Bias: avoided because only studies with more than 25 patients were included

Notes:

Sharma, V K et al. Prophylactic antibiotic administration reduces sepsis and mortality in acute necrotizing pancreatitis: a meta-analysis. Pancreas. 22. 28-31. 2001

Evidence level/Study Types	P - I - C	Outcomes/Results	Literature References
Evidence level: 1 **Study type:** metaanalysis **Databases:** **Search period:** January 1966 until January 2000 **Inclusion Criteria:** 3 RCTs were included Keywords for the searchwerepancreatitis; pancreatitis, acute necrotizing; andtext wordacute pancreatitiscombined withantibiotics(keyword and text word). We searched for publicationsin abstract form using the article references and officialproceedings of	**Intervention:** Antibiotics **Comparison:** no antibiosis	**Primary:** complications, superinfection **Secondary:** **Results:** Antibiotic prophylaxis sig-nificantly reduced sepsis by 21.1% (NNT5) and mortalityby 12.3% (NNT8) compared with no prophylaxis. Therewas also a nonsignificant trend toward a decrease in local pan-creatic infections (ARR12%; NNT8). **Author's Conclusion:** All patients with ANP should be given prophylaxis with anantibiotic with proven efficacy in	

all major North American and Europeanmeetings. **Exclusion Criteria:**		necrotic pancreatic tissue.	

Methodical Notes

Funding Sources: none

COI: none

Study Quality:

Heterogeneity:

Publication Bias:

Notes:
older studies

van Brunschot, Sandra et al. Minimally invasive and endoscopic versus open necrosectomy for necrotising pancreatitis: a pooled analysis of individual data for 1980 patients. Gut. 67. 697-706. 2018

Evidence level/Study Types	P - I - C	Outcomes/Results	Literature References
Evidence level: 1 **Study type:** Systemqatic metaanalysis **Databases:** patients undergoing pancreatic necrosectomy in 51 hospitals who were included in 15 cohorts from specialist pancreatic centres in the USA and Canada (n=4), UK (n=4), Germany (n=2), Hungary (n=2), The Neth-erlands (n=1), India (n=1) and Brazil (n=1). **Search period:** **Inclusion Criteria:** Patients undergoing necrosectomy **Exclusion Criteria:**	**Population:** original study data from patients undergoing pancreatic necrosectomy in 51 hospitals who were included in 15 cohorts from specialist pancreatic centres in the USA and Canada (n=4), UK (n=4), Germany (n=2), Hungary (n=2), The Neth-erlands (n=1), India (n=1) and Brazil (n=1). The cohorts were identified by a predefined systematic literature search. 1980 patients who underwent pancreatic necrosec-tomy; a total of 1167 patients underwent open necrosectomy, 467 patients underwent minimally invasive surgical necrosec-tomy and 346 patients underwent endoscopic necrosectomy. **Intervention:** endoscopy vs. minimal invasive surgery vs open necrosectomy **Comparison:**	**Primary:** multivariable logistic regression analysis to evaluate the association between different methods of necrosectomy and death. **Secondary:** severity of pancreatitis and death **Results:** there was a lower risk of death for minimally invasive surgical necrosectomy (Or, 0.53; 95%ci0.34 to 0.84; p=0.006) and endoscopic necrosectomy (Or, 0.20; 95%ci0.06 to 0.63; p=0.006). after propensity score matching with risk stratification, minimally invasive surgical necrosectomy remained associated with a lower risk of death than open necrosectomy in the very high-risk group (42/111 vs 59/111; risk ratio, 0.70; 95% ci0.52 to 0.95; p=0.02). endoscopic necrosectomy was associated with a lower risk of death than open necrosectomy in the high-risk group (3/40 vs 12/40; risk ratio, 0.27; 95%ci0.08 to 0.88; p=0.03) and in the very high-risk group (12/57 vs 28/57; risk ratio, 0.43; 95%ci0.24 to 0.77; p=0.005). **Author's Conclusion:** in high-risk patients with necrotising pancreatitis, minimally invasive surgical and endoscopic necrosectomy are associated with reduced death rates compared with open necrosectomy.	

Methodical Notes

Funding Sources: none **COI:** none **Study Quality:** good **Heterogeneity:** poor **Publication Bias:** none **Notes:**

OXFORD (2011) Appraisal Sheet: RCT: *8 Bewertung(en)*

Bakker, Olaf J et al. Endoscopic transgastric vs surgical necrosectomy for infected necrotizing pancreatitis: a randomized trial. JAMA. 307. 1053-61. 2012

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 2 **Study type:** prospective multicenter RCT **Number of Patient:** 22 **Recruitung Phase:** **Inclusion Criteria:** Adult patients needing necrosectomy forsuspected or confirmed infected necro-tizing pancreatitis who could undergoboth endoscopic or surgical necrosec-tomy, based on computed tomo-graphic (CT) imaging, were eligible forrandomization. **Exclusion Criteria:** previous surgical or endo-scopic necrosectomy, previous explor-atory laparotomy, pancreatitis as aconsequence of abdominal surgery, aflare-up of chronic pancreatitis, abdomi-nal compartment syndrome, perfora-tion of a visceral organ, or bleeding asindication for intervention.	**Intervention:** endoscopic transgastric necrosectomy **Comparison:** video-assisted retro-peritoneal debridement	**Primary:** IL-6 level **Secondary:** composite end point of major complications (new-onset multiple organ failure, intra-abdominal bleeding, enterocutaneous fistula, orpancreatic fistula) or death **Results:** Endoscopic transgastric necrosectomy reduced the postprocedural IL-6 levels com-pared with surgical necrosectomy (P=.004). The composite clinical end point occurredless often after endoscopic necrosectomy (20% vs 80%; risk difference [RD], 0.60; 95%CI, 0.16-0.80;P=.03). Endoscopic necrosectomy did not cause new-onset multiple or-gan failure (0% vs 50%, RD, 0.50; 95% CI, 0.12-0.76;P=.03) and reduced the numberof pancreatic fistulas (10% vs 70%; RD, 0.60; 95% CI, 0.17-0.81;P=.02). **Author's Conclusion:** endoscopic necrosec-tomy reduced the proinflammatory response as well as the composite clinical end pointcompared with surgical necrosectom

Methodical Notes

Funding Sources: none **COI:** none **Randomization:** 1:1 **Blinding:** no **Dropout Rate/ITT-Analysis:** 2/22 **Notes:**

Inflammatory response (IL-6 level) perhaps not an ideal marker

Bassi, C et al. Controlled clinical trial of pefloxacin versus imipenem in severe acute pancreatitis. Gastroenterology. 115. 1513-7. 1998

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 2 **Study type:** RCT unblinded **Number of Patient:** 60 **Recruitung Phase:** **Inclusion Criteria:** patients with severe acute pancreatitis with necrosisaffecting at least 50% of the pancreas **Exclusion Criteria:** unclear	**Intervention:** Perfloxacin **Comparison:** Imipenem	**Primary:** differences in incidence of pancreatic and extrapancreatic infections **Secondary:** need for surgery, lengthof hospital stay, and mortality. **Results:** Ten of 30 patients in group perfloxacin developed infected necrosis (34%), compared with 3 of 30 patients in group imipenem(10.0%); the difference in favor of imipenem was statistically significant (P50.034). **Author's Conclusion:** pefloxacin is inferior to imipenem in the prevention of infec-tions associated with severe pancreatitis.

Methodical Notes

Funding Sources: None

COI: None

Randomization: 1:1

Blinding: no

Dropout Rate/ITT-Analysis: no

Notes:
Ten of 30 patients in group perfloxacin developed infectednecrosis (34%), compared with 3 of 30 patients in group imipenem(10.0%); the difference in favor of imipenem was statistically significant (P50.034).

Dellinger, E Patchen et al. Early antibiotic treatment for severe acute necrotizing pancreatitis: a randomized, double-blind, placebo-controlled study. Ann. Surg. 245. 674-83. 2007

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 2 **Study type:** RCT **Number of Patient:** 100 **Recruitung Phase:** **Inclusion Criteria:** clinically severe,confirmed necrotizing pancreatitis: 50 received meropenem and 50received placebo. **Exclusion Criteria:**	**Intervention:** meropenem **Comparison:** placebo	**Primary:** develop-ment of pancreatic or peripancreatic infection within 42 days fol-lowing randomization **Secondary:** time between onset ofpancreatitis and the development of pancreatic or peripancreaticinfection; all-cause mortality; requirement for surgical intervention;development of nonpancreatic infections within 42 days followingrandomization. **Results:** Pancreatic or peripancreatic infections developed in 18%(9 of 50) of patients in the meropenem group compared with 12% (6of 50) in the placebo group (P0.401). Overall mortality rate was20% (10 of 50) in the meropenem group and 18% (9 of 50) in theplacebo group (P0.799). Surgical intervention was required in26% (13 of 50) and 20% (10 of 50) of the meropenem and placebogroups, respectively (P0.476).

		Author's Conclusion: This study demonstrated no statistically significantdifference between the treatment groups for pancreatic or peripan-creatic infection, mortality, or requirement for surgical intervention,and did not support early prophylactic antimicrobial use in patientswith severe acute necrotizing pancreatitis.

Methodical Notes

Funding Sources: None

COI: None

Randomization: 1:1

Blinding: Yes

Dropout Rate/ITT-Analysis: yes

Notes:
Study not related to the Questions for AG4-AP.
Assessment of Quality and Level of evidence not applicable

García-Barrasa, A et al. A double-blind, placebo-controlled trial of ciprofloxacin prophylaxis in patients with acute necrotizing pancreatitis. J. Gastrointest. Surg. 13. 768-74. 2009

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 2 **Study type:** RCT **Number of Patient:** Forty-six patients **Recruitung Phase:** May 1999 and December 2003 **Inclusion Criteria:** acute necrotiz-ing pancreatitis **Exclusion Criteria:** prior antibiotics, no evidence of necrosis initially	**Intervention:** cirpo **Comparison:** placebo	**Primary:** whether prophylaxis with intravenous ciprofloxacin couldreduce the incidence of infected pancreatic necrosis. **Secondary:** mortality rate;on the extrapancreatic infections; on the surgical treatment,its timing and the re-operation rate; on the development oforgan failure2and on the in-hospital and ICU length of stay **Results:** Comparing the 22 with intravenous ciprofloxacin and 19 with placebo, infected pancreatic necrosis was detected in36% and 42% respectively (p=0.7). The mortality rate was 18% and 11%, respectively (p=0.6). No significant differencesbetween both treatment groups were observed with respect to variables such as: non-pancreatic infections, surgicaltreatment, timing and the re-operation rate, organ failure, length of hospital and ICU stays. **Author's Conclusion:** The prophylactic use of ciprofloxacin in patients with severe necrotizing pancreatitis did not significantlyreduce the risk of developing pancreatic infection or decrease the mortality rate.

Methodical Notes

Funding Sources: none

COI: none

Randomization: 1:1

Blinding: yes

Dropout Rate/ITT-Analysis: no

Notes:

Isenmann, Rainer et al. Prophylactic antibiotic treatment in patients with predicted severe acute pancreatitis: a placebo-controlled, double-blind trial. Gastroenterology. 126. 997-1004. 2004

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 2 **Study type:** RCT **Number of Patient:** 190 **Recruitung Phase:** January1999 and June 2002 **Inclusion Criteria:** AP undergoing surgery intraoperative smears, follow-up **Exclusion Criteria:**	**Intervention:** Metronidazol or cirpofloxicin **Comparison:** placebo	**Primary:** to demonstrate that prophy-lactic intravenous ciprofloxacin/metronidazole is efficacious inreducing the incidence of infected pancreatic necrosis (primaryend point). Infected pancreatic necrosis was defined as thepresence of bacteria in intraoperative smears taken from thepancreas or assumed if computed tomography-guided or ul-trasound-guided,fine-needle aspiration from necrotic area re-vealed bacterial infection. **Secondary:** death, extrapancre-atic infection, surgical treatment for necrotizing pancreatitis,duration of stay in the intensive care unit, and hospitalizationas well as systemic complications of the disease. **Results:** Fifty-eight patients received CIP/MET and 56patients PLA. Twenty-eight percent in the CIP/METgroup required open antibiotic treatment vs. 46% withPLA. Twelve percent of the CIP/MET group developedinfected pancreatic necrosis compared with 9% of thePLA group (P0.585). Mortality was 5% in theCIP/MET and 7% in the PLA group. In 76 patients withpancreatic necrosis on contrast-enhanced CT scan, nodifferences in the rate of infected pancreatic necrosis,systemic complications, or mortality were observed. **Author's Conclusion:** This study detected no benefit of antibi-otic prophylaxis with respect to the risk of developinginfected pancreatic necrosis.

Methodical Notes

Funding Sources: None

COI: None

Randomization: yes

Blinding: yes

Dropout Rate/ITT-Analysis: yes

Notes:

Manes, Gianpiero et al. Prophylaxis with meropenem of septic complications in acute pancreatitis: a randomized, controlled trial versus imipenem. Pancreas. 27. e79-83. 2003

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 2 **Study type:** RCT **Number of Patient:** 176 **Recruitung Phase:** From January 1996 to December 2001 **Inclusion Criteria:** necrotizing pancreatitis **Exclusion Criteria:** Referred patients,immunocompromised patients, and	**Intervention:** Meropenem to avoid septic complication **Comparison:** Imipenem	**Primary:** avoidance of MOV, bacterial infection **Secondary:** **Results:** No difference was observed between patients treatedwith meropenem and those treated with imipenem in terms of inci-dence of pancreatic infection (11.4% versus 13.6%) and extrapancre-atic infections (21.6% versus 23.9%) and clinical outcome. **Author's Conclusion:** Mero-penem is as effective as imipenem in preventing septic complicationsof patients with severe acute pancreatitis.

patients with underlyingchronic pancreatitis were excluded from the study		

Methodical Notes

Funding Sources: none

COI: none

Randomization: 1:1

Blinding: no

Dropout Rate/ITT-Analysis: no

Notes:

Maraví-Poma, Enrique et al. Early antibiotic treatment (prophylaxis) of septic complications in severe acute necrotizing pancreatitis: a prospective, randomized, multicenter study comparing two regimens with imipenem-cilastatin. Intensive Care Med. 29. 1974-80. 2003

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 2 **Study type:** RCT unblinded **Number of Patient:** 92 **Recruitung Phase:** **Inclusion Criteria:** severe ANP (CT severity index high-er than 4) were considered for the study. **Exclusion Criteria:** documented hypersensitivity to imipenem/cilastatin or to ra-diological contrast medium, gravidity, chronic renal insufficiency,and antibiotic therapy previous to the admission to the ICU. More-over, patients in whom the antibiotic prophylaxis could not bestarted within the first 96 h of disease were also excluded.	**Intervention:** Imipenem for 14 days **Comparison:** at least for 14 days and as long as any major system-ic complication of the disease was present	**Primary:** Local and systemic complications of acute pancreatitis **Secondary:** **Results:** The incidence of in-fected pancreatic necrosis, pancreaticabscess, and extrapancreatic infectionswas 11%, 17%, and 28% in group 1and 17.4%, 13%, and 35% in group 2(n.s.). Pancreatic or extrapancreatic in-fection byCandida albicansoccurredin 7% and 22% of patients. Global mortality was 18.5% (10.9% secondary to septic complications), without differences between groups. **Author's Conclusion:** Compared to a 14-day imipenem pro-phylaxis, a longer antibiotic adminis-tration in patients with ANP is not associated with a reduction in the incidence of septic complications ofthe disease.

Methodical Notes

Funding Sources: none

COI:

Randomization: 1:1

Blinding: no

Dropout Rate/ITT-Analysis: no

Notes:

Mier, J et al. Early versus late necrosectomy in severe necrotizing pancreatitis. Am. J. Surg. 173. 71-5. 1997

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 2 **Study type:** RCT **Number of Patient:** 150 **Recruitung Phase:** 20 months **Inclusion Criteria:** high Ranson's score and/or extensive parenchymal necro- sis demonstrated by CT. **Exclusion Criteria:**	**Intervention:** early necrosectomy **Comparison:** necrosectomy > 12 days	**Primary:** mortality **Secondary:** **Results:** mortality rate (56% versus 27%) **Author's Conclusion:** early intensive conservative treatment with late necrosectomy for selected cases is the current rationale approach for SNP
Methodical Notes		
Funding Sources: **COI:** **Randomization:** **Blinding:** **Dropout Rate/ITT-Analysis:** **Notes:**		

OXFORD (2011) Appraisal Sheet: Diagnostic Studies: *9 Bewertung(en)*

Abdelhafez, Mohamed et al. Transluminal retroperitoneal endoscopic necrosectomy with the use of hydrogen peroxide and without external irrigation: a novel approach for the treatment of walled-off pancreatic necrosis. Surg Endosc. 27. 3911-20. 2013		
Evidence level/Study Types	**Population**	**Outcomes/Results**
Evidence level: 4 **Study type:** yes	**Number of patients / samples:** case series **Reference standard:** No **Validation:** No **Blinding:** No **Inclusion of clinical information:** Yes **Dealing with ambiguous clinical findings:** Yes	**Results:** H2O2 feasible **Author conclusions:** H2=2 promising approach
Methodical Notes		
Funding Sources: None **COI:** None		

Notes:

Adam, U et al. The penetration of ciprofloxacin into human pancreatic and peripancreatic necroses in acute necrotizing pancreatitis. Infection. 29. 326-31. 2001

Evidence level/Study Types	Population	Outcomes/Results
Evidence level: 4 **Study type:** no,	**Number of patients / samples:** 14 patients **Reference standard:** No **Validation:** No **Blinding:** No **Inclusion of clinical information:** Yes **Dealing with ambiguous clinical findings:** Yes	**Results:** Ciprofloxacin penetrates in necrotic collections **Author conclusions:** CIP may be useful in preventing infection

Methodical Notes

Funding Sources: none

COI: none

Notes: few patients, no comparison

Cardoso, Filipe S et al. C-reactive protein may influence decisively the prescription of prophylactic antibiotics in acute pancreatitis: a population-based cohort study. Pancreas. 44. 404-8. 2015

Evidence level/Study Types	Population	Outcomes/Results
Evidence level: 3 **Study type:** single-center retrospective cohort study	**Number of patients / samples:** 299 **Reference standard:** no **Validation:** no **Blinding:** no **Inclusion of clinical information:** na **Dealing with ambiguous clinical findings:** na	**Results:** patients with a CRP at 48 hours after hospital ad-mission level greater than or equal to 150 mg/L had a significantly higher likelihood of receiving prophylactic antibiotics. However, prophylactic antibiotics did not improve in-hospital mortality in AP. **Author conclusions:** Clinicians may need better tools to supportthe decision to prescribe prophylactic antibiotics in acute pancreatitis

Methodical Notes

Funding Sources: none

COI: none

Notes:

Finkelmeier, Fabian et al. Predictive Value of Computed Tomography Scans and Clinical Findings for the Need of Endoscopic Necrosectomy in Walled-off Necrosis From Pancreatitis. Pancreas. 46. 1039-1045. 2017

Evidence level/Study Types	Population	Outcomes/Results
Evidence level: 3 **Study type:** No, retrospective analysis	**Number of patients / samples:** Sixty-five patients were included, **Reference standard:** No **Validation:** No **Blinding:** No **Inclusion of clinical information:** Yes **Dealing with ambiguous clinical findings:** Yes	**Results:** Logistic regression revealeddiabetes as a risk factor for WON. Computed tomography scans revealed4.62% (n = 3) patients as false positive and 24.6% (n = 16) as false negativefindings for WON. Reduced perfusion and detection of solid findings wereindependent risk factors for WON **Author conclusions:** Computed tomography scans are of low diagnosticyield when needed to predict treatment of patients with pancreatic cysts.Reduced pancreatic perfusion and solid findings seem to be a risk factorfor WON, whereas patients with diabetes seem to be at higher risk ofdeveloping WON

Methodical Notes

Funding Sources: none

COI: none

Notes:

Islim, Filiz et al. Non-invasive detection of infection in acute pancreatic and acute necrotic collections with diffusion-weighted magnetic resonance imaging: preliminary findings. Abdom Imaging. 39. 472-81. 2014

Evidence level/Study Types	Population	Outcomes/Results
Evidence level: 3 **Study type:** Unclear	**Number of patients / samples:** 20/21 **Reference standard:** Clinical follow-up FNP **Validation:** Yes **Blinding:** Yes! **Inclusion of clinical information:** No	**Results:** For detection of infected fluid collections, CT was determined to have a sensitivity of 60.0%(6/10), a specificity of 100.0%(11/11), an accuracy of 80.9%(17/21), a positive predictivevalue of 100.0%(6/6), and a negative predictive value of73.3% (11/15). DW-MRI was calculated to have a sensitivity of 100.0%(10/10), a specificity of 90.9%(10/11), anaccuracy of 95.2%(20/21), a positive predictive value of90.9%(10/11), and a negative predictive value of 100.0%(10/10) **Author conclusions:** DW-MRI is a safe andvaluable non-invasive technique with which to distin-guish infected from non-infected collections in patientswith AP.

	Dealing with ambiguous clinical findings: Yes	

Methodical Notes

Funding Sources: None

COI: None

Notes: low numbers but good and valid study

Paye, F et al. Percutaneous aspiration for bacteriological studies in patients with necrotizing pancreatitis. Br J Surg. 85. 755-9. 1998

Evidence level/Study Types	Population	Outcomes/Results
Evidence level: 2 **Study type:** no	**Number of patients / samples:** 17 **Reference standard:** no **Validation:** no **Blinding:** no **Inclusion of clinical information:** yes **Dealing with ambiguous clinical findings:** yes	**Results:** Secondary infection of necrosis was observed in two patients of nine who had only fine-needleaspiration cytology of the collection, and in seven of eight it was drained percutaneously (P0·01).Only one patient drained percutaneously recovered without surgery. Surgical drainage was requiredin 12 patients. The hospital mortality rate was 29 per cent and was not significantly affected by thebacteriological status of necrosis. **Author conclusions:** Percutaneous drainage of sterile collections predisposed to secondary infection of thenecrosis and did not cure the patients. A first sterile percutaneous aspiration did not predict afavourable course and surgery frequently remains necessary.

Methodical Notes

Funding Sources:

COI:

Notes: Study israther old. low number of patients

Rau, B et al. Role of ultrasonographically guided fine-needle aspiration cytology in the diagnosis of infected pancreatic necrosis. Br J Surg. 85. 179-84. 1998

Evidence level/Study Types	Population	Outcomes/Results
Evidence level: 2 **Study type:**	**Number of patients / samples:** 98/193	**Results:** An overall sensitivity of 88 percent and a specificity of 90 per cent was obtained. No difference was found in biochemical andclinical parameters indicating systemic inflammatory response syndrome before each FNACbetween patients with proven sterile or infected necrosis.

prospective cohort study	**Reference standard:** FNA **Validation:** surgical smear **Blinding:** **Inclusion of clinical information:** yes **Dealing with ambiguous clinical findings:** yes	**Author conclusions:** Ultrasonographically guided FNAC is a fast and reliable technique for the diagnosis ofinfected necrosis. As complication rates are very low, the procedure can be repeated at shortintervals to improve the diagnostic accuracy. Ultrasonographically guided FNAC is recommendedfor all patients with necrotizing pancreatitis in whom systemic inflammatory response syndromepersists beyond the first week after onset of symptoms.
Methodical Notes		
Funding Sources: **COI:** **Notes:**		

Stiles, G M et al. Fine needle aspiration of pancreatic fluid collections. Am Surg. 56. 764-8. 1990

Evidence level/Study Types	Population	Outcomes/Results
Evidence level: 3 **Study type:** chart review	**Number of patients / samples:** 35 patients 50 samples **Reference standard:** clinical outcome **Validation:** No **Blinding:** No **Inclusion of clinical information:** yes **Dealing with ambiguous clinical findings:** yes	**Results:** **Author conclusions:** Better outcome of pancreatitis if asporate was sterile
Methodical Notes		
Funding Sources: no **COI:** no **Notes:**		

van Baal, Mark C et al. The role of routine fine-needle aspiration in the diagnosis of infected necrotizing pancreatitis. Surgery. 155. 442-8. 2014

Evidence level/Study Types	Population	Outcomes/Results

Evidence level: 1 **Study type:** post hoc analysis from a prospective, multicenter database	**Number of patients / samples:** 208 consecutive patients **Reference standard:** FNP **Validation:** CT, clinical **Blinding:** No **Inclusion of clinical information:** yes **Dealing with ambiguous clinical findings:** Yes	**Results:** nfection was confirmed in80% of 92 patients of the clinical group, in 94% of 88 patients of the imaging group, and in 86%of 28 patients of the FNA group (P= .07). Mortality was 19% and was not different between groups(P= .39). **Author conclusions:** INP can generally be diagnosed based on clinical or imaging signs of infection. FNA may be useful in patients with unclear clinical signs and no imaging signs of INP.
Methodical Notes		
Funding Sources: None **COI:** None **Notes:** review of well-performed cohort studies		

OXFORD (2011) Appraisal Sheet: Prognostic Studies: *35 Bewertung(en)*

Abu Dayyeh, Barham K et al. Large-caliber metal stents versus plastic stents for the management of pancreatic walled-off necrosis. Gastrointest. Endosc. 87. 141-149. 2018		
Population	**Intervention**	**Outcomes/Results**
Evidence level: 3 **Study type:** Cohort study **Number of Patient:** 94 **Recruitung Phase:** **Inclusion Criteria:** WON **Exclusion Criteria:**	**Intervention:** LAMS **Comparison:** Plastic stents	**Primary:** WON resolution **Secondary:** **Results:** WON Resolution significantly faster with Metall stents **Author's Conclusion:** Metallstents better
Methodical Notes		
Funding Sources: None **COI:** None **Randomization:** None **Blinding:** None **Dropout Rate/ITT-Analysis:** **Notes:**		

Ahmed, Ola et al. Selective Necrosectomy for Infected Pancreatic Necrosis. Dig Surg. 34. 180-185. 2017

Population	Intervention	Outcomes/Results
Evidence level: 2 **Study type:** observational study **Number of Patient:** 38 patients with percutanous radilogically placed drainage **Recruitung Phase:** 6 years (2008-2014) **Inclusion Criteria:** necrotic collection **Exclusion Criteria:** unclear	**Intervention:** external drainage (up to six drains per patient) **Comparison:** none	**Primary:** 60% did not require further intervention (surgery) **Secondary:** 5% mortality, **Results:** 60% did not require further intervention (surgery) **Author's Conclusion:** radiological-guided drainage of infected pancreatic collections can, in most cases, prove curative and, if not, facilitates delayed surgical intervention with improved outcomes.

Methodical Notes

Funding Sources: none

COI: none

Randomization: no

Blinding: no

Dropout Rate/ITT-Analysis: no

Notes: too few patients, no comparison

Attam, Rajeev et al. Endoscopic transluminal drainage and necrosectomy by using a novel, through-the-scope, fully covered, large-bore esophageal metal stent: preliminary experience in 10 patients. Gastrointest. Endosc. 80. 312-8. 2014

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** Observational study, retrospective, small number of patients **Number of Patient:** 10 **Recruitung Phase:** ? **Inclusion Criteria:** WON larger than 10 cm **Exclusion Criteria:** ûnclear	**Intervention:** Initial cystenterostomy was performed by using EUS, and in the same session, a TTS (1860 mm), fully covered esophageal stent was placed to create a wide-borefistula into the cavity. In 1 or more latersessions, the stent was removed, and endoscopic necrosectomy was performed as needed **Comparison:** None	**Primary:** cyst resolution **Secondary:** side effects **Results:** Resolution of WON was achieved in 9 of the 10 patients (90%) after a me-dian of 3 endoscopic sessions **Author's Conclusion:** Endoscopic therapy using a large-bore TTS, fully covered esophageal stent is feasible for use in thetreatment of large WON.

Methodical Notes

Funding Sources: none

COI: none

Randomization: no

Blinding: no

Dropout Rate/ITT-Analysis: no

Notes:

Bang, J Y et al. Outcomes after implementing a tailored endoscopic step-up approach to walled-off necrosis in acute pancreatitis. Br J Surg. 101. 1729-38. 2014

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** observational study **Number of Patient:** 100 patients **Recruitung Phase:** In the initial period (2004–2009) symptomatic patients with walled-off necrosis underwentconventional single transmural drainage with placement of two stents and a nasocystic catheter, followedby direct endoscopic necrosectomy, if required. In the later period (2010–2013) an algorithmic approachwas adopted based on size and extent of the walled-off necrosis and stepwise response to intervention. **Inclusion Criteria:** WON woith indication to treatment **Exclusion Criteria:** Excluded from the study were patients with walled-offnecrosis located more than 15 mm from the gastrointestinallumen, coagulopathy or follow-up of less than 60 days.	**Intervention:** two plastic stents plus nasocystic drainage **Comparison:** drainage fpr cysts <12mm, percutaneous for cysts >12 cm, endoscopic necrosectomy for insufficient response, followed by surgery if endoscopic treatment failed.	**Primary:** treatment success, defined as a reduction in walled-off necrosis size to 2 cm orless on CT after 8 weeks. **Secondary:** **Results:** he treatment success rate was signifi-cantly higher in the algorithmic treatment group: 48 (91per cent)versus28 (60 per cent) (P<0·001) **Author's Conclusion:** An algorithmic approach to pancreatic and peripancreatic walled-off necrosis, based on thecollection size, location and stepwise response to intervention, resulted in an improved rate of treatmentsuccess compared with conventional endoscopic management

Methodical Notes

Funding Sources: none

COI: none

Randomization: no

Blinding: no

Dropout Rate/ITT-Analysis: no

Notes:

Bapaye, Amol et al. Endoscopic ultrasonography-guided transmural drainage of walled-off pancreatic necrosis: Comparison between a specially designed fully covered bi-flanged metal stent and multiple plastic stents. Dig Endosc. 29. 104-110. 2017

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** retrospective observational study of two different cohorts **Number of Patient:** 133 **Recruitung Phase:** 10 years (2005–2014) **Inclusion Criteria:** EUS-guided WON draina **Exclusion Criteria:**	**Intervention:** Plastic stents for drainage **Comparison:** metallstent for drainage	**Primary:** clinical success, adverse events and mortality **Secondary:** requirement for direct endoscopic necrosectomy, mean sessions, need for salvage surgery and hospital stay. **Results:** MPS were placed in 61 and BFMS in 72 patients.Patients undergoing BFMS drainage required fewer DEN sessions(mean 1.46vs2.74,P<0.05), had fewer adverse events (5.6%vs36.1%,P<0.05), needed salvage surgery less often (2.7%vs26.2%,P<0.05), and had significantly shorter hospital stay (4.1vs8days,P<0.05) compared to those undergoing MPS drainage.There was no difference in DEN requirement (P= 0.217) andmortality (P= 0.5) in both groups. Overall clinical success withBFMS was superior to MPS (94%vs73.7%,P<0.05). **Author's Conclusion:** METall stents appear to be superior to multiple plastic stents for EUS-guided WON drainage in terms of clinical success, number of DEN sessions, adverse events, need for salvage surgery and hospital stay.

Methodical Notes
Funding Sources: no **COI:** no **Randomization:** no **Blinding:** no **Dropout Rate/ITT-Analysis:** no **Notes:** retrospective, small sample size

Bausch, Dirk et al. Minimally invasive operations for acute necrotizing pancreatitis: comparison of minimally invasive retroperitoneal necrosectomy with endoscopic transgastric necrosectomy. Surgery. 152. S128-34. 2012

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** retrospective observational study **Number of Patient:** 62 **Recruitung Phase:** from 1998 to 2010 **Inclusion Criteria:** acute pancreariris with a need for intervention **Exclusion Criteria:**	**Intervention:** open surgery vs minimal invasice surgery vs endoscopic transgastric approach **Comparison:**	**Primary:** resolution of WON/necrosis **Secondary:** side effects such as life-threatening condition, postoperative pancreatic fistula requiring intervention, necessary emergency operation, or mortality after the first necrosectomy procedure during the course of the disease **Results:** Minimally invasive approach leads to minimal trauma, maintain abdominal compartmentalization, and may avoid open surgery and long hospital stay **Author's Conclusion:** operative procedures should be delayed as long as possible to decrease morbidity and mortality

Methodical Notes
Funding Sources: none **COI:** none **Randomization:** no **Blinding:** no **Dropout Rate/ITT-Analysis:** no **Notes:** retrospective, single center

Berzin, Tyler M et al. Prevalence of primary fungal infections in necrotizing pancreatitis. Pancreatology. 7. 63-6. 2007

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** observational study, single-center retrospective **Number of Patient:** 65 **Recruitung Phase:** 5 years **Inclusion Criteria:** presence of necrotizing pancreatitis **Exclusion Criteria:**	**Intervention:** none **Comparison:** none	**Primary:** Microbiologic data obtained from radiologic and endoscopic pancreatic interventions, and from surgical debridements were reviewed for evidence of bacterial and fungal infection. **Secondary:** **Results:** Among the 64 study patients with necrotizing pancre-atitis, there were no primary pancreatic fungal infections, 7 (11%) secondary fungal infections, and 15 (23%) pan-creatic bacterial infections. **Author's Conclusion:** Limited use and short dura-tion of carbapenem therapy may be factors contributing to the absence of primary fungal infections in our study

Methodical Notes
Funding Sources: no **COI:** no **Randomization:** no **Blinding:** no **Dropout Rate/ITT-Analysis:** no **Notes:**

Besselink, M G et al. Timing and impact of infections in acute pancreatitis. Br J Surg. 96. 267-73. 2009

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** cohort study **Number of Patient:** 731 patients	**Intervention:** none **Comparison:** none	**Primary:** presence and time of onset of bacteraemia, infected(peri)pancreatic necrosis,pneumonia (including ventilatoracquired and that in non-ventilated patients) and persistentorgan failure and death were recorded. **Secondary:**

Recruitung Phase: 2004 – 200 **Inclusion Criteria:** primary episode of acute pancreatitis **Exclusion Criteria:** Patients with pancreatitissubsequent to endoscopic retrograde cholangiopancre-aticography, suspected malignancy of the pancreas orbiliary tree, non-pancreatic infection/sepsis caused by asecond disease, diagnosis of pancreatitis first made at oper-ation, or a medical history of immune deficiency wereexcluded.		**Results:** The initial infection in 173 patients was diagnosed a median of 8 (interquartile range 3 – 20)days after admission (infected necrosis, median day 26; bacteraemia/pneumonia, median day 7). Eightyper cent of 61 patients who died had an infection. In 154 patients with pancreatic parenchymalnecrosis, bacteraemia was associated with increased risk of infected necrosis (65versus37·9percent;P=0·002). In 98 patients with infected necrosis, bacteraemia was associated with higher mortality (40versus16 per cent;P=0·014). In multivariable analysis, persistent organ failure (odds ratio (OR) 18·0),bacteraemia (OR 3·4) and age (OR 1·1) were associated with death. **Author's Conclusion:** Infections occur early in acute pancreatitis, and have a significant impact on mortality,especially bacteraemia. Prophylactic strategies should focus on early intervention.
Methodical Notes		
Funding Sources: **COI:** **Randomization:** **Blinding:** **Dropout Rate/ITT-Analysis:** **Notes:**		

Cacopardo, Bruno et al. Localized and systemic bacterial infections in necrotizing pancreatitis submitted to surgical necrosectomy or percutaneous drainage of necrotic secretions. BMC Surg. 13 Suppl 2. S50. 2013

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** observational cohort study **Number of Patient:** 46 **Recruitung Phase:** (2006-2011 **Inclusion Criteria:** acute necrotizing pancreatitis **Exclusion Criteria:**	**Intervention:** none **Comparison:** none	**Primary:** prevalence and characteristics of pancreatic and systemic infections in patients with necrotizing pancreatitis submitted to surgical procedures during their hospital stay. **Secondary:** impact of infectious complications on patient clinical outcome. **Results:** 74% patients with necrotizing pancreatitis had a localized or systemic infection. Mortality rate was significantly ($p < 0.05$) higher among patients with infection (17%) than subjects withoutinfection (8%). Within the infected group, those subjects with evidence of systemic infection (positive bloodcultures) developed more complications and demonstrated a higher ($p < 0.05$) mortality rate (28%) than thosewho had only a localized infection (10%). **Author's Conclusion:** Infectious complications significantly increase mortality in patients with necrotizing pancreatitis. Inaddition, subjects with systemic infections developed more complications and demonstrated a higher mortalityrate in comparison with those having a localized infection. In our study, the sensitivity pattern of the isolatedmicroorganisms suggests to consider carbapenems as the best option for empirical treatment in patients withnecrotizing pancreatitis who develop a clear-cut evidence of systemic or localized bacterial infection.
Methodical Notes		

Funding Sources: None

COI: nonw

Randomization: no

Blinding: no

Dropout Rate/ITT-Analysis: no

Notes:

Chandrasekaran, Prasanna et al. Prospective comparison of long term outcomes in patients with severe acute pancreatitis managed by operative and non operative measures. Pancreatology. 15. 478-484. 2015

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** observational cohort study **Number of Patient:** 35 patients **Recruitung Phase:** **Inclusion Criteria:** one year of follow up after recovery from attack of acutepancreatitis were evaluated **Exclusion Criteria:** Patients with less than one year follow up after complete re-covery from pancreatitis.2. Patients presenting with pseudocysts.3. Patients with chronic pancreatitis.4. Patients who resumed heavy drinking after recovery.	**Intervention:** no operation (drainage) **Comparison:** operation	**Primary:** Long term conseuences of respective therapy **Secondary:** **Results:** Patients managed non-operativelyhad significantly less exocrine dysfunction in comparison to oper-ated patients. The non-operative group had less endocrine dysfunction and significantly less number of patients with insulin requirement. **Author's Conclusion:** non-operat5ive measure suprior to surgery also in a long term perspective

Methodical Notes

Funding Sources: none

COI: noe

Randomization: no

Blinding: no

Dropout Rate/ITT-Analysis: no

Notes: Long term FU-study

Chen, Hong-Ze et al. Early prediction of infected pancreatic necrosis secondary to necrotizing pancreatitis. Medicine (Baltimore). 96. e7487. 2017

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** Retrospective analyses of consecutive patients with sever a ute	**Intervention:** none **Comparison:** Comparison of clinical parameter as prognostic parameters for those patients among	**Primary:** Prognostic Clinical parameters associated with the presence of infected or non-infected pancreatic necrosis **Secondary:** none defined

pancreatitis. **Number of Patient:** 215 **Recruitung Phase:** 01.2012-08.2016 **Inclusion Criteria:** Consecu- tive adult patients (>18 years) with a first episode of AP who were admitted to the Department of Pancreatic and Biliary Surgery, First Affiliated Hospital of Harbin Medical University from January 2012 to August 2016 were enrolled. **Exclusion Criteria:** Age < 18, pain for more than 48 h before admission, referral patients, known history of acute or chronic pancreatitis, known history of severe chronic illness, any invasive intervention or death within the first 3 days due to severe complications, incomplete data	the 215 that developed infected (n=87) versus non-infected (n=128) pancreatic necrosis. Severity assessment using revised Atalanta classification (RAC). The baseline variables were recorded within 48hours of admission, including demographic data, such as the age, gender, etiology, and body mass index (BMI), and the maximum value of the following clinical data within 48hours: white blood cell (WBC) count, HCT, platelet (PLT) count, BUN, Cr, D-dimer, CRP, PCT, and heart rate. APACHE-II and Imrie scores were evaluated on the second day after admission. Additionally, the modified Marshall scoring system, sequential organ failure assessment (SOFA) score, and modified CTSI at the end of third day were also documented.	**Results:** A total of 215 patients were enrolled in our study. Among them, 87 (40.5%) patients developed IPNs after a median of 13.5 (9.5–23.0) days from admission. Multivariate analysis indicated that the level of hematocrit (HCT) from 40% to 50% (P=.012, odds ratio (OR) = 2.407), HCT over 50% (P < .009, OR = 6.794), blood urea nitrogen (BUN) (P = .040, OR = 1.894), C-reactive protein (CRP) (P=.043, OR=1.837), and procalcitonin (PCT) (P=.002, OR=2.559) were independent risk factors of IPN secondary to NP. The ROC cures revealed that the area under the ROC (AUC) of the maximum level of HCT, BUN, CRP, and PCT within 48hours of admission was 0.687, 0.620, 0.630, and 0.674 respectively. Furthermore, the combination of these 4 individual parameters contributes to a more preferable AUC of 0.789 with a sensitivity of 67.8% and specificity of 77.3%. **Author's Conclusion:** The maximum levels of PCT, CRP, HCT, and BUN within 48hours of admission are independent factors of IPN and their combination might accurately predict the occurrence of IPN secondary to NP.

Methodical Notes

Funding Sources: This study was funded by the National Nature Scientific Foundation of China (Nos 81372613, 81370565, 81470887, 81670583), National High Technology Research and Development Program of China (2014AA020609), and Wei-Han Yu Scientific Foundation of Harbin Medical University.

COI: none

Randomization: none

Blinding: none

Dropout Rate/ITT-Analysis: none

Notes: To assess the association between the clinical parameters within 48 hours of admission and the occurrence of infected pancreatic necrosis (IPN) during the late phase of necrotizing pancreatitis (NP). Retrospective analyses of consecutive patients with sever acute pancreatitis.

Dong, Xin et al. In situ high-volume modified continuous closed and/or open lavage for infected necrotizing pancreatitis. Pancreas. 36. 44-9. 2008

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** retrospective cohort study **Number of Patient:** 53	**Intervention:** continuous closed or open multidrain lavage with >20L/d **Comparison:**	**Primary:** Mortality **Secondary:** complications **Results:** Mortality 17%,

Recruitung Phase: August 1997 to December 2006 **Inclusion Criteria:** infected necrotizing pancreatitis requiring surgical intervention **Exclusion Criteria:**		**Author's Conclusion:** Feasible, better than surgery alone

Methodical Notes

Funding Sources: none

COI: none

Randomization: no

Blinding: no

Dropout Rate/ITT-Analysis: no

Notes:

Gardner, Timothy B et al. A comparison of direct endoscopic necrosectomy with transmural endoscopic drainage for the treatment of walled-off pancreatic necrosis. Gastrointest. Endosc. 69. 1085-94. 2009

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** Retrospective, comparative study **Number of Patient:** 45 **Recruitung Phase:** April 1998 to October2007 **Inclusion Criteria:** WON with indication for treatment **Exclusion Criteria:**	**Intervention:** DIrect endoscopic necrosectomy (DEN) **Comparison:** Endoscopic drainage (one plastic stent)	**Primary:** s resolution of the necrotic cavity without the need foroperative or percutaneous intervention. **Secondary:** **Results:** Successful resolution was accomplished in 88% who underwent direct endoscopic necrosectomy versus 45% who received standard drainage (P!.01), without a change in the total number of procedures. Complications were limited to mild periprocedural bleeding with equivalent rates between groups. **Author's Conclusion:** Direct endoscopic necrosectomy achieves higher rates of resolution, without a concomitant changein the number of endoscopic procedures, complication rate, or time to resolution compared with standard endo-scopic drainage for WOPN. The need for fewer postprocedural inpatient hospital days and a decrease in the rate ofcavity recurrence are also likely benefits of this technique.

Methodical Notes

Funding Sources: none

COI:

Randomization: no

Blinding: no

Dropout Rate/ITT-Analysis: no

Notes: retrospective comparison of twi treatment groups

Garg, P K et al. Incidence, spectrum and antibiotic sensitivity pattern of bacterial infections among patients with acute pancreatitis. J. Gastroenterol. Hepatol. 16. 1055-9. 2001

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** prospective cohort study. Descriptive **Number of Patient:** 169 **Recruitung Phase:** January1997 and June 2000 **Inclusion Criteria:** If a patient developed fever or leukocyto-sis, the following investigations were done: cultures ofblood, urine sputum, bile (in some cases), throat swab,intravenous cannula and urinary catheter tip. Cultureswere repeated in patients with continuing fever until thepresence of infection was established or excluded. Pan-creatic tissue was obtained either by using US-guidedaspiration of pancreatic necrotic material/peripancreaticcollection or obtained during surgery for bacteriologi-cal culture and Gram's stain in patients with suspectedpancreatic infection. **Exclusion Criteria:**	**Intervention:** No **Comparison:** none	**Primary:** presence of bacteria **Secondary:** **Results:** Of the 169 patients, 63 hadinfections at various sites. A total of 80 cultures were positive, and 12 different bacterial isolates werecultured from samples taken from these 63 patients. Polymicrobial infection was seen in 32% of patients.Twenty-four patients had a confirmed pancreatic infection. Blood cultures had a growth of organismsin 19 patients, with evidence of ongoing or worsening pancreatitis, thus raising a strong suspicion ofinfected necrosis in them. The commonest organisms were Escherichia colifrom 20 cultures andPseudomonas aeruginosafrom 18 cultures. The antibiotic sensitivity pattern showed that most bacteriawere sensitive to third generation cephalosporins and quinolones; notably among them were cefotaxime,ceftazidime, and ciprofloxacin. **Author's Conclusion:** Bacterial infections were seen in 37% of patients with acute pancreatitis. The common-est organisms were Pseudomonas aeruginosaand Escherichia coli. Most bacterial isolates were sensitive tothird generation cephalosporins and quinolones.

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes:

Garg, Pramod Kumar et al. Primary conservative treatment results in mortality comparable to surgery in patients with infected pancreatic necrosis. Clin. Gastroenterol. Hepatol. 8. 1089-1094.e2. 2010

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** retrospective comparative (with prospectively acquiredd atabase) and prospective observational studies **Number of Patient:** consecutive patients with acute pancreatitis (n=804)	**Intervention:** conservative treartment (including drainage) **Comparison:** open surgery	**Primary:** The difference in the mortality between the 2 groups of patients with infected pancreatic necrosis was the primary outcome measure. **Secondary:** **Results:** The mortality was compa-rable in group 1 versus group 2 (43% vs 28%;P.22). Duringa period of 10 years, the patients who received primary conser-vative treatment had

Recruitung Phase: time periods during 10 years, ie, 1997–2002(primary surgical treatment) and 2003–2006 (primary conservative treatment). We further evaluated prospectively the strategy of primary conservative treatment for IPN from January 2007 to December 2008. **Inclusion Criteria:** AP **Exclusion Criteria:** Patients with acute exacerbation of chronic pancreati-tis, those admitted with late complications of AP such as pan-creatic pseudocyst, and those with pancreatic malignancy wereexcluded.		significantly higher survival rates thanthose who received surgery (76.9% vs 46.4%;P.005). In theprospective study during 2007–2008, the mortality from in-fected necrosis was 29.6% after primary conservative treatment,confirming the results of the comparative study. **Author's Conclusion:** In treating patients with IPN, a primary conserva-tive strategy resulted in mortality that was comparable withthat after surgery, and 76% of the patients were able toavoid surgery; 54.5% of IPN patients were successfully man-aged with the primary conservative strategy.
Methodical Notes		
Funding Sources: none **COI:** none **Randomization:** no **Blinding:** no **Dropout Rate/ITT-Analysis:** no **Notes:** retrospective comparative (with prospectively acquired database) and prospective observational studies. Percutaneous drainage was regarded as conservative treatment.		

Gluck, Michael et al. Endoscopic and percutaneous drainage of symptomatic walled-off pancreatic necrosis reduces hospital stay and radiographic resources. Clin. Gastroenterol. Hepatol. 8. 1083-8. 2010

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** retrospective cohort study comparing two appraoches **Number of Patient:** 43 **Recruitung Phase:** January 2006 and August 2009 **Inclusion Criteria:** symptomatic WON **Exclusion Criteria:**	**Intervention:** Endscopic PLUS external drainage (CMT) **Comparison:** external drainage (SPD)	**Primary:** outcome (CT-Scans, number of drains, radiation exposure, ...) **Secondary:** **Results:** Patients undergoing CMT had significantly decreased length ofhospitalization (26 vs 55 days,P.0026), duration of externaldrainage (83.9 vs 189 days,P.002), number of computedtomography scans (8.95 vs 14.3,P.002), and drain studies(6.5 vs 13,P.0001). Patients in the SPD arm had morecomplications. **Author's Conclusion:** endoscopic plus external drainage provided a more effective and safer management technique, resulting in shorter hospitalizations and fewer radiologic procedures
Methodical Notes		
Funding Sources: **COI:**		

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes: Endoscopy PLUS drainage

Gomatos, Ilias P et al. Outcomes From Minimal Access Retroperitoneal and Open Pancreatic Necrosectomy in 394 Patients With Necrotizing Pancreatitis. Ann. Surg. 263. 992-1001. 2016

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** cohort study **Number of Patient:** 399 patients **Recruitung Phase:** January 1, 1997 until the December 31, 2013 **Inclusion Criteria:** patients with acute necrotizing pancreatitis who underwent pancreatic necrosectomy during the study period butfive patients were excluded because of incomplete data. **Exclusion Criteria:**	**Intervention:** minimally invasive surgery (MARPN) **Comparison:** open surgery (OPN)	**Primary:** **Secondary:** **Results:** omplications occurred in 174 MARPN patients (63.5%) and 98 (81.7%) OPN patients (P<0.001). OPN was associated with increased postoperative multiorgan failure [42 (35%) vs 56(20.4%),P¼0.001]. The mortality rate was 42 (15.3%) in MARPNs and 28(23.3%) in OPNs (P¼0.064). Both the mortality and the overall complicationrates decreased between 1997–2008 and 2008–2013 [49 (23.8%) vs 21(11.2%)P¼0.001, respectively; and 151 (73.3%) vs 121 (64.4%),P¼0.080, respectively). Increased mortality was independently associatedwith age (P<0.001), preoperative intensive care stay (P¼0.014), andmultiple organ failure (P<0.001); operation before 2008 (P<0.001)and conversion to OPN (P¼0.035). MARPN independently reducedmortality odds risk (odds ratio¼0.27; 95% confidence interval¼0.12–0.57;P<0.001). **Author's Conclusion:** The role of MARPN in reducing compli-cations and deaths within a multimodality approach remains substantial andshould be used initially if feasible.

Methodical Notes

Funding Sources: none

COI: none

Randomization: no

Blinding: no

Dropout Rate/ITT-Analysis: yes

Notes: retrospective analysis of prospectivewly collected data from a surgical institution

González-López, Jaime et al. Theoretical approach to local infusion of antibiotics for infected pancreatic necrosis. Pancreatology. 16. 719-25. 2016

Population	Intervention	Outcomes/Results
Evidence level: 5	**Intervention:** na	**Primary:** theoretical background to apply the technique of local administration of antibiotics.

Study type: heoretical framework **Number of Patient:** na **Recruitung Phase:** na **Inclusion Criteria:** na **Exclusion Criteria:** na	**Comparison:** na	**Secondary:** **Results:** Piperacillin, vancomycin and metronidazole achieve high concentrations in the surrounding tissue very fast. Imipenem, ceftriaxone, ciprofloxacin, gentamicin, linezolid and cloxacillin achieve in-termediate concentration values. Tigecycline, showed the lowest concentration values (<2 mg/L).Calculated EF is highest for piperacillin and imipenem short after administration and near to surface diffusion area (0.5 cm), but EF of imipenem is higher at deeper areas and longer time afteradministration. **Author's Conclusion:** Imipenem has the best theoretical results in empiric local treat-ment. Linezolid and tigecycline solutions are not recommended

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes: theoretical, mathematical modell based on current available data

Gornals, Joan B et al. Endoscopic necrosectomy of walled-off pancreatic necrosis using a lumen-apposing metal stent and irrigation technique. Surg Endosc. 30. 2592-602. 2016

Population	Intervention	Outcomes/Results
Evidence level: 4 **Study type:** case series **Number of Patient:** 12 **Recruitung Phase:** September 2011 to August 2014 **Inclusion Criteria:** OPatients with WOPN **Exclusion Criteria:**	**Intervention:** Plaxement of a LAMS and irrigation to flush out non-adherent debris **Comparison:** No	**Primary:** resolution of WOPN during 13 months follow-up **Secondary:** **Results:** Clinical success was achieved in 100 % of casesafter a median of three sessions per patient (range 2–8).The median length of hospitalization was 15.9 days.Median procedure time of the access session was31±10.16 min. No adverse events (AE) were describedduring the procedures or 24 h after. There were four AE(two infections and two bleedings) between sessions, butonly two were severe (16.6 %). There was no need forsurgery, and no mortalities occurred. **Author's Conclusion:** transmural necrosectomy by irrigation without mechanical debridement helps to simplify the technique, is feasible, and has excellent outcomes in WOPN treatment.

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes: enthusiastic case series

Ji, Liang et al. Risk Factors for the Need of Surgical Necrosectomy After Percutaneous Catheter Drainage in the Management of Infection Secondary to Necrotizing Pancreatitis. Pancreas. 47. 436-443. 2018

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** retrospective cohort study **Number of Patient:** 308 Clinically Cured PatientsWith Documented/Suspected Secondary Infection **Recruitung Phase:** 1 year (2011) **Inclusion Criteria:** clinically cured patients with percutaneous drainage **Exclusion Criteria:**	**Intervention:** Outcome/ necessity after drainage for further intervention **Comparison:**	**Primary:** identification of risk factors for the need of surgical necrosectomy **Secondary:** **Results:** mean computed tomographic (CT) density ofnecrotic fluid collection (NFC;P< 0.001), and multiple-organ failure(MOF;P< 0.001) within 24 hours before the initial PCD were independentrisk factors, and a combination of the previously mentioned 2 factors pro-duced an area under the curve of 0.775. In the post-PCD model, mean CTdensity of NFC (P= 0.041), MOF (P= 0.002), and serum procalcitoninlevel (P= 0.035) 3 days after the initial PCD were independent risk factors,and a combination of these previously mentioned factors produced an areaunder the curve of 0.642. **Author's Conclusion:** CT, MOV and PCR are good predictors for the necessity of necrosectomy

Methodical Notes

Funding Sources: None

COI: None

Randomization: None

Blinding: None

Dropout Rate/ITT-Analysis: None

Notes:

Kochhar, Rakesh et al. Prevalence and outcome of fungal infection in patients with severe acute pancreatitis. J. Gastroenterol. Hepatol. 24. 743-7. 2009

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** onbservational cohort study	**Intervention:** none **Comparison:** none	**Primary:** Presence of fungal infection **Secondary:** risk factors for infection **Results:** GASTROENTEROLOGYjgh_5712 743..747Prevalence and outcome of fungal infection in patients withsevere acute pancreatitisRakesh Kochhar,*SKMahiuddin Ahammed,* Arunaloke Chakrabarti,†Pallab Ray,†Saroj K Sinha,*Usha Dutta,* Jai Dev

Number of Patient: 50 **Recruitung Phase:** January 2006 until April 2007 **Inclusion Criteria:** ANP **Exclusion Criteria:**		Wig‡and Kartar Singh*Departments of†Gastroenterology,‡Microbiology and *General Surgery, Postgraduate Institute of Medical Education and Research, Chandigarh,IndiaAbstractBackground and Aim:To study the prevalence of risk factors and outcome of fungalinfections in patients with severe acute pancreatitis.Methods:Fifty consecutive patients with severe acute pancreatitis were investigated forevidence of fungal infection by weekly culture of body fluids and aspirate from pancreatic/peripancreatic tissue and samples collected at necrosectomy. All patients were managed asper a standard protocol. Patients with documented fungal infection were treated withintravenous amphotericin or fluconazole. Data were analyzed using SPSS software (version13), and risk factors for fungal infection and mortality were determined.Results:Fungal infection was documented in 18 (36%) of 50 patients withCandidaalbicans(the commonest species). The incidence of fungal infection steadily increasedwith increasing duration of hospital stay. Those with fungal infection more often hadevidence of respiratory failure (P=0.031) and hypotension (P=0.031) at admission,prolonged hospital stay>4 weeks (P=0.034), longer duration of antibiotics (P=0.003),received total parenteral nutrition (P=0.005), and required mechanical ventilation(P=0.001) in contrast to those without fungal infection. The logistic regression analysisfound the independent risk factors for fungal infection to be antibiotic therapy for>4 weeks and hypotension at hospitalization. **Author's Conclusion:** Fungal infection was detected in 36% of our patients. The independent riskfactors associated with it were hypotension at hospitalization and prolonged antibiotictherapy. Antifungal therapy improved their chances of survival.

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes:

Kumar, Nitin et al. Direct endoscopic necrosectomy versus step-up approach for walled-off pancreatic necrosis: comparison of clinical outcome and health care utilization. Pancreas. 43. 1334-9. 2014

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** matched cohort study **Number of Patient:** 24 **Recruitung Phase:** January 2009 to December 2010 **Inclusion Criteria:** WOPN with indication to therapy	**Intervention:** direct endoscopic necrosectomy **Comparison:** percutaneous catheter drainage (PCD) with step-up approach	**Primary:** clinical resolution **Secondary:** antibiotic use, pulmonary failure, endocrine insufficiency, and shorter length of stay **Results:** Clinical resolution in 11 of 12 patients after DEN versus 3 of 12 step-up approach patients after PCD ($P < 0.01$). Nine step-up approach patients required surgery; 7 of these experienced complications. Direct endoscopic necrosectomy resulted in less new antibiotic use, pulmonary failure, endocrine insufficiency, and shorter length of stay ($P < 0.05$). Health care utilization was lower after DEN by 5.2:1 ($P < 0.01$) **Author's Conclusion:** Direct endoscopic necrosectomy may be superior to step-up approach for WOPN with suspected or established infection. Primary PCD generally delayed definitive therapy. Given the higher efficacy, shorter length of stay, and lower health care utilization, DEN could be the first-line therapy for WOPN, with primary PCD for inaccessible or immature collections.

Exclusion Criteria:		

Methodical Notes

Funding Sources: none

COI: none

Randomization: matching

Blinding: no

Dropout Rate/ITT-Analysis:

Notes:

Lang, Gabriel D et al. EUS-guided drainage of peripancreatic fluid collections with lumen-apposing metal stents and plastic double-pigtail stents: comparison of efficacy and adverse event rates. Gastrointest. Endosc. 87. 150-157. 2018

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** retrospective cohort study **Number of Patient:** 103 (84/19) **Recruitung Phase:** 2008 to 2015 **Inclusion Criteria:** All patients undergoing EUS-guided PPFC drainage for pancreatic pseudocyst (PP) or WON **Exclusion Criteria:**	**Intervention:** Plastic stent **Comparison:** LAMS	**Primary:** radiographic resolution of the fluid collection within 6 months of the index endo-scopic procedure and the occurrence of adverse events, including bleeding, perforation, and unplanned endoscopic interventions. **Secondary:** **Results:** There were significantly more bleeding episodes in the LAMS group(4 [19%]: 2 splenic artery pseudo-aneurysms, 1 collateral vessel bleed, 1 intracavitary variceal bleed;PZ.0003)than in the DPPS group (1 (1%]: stent erosion into the gastric wall). One perforation occurred in the DPPSgroup. Unplanned repeat endoscopy was more frequent in the LAMS group (10% vs 26%,PZ.07). Among retreatedLAMS patients in with WON, 5 (56%) had obstruction by necrotic debris. In patients for whom follow-up was available,67 of 70 (96%) with DPPSs and 16 of 17 (94%) with LAMSs had resolution of PPFCs within 6 months (PZ.78) **Author's Conclusion:** DPPSs and LAMSs are effective methods for treatment of PPFCs. In our cohort, use of LAMSs wasassociated with significantly higher rates of procedure-related bleeding and greater need for repeat endoscopicintervention.

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes: less than half were ANC/WOPN (pseudozysts) => need for large caliber stent questionable.

Li, Ang et al. Step-up mini-invasive surgery for infected pancreatic necrosis: Results from prospective cohort

study. Pancreatology. 16. 508-14. 2016

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** prospective cohort study **Number of Patient:** 54 **Recruitung Phase:** From January 2012 to March 201 **Inclusion Criteria:** Infected pancreatic necrosis defined as persistent sepsis or progressive clinical deterioration despite maximal support in the intensive care unit (ICU), or the presence of gas in fluid observed on contrast-enhanced CT scans. **Exclusion Criteria:**	**Intervention:** Step-up approach: percutaneous catheter drainage (PCD), mini-incision drainage (MID), video assisted debridement (VAD), open pancreatic necrosectomy **Comparison:**	**Primary:** frequency of surgery, treatment dura-tion, cure rate, incidence of complication (enterocutaneousfistula,perforation of a visceral organ, intraabdominal bleeding andpancreatic leakage during admission or during the 3 months afterdischarge) and overall mortality **Secondary:** **Results:** Of the 54 cases, 18 (33.3%) were cured after PCD; 13 (24.1%) with un-controlled infection were cured after MID; and the remaining 19 cases (35.2%) were cured after VAD. Noopen surgery was performed. Overall mortality was 7.4% (4/54), and the incidence of complications was12.9% (7/54). In multivariable regression, the following factors were associated with high failure rate forboth PCD and MID: heterogeneousfluid collection (odds ratio (OR)¼3.14; 95% confidence interval (CI):1.32～4.25, P¼0.001 for PCD; OR¼2.99; 95% CI: 1.52～5.10, P¼0.006 for MID), multiple infectedcollections (OR¼4.51; 95% CI: 2.94～8.63; P¼0.000 for PCD; OR¼4.17; 95% CI: 2.77～8.12, P¼0.000for MID), CT severity index (0～3/4～6/7～10: OR¼2.16; 95% CI: 1.83～3.62, P¼0.031 for PCD;OR¼2.72; 95% CI: 1.78～4.10, P¼0.005 for MID). **Author's Conclusion:** Step-up mini-invasive techniques can be considered afirst choice in the treatment of IPN.CT is effective to predict success of PCD and MID.

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes:

Mukai, Shuntaro et al. Endoscopic ultrasound-guided placement of plastic vs. biflanged metal stents for therapy of walled-off necrosis: a retrospective single-center series. Endoscopy. 47. 47-55. 2015

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** cohort study **Number of Patient:** 70 (43/27) **Recruitung Phase:** between October 2006 and September 2013 **Inclusion Criteria:** infected WON, or sterileWON in the presence of an	**Intervention:** LAMS (metallstent) **Comparison:** Plastic stent(s)	**Primary:** disappearance of symptoms or inflammation regardless of the collection size. **Secondary:** safety, efficacy, and cost performance of EUS-guided drain-age for WON **Results:** There were no statistically significant dif-ferences in rates of technical success, clinical suc-cess, and adverse events between plastics stentsand BFMS, despite the size of WON in the BFMSgroup being significantly larger than that in theplastic stent group (105.6 vs. 77.1 mm;P=0.003). Costs

increase in the size of the collection at 6 months after WON first occurred or worsening symptoms with a collection larger than 6cm. **Exclusion Criteria:** The exclusion criteria for drainage were patients aged less than 20 years, and patients who could not tolerate an endoscopic approach.		similar **Author's Conclusion:** Plastic stents and BFMS were safeand effective for the treatment of WON. In partic-ular, BFMS placement appeared to be preferablefor initial EUS-guided drainage and additional re-intervention (e.g. DEN) as it reduced the proce-dure time.
Methodical Notes		
Funding Sources: **COI:** **Randomization:** **Blinding:** no **Dropout Rate/ITT-Analysis:** no **Notes:** few patients		

Pascual, Isabel et al. Surgical versus nonsurgical treatment of infected pancreatic necrosis: more arguments to change the paradigm. J. Gastrointest. Surg. 17. 1627-33. 2013

Population	Intervention	Outcomes/Results
Evidence level: 4 **Study type:** retrospective cohort study/ case series **Number of Patient:** 38 **Recruitung Phase:** 1998 and 2010 **Inclusion Criteria:** Patients with infected pancreatic necrosis **Exclusion Criteria:**	**Intervention:** Drainage **Comparison:** open surgery	**Primary:** differences in mor-tality, morbidity (in-hospital infections, intraabdominalbleeding, pancreatic fistula, new onset organ failure definedas organ failure not present 24 h before treatment of IPN),and length of hospital stay, between the initially conservativeand initially surgical groups, according to an intention to treat analysis **Secondary:** pancreatic exocrine and endocrine function **Results:** Mortality occurred in 16.7 % of cases in the nonsurgical group versus 42.9 % in the surgical group. In the primarynonsurgical group, seven were operated on due to failure of initial conservative treatment. In this latter group, mortality was28.6 % and was performed significantly later than in the primary surgical group. The group of primary surgical treatment wasassociated with a significant higher rate of multiple organ failure (MOF) at IPN diagnosis, new onset or worsening of organfailure, and MOF and nosocomial infection after surgery. **Author's Conclusion:** Initial nonsurgical approach in IPN is associated with better results both in cases which respond to this treatmentas well as in those who, failing this conservative approach, have to be operated on after a delayed period. Primary surgicallytreated patients had a more severe disease at the time of IPN.
Methodical Notes		
Funding Sources: none **COI:** none **Randomization:** no **Blinding:** no		

Dropout Rate/ITT-Analysis: yes

Notes:

Rana, Surinder S et al. Endoscopic ultrasound guided transmural drainage of walled off pancreatic necrosis using a "step - up" approach: A single centre experience. Pancreatology. 17. 203-208. 2017

Population	Intervention	Outcomes/Results
Evidence level: 4 **Study type:** retrospective case series **Number of Patient:** 86 **Recruitung Phase:** **Inclusion Criteria:** WON requiring treatment **Exclusion Criteria:** preg-nancy, age less than 18 years, presence of congestive cardiac failure,compromised pulmonary status, refusing consent, coagulopathy,thrombocytopenia, distance of WON>1 cm from the gastrointes-tinal lumen or any contraindication to endoscopic drainage wereexcluded	**Intervention:** EUS placed plastic stents followed by metall stents and/or direct endoscopic necrosectomy (DEN) **Comparison:** none	**Primary:** resolution of symptoms with resolution of WON on follow-up CT with no need for surgery **Secondary:** **Results:** US guided transmural drainage was technically successful in 85/86 (98.8%)patients and 70 (82.4%) were drained with multiple 7/10Fr plastic stents alone while DEN was needed in9 (10.6%) and FCSEMS was inserted in 6 (7%) patients. All patients had successful outcome with nonerequiring surgery. The patients who needed DEN/FCSEMS presented earlier and had large size collection with more solid necrotic debris as compared to patients treated with multiple plastic stents alone. **Author's Conclusion:** “Step up”endoscopic transmural drainage using multiple plastic stents as an initial therapyis safe and effective treatment of WON and avoids more aggressive DEN in majority of patients. Large size WON with more necrotic debris may require DEN.

Methodical Notes

Funding Sources:

COI:

Randomization: no

Blinding: no

Dropout Rate/ITT-Analysis: no

Notes: large case series, no comparison

Rana, Surinder Singh et al. Consequences of long term indwelling transmural stents in patients with walled off pancreatic necrosis & disconnected pancreatic duct syndrome. Pancreatology. 13. 486-90. 2013

Population	Intervention	Outcomes/Results
Evidence level: 4 **Study type:** retrospective case series **Number of Patient:** 30	**Intervention:** long termindwelling transmural stents and DPDS were followed up for amean of 20.412.2 months **Comparison:**	**Primary:** consequences of indwelling stents **Secondary:** recurrence if stents migrated **Results:** Five patients (16.6%) had spontaneous migration of stents (both the stents in four patients and one stent in one patient; 7 Fr in four and 10 Fr in one patient respectively). Stent migration led to

Recruitung Phase: **Inclusion Criteria:** left platic stent for initial drainage of WON and disrupted pancreatic duct syndrom **Exclusion Criteria:**		recurrence of pancreatic fluid collection (PFC) in one patient whereas in the remaining 4 patients it did not cause any symptoms. There was no recurrence of symptomatic PFC in remaining 25 patients. **Author's Conclusion:** long term indwelling transmural stents following successful resolution of WOPN with DPDS are not associated with major complications and seem to decrease the rate of symptomaticPFC recurrence
Methodical Notes		
Funding Sources: **COI:** **Randomization:** **Blinding:** **Dropout Rate/ITT-Analysis:** **Notes:** retrospetive case series but important message		

Rau, Bettina M et al. Role of early multisystem organ failure as major risk factor for pancreatic infections and death in severe acute pancreatitis. Clin. Gastroenterol. Hepatol. 4. 1053-61. 2006

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** cohort study **Number of Patient:** 135 patients **Recruitung Phase:** **Inclusion Criteria:** operatively treated sterile necrosis **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** Secondary infection **Secondary:** death **Results:** Multiple logistic regression iden-tified early/preoperative MODS and extent of intrapan-creatic necrosis as major risk factors to develop second-ary PIN in operatively treated sterile necrosis. However,irrespective of operative or conservative treatment, onlyearly onset MODS>2 organs proved to be the predom-inant risk factor for death. **Author's Conclusion:** Early MODS andextended intrapancreatic necrosis are risk factors forsecondary PIN after operative treatment of sterile ne-crosis.
Methodical Notes		
Funding Sources: **COI:** **Randomization:** **Blinding:** **Dropout Rate/ITT-Analysis:** **Notes:** Indication for intervention = infection, MODS and extended pancreativ necrosis (even fpr sterile necrosis)		

Rodriguez, J Ruben et al. Debridement and closed packing for sterile or infected necrotizing pancreatitis: insights into indications and outcomes in 167 patients. Ann. Surg. 247. 294-9. 2008

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** retrospective cohort sudy **Number of Patient:** 167(6.8%) had necrotizing pancreatitis that required surgical intervention. **Recruitung Phase:** 1990 until 2005 **Inclusion Criteria:** necrotizing pancreatitis that required surgical intervention. Particular emphasis was placed on the indication for surgery and the presence of infected necrosis **Exclusion Criteria:**	**Intervention:** Surgery **Comparison:** none	**Primary:** outcome of surgery **Secondary:** **Results:** The primary preoperative indication for operation was infected necrosis (51%), butintraoperative cultures proved that 72% of the entire cohort was infected. The rate of reoperationwas 12.6%, and 29.9% of patients required percutaneous interventional radiology drainage afterinitial debridement. Overall operative mortality was 11.4% (19/167), but higher in patients whowere operated upon before 28 days (20.3% vs. 5.1%, P = 0.002). Other important predictors ofmortality included organ failure ≥3 (OR = 2.4, P = 0.001), postoperative intensive care unit stay≥6 days (OR = 15.9, P = 0.001), and female gender (OR = 5.41, P = 0.02). **Author's Conclusion:** Open, transperitoneal debridement followed by closed packing and drainageresults in the lowest reported mortality and reoperation rates, and provides a standard forcomparing other methods of treatment. A negative FNA does not reliably rule out infection. Theclinical status of the patients and not proof of infection should determine the need fordebridement.

Methodical Notes

Funding Sources:

COI:

Randomization:

Blinding:

Dropout Rate/ITT-Analysis:

Notes:

Sahar, Nadav et al. Duration of antibiotic treatment after endoscopic ultrasound-guided drainage of walled-off pancreatic necrosis not affecting outcomes. J. Gastroenterol. Hepatol. 33. 1548-1552. 2018

Population	Intervention	Outcomes/Results
Evidence level: 4 **Study type:** retrospective case series **Number of Patient:** 61	**Intervention:** antibiotics < 5 days **Comparison:** antibiotics > 5 days	**Primary:** effectiveness of prophylactic an-tibiotics given before DMD of WON in minimizing pancreatic in-fections related to the procedur **Secondary:** **Results:** Patients in the SD group were treated with antibiotics for a median of 3 dayscompared with 8.5 days in the LD group. There were no differences in recurrent febrileepisodes within 30 days of procedure—44% of SD groupversus39% of LD (P=

Recruitung Phase: January 1, 2008, and March 31, 2017 **Inclusion Criteria:** endoscopic drainage of walled-off-necrosis **Exclusion Criteria:**		0.69).There was also no difference in time to resolution of WON (64 days for both groups,P= 0.72) or duration of hospitalization post-DMD (SD 7.7 daysversusLD 7.5 days,P= 0.42). Three cases ofClostridium difficilecolitis were observed in the LD group. **Author's Conclusion:** Longer course of antibiotics seems to have similar outcomes compared withshorter courses in patients with WON treated with DMD. Prolonged-course therapy maypredispose to secondary infections likeC. difficilecolitis

Methodical Notes

Funding Sources: Boston Sci

COI: none

Randomization: none

Blinding: no

Dropout Rate/ITT-Analysis: no

Notes:

Sarathi Patra, P et al. Natural resolution or intervention for fluid collections in acute severe pancreatitis. Br J Surg. 101. 1721-8. 2014

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** prospective cohort study **Number of Patient:** Of 122 patients with acute pancreatitis, 109 were analysed. **Recruitung Phase:** May 2011 and July 201 **Inclusion Criteria:** diagnosis of acutepancreatitis **Exclusion Criteria:** Patients without baseline CECT within the first week ofonset of pain, those who did not consent to participate,patients with pre-existing severe co-morbid illnesses (suchas recent myocardial infarction, congestive cardiac failure,decompensated liver disease and chronic renal failure), andthose with radiological evidence of chronic pancreatitis	**Intervention:** only follow-up **Comparison:** none	**Primary:** course of pancreatitis **Secondary:** **Results:** 91 patients (83·5 per cent)had fluid collections at baseline. Eleven of 29 with interstitial oedematous pancreatitis had acuteperipancreatic fluid collections, none of which evolved into pseudocysts. All 80 patients with acutenecrotizing pancreatitis had at least one acute necrotizing collection (ANC); of these, five patientsdied (2 after drainage), three underwent successful drainage within 5 weeks, and collections resolvedspontaneously in 33 and evolved into WON in 39. By 6 months' follow-up, WON had required drainagein eight patients, resolved spontaneously in 23 and was persistent but asymptomatic in seven. Factorsassociated with increased risk of WON were blood urea nitrogen 20 mg/dl or more (odds ratio (OR)10·96, 95 per cent c.i. 2·57 to 46·73;P=0·001) and baseline ANC diameter greater than 6 cm (OR 14·57,1·60 to 132·35;P=0·017). Baseline ANC diameter over 6 cm was the only independent predictor of eitherthe need for drainage or persistence of such collections beyond 6 months (hazard ratio 6·61, 1·77 to 24·59;P=0·005). **Author's Conclusion:** Pancreatic pseudocysts develop infrequently in oedematous acute pancreatitis. Onlyone-quarter of ANCs either require intervention or persist beyond 6 months, whereas more than one-halfof WONs resolve without any intervention within 6 months of onset. Baseline diameter of ANC(s) is animportant predictor of outcome.

Methodical Notes
Funding Sources: none **COI:** none **Randomization:** no **Blinding:** no **Dropout Rate/ITT-Analysis:** no **Notes:**

Schwender, Brian J et al. Risk factors for the development of intra-abdominal fungal infections in acute pancreatitis. Pancreas. 44. 805-7. 2015

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** retrospective cohort study **Number of Patient:** 479 **Recruitung Phase:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** Out of 479 patients admitted with acute pancreatitis, 17 patients were subsequently found to have an AFI and 3 of these patients expired. The mean length of stay for patients with an AFI was 24 days and 76% were admitted to the intensive care unit. Patients with AFI were more likely to have received prophylactic antibiotics on admission (OR 1.7, 95% C.I. 1.2–2.3), TPN within 7 days of admission (OR 1.4, 95% C.I. 1.1–1.7) or to have necrosis on CT scan within 7 days of admission (OR 1.4, 95% C.I. 1.1–1.7). Multivariable regression models identified admission antibiotic use (OR 1.6, 95% C.I. 1.4–1.8) as the strongest predictor of AFI **Author's Conclusion:** Admission antibiotics are the biggest risk factor for the development of intra-abdominal fungal infections in acute pancreatitis. Prophylactic antibiotics to prevent infected necrosis should therefore be discouraged.

Methodical Notes
Funding Sources: **COI:** **Randomization:** **Blinding:** **Dropout Rate/ITT-Analysis:** **Notes:**

Senn, Laurence et al. Caspofungin for prevention of intra-abdominal candidiasis in high-risk surgical patients. Intensive Care Med. 35. 903-8. 2009

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** prospective cohort study	**Intervention:** A caspofungin loading dose (70 mg), was followed by50 mg/day until	**Primary:** to explore theefficacy and safety of caspofungin for prevention of intra-abdominal invasive candidiasis inhigh-risk surgical

Number of Patient: 19 **Recruitung Phase:** February 2006 and March 2007 **Inclusion Criteria:** Inclusion criteria were: (1) ageC16 years, (2) recurrentgastrointestinal perforations/anastomotic leakage(s) afterabdominal surgery or surgery for acute necrotizing pan-creatitis during the preceding 7 days **Exclusion Criteria:** documented candidiasis at study entry, (2) ongoing antifungal therapy during[48 h, (3) severe hepatic insufficiency (Child–Pugh score[9), (4) caspofungin allergy, (5) pregnant or lactatingwoman, or (6) high probability of death within 72 h.	resolution of the surgical conditiondefined by (1) recovery of gastrointestinal function and(2) no complication requiring surgical reintervention. **Comparison:** none	patients. **Secondary:** **Results:** The colo-nization index decreased significantlyduring study therapy, and the CCIremained\0.4 in all patients. Ca-spofungin was successful forprevention of intra-abdominal IC in18/19 patients (95%, 1 breakthroughIC 5 days after inclusion). No drug-related adverse event requiring ca-spofungin discontinuation occurred. **Author's Conclusion:** Caspofungin may beefficacious and safe for prevention ofintra-abdominal candidiasis in high-risk surgical patients.
Methodical Notes		
Funding Sources: **COI:** **Randomization:** **Blinding:** **Dropout Rate/ITT-Analysis:** **Notes:**		

Sharaiha, Reem Z et al. Endoscopic Therapy With Lumen-apposing Metal Stents Is Safe and Effective for Patients With Pancreatic Walled-off Necrosis. Clin. Gastroenterol. Hepatol. 14. 1797-1803. 2016		
Population	**Intervention**	**Outcomes/Results**
Evidence level: 4 **Study type:** retrospective case series **Number of Patient:** 124 **Recruitung Phase:** between January 2014 and May 2015 **Inclusion Criteria:** patients with WOPN **Exclusion Criteria:**	**Intervention:** endoscopic management of WON by using the LAMS **Comparison:** non	**Primary:** linical successrate of LAMS for the drainage of WONs, which wasdefined as complete resolution of WON on follow-upimaging at 3 months without the need for further intervention via surgery or IR. **Secondary:** WON recurrence and the rate ofadverse events and the need for early (<30 days) or long-term (30 days) adverse events requiring endoscopicre-intervention. **Results:** Clinical success was achieved in 107 pa-tients (86.3%) after 3 months of follow-up. Thirteen patients required a percutaneous drain,and 3 required a surgical intervention to manage their WON. The stents remained patent in94% of patients (117 of 124) and migrated in 5.6% of patients (7 of 124). The median numberof endoscopic interventions was 2 (range, 1–9 interventions). **Author's Conclusion:** ndoscopic therapy of WON by usingLAMS is safe and effective. Creation of a large and sustained cystogastrostomy or cystoenter-ostomy tract is effective in the drainage and treatment of WON.

Methodical Notes
Funding Sources:
COI:
Randomization: none
Blinding:
Dropout Rate/ITT-Analysis:
Notes: large case series with potential bias

Literatursammlung:

AG7-CP

Inhalt: 40 Literaturstellen

Literaturstelle	Evidenzlevel	Studientyp
Allendorph, M 1987	4	yes
Becker, M 1980	1	no
Bellin, Melena D 2008	3	no
Bellin, Melena D 2017	1	cohort study
Bellin, Melena D 2011	3	prospective cohort
Boerma, D 2000	4	prospective cohort
Brown, C W 1993	3	retrospective cohort study
Ceppa, Eugene P 2013	3	retrospective cohort study
Chao, H C 2000	3	prospective study
Chinnakotla, Srinath 2015	3	retrospective cohost study
Chinnakotla, Srinath 2014	3	retrospective cohort study
Chiu, Bill 2006	3	retrospective cohort study
Chromik, Ansgar M 2008	2	retrospective cohort study
Crombleholme, T M 1990	2	retrospective cohort study
Delaney, Lisa 2008	3	retrospective cohort study
DuBay, D 2000	2	retrospective cohort study
Ford, Kathryn 2016	2	single-center, retrospective review of children
Ghosh, Dhruva Nath 2007	3	Retrospective case cohort
Graham, K S 1998	2	retrospective case cohort
Hsu, R K 2000	3	retrospective case cohort
Iqbal, C W 2009	3	retrospective case cohort
Jeong, In Sook 2018	3	retrospective cohort study
Kargl, S 2015	2	prospective cohort study
Kolodziejczyk, E 2014	3	retrospective cohort study
Kolodziejczyk, Elwira 2016	3	retrospective cohort study
Laje, Pablo 2013	2	retrospective chart review
Li, Zhao-Shen 2010	3	retrospective cohort study
Minen, Federico 2012	2	retrospective cohort study
Oracz, Grzegorz 2014	3	retrospective cohort study

Paris, Catherine 2010	2	retrospective cohort study
Poddar, Ujjal 2017	2	retrospective cohort
Rabinovich, Aaron 2006	2	retrospective cohort
Ray, Sukanta 2015	3	retrospective cohort
Schwarzenberg, Sarah Jane 2015	3	prospective registry of children with pancreatitis, multicenter, multinational
Sun, Xiao-Tian 2015	2	retrospective cohort, single center
Troendle, David M 2015	3	retrospective cohort, single center
Troendle, David M 2017	2	retrospective, multicenter cohort study/register
Varadarajulu, Shyam 2004	2	retrospective, two-cohort case-controlled study
Wang, Wei 2009	3	retrospective cohort
Weber, T R 2001	2	single center, retrospective cohort

OXFORD (2011) Appraisal Sheet: Diagnostic Studies: 7 Bewertung(en)

Allendorph, M et al. Endoscopic retrograde cholangiopancreatography in children. J. Pediatr. 110. 206-11. 1987

Evidence level/Study Types	Population	Outcomes/Results
Evidence level: 4 **Study type:** yes	**Number of patients / samples:** 39 **Reference standard:** no **Validation:** no **Blinding:** no **Inclusion of clinical information:** yes **Dealing with ambiguous clinical findings:** no	**Results:** ok **Author conclusions:** ok

Methodical Notes

Funding Sources: none

COI: no

Notes:

Becker, M et al. [Endoscopic retrograde cholangio-pancreatography in children (author's transl)]. Dtsch. Med. Wochenschr. 105. 1055-60. 1980

Evidence level/Study Types	Population	Outcomes/Results
Evidence level: 1 **Study type:** no	**Number of patients / samples:** n.a. **Reference standard:** no **Validation:** n.a. **Blinding:** n.a. **Inclusion of clinical information:** yes **Dealing with ambiguous clinical findings:** no	**Results:** ok **Author conclusions:** ok

Methodical Notes

Funding Sources: none

COI: none

Notes: low

Bellin, Melena D et al. Outcome after pancreatectomy and islet autotransplantation in a pediatric population. J. Pediatr. Gastroenterol. Nutr. 47. 37-44. 2008

Evidence level/Study Types	Population	Outcomes/Results
Evidence level: 3 **Study type:** no	**Number of patients / samples:** 24 **Reference standard:** no **Validation:** no **Blinding:** no **Inclusion of clinical information:** yes **Dealing with ambiguous clinical findings:** no	**Results:** **Author conclusions:** reasonable

Methodical Notes

Funding Sources: Follow-up information was available on 18 of 24 patients. All of the patients required narcotics before surgery. Of the 18, only 7 (39%) were still taking narcotics at the time of the survey. At 1 year posttransplant, 78% of patients had islet graft function with full function (insulin
Chronic pancreatitis (CP) is characterized by recurrent or chronic abdominal pain with late progression to exocrine and endocrine insufficiency. The pain can be so severe that affected patients continue to have pain despite treatment with narcotic analgesics. At that point, the objective of therapy is to interrupt or eliminate the root cause of the pain, while preserving as much exocrine and endocrine function as possible. Because intraductal pressure may be increased in some cases of painful CP, the first-line treatment is usually endoscopic sphincter- otomy and stenting procedures (now preferred over surgical drainage) (1). Celiac nerve blocks also can be administered, although any pain relief they confer is usually transient.
Received June 25, 2007; accepted October 1, 2007.
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The authors report no conflicts of interest.
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independent) in 56% and partial function (once-daily insulin use only) in 22%. By Cox regression analysis, important predictors of insulin independence were islet yield >2000 islet equivalents per kilogram and lack of prior pancreatic surgery (P ¼ 0.011). Preadolescents were less likely to require chronic narcotic therapy at follow-up (P ¼ 0.05) and were more likely to maintain graft function (P ¼ 0.02) compared with adolescents.

COI: no

Notes:

Chao, H C et al. Sonographic evaluation of the pancreatic duct in normal children and children with pancreatitis. J Ultrasound Med. 19. 757-63. 2000

Evidence level/Study Types	Population	Outcomes/Results
Evidence level: 3 **Study type:**	**Number of patients / samples:** 51	**Results:** The mean ages of children with acute pancreatitis and chronic pancreatitis were 9.7 ± 3.9 and 10.3 ± 3.1 years, respectively (range, 1 to 8 years). The mean age of normal children was 9.6 ± 5.3 years. A significant difference was found in diameter of the pancreatic duct between children with acute and chronic pancreatitis versus that of age-matched con- trol. In addition, a significant difference in diameter

prospective study	**Reference standard:** n.a. **Validation:** n.a. **Blinding:** no **Inclusion of clinical information:** yes **Dealing with ambiguous clinical findings:** no	of the pancreatic body was found between children with acute pancreatitis and age-matched controls, but there was no marked difference in diameter of the pancreatic body between normal persons and those with chronic pancreatitis. The mean diameters of the pancreatic duct in acute pancreatitis and chronic pancreatitis were 2.34 ± 0.47 mm and 2.84 ± 0.67 mm, respectively, which was greater than that of normal children (1.65 ± 0.45 mm). Pancreatic ducts with diameters greater than 1.5 mm in children between 1 and 6 years, greater than 1.9 mm at ages 7 to 12 years, or greater than 2.2 mm at ages 13 to 18 years were significantly associated with the pres- ence of acute pancreatitis. Thirty-two patients, including 25 with acute pancreatitis and 7 with chronic pancreatitis, underwent follow-up measure- ment of pancreatic duct and serum lipase examina- tion on at least three occasions. **Author conclusions:** A good correlation between the diameter of pancreatic duct and serum lipase level was found. Thus, ultrasonography of the pancreatic duct is valuable in diagnosis and moni- toring of pancreatitis in children.

Methodical Notes

Funding Sources: not indicated

COI: not indicated

Notes:

Delaney, Lisa et al. MR cholangiopancreatography in children: feasibility, safety, and initial experience. Pediatr Radiol. 38. 64-75. 2008

Evidence level/Study Types	Population	Outcomes/Results
Evidence level: 3 **Study type:** retrospective cohort study	**Number of patients / samples:** 78 **Reference standard:** n.a. **Validation:** no **Blinding:** no **Inclusion of clinical information:** yes **Dealing with ambiguous clinical findings:** no	**Results:** A total of 85 MRCP studies were performed in children (mean age 10.3 years), most commonly for evaluation of pancreatitis (n=47, 55%); 41 (48%) used secretin and 39 (46%) used a negative oral contrast agent. Of the 85 studies, 72 (85%) had excellent image quality and 43 were normal. ERCP was performed after 16 of the 85 MRCP studies (19%); the diagnoses were concordant with those of MRCP in 13 (81%). There were 42 abnormal MRCP studies, and these were more likely to be in girls(P=0.03) and in children who had undergone ERCP (P<0.01). Secretin and the negative oral contrast agent were well-tolerated. Secretin improved duct visualization (P<0.001). **Author conclusions:** MRCP safely and accurately depicted pancreati- cobiliary anatomy in children. The use of secretin improved visualization of the pancreatic duct.

Methodical Notes

Funding Sources: not indicated

COI: not indicated

Notes:

Kolodziejczyk, Elwira et al. MRCP Versus ERCP in the Evaluation of Chronic Pancreatitis in Children: Which Is the Better Choice?. Pancreas. 45. 1115-9. 2016

Evidence level/Study Types	Population	Outcomes/Results
Evidence level: 3 **Study type:** retrospective cohort study	**Number of patients / samples:** 48 **Reference standard:** Yes, results of MRCP were compared with ERCP as a gold standard **Validation:** The sensitivity, specificity, positive predictive value, and negative predictive value of MRCP in the detection of CP-specific changes were determined using ERCP as a diagnostic standard. **Blinding:** no **Inclusion of clinical information:** yes **Dealing with ambiguous clinical findings:** no	**Results:** Diagnostic ERCP pancreatograms were obtained in 41 (85.4%) of 48 patients and diagnostic MRCP images in all 48 children. The sensitivity and positive predictive value of MRCP were 77.1% and 90%, respectively, and its specificity and negative predictive value amounted to 50% and 27.3%, respectively. The patients with consistent results of MRCP and ERCP (ie, true-positive and true-negative cases) and individuals with incompatible results of the tests (ie, false-positive and false-negative cases) differed in terms of their median age at MRCP (14.17 vs 10.33 years) and median CP stage according to the Cambridge Scale (4 vs 2). **Author conclusions:** Magnetic resonance cholangiopancreatography provides diagnostic information equivalent to ERCP in a large percentage of pediat- ric patients with CP and should be used as the imaging method of choice, especially if the likelihood of therapeutic intervention is low.

Methodical Notes

Funding Sources: none

COI: no

Notes:

Minen, Federico et al. Acute and recurrent pancreatitis in children: exploring etiological factors. Scand. J. Gastroenterol. 47. 1501-4. 2012

Evidence level/Study Types	Population	Outcomes/Results
Evidence level: 2 **Study type:** retrospective cohort study	**Number of patients / samples:** 34 **Reference standard:** There was no reference standard. The	**Results:** The most common etiologies of AP were medications (11/34) and biliary tract diseases (9/34), whereas systemic diseases accounted for a small percentage of case. Among patients with recurrent episodes, biliary anomalies were the most common cause (6/11), whereas only 2 out of 11 patients with recurrent pancreatitis presented a hereditary cause. Imaging studies were performed in all the cases. All the patients underwent ultrasound (US) scan, which Figure 1. Etiologies of acute and recurrent pancreatitis. was unremarkable in 9/34 cases, whereas CT and MR cholangiography were

	authors retrospectively analysed the diagnostic procedures for each patient and causes of chronic pancreatitis. **Validation:** n.a. **Blinding:** no **Inclusion of clinical information:** yes **Dealing with ambiguous clinical findings:** no	performed only in recurrent or undiagnosed cases to rule out anatomic anomalies. CT was abnormal in 4/7 cases. In one case, CT suggested a pancreas divisum, therefore confirmed by ERCP. MR was performed in 10 patients and was diagnostic in 3 cases (2 pancreas divisum, 1 abnormal common bile duct). ERCP was performed in four patients. In two cases was performed only for diag- nostic purposes, and found a pancreas divisum in 1/2; in the other 2 cases was performed for therapeutic purpose: in one case, ERCP confirmed the MR finding of the abnormal common bile duct and sphincterotomy was done; in the second case, a stent was placed in a patient with sclerosing cholangitis associated with Crohn's disease. Genetic studies (CFTR, SPINK1, PRRS1 muta- tions) were performed in all patients with recurrent episodes and were positive for a heterozygous N34S SPINK1 mutation in two cases. **Author conclusions:** This study highlights that etiologies of AP in children are variable. Epidemiology of AP could be influenced by single center's characteristics. Anatomic anomalies should be ruled out and genetic causes should be considered in recurrent cases.

Methodical Notes

Funding Sources: none

COI: no

Notes:

OXFORD (2011) Appraisal Sheet: Prognostic Studies: 23 Bewertung(en)

Bellin, Melena D et al. Total Pancreatectomy With Islet Autotransplantation Resolves Pain in Young Children With Severe Chronic Pancreatitis. J. Pediatr. Gastroenterol. Nutr. 64. 440-445. 2017

Population	Intervention	Outcomes/Results
Evidence level: 1 **Study type:** cohort study **Number of Patient:** 17 **Recruitung Phase:** 5 yrs **Inclusion Criteria:** children with chronic pancreatitis 3-8 yrs of age **Exclusion Criteria:** none	**Intervention:** none **Comparison:** no	**Primary:** measurement of pain **Secondary:** endocrine/islet pancreatic function **Results:** well oresented **Author's Conclusion:** ok

Methodical Notes

Funding Sources: 5K23DK084315 (Bellin)

COI: no

Randomization: no

Blinding: no

Dropout Rate/ITT-Analysis: n.a.

Notes: Interesting retrospective study, low patient number due to the extremely rare procedure in children

Bellin, Melena D et al. Quality of life improves for pediatric patients after total pancreatectomy and islet autotransplant for chronic pancreatitis. Clin. Gastroenterol. Hepatol. 9. 793-9. 2011

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** prospective cohort **Number of Patient:** 19 **Recruitung Phase:** 3 years **Inclusion Criteria:** chronic pancreatitis **Exclusion Criteria:**	**Intervention:** total pancreatectomyand islet autotransplantation **Comparison:** none	**Primary:** QOL **Secondary:** **Results:** ok **Author's Conclusion:** ok

Methodical Notes

Funding Sources: National Pancreas Foundation

COI: no

Randomization: no

Blinding: no

Dropout Rate/ITT-Analysis: none

Notes:

Boerma, D et al. Long-term outcome of endoscopic stent placement for chronic pancreatitis associated with pancreas divisum. Endoscopy. 32. 452-6. 2000

Population	Intervention	Outcomes/Results
Evidence level: 4 **Study type:** prospective cohort **Number of Patient:** 16 **Recruitung Phase:** **Inclusion Criteria:** patients with pancreas divisum **Exclusion Criteria:** none	**Intervention:** pancreatic stenting **Comparison:** no	**Primary:** pain **Secondary:** **Results:** ok **Author's Conclusion:** ok

Methodical Notes

Funding Sources:

COI: none

Randomization: no

Blinding: no

Dropout Rate/ITT-Analysis: no

Notes: only 2/16 patients were children

Brown, C W et al. The diagnostic and therapeutic role of endoscopic retrograde cholangiopancreatography in children. J. Pediatr. Gastroenterol. Nutr. 17. 19-23. 1993

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** retrospective cohort study **Number of Patient:** 92 **Recruitung Phase:** not indicated **Inclusion Criteria:** pancreatitis **Exclusion Criteria:**	**Intervention:** EFCP, Stenting **Comparison:** no	**Primary:** descriptive **Secondary:** **Results:** **Author's Conclusion:** ok

Methodical Notes

Funding Sources:

COI: none

Randomization: none

Blinding: none

Dropout Rate/ITT-Analysis:

Notes:

Ceppa, Eugene P et al. Hereditary pancreatitis: endoscopic and surgical management. J. Gastrointest. Surg. 17. 847-56; discussion 856-7. 2013

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** retrospective cohort study **Number of Patient:** 87 **Recruitung Phase:** 14 yrs **Inclusion Criteria:** Recurrent pancreatitis **Exclusion Criteria:** none	**Intervention:** none **Comparison:** none	**Primary:** clinical outcome **Secondary:** **Results:** Eighty-seven patients were identified. Genetic testing confirmed the diagnosis in 54 patients (62 %). Eighty-five patients (98 %) underwent 263 endoscopic procedures including sphincterotomy (72 %), stone removal (49 %), and pancreatic duct stenting (82 %). Twenty-eight patients (32 %) have undergone 37 operations which included 19 resections and 18 drainage procedures. The interval between procedures for recurrent pain was longer for surgery than for endoscopic therapy (9.1 vs. 3.4 years, $p<0.05$). **Author's Conclusion:** ok

Methodical Notes

Funding Sources:

COI:

Randomization: no

Blinding: no

Dropout Rate/ITT-Analysis:

Notes:

Chinnakotla, Srinath et al. Factors Predicting Outcomes After a Total Pancreatectomy and Islet Autotransplantation Lessons Learned From Over 500 Cases. Ann. Surg. 262. 610-22. 2015

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** retrospective cohost study **Number of Patient:** 581 patients included 490 adults and 91 children **Recruitung Phase:** 37 yrs **Inclusion Criteria:** adults and children with chronic pancreatitis **Exclusion Criteria:** none	**Intervention:** pancreatectomy, islet autotransplantation **Comparison:** no	**Primary:** pain, narcotic use **Secondary:** insulin dependence **Results:** In our patients, the duration (mean ± SD) of CP before their TP-IAT was 7.1 ±0.3 years and narcotic usage of 3.3 ± 0.2 years. Pediatric patients had better postoperative outcomes. Among adult patients, the odds of narcotic use at 1 year were increased by previous endoscopic retrograde cholangiopancreatography (ERCP) and stent placement, and a high number of previous stents (>3). Independent risk factors for pancreatic pain at 1 year were pancreas divisum, previous body mass index >30, and a high number of previous stents (>3). The strongest independent risk factor for islet graft failure was a low islet yield—in islet equivalents (IEQ)—per kilogram of body weight. We noted a strong dose-response relationship between the lowest-yield category (<2000 IEQ) and the highest (≥5000 IEQ or more). Islet graft failure was 25-fold more likely in the lowest-yield category. **Author's Conclusion:** This article represents the largest study of factors predicting outcomes after a TP- IAT. Preoperatively, the patient subgroups we identified warrant further attention.

Methodical Notes

Funding Sources: not indicated

COI: not indicated

Randomization: no

Blinding: no

Dropout Rate/ITT-Analysis: none

Notes: This article represents the largest study of factors predicting outcomes after a TP- IAT. Preoperatively, the patient subgroups we identified warrant further attention.

Chinnakotla, Srinath et al. Total pancreatectomy and islet autotransplantation in children for chronic pancreatitis: indication, surgical techniques, postoperative management, and long-term outcomes. Ann. Surg. 260. 56-64. 2014

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** retrospective cohort study	**Intervention:** see above **Comparison:** no	**Primary:** pain **Secondary:** Indication, Surgical Techniques, Post Operative Management and Long-Term Outcomes **Results:** Pancreatitis pain and the severity of pain statistically improved in

Number of Patient: 75 pediatric patients **Recruitung Phase:** 24 yrs **Inclusion Criteria:** children with chronic pancreatitis for pancreatectomy and islet autotransplantatiomn **Exclusion Criteria:** none		90% of patients after TP-IAT (p =<0.001). The relief from narcotics was sustained. Of the 75 patients undergoing TP- IAT, 31 (41.3%) achieved insulin independence. Younger age (p=0.032), lack of prior Puestow (p=0.018), lower body surface area (p=0.048), IEQ per Kg Body Weight (p=0.001) and total IEQ (100,000) (0.004) were associated with insulin independence. By multivariate analysis, 3 factors were associated with insulin independence after TP-IAT:(1) male gender, (2) lower body surface area and the (3) higher total IEQ per kilogram body weight. Total IEQ (100,000) was the single factor most strongly associated with insulin independence (OR = 2.62; p value < 0.001). **Author's Conclusion:** TP-IAT provides sustained pain relief and improved quality of life. The β cell function is dependent on islet yield. TP-IAT is an effective therapy for children with painful pancreatitis that fail medical and or endoscopic management

Methodical Notes

Funding Sources: not indicated

COI: not indicated

Randomization: no

Blinding: no

Dropout Rate/ITT-Analysis: no

Notes: This patient cohort is repeatedly published each with a different focus

Chiu, Bill et al. Longitudinal pancreaticojejunostomy and selective biliary diversion for chronic pancreatitis in children. J. Pediatr. Surg. 41. 946-9. 2006

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** retrospective cohort study **Number of Patient:** 4 **Recruitung Phase:** not indicated **Inclusion Criteria:** chronic pancreatitis, pain **Exclusion Criteria:**	**Intervention:** Puestow procedure **Comparison:** no	**Primary:** outcome after Puestow procedure **Secondary:** costs, associated conditions **Results:** Four patients (one girl), 3 to 16 years old, underwent LPJ. Associated conditions included bile duct obstruction (2), single (1) or multiple (1) pancreatic duct strictures, recurrent familial pancreatitis (1), pseudocyst (1), Down's syndrome (1), and duodenal web (1). Preoperative endoscopic stenting was performed in two patients. All were on restricted diets, one on parenteral nutrition. Pre-LPJ, each child had 3 to 6 admissions for pancreatitis with mean total cost of $39,000, excluding diet charges. At surgery, two patients required biliary diversion for persistent biliary obstruction in addition to LPJ. Postoperatively, no patient developed fistulas or anastomotic leaks. There were no deaths. The median length of hospitalization post-LPJ was 8 days with mean cost of US$37,000. All patients resumed a normal diet post-LPJ. There were no recurrences of pancreatitis with follow-ups between 2 and 6 years. **Author's Conclusion:** Longitudinal pancreaticojejunostomy is safe and cost-effective for treating pediatric chronic pancreatitis. It has minimal complications and frees patients from pancreatitis-related hospitalizations.

Methodical Notes

Funding Sources: not indicated

COI: not indicated

Randomization: no

Blinding: no

Dropout Rate/ITT-Analysis: none

Notes: Puestow procedure in CP

Chromik, Ansgar M et al. Tailored resective pancreatic surgery for pediatric patients with chronic pancreatitis. J. Pediatr. Surg. 43. 634-43. 2008

Population	Intervention	Outcomes/Results
Evidence level: 2 **Study type:** retrospective cohort study **Number of Patient:** 6 children **Recruitung Phase:** 3 years **Inclusion Criteria:** chronic pancreatitis with uncontrolled pain **Exclusion Criteria:**	**Intervention:** various surgical approaches for pancreatic drainage, no pancreatectomy **Comparison:** no	**Primary:** pain **Secondary:** length of hospital stay, intraoperative blood loss **Results:** Overall, 6 pediatric patients (3 male, 3 female, ages 7-18 years) underwent a duodenum- preserving pancreatic head resection (3), a middle segmental pancreatic resection (2), or a distal pancreatectomy (1) for CP of different etiologies (idiopathic 2, posttraumatic 2, pancreas divisum 1, situs inversus 1). No mortality or major surgical complication occurred. Mean operative time was 294 min (207- 412 min) and intraoperative blood loss was 541 mL (100-1300 mL). Postoperative hospital stay was 13 days (10-18 days). No endocrine or exocrine insufficiency occurred during follow up of 46 months (25- 50 m), and pain control was improved in 5 of 6 patients. **Author's Conclusion:** Tailored organ-preserving resective pancreatic surgery can be performed with low morbidity and mortality in pediatric patients with CP and not responding to conservative treatment.

Methodical Notes

Funding Sources: not indicated

COI: not indicated

Randomization: no

Blinding: no

Dropout Rate/ITT-Analysis: no

Notes: single center, surgical study

Crombleholme, T M et al. The modified Puestow procedure for chronic relapsing pancreatitis in children. J. Pediatr. Surg. 25. 749-54. 1990

Population	Intervention	Outcomes/Results
Evidence level: 2 **Study type:** retrospective cohort study **Number of Patient:** 10 **Recruitung Phase:** 20	**Intervention:** surgical Puestow or Duval procedure **Comparison:** no	**Primary:** pain **Secondary:** exocrine pancreatic insufficiency **Results:** In light of recent reports in adults that endocrine and exocrine function may be preserved by early pancreaticoje- junostomy, we reviewed our experience with this proce- dure (one Duval, 10 Puestows) in 10 children between 1969 and 1989. The underlying etiology was familial pancreatitis in four patients, one case of unknown etiology, congenital ductal anomalies in four (one pancreas divisum, one annu- lar pancreas, one choledochal cyst, and one ductal steno- sis), and posttraumatic in one. All 10 had intractable recurrent abdominal pain. Preoperatively, only three pa- tients evidenced exocrine insufficiency and none had

years **Inclusion Criteria:** chronic pancreatitis **Exclusion Criteria:**		endo- crine insufficiency. There was complete resolution of pain in eight patients and improvement in two during a mean observation period of 4 years ~range, 7 months to 19.75 years). Exocrine insufficiency resolved in two patients but has persisted in the third patient now on Viokase. Endo- crine insufficiency has developed during follow-up in one patient. **Author's Conclusion:** Pancreaticojejunostomy provides excellent relief of recurrent pain in chronic relapsing pancreatitis in chil- dren. Endoscopic retrograde cholangiopancreatography (ERCP) is indicated when the diagnosis of chronic relapsing pancreatitis is suspected to define the ductal anatomy. Pancreaticojejunostomy may prevent the progression of exocrine and endocrine insufficiency if performed early in the course of the disease.

Methodical Notes

Funding Sources: not indicated

COI: not indicated

Randomization: none

Blinding: no

Dropout Rate/ITT-Analysis: no

Notes: small cohort

DuBay, D et al. The modified Puestow procedure for complicated hereditary pancreatitis in children. J. Pediatr. Surg. 35. 343-8. 2000

Population	Intervention	Outcomes/Results
Evidence level: 2 **Study type:** retrospective cohort study **Number of Patient:** 12 **Recruitung Phase:** 25 **Inclusion Criteria:** children with chronic pancreatitis **Exclusion Criteria:**	**Intervention:** Puestow procedure **Comparison:** no	**Primary:** pancreatic function **Secondary:** surgical morbidity and mortality **Results:** Results: Twelve patients (6 boys and 6 girls) with a mean age of 9.3 years were identified. Presenting diagnoses were abdominal pain (n 10), failure to thrive (n 4), pancreatic pleural effusion (n 2), and pancreatic ascites (n 1). Blood loss was greater in patients who underwent distal pancreatec- tomy to localize the duct (n 6) than in those who underwent direct transpancreatic duct localization (n 6; 29.1 6.8 v 8.3 3.7 mL/kg; P .03). Other complications in patients who underwent distal pancreatectomy included splenic devas- cularization requiring splenectomy (n 1) and postoperative intraabdominal bleeding with subsequent left subphrenic abscess (n 1). There was no surgical mortality. Five pa- HEREDITARY PANCREATITIS is an autosomal dominant disorder with 80% penetrance and vari- able expressivity.1 Since Comfort and Steinberg2 de- scribed the first family pedigree in 1952, approximately 100 additional kindreds have been described worldwide.3 Hereditary pancreatitis currently is thought to be an underrecognized cause of chronic relapsing pancreatitis in the pediatric age groups.4 After a variable asymptom- atic period, the disease manifests in childhood as either an acute or chronic process.5 Clinically, hereditary pancre- atitis often progresses to a severe chronic form that is associated with frequent complications and the need for surgical intervention.6,7 Recently, a mutation in the trypsinogen gene has been described in hereditary pancreatitis that prevents inactiva- tion of trypsin thus permitting pancreatic autodigestion and clinical pancreatitis.1 Affected offspring with the clinical phenotype have recurrent bouts of epigastric pain indistinguishable from that of pancreatitis of any other cause.8 Many patients progress to complicated chronic pancreatitis characterized by pancreatic stones, ductal obstruction and dilatation, pseudocyst formation, chronic tients had steatorrhea preoperatively that resolved in 4 patients postoperatively and was well controlled in the fifth. Mean number of hospitalizations for pancreatitis in the 5 years after surgery were markedly less than in the 5 years preceding surgery (0.40.2 v 3.50.5; P.01, n9). Percentile ideal body weight tended to increase within the first postoperative year (24.66.8 v 45.08.3; P.07, n 9), and by the third year this trend was clearly significant (27.0 7.2 v 60.9 9.5; P .01, n 8).

		Author's Conclusion: In children with complicated HP, the modified Puestow procedure improves the quality of life by improving pancreatic function, decreasing hospitalizations, and increas- ing the percentile ideal body weight. Direct pancreatic duct localization during the procedure had a lower morbidity rate than localization via distal pancreatectomy. It is our impres- sion that surgery performed in the early stage of complicated disease may preserve pancreatic function.

Methodical Notes

Funding Sources: not indicated

COI: not indicated

Randomization: no

Blinding: no

Dropout Rate/ITT-Analysis: n.a.

Notes:

Ford, Kathryn et al. Surgical Success in Chronic Pancreatitis: Sequential Endoscopic Retrograde Cholangiopancreatography and Surgical Longitudinal Pancreatojejunostomy (Puestow Procedure). Eur J Pediatr Surg. 26. 232-9. 2016

Population	Intervention	Outcomes/Results
Evidence level: 2 **Study type:** single-center, retrospective review of children **Number of Patient:** 9 **Recruitung Phase:** 10 yrs **Inclusion Criteria:** chromnic pancreatitis, pain **Exclusion Criteria:** none	**Intervention:** ERCP and surgery with Puestow procedure **Comparison:** none	**Primary:** pain **Secondary:** lifestyle scoring **Results:** In this study, eight (M:F ratio of 4:4) children underwent an LPJ and one female child had a more limited pancreatojejunostomy anastomosis following preliminary ERCP and stent placement where possible. Diagnoses included hereditary pancreatitis (n ¼ 3), idiopathic or structural pancreatitis (n ¼ 5), and duct stricture following radiotherapy (n ¼ 1). Median duct diameter presurgery was 5 (4–11) mm. Endoscopic placement of a Zimmon pancreatic stent was possible in six with relief of symptoms in all. Median age at definitive surgery was 11 (range, 7–17) years with a median postoperative stay of 9 (range, 7–12) days and a follow-up of 6 (range, 0.5–12) years. All children reported markedly reduced episodes of pain postprocedure. One developed diabetes mellitus, while three had exocrine deficiency (fecal elastase < 200 µg/g) requiring enzyme supplementation. The child with limited LPJ had symptomatic recurrence and required restenting and further surgery to widen the anastomosis to become pain free. **Author's Conclusion:** ERCP and stenting provide a therapeutic trial to assess possible benefit of a definitive duct drainage procedure. LPJ—the modified Puestow operation was safe and complication-free with good medium-term relief of symptoms. We were not able to identify a consistent etiology-associated outcome.

Methodical Notes

Funding Sources: not indicated

COI: none

Randomization: no

Blinding: no

Dropout Rate/ITT-Analysis: n.a.

Notes:

Ghosh, Dhruva Nath et al. The leaking pancreatic duct in childhood chronic pancreatitis. Pediatr. Surg. Int. 23. 65-8. 2007

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** Retrospective case cohort **Number of Patient:** 7 **Recruitung Phase:** 4 years **Inclusion Criteria:** leaking pancreatic duct in chronic pancreatitis **Exclusion Criteria:** none	**Intervention:** Puestow procedure **Comparison:** none	**Primary:** Recovery of a leaking pancreatic duct **Secondary:** **Results:** All children were operated within 6 days of diagnosis by a Pue- stow's procedure in six and peripancreatic drainage in one. Six children made a prompt and lasting recovery after a Puestow's procedure while one child, also suf- fering from metastatic neuroblastoma, died in the immediate post operative period after peripancreatic drainage. **Author's Conclusion:** We recommend prompt and definitive sur- gical management of this potentially lethal condition.

Methodical Notes

Funding Sources: not indicated

COI: not indicated

Randomization: no

Blinding: no

Dropout Rate/ITT-Analysis: n.a.

Notes: This is a retrospective case study of 7 children.

Graham, K S et al. ERCP in the management of pediatric pancreatitis. Gastrointest. Endosc. 47. 492-5. 1998

Population	Intervention	Outcomes/Results
Evidence level: 2 **Study type:** retrospective case cohort **Number of Patient:** 17 **Recruitung Phase:** 8 years **Inclusion Criteria:** recurrent acute	**Intervention:** ERCP **Comparison:** n.a.	**Primary:** to determine the impact of ERCP on the management of recurrent acute or chronic pancreatitis **Secondary:** **Results:** In 16 of 17 patients (94%), the pancreatic duct was successfully visualized. Of the 16 studies, 9 (56%) had abnormal findings. A change in therapy occurred in all 9 patients as a result of the findings at ERCP. Of the 7 patients with a prior abnormal CT or ultrasound, 5 (71%) had an abnormal ERCP, all resulting in a change in therapy. Three of the 9 patients (33%) without radiographic abnormalities had an abnormal ERCP that, in each case, resulted in a change in therapy. Overall, findings at ERCP altered therapy in 52% of pediatric patients studied with recurrent acute or chronic pancreatitis. A prior abnormal CT had a high predictive value with respect to ERCP resulting in a change in management (83%). **Author's Conclusion:** ERCP is useful in the management of pediatric recurrent acute or chronic pancreatitis; abnormalities are found at a rate similar to those found in adults.

pancreatitis **Exclusion Criteria:** none		

Methodical Notes

Funding Sources: not indicated

COI: not indicated

Randomization: no

Blinding: no

Dropout Rate/ITT-Analysis: no

Notes:

Hsu, R K et al. Therapeutic ERCP in the management of pancreatitis in children. Gastrointest. Endosc. 51. 396-400. 2000

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** retrospective case cohort **Number of Patient:** 22 **Recruitung Phase:** 32 months **Inclusion Criteria:** ERCP for pancreatitis **Exclusion Criteria:** none	**Intervention:** ERCP **Comparison:** none	**Primary:** pain **Secondary:** emergency department visits, clinic visits, and hospital admissions related to the pancreatitis **Results:** Mean age of the patients was 10.7 years (range 1.5 to 17 years). Abdominal pain was the main presenting symptoms with hyperamylasemia and hyperlipasemia. Clinical diagnoses includ- ed acute pancreatitis (6), recurrent pancreatitis (5), and chronic pancreatitis (11). The mean follow- up was 16.4 months. Nine patients had sphincter manometry, with abnormal results leading to bil- iary sphincterotomy in 4. Fifteen patients underwent a total of 23 therapeutic ERCP procedures unrelated to sphincter dysfunction. There were 2 complications of 34 procedures (6%), both being mild pancreatitis after sphincter manometry. There were no deaths. There was a significant reduc- tion in frequency ($p < 0.01$) and severity of pain ($p < 0.01$) after intervention. Patients without pan- creatographic changes of chronic pancreatitis had the most marked clinical improvement ($p < 0.05$). In those with ductal changes of chronic pancreatitis, clinical improvement was not predict- ed by the extent of ductal changes. There was a significant decrease in health care encounters ($p < 0.05$) and improvement in general condition ($p < 0.01$) after endoscopic therapy, especially in those with a normal pancreatogram. **Author's Conclusion:** Therapeutic ERCP is safe in pediatric patients with pancreatitis. Significant clinical improvement is achieved in patients with biliary or pancreatic stone disease. Prospective studies with long-term follow-up are needed to determine the impact of endoscopic therapy in patients with chronic pancreatitis and sphincter of Oddi dysfunction.

Methodical Notes

Funding Sources: not indicated

COI: not indicated

Randomization: no

Blinding: no

Dropout Rate/ITT-Analysis:

Notes:

Iqbal, C W et al. Management of chronic pancreatitis in the pediatric patient: endoscopic retrograde cholangiopancreatography vs operative therapy. J. Pediatr. Surg. 44. 139-43; discussion 143. 2009

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** retrospective case cohort **Number of Patient:** 37 **Recruitung Phase:** 34 years **Inclusion Criteria:** Chronic pancreatitis **Exclusion Criteria:**	**Intervention:** ERCP or operative therapy **Comparison:** no	**Primary:** rate of recurrent pancreatitis **Secondary:** **Results:** We identified 37 children with CP; 25 (68%) were managed by OR with 20 of these previously failing ERCP. Twelve (32%) were managed by ERCP alone. Mean follow-up was longer in the OR group (5.1 vs 2.1 years; P = .02). Patients with idiopathic pancreatitis (58% vs 13%; P = .04) and patients with a later onset of pancreatitis (12.0 vs 7.4 years; P = .002) were more likely to be managed with ERCP alone. The patients who underwent OR had a lower rate of recurrent pancreatitis (39% vs 75%; P b .0001), although this did not correlate to fewer hospitalizations or less narcotic use compared to ERCP alone. When patients who failed ERCP and progressed to OR were included in the ERCP alone group, ERCP was worse in recurrence (90% vs 39%; P b .0001) and rate of hospitalization (55% vs 33%; P = .04) compared to OR. **Author's Conclusion:** Patients with CP managed by OR have a lower rate of recurrent pancreatitis and hospitalization compared to ERCP.

Methodical Notes

Funding Sources: not indicated

COI: Patients with CP managed by OR have a lower rate of recurrent pancreatitis and hospitalization compared to ERCP.

Randomization: no

Blinding: no

Dropout Rate/ITT-Analysis: none

Notes:

Jeong, In Sook et al. Metal stents placement for refractory pancreatic duct stricture in children. World J. Gastroenterol. 24. 408-414. 2018

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** retrospective cohort study **Number of Patient:** 8 **Recruitung Phase:** 3 years **Inclusion Criteria:** chronic pancreatitis and benign dominant MPD stricture	**Intervention:** ERCP, self-expandable stent **Comparison:** no	**Primary:** complication after stenting **Secondary:** **Results:** The placement and removal of the FCSEMSs were successful in all 8 patients. Five patients were boys and 3 were girls. The median age at initial FCSEMS placement was 12 years (range, 5-18 years). The diameters of all the inserted stents were 6 mm, and the lengths were 4-7 cm. The median indwelling time was 6 mo (range, 3-10 mo). No pancreatic sepsis, pancreatitis, cholestasis, or mortality occurred. There was no proximal and distal migration. All subjects showed a patent stent. On follow-up ERCP, the mean diameter of the stricture improved from 1.1 mm to 2.8 mm (P < 0.05), whereas that of upstream dilation improved from 8.4 mm to 6.3 mm (P < 0.05). **Author's Conclusion:** This initial experience showed that temporary FCSEMS placement is feasible and safe for the management of refractory benign MPD stricture in children.

Exclusion Criteria: none		

Methodical Notes

Funding Sources: not indicated

COI: none

Randomization: no

Blinding: no

Dropout Rate/ITT-Analysis: no

Notes:

Kargl, S et al. Therapeutic step-up strategy for management of hereditary pancreatitis in children. J. Pediatr. Surg. 50. 511-4. 2015

Population	Intervention	Outcomes/Results
Evidence level: 2 **Study type:** prospective cohort study **Number of Patient:** 12 **Recruitung Phase:** 7 years **Inclusion Criteria:** chronic pancreatitis **Exclusion Criteria:**	**Intervention:** ERCP, surgery **Comparison:** none	**Primary:** interval free of recurrence of pancreatitis **Secondary:** **Results:** After diagnostic work-up (laboratory data, ultrasound examination, magnetic resonance cholangio- pancreatography and genetic testing), all 12 patients underwent early endoscopic retrograde cholangiopan- creatography (ERCP), which was successfully performed in ten children. Obstructive pancreatitis was found in eight children, and required sphincterotomy, dilation and stenting for 12 months. In two children with unsuccessful ERCP, open surgical drainage procedures were performed. After a mean follow-up of 32 months all children are free of recurrence of pancreatitis without any impairment of everyday activities. **Author's Conclusion:** For children with hereditary pancreatitis, a therapeutic step plan with early ERCP and open surgical drainage procedures in case of impossible or insufficient endoscopic treatment prevents recurring pancreatitis and offers a normal quality of life without any major complications.

Methodical Notes

Funding Sources: not indicated

COI: not indicated

Randomization: no

Blinding: no

Dropout Rate/ITT-Analysis: no

Notes:

Kolodziejczyk, E et al. The nutritional status and factors contributing to malnutrition in children with chronic pancreatitis. Pancreatology. 14. 275-9. 2014

Population	Intervention	Outcomes/Results
Evidence	**Intervention:** none	**Primary:** Level of malnutrition

level: 3 **Study type:** retrospective cohort study **Number of Patient:** 208 **Recruitung Phase:** 24 years **Inclusion Criteria:** children with chronic pancreatitis **Exclusion Criteria:**	**Comparison:** To identify the factors contributing to malnutrition among the following variables: age at CP onset, duration of CP, number of CP exacer- bations, the number of ERCPs performed, the grade of pancreatic damage documented on imaging, co-occurrence of diabetes, and the results of 72-h fecal fat quantification.	**Secondary:** **Results:** We documented features of malnutrition in 52 (25%) children with CP, including 36 (17.3%) patients with moderate malnutrition, and 2 (0.96%) with severe malnutrition. There was no significant difference in the prevalence of malnutrition between groups of patients with various etiological factors of chronic pancreatitis. The age at CP onset showed the best discrimination ability of malnourished patients: the mean age at disease onset in a subgroup of malnourished children was significantly higher than in children with Cole's index >85%. **Author's Conclusion:** A considerable percentage of children with CP can suffer from clinically significant malnutrition. Later age at CP onset predisposes to development of malnutrition.

Methodical Notes

Funding Sources: not indicated

COI: A considerable percentage of children with CP can suffer from clinically significant malnutrition. Later age at CP onset predisposes to development of malnutrition.

Randomization: no

Blinding: no

Dropout Rate/ITT-Analysis: n.a.

Notes:

Laje, Pablo et al. Modified Puestow procedure for the management of chronic pancreatitis in children. J. Pediatr. Surg. 48. 2271-5. 2013

Population	Intervention	Outcomes/Results
Evidence level: 2 **Study type:** retrospective chart review **Number of Patient:** 6 **Recruitung Phase:** 10 years **Inclusion Criteria:** Puestow procedure in chronic pancreatitis in children **Exclusion Criteria:** none	**Intervention:** Modified Puestow procedure **Comparison:** none	**Primary:** Pain **Secondary:** **Results:** Six patients underwent a modified Puestow procedure (lateral pancreaticojejunostomy) for the management of chronic pancreatitis, three females and three males. Four patients had hereditary pancreatitis (three with confirmed N34S mutation in the SPINK1 gene), one patient had chronic pancreatitis of unknown etiology, and one patient with annular pancreas developed obstructive chronic pancreatitis. The pancreatic duct was dilated in all cases, with a maximum diameter of 5 to 10 mm. Median time between onset of pain and surgery was 4 years (range: 1–9). Median age at surgery was 7.5 years (range: 5–15). Median hospital stay was 12 days (range: 9–28). Median follow up was 4.5 years (range: 5 months to 9 years). All patients had temporary postoperative improvement of their abdominal pain. In two patients the pain recurred at 6 months and 2 years postoperatively and eventually required total pancreatectomy to treat intractable pain, 3 and 8 years after surgery. Two patients were pain free for two years and subsequently developed occasional episodes of pain. The two most recent patients are pain free at 1 year (obstructive chronic pancreatitis) and 5 months (hereditary pancreatitis) follow-up. Two patients developed type I diabetes mellitus 10 and 12 months postoperatively (one with hereditary and one with idiopathic chronic pancreatitis). **Author's Conclusion:** We conclude that the modified Puestow procedure in children is feasible and safe. It seems to provide definitive pain control and prevent further damage to the pancreas in patients with obstructive chronic pancreatitis.

		However, in patients with hereditary pancreatitis, pain control outcomes are variable and the operation may not abrogate the progression of disease to pancreatic insufficiency.

Methodical Notes

Funding Sources: not indicated

COI: not indicated

Randomization: no

Blinding: no

Dropout Rate/ITT-Analysis: n.a.

Notes: Small sample size

Li, Zhao-Shen et al. A long-term follow-up study on endoscopic management of children and adolescents with chronic pancreatitis. Am. J. Gastroenterol. 105. 1884-92. 2010

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** retrospective cohort study **Number of Patient:** 51 **Recruitung Phase:** 10 years **Inclusion Criteria:** chronic pancreatitis **Exclusion Criteria:** unclear diagnosis	**Intervention:** ERCP **Comparison:** To describe the symptoms and to evaluate the therapeutic effect appropriately, we divided our patients into three subgroups: (i) Acute pancreatitis attacks alone: acute abdominal pain and ten- derness in the upper abdomen with elevated serum amylase (or lipase) levels increased more than threefold of the upper limit of normal, or abnormal imaging findings in the pancreas associated with acute pancreatitis; (ii) Abdominal pain alone: pain syndrome consistent with CP without other etiologies identified for pain and documented elevations in amylase or lipase; and (iii) Acute pancreatitis attacks plus abdominal pain: coexistent acute pancrea- titis attacks and abdominal pain.	**Primary:** pain **Secondary:** post-ERCP pancreatitis, lab tests **Results:** Follow-up information was available in 42 (91.3%) of the 46 patients who received therapeutic ERCP. There were 20 boys and 22 girls, with the age at first onset being 11.8±4.5 years. A total of 110 therapeutic ERCP sessions were performed in the 42 patients. The post-ERCP complication rate was 17.3%, including mild and moderate pancreatitis (n=17) and mild cholangitis (n=2). The mean follow-up period of time was 61.4 (range: 24–132) months. Five patients underwent subsequent surgery because of refractory abdominal pain after endotherapy. Of the remaining 37 patients who received therapeutic ERCP alone, abdominal pain improved in 30 (81.1%) patients, and was com- pletely relieved in 24 (64.9%) patients during the period of follow-up. **Author's Conclusion:** Therapeutic ERCP may offer long-term improvement in pain in children and adolescents with CP.

Methodical Notes

Funding Sources: This study was supported in part by the National Natural Science Foundation of China no. 30800510.

COI: none

Randomization: no

Blinding: no

Dropout Rate/ITT-Analysis: n.a.

Notes:

Oracz, Grzegorz et al. Efficiency of pancreatic duct stenting therapy in children with chronic pancreatitis. Gastrointest. Endosc. 80. 1022-9. 2014

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** retrospective cohort study **Number of Patient:** 208 **Recruitung Phase:** 25 **Inclusion Criteria:** children with chronic pancreatitis **Exclusion Criteria:**	**Intervention:** ERCP and stenting **Comparison:** none	**Primary:** Episodes of pancreatitis before and after stenting **Secondary:** **Results:** A total of 223 pancreatic duct stenting procedures were performed in 72 children. The median number of stent replacements was 3 (range 1-21). A statistically significant decrease in the number of pancreatitis episodes per year was observed: from 1.75 to 0.23 after endoscopic treatment (P! .05). Pancreatic duct stenting was per- formed more frequently in patients with hereditary pancreatitis (61.5%) and in children with CP and anatomic anomalies of the pancreatic duct (65%; P ! .05). **Author's Conclusion:** Pancreatic duct stenting therapy is a safe and effective procedure in children with CP. This therapy should be recommended especially for children with hereditary pancreatitis and patients with anatomic anoma- lies of the pancreatic duct.

Methodical Notes

Funding Sources: not indicated

COI: not indicated

Randomization: no

Blinding: no

Dropout Rate/ITT-Analysis:

Notes:

Paris, Catherine et al. Endoscopic retrograde cholangiopancreatography is useful and safe in children. J. Pediatr. Surg. 45. 938-42. 2010

Population	Intervention	Outcomes/Results
Evidence level: 2 **Study type:** retrospective cohort study **Number of Patient:** 29 **Recruitung Phase:** 17 years **Inclusion Criteria:** Biliary and pancreatic indications for ERCP **Exclusion Criteria:**	**Intervention:** ERCP with stenting **Comparison:** Biliary and pancreatic indications for ERCP, two groups	**Primary:** successful ERCP with cannulation of the papilla **Secondary:** **Results:** Thirty-eight ERCPs were performed on 29 patients. There were 21 girls (72%), and median age at time of procedure was 10.3 years old (range, 3-17 years). Most had only one procedure performed. Two children had 2 interventions, and 1 child with papillary stenosis had 8 interventions linked to stent treatment. The ampulla was cannulated, and the procedure was successfully completed in 97% (37/38) of cases. General anesthesia and sedation were performed in 74% and 26% of procedures, respectively. Indications for ERCP were 29 recurrent or chronic pancreatitis (76%), 8 common bile duct obstructions (21%), and 1 choledochal cyst (3%). Endoscopic treatment was done in 29% of cases. The complication rate was 13.5%, and 4 clinical acute pancreatitis resolved with conservatory treatment. No severe pancreatitis, perforation, or bleeding was noted. Of the patients, 79% had their follow-up at the Centre Hospitalier Universitaire Ste-Justine for a median length of 43 months (range, 1-53 months). **Author's Conclusion:** Endoscopic retrograde cholangiopancreatography is used as a diagnostic and therapeutic procedure in children with a complication rate similar to that seen in adults. The need for general anesthesia is much more frequent with children. When performed by well-trained endoscopists, ERCP is useful and safe in children.

Methodical Notes

Funding Sources: not indicated **COI:** not indicated **Randomization:** no **Blinding:** no **Dropout Rate/ITT-Analysis:** n.a. **Notes:**

NEWCASTLE - OTTAWA Checklist: Cohort: 10 Bewertung(en)

Poddar, Ujjal et al. Clinical profile and treatment outcome of chronic pancreatitis in children: a long-term follow-up study of 156 cases. Scand. J. Gastroenterol. 52. 773-778. 2017

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 2 **Study type:** retrospective cohort	**Funding sources:** not indicated **Conflict of Interests:** none **Randomization:** no **Blinding:** no **Dropout rates:**	**Total no. patients:** 156 **Recruiting Phase:** 3 years **Inclusion criteria:** chronic pancreatitis in children **Exclusion criteria:**	**Interventions:** no **Comparison:** none
Notes:	**Author's conclusion:** Pediatric CP in Asia presents with episodic pain and genetic predisposition seems to be a major cause. There are two subsets; CCP and NCCP with former showing marked imaging changes, more often associated with malnutrition and complications. Endoscopic therapy for pain relief gives modest benefit but medical therapy is not encouraging.		
Outcome Measures/results	**Primary** pain **Secondary**	**Results:** The median age of the patients was 13 [inter-quartile range (IQR): 10–14] years (93 males) and 134 (86%) were idiopathic. Genetic mutations were found in 22/40 (55%) idiopathic cases. All but two presented with pain abdomen (episodic pain in 93.6%) and symptom duration was 12 (IQR: 6–24) months. There were two subsets; calcific (CCP) 68 (43.5%) and non-calcific (NCCP) 88 (56.5%). In CCP group, significantly more children had Cambridge grade 5 magnetic resonance cholangiopancreatogra- phy changes, low weight Z-score, and had continuous pain more compared to NCCP group. Over a median follow-up of 23 (IQR: 8–45.5) months, more children in CCP group had complications. Endoscopic therapy (done for persistent pain in 40) relieved pain in 52.5% of cases while medical ther- apy did so in 36% of cases.	

Rabinovich, Aaron et al. Pancreatic disorders in children: relationship of postoperative morbidity and the indication for surgery. Am Surg. 72. 641-3. 2006

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 2 **Study type:**	**Funding sources:** not indicated	**Total no. patients:** 62 **Recruiting Phase:** 12 years	**Interventions:** surgical treatment

retrospective cohort	**Conflict of Interests:** not indicated **Randomization:** no **Blinding:** no **Dropout rates:** no	**Inclusion criteria:** surgical intervention in pancreatic disorders in children **Exclusion criteria:** Patients who received ERCP or other interventional treatment	**Comparison:** according to 1) pancreatitis, 2) trauma, and 3) tumors
Notes:	**Author's conclusion:** Pancreatic surgery in children is associated with a very low mor- tality (1.6%) and morbidity equal to that of adult patients. Unique types of morbidities occur with each category of disease state.		
Outcome Measures/results	**Primary** evaluation of Postoperative Morbidity and the Indication for Surgery **Secondary**	**Results:** Disorders were divided into 3 categories: 1) pancreatitis, 2) trauma, and 3) tumors. Sixty-two patients (28 males and 34 females), average age was 9.5 years (range, 1 week–18 years), underwent 72 operations. Thirty-seven procedures in 30 category I patients, 18 procedures in 15 category II, and 17 operations in 17 category III. There was only one death. A total of 33.9 per cent of the patients had postoperative complications that included: infection (11%), pseudocyst (6%), diabetes mellitus (5.6%), pancreatic fistula (3%), bowel obstruc- tion (1.3%), extracellular fluid (1.3%), pleural effusion (1.3%), and recurrent abdominal pain (13%) (all in category I patients). There was equivalent morbidity between all 3 groups but unique differences with in the categories. Recurrent abdominal pain characterized category I patients, fistulas were more common in category II, and diabetes mellitus was primarily related to near total excisions in category III.	

Ray, Sukanta et al. Frey procedure for chronic pancreatitis in children: A single center experience. J. Pediatr. Surg. 50. 1850-3. 2015

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 3 **Study type:** retrospective cohort	**Funding sources:** none **Conflict of Interests:** none **Randomization:** no **Blinding:** no **Dropout rates:** n.a.	**Total no. patients:** 24 **Recruiting Phase:** 7 years **Inclusion criteria:** Diagnosis of chronic pancreatitis **Exclusion criteria:**	**Interventions:** Frey procedure and failure of endoscopic treatment **Comparison:** none
Notes:	**Author's conclusion:** Frey procedure is safe and feasible in children with acceptable perioperative complications and good short-term pain control.		
Outcome Measures/results	**Primary** Pain control **Secondary** Duration of surgery (minutes) Mortality Exocrine insufficiency	**Results:** Twenty four children were included in our study. There were 13 girls and 11 boys. Mean age at operation was 13.95 years (range, 4 to 18 years). Mean duration between the diagnosis of chronic pancreatitis and surgery was 4.41 years (range, 1 to 14 years). Frey procedure was performed after failure of medical or endoscopic therapy. Mean duration of operation and blood loss were 215 minutes (range, 150–300 minutes) and 177 ml (range, 50 to 500 ml) respectively. Average postoperative hospital stay was 8 days (range, 5 to 16 days). Five patients (21%) developed postoperative complications. There was no in hospital mortality and no patient required reop- eration for postoperative complications. More than a	

	Endocrine insufficiency	median follow-up of 29 months (range, 3–78 months), 91% of the patients remained pain free.

Schwarzenberg, Sarah Jane et al. Pediatric chronic pancreatitis is associated with genetic risk factors and substantial disease burden. J. Pediatr. 166. 890-896.e1. 2015

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 3 **Study type:** prospective registry of children with pancreatitis, multicenter, multinational	**Funding sources:** NIH **Conflict of Interests:** not relevant to the study **Randomization:** no **Blinding:** no **Dropout rates:** 170/194 patients in the INSPIRRE database were included	**Total no. patients:** 170 **Recruiting Phase:** 1 year **Inclusion criteria:** chronic pancreatitis **Exclusion criteria:**	**Interventions:** none **Comparison:** no
Notes:	**Author's conclusion:** Chronic pancreatitis occurs at a young age with distinct clinical features. Genetic and obstructive risk factors are common, and disease burden is substantial.		
Outcome Measures/results	**Primary** risk factor for chronic pancreatitis **Secondary** pain, missing school days	**Results:** Among 170 subjects in the registry, 76 (45%) had chronic pancreatitis; 57% were female, 80% were Caucasian, median age at diagnosis was 9.9 years. Pancreatitis-predisposing genetic mutations were identified in 51 (67%) and obstructive risk factors in 25 (33%). Toxic/metabolic and autoimmune factors were uncommon. Imaging demonstrated ductal abnormalities and pancreatic atrophy more commonly than calcifications. Fifty-nine (77%) reported abdominal pain within the past year; pain was reported as constant and receiving narcotics in 28%. Children with chronic pancreatitis reported a median of 3 emergency room visits and 2 hospitalizations in the last year. Forty-seven subjects (70%) missed one day of school in the past month due to chronic pancreatitis; 26 (34%) missed 3 or more days. Children reporting constant pain were more likely to miss school (p=0.002), visit emergency room (p=0.01) and experience hospitalizations (p=0.03) compared with children with episodic pain. Thirty-three children (43%) underwent therapeutic ERCP; one or more pancreatic surgeries were performed in 30 (39%).	

Sun, Xiao-Tian et al. Clinical Features and Endoscopic Treatment of Chinese Patients With Hereditary Pancreatitis. Pancreas. 44. 59-63. 2015

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 2 **Study type:** retrospective cohort, single center	**Funding sources:** not indicated **Conflict of Interests:** not indicated **Randomization:**	**Total no. patients:** 22 **Recruiting Phase:** 18 years **Inclusion criteria:** chronic pancreatitis **Exclusion criteria:** none	**Interventions:** ERCP **Comparison:** no

	no **Blinding:** no **Dropout rates:** n.a.		
Notes:	**Author's conclusion:** As compared with previous studies, our patient cohort, with a relatively higher frequency of R122H mutation, showed a much lower surgery rate, and endoscopic interventions may be recommended to be the first-line treatment.		
Outcome Measures/results	**Primary** evaluation of clinical features of CP in the chinese population **Secondary** clinical remission after ERCP	**Results:** A total of 22 inpatients with HP (male, 12; female, 10) participated in this study. Mean (SD) age at first onset and at diagnosis were 24.5 (11.9) years and 29.1 (11.2) years, respectively. The predominant radiological feature was pancreatic calcifications. Thirty-nine endoscopic retrograde cholangiopancreatography procedures were successfully performed on 19 cases. In the final long-term follow-up, 21 patients got complete or incomplete remission after endoscopic retrograde cholangiopancreatography and/or surgery. Genetic analyses were available in 20 patients, and muta- tion rates of R122H, N29I, and A16V in PRSS1 were 60%, 25% and 5%, respectively.	

Troendle, David M et al. Factors associated with post-ERCP pancreatitis and the effect of pancreatic duct stenting in a pediatric population. Gastrointest. Endosc. 81. 1408-16. 2015

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 3 **Study type:** retrospective cohort, single center	**Funding sources:** not indicated **Conflict of Interests:** none **Randomization:** no **Blinding:** no **Dropout rates:** n.a.	**Total no. patients:** 313 **Recruiting Phase:** 10 years **Inclusion criteria:** ERCP in children **Exclusion criteria:** none	**Interventions:** ERCP **Comparison:** none
Notes:	**Author's conclusion:** In the pediatric population, pancreatic duct injection and pancreatic sphincterotomy are associ- ated with significantly increased rates of PEP, whereas a history of chronic pancreatitis is negatively associated. Prophylactic pancreatic stenting is associated with higher rates of PEP in high-risk patients and does not eliminate severe PEP.		
Outcome Measures/results	**Primary** Post ERCP pancreatitis **Secondary**	**Results:** PEP occurred after 47 procedures (prevalence, 10.9%). Thirty-four cases were mild, 9 were moderate, and 4 were severe. There was no mortality. On multiple logistic analysis, pancreatic duct injection (P ! .0001; odds ratio 30.8; 95% confidence interval [CI], 9.1-103.9) and pancreatic sphincterotomy (P ! .01; OR 3.8; 95% CI, 1.6-9.8) were positively associated with PEP. A history of chronic pancreatitis was negatively associated with PEP (P ! .05; OR 0.37; 95% CI, 0.15-0.93). On subset analysis, placing a prophylactic pancreatic stent was asso- ciated with significantly increased rates of PEP in patients with pancreatic duct injection compared with those who had no attempt at stent placement (P !.01). Two patients with severe pancreatitis had prophylactic pancreatic stents in place.	

Troendle, David M et al. Therapeutic Endoscopic Retrograde Cholangiopancreatography in Pediatric

Patients With Acute Recurrent and Chronic Pancreatitis: Data From the INSPPIRE (INternational Study group of Pediatric Pancreatitis: In search for a cuRE) Study. Pancreas. 46. 764-769. 2017

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 2 **Study type:** retrospective, multicenter cohort study/register	**Funding sources:** NIH **Conflict of Interests:** not indicated **Randomization:** no **Blinding:** no **Dropout rates:** n.a.	**Total no. patients:** 117 **Recruiting Phase:** 2,5 years **Inclusion criteria:** children underwent at least one therapeutic ERCP **Exclusion criteria:**	**Interventions:** ERCP **Comparison:** no
Notes:	**Author's conclusion:** Therapeutic ERCP is frequently utilized in children with ARP or CP and may offer benefit in selected cases, specifically if ductal obstruction is present. Longitudinal studies are needed to clarify the efficacy of therapeutic ERCP and to explore subgroups that might have increased benefit from such intervention.		
Outcome Measures/results	**Primary** Indication for ERCP in children **Secondary**	**Results:** 117 children (38.9%) underwent at least one therapeutic ERCP. The procedure was more commonly performed in children with CP compared to ARP (65.8% vs 13.5%, p<0.0001). Utility of therapeutic ERCP was reported to be similar between ARP and CP (53% vs 56%, p=0.81) and was found to be helpful for at least one indication in both groups (53 of 99 patients, 53.5%). Predictors for undergoing therapeutic ERCP were: presence of obstructive factors in ARP and CP, Hispanic ethnicity, or white race in CP.	

Varadarajulu, Shyam et al. Technical outcomes and complications of ERCP in children. Gastrointest. Endosc. 60. 367-71. 2004

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 2 **Study type:** retrospective, two-cohort case-controlled study	**Funding sources:** not indicated **Conflict of Interests:** not indicated **Randomization:** no **Blinding:** no **Dropout rates:** n.a.	**Total no. patients:** 116 **Recruiting Phase:** 8 years **Inclusion criteria:** ERCP for different indications **Exclusion criteria:**	**Interventions:** ERCP **Comparison:** case-control adult patient cohort
Notes:	**Author's conclusion:** see results		
Outcome Measures/results	**Primary** Outcome after ERCP **Secondary**	**Results:** Procedure success and complication rate is similar in pediatric and adult cohort.	

Wang, Wei et al. Chronic pancreatitis in Chinese children: etiology, clinical presentation and imaging diagnosis. J. Gastroenterol. Hepatol. 24. 1862-8. 2009

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 3 **Study type:** retrospective cohort	**Funding sources:** not indicated **Conflict of Interests:** not indicated **Randomization:** no **Blinding:** no **Dropout rates:** no	**Total no. patients:** 427 **Recruiting Phase:** 9,5 years **Inclusion criteria:** Children with pancreatitis **Exclusion criteria:**	**Interventions:** none **Comparison:** none
Notes:	**Author's conclusion:** The main etiological factor of Chinese children with CP is idiopathic. The main symptom in these patients is multiple episodes of mild to moderate abdominal pain, which often lead to a delay in the definite diagnosis. CT and MRCP (or MRI) should be used as the first investigation in the evaluation of these cases.		
Outcome Measures/results	**Primary** Etiology of CP in childhood **Secondary** clinical presentation imaging diagnosis	**Results:** A total of 427 CP patients presented to our center. There were 42 (9.8%) children with CP, including 21 males and 21 females, with a mean age of 11.7 years at the first onset. The main etiological factor was idiopathic (73.8%). Of the patients, 78.5% had episodes of mild to moderate abdominal pain and 54.8% had multiple (	

Weber, T R et al. Operative management of chronic pancreatitis in children. Arch Surg. 136. 550-4. 2001

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 2 **Study type:** single center, retrospective cohort	**Funding sources:** not indicated **Conflict of Interests:** not indicated **Randomization:** no **Blinding:** no **Dropout rates:** n.a.	**Total no. patients:** 18 **Recruiting Phase:** 13 years **Inclusion criteria:** Children with surgery for CP **Exclusion criteria:**	**Interventions:** Surgery for CP **Comparison:** no
Notes:	**Author's conclusion:** This series suggests that distal pancre- atectomy and pancreaticojejunostomy are effective treat- ments for this difficult group of patients, while longitu- dinal pancreaticojejunostomy was ineffective. Long- term relief of pain and reduced need for rehospitalization are the usual results after this procedure.		

Outcome Measures/results	**Primary** chronic pain medication requirements. **Secondary** Survival, need for rehospitalization or reoperation	**Results:** All patients survived. Follow-up ranged from 1 to 15 years. Thirteen (72%) of 18 patients have required no further hospitalizations or medications. Two patients required a second operation to convert their longitudinal pancreaticojejunostomy to distal pancreatectomy, and 3 patients have required 2 to 5 additional hospitalizations for recurrent pancreatitis. Endoscopic retrograde cholangio- pancreatography on 5 patients 2 to 4 years postopera- tively showed patent distal pancreaticojejunostomy.

Literatursammlung:

AG7-CP Handsuche

Inhalt: *51 Literaturstellen*

Literaturstelle	Evidenzlevel	Studientyp
Abu-El-Haija, M. 2018	4	systematic review
Abu-El-Haija, M. 2014	3	
Abu-El-Haija, M. 2018	2	
Abu-El-Haija, M. 2016	3	retrospective
Afghani, E. 2014	1	
Antunes, H. 2014	3	
Audrezet, M. P. 2002	2	genetic analysis of patients with idiopathic CP
Bellin, M. D. 2017	4	
Borowitz, D. S. 1995	1	
Bowrey, D. J. 1999	1	
Carrere, J. 1986	2	
Carroccio, A. 1992	2	rerospective
Cheng, C. L. 2005	2	
Chiu, B. 2006	1	
Chromik, A. M. 2008	1	
Coffey, M. J. 2013	2	
Cohn, J. A. 2005	2	genetic association study, case control design
Dickerson, R. N. 1991	1	propspective
DiMagno, E. P. 2001	1	
Durno, C. 2002	5	cohort analyses, genetic study, genotype phenotype correlation study
Enestvedt, B. K. 2013	4	
Fjeld, K. 2015	5	genetic association study, case control design
Gesetz über genetische Untersuchungen bei Menschen (Gendiagnostikgesetz - GenDG)	2	
Graff, G. R. 2010	1	
Griese, M. 2005	1	
Kandula, L. 2008	3	retrospective
Keim, V. 2003	3	case "control" study: patients with PRSS1 mutations (p.N29I, p.R122H)compared to patients with SPINK1 p.N34S mutation
Kumar, S. 2016	2	
Laje, P. 2013	1	
Lasher, D. 2019	4	genetic association study, case control design
Mathew, P. 1996	1	
Morinville, V. D. 2012	3	consensus statement

Morris-Stiff, G. J. 1999	1	
Parniczky, A. 2018	5	systematic review
Rasmussen, H. H. 2013	1	expert opinion
Rosendahl, J. 2013	4	genetic association study, case control design
Rosendahl, J. 2008	5	genetic association study, case control design
Scheers, I. 2017	3	cohort study of patients with autoimmune panmceratitis, literature search
Sharer, N. 1998	3	genetic study, no controls investigated
Stallings, V. A. 2008	1	
Szabo, F. K. 2015	3	retrospective
Ventrucci, M. 1989	3	
Ventrucci, M. 1987	3	
Vujasinovic, M. 2019	1	
Weber, T. R. 2001	5	
Werlin, S. L. 2003	3	retrospective
Whitcomb, D. C. 1996	5	genetic linkage study, genetic pedigree analysis
Witt, H. 2013	5	genetic association study, case control design
Witt, H. 2002	3	genetic association study
Witt, H. 1999	4	genetic association study, case control desiogn
Witt, H. 2000	5	genetic association study, case control

OXFORD (2011) Appraisal Sheet: Systematic Reviews: *11 Bewertung(en)*

Abu-El-Haija, M. et al. Management of Acute Pancreatitis in the Pediatric Population: A Clinical Report From the North American Society for Pediatric Gastroenterology, Hepatology and Nutrition Pancreas Committee. J Pediatr Gastroenterol Nutr. 66. 159-176. 2018

Evidence level/Study Types	P - I - C	Outcomes/Results	Literature References
Evidence level: 4 **Study type:** systematic review **Databases:** evidence-based search of the literature on nutrition in AP, ARP, and CP with a focus on pediatrics **Search period:** n.i. **Inclusion Criteria:** evidence-based search of the literature on nutrition in AP, ARP, and CP with	**Intervention:** none **Comparison:** none	**Primary:** enteral nutrition in pancreatitis **Secondary:** **Results:** The literature on nutrition in pediatric pancreatitis is limited. Children with mild AP benefit from starting an early nutritional regimen in the course of the attack. Early nutrition should be attempted in severe AP when possible; enteral nutrition is preferred over parenteral nutrition. Children with ARP are likely to tolerate and benefit from a regular diet. Children with CP need ongoing assessment for growth and nutritional deficiencies, exocrine and endocrine insufficiencies. **Author's Conclusion:** This document presents the first authoritative recommendations on nutritional considerations in pediatric pancreatitis. Future research should address the gaps in knowledge particularly relating to optimal nutrition for AP in children, role of diet or dietary supplements	

a focus on pediatrics **Exclusion Criteria:**		on recurrent attacks of pancreatitis and pain episodes, monitoring practices to detect early growth and nutritional deficiencies in CP and identifying risk factors that predispose children to these deficiencies.	

Methodical Notes

Funding Sources: none

COI: none

Study Quality:

Heterogeneity:

Publication Bias:

Notes:

Abu-El-Haija, M. et al. Update to the management of pediatric acute pancreatitis: highlighting areas in need of research. J Pediatr Gastroenterol Nutr. 58. 689-93. 2014

Evidence level/Study Types	P - I - C	Outcomes/Results	Literature References
Evidence level: 3 **Study type:** **Databases:** **Search period:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** **Author's Conclusion:**	

Methodical Notes

Funding Sources:

COI:

Study Quality:

Heterogeneity:

Publication Bias:

Notes:

Abu-El-Haija, M. et al. Nutritional Considerations in Pediatric Pancreatitis: A Position Paper from the NASPGHAN Pancreas Committee and ESPGHAN Cystic Fibrosis/Pancreas Working Group. J Pediatr Gastroenterol Nutr. 67. 131-143. 2018

Evidence level/Study Types	P - I - C	Outcomes/Results	Literature References
Evidence level: 2 **Study type:** **Databases:** **Search period:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** **Author's Conclusion:**	

Methodical Notes

Funding Sources:

COI:

Study Quality:

Heterogeneity:

Publication Bias:

Notes:

Afghani, E. et al. An overview of the diagnosis and management of nutrition in chronic pancreatitis. Nutr Clin Pract. 29. 295-311. 2014

Evidence level/Study Types	P - I - C	Outcomes/Results	Literature References
Evidence level: 1 **Study type:** **Databases:** **Search period:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** **Author's Conclusion:**	

Methodical Notes

Funding Sources:

COI:

Study Quality:

Heterogeneity:

Publication Bias:

Notes:
Expert opinion

Borowitz, D. S. et al. Use of pancreatic enzyme supplements for patients with cystic fibrosis in the context of fibrosing colonopathy. Consensus Committee. J Pediatr. 127. 681-4. 1995

Evidence level/Study Types	P - I - C	Outcomes/Results	Literature References
Evidence level: 1 **Study type:** **Databases:** **Search period:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** **Author's Conclusion:**	

Methodical Notes

Funding Sources:

COI:

Study Quality:

Heterogeneity:

Publication Bias:

Notes:

Bowrey, D. J. et al. Selenium deficiency and chronic pancreatitis: disease mechanism and potential for therapy. HPB Surg. 11. 207-15; discussion 215-6. 1999

Evidence level/Study Types	P - I - C	Outcomes/Results	Literature References
Evidence level: 1 **Study type:** **Databases:** **Search period:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** **Author's Conclusion:**	

Methodical Notes
Funding Sources:
COI:
Study Quality:
Heterogeneity:
Publication Bias:
Notes:

Gesetz über genetische Untersuchungen bei Menschen (Gendiagnostikgesetz - GenDG). . https://www.gesetze-im-internet.de/bundesrecht/gendg/gesamt.pdf. . .

Evidence level/Study Types	P - I - C	Outcomes/Results	Literature References
Evidence level: 2 **Study type:** **Databases:** **Search period:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** **Author's Conclusion:**	

Methodical Notes
Funding Sources:
COI:
Study Quality:
Heterogeneity:
Publication Bias:
Notes:

Morinville, V. D. et al. Definitions of pediatric pancreatitis and survey of present clinical practices. J Pediatr Gastroenterol Nutr. 55. 261-5. 2012

Evidence level/Study Types	P - I - C	Outcomes/Results	Literature References
Evidence level: 3 **Study type:** consensus statement **Databases:** **Search period:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** AP was defined as requiring 2 of the following: abdominal pain compatible with AP, serum amylase and/or lipase values **Author's Conclusion:** INSPPIRE represents the first initiative to create a multicenter approach to systematically characterize pancreatitis in children. Future aims include creation of patient database and biologic sample repository.	

Methodical Notes
Funding Sources: none
COI: none
Study Quality:
Heterogeneity:
Publication Bias:
Notes:

Parniczky, A. et al. EPC/HPSG evidence-based guidelines for the management of pediatric pancreatitis. Pancreatology. 18. 146-160. 2018

Evidence level/Study Types	P - I - C	Outcomes/Results	Literature References
Evidence level: 5 **Study type:** systematic review **Databases:** **Search period:** **Inclusion Criteria:** acute pancreatitis: diagnosis; etiology; prognosis; imaging; complications; therapy; biliary tract management; acute recurrent pancreatitis: diagnosis; chronic pancreatitis: diagnosis, etiology, treatment, imaging, intervention, pain, complications; enzyme replacement **Exclusion Criteria:**	**Population:** children **Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** **Author's Conclusion:**	

Methodical Notes

Funding Sources:

COI: none

Study Quality:

Heterogeneity:

Publication Bias:

Notes:

Rasmussen, H. H. et al. Nutrition in chronic pancreatitis. World J Gastroenterol. 19. 7267-75. 2013

Evidence level/Study Types	P - I - C	Outcomes/Results	Literature References
Evidence level: 1 **Study type:** expert opinion **Databases:** **Search period:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** **Author's Conclusion:**	

Methodical Notes

Funding Sources:

COI:

Study Quality:

Heterogeneity:

Publication Bias:

Notes:
expert opinion

Stallings, V. A. et al. Evidence-based practice recommendations for nutrition-related management of children and adults with cystic fibrosis and pancreatic insufficiency: results of a systematic review. J Am Diet Assoc. 108. 832-9. 2008

Evidence level/Study Types	P - I - C	Outcomes/Results	Literature References

Evidence level: 1 **Study type:** **Databases:** **Search period:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** **Author's Conclusion:**	
Methodical Notes			
Funding Sources: **COI:** **Study Quality:** **Heterogeneity:** **Publication Bias:** **Notes:**			

NEWCASTLE - OTTAWA Checklist: Case Control: *17 Bewertung(en)*

Audrezet, M. P. et al. Determination of the relative contribution of three genes-the cystic fibrosis transmembrane conductance regulator gene, the cationic trypsinogen gene, and the pancreatic secretory trypsin inhibitor gene-to the etiology of idiopathic chronic pancreatitis. Eur J Hum Genet. 10. 100-6. 2002

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 2 **Study type:** genetic analysis of patients with idiopathic CP	**Funding sources:** INSERM **Conflict of Interests:** not stated **Randomization:** not applicable **Blinding:** not applicable **Dropout rates:** not applicable	**Total no. patients:** 39 **Patient characteristics:** 1999-2001 **Inclusion criteria:** idiopathic CP **Exclusion criteria:** alcohol, gallstones, trauma, medication, infection or metabolic disorders, an age of greater than 45 years and a report of positive family history	**Interventions:** not applicable **Comparison:** not applicable
Notes:	small sample size, no control subjects! **Author's conclusion:** PRSS1, SPINK1 and CFTR variants can be found in ICP patients - some were trans-heterozygous for variants in 2 genes		
Outcome Measures/results	**Primary** Frequncy of PRSS1, SPINK1 and CFTR variants in ICP patients **Secondary** none	**Results:** Our results demonstrate that, firstly, `gain-of-function' mutations in the PRSS1 gene may occasionally be found in an obvious ICP subject. Secondly, presumably `loss-of-function' mutations in the PSTI gene appear to be frequent, with a detection rate of at least 10% in ICP and, finally, abnormal CFTR alleles are common: at least 20% of patients carried one of the most common CFTR mutations, and about 10% of patients were compound heterozygotes, having at least one `mild' allele. Thus, in total, about 30% of ICP patients carried at least one abnormal allele in one of the three genes, and this is the most conservative estimate. Moreover, a trans-heterozygous state with sequence variations in the PSTI/CFTR genes was found in three patients. However, an association between the 5T allele in intron 8 of the CFTR gene and ICP remains unproven.	

Bellin, M. D. et al. Total Pancreatectomy With Islet Autotransplantation

Resolves Pain in Young Children With Severe Chronic Pancreatitis. J Pediatr Gastroenterol Nutr. 64. 440-445. 2017

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 4 Study type:	Funding sources: Conflict of Interests: Randomization: Blinding: Dropout rates:	Total no. patients: Patient characteristics: Inclusion criteria: Exclusion criteria:	Interventions: Comparison:
Notes:	Author's conclusion:		
Outcome Measures/results	Primary Secondary	Results:	

Chiu, B. et al. Longitudinal pancreaticojejunostomy and selective biliary diversion for chronic pancreatitis in children. J Pediatr Surg. 41. 946-9. 2006

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 Study type:	Funding sources: Conflict of Interests: Randomization: Blinding: Dropout rates:	Total no. patients: Patient characteristics: Inclusion criteria: Exclusion criteria:	Interventions: Comparison:
Notes:	Author's conclusion:		
Outcome Measures/results	Primary Secondary	Results:	

Chromik, A. M. et al. Tailored resective pancreatic surgery for pediatric patients with chronic pancreatitis. J Pediatr Surg. 43. 634-43. 2008

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 Study type:	Funding sources: Conflict of Interests: Randomization: Blinding: Dropout rates:	Total no. patients: Patient characteristics: Inclusion criteria: Exclusion criteria:	Interventions: Comparison:
Notes:	Author's conclusion:		
Outcome Measures/results	Primary Secondary	Results:	

Cohn, J. A. et al. Increased risk of idiopathic chronic pancreatitis in cystic fibrosis carriers. Hum Mutat. 26. 303-7. 2005

Evidence level	Methodical Notes	Patient characteristics	Interventions

Evidence level: 2 **Study type:** genetic association study, case control design	**Funding sources:** not stated **Conflict of Interests:** not stated **Randomization:** not applicable **Blinding:** not applicable **Dropout rates:** not applicable	**Total no. patients:** 52 **Patient characteristics:** not stated **Inclusion criteria:** idiopathic chronic pancreatitis **Exclusion criteria:** PRSS1 mutation, alcohol abuse or other causes of CP	**Interventions:** not applicable **Comparison:** CFTR variant frequncy in patients and controls
Notes:	different ethnicities of patients (59% from UK) and controls (all from UK) **Author's conclusion:** CFTR carriers are enrichd in ICP		
Outcome Measures/results	**Primary** difference of the frequncy of genetic CFTR variants between patietns and controls **Secondary** none	**Results:** Fifteen subjects had a total of 18 pathogenic CFTR alleles. Eight subjects had common CF-causing mutations. This group included seven CF carriers in whom the second CFTR allele was normal (4.3 times the expected frequency, P50.0002). Three subjects had compound heterozygotes genotypes containing two pathogenic alleles (31 times the expected frequency, Po0.0001). A variant allele of uncertain significance (p.R75Q) was detected in eight of the 52 ICP subjects and at a similar frequency (13/96) in random donors. ICP differs from other established CFTR-related conditions in that ICP risk is increased in CF carriers who have one documented normal CFTR allele. Having two CFTR mutations imparts a higher relative risk, while having only one mutation imparts a higher attributable risk.	

Fjeld, K. et al. A recombined allele of the lipase gene CEL and its pseudogene CELP confers susceptibility to chronic pancreatitis. Nat Genet. 47. 518-522. 2015

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 5 **Study type:** genetic association study, case control design	**Funding sources:** This work was supported by grants and fellowships to P.R.N. and A.M. from the Translational Fund of Bergen Medical Research Foundation, KG Jebsen Foundation, University of Bergen, Research Council of Norway and Western Norway Regional Health Authority (Helse Vest), and to P.R.N. from the European Research Council. Work performed in the German, French and Belgian laboratories was supported by grants from the German Federal Ministry of Education and Research (BMBF GANI-MED 03152061A and BMBF 0314107), European Union Framework Programme 7 (EPC-TM, REGPOT-2010-1 and BetaBat), Europäische Fonds für regionale Entwicklung, State Ministry of Economics Mecklenburg-Vorpommern (V-630-S-150-2012/132/133), Deutsche Forschungsgemeinschaft	**Total no. patients:** 1193 **Patient characteristics:** 1998-2014 **Inclusion criteria:** alcoholic and non-alcoholic CP **Exclusion criteria:** not stated	**Interventions:** not applicable **Comparison:** CEL hybride allele frequency in patietns and controls

	(RO 3929/1-1, RO 3939/2-1 1, Wi 2036/2-3, SFB 1052 C01 and SPP 1629 TO 718/2-1), Colora Stiftung gGmbH, Leipzig Interdisciplinary Research Cluster of Genetic Factors, Clinical Phenotypes and Environment (LIFE Center, Universität Leipzig), INSERM, French Association des Pancréatites Chroniques Héréditaires (APCH), Actions de Recherche Concertée de la Communauté Française (ARC) and Fonds National de la Recherche Scientifique (FNRS, Belgium). **Conflict of Interests:** none **Randomization:** not applicable **Blinding:** not applicable **Dropout rates:** not applicable		
Notes:	**Author's conclusion:** These findings implicate a new pathway distinct from the protease-antiprotease system of pancreatic acinar cells in chronic pancreatitis.		
Outcome Measures/results	**Primary** different frequency of the CEL hybride allele **Secondary** none	**Results:** In a discovery series of familial chronic pancreatitis cases, we observed CEL-HYB in 1 14.1% (10/71) of cases compared to 1 1.0% (5/478) of controls (odds ratio (OR) = 1 15.5; 95% confidence interval (CI) = 5.1–46.9; P = 1 1.3 × 1 10−6 by two-tailed Fisher's exact test). In three replication studies of nonalcoholic chronic pancreatitis, we identified CEL-HYB in a total of 3.7% (42/1,122) cases and 0.7% (30/4,152) controls (OR = 5.2; 95% CI = 3.2–8.5; P = 1 1.2 × 1 10−1111; formal meta-analysis). The allele was also enriched in alcoholic chronic pancreatitis. Expression of CEL-HYB in cellular models showed reduced lipolytic activity, impaired secretion, prominent intracellular accumulation and induced autophagy.	

Laje, P. et al. Modified Puestow procedure for the management of chronic pancreatitis in children. J Pediatr Surg. 48. 2271-5. 2013			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 1 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Patient characteristics:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		

Outcome Measures/results	Primary Secondary	Results:

Lasher, D. et al. Protease-Sensitive Pancreatic Lipase Variants Are Associated With Early Onset Chronic Pancreatitis. Am J Gastroenterol. 114. 974-983. 2019			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 **Study type:** genetic association study, case control design	**Funding sources:** This work was supported by the Else Kröner-Fresenius-Foundation (EKFS) (to H.W.), the Deutsche Forschungsgemeinschaft (DFG) grants Wi 2036/2-3 (to H.W.); National Institutes of Health grants R01DK058088 and R01DK095753 (to M.S.-T.), R01DK808820 and R01DK097241 (to M.E.L.), and R01DK061451 (to D.C.W.); the Hungarian Scientific Research Fund grant PD120960 (to A.S.); Grants-in-Aid for Scientific Research (KAKENHI) 16K15421 (to A.M.), and 17K15916 (to E.N.), the Smoking Research Foundation (to A.M.); Conseil R´egional de Bretagne, the Association des Pancreatites Chroniques Hereditaires, Association de Transfusion Sanguine et de Biog´en´etique Gaetan Saleun, Institut National de la Sant´e et de la Recherche M´edicale (INSERM), France (to C.F.); the Council of Scientific and Industrial Research, Govt of India, India (to G.R.C.); and the OeNB Jubiläumsfonds 16678 (to T.M.). **Conflict of Interests:** none **Randomization:** not applicable **Blinding:** not applicable **Dropout rates:** not applicable	**Total no. patients:** 1898 **Patient characteristics:** not stated **Inclusion criteria:** patients with non-alcoholic CP **Exclusion criteria:** not stated	**Interventions:** not applicable **Comparison:** frequncy of functional PNLIP mutations in patients and controls
Notes:	**Author's conclusion:** Data indicate that protease-sensitive PNLIP variants are novel genetic risk factors for the development of CP.		
Outcome Measures/results	**Primary** frequency of mutations in cases and controls **Secondary** none	**Results:** In the German discovery cohort, 8/429 (1.9%) patients and 2/600 (0.3%) controls carried a PNLIP missense variant (P50.02, odds ratio [OR]55.7,95%confidence interval [CI]51.1–38.9). Variants detected in patients were prone to proteolytic degradation by trypsin and chymotrypsin. In the French replication cohort, protease-sensitive variants were also enriched in patients with early-onset CP (5/632 [0.8%]) vs	

		controls (1/957 [0.1%]) (P 5 0.04, OR 5 7.6, 95% CI 5 0.9–172.9). In contrast, we detected no protease-sensitive variants in the non-European populations. In the combined European data, protease-sensitive variants were found in 13/1,163 cases (1.1%) and in 3/3,000 controls (0.1%) (OR 5 11.3, 95% CI 5 3.0–49.9, P < 0.0001).

Rosendahl, J. et al. CFTR, SPINK1, CTRC and PRSS1 variants in chronic pancreatitis: is the role of mutated CFTR overestimated?. Gut. 62. 582-92. 2013			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 **Study type:** genetic association study, case control design	**Funding sources:** Deutsche Forschungsgemeinschaft WI 2036/2-1, WI 2036/2-2 and WI 2036/2-3 (to HW) and RO 3929/1-1 and RO 3939/2-1 (to JR), by the Sonnenfeld-Stiftung (to HW and to RN), and by a grant from the Colora Stiftung GmbH (to JR) **Conflict of Interests:** none **Randomization:** not applicable **Blinding:** not applicable **Dropout rates:** not applicable	**Total no. patients:** 660 **Patient characteristics:** 1998-2011 **Inclusion criteria:** patients with idiopathic CP or hereditary pancreatitis **Exclusion criteria:** alcohol abuse, trauma, medication, infection and metabolic disorders	**Interventions:** not applicable **Comparison:** not applicable
Notes:	**Author's conclusion:** Accumulation of CFTR variants in CP is less pronounced than reported previously, with ORs between 2.7 and 4.5. Only CF-causing variants reached statistical significance. Compound and trans-heterozygosity is an overt risk factor for the development of CP, but the number of CFTR compound heterozygotes in particular is rather low. In summary, the study demonstrates the complexity of genetic interactions in CP and a minor influence of CFTR alterations in CP development.		
Outcome Measures/results	**Primary** frequncy of CFTR mutations in patients and controls **Secondary** none	**Results:** Frequencies of CFTR variants p.R75Q, p.I148T, 5T-allele and p.E528E were comparable in patients and controls. We identified 103 CFTR variants, which represents a 2.7-fold risk increase (p<0.0001). Severe cystic fibrosis (CF)-causing variants increased the risk of developing CP 2.9-fold, and mild CF-causing variants 4.5-fold (p<0.0001 for both). Combined CF-causing variants increased CP risk 3.4-fold (p<0.0001), while non-CF causing variants displayed a 1.5-fold over-representation in patients (p¼0.14). CFTR compound heterozygous status with variant classes CF-causing severe and mild represented an OR of 16.1 (p<0.0001). Notably, only 9/660 (1.4%) patients were compound heterozygotes in this category. Trans-heterozygosity increased CP risk, with an OR of 38.7, with 43/660 (6.5%) patients and 3/1667 (0.2%) controls being trans-heterozygous (p<0.0001).	

Rosendahl, J. et al. Chymotrypsin C (CTRC)	**Interventions:** This

variants that diminish activity or secretion are associated with chronic pancreatitis. Nat Genet. 40. 78-82. 2008 107). A replication study identified these two variants in 10 of 348 (2.9%) individuals with alcoholic chronic pancreatitis but only 3 of 432 (0.7%) subjects with alcoholic liver disease (OR ¼ 4.2; CI ¼ 1.2–15.5; P ¼ 0.02). CTRC variants were also found in 10 of 71 (14.1%) Indian subjects with tropical pancreatitis but only 1 of 84 (1.2%) healthy controls (OR ¼ 13.6; CI ¼ 1.7–109.2; P ¼ 0.0028). Functional analysis of the CTRC variants showed impaired activity and/or reduced secretion. **Exclusion criteria: Loss-of-function alterations in CTRC predispose to pancreatitis by diminishing** **its protective trypsin-degrading activity.**		work was supported by US National Institutes of Health grant DK058088 (to M.S.-T.), a scholarship from the Rosztoczy Foundation (to B.O.), by the Medical Faculty of the University of Leipzig formel.1 (to J.R.), and the Deutsche Forschungsgemeinschaft (DFG) grant Te 352/2-1 (to N.T.) and grants Wi 2036/2-1 and Wi 2036/2-2 (to H.W.).
Notes:	**Author's conclusion:** none	
Outcome Measures/results	**Primary** not applicable **Secondary** not applicable	**Results:** not applicable

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Evidence level

Evidence level: 5

Study type: genetic association study, case control design

Notes:

Methodical Notes

Funding sources: This work was supported by US National Institutes of Health grant DK058088 (to M.S.-T.), a scholarship from the Rosztoczy Foundation (to B.O.), by the Medical Faculty of the University of Leipzig formel.1 (to J.R.), and the Deutsche Forschungsgemeinschaft (DFG) grant Te 352/2-1 (to N.T.) and grants Wi 2036/2-1 and Wi 2036/2-2 (to H.W.).

Conflict of Interests: none

Randomization: not applicable

Blinding: not applicable

Dropout rates: not applicable

Patient characteristics

Total no. patients: 1320

Patient characteristics: 1998-2007

Inclusion criteria: idiopathic/hereditary CP or alcoholic CP

Exclusion criteria: trauma, medication, infection, metabolic disorders

Interventions

Interventions: not applicable

Comparison: CTRC variant frequency in patients and controls

Author's conclusion: Loss-of-function alterations in CTRC predispose to pancreatitis by diminishing its protective trypsin-degrading activity.

Outcome Measures/results	**Primary** difference of CTRC mutations between cases and controls **Secondary** none	**Results:** Two alterations in this gene, p.R254W and p.K247_R254del, were significantly overrepresented in the pancreatitis group, being present in 30 of 901 (3.3%) affected individuals but only 21 of 2,804 (0.7%) controls (odds ratio (OR) ¼ 4.6; confidence interval (CI) ¼ 2.6–8.0; P ¼ 1.3 107). A replication study identified these two variants in 10 of 348 (2.9%) individuals with alcoholic chronic pancreatitis but only 3 of 432 (0.7%) subjects with alcoholic liver disease (OR ¼ 4.2; CI ¼ 1.2–15.5; P ¼ 0.02). CTRC variants were also found in 10 of 71 (14.1%) Indian subjects with tropical pancreatitis but only 1 of 84 (1.2%) healthy controls (OR ¼ 13.6; CI ¼ 1.7–109.2; P ¼ 0.0028). Functional analysis of the CTRC variants showed impaired activity and/or reduced secretion.

Sharer, N. et al. Mutations of the cystic fibrosis gene in patients with chronic pancreatitis. N Engl J Med. 339. 645-52. 1998

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 3 **Study type:** genetic study, no controls investigated	**Funding sources:** Zeneca Diagnostics **Conflict of Interests:** none declared **Randomization:** not applicable **Blinding:** not applicable **Dropout rates:** not applicable	**Total no. patients:** 134 **Patient characteristics:** 1993 (January to June) **Inclusion criteria:** patients with chronic pancreatitis of different aetiology (71 alcohol-related, 60 idiopathic, 2 hyperparathyreoidism, 1 hypertriglycerdemia) **Exclusion criteria:** none	**Interventions:** not applicable **Comparison:** none
Notes:	**Author's conclusion:** Mutations of the CFTR gene and the 5T genotype are associated with chronic pancreatitis.		
Outcome Measures/results	**Primary** frequncy of CFTR mutations **Secondary** none	**Results:** The 94 male and 40 female patients ranged in age from 16 to 86 years. None had a mutation on both copies of the CFTR gene. Eighteen patients (13.4 percent), including 12 without alcoholism, had a CFTR mutation on one chromosome, as compared with a frequency of 5.3 percent among 600 local unrelated partners of persons with a family history of cystic fibrosis (P<0.001). A total of 10.4 percent of the patients had the 5T allele in intron 8 (14 of 134), which is twice the expected frequency (P=0.008). Four patients were heterozygous for both a CFTR mutation and the 5T allele. Patients with a CFTR mutation were younger than those with no mutations (P=0.03). None had the combination of sinopulmonary disease, high sweat electrolyte concentrations, and low nasal potential-difference values that are diagnostic of cystic fibrosis.	

Weber, T. R. et al. Operative management of chronic pancreatitis in children. Arch Surg. 136. 550-4. 2001

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 5 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Patient characteristics:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary**	**Results:**	

	Secondary	

Whitcomb, D. C. et al. Hereditary pancreatitis is caused by a mutation in the cationic trypsinogen gene. Nat Genet. 14. 141-5. 1996			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 5 **Study type:** genetic linkage study, genetic pedigree analysis	**Funding sources:** NIH, the Pathology Research and Education Foundation **Conflict of Interests:** not declared **Randomization:** not applicable **Blinding:** not applicable **Dropout rates:** not applicable	**Total no. patients:** 42 family members (20 affected, 6 obligate carriers, 16 unaffected) from 5 kindreds **Patient characteristics:** not stated **Inclusion criteria:** hereditary pancreatitis (strong family history) **Exclusion criteria:** not stated	**Interventions:** not applicable **Comparison:** not applicable
Notes:	**Author's conclusion:** PRRS1 mutations cause hereditary pancreatitis		
Outcome Measures/results	**Primary** presence of PRSS1 mutations in patients and controls **Secondary** none	**Results:** PRSS1 p.R122H segregated with the disease and was absent in controls	

Witt, H. et al. Variants in CPA1 are strongly associated with early onset chronic pancreatitis. Nat Genet. 45. 1216-20. 2013			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 5 **Study type:** genetic association study, case control design	**Funding sources:** This work was supported by the Deutsche Forschungsgemeinschaft (DFG) grants Wi 2036/2-2 and Wi 2036/2-3 (to H.W.) and RO 3929/1-1 and RO 3939/2-1 (to J.R.), the Else Kröner-Fresenius-Foundation (EKFS) (to H.W.), a grant of the Colora Stiftung gGmbH (to J.R.), US National Institutes of Health (NIH) grants R01DK058088, R01DK082412, R01DK082412-S2 and R01DK095753 (to M.S.-T.), fellowships from the Rosztoczy Foundation (to M. Bence and A. Schnúr), the Bolyai postdoctoral fellowship from the Hungarian Academy of Sciences (to R.S.), INSERM, the Programme Hospitalier de Recherche Clinique (PHRC R 08-04), the French Association des Pancréatites Chroniques Héréditaires and its president N. Meslet, the Czech Ministry of Health conceptual development project of research organization University Hospital Motol in Prague (00064203) and grants CZ.2.16/3.1.00/24022OPPK (to M.M.), the Council of Scientific and Industrial Research (CSIR), Ministry of Science and Technology, Government of India, India grant GENESIS (to G.R.C.), a Grant-in-Aid from the Japan Society for the Promotion of Science (#23591008 to A.M.) and the Research Committee of Intractable Pancreatic Diseases provided by the Ministry of Health, Labour and Welfare of Japan (to A.M. and T.S.). **Conflict of Interests:** none **Randomization:** not applicable **Blinding:** not applicable **Dropout rates:** not applicable	**Total no. patients:** 2038 **Patient characteristics:** 1998-2012 **Inclusion criteria:** patients with acute recurrent or chronic non-alcoholic pancreatitis **Exclusion criteria:** alcohol abuse	**Interventions:** not applicable **Comparison:** freqeuncy of functional deleterious CPA1 in patietns and controls
Notes:	**Author's conclusion:** CPA1 variants are associated to non-alcoholic chronic pancreatitis. The mechanism by which CPA1 variants confer increased pancreatitis risk may involve misfolding-induced endoplasmic reticulum stress rather than elevated trypsin activity, as is seen with other genetic risk factors for this disease.		
Outcome Measures/results	**Primary** freqeuncy of functional deleterious CPA1 in patietns and controls **Secondary** not applicable	**Results:** Functionally impaired variants were present in 29/944 (3.1%) German cases and 5/3,938 (0.1%) controls (odds ratio (OR) = 24.9, P = 1 1.5 × 1 10−16). The association was strongest in subjects aged ≤10 years (9.7%; OR = 84.0, P = 4.1 1 × 1 10−24). In the replication sets, defective CPA1 variants were present in 8/600 (1.3%) cases and 9/2,432 (0.4%) controls from Europe (P = 0.01), 5/230 (2.2%) cases and 0/264 controls from India (P = 0.02) and 5/247 (2.0%) cases and 0/341 1 controls from Japan (P = 0.013).	

Witt, H. et al. Alpha1-antitrypsin genotypes in patients with chronic pancreatitis. Scand J Gastroenterol. 37. 356-9. 2002			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 3	**Funding sources:** none	**Total no. patients:** 96	**Interventions:** not applicable

Study type: genetic association study	**Conflict of Interests:** none **Randomization:** not applicable **Blinding:** not applicable **Dropout rates:** not applicable	**Patient characteristics:** 1998-2000 **Inclusion criteria:** children and adolescents (18 yrs. or younger) with acute recurrent or chronic pancreatitis **Exclusion criteria:** cystic Ž brosis and metabolic, traumatic, anatomical anomalies, toxic, infectious causes or systemic diseases	**Comparison:** mutation frequency in patients vs. controls
Notes:	**Author's conclusion:** a1-antitrypsin deficiency is not related to the pathogenesis of idiopathic or hereditary CP.		
Outcome Measures/results	**Primary** frequncy of AAT Z and S allele in patients compared to controls **Secondary** none	**Results:** Seven out of 96 patients (7.3%) with CP were heterozygous for an a1-antitrypsin deficiency allele (4 for the S allele and 3 for the Z allele). No patient was homozygous or compound heterozygous for these alleles. Twenty out of 185 control individuals (10.8%) were heterozygous for the S or Z allele (PiS: 12 controls; PiZ: 8 controls) . No significant differences were found between the allele frequency in patients and the control individuals (P > 0.1).	

Witt, H. et al. A signal peptide cleavage site mutation in the cationic trypsinogen gene is strongly associated with chronic pancreatitis. Gastroenterology. 117. 7-10. 1999

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 4 **Study type:** genetic association study, case control desiogn	**Funding sources:** none **Conflict of Interests:** none **Randomization:** not applicable **Blinding:** not applicable **Dropout rates:** not applicable	**Total no. patients:** 44 **Patient characteristics:** 1998-1999 **Inclusion criteria:** children or adolescents (18 yrs. or younger) with acute recurrent or chronic pancreatitis **Exclusion criteria:** cystic fibrosis and metabolic, anatomic, traumatic, toxic, or infectious causes	**Interventions:** none **Comparison:** mutation frequency in patietns and controls
Notes:	**Author's conclusion:** Heterozygosity for the A16V mutation is strongly associated with CP. These results indicate that a significant percentage of patients with idiopathic CP may have a genetic basis for their disorder; therefore, genetic testing should be included in the diagnostic evaluation of these patients.		
Outcome Measures/results	**Primary** frequency of PRSS1 mutations **Secondary** none	**Results:** A mutation in the cationic trypsinogen gene was detected in 5 patients: in 2 patients with a family history of CP and in 3 patients with idiopathic CP. In 1 patient the formerly described R122H mutation was detected. In 4 patients a hitherto unknown mutation was found at the signal peptide cleavage site leading to an alanine to valine exchange in codon 16. The mutations were inherited in all cases. In 95 unrelated control individuals the A16V mutation was not found.	

Witt, H. et al. Mutations in the gene encoding the serine protease inhibitor, Kazal type 1 are associated with chronic pancreatitis. Nat Genet. 25. 213-6. 2000

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 5 **Study type:** genetic association study, case control	**Funding sources:** none **Conflict of Interests:** none **Randomization:** not applicable **Blinding:** not applicable **Dropout rates:** not applicable	**Total no. patients:** 96 **Patient characteristics:** 1998-1999 **Inclusion criteria:** children (18 yrs. or younger) with acute recurrent or chronic pancreatitis from Germany and Austria **Exclusion criteria:** cystic fibrosis; metabolic, anatomic, traumatic, toxic or infectious causes	**Interventions:** none **Comparison:**
Notes:	**Author's conclusion:** mutations in SPINK1 are associated with chronic pancreatitis		
Outcome Measures/results	**Primary** frequency of SPINK1 variants in pancreatitis patients vs.	**Results:** In 23% (22/96) of the patients SPINK1 mutations were found. Of these, 18 patients (6 of whom were homozygous, carried a missense mutation of codon 34 (N34S). In contrast, only 1/279 control subjects was heterozygous for p.N34S. Also	

	controls **Secondary** none	four other rare sequence variants (c.1-53C>T, p.M1?, p.L14P and IVS3+2T>C) were found in patients but not in controls.

NEWCASTLE - OTTAWA Checklist: Cohort: *23 Bewertung(en)*

Abu-El-Haija, M. et al. Early Enteral Nutrition in Children With Acute Pancreatitis. J Pediatr Gastroenterol Nutr. 62. 453-6. 2016

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 3 **Study type:** retrospective	**Funding sources:** none **Conflict of Interests:** none **Randomization:** no **Blinding:** no **Dropout rates:**	**Total no. patients:** 38 **Recruiting Phase:** 9 months **Inclusion criteria:** acute pancreatitis **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:** Early feeds are feasible in pediatric patients with AP. Pain was not increased in the group that had more fat in their diet.		
Outcome Measures/results	**Primary** pain level **Secondary**	**Results:** Pain levels were similar between patients who were allowed to feed and patients kept nill per os. Higher fat intake grams per kilogram per day was associated with significantly lower pain scores.	

Antunes, H. et al. Acute pancreatitis in children: a tertiary hospital report. Scand J Gastroenterol. 49. 642-7. 2014

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 3 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Carrere, J. et al. Physiologically elevated concentration of serum trypsin-like immunoreactivity in newborns. Comparison with lipase. Biol Neonate. 49. 113-20. 1986

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 2 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Carroccio, A. et al. Use of famotidine in severe exocrine pancreatic insufficiency with persistent maldigestion on enzymatic replacement therapy. A long-term study in cystic fibrosis. Dig Dis Sci. 37. 1441-6. 1992

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 2 **Study type:** rerospective	**Funding sources:** not indicated **Conflict of**	**Total no. patients:** 10 **Recruiting Phase:** **Inclusion criteria:** CF with pancreatic	**Interventions:** famotidine with oral enzyme replacement therapy **Comparison:**

	Interests: not indicated **Randomization:** **Blinding:** **Dropout rates:**	insufficiency **Exclusion criteria:**	
Notes:	**Author's conclusion:** Thesedata suggestthatfamotidine is a useful adjuvant to pancreatic enzymetherapy in patients with severepancreatic insufficiency andpersistentmaldigestionon large dosesofpancreaticsupplements;infact, famotidine improvesnot onlyfat absorptionbut the nutritional statusof thepatients.		
Outcome Measures/results	**Primary** **Secondary**	**Results:** We studied l0 patients, mean age 12.5 years, with persistentsteatorrheaon enzymaticsupplementation.A double-blind crossoverdesign was usedandfamotidine (1 mg/kg/day)or placebo was given as adjuvant to enzymatic preparationsfor either of two six-monthperiods. A statistically significative reduction in fecal wet weight ($P < 0.0001$), an improvementin the coefficientoffat absorption ($P < 0.01$) and in the steatocrit values ($P < 0.028$) werefound on famotidine. Moreover, the weight and the height increaseswere greater afterfamotidine than after placeboperiod (respectively,$P < 0.012$ and $P < 0.01$); also the serum calcium and triglycerides levels werehigherafterthe periodonfamotidine(respectively,$P< 0.0025$and$P< 0.025$).No adverseeffectsoffamotidine were noted.	

Cheng, C. L. et al. Diagnostic and therapeutic endoscopic retrograde cholangiopancreatography in children: a large series report. J Pediatr Gastroenterol Nutr. 41. 445-53. 2005

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 2 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Coffey, M. J. et al. Serum lipase as an early predictor of severity in pediatric acute pancreatitis. J Pediatr Gastroenterol Nutr. 56. 602-8. 2013

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 2 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Dickerson, R. N. et al. Resting energy expenditure in patients with pancreatitis. Crit Care Med. 19. 484-90. 1991

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:** propspective	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** 48 **Recruiting Phase:** not indicated **Inclusion criteria:** AP, CP **Exclusion criteria:**	**Interventions:** none **Comparison:**
Notes:	**Author's conclusion:**		

Outcome Measures/results	**Primary** resting energy expenditure **Secondary**	**Results:**

DiMagno, E. P. Gastric acid suppression and treatment of severe exocrine pancreatic insufficiency. Best Pract Res Clin Gastroenterol. 15. 477-86. 2001			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 1 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Durno, C. et al. Genotype and phenotype correlations in patients with cystic fibrosis and pancreatitis. Gastroenterology. 123. 1857-64. 2002			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 5 **Study type:** cohort analyses, genetic study, genotype phenotype correlation study	**Funding sources:** Supported by grants in aid from the Canadian Cystic Fibrosis Foundation and National Institutes of Health (NIDDK-DK49096).C. D.was awarded a research fellowship from the Hospital for Sick Children Research Institute and Janssen Ortho (Canada) Inc. **Conflict of Interests:** not stated **Randomization:** not applicable **Blinding:** not applicable **Dropout rates:** not applicable	**Total no. patients:** 1075 **Recruiting Phase:** 1966-1996 **Inclusion criteria:** patients with cystic fibrosis **Exclusion criteria:** not applicable	**Interventions:** not applicable **Comparison:** frequency of pancreatitis in CF patients with and w/o exocrine insufficiency
Notes:	**Author's conclusion:** Patients with CF with pancreatic sufficiency carry at least one mild mutant allele and are at a significant risk of developing pancreatitis. Symptoms of pancreatitis may precede the diagnosis of CF.Pancreatitis is associated with an otherwise mild CF phenotype.		
Outcome Measures/results	**Primary** genotype phenotype correlation in CF patients **Secondary** none	**Results:** Among 1075 patients with CF, 937 (87%) were pancreatic insufficient at diagnosis, 28 (3%) were pancreatic sufficient but developed pancreatic insufficiency after diagnosis, and 110 (10%) have remained pancreatic sufficient.No patients with pancreatic insufficiency developed pancreatitis.Nineteen patients (17.3%) with pancreatic sufficiency experienced one or more attacks of pancreatitis.The mean age at diagnosis of pancreatitis was 22.7 10.3 years (range, 10–35 years), and pancreatitis was recognized before the diagnosis of CF in 6 patients (32%).The diagnosis of CF in pancreatic-sufficient patients, with and without pancreatitis, was established at a significantly older age than in those with pancreatic insufficiency ($P < 0.0001$). Genotyped patients with pancreatic insufficiency carried 2 severe mutant alleles.All genotyped patients with pancreatic sufficiency and pancreatitis carried at least one mild mutation.No specific genotype was predictive of pancreatitis.	

Enestvedt, B. K. et al. Endoscopic retrograde cholangiopancreatography in the pediatric population is safe and efficacious. J Pediatr Gastroenterol Nutr. 57. 649-54. 2013			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:			

	Author's conclusion:	
Outcome Measures/results	**Primary** **Secondary**	**Results:**

Graff, G. R. et al. Efficacy and tolerability of a new formulation of pancrelipase delayed-release capsules in children aged 7 to 11 years with exocrine pancreatic insufficiency and cystic fibrosis: a multicenter, randomized, double-blind, placebo-controlled, two-period cross. Clin Ther. 32. 89-103. 2010

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Griese, M. et al. Skin prick test reactivity to supplemental enzymes in cystic fibrosis and pancreatic insufficiency. J Pediatr Gastroenterol Nutr. 40. 194-8. 2005

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Kandula, L. et al. Etiology and outcome of acute pancreatitis in infants and toddlers. J Pediatr. 152. 106-10, 110 e1. 2008

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 3 **Study type:** retrospective	**Funding sources:** not indicated **Conflict of Interests:** not indicated **Randomization:** no **Blinding:** no **Dropout rates:** 20%	**Total no. patients:** 109 cases , 87 met the criteria **Recruiting Phase:** 10 years **Inclusion criteria:** acute pancreatitis according to clinical definition **Exclusion criteria:** pancreatitis not proven	**Interventions:** none **Comparison:** none
Notes:	**Author's conclusion:** AP is commonly associated with multisystem disease, particularly with HUS. Idiopathic pancreatitis and pancreatitis associated with biliary disease are seen in children under age 3 years. Trauma is a less frequent cause of pancreatitis, and severe pancreatitis is rare in this age group.		
Outcome Measures/results	**Primary** clinical course **Secondary**	**Results:** Of 109 cases, 87 met the diagnostic criteria. Median age was 20 months (range, 1 week to 35 months). AP was associated with multisystem disease in 29 cases (34%), with hemolytic uremic syndrome (HUS) being common. Pancreatitis was associated with systemic infections in 16 cases (18%) and was idiopathic in 15 cases (17%). Biliary disease played an important etiologic role (9%), as did trauma (8%). Pancreatitis was mild in 76 cases (87.3%) and severe in 3 cases (3.4%).	

Keim, V. et al. The course of genetically determined chronic pancreatitis. JOP. 4. 146-54. 2003

Evidence level	Methodical Notes	Patient characteristics	Interventions

Evidence level: 3 **Study type:** case "control" study: patients with PRSS1 mutations (p.N29I, p.R122H)compared to patients with SPINK1 p.N34S mutation	**Funding sources:** Deutsche Forschungsgemeinschaft (DFG) **Conflict of Interests:** not stated **Randomization:** not applicable **Blinding:** not applicable **Dropout rates:** not applicable	**Total no. patients:** 139 **Recruiting Phase:** not stated **Inclusion criteria:** CP patients with PRSS1 mutations (p.N29I, p.R122H)and with SPINK1 p.N34S mutation **Exclusion criteria:** CP patietns w/o these mutations	**Interventions:** not applicable **Comparison:** clinical course in CP patients with PRSS1 mutations (p.N29I, p.R122H)and with SPINK1 p.N34S mutation
Notes:	**Author's conclusion:** The progression of chronic pancreatitis was slightly more rapid in patients with SPINK1 mutations than in patients with cationic trypsinogen mutations, but was much less than in those having alcoholic chronic pancreatitis.		
Outcome Measures/results	**Primary** first hospital stay, calcifications, duct dilations, surgery, diabetes **Secondary** not stated	**Results:** Ten years after the onset of the disease, the probability (±SE) of symptoms in patients with PRSS1 mutations was as follows: 1st hospital stay: 86±4%; calcification: 21±4%; duct dilatation: 26±9%; surgery: 19±5%; diabetes: 6±5%. After 25 years, we found the following data: 1st hospital stay: 96±3%; calcification: 38±8%; duct dilatation: 38±8%; surgery: 37±10%; diabetes: 28±8%. A case-control-study of 38 pairs of patients with either PRSS1 or SPINK1 mutations showed that the probability of duct dilatation, diabetes and calcification was slightly higher in patients having a SPINK1 mutation. There was no difference between those subjects with a homozygous or heterozygous SPINK1 mutation. In comparison to alcoholic chronic pancreatitis patients, the PRSS1 associated disease revealed a lower frequency of calcification and diabetes.	

Kumar, S. et al. Risk Factors Associated With Pediatric Acute Recurrent and Chronic Pancreatitis: Lessons From INSPPIRE. JAMA Pediatr. 170. 562-9. 2016

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 2 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Mathew, P. et al. Antioxidants in hereditary pancreatitis. Am J Gastroenterol. 91. 1558-62. 1996

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Morris-Stiff, G. J. et al. The antioxidant profiles of patients with recurrent acute and chronic pancreatitis. Am J Gastroenterol. 94. 2135-40. 1999

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**

Notes:	**Author's conclusion:**	
Outcome Measures/results	**Primary** **Secondary**	**Results:**

Scheers, I. et al. Autoimmune Pancreatitis in Children: Characteristic Features, Diagnosis, and Management. Am J Gastroenterol. 112. 1604-1611. 2017

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 3 **Study type:** cohort study of patients with autoimmune panmceratitis, literature search	**Funding sources:** This work was supported by NIH DK096327 (to A.U.), DK108334 (to A.U.), UL1 TR000442 (CTSA), National Pancreas Foundation (to A.U.), and REDCap. I.S. is supported by the Restracomp Grant and a Fondation St-Luc Grant. **Conflict of Interests:** M.L. is a consultant for AbbVie and Nordmark Arzneimittel, is in the Board of Directors of the National Pancreas Association, and receives royalties from Millipore. T.G. received a research grant from Vertex Pharmaceuticals. **Randomization:** not applicable **Blinding:** not applicable **Dropout rates:** not applicable	**Total no. patients:** 48 **Recruiting Phase:** not stated **Inclusion criteria:** patients with pediatric AIP **Exclusion criteria:** not stated	**Interventions:** not applicable **Comparison:** not applicable
Notes:	**Author's conclusion:** Pediatric AIP has a distinct presentation with features similar to type 2 AIP in adults. This comprehensive report on the largest group of children with AIP to date is expected to help with the diagnosis and management of this disease and pave the way for future research studies.		
Outcome Measures/results	**Primary** not stated **Secondary** not stated	**Results:** We identified 48 AIP cases: 30 from literature review, 14 from INSPPIRE, and 4 from CUSL. The median age at diagnosis was 13 years (range 2–17 years). Abdominal pain (43/47, 91%) and/or obstructive jaundice (20/47, 42%) were the most common symptoms at diagnosis. Elevated serum IgG4 levels were only observed in 9/40 (22%) children. Cross-sectional imaging studies were abnormal in all children including hypointense global or focal gland enlargement (39/47, 83%), main pancreatic duct irregularity (30/47, 64%), and common bile duct stricture (26/47, 55%). A combination of lymphoplasmacytic inflammation, pancreatic fibrosis, and ductal granulocyte infiltration were the main histological findings (18/25, 72%). Children with AIP had a prompt clinical response to steroids. Complications of AIP included failure of exocrine (4/25, 16%) and endocrine (3/27, 11%) pancreas function.	

Szabo, F. K. et al. Early Enteral Nutrition and Aggressive Fluid Resuscitation are Associated with Improved Clinical Outcomes in Acute Pancreatitis. J Pediatr. 167. 397-402 e1. 2015

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 3 **Study type:** retrospective	**Funding sources:** none **Conflict of Interests:** none **Randomization:** no **Blinding:** no **Dropout rates:**	**Total no. patients:** 201 **Recruiting Phase:** 5 years **Inclusion criteria:** acute pancreatitis **Exclusion criteria:**	**Interventions:** high vs low fluid volume early vs late enteral nutrition **Comparison:**
Notes:	**Author's conclusion:** Our data support that early enteral nutrition and early aggressive IVF improve outcomes of pediatric AP.		
Outcome Measures/results	**Primary** length of stay **Secondary**	**Results:** The study included 201 patients. Children who received feeds within the first 48 hours and received greater than maintenance IVF within 24 hours had a shorter length of stay, less intensive care unit admissions and severe AP rates compared with the patients who remained nil per os during the first 48 hours and received lower rates of IVF.	

Ventrucci, M. et al. Role of serum pancreatic enzyme assays in diagnosis of pancreatic disease. Dig Dis Sci. 34. 39-45. 1989			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 3 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Ventrucci, M. et al. Serum pancreatic enzyme behavior during the course of acute pancreatitis. Pancreas. 2. 506-9. 1987			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 3 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Vujasinovic, M. et al. Zinc deficiency in patients with chronic pancreatitis. World J Gastroenterol. 25. 600-607. 2019			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 1 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Werlin, S. L. et al. Pancreatitis in children. J Pediatr Gastroenterol Nutr. 37. 591-5. 2003			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 3 **Study type:** retrospective	**Funding sources:** none **Conflict of Interests:** none **Randomization:** no **Blinding:** no **Dropout rates:** n.a.	**Total no. patients:** 180 **Recruiting Phase:** 5 yearsa **Inclusion criteria:** acute pancreatitis **Exclusion criteria:**	**Interventions:** none **Comparison:**
Notes:	**Author's conclusion:** Pancreatitis is more common in children than previously thought. Upon careful assessment fewer cases were found to be idiopathic than in previous series. The outcome of pancreatitis depends on co-morbid conditions.		

Outcome Measures/results	**Primary** etiology of pancreatitis **Secondary** pain, treatment,	**Results:** Two hundred fourteen episodes of pancreatitis in 180 patients were documented. The most common etiologies were systemic disease (14%), trauma (14%), drug induced (12%), biliary tract disease (12%), infectious (8%), and idiopathic (8%), which made up 68% of the total cases. Eleven patients died, all from underlying systemic illnesses. The serum amy- lase and lipase were elevated in 82% and 83% of patients respectively.

Literatursammlung:

AG8-AP Handsuche

Inhalt: *1 Literaturstellen*

Literaturstelle	Evidenzlevel	Studientyp
Das, S. L. 2014	1	systematic review of inception studies

OXFORD (2011) Appraisal Sheet: Prognostic Studies: *1 Bewertung(en)*

Das, S. L. et al. Newly diagnosed diabetes mellitus after acute pancreatitis: a systematic review and meta-analysis. Gut. 63. 818-31. 2014

Population	Intervention	Outcomes/Results
Evidence level: 1 **Study type:** systematic review of inception studies **Number of Patient:** 1102 patient in 24 studies **Recruitung Phase:** 1946 - 2013 **Inclusion Criteria:** prospective studies, first AP attack, no previous DM/preDM, moin. FU 1 months **Exclusion Criteria:** CP, previous diabetes	**Intervention:** **Comparison:**	**Primary:** prevalence of DM after AP **Secondary:** **Results:** Pooled prevalence of DM/preDM: < 12 months: 34,6% 12-36 months: 33,2% 37-60 months: 34,8% > 60months: 58,5% **Author's Conclusion:** n conclusion, this comprehensive systematic review indicatesthat patients with AP have a nearly 40% prevalence of newly-diagnosed prediabetes or DM after discharge from hospital, andthe risk of DM doubles over 5 years.

Methodical Notes

Funding Sources: nk

COI: none declared

Randomization: no

Blinding: no

Dropout Rate/ITT-Analysis: reported

Notes:

Literatursammlung:

AG8-AP: Verlaufskontrolle nach Pankreatitis_Literatursuche

Inhalt: *37 Literaturstellen*

Literaturstelle	Evidenzlevel	Studientyp
Ammann, R W 1994	4	prospective cohort
Beagon, C 2015	4	retrospective cohort study
Bertilsson, Sara 2015	4	retrospective cohort study
Bogdan, Justyna 2012	4	retrospective single center
Bozkurt, T 1995	4	prospective single center longitudinal study
Burge, Mark R 2003	4	retrospective single center longitudinal
Chacón-Portillo, Martin A 2017	3	prospective single center longitudinal
Chen, Chun-Hao 2006	4	single center longitudinal, unclear if prospective or retrospective
Cho, Jeong Hyeon 2015	4	retrospective single center longitudinal study
Chung, Wei-Sheng 2017	4	registry based case control study (retrospective, observational)
Ekbom, A 1994	4	retrospective cohort study
Gillies, Nicola 2016	4	cross sectional follow-up study
Ho, Te-Wei 2015	1	retrospective follow-up study
Karlson, B M 1997	3	crosssectional follow-up study, population based reigstry
Kimura, Yuto 2015	4	single center retrospective cohort study
Kirkegård, Jakob 2018	1	nationwide, population-based, matchedcohort study
Kwon, Yongwonn 2012	3	retrospective single center cohort study
Lee, Peter J W 2016	4	retrospective cohort study, single center
Lin, C-C 2014	1	population based cohort study
Munigala, Satish 2015	3	retrospective cohort study
Munigala, Satish 2014	1	retrospective cohort study
Nikkola, Jussi 2017	4	retrospective cohort study
Nikkola, Jussi 2017	2	prognostic cohort study, single center
Nikkola, Jussi 2014	3	prospective cohort study, single center

Nikkola, Jussi 2013	3	single center prospective cohort study
Nordback, Isto 2009	2	single center RCT
Pelli, Hanna 2009	3	prospective cohort study
Poornachandra, Kuchhangi Sureshchandra 2011	3	prospective single center cohort study with 4 week FU
Sandhu, Supna 2011	5	retrospective single-center cohort study
Shen, Hsiu-Nien 2015	2	population based cohort study with FU
Tu, Jianfeng 2017	3	retrospective cohort study
Umapathy, Chandraprakash 2016	3	retrospective single center cohort study
Uomo, G 2010	4	prospective cohort study, single center
Vipperla, Kishore 2014	2	singel-center prospective cohort study
Xiang, Jun-Xi 2017	4	retrospective single-center cohort study
Yadav, Dhiraj 2009	3	multi-center cross-sectional study
Yadav, Dhiraj 2014	2	population based cohort study

OXFORD (2011) Appraisal Sheet: RCT: *1 Bewertung(en)*

Nordback, Isto et al. The recurrence of acute alcohol-associated pancreatitis can be reduced: a randomized controlled trial. Gastroenterology. 136. 848-55. 2009		
Population	**Intervention - Comparison**	**Outcomes/Results**
Evidence level: 2 **Study type:** single center RCT **Number of Patient:** 120 **Recruitung Phase:** 4 years (2001 - 2005) **Inclusion Criteria:** first Episode of aAP **Exclusion Criteria:** no other AP, no CP	**Intervention:** standard BI vs. repeated GI-clinic visits+BI every six months **Comparison:**	**Primary:** recurrent AP episodes **Secondary:** alcohol consumption **Results:** C vs Tx-group Total hospital admissions Abdominal complaints: Number of patients, N (%): 16 (26) vs 7 (12) p=.038 Number of admissions: 30 vs 15 p=.004 Recurrent AP: Number of patients, N (%): 13 (21) vs. 5 (8) p=.042 First recurrence <6 mo, N (%) 5 (8) vs. 4 (7) p NS >6 mo, N (%) 8 (13) vs. 1 (2) p=.018 Number of episodes: Overall: 20 vs. 9 p=.012 <6 mo 5 vs. 4 p=NS >6 to 24 mo 15 vs. 5 p=.009 No significant change in C2 consupmtion between groups **Author's Conclusion:** We conclude that

		scheduled visits at 6-month intervals to a gastrointestinal outpatient clinic, including a repeated intervention against alcohol consumption, resulted in a lower recurrence rate of AP during a 2-year follow-up period than an initial intervention only during the hospitalization for the first alcohol-associated AP.

Methodical Notes

Funding Sources: Pirkanmaa Hospital District Research Fund.

COI: none declared

Randomization: yes

Blinding: no

Dropout Rate/ITT-Analysis: reported

Notes:

OXFORD (2011) Appraisal Sheet: Diagnostic Studies: *1 Bewertung(en)*

Kwon, Yongwonn et al. Multidetector row computed tomography of acute pancreatitis: Utility of single portal phase CT scan in short-term follow up. Eur J Radiol. 81. 1728-34. 2012

Evidence level/Study Types	Population	Outcomes/Results
Evidence level: 3 **Study type:** retrospective single center cohort study	**Number of patients / samples:** 52 patients (494 screened) **Reference standard:** yes, biphasic CECT at index and with 30 day intervall. **Validation:** not applied **Blinding:** yes **Inclusion of clinical information:** no **Dealing with ambiguous clinical findings:**	**Results:** no significant difference was observed between CTSI from portal phase and dual phase scan. Unenhanced scan inferior. Interobserver agreement: substantial to excellent agreement (ICC values ranging0.67–0.84 in unenhanced scan, 0.73–0.93 in portal phase scan, and0.77–0.91indualphasescan)withregardtothesumofCTSIscoring **Author conclusions:** In conclusion, for short-term follow up imaging in assessmentof patients with acute pancreatitis and no suspicion for activehemorrhage or pseudoaneurysm, single portal phase CT imageswithout addition of unenhanced or arterial phase images provide sufficient information, and thereby contribute to reduced radiationexposure.

	na	

Methodical Notes

Funding Sources: supported by Konkuk University in 2011

COI: nk

Notes:

OXFORD (2011) Appraisal Sheet: Prognostic Studies: *26 Bewertung(en)*

Bozkurt, T et al. Exocrine pancreatic function after recovery from necrotizing pancreatitis. Hepatogastroenterology. 42. 55-8. 1995

Population	Intervention	Outcomes/Results
Evidence level: 4 **Study type:** prospective single center longitudinal study **Number of Patient:** 53 **Recruitung Phase:** 9 years **Inclusion Criteria:** necrotizing AP **Exclusion Criteria:** death during index admission	**Intervention:** none **Comparison:** time points 1-3 months; 3-6 months; 6-12 months, 18 months	**Primary:** exocrine function as pancreatic secretion and enzyme activity after Lund-Test-Meal **Secondary:** **Results:** 1-3 months: 74% mild-moderate; 26% severe; 0% normal 3-6 months: 78% mild to moderate; 9% severe; 13% normal 6-12 months: 84% any; 16% normal 18 months: 81% mild to moderate; 6% severe; 13% normal **Author's Conclusion:** recovery from necrotizing pancreatitis with 80-85% PEI

Methodical Notes

Funding Sources: nk

COI: nk

Randomization: na

Blinding: na

Dropout Rate/ITT-Analysis: nk

Notes:

Burge, Mark R et al. The role of ethnicity in post-pancreatitis diabetes mellitus. Diabetes Technol. Ther. 5. 183-8. 2003

Population	Intervention	Outcomes/Results
Evidence level: 4 **Study type:** retrospective single center longitudinal	**Intervention:** none **Comparison:** hispanci vs. non-hispanic ethnicity	**Primary:** incidence of diabetes after AP **Secondary:** incidence of diabetes compared to historic controls **Results:** 98/887 developed diabetes Hispanic 61/466

Number of Patient: 887 **Recruitung Phase:** 5 years (1991-1995) **Inclusion Criteria:** acute pancreatitis, hispanic and non-hispanic whites **Exclusion Criteria:** none		non-Hispanic 37/421; p=0.04 Incidence of diabetes roughly 50% higher in post-AP compared to control **Author's Conclusion:** Hispanic patients are at an in-creased risk of post-pancreatitis diabetes com-pared with non-Hispanic white patients, andpatients with a history of pancreatitis are at asignificantly increased risk of diabetes com-pared with previously published historicalcontrol subjects without a history of pancreatitis
Methodical Notes		
Funding Sources: nk **COI:** nk **Randomization:** na **Blinding:** na **Dropout Rate/ITT-Analysis:** nk **Notes:** time from AP to DM unclear		

Chacón-Portillo, Martin A et al. Abnormal Cardiovascular Findings in Acute Pancreatitis: Are They Associated with Disease Severity?. Rev. Invest. Clin. 69. 314-318. 2017

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** prospective single center longitudinal **Number of Patient:** 27 **Recruitung Phase:** 8 months (2015) **Inclusion Criteria:** AP **Exclusion Criteria:** history of cardio-vascular disease, chronic renal failure, or pregnancy were excluded from the study.	**Intervention:** none **Comparison:** severity according to revAtlanta	**Primary:** KG, echocardiogram (ECO), and venous blood sample performance to measure tro-ponin I (TnI) and pro-BNP levels at the acute and fol-low-up visit (~3 months after discharge). **Secondary:** **Results:** n=19 (70%) for FU 1 death unrelated to AP **Author's Conclusion:** not conclusive
Methodical Notes		
Funding Sources: nk **COI:** nk **Randomization:** na **Blinding:** na **Dropout Rate/ITT-Analysis:** 30% dor		

Notes: sample size too small

Chen, Chun-Hao et al. Etiology, severity and recurrence of acute pancreatitis in southern taiwan. J. Formos. Med. Assoc. 105. 550-5. 2006

Population	Intervention	Outcomes/Results
Evidence level: 4 **Study type:** single center longitudinal, unclear if prospective or retrospective **Number of Patient:** 106 **Recruitung Phase:** 2 years (1999 - 2001) **Inclusion Criteria:** first attacke of AP **Exclusion Criteria:** CP, RAP	**Intervention:** none **Comparison:** etiologies	**Primary:** recurrence of AP (median FU 20mths) **Secondary:** **Results:** Multiple logistic regression analysis of risk factors associated with (severity) and recurrence of acutepancreatitis: Recurrence Alcoholic pancreatitis (alcoholic=1, non-alcoholic=0): OR 3.5 (1.06-11.59 95% CI) **Author's Conclusion:** acute pancreatitis associated with alcohol misuse tends to recur more frequently.

Methodical Notes

Funding Sources: nk

COI: nk

Randomization: na

Blinding: na

Dropout Rate/ITT-Analysis: nk

Notes:

Cho, Jeong Hyeon et al. Usefulness of scheduled follow-up CT in discharged patients with acute pancreatitis. Pancreatology. 15. 642-6. 2015

Population	Intervention	Outcomes/Results
Evidence level: 4 **Study type:** retrospective single center longitudinal study **Number of Patient:** 106 who underwent scheduled FUCT in an outpatientdepartment between four and 12 weeks after discharge. **Recruitung Phase:** 3 years (2010 - 2012) **Inclusion Criteria:** asymptomatic patientswho underwent CECT during theirfirst hospital stay due to	**Intervention:** none **Comparison:** pathologic findings on FUCT vs. normal FUCT	**Primary:** Event defined as (1) newly developed or increased pancreatic collectionsuch as pseudocyst or walled-off necrosis; and (2) pancreatic cancer. **Secondary:** **Results:** Median time to FUCT was 69 (31-90) days. 23/106 had events (ancreatic cancer (n=2), increased size of pancreaticcollection (n=3), newly developed pancreatic collection (n=18). Multivariate analysis of predictors of events: Etiology (alcohol): OR (95% CI) 3.22 (1.00-10.38) p=0.05 CT Severity index greater 2: OR (95% CI) 4.46 (1.08-18.43) p=0.039 BISAP greater 1: OR (95% CI) 4.83 (1.08-21.55) p=0.039 **Author's Conclusion:** In conclusion, late follow up imaging strategy is not applicableto all patients with acute pancreatitis, and for a subgroup of them,undergoing FUCT after discharge would be beneficial. Especially incase of CTSIgreater 2 points or BISAP score greater 1 points, undergoing FUCT within three months after discharge may be helpful in acutepancreatitis patients in order to rule out local complications

acute pancreatitis **Exclusion Criteria:** not asymptomatic at discharge no initial CECT		andclinical patient's care. In addition, clinicians should be aware ofpancreatic neoplasms as possible cause and late sequela ofpancreatitis, especially in patients who have obscure etiology ofpancreatitis and experience continuing weight loss. Further pro-spective studies are warranted to verify our conclusions.

Methodical Notes

Funding Sources: Gachon University Gil MedicalCenter (Grant number: 2013-49) and Basic Science Research Pro-gram through the National Research Foundation of Korea (NRF)funded by the Ministry of Education, Science and Technology (No.2011-0013944).

COI: nk

Randomization: na

Blinding: na

Dropout Rate/ITT-Analysis: nk

Notes:

Ekbom, A et al. Pancreatitis and pancreatic cancer: a population-based study. J. Natl. Cancer Inst. 86. 625-7. 1994

Population	Intervention	Outcomes/Results
Evidence level: 4 **Study type:** retrospective cohort study **Number of Patient:** 7956 **Recruitung Phase:** 18 years (1965 - 1983) **Inclusion Criteria:** AP, CP, unspecified pancreatitis **Exclusion Criteria:** occurence of PDAC within 2 years from index admission	**Intervention:** none **Comparison:** AP vs. CP(unspec.	**Primary:** SIR of PDAC **Secondary:** **Results:** The risks among patients with chronic pancreatitis (SIR = 3.8; 95% CI = 1.4-8.2) and those with more than one discharge diagnosis of either acute or unspecified pancreatitis (SIR = 4.8; 95%CI = 1.9-9.9) were higher than the risk among patients with only one dischargeof acute (SIR = 1.6; 95% CI = 0.9-2.7). The excess risk was mostpronounced during the first period of fol-low-up (2-4 years) and close to unity after10 or more years **Author's Conclusion:** A twofold excess risk for pancreaticcancer among patients discharged forpancreatitis indicates a modest associa-tion, with the excess number of cancersbeing most pronounced among patients with chronic or recurrent pancreatitis.However, for each type of pancreatitis,the elevated risk was confined to the first10 years after initial discharge.

Methodical Notes

Funding Sources: nk

COI: nk

Randomization: na

Blinding: na

Dropout Rate/ITT-Analysis: nk

Notes:

Gillies, Nicola et al. Interleukin-6 is associated with chronic hyperglycemia and insulin resistance in patients after acute pancreatitis. Pancreatology. 16. 748-55. 2016

Population	Intervention	Outcomes/Results
Evidence level: 4 **Study type:** cross sectional follow-up study **Number of Patient:** 83 **Recruitung Phase:** unclear **Inclusion Criteria:** first episode of AP, living in confined area **Exclusion Criteria:** Individuals were not considered eligible if they currently had orwere previously diagnosed with chronic pancreatitis, post-endoscopic retrograde cholangiography pancreatitis, intra-operative diagnosis of pancreatitis, pregnancy during AP or after-wards, malignancy, and pre-existing prediabetes or diabetesmellitus	**Intervention:** none **Comparison:** severity of AP	**Primary:** incidence of chronic hyperglycemia **Secondary:** **Results:** Mild: 16% Moderate: 55% Severe: 100% Time of FU: no diabetes 17,5(5-50) months; diabetes 37 (20-45) months Association to IL-6 levels **Author's Conclusion:**

Methodical Notes

Funding Sources: s supported in part by the HealthResearch Council of New Zealand (grant 15/035 to Dr. Petrov)

COI: nk

Randomization: na

Blinding: na

Dropout Rate/ITT-Analysis: nk

Notes: Time from AP to blood sampling longer in Diabetes group

Ho, Te-Wei et al. Change of Both Endocrine and Exocrine Insufficiencies After Acute Pancreatitis in Non-Diabetic Patients: A Nationwide Population-Based Study. Medicine (Baltimore). 94. e1123. 2015

Population	Intervention	Outcomes/Results
Evidence level: 1 **Study type:** retrospective follow-up study **Number of Patient:** 12,284 **Recruitung Phase:** 2001-2010 **Inclusion Criteria:** first attacke of AP during study period ICD-9-CM code 577.0 **Exclusion Criteria:** follow-up of less than 6 months (n=477), those whoreceived pancreatic surgery (n=23), and those<20 years(n=35) were further excluded. In addition, patients were excluded if they were diagnosed with DM (ICD-9-CM code250.x) before first AP index date (n=23)	**Intervention:** none **Comparison:** AP severity, gender, age, etiology ect, recurrence, CCI, income, comorbidities	**Primary:** incidence of DM incidence of PEI (use of enzymes) **Secondary:** **Results:** incidence of DM: - overall 5% Cox logistic regression: alcohol-associated AP (odds ratio, 1.894; 95% CI, 1.520–2.268;P<0.001) and =>2 readmissions for AP (odds ratio, 1.937; 95%CI, 1.483–2.391;P<0.001) incidence of PEI (use of enzymes) - overall 45,7% Cox logistic regression: alcohol-associated AP (odds ratio, 1.215; 95% CI, 1.133–1.297;P<0.001) combined DM and PEI

		- overall 3,0% Cox logisticregression model: alcohol-associated AP (odds ratio,1.804; 95% CI, 1.345–2.263;P<0.001) and =>2 readmissionsfor AP (odds ratio, 3.190; 95% CI, 2.317–4.063;P<0.001) **Author's Conclusion:** alcohol-associatedAP contributed to a higher proportion to exocrine or endocrineinsufficiencies. In addition, recurrent AP also led toendocrine insufficiency.
Methodical Notes		
Funding Sources: nk **COI:** nk **Randomization:** na **Blinding:** na **Dropout Rate/ITT-Analysis:** nk **Notes:**		

Karlson, B M et al. The risk of pancreatic cancer following pancreatitis: an association due to confounding?. Gastroenterology. 113. 587-92. 1997

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** crosssectional follow-up study, population based reigstry **Number of Patient:** 29,530 (AP, CP, RAP, NOS) **Recruitung Phase:** 19 years (1965-1983) **Inclusion Criteria:** pancreatitis, AP, CP RAP **Exclusion Criteria:** bad records ect.	**Intervention:** none **Comparison:** cancer incidence within 10 years, 1st year excluded	**Primary:** PDAC incidence after pancreatitis **Secondary:** **Results:** one acute pancreatitis (SIR, both genders): 1-4yr: 2.4 (1.6-3.3) 5-9yr: 1.6 (1.1-2.2) 10-24yr: 1.2 (0.7-1.7) **Author's Conclusion:** No proof of strong association due to confounders like alcohol and smoking
Methodical Notes		
Funding Sources: nk **COI:** nk **Randomization:** na **Blinding:** yes **Dropout Rate/ITT-Analysis:** performed		

Notes:

Kimura, Yuto et al. Acute Pancreatitis as a Possible Indicator of Pancreatic Cancer: The Importance of Mass Detection. Intern. Med. 54. 2109-14. 2015

Population	Intervention	Outcomes/Results
Evidence level: 4 **Study type:** single center retrospective cohort study **Number of Patient:** 177 **Recruitung Phase:** 6 years (2006-2012) **Inclusion Criteria:** admission of AP any cause **Exclusion Criteria:** nk	**Intervention:** none **Comparison:** cancer vs. no cancer detected on CECT cancer during index admission vs. cancer in FU (clinical or CECT)	**Primary:** cancer incidence **Secondary:** **Results:** n=5 (2.8%) PDAC on index admission n=7 (4,0%) PDAC during FU 2-24 months later - n=2 on FU CECT due to abnormalities seen on index CT with no mass detected - n=1 before FU-CECT because of symptoms - n=3 had no FU CECT because of normal index CECT, but developed cancer within FU clinically - n=1 had CP and cancer was missdiagnosed as PP no prognostic factors identified including CA19.9 **Author's Conclusion:** In conclusion, our results suggest that acute pancreatitis isa diagnostic indicator for pancreatic cancer, and the detec-tion of a pancreatic mass on CTled to the diagnosis of pan-creatic cancer, while various factors associated with acutepancreatitis and pancreatic cancer were not predictive of adiagnosis of pancreatic cancer. Moreover, patients hospital-ized for acute pancreatitis should be followed up with regu-lar examinations, including CT and EUS, if possible, for atleast 1 year, even if diagnostic images do not demonstrateany pancreatic abnormalities suggestive of pancreatic cancerduring the first hospitalization.

Methodical Notes

Funding Sources: nk

COI: nk

Randomization: none

Blinding: none

Dropout Rate/ITT-Analysis: nk

Notes:

Lee, Peter J W et al. Thirty-Day Readmission Predicts 1-Year Mortality in Acute Pancreatitis. Pancreas. 45. 561-4. 2016

Population	Intervention	Outcomes/Results
Evidence level: 4 **Study type:** retrospective cohort study, single center **Number of Patient:** 342 **Recruitung Phase:** 5 years (2007 - 2011)	**Intervention:** none **Comparison:** live status after 12 months	**Primary:** 1year survival **Secondary:** **Results:** On Multivariable Cox Regression the CCI HR 1.3(1.2-1.5) and readmission within 30 days HR 4.5 (2.2-9.1) are associated with one-year mortality. **Author's Conclusion:** n this study, we found that patients with AP who are re-admitted within 30 days of discharge and those with increasedcomorbidities are at substantial risk of death at 1 year.

Inclusion Criteria: AP hospital admission **Exclusion Criteria:** CP		

Methodical Notes

Funding Sources: nk

COI: nk

Randomization: na

Blinding: none

Dropout Rate/ITT-Analysis: nk

Notes:

Munigala, Satish et al. Increased risk of pancreatic adenocarcinoma after acute pancreatitis. Clin. Gastroenterol. Hepatol. 12. 1143-1150.e1. 2014

Population	Intervention	Outcomes/Results
Evidence level: 1 **Study type:** retrospective cohort study **Number of Patient:** 495.504 **Recruitung Phase:** 10 years (1998-2007), follow-up started 2000 **Inclusion Criteria:** first episode of AP older 25y/o **Exclusion Criteria:** CP, concomittant PDAC, CPL	**Intervention:** **Comparison:** AP vs non-AP	**Primary:** 10 year risk of PDAC **Secondary:** **Results:** Year 1 Incidence rate per 1000person-year: 14.48 vs. 0.25 RR 66.01 (47.24–92.23) p<.0001> Year 2 Incidence rate per 1000person-year: 1.83 vs. 0.29 RR 5.15 (2.30–11.52) p<.0001> Year 23 non-sign. PDAC cases only in patients above 40! **Author's Conclusion:** To conclude, patients with AP after 40 years of agehave an increased risk of PaCa diagnosis within thefollowing 24 months. This would argue for a potentialuse of further diagnostic imaging with EUS to diagnoseunderlying PaCa.

Methodical Notes

Funding Sources: nk

COI: nk

Randomization: na

Blinding: na

Dropout Rate/ITT-Analysis: reported

Notes: obsevrational, no adjustments

Nikkola, Jussi et al. The Intensity of Brief Interventions in Patients with Acute Alcoholic Pancreatitis Should be Increased, Especially in Young Patients with Heavy Alcohol Consumption. Alcohol Alcohol. 52. 453-459. 2017

Population	Intervention	Outcomes/Results
Evidence level: 4 **Study type:** retrospective cohort study **Number of Patient:** 74 **Recruitung Phase:** 2 years (2010-2012) **Inclusion Criteria:** first episode of alcoholic AP **Exclusion Criteria:** other etiology, RAP, CP, misdiagnosed	**Intervention:** none **Comparison:** alcohol consumption behavioral intervention	**Primary:** RAP vs. no-RAP **Secondary:** Age **Results:** AUDIT points≥20(%) RAP: 7 (70.0) non-RAP 5 (29.4) OR 5.6 (1.02–30.9) p0.048 Age, years, mean (SD) RAP 41.4 (10.6) non-RAP 47.6 (12.6) OR (0.960.92–1.00) p0.045 Development of RAP in patients who did or did not receive BI duringfirst hospitalization of AAP (log-rank:P=0.88). **Author's Conclusion:** The in-hospital BI assuch did not prevent the development of RAP. Young patients espe-cially, with AUDIT points of 20 or over, are at high risk for devel-oping RAP and should be included in a more intense follow-uptreatment program

Methodical Notes

Funding Sources: ompetitive Research Fund ofPirkanmaa Hospital District.

COI: one declared

Randomization: na

Blinding: na

Dropout Rate/ITT-Analysis: reported

Notes:

Nikkola, Jussi et al. The Long-term Prospective Follow-up of Pancreatic Function After the First Episode of Acute Alcoholic Pancreatitis: Recurrence Predisposes One to Pancreatic Dysfunction and Pancreatogenic Diabetes. J. Clin. Gastroenterol. 51. 183-190. 2017

Population	Intervention	Outcomes/Results
Evidence level: 2 **Study type:** prognostic cohort study, single center **Number of Patient:** 77 for long-term FU **Recruitung Phase:** 4 years (2001 - 2005) **Inclusion Criteria:** first episode of aAP **Exclusion Criteria:** survival < 2 years other etiology CP pre. surgery	**Intervention:** none **Comparison:** T3DM on FU	**Primary:** risk factors for endocrine dysfunction **Secondary:** risk factors for exocrine dysfunction **Results:** median follow-up time was 10.5 years (range, 3.1to 12.9 y) Endocrine dysfunction 55% on FU RAP strongest predictor of endocrine dysf. OR 8.2(1.2-54.3) p=0.029 PEI predicts endocrin. dysf. OR 10.8 (1.2-102.0) p=0.037 Exocrine dysfunction 24% on FU Abnormal endocrinefunction (vs. no) 8/8(100) vs 12/30 (40) 0.003 **Author's Conclusion:** RAP is strongly associated with thedevelopment of new pancreatogenic diabetes and also witha higher overall mortality. Exocrine pancreatic dysfunctiondeveloped in 25% of the patients and was associated withendocrine pancreatic dysfunction

Methodical Notes
Funding Sources: nk **COI:** nk **Randomization:** na **Blinding:** na **Dropout Rate/ITT-Analysis:** reported 32% **Notes:**

Nikkola, Jussi et al. Pancreatic morphological changes in long-term follow-up after initial episode of acute alcoholic pancreatitis. J. Gastrointest. Surg. 18. 164-70; discussion 170-1. 2014

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** prospective cohort study, single center **Number of Patient:** 36 **Recruitung Phase:** 4 years (2001 to 2005) **Inclusion Criteria:** first episode of aAP **Exclusion Criteria:** other etiology, CP, no FU available	**Intervention:** none **Comparison:** recurrence of AP	**Primary:** change in sMRCP **Secondary:** **Results:** during 7y-FU 53% imaging returned to normal, 47% had chronic changes (36% PP, 28% parenchymal changes, 28% atrophy, 11% constrictions, 6% dilatation). Often changes visable at 2 years also. Severe and moderatly sever AP predicted abnormal findings in FU. **Author's Conclusion:** Morphological pancreatic changes increase with recurrentepisodes of acute pancreatitis. Patients with mild first epi-sode assessed with the updated Atlanta criteria had fewerchronic changes in the pancreas even in the long term.However, independent of severity, even a single episode ofacute alcoholic pancreatitis may induce chronic morpholog-ical changes in long-term follow-up.

Methodical Notes
Funding Sources: nk **COI:** nk **Randomization:** na **Blinding:** yes **Dropout Rate/ITT-Analysis:** 18% reported **Notes:**

Nikkola, Jussi et al. Abstinence after first acute alcohol-associated pancreatitis protects against recurrent pancreatitis and minimizes the risk of pancreatic dysfunction. Alcohol Alcohol. 48. 483-6. 2013

Population	Intervention	Outcomes/Results

Evidence level: 3 **Study type:** single center prospective cohort study **Number of Patient:** 18 **Recruitung Phase:** 4 years (2001 - 2005), 5.15 years FU **Inclusion Criteria:** first attack of aAP, abstinence of alcohol after AP **Exclusion Criteria:** CP, non-C2 etiology, persistent alcoholl consumption	**Intervention:** BI at basline **Comparison:** indirect to ongoing alcohol consumption	**Primary:** recurrence pancreatic function **Secondary:** **Results:** 0/18 recurence vs. 34/100 in non-abstinence group 1/18 PEI no new-onset-DM on FU **Author's Conclusion:** This study suggests that abstinence seemsto be an excellent way to prevent recurrences of acute alco-holic pancreatitis, also in the long term. Pancreatic dysfunc-tion is also rare among abstinent patients. Total abstinenceshould be considered a goal for patients with alcoholicpancreatitis.

Methodical Notes

Funding Sources: nk

COI: nk

Randomization: na

Blinding: na

Dropout Rate/ITT-Analysis: not reported

Notes:

Pelli, Hanna et al. Pancreatic damage after the first episode of acute alcoholic pancreatitis and its association with the later recurrence rate. Pancreatology. 9. 245-51. 2009

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** prospective cohort study **Number of Patient:** 93 recruited, 54 for FU **Recruitung Phase:** 3 years (2001 - 2004) **Inclusion Criteria:** first episode of aAP	**Intervention:** none **Comparison:** severity	**Primary:** pancreatic function **Secondary:** **Results:** DM mild vs severe @2years FU: 7% vs 31% = 0.05, OR: 5.48, 95% CI: 1.04–29.0) PEI, mostly recovers from baseline, no difference with regard to severity. **Author's Conclusion:** As a conclusion, this study demonstrates that the clin-ical severity of the first episode of AAP associated with decreased diabetic control, as judged by the increased prevalence of glycosylated haemoglobin over 6.5% at 2 years. Patients with newly impaired glucose metabolism were more dependent on alcohol at 2 years. The severity of pancreatitis was not associated with pancreatic exo-crine function, as measured by the faecal elastase-1 assay, at 2 years when the changes following the acute episode had subsided.

Exclusion Criteria: CP, RAP, non-aAP		

Methodical Notes

Funding Sources: Mar y and Georg C. Ehrnrooth Foundation, the Research Foundation of As-traZeneca Corporation, the Research Foundation of Orion Cor-poration, the Yrjö Jahnsson Foundation and the Medical Re-search Fund of Tampere University Hospital.

COI: nk

Randomization: na

Blinding: na

Dropout Rate/ITT-Analysis: 43% drop-out rate

Notes:

Sandhu, Supna et al. Incidence of pancreatitis, secondary causes, and treatment of patients referred to a specialty lipid clinic with severe hypertriglyceridemia: a retrospective cohort study. Lipids Health Dis. 10. 157. 2011

Population	Intervention	Outcomes/Results
Evidence level: 5 **Study type:** retrospective single-center cohort study **Number of Patient:** 95 **Recruitung Phase:** 21 years (1986 - 2007) **Inclusion Criteria:** TG >20mM **Exclusion Criteria:**	**Intervention:** **Comparison:** TG levels	**Primary:** incidence of pancreatitis **Secondary:** **Results:** 15(15.8%) had a history of pancreatitis. mean TG was 38.13 mM [median 30.91 mM (IQ 25.6 - 52.2)], all >20.5 mM (1815 mg/dl). cohort of 91 patients with TG levels between 10 and 20 mM (886 -1771 mg/dl) at time of presentation to clinic revealed ahistory of pancreatitis in only 3 (3,3%) patients **Author's Conclusion:** pancreatitis occurred in a relatively small percentageof patients, and not unless TG were > 20 mM

Methodical Notes

Funding Sources: Faculty of Medicine Summer Studentship Award

COI: none declared

Randomization: no

Blinding: no

Dropout Rate/ITT-Analysis: nk

Notes:

Shen, Hsiu-Nien et al. Risk of Diabetes Mellitus after First-Attack Acute Pancreatitis: A National Population-Based Study. Am. J. Gastroenterol. 110. 1698-706. 2015

Population	Intervention	Outcomes/Results

Evidence level: 2 **Study type:** population based cohort study with FU **Number of Patient:** n=2,966 with first AP episode, non-diabetic n=11,864 controls, non-AP, non-diabetic **Recruitung Phase:** 13 years (1997-2010) **Inclusion Criteria:** first AP vs. non-AP **Exclusion Criteria:** diabetes, cancer	**Intervention:** none **Comparison:** Ap vs. not	**Primary:** incidence of diabetes on FU **Secondary:** **Results:** aHR All AP: men: <3months: 9.30 (4.39–19.72); >3months: 3.21 (2.59–3.98) women: <3months: 5.90 (3.37–10.34); >3months: 2.54 (2.13–3.04) mild AP: men: <3months: 10.47 (4.41–24.86); >3months: 3.34 (2.63–4.25) women: <3months: 5.94 (3.13–11.26); >3months: 2.49 (2.04–3.04) non RAP (HR): overall: <3months: 7.04 (3.65–13.55); >3months: 1.87 (1.49–2.35) **Author's Conclusion:** In conclusion, the study fi nds that the overall risk of DM increases by twofold aft er the fi rst-attack AP. A long-term follow-up is recommended for patients with AP to monitor the develop-ment of DM, especially in some risk groups, such as men aged <65 years regardless of severity.
Methodical Notes		
Funding Sources: hospital (grant no. CMFHR10272) and the National Scientifi c Council (grant no. NSC101-2314-B-006-076-MY3) **COI:** none declared **Randomization:** no **Blinding:** no **Dropout Rate/ITT-Analysis:** reported **Notes:** demographics of controls different from AP patients		

Tu, Jianfeng et al. Endocrine and exocrine pancreatic insufficiency after acute pancreatitis: long-term follow-up study. BMC Gastroenterol. 17. 114. 2017

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** retrospective cohort study **Number of Patient:** 113 **Recruitung Phase:** 3 months (2016) **Inclusion Criteria:** first episode severe AP **Exclusion Criteria:** diabetes, diarrhea, CP, death	**Intervention:** none **Comparison:** extent of necrosis, severity	**Primary:** incidence of PEI, DM **Secondary:** **Results:** med. FU 43 omths (1-260) normal GT: 40,7%; impaired GT: 29,2%; DM: 30,1% fElastase: >200 64,6%; 100-200 29,2%; <100 6,2% correlates with extent of necrosis and severity and age (higher in younger) **Author's Conclusion:** Pancreaticnecrosis, extent of pancreatic necrosis>50%, WON andinsulin resistance were the independent risk factors ofnew onset diabetes after AP
Methodical Notes		

Funding Sources: Natural Science Foundationof China (No.81570584, 81,670,588). The collection, analysis and interpretationof data was funded by the Science and Technology Foundation of ZhejiangProvince, China (No. 2013C37022). Natural Science Foundation of ZhejiangProvince, China (LY18H150005).

COI: none declared

Randomization: no

Blinding: no

Dropout Rate/ITT-Analysis: reported 6%

Notes:

Umapathy, Chandraprakash et al. Natural History After Acute Necrotizing Pancreatitis: a Large US Tertiary Care Experience. J. Gastrointest. Surg. 20. 1844-1853. 2016

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** retrospective single center cohort study **Number of Patient:** 167 **Recruitung Phase:** 7 years (2001- -2008 **Inclusion Criteria:** necrotizing pancreatitis with radiological evidence **Exclusion Criteria:** nk	**Intervention:** none **Comparison:**	**Primary:** incidence of DM, PEI, disability in survivors min. 1y FU **Secondary:** **Results:** DM: n=73 45% (31% on index admission; 14% during FU) PEI: n=106 28% on PERT on FU Disability: n=76 55% disability on FU Overall, the median survival following ANP was 9.1 years(IQR 4.5,), which was significantly lower when comparedwith age- and sex-matched US population (26.1 years) **Author's Conclusion:** Decreased long-term survival compared to controls. A high fraction of patients develops en-docrine insufficiency, requires PERT, and suffers from long-term disability.

Methodical Notes

Funding Sources: nk

COI: none declared

Randomization: no

Blinding: no

Dropout Rate/ITT-Analysis: reported

Notes:

Uomo, G et al. Pancreatic functional impairment following acute necrotizing pancreatitis: long-term outcome of a non-surgically treated series. Dig Liver Dis. 42. 149-52. 2010

Population	Intervention	Outcomes/Results
Evidence level: 4 **Study type:** prospective cohort study, single center	**Intervention:** consevrative NAP treatment **Comparison:**	**Primary:** pancreatic insuff. **Secondary:** **Results:** PEI: 22,5% transient impairmant of fecal elastase (<200µg/g),

Number of Patient: 40 **Recruitung Phase:** 10 years (1984-1993) **Inclusion Criteria:** non-surgical patients with NAP **Exclusion Criteria:** surgery, death		return to normal in 5 years endocrine insuff.: 15,7% with 6years of follow-up developed DM **Author's Conclusion:** In conclusion, the results obtained from a very-long follow-upperiod suggest that after an episode of necrotizing AP, pancreaticfunction recovers completely in the vast majority of unoperatedpatients.
Methodical Notes		
Funding Sources: nk **COI:** none declared **Randomization:** na **Blinding:** na **Dropout Rate/ITT-Analysis:** 80% reported **Notes:**		

Vipperla, Kishore et al. Risk of and factors associated with readmission after a sentinel attack of acute pancreatitis. Clin. Gastroenterol. Hepatol. 12. 1911-9. 2014

Population	Intervention	Outcomes/Results
Evidence level: 2 **Study type:** singel-center prospective cohort study **Number of Patient:** 127 **Recruitung Phase:** 7 years (2003 - 2010) **Inclusion Criteria:** sentenial AP attack with readmission **Exclusion Criteria:**	**Intervention:** **Comparison:** early vs. late readmission	**Primary:** reason for admission **Secondary:** **Results:** Total readmission: n=43 Early admission(<30 days): symptoms 14%, local complications 43%, RAP 29%, surgical compl. 10%, pleural effusion 5% Late admission (>30 days): symptoms 9%, local complications 27%, RAP 55%, surgical compl. 5%, NJ-tube 5% Predictors of readmission: no solid food, poor symptom control, poor pain control, drains in place, abnormal vital signs **Author's Conclusion:** In summary, readmissions after the sentinel attackof AP are common and usually owing to smoldering(ongoing) symptoms, local complications, and RAP.Readmissions from ongoing symptoms or local com-plications of AP are common early during the follow-up period, whereas RAP risk increases with theduration of follow-up evaluation and its risk is influ-enced by sex and etiology of AP.
Methodical Notes		
Funding Sources: nk **COI:** none declared		

Randomization: no

Blinding: no

Dropout Rate/ITT-Analysis: 22%

Notes:

Xiang, Jun-Xi et al. Impact of cigarette smoking on recurrence of hyperlipidemic acute pancreatitis. World J. Gastroenterol. 23. 8387-8394. 2017

Population	Intervention	Outcomes/Results
Evidence level: 4 **Study type:** retrospective single-center cohort study **Number of Patient:** 88 **Recruitung Phase:** 3 years (2013 - 2016) **Inclusion Criteria:** hyperlipidemia pancreatitis with or w/o recurrence **Exclusion Criteria:** Cp, other AP etiology	**Intervention:** **Comparison:** smoking status	**Primary:** recurrence rate **Secondary:** **Results:** Smoking increases risk for recurrence HR 4.3 (1.4-12.5)p=0.009, dose dependent and shortens recurrence-free survival. **Author's Conclusion:** For smokers, continued smoking might be strongly correlated with HLAP recurrence and compromised survival.

Methodical Notes

Funding Sources: National Natural Science Foundation of China, No. 81501608.

COI: none declared

Randomization: na

Blinding: na

Dropout Rate/ITT-Analysis: not reported

Notes:

Yadav, Dhiraj et al. Alcohol consumption, cigarette smoking, and the risk of recurrent acute and chronic pancreatitis. Arch. Intern. Med. 169. 1035-45. 2009

Population	Intervention	Outcomes/Results
Evidence level: 3 **Study type:** multi-center cross-sectional study **Number of Patient:** 460 **Recruitung Phase:** 2000-2006	**Intervention:** none **Comparison:** smoking, drinking	**Primary:** RAP vs. controls **Secondary:** **Results:** Smoking > 35py associated independently with RAP HR 1.91 (1.17-3.11) p=.01; no association with drinking and RAP, compared to alcohol consumption in controls. **Author's Conclusion:** Risk for CP from alcohol consumptionoccurs above a threshold level, while risk due to smok-ing is dose dependent. Drinking levels in subjects withRAP are similar to controls.

Inclusion Criteria: 2 episodes of AP **Exclusion Criteria:** CP		

Methodical Notes

Funding Sources: DK061451 from the National Institute of Diabetes andDigestive and Kidney Diseases, Rockville, Maryland (DrWhitcomb); the National Pancreas Foundation, Boston,Massachusetts; and Robert and Vicki Hall, and Andrewand Michelle Aloe.

COI: none declared

Randomization: na

Blinding: na

Dropout Rate/ITT-Analysis: nk

Notes:

Yadav, Dhiraj et al. A population-based evaluation of readmissions after first hospitalization for acute pancreatitis. Pancreas. 43. 630-7. 2014

Population	Intervention	Outcomes/Results
Evidence level: 2 **Study type:** population based cohort study **Number of Patient:** 6010 **Recruitung Phase:** 10 years (1995 - 2006) **Inclusion Criteria:** pancreatitis **Exclusion Criteria:** biliary pancreatitis PDAC	**Intervention:** none **Comparison:** AP vs. CP	**Primary:** readmission rates incdence of consecutive CP diagnosis **Secondary:** **Results:** 12,8% developed subsequent CP readmission highest in young patients, alcoholic etiology high rate of readmission associated with subsequent diagnosis of CP **Author's Conclusion:** We found that the riskand burden of readmissions was determined by younger age,alcohol etiology, and diagnosis of CP

Methodical Notes

Funding Sources: supported by the Department of Medicine, University ofPittsburgh (

COI: none declared

Randomization: no

Blinding: no

Dropout Rate/ITT-Analysis: not reported

Notes:

NEWCASTLE - OTTAWA Checklist: Case Control: *3 Bewertung(en)*

Chung, Wei-Sheng et al. Incidence and risk of acute coronary syndrome in patients with acute pancreatitis: A nationwide cohort study. Pancreatology. 17. 675-680. 2017

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 4 **Study type:** registry based case control study (retrospective, observational)	**Funding sources:** grants from Taiwan Ministry ofHealth and Welfare Clinical Trial and Research Center for Excellence(MOHW104-TDU-B-212-113002) **Conflict of Interests:** none declared **Randomization:** na **Blinding:** na **Dropout rates:** nk	**Total no. patients:** AP= 87068 Controls= 348 272 **Patient characteristics:** 10 years (2000 - 2010) **Inclusion criteria:** AP: first epsiode of AP and aged>20 years Controls: aged>20 years **Exclusion criteria:** AP: no history of ACS, pancreatic cancer, and chronic pancreatitis Controls: no history of ACS, pancreatic cancer, acute pancreatitis and chronic pancreatitis	**Interventions:** none **Comparison:** Rate of ACS
Notes:	FU shorter in AP group drop-out rate and LOF not stated **Author's conclusion:** Our nationwide cohort study of approximately 87068 patientswith AP with 508991 person-years follow-up indicated that pa-tients with AP were at a 1.24-fold increased risk of ACS comparedwith those without AP. The age-specific aHR of ACS in patients withAP compared with those without AP was higher in the youngergroup than in the older group despite the incidence of ACSincreased with age. Approximate one third of ACS developed within1 month of AP occurrence. Thesefindings highlight the importanceof a multidisciplinary team to adopt an integrated approach to takecare of patients with AP.		
Outcome Measures/results	**Primary** ACS (including ICD-9-CM code 411.1for unstable angina; ICD-9-CM code 410 for STEMI and 411.8 fornon-STEMI). **Secondary**	**Results:** Without Acute pancreatitis: incidence rate per 1000 person years 3.03 adj. HR: 1.00 (reference) With AP: incidence rate per 1000 person years 5.52 adj. HR: 1.14 (1.07 - 1.21) (95% CI) Rate decreasing with tiem from AP, Rate highest (10.6) within one month from AP	

Kirkegård, Jakob et al. Acute Pancreatitis and Pancreatic Cancer Risk: A Nationwide Matched-Cohort Study in Denmark. Gastroenterology. 154. 1729-1736. 2018

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:** nationwide, population-based, matchedcohort study	**Funding sources:** anish Cancer Society (no.R124-A7521) in addition to grants from“Aase og Ejnar Danielsens Fond,”“Direktør Emil C. Hertz og Hustru Inger Hertz’Fond,”“Familien HedeNielsens Fond,”“Direktør Werner Richter og hustrus Legat,”“Krista og ViggoPetersens Fond,”“Neye-Fonden,”and“Th. Maigaard’s Eftf. Fru Lily BenthineLunds Fond af 1.6.1978.”	**Total no. patients:** acute pancreatitis 41,669 sex and age matched controls (1:5) 208,340 **Patient characteristics:** 33 years (1980 - 2013) **Inclusion criteria:** inpatient diagnosis of AP, index=time of first episode	**Interventions:** none **Comparison:** AP vs. no AP

	Conflict of Interests: none declared **Randomization:** none **Blinding:** none **Dropout rates:** 0%	**Exclusion criteria:** outpatient AP CP PDAC post-surgery or Tx age <18years	
Notes:	population based, virtual 100% FU **Author's conclusion:** In conclusion, patients admitted with acute pancreatitishad an increased risk of pancreatic cancer compared withage- and sex-matched comparison subjects from the generalpopulation.		
Outcome Measures/results	**Primary** incidence of PDAC on FU **Secondary**	**Results:** 937 cancer occured. 2 years of follow-up (adjusted HR [aHR] 19.28; 95% CI 14.62–25.41) 2 to 5 years follow-up (aHR 2.43; 95% CI 1.73–3.41) > 5 years follow-up (aHR 2.02;95% CI 1.57–2.61) Absolute 2- and 5-year risks of pancreatic cancer among patients with acute pancreatitiswere 0.70% (95% CI 0.62%–0.78%) and 0.87% (95% CI0.78%–0.97%) When stratifying the patients according to the acutepancreatitis etiology, our sensitivity analysis suggestedthat, compared with the general population, patients withidiopathic pancreatitis have the highest pancreatic cancerrisk, followed by patients with biliary pancreatitis. Nomeaningful interpretation can be made from the group ofpatients with alcoholic or ERCP-related pancreatitis(Table 3). Finally, our assessment of the impact ofconfounding from tobacco smoking and alcohol consumption showed no substantial effect on our estimates(Supplementary Tables 6and7	

Lin, C-C et al. Independent and joint effect of type 2 diabetes and gastric and hepatobiliary diseases on risk of pancreatic cancer risk: 10-year follow-up of population-based cohort. Br. J. Cancer. 111. 2180-6. 2014

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 1 **Study type:** population based cohort study	**Funding sources:** Taiwan Ministry of Health andWelfare Clinical Trial and Research Center of Excellence(MOHW103-TDU-B-212-113002), Health and welfare surchargeof tobacco products, China Medical University Hospital CancerResearch Center of Excellence (MOHW103-TD-B-111-03, Tai-wan) and China Medical University under the Aim for TopUniversity Plan of the Ministry of Education, Taiwan **Conflict of Interests:** none declared **Randomization:** none **Blinding:** yes **Dropout rates:** nk	**Total no. patients:** 166 850 subjects in each cohort **Patient characteristics:** 1 year (1997 - 1998), Follow-up till 2010 **Inclusion criteria:** Diabetes mellitus type 2 vs. not **Exclusion criteria:** other forms of diabetes, cancer diagnosis	**Interventions:** none **Comparison:** diabetics vs. non-diabeteics
Notes:			

	Author's conclusion: Our study highlights pre-existing type 2 diabetes, acute alcoholichepatitis, acute pancreatitis, chronic pancreatitis, alcohol depen-dence, cholecystitis, and/or gastric ulcer portending pancreaticcancer. Significant joint effects of acute alcoholic hepatitis, acutepancreatitis, cholecystitis, and gastric ulcer along with type 2diabetes on pancreatic cancer risk were likewise noted.	
Outcome Measures/results	**Primary** 10 year PDAC risk **Secondary**	**Results:** AP adjusted HR 1.74 (1.23 - 2.45)*** AP + DM HR 6.55 (2.52 - 17.04)***

NEWCASTLE - OTTAWA Checklist: Cohort: *6 Bewertung(en)*

Ammann, R W et al. Progression of alcoholic acute to chronic pancreatitis. Gut. 35. 552-6. 1994			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 **Study type:** prospective cohort	**Funding sources:** n.a. **Conflict of Interests:** n.a. **Randomization:** n.a. **Blinding:** n.a. **Dropout rates:** not statedd	**Total no. patients:** 254 **Recruiting Phase:** 1963 1992 **Inclusion criteria:** alcoholic AP **Exclusion criteria:** chronic pancreatitis	**Interventions:** n.a. **Comparison:** progression to CP vs. non-progression
Notes:	**Author's conclusion:** progression from AP to CP common, more likely if more attacks and local complications multifactorial disease concept proposed		
Outcome Measures/results	**Primary** presence of CP **Secondary** n.a.	**Results:** 215/254 progress more attacks and more severe attacks in progressors time to diagnosis of CP around 5 years	

Beagon, C et al. The Impact of Social Work Intervention in Alcohol-Induced Pancreatitis in Ireland: a Single-Center Experience. Alcohol Alcohol. 50. 438-43. 2015			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 **Study type:** retrospective cohort study	**Funding sources:** not statet **Conflict of Interests:** none declared **Randomization:** none **Blinding:** none **Dropout rates:** none	**Total no. patients:** 160 **Recruiting Phase:** 4 years **Inclusion criteria:** alcoholic ap **Exclusion criteria:** lack of sufficient clinical data	**Interventions:** social work intervention/alcohol intervention **Comparison:** relapse rate w/ or w/o social work intervention
Notes:			

	Author's conclusion: This retrospective study suggests that our current SW intervention foralcohol-induced acute pancreatitis patients in the study is ineffective.It demonstrates a significant (20%) rate of relapse, which is likelyto be a conservative estimate of the ongoing alcohol-induced pancrea-titis relapse rate in this population. Further study around effectiveintervention is urgently needed.	
Outcome Measures/results	**Primary** relapse rate **Secondary** coverage of SW referral	**Results:** Of the 47 first admission patients seen by SW, 10 relapsed; and of the 68 who did not receive SW intervention, 10 relapsed. This is not a significantly different(ANOVA,P= 0.352)

Bertilsson, Sara et al. Factors That Affect Disease Progression After First Attack of Acute Pancreatitis. Clin. Gastroenterol. Hepatol. 13. 1662-9.e3. 2015

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 4 **Study type:** retrospective cohort study	**Funding sources:** unknwon **Conflict of Interests:** n.a. **Randomization:** n.a. **Blinding:** n.a. **Dropout rates:** none	**Total no. patients:** 1457 **Recruiting Phase:** 10 years **Inclusion criteria:** first attack of AP from any cause **Exclusion criteria:** previous AP chronic AP residing not in the cachment area moving away from catchment area during FU	**Interventions:** none **Comparison:** etiology of AP
Notes:	**Author's conclusion:** The severity offirst-time AP, smoking, and alcohol abuse are related to recurrence and sub-sequent chronic pancreatitis. Recurrence increases the risk for progression to chronicpancreatitis.		
Outcome Measures/results	**Primary** recurrence rate progression to CP **Secondary**	**Results:** Risk for recurrence was signifi-cantly higher among smokers (hazard ratio [HR], 1.42; 95% confidence interval [CI], 1.03–1.95;P[.03), patients with alcohol-associated AP (HR, 1.58; 95% CI, 1.25–2.23;P<.01 after organfailure ci and in patients with systemic complications or local> APof all etiologies progressed to chronic pancreatitis, although alcohol-associated AP progressedmost frequently (2.8/100 patient-years). Patients with recurrent AP were at the highest risk forchronic pancreatitis (HR, 6.74; 95% CI, 4.02L11.3;P<.01 followed by alcohol-associated ap ci smoking systemiccomplications and peripancreatic necrosis>	

Bogdan, Justyna et al. Epidemiological characteristic of acute pancreatitis in Trzebnica district. Pol Przegl Chir. 84. 70-5. 2012

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 4 **Study type:** retrospective single center	**Funding sources:** nk **Conflict of Interests:** nk **Randomization:** na **Blinding:** na	**Total no. patients:** 298 **Recruiting Phase:** 6 years (2005-2010) **Inclusion criteria:** confirmed AP **Exclusion criteria:** other disease more likely, CP	**Interventions:** none **Comparison:** etiology

	Dropout rates: nk		
Notes:	**Author's conclusion:** none		
Outcome Measures/results	**Primary** recurrence **Secondary** -	**Results:** recurrence rates by etiology alcohol 48% gall-stone 6,25% idiopathic 19% PDAC 0% Total 29%	

Munigala, Satish et al. Heavy Smoking Is Associated With Lower Age at First Episode of Acute Pancreatitis and a Higher Risk of Recurrence. Pancreas. 44. 876-81. 2015

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 3 **Study type:** retrospective cohort study	**Funding sources:** nk **Conflict of Interests:** nk **Randomization:** na **Blinding:** yes **Dropout rates:** reported	**Total no. patients:** 6799 **Recruiting Phase:** 8 years (2001 - 2007) **Inclusion criteria:** AP episode **Exclusion criteria:** Ap due to gallstones, CP	**Interventions:** none **Comparison:** smoking and alcohol intake
Notes:	**Author's conclusion:** In conclusion, our study indicates that smoking is an inde-pendent risk factor for AP and also augments the alcohol-relatedrisk. Smoking alone and in combination with alcohol increasesthe risk of AP, lowers the median age for onset of AP, and in-creases the risk of recurrent attacks.		
Outcome Measures/results	**Primary** risk for AP recurrence **Secondary**	**Results:** Ap risk: History of smoking only1.78 (1.64–1.94) <0.0001 History of alcohol only4.20 (3.88–4.55) <0.0001 History of smoking and alcohol6.66 (6.24–7.10) <0.0001 Risk of recurrence (more than 4 episodes) None alcohol none-smoking vs. smoking: 8.62% vs 11.90% ** alcohol none-smoking vs. smoking: 12.93% vs 17.92% ***	

Poornachandra, Kuchhangi Sureshchandra et al. Clinical, biochemical, and radiologic parameters at admission predicting formation of a pseudocyst in acute pancreatitis. J. Clin. Gastroenterol. 45. 159-63. 2011

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 3 **Study type:** prospective single center cohort study with 4 week FU	**Funding sources:** nk **Conflict of Interests:** nk **Randomization:** na **Blinding:** no	**Total no. patients:** 75 **Recruiting Phase:** 1 year (2006 - 2007) **Inclusion criteria:** AP **Exclusion criteria:** nk	**Interventions:** clinical FU and repeated US --> CECT if abnormal **Comparison:**

	Dropout rates: 2/75		
Notes:	**Author's conclusion:** n conclusion, male sex, palpable mass, ascites, and ahigh CTSI score at admission can predict the developmentof a pseudocyst after an attack of acute pancreatitis.		
Outcome Measures/results	**Primary** developement of APFC during FU **Secondary**	**Results:** 34 collections (52.3%) noted at FU Male sex p0.024 OR 10.05 (1.35-74.77) Palpable mass at baseline p0.028 OR 15.33 (1.35-174.3 Ascites p0.005 OR 72.31 (3.76-1391.04) CTSI p0.013 OR 1.52 (1.09-2.13) multiv. regression analysis	

Literatursammlung:

AG8-CP Autoimmune Pankreatitis

Inhalt: *190 Literaturstellen*

Literaturstelle	Evidenzlevel	Studientyp
Al-Saif, Faisal 2006	5	Case report
Anjiki, Hajime 2011	3	Non-randomized controlled cohort
Aoki, S 2005	3	Non-randomized controlled cohort
Aparisi, L 2005	4	Case-control study
Arikawa, Shunji 2010	3	Non-randomized controlled cohort
Asada, Masanori 2006	4	Case-control study
Balasubramanian, Gokulakrishnan 2012	4	Case-series
Bang, Sung-Jo 2008	4	Case-series
Bi, Yan 2016	4	Case-series
Buijs, Jorie 2016	3	Non-randomized controlled cohort
Buijs, Jorie 2015	3	Follow-up study
Buijs, Jorie 2014	2	Randomized trial
Carbognin, G 2009	4	Case-series
Cebe, Katherine M 2013	4	Case-control study
Chandan, Vishal S 2008	4	Case series
Chang, Ming-Chu 2009	4	Case-control study
Chang, Ming-Chu 2015	4	Case-control study
Chang, Ming-Chu 2014	4	Case-control study
Chang, Ming-Chu 2014	3	Non-randomized controlled cohort
Chang, Ming-Chu 2014	3	Non-randomized controlled cohort
Chang, Woo Ik 2009	4	Case-control study
Chari, Suresh T 2006	4	Case-series
Chari, Suresh T 2009	3	Non-randomized controlled cohort
Chatterjee, Suvadip 2014	3	Follow-up study
Cheuk, Wah 2008	4	Case-series

Cho, Min Keun 2018	3	Non-randomized controlled cohort
Choi, Eun Kwang 2007	3	Non-randomized controlled cohort
Choi, Seo-Youn 2016	3	Non-randomized controlled cohort
Chu, Kim E 2009	3	Non-randomized controlled cohort
Church, Nicholas I 2007	3	Follow-up study
Clark, Clancy J 2013	3	Follow-up study
Culver, Emma L 2017	3	Non-randomized controlled cohort
Czakó, László 2011	4	Case-series
Deheragoda, Maesha G 2007	3	Non-randomized controlled cohort
Deshpande, Vikram 2006	4	Case-series
Deshpande, Vikram 2011	4	Case-control study
Deshpande, Vikram 2005	4	Case-control study
Detlefsen, Sönke 2010	4	Case-control study
Detlefsen, Sönke 2018	3	Non-randomized controlled cohort
Detlefsen, Sönke 2017	4	Case-series
Detlefsen, Sönke 2012	4	Case-series
Dhall, Deepti 2010	4	
Donet, Jean A 2018	2	Systematic review
Esposito, Irene 2008	4	Case-control study
Farrell, James J 2004	4	Case-series
Felix, Klaus 2016	3	Non-randomized controlled cohort
Frulloni, Luca 2009	3	Non-randomized controlled cohort
Frulloni, Luca 2009	4	Case-series
Frulloni, Luca 2010	3	Follow-up study
Fujinaga, Yasunari 2010	4	Case series
Furuhashi, Naohiro 2015	3	Non-randomized controlled cpohort
Ghassem-Zadeh, Sahar 2017	3	Non-randomized controlled cohort
Ghazale, Amaar 2007	3	Non-randomized controlled cohort
Hamano, Hideaki 2006	4	Case-series
Hardacre, Jeffrey M 2003	3	Follow-up study
Hart, Phil A 2013	3	Follow-up study
Hart, Phil A 2016	3	Follow-up study
Hart, Phil A 2013	3	Follow-up study

Hirano, Kenji 2009	4	Case-series
Hirano, Kenji 2012	3	Follow-up study
Hirano, Kenji 2016	3	Follow-up study
Hirano, Kenji 2007	3	Non-randomized controlled cohort / Follow-up study
Hirota, Morihisa 2011	3	Non-randomized controlled cohort
Hirth, Michael 2018	3	Follow-up study
Hocke, M 2011	4	Case series
Hocke, M 2011	5	Case report
Hoki, Noriyuki 2009	3	Non-randomized controlled cohort
Holmes, Brittany J 2012	4	Case-series
Horiuchi, Akira 2002	4	Case series
Hosoda, Hideo 2008	3	Non-randomized controlled cohort
Huggett, Matthew T 2014	3	Non-randomized controlled cohort / Follow-up study
Hur, Bo Yun 2012	3	Non-randomized controlled cohort
Hyodo, Naoko 2003	4	Case series
Ikeura, Tsukasa 2014	4	Case-series
Ikeura, Tsukasa 2014	3	Non-randomized controlled cohort / Follow-up study
Imai, Kenichiro 2011	4	Case-series
Irie, H 1998	4	Case series
Ishigami, Kousei 2010	4	Case-control study
Ishikawa, Takuya 2012	4	Case-series
Ishikawa, Takuya 2012	3	Case-series
Ito, Tetsuhide 2007	1	Consensus document
Itokawa, Fumihide 2011	3	Non-randomized controlled cohort
Iwasaki, Susumu 2015	4	Case-series
Iwashita, Takuji 2012	4	Case-series
Jung, Jae Gu 2015	4	Case-series
Kamisawa, T 2009	3	Non-randomized controlled cohort / Follow-up study
Kamisawa, T 2008	4	Case-series
Kamisawa, Terumi 2009	4	Case-series
Kamisawa, Terumi 2009	3	Follow-up study
Kamisawa, Terumi 2011	4	Case-series
Kamisawa, Terumi 2006	4	Case-series

Kamisawa, Terumi 2003	4	Case-series
Kamisawa, Terumi 2008	3	Non-randomized controlled cohort / Follow-up study
Kamisawa, Terumi 2014	1	Consensus document
Kamisawa, Terumi 2010	4	Case-control study
Kamisawa, Terumi 2008	3	Non-randomized controlled cohort
Kamisawa, Terumi 2005	3	Follow-up study
Kanno, Atsushi 2012	4	Case-series
Kanno, Atsushi 2016	4	Case-series
Kawa, Shigeyuki 2014	1	Consensus paper
Kawa, Shigeyuki 2015	4	Case-series
Kawai, Yuichi 2012	3	Non-randomized controlled cohort
Khalili, Korosh 2008	2	Randomized trial
Kindle, Scott A 2015	4	Case-series
Komatsu, Kenichi 2005	4	Case-control study
Koyama, Rikako 2008	4	Case-series
Ku, Yuna 2017	3	Non-randomized controlled cohort
Kubota, Kensuke 2007	3	Follow-up study
Kubota, Kensuke 2018	3	Non-randomized controlled cohort / Follow-up study
Kubota, Kensuke 2017	3	Non-randomized controlled cohort / Follow-up study
Kubota, Kensuke 2009	4	Case-series
Kubota, Kensuke 2011	3	Non-randomized controlled cohort / Follow-up study
Learn, Peter A 2011	4	Case-series
Lee, Sunyoung 2018	2	Randomized trial
Leise, Michael D 2011	5	Case-report
López-Serrano, Antonio 2016	3	Follow-up study
Lorenzo, Diane 2018	3	Non-randomized controlled cohort / Follow-up study
Macinga, Peter 2017	4	Case-series
Maire, Frédérique 2011	3	Follow-up study
Maire, Frédérique 2014	3	Follow-up study
Manfredi, Riccardo 2011	3	Follow-up study
Manfredi, Riccardo 2008	3	Follow-up study
Manser, Christine N 2015	3	Follow-up study
Maruyama, Masahiro 2012	3	Follow-up study

Maruyama, Masahiro 2014	5	
Masamune, Atsushi 2017	2	Randomized trial
Matsubayashi, Hiroyuki 2013	3	Follow-up study
Miura, Fumihiko 2013	3	Non-randomized controlled cohort / Follow-up study
Miyazawa, Masaki 2017	3	Follow-up study
Mizuno, Nobumasa 2009	2	Randomized trial
Moon, S-H 2008	2	Observational study with dramatic effect
Morishima, Tomomasa 2016	2	Randomized trial
Naitoh, Itaru 2013	3	Non-randomized controlled cohort
Naitoh, Itaru 2010	4	Case-series
Naitoh, Itaru 2015	3	Non-randomized controlled cohort
Negrelli, Riccardo 2018	4	Case-series
Nishimori, I 2005	3	Non-randomized controlled cohort
Nishimori, Isao 2006	2	Observational study with dramatic effect
Nishino, Takayoshi 2006	3	Follow-up study
Notohara, Kenji 2015	4	Case-series
Ogoshi, Takaaki 2015	4	Case-series
Ohno, Yoshinori 2016	3	Follow-up study
Okazaki, K 2000	4	Case-series
Okazaki, Kazuichi 2014	1	Consensus document
Oki, Hodaka 2015	4	Case-control study
Paik, Woo Hyun 2013	4	Case-control study
Palazzo, Maxime 2015	4	Case-control study
Park, Sang Hyoung 2013	4	Case-series
Raina, Amit 2009	4	Case-series
Rasch, Sebastian 2015	4	Case-series
Ravi, Karthik 2009	4	Case-series
Rebours, Vinciane 2012	3	Non-randomized controlled cohort
Rehnitz, Christoph 2011	4	Case series
Sah, Raghuwansh P 2010	3	Non-randomized controlled cohort / Follow-up study
Sah, Raghuwansh P 2010	4	Case-series
Schneider, Alexander 2017	3	Non-randomized controlled cohort / Follow-up study
Schneider, Alexander 2017	3	Non-randomized controlled cohort

Schnelldorfer, Thomas 2007	3	Follow-up study
Shimizu, Kyoko 2016	3	Follow-up study
Shimizu, Shuya 2015	3	Follow-up study
Shimosegawa, Tooru 2012	1	Consensus document
Shimosegawa, Tooru 2011	1	Consensus document
Shiokawa, Masahiro 2013	3	Follow-up study
Song, Tae Jun 2012	3	Non-randomized controlled cohort / Follow-up study
Song, Tae Jun 2010	3	Non-randomized controlled cohort
Sugimoto, Mitsuru 2017	4	Case-control study
Sugimoto, Mitsuru 2015	2	Randomized trial
Sugumar, Aravind 2011	2	Randomized trial
Sumimoto, Kimi 2013	3	Non-randomized controlled cohort
Suzuki, Daisuke 2018	3	Follow-up study
Tabata, Taku 2012	4	Case-series
Takahashi, Naoki 2009	3	Follow-up study
Takuma, Kensuke 2010	4	Case-series
Takuma, Kensuke 2011	3	Follow-up study
Terzin, Viktória 2012	4	Case-series
Tomiyama, Takashi 2011	2	Randomized trial
Tsushima, K 2009	4	Case-control study
Uchida, Kazushige 2009	3	Follow-up study
Uehara, Takeshi 2008	4	Case-series
Umehara, Hisanori 2012	1	Consensus document
van Heerde, M J 2012	4	Case-series
van Heerde, Marianne J 2014	3	Non-randomized controlled cohort
Yamamoto, H 2011	4	Case-series
Yamashita, Hiroaki 2014	4	Case-series
Yukutake, Masanobu 2014	3	Follow-up study
Yurci, Alper 2013	3	Follow-up study
Zamboni, Giuseppe 2004	4	Case-series
Zhang, Li 2014	4	Case-series
Zhang, Lizhi 2011	2	Randomized-trial
Zhang, Xuefeng 2014	4	Case-series

OXFORD (2011) Appraisal Sheet: Systematic Reviews: *8 Bewertung(en)*

Donet, Jean A et al. Pancreatic Pseudocysts and Parenchymal Necrosis in Patients With Autoimmune Pancreatitis: A Systematic Review. Pancreas. 47. 952-957. 2018			
Evidence level/Study Types	**P - I - C**	**Outcomes/Results**	**Literature References**
Evidence level: 2 **Study type:** Systematic review **Databases:** **Search period:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** **Author's Conclusion:**	
Methodical Notes			
Funding Sources: **COI:** **Study Quality:** **Heterogeneity:** **Publication Bias:** **Notes:**			

Ito, Tetsuhide et al. Treatment for autoimmune pancreatitis: consensus on the treatment for patients with autoimmune pancreatitis in Japan. J. Gastroenterol. 42 Suppl 18. 50-8. 2007			
Evidence level/Study Types	**P - I - C**	**Outcomes/Results**	**Literature References**
Evidence level: 1 **Study type:** Consensus document **Databases:** **Search period:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** **Author's Conclusion:**	
Methodical Notes			
Funding Sources: **COI:** **Study Quality:** **Heterogeneity:**			

Publication Bias:

Notes:
Consensus document

Kamisawa, Terumi et al. Amendment of the Japanese Consensus Guidelines for Autoimmune Pancreatitis, 2013 III. Treatment and prognosis of autoimmune pancreatitis. J. Gastroenterol. 49. 961-70. 2014

Evidence level/Study Types	P - I - C	Outcomes/Results	Literature References
Evidence level: 1 **Study type:** Consensus document **Databases:** **Search period:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** **Author's Conclusion:**	

Methodical Notes

Funding Sources:

COI:

Study Quality:

Heterogeneity:

Publication Bias:

Notes:
Consensus document

Kawa, Shigeyuki et al. Amendment of the Japanese Consensus Guidelines for Autoimmune Pancreatitis, 2013 II. Extrapancreatic lesions, differential diagnosis. J. Gastroenterol. 49. 765-84. 2014

Evidence level/Study Types	P - I - C	Outcomes/Results	Literature References
Evidence level: 1 **Study type:** Consensus paper **Databases:** **Search period:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** **Author's Conclusion:**	

Methodical Notes

Funding Sources:

COI:

Study Quality:

Heterogeneity:

Publication Bias:

Notes:
Consensus paper

Okazaki, Kazuichi et al. Amendment of the Japanese Consensus Guidelines for Autoimmune Pancreatitis, 2013 I. Concept and diagnosis of autoimmune pancreatitis. J. Gastroenterol. 49. 567-88. 2014

Evidence level/Study Types	P - I - C	Outcomes/Results	Literature References
Evidence level: 1 **Study type:** Consensus document **Databases:** **Search period:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** **Author's Conclusion:**	

Methodical Notes

Funding Sources:

COI:

Study Quality:

Heterogeneity:

Publication Bias:

Notes:
Consensus document

Shimosegawa, Tooru. The amendment of the Clinical Diagnostic Criteria in Japan (JPS2011) in response to the proposal of the International Consensus of Diagnostic Criteria (ICDC) for autoimmune pancreatitis. Pancreas. 41. 1341-2. 2012

Evidence level/Study Types	P - I - C	Outcomes/Results	Literature References
Evidence level: 1 **Study type:** Consensus document **Databases:** **Search period:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** **Author's Conclusion:**	

Methodical Notes

Funding Sources:

COI:

Study Quality:

Heterogeneity:

Publication Bias:

Notes:
Consensus document

Shimosegawa, Tooru et al. International consensus diagnostic criteria for autoimmune pancreatitis: guidelines of the International Association of Pancreatology. Pancreas. 40. 352-8. 2011

Evidence level/Study Types	P - I - C	Outcomes/Results	Literature References
Evidence level: 1 **Study type:** Consensus document **Databases:** **Search period:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** **Author's Conclusion:**	

Methodical Notes

Funding Sources:

COI:

Study Quality:

Heterogeneity:

Publication Bias:

Notes:
Consensus document

Umehara, Hisanori et al. Comprehensive diagnostic criteria for IgG4-related disease (IgG4-RD), 2011. Mod Rheumatol. 22. 21-30. 2012

Evidence level/Study Types	P - I - C	Outcomes/Results	Literature References
Evidence level: 1 **Study type:** Consensus document **Databases:** **Search period:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** **Author's Conclusion:**	

Methodical Notes
Funding Sources:
COI:
Study Quality:
Heterogeneity:
Publication Bias:
Notes: Consensus document

OXFORD (2011) Appraisal Sheet: RCT: *6 Bewertung(en)*

Buijs, Jorie et al. Comparable efficacy of low- versus high-dose induction corticosteroid treatment in autoimmune pancreatitis. Pancreas. 43. 261-7. 2014		
Population	**Intervention - Comparison**	**Outcomes/Results**
Evidence level: 2 **Study type:** Randomized trial **Number of Patient:** **Recruitung Phase:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** **Author's Conclusion:**
Methodical Notes		
Funding Sources: **COI:** **Randomization:** **Blinding:** **Dropout Rate/ITT-Analysis:** **Notes:**		

Masamune, Atsushi et al. Randomised controlled trial of long-term maintenance corticosteroid therapy in patients with autoimmune pancreatitis. Gut. 66. 487-494. 2017		
Population	**Intervention - Comparison**	**Outcomes/Results**
Evidence level: 2 **Study type:** Randomized trial **Number of Patient:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:**

Recruitung Phase: **Inclusion Criteria:** **Exclusion Criteria:**		**Author's Conclusion:**
Methodical Notes		
Funding Sources: **COI:** **Randomization:** **Blinding:** **Dropout Rate/ITT-Analysis:** **Notes:**		

Moon, S-H et al. Is a 2-week steroid trial after initial negative investigation for malignancy useful in differentiating autoimmune pancreatitis from pancreatic cancer? A prospective outcome study. Gut. 57. 1704-12. 2008

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 2 **Study type:** Observational study with dramatic effect **Number of Patient:** **Recruitung Phase:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** **Author's Conclusion:**
Methodical Notes		
Funding Sources: **COI:** **Randomization:** **Blinding:** **Dropout Rate/ITT-Analysis:** **Notes:**		

Nishimori, Isao et al. Influence of steroid therapy on the course of diabetes mellitus in patients with autoimmune pancreatitis: findings from a nationwide survey in Japan. Pancreas. 32. 244-8. 2006

Population	Intervention - Comparison	Outcomes/Results

Evidence level: 2 **Study type:** Observational study with dramatic effect **Number of Patient:** **Recruitung Phase:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** **Author's Conclusion:**
Methodical Notes		
Funding Sources: **COI:** **Randomization:** **Blinding:** **Dropout Rate/ITT-Analysis:** **Notes:**		

Sugimoto, Mitsuru et al. Efficacy of Steroid Pulse Therapy for Autoimmune Pancreatitis Type 1: A Retrospective Study. PLoS ONE. 10. e0138604. 2015

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 2 **Study type:** Randomized trial **Number of Patient:** **Recruitung Phase:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** **Author's Conclusion:**
Methodical Notes		
Funding Sources: **COI:** **Randomization:** **Blinding:** **Dropout Rate/ITT-Analysis:** **Notes:**		

Tomiyama, Takashi et al. Comparison of steroid pulse therapy and conventional oral steroid therapy as initial treatment for autoimmune pancreatitis. J. Gastroenterol. 46. 696-704. 2011

Population	Intervention - Comparison	Outcomes/Results
Evidence level: 2 **Study type:** Randomized trial **Number of Patient:** **Recruitung Phase:** **Inclusion Criteria:** **Exclusion Criteria:**	**Intervention:** **Comparison:**	**Primary:** **Secondary:** **Results:** **Author's Conclusion:**
Methodical Notes		
Funding Sources: **COI:** **Randomization:** **Blinding:** **Dropout Rate/ITT-Analysis:** **Notes:**		

OXFORD (2011) Appraisal Sheet: Diagnostic Studies: *82 Bewertung(en)*

Anjiki, Hajime et al. Gastric emptying in patients with autoimmune pancreatitis. Pancreas. 40. 1302-6. 2011		
Evidence level/Study Types	**Population**	**Outcomes/Results**
Evidence level: 3 **Study type:** Non-randomized controlled cohort	**Number of patients / samples:** **Reference standard:** **Validation:** **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	**Results:** **Author conclusions:**
Methodical Notes		
Funding Sources: **COI:** **Notes:**		

Aoki, S et al. Immunohistochemical study of autoimmune pancreatitis using anti-IgG4 antibody and patients' sera. Histopathology. 47. 147-58. 2005		
Evidence level/Study Types	**Population**	**Outcomes/Results**

Evidence level: 3 **Study type:** Non-randomized controlled cohort	**Number of patients / samples:** **Reference standard:** **Validation:** **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	**Results:** **Author conclusions:**
Methodical Notes		
Funding Sources: **COI:** **Notes:**		

Arikawa, Shunji et al. Comparison of sclerosing cholangitis with autoimmune pancreatitis and infiltrative extrahepatic cholangiocarcinoma: multidetector-row computed tomography findings. Jpn J Radiol. 28. 205-13. 2010

Evidence level/Study Types	Population	Outcomes/Results
Evidence level: 3 **Study type:** Non-randomized controlled cohort	**Number of patients / samples:** **Reference standard:** **Validation:** **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	**Results:** **Author conclusions:**
Methodical Notes		
Funding Sources: **COI:** **Notes:**		

Buijs, Jorie et al. Testing for Anti-PBP Antibody Is Not Useful in Diagnosing Autoimmune Pancreatitis. Am. J. Gastroenterol. 111. 1650-1654. 2016

Evidence level/Study Types	Population	Outcomes/Results
Evidence level: 3 **Study type:** Non-randomized controlled cohort	**Number of patients / samples:** **Reference standard:** **Validation:** **Blinding:**	**Results:** **Author conclusions:**

	Inclusion of clinical information: **Dealing with ambiguous clinical findings:**	
Methodical Notes		
Funding Sources: **COI:** **Notes:**		

Carbognin, G et al. Autoimmune pancreatitis: imaging findings on contrast-enhanced MR, MRCP and dynamic secretin-enhanced MRCP. Radiol Med. 114. 1214-31. 2009		
Evidence level/Study Types	**Population**	**Outcomes/Results**
Evidence level: 4 **Study type:** Case-series	**Number of patients / samples:** **Reference standard:** **Validation:** **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	**Results:** **Author conclusions:**
Methodical Notes		
Funding Sources: **COI:** **Notes:**		

Chandan, Vishal S et al. Patchy distribution of pathologic abnormalities in autoimmune pancreatitis: implications for preoperative diagnosis. Am. J. Surg. Pathol. 32. 1762-9. 2008		
Evidence level/Study Types	**Population**	**Outcomes/Results**
Evidence level: 4 **Study type:** Case series	**Number of patients / samples:** **Reference standard:** **Validation:** **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	**Results:** **Author conclusions:**
Methodical Notes		
Funding Sources: **COI:**		

Notes:

Chang, Ming-Chu et al. Cystic fibrosis transmembrane conductance regulator gene variants are associated with autoimmune pancreatitis and slow response to steroid treatment. J. Cyst. Fibros. 14. 661-7. 2015		
Evidence level/Study Types	**Population**	**Outcomes/Results**
Evidence level: 4 **Study type:** Case-control study	**Number of patients / samples:** **Reference standard:** **Validation:** **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	**Results:** **Author conclusions:**
Methodical Notes		
Funding Sources: **COI:** **Notes:**		

Chang, Ming-Chu et al. Human cationic trypsinogen but not serine peptidase inhibitor, Kazal type 1 variants increase the risk of type 1 autoimmune pancreatitis. J. Gastroenterol. Hepatol. 29. 2038-42. 2014		
Evidence level/Study Types	**Population**	**Outcomes/Results**
Evidence level: 4 **Study type:** Case-control study	**Number of patients / samples:** **Reference standard:** **Validation:** **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	**Results:** **Author conclusions:**
Methodical Notes		
Funding Sources: **COI:** **Notes:**		

Chang, Ming-Chu et al. Comparison and validation of International Consensus Diagnostic Criteria for diagnosis of autoimmune pancreatitis from pancreatic cancer in a Taiwanese cohort. BMJ Open. 4. e005900. 2014		
Evidence level/Study Types	**Population**	**Outcomes/Results**

Evidence level: 3 **Study type:** Non-randomized controlled cohort	**Number of patients / samples:** **Reference standard:** **Validation:** **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	**Results:** **Author conclusions:**
Methodical Notes		
Funding Sources: **COI:** **Notes:**		

Chang, Ming-Chu et al. Increase diagnostic accuracy in differentiating focal type autoimmune pancreatitis from pancreatic cancer with combined serum IgG4 and CA19-9 levels. Pancreatology. 14. 366-72. 2014		
Evidence level/Study Types	**Population**	**Outcomes/Results**
Evidence level: 3 **Study type:** Non-randomized controlled cohort	**Number of patients / samples:** **Reference standard:** **Validation:** **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	**Results:** **Author conclusions:**
Methodical Notes		
Funding Sources: **COI:** **Notes:**		

Chang, Woo Ik et al. The clinical and radiological characteristics of focal mass-forming autoimmune pancreatitis: comparison with chronic pancreatitis and pancreatic cancer. Pancreas. 38. 401-8. 2009		
Evidence level/Study Types	**Population**	**Outcomes/Results**
Evidence level: 4 **Study type:** Case-control study	**Number of patients / samples:** **Reference standard:** **Validation:** **Blinding:**	**Results:** **Author conclusions:**

	Inclusion of clinical information: **Dealing with ambiguous clinical findings:**	
Methodical Notes		
Funding Sources: **COI:** **Notes:**		

Chari, Suresh T et al. A diagnostic strategy to distinguish autoimmune pancreatitis from pancreatic cancer. Clin. Gastroenterol. Hepatol. 7. 1097-103. 2009		
Evidence level/Study Types	**Population**	**Outcomes/Results**
Evidence level: 3 **Study type:** Non-randomized controlled cohort	**Number of patients / samples:** **Reference standard:** **Validation:** **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	**Results:** **Author conclusions:**
Methodical Notes		
Funding Sources: **COI:** **Notes:**		

Cho, Min Keun et al. Contrast-Enhanced Endoscopic Ultrasound for Differentially Diagnosing Autoimmune Pancreatitis and Pancreatic Cancer. Gut Liver. 12. 591-596. 2018		
Evidence level/Study Types	**Population**	**Outcomes/Results**
Evidence level: 3 **Study type:** Non-randomized controlled cohort	**Number of patients / samples:** **Reference standard:** **Validation:** **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	**Results:** **Author conclusions:**
Methodical Notes		

Funding Sources: **COI:** **Notes:**

Choi, Eun Kwang et al. The sensitivity and specificity of serum immunoglobulin G and immunoglobulin G4 levels in the diagnosis of autoimmune chronic pancreatitis: Korean experience. Pancreas. 35. 156-61. 2007		
Evidence level/Study Types	**Population**	**Outcomes/Results**
Evidence level: 3 **Study type:** Non-randomized controlled cohort	**Number of patients / samples:** **Reference standard:** **Validation:** **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	**Results:** **Author conclusions:**
Methodical Notes		
Funding Sources: **COI:** **Notes:**		

Choi, Seo-Youn et al. Differentiating Mass-Forming Autoimmune Pancreatitis From Pancreatic Ductal Adenocarcinoma on the Basis of Contrast-Enhanced MRI and DWI Findings. AJR Am J Roentgenol. 206. 291-300. 2016		
Evidence level/Study Types	**Population**	**Outcomes/Results**
Evidence level: 3 **Study type:** Non-randomized controlled cohort	**Number of patients / samples:** **Reference standard:** **Validation:** **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	**Results:** **Author conclusions:**
Methodical Notes		
Funding Sources: **COI:** **Notes:**		

Chu, Kim E et al. The role of Movat pentachrome stain and immunoglobulin G4 immunostaining in the diagnosis of autoimmune pancreatitis. Mod. Pathol. 22. 351-8. 2009

Evidence level/Study Types	Population	Outcomes/Results
Evidence level: 3 **Study type:** Non-randomized controlled cohort	**Number of patients / samples:** **Reference standard:** **Validation:** **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	**Results:** **Author conclusions:**

Methodical Notes

Funding Sources:

COI:

Notes:

Culver, Emma L et al. No evidence to support a role for Helicobacter pylori infection and plasminogen binding protein in autoimmune pancreatitis and IgG4-related disease in a UK cohort. Pancreatology. 17. 395-402. 2017

Evidence level/Study Types	Population	Outcomes/Results
Evidence level: 3 **Study type:** Non-randomized controlled cohort	**Number of patients / samples:** **Reference standard:** **Validation:** **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	**Results:** **Author conclusions:**

Methodical Notes

Funding Sources:

COI:

Notes:

Deheragoda, Maesha G et al. The use of immunoglobulin g4 immunostaining in diagnosing pancreatic and extrapancreatic involvement in autoimmune pancreatitis. Clin. Gastroenterol. Hepatol. 5. 1229-34. 2007

Evidence level/Study Types	Population	Outcomes/Results

Evidence level: 3 **Study type:** Non-randomized controlled cohort	**Number of patients / samples:** **Reference standard:** **Validation:** **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	**Results:** **Author conclusions:**
Methodical Notes		
Funding Sources: **COI:** **Notes:**		

Deshpande, Vikram et al. Endoscopic ultrasound guided fine needle aspiration biopsy of autoimmune pancreatitis: diagnostic criteria and pitfalls. Am. J. Surg. Pathol. 29. 1464-71. 2005

Evidence level/Study Types	Population	Outcomes/Results
Evidence level: 4 **Study type:** Case-control study	**Number of patients / samples:** **Reference standard:** **Validation:** **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	**Results:** **Author conclusions:**
Methodical Notes		
Funding Sources: **COI:** **Notes:**		

Detlefsen, Sönke et al. Deposition of complement C3c, immunoglobulin (Ig)G4 and IgG at the basement membrane of pancreatic ducts and acini in autoimmune pancreatitis. Histopathology. 57. 825-35. 2010

Evidence level/Study Types	Population	Outcomes/Results
Evidence level: 4 **Study type:** Case-control study	**Number of patients / samples:** **Reference standard:** **Validation:** **Blinding:** **Inclusion of clinical information:**	**Results:** **Author conclusions:**

	Dealing with ambiguous clinical findings:	
Methodical Notes		
Funding Sources: **COI:** **Notes:**		

Detlefsen, Sönke et al. Value of anti-plasminogen binding peptide, anti-carbonic anhydrase II, immunoglobulin G4, and other serological markers for the differentiation of autoimmune pancreatitis and pancreatic cancer. Medicine (Baltimore). 97. e11641. 2018		
Evidence level/Study Types	**Population**	**Outcomes/Results**
Evidence level: 3 **Study type:** Non-randomized controlled cohort	**Number of patients / samples:** **Reference standard:** **Validation:** **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	**Results:** **Author conclusions:**
Methodical Notes		
Funding Sources: **COI:** **Notes:**		

Detlefsen, Sönke et al. Microscopic findings in EUS-guided fine needle (SharkCore) biopsies with type 1 and type 2 autoimmune pancreatitis. Pathol. Int. 67. 514-520. 2017		
Evidence level/Study Types	**Population**	**Outcomes/Results**
Evidence level: 4 **Study type:** Case-series	**Number of patients / samples:** **Reference standard:** **Validation:** **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	**Results:** **Author conclusions:**
Methodical Notes		
Funding Sources: **COI:**		

Notes:

Dhall, Deepti et al. Use of immunohistochemistry for IgG4 in the distinction of autoimmune pancreatitis from peritumoral pancreatitis. Hum. Pathol. 41. 643-52. 2010		
Evidence level/Study Types	**Population**	**Outcomes/Results**
Evidence level: 4 **Study type:**	**Number of patients / samples:** **Reference standard:** **Validation:** **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	**Results:** **Author conclusions:**
Methodical Notes		
Funding Sources: **COI:** **Notes:** Case-control study		

Esposito, Irene et al. Autoimmune pancreatocholangitis, non-autoimmune pancreatitis and primary sclerosing cholangitis: a comparative morphological and immunological analysis. PLoS ONE. 3. e2539. 2008		
Evidence level/Study Types	**Population**	**Outcomes/Results**
Evidence level: 4 **Study type:** Case-control study	**Number of patients / samples:** **Reference standard:** **Validation:** **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	**Results:** **Author conclusions:**
Methodical Notes		
Funding Sources: **COI:** **Notes:**		

Farrell, James J et al. EUS findings in patients with autoimmune pancreatitis. Gastrointest. Endosc. 60. 927-36. 2004		
Evidence level/Study Types	**Population**	**Outcomes/Results**

Evidence level: 4 **Study type:** Case-series	**Number of patients / samples:** **Reference standard:** **Validation:** **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	**Results:** **Author conclusions:**
Methodical Notes		
Funding Sources: **COI:** **Notes:**		

Felix, Klaus et al. Differential Diagnosis of Autoimmune Pancreatitis From Pancreatic Cancer by Analysis of Serum Gelatinase Levels. Pancreas. 45. 1048-55. 2016

Evidence level/Study Types	Population	Outcomes/Results
Evidence level: 3 **Study type:** Non-randomized controlled cohort	**Number of patients / samples:** **Reference standard:** **Validation:** **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	**Results:** **Author conclusions:**
Methodical Notes		
Funding Sources: **COI:** **Notes:**		

Frulloni, Luca et al. Identification of a novel antibody associated with autoimmune pancreatitis. N. Engl. J. Med. 361. 2135-42. 2009

Evidence level/Study Types	Population	Outcomes/Results
Evidence level: 3 **Study type:** Non-randomized controlled cohort	**Number of patients / samples:** **Reference standard:** **Validation:** **Blinding:** **Inclusion of clinical information:**	**Results:** **Author conclusions:**

	Dealing with ambiguous clinical findings:	
Methodical Notes		
Funding Sources: **COI:** **Notes:**		

Fujinaga, Yasunari et al. Characteristic findings in images of extra-pancreatic lesions associated with autoimmune pancreatitis. Eur J Radiol. 76. 228-38. 2010		
Evidence level/Study Types	**Population**	**Outcomes/Results**
Evidence level: 4 **Study type:** Case series	**Number of patients / samples:** **Reference standard:** **Validation:** **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	**Results:** **Author conclusions:**
Methodical Notes		
Funding Sources: **COI:** **Notes:**		

Furuhashi, Naohiro et al. Differentiation of focal-type autoimmune pancreatitis from pancreatic carcinoma: assessment by multiphase contrast-enhanced CT. Eur Radiol. 25. 1366-74. 2015		
Evidence level/Study Types	**Population**	**Outcomes/Results**
Evidence level: 3 **Study type:** Non-randomized controlled cpohort	**Number of patients / samples:** **Reference standard:** **Validation:** **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	**Results:** **Author conclusions:**
Methodical Notes		
Funding Sources: **COI:**		

Notes:

Ghassem-Zadeh, Sahar et al. Distinct pathophysiological cytokine profiles for discrimination between autoimmune pancreatitis, chronic pancreatitis, and pancreatic ductal adenocarcinoma. J Transl Med. 15. 126. 2017		
Evidence level/Study Types	**Population**	**Outcomes/Results**
Evidence level: 3 **Study type:** Non-randomized controlled cohort	**Number of patients / samples:** **Reference standard:** **Validation:** **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	**Results:** **Author conclusions:**
Methodical Notes		
Funding Sources: **COI:** **Notes:**		

Ghazale, Amaar et al. Value of serum IgG4 in the diagnosis of autoimmune pancreatitis and in distinguishing it from pancreatic cancer. Am. J. Gastroenterol. 102. 1646-53. 2007		
Evidence level/Study Types	**Population**	**Outcomes/Results**
Evidence level: 3 **Study type:** Non-randomized controlled cohort	**Number of patients / samples:** **Reference standard:** **Validation:** **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	**Results:** **Author conclusions:**
Methodical Notes		
Funding Sources: **COI:** **Notes:**		

Hirano, Kenji et al. Diagnostic utility of biopsy specimens for autoimmune pancreatitis. J. Gastroenterol. 44. 765-73. 2009

Evidence level/Study Types	Population	Outcomes/Results
Evidence level: 4 **Study type:** Case-series	**Number of patients / samples:** **Reference standard:** **Validation:** **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	**Results:** **Author conclusions:**
Methodical Notes		
Funding Sources: **COI:** **Notes:**		

Hirota, Morihisa et al. Perfusion computed tomography findings of autoimmune pancreatitis. Pancreas. 40. 1295-301. 2011

Evidence level/Study Types	Population	Outcomes/Results
Evidence level: 3 **Study type:** Non-randomized controlled cohort	**Number of patients / samples:** **Reference standard:** **Validation:** **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	**Results:** **Author conclusions:**
Methodical Notes		
Funding Sources: **COI:** **Notes:**		

Hoki, Noriyuki et al. Diagnosis of autoimmune pancreatitis using endoscopic ultrasonography. J. Gastroenterol. 44. 154-9. 2009

Evidence level/Study Types	Population	Outcomes/Results
Evidence level: 3 **Study type:** Non-randomized controlled cohort	**Number of patients / samples:** **Reference standard:** **Validation:** **Blinding:**	**Results:** **Author conclusions:**

	Inclusion of clinical information: **Dealing with ambiguous clinical findings:**	
Methodical Notes		
Funding Sources: **COI:** **Notes:**		

Holmes, Brittany J et al. Fine needle aspirate of autoimmune pancreatitis (lymphoplasmacytic sclerosing pancreatitis): cytomorphologic characteristics and clinical correlates. Acta Cytol. 56. 228-32. 2012		
Evidence level/Study Types	**Population**	**Outcomes/Results**
Evidence level: 4 **Study type:** Case-series	**Number of patients / samples:** **Reference standard:** **Validation:** **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	**Results:** **Author conclusions:**
Methodical Notes		
Funding Sources: **COI:** **Notes:**		

Horiuchi, Akira et al. ERCP features in 27 patients with autoimmune pancreatitis. Gastrointest. Endosc. 55. 494-9. 2002		
Evidence level/Study Types	**Population**	**Outcomes/Results**
Evidence level: 4 **Study type:** Case series	**Number of patients / samples:** **Reference standard:** **Validation:** **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	**Results:** **Author conclusions:**
Methodical Notes		
Funding Sources: **COI:**		

Notes:

Hosoda, Hideo et al. Potential for differential diagnosis of autoimmune pancreatitis and pancreatic cancer using carbonic anhydrase II antibody. Pancreas. 37. e1-7. 2008		
Evidence level/Study Types	**Population**	**Outcomes/Results**
Evidence level: 3 **Study type:** Non-randomized controlled cohort	**Number of patients / samples:** **Reference standard:** **Validation:** **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	**Results:** **Author conclusions:**
Methodical Notes		
Funding Sources: **COI:** **Notes:**		

Hur, Bo Yun et al. Magnetic resonance imaging findings of the mass-forming type of autoimmune pancreatitis: comparison with pancreatic adenocarcinoma. J Magn Reson Imaging. 36. 188-97. 2012		
Evidence level/Study Types	**Population**	**Outcomes/Results**
Evidence level: 3 **Study type:** Non-randomized controlled cohort	**Number of patients / samples:** **Reference standard:** **Validation:** **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	**Results:** **Author conclusions:**
Methodical Notes		
Funding Sources: **COI:** **Notes:**		

Hyodo, Naoko et al. Ultrasonographic evaluation in patients with autoimmune-related pancreatitis. J. Gastroenterol. 38. 1155-61. 2003		
Evidence level/Study Types	**Population**	**Outcomes/Results**

Evidence level: 4 **Study type:** Case series	**Number of patients / samples:** **Reference standard:** **Validation:** **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	**Results:** **Author conclusions:**
Methodical Notes		
Funding Sources: **COI:** **Notes:**		

Ikeura, Tsukasa et al. Retrospective comparison between preoperative diagnosis by International Consensus Diagnostic Criteria and histological diagnosis in patients with focal autoimmune pancreatitis who underwent surgery with suspicion of cancer. Pancreas. 43. 698-703. 2014

Evidence level/Study Types	Population	Outcomes/Results
Evidence level: 4 **Study type:** Case-series	**Number of patients / samples:** **Reference standard:** **Validation:** **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	**Results:** **Author conclusions:**
Methodical Notes		
Funding Sources: **COI:** **Notes:**		

Imai, Kenichiro et al. Endoscopic ultrasonography-guided fine needle aspiration biopsy using 22-gauge needle in diagnosis of autoimmune pancreatitis. Dig Liver Dis. 43. 869-74. 2011

Evidence level/Study Types	Population	Outcomes/Results
Evidence level: 4 **Study type:** Case-series	**Number of patients / samples:** **Reference standard:** **Validation:** **Blinding:** **Inclusion of clinical information:**	**Results:** **Author conclusions:**

	Dealing with ambiguous clinical findings:	
Methodical Notes		
Funding Sources: **COI:** **Notes:**		

Irie, H et al. Autoimmune pancreatitis: CT and MR characteristics. AJR Am J Roentgenol. 170. 1323-7. 1998		
Evidence level/Study Types	**Population**	**Outcomes/Results**
Evidence level: 4 **Study type:** Case series	**Number of patients / samples:** **Reference standard:** **Validation:** **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	**Results:** **Author conclusions:**
Methodical Notes		
Funding Sources: **COI:** **Notes:**		

Ishigami, Kousei et al. MRI findings of pancreatic lymphoma and autoimmune pancreatitis: a comparative study. Eur J Radiol. 74. e22-8. 2010		
Evidence level/Study Types	**Population**	**Outcomes/Results**
Evidence level: 4 **Study type:** Case-control study	**Number of patients / samples:** **Reference standard:** **Validation:** **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	**Results:** **Author conclusions:**
Methodical Notes		
Funding Sources: **COI:** **Notes:**		

Ishikawa, Takuya et al. Peripancreatic vascular involvements of autoimmune pancreatitis. J. Gastroenterol. Hepatol. 27. 1790-5. 2012		
Evidence level/Study Types	**Population**	**Outcomes/Results**
Evidence level: 4 **Study type:** Case-series	**Number of patients / samples:** **Reference standard:** **Validation:** **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	**Results:** **Author conclusions:**
Methodical Notes		
Funding Sources: **COI:** **Notes:**		

Itokawa, Fumihide et al. EUS elastography combined with the strain ratio of tissue elasticity for diagnosis of solid pancreatic masses. J. Gastroenterol. 46. 843-53. 2011		
Evidence level/Study Types	**Population**	**Outcomes/Results**
Evidence level: 3 **Study type:** Non-randomized controlled cohort	**Number of patients / samples:** **Reference standard:** **Validation:** **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	**Results:** **Author conclusions:**
Methodical Notes		
Funding Sources: **COI:** **Notes:**		

Iwasaki, Susumu et al. Characteristic findings of endoscopic retrograde cholangiopancreatography in autoimmune pancreatitis. Gut Liver. 9. 113-7. 2015		
Evidence level/Study Types	**Population**	**Outcomes/Results**
Evidence level: 4 **Study type:** Case-series	**Number of patients / samples:** **Reference standard:**	**Results:** **Author conclusions:**

	Validation: **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	
Methodical Notes		
Funding Sources: **COI:** **Notes:**		

Iwashita, Takuji et al. Use of samples from endoscopic ultrasound-guided 19-gauge fine-needle aspiration in diagnosis of autoimmune pancreatitis. Clin. Gastroenterol. Hepatol. 10. 316-22. 2012		
Evidence level/Study Types	**Population**	**Outcomes/Results**
Evidence level: 4 **Study type:** Case-series	**Number of patients / samples:** **Reference standard:** **Validation:** **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	**Results:** **Author conclusions:**
Methodical Notes		
Funding Sources: **COI:** **Notes:**		

Jung, Jae Gu et al. Comparison of endoscopic retrograde cholangiopancreatography with papillary biopsy and endoscopic ultrasound-guided pancreatic biopsy in the diagnosis of autoimmune pancreatitis. Pancreatology. 15. 259-64. 2015		
Evidence level/Study Types	**Population**	**Outcomes/Results**
Evidence level: 4 **Study type:** Case-series	**Number of patients / samples:** **Reference standard:** **Validation:** **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	**Results:** **Author conclusions:**

Methodical Notes
Funding Sources:
COI:
Notes:

Kamisawa, T et al. Can MRCP replace ERCP for the diagnosis of autoimmune pancreatitis?. Abdom Imaging. 34. 381-4. 2008		
Evidence level/Study Types	**Population**	**Outcomes/Results**
Evidence level: 4 **Study type:** Case-series	**Number of patients / samples:** **Reference standard:** **Validation:** **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	**Results:** **Author conclusions:**
Methodical Notes		
Funding Sources: **COI:** **Notes:**		

Kamisawa, Terumi et al. MRCP and MRI findings in 9 patients with autoimmune pancreatitis. World J. Gastroenterol. 12. 2919-22. 2006		
Evidence level/Study Types	**Population**	**Outcomes/Results**
Evidence level: 4 **Study type:** Case-series	**Number of patients / samples:** **Reference standard:** **Validation:** **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	**Results:** **Author conclusions:**
Methodical Notes		
Funding Sources: **COI:** **Notes:**		

Kamisawa, Terumi et al. FDG-PET/CT findings of autoimmune pancreatitis. Hepatogastroenterology. 57. 447-50. 2010		
Evidence level/Study Types	**Population**	**Outcomes/Results**
Evidence level: 4 **Study type:** Case-control study	**Number of patients / samples:** **Reference standard:** **Validation:** **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	**Results:** **Author conclusions:**
Methodical Notes		
Funding Sources: **COI:** **Notes:**		

Kamisawa, Terumi et al. A new diagnostic endoscopic tool for autoimmune pancreatitis. Gastrointest. Endosc. 68. 358-61. 2008		
Evidence level/Study Types	**Population**	**Outcomes/Results**
Evidence level: 3 **Study type:** Non-randomized controlled cohort	**Number of patients / samples:** **Reference standard:** **Validation:** **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	**Results:** **Author conclusions:**
Methodical Notes		
Funding Sources: **COI:** **Notes:**		

Kanno, Atsushi et al. Diagnosis of autoimmune pancreatitis by EUS-FNA by using a 22-gauge needle based on the International Consensus Diagnostic Criteria. Gastrointest. Endosc. 76. 594-602. 2012		
Evidence level/Study Types	**Population**	**Outcomes/Results**
Evidence level: 4 **Study type:** Case-series	**Number of patients / samples:** **Reference standard:**	**Results:** **Author conclusions:**

	Validation: **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	
Methodical Notes		
Funding Sources: **COI:** **Notes:**		

Kanno, Atsushi et al. Diagnosis of autoimmune pancreatitis by EUS-guided FNA using a 22-gauge needle: a prospective multicenter study. Gastrointest. Endosc. 84. 797-804.e1. 2016		
Evidence level/Study Types	**Population**	**Outcomes/Results**
Evidence level: 4 **Study type:** Case-series	**Number of patients / samples:** **Reference standard:** **Validation:** **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	**Results:** **Author conclusions:**
Methodical Notes		
Funding Sources: **COI:** **Notes:**		

Kawai, Yuichi et al. Autoimmune pancreatitis: assessment of the enhanced duct sign on multiphase contrast-enhanced computed tomography. Eur J Radiol. 81. 3055-60. 2012		
Evidence level/Study Types	**Population**	**Outcomes/Results**
Evidence level: 3 **Study type:** Non-randomized controlled cohort	**Number of patients / samples:** **Reference standard:** **Validation:** **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	**Results:** **Author conclusions:**
Methodical Notes		

Funding Sources:
COI:
Notes:

Khalili, Korosh et al. Renal cortical lesions in patients with autoimmune pancreatitis: a clue to differentiation from pancreatic malignancy. Eur J Radiol. 67. 329-35. 2008		
Evidence level/Study Types	**Population**	**Outcomes/Results**
Evidence level: 2 **Study type:** Randomized trial	**Number of patients / samples:** **Reference standard:** **Validation:** **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	**Results:** **Author conclusions:**
Methodical Notes		
Funding Sources: **COI:** **Notes:**		

Koyama, Rikako et al. Ultrasonographic imaging of bile duct lesions in autoimmune pancreatitis. Pancreas. 37. 259-64. 2008		
Evidence level/Study Types	**Population**	**Outcomes/Results**
Evidence level: 4 **Study type:** Case-series	**Number of patients / samples:** **Reference standard:** **Validation:** **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	**Results:** **Author conclusions:**
Methodical Notes		
Funding Sources: **COI:** **Notes:**		

Kubota, Kensuke et al. A proposal for differentiation between early- and advanced-stage autoimmune pancreatitis by endoscopic ultrasonography. Dig Endosc. 21. 162-9. 2009

Evidence level/Study Types	Population	Outcomes/Results
Evidence level: 4 **Study type:** Case-series	**Number of patients / samples:** **Reference standard:** **Validation:** **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	**Results:** **Author conclusions:**
Methodical Notes		
Funding Sources: **COI:** **Notes:**		

Lee, Sunyoung et al. Comparison of diagnostic performance between CT and MRI in differentiating non-diffuse-type autoimmune pancreatitis from pancreatic ductal adenocarcinoma. Eur Radiol. 28. 5267-5274. 2018

Evidence level/Study Types	Population	Outcomes/Results
Evidence level: 2 **Study type:** Randomized trial	**Number of patients / samples:** **Reference standard:** **Validation:** **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	**Results:** **Author conclusions:**
Methodical Notes		
Funding Sources: **COI:** **Notes:**		

Manfredi, Riccardo et al. Autoimmune pancreatitis: pancreatic and extrapancreatic MR imaging-MR cholangiopancreatography findings at diagnosis, after steroid therapy, and at recurrence. Radiology. 260. 428-36. 2011

Evidence level/Study Types	Population	Outcomes/Results
Evidence level: 3 **Study type:** Follow-up study	**Number of patients / samples:** **Reference standard:** **Validation:**	**Results:** **Author conclusions:**

	Blinding: **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	
Methodical Notes		
Funding Sources: **COI:** **Notes:**		

Manfredi, Riccardo et al. Autoimmune pancreatitis: CT patterns and their changes after steroid treatment. Radiology. 247. 435-43. 2008		
Evidence level/Study Types	**Population**	**Outcomes/Results**
Evidence level: 3 **Study type:** Follow-up study	**Number of patients / samples:** **Reference standard:** **Validation:** **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	**Results:** **Author conclusions:**
Methodical Notes		
Funding Sources: **COI:** **Notes:**		

Maruyama, Masahiro et al. Risk factors for pancreatic stone formation in autoimmune pancreatitis over a long-term course. J. Gastroenterol. 47. 553-60. 2012		
Evidence level/Study Types	**Population**	**Outcomes/Results**
Evidence level: 3 **Study type:** Follow-up study	**Number of patients / samples:** **Reference standard:** **Validation:** **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	**Results:** **Author conclusions:**
Methodical Notes		

Funding Sources:
COI:
Notes:

Mizuno, Nobumasa et al. Histological diagnosis of autoimmune pancreatitis using EUS-guided trucut biopsy: a comparison study with EUS-FNA. J. Gastroenterol. 44. 742-50. 2009		
Evidence level/Study Types	**Population**	**Outcomes/Results**
Evidence level: 2 **Study type:** Randomized trial	**Number of patients / samples:** **Reference standard:** **Validation:** **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	**Results:** **Author conclusions:**
Methodical Notes		
Funding Sources: **COI:** **Notes:**		

Morishima, Tomomasa et al. Prospective multicenter study on the usefulness of EUS-guided FNA biopsy for the diagnosis of autoimmune pancreatitis. Gastrointest. Endosc. 84. 241-8. 2016		
Evidence level/Study Types	**Population**	**Outcomes/Results**
Evidence level: 2 **Study type:** Randomized trial	**Number of patients / samples:** **Reference standard:** **Validation:** **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	**Results:** **Author conclusions:**
Methodical Notes		
Funding Sources: **COI:** **Notes:**		

Naitoh, Itaru et al. Clinical evaluation of international consensus diagnostic criteria for type 1 autoimmune pancreatitis in comparison with Japanese diagnostic criteria 2011. Pancreas. 42. 1238-44. 2013

Evidence level/Study Types	Population	Outcomes/Results
Evidence level: 3 **Study type:** Non-randomized controlled cohort	**Number of patients / samples:** **Reference standard:** **Validation:** **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	**Results:** **Author conclusions:**
Methodical Notes		
Funding Sources: **COI:** **Notes:**		

Naitoh, Itaru et al. Endoscopic retrograde cholangiopancreatography-related adverse events in patients with type 1 autoimmune pancreatitis. Pancreatology. 16. 78-82. 2015

Evidence level/Study Types	Population	Outcomes/Results
Evidence level: 3 **Study type:** Non-randomized controlled cohort	**Number of patients / samples:** **Reference standard:** **Validation:** **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	**Results:** **Author conclusions:**
Methodical Notes		
Funding Sources: **COI:** **Notes:**		

Nishimori, I et al. Serum antibodies to carbonic anhydrase IV in patients with autoimmune pancreatitis. Gut. 54. 274-81. 2005

Evidence level/Study Types	Population	Outcomes/Results
Evidence level: 3 **Study type:** Non-randomized controlled cohort	**Number of patients / samples:** **Reference standard:** **Validation:**	**Results:** **Author conclusions:**

	Blinding: **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	
Methodical Notes		
Funding Sources: **COI:** **Notes:**		

Okazaki, K et al. Autoimmune-related pancreatitis is associated with autoantibodies and a Th1/Th2-type cellular immune response. Gastroenterology. 118. 573-81. 2000		
Evidence level/Study Types	**Population**	**Outcomes/Results**
Evidence level: 4 **Study type:** Case-series	**Number of patients / samples:** **Reference standard:** **Validation:** **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	**Results:** **Author conclusions:**
Methodical Notes		
Funding Sources: **COI:** **Notes:**		

Oki, Hodaka et al. DWI findings of autoimmune pancreatitis: comparison between symptomatic and asymptomatic patients. J Magn Reson Imaging. 41. 125-31. 2015		
Evidence level/Study Types	**Population**	**Outcomes/Results**
Evidence level: 4 **Study type:** Case-control study	**Number of patients / samples:** **Reference standard:** **Validation:** **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	**Results:** **Author conclusions:**
Methodical Notes		

Funding Sources: **COI:** **Notes:**

Palazzo, Maxime et al. Irregular narrowing of the main pancreatic duct in association with a wall thickening is a key sign at endoscopic ultrasonography for the diagnosis of autoimmune pancreatitis. Pancreas. 44. 211-5. 2015		
Evidence level/Study Types	**Population**	**Outcomes/Results**
Evidence level: 4 **Study type:** Case-control study	**Number of patients / samples:** **Reference standard:** **Validation:** **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	**Results:** **Author conclusions:**
Methodical Notes		
Funding Sources: **COI:** **Notes:**		

Rebours, Vinciane et al. Immunoglobulin G4 immunostaining of gastric, duodenal, or colonic biopsies is not helpful for the diagnosis of autoimmune pancreatitis. Clin. Gastroenterol. Hepatol. 10. 91-4. 2012		
Evidence level/Study Types	**Population**	**Outcomes/Results**
Evidence level: 3 **Study type:** Non-randomized controlled cohort	**Number of patients / samples:** **Reference standard:** **Validation:** **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	**Results:** **Author conclusions:**
Methodical Notes		
Funding Sources: **COI:** **Notes:**		

Rehnitz, Christoph et al. Morphologic patterns of autoimmune pancreatitis in CT and MRI. Pancreatology. 11. 240-51. 2011		
Evidence level/Study Types	**Population**	**Outcomes/Results**
Evidence level: 4 **Study type:** Case series	**Number of patients / samples:** **Reference standard:** **Validation:** **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	**Results:** **Author conclusions:**
Methodical Notes		
Funding Sources: **COI:** **Notes:**		

Schneider, Alexander et al. Diagnosing autoimmune pancreatitis with the Unifying-Autoimmune-Pancreatitis-Criteria. Pancreatology. 17. 381-394. 2017		
Evidence level/Study Types	**Population**	**Outcomes/Results**
Evidence level: 3 **Study type:** Non-randomized controlled cohort	**Number of patients / samples:** **Reference standard:** **Validation:** **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	**Results:** **Author conclusions:**
Methodical Notes		
Funding Sources: **COI:** **Notes:**		

Song, Tae Jun et al. The combined measurement of total serum IgG and IgG4 may increase diagnostic sensitivity for autoimmune pancreatitis without sacrificing specificity, compared with IgG4 alone. Am. J. Gastroenterol. 105. 1655-60. 2010		
Evidence level/Study Types	**Population**	**Outcomes/Results**
Evidence level: 3	**Number of patients / samples:**	**Results:**

Study type: Non-randomized controlled cohort	**Reference standard:** **Validation:** **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	**Author conclusions:**
Methodical Notes		
Funding Sources: **COI:** **Notes:**		

Sugimoto, Mitsuru et al. Endoscopic Ultrasonography-Guided Fine Needle Aspiration Can Be Used to Rule Out Malignancy in Autoimmune Pancreatitis Patients. J Ultrasound Med. 36. 2237-2244. 2017

Evidence level/Study Types	Population	Outcomes/Results
Evidence level: 4 **Study type:** Case-control study	**Number of patients / samples:** **Reference standard:** **Validation:** **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	**Results:** **Author conclusions:**
Methodical Notes		
Funding Sources: **COI:** **Notes:**		

Sugumar, Aravind et al. Endoscopic retrograde pancreatography criteria to diagnose autoimmune pancreatitis: an international multicentre study. Gut. 60. 666-70. 2011

Evidence level/Study Types	Population	Outcomes/Results
Evidence level: 2 **Study type:** Randomized trial	**Number of patients / samples:** **Reference standard:** **Validation:** **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	**Results:** **Author conclusions:**

Methodical Notes
Funding Sources: **COI:** **Notes:**

Sumimoto, Kimi et al. A proposal of a diagnostic algorithm with validation of International Consensus Diagnostic Criteria for autoimmune pancreatitis in a Japanese cohort. Pancreatology. 13. 230-7. 2013		
Evidence level/Study Types	**Population**	**Outcomes/Results**
Evidence level: 3 **Study type:** Non-randomized controlled cohort	**Number of patients / samples:** **Reference standard:** **Validation:** **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	**Results:** **Author conclusions:**
Methodical Notes		
Funding Sources: **COI:** **Notes:**		

van Heerde, Marianne J et al. A comparative study of diagnostic scoring systems for autoimmune pancreatitis. Pancreas. 43. 559-64. 2014		
Evidence level/Study Types	**Population**	**Outcomes/Results**
Evidence level: 3 **Study type:** Non-randomized controlled cohort	**Number of patients / samples:** **Reference standard:** **Validation:** **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	**Results:** **Author conclusions:**
Methodical Notes		
Funding Sources: **COI:** **Notes:**		

Yamashita, Hiroaki et al. A comparison of the diagnostic efficacy in type 1 autoimmune pancreatitis based on biopsy specimens from various organs. Pancreatology. 14. 186-92. 2014		
Evidence level/Study Types	**Population**	**Outcomes/Results**
Evidence level: 4 **Study type:** Case-series	**Number of patients / samples:** **Reference standard:** **Validation:** **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	**Results:** **Author conclusions:**
Methodical Notes		
Funding Sources: **COI:** **Notes:**		

Zamboni, Giuseppe et al. Histopathological features of diagnostic and clinical relevance in autoimmune pancreatitis: a study on 53 resection specimens and 9 biopsy specimens. Virchows Arch. 445. 552-63. 2004		
Evidence level/Study Types	**Population**	**Outcomes/Results**
Evidence level: 4 **Study type:** Case-series	**Number of patients / samples:** **Reference standard:** **Validation:** **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	**Results:** **Author conclusions:**
Methodical Notes		
Funding Sources: **COI:** **Notes:**		

Zhang, Lizhi et al. Autoimmune pancreatitis (AIP) type 1 and type 2: an international consensus study on histopathologic diagnostic criteria. Pancreas. 40. 1172-9. 2011		
Evidence level/Study Types	**Population**	**Outcomes/Results**
Evidence level: 2 **Study type:** Randomized-trial	**Number of patients / samples:** **Reference standard:**	**Results:** **Author conclusions:**

	Validation: **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	
Methodical Notes		
Funding Sources: **COI:** **Notes:**		

Zhang, Xuefeng et al. Pancreatic ductal adenocarcinoma with autoimmune pancreatitis-like histologic and immunohistochemical features. Hum. Pathol. 45. 621-7. 2014		
Evidence level/Study Types	**Population**	**Outcomes/Results**
Evidence level: 4 **Study type:** Case-series	**Number of patients / samples:** **Reference standard:** **Validation:** **Blinding:** **Inclusion of clinical information:** **Dealing with ambiguous clinical findings:**	**Results:** **Author conclusions:**
Methodical Notes		
Funding Sources: **COI:** **Notes:**		

NEWCASTLE - OTTAWA Checklist: Case Control: *14 Bewertung(en)*

Al-Saif, Faisal et al. Autoimmune pancreatitis with autoimmune hemolytic anemia. Pancreas. 33. 316-7. 2006			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 5 **Study type:** Case report	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Patient characteristics:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**

Notes:	Obige Fragen nicht zutreffend, case report, no study **Author's conclusion:**	
Outcome Measures/results	**Primary** **Secondary**	**Results:**

Aparisi, L et al. Antibodies to carbonic anhydrase and IgG4 levels in idiopathic chronic pancreatitis: relevance for diagnosis of autoimmune pancreatitis. Gut. 54. 703-9. 2005

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 4 **Study type:** Case-control study	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Patient characteristics:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Chang, Ming-Chu et al. Autoimmune pancreatitis associated with high prevalence of gastric ulcer independent of Helicobacter pylori infection status. Pancreas. 38. 442-6. 2009

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 4 **Study type:** Case-control study	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Patient characteristics:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Huggett, Matthew T et al. Type 1 autoimmune pancreatitis and IgG4-related sclerosing cholangitis is associated with extrapancreatic organ failure, malignancy, and mortality in a prospective UK cohort. Am. J. Gastroenterol. 109. 1675-83. 2014

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 3 **Study type:** Non-randomized controlled cohort / Follow-up study	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Patient characteristics:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Ikeura, Tsukasa et al. Relationship between autoimmune pancreatitis and pancreatic cancer: a single-center experience. Pancreatology. 14. 373-9. 2014

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 3 **Study type:** Non-randomized controlled cohort / Follow-up study	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Patient characteristics:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Komatsu, Kenichi et al. High prevalence of hypothyroidism in patients with autoimmune pancreatitis. Dig. Dis. Sci. 50. 1052-7. 2005

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 4 **Study type:** Case-control study	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Patient characteristics:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**

Notes:	**Author's conclusion:**	
Outcome Measures/results	**Primary** **Secondary**	**Results:**

Ku, Yuna et al. IL-8 Expression in Granulocytic Epithelial Lesions of Idiopathic Duct-centric Pancreatitis (Type 2 Autoimmune Pancreatitis). Am. J. Surg. Pathol. 41. 1129-1138. 2017			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 3 **Study type:** Non-randomized controlled cohort	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Patient characteristics:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Leise, Michael D et al. IgG4-associated cholecystitis: another clue in the diagnosis of autoimmune pancreatitis. Dig. Dis. Sci. 56. 1290-4. 2011			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 5 **Study type:** Case-report	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Patient characteristics:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Lorenzo, Diane et al. Features of Autoimmune Pancreatitis Associated With Inflammatory Bowel Diseases. Clin. Gastroenterol. Hepatol. 16. 59-67. 2018

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 3 **Study type:** Non-randomized controlled cohort / Follow-up study	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Patient characteristics:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Miura, Fumihiko et al. Long-term surgical outcomes of patients with type 1 autoimmune pancreatitis. World J Surg. 37. 162-8. 2013

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 3 **Study type:** Non-randomized controlled cohort / Follow-up study	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Patient characteristics:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Paik, Woo Hyun et al. Clinical and pathological differences between serum immunoglobulin G4-positive and -negative type 1 autoimmune pancreatitis. World J. Gastroenterol. 19. 4031-8. 2013

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 4 **Study type:** Case-control study	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Patient characteristics:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**

Notes:	**Author's conclusion:**	
Outcome Measures/results	**Primary** **Secondary**	**Results:**

Sah, Raghuwansh P et al. Differences in clinical profile and relapse rate of type 1 versus type 2 autoimmune pancreatitis. Gastroenterology. 139. 140-8; quiz e12-3. 2010			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 3 **Study type:** Non-randomized controlled cohort / Follow-up study	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Patient characteristics:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Schneider, Alexander et al. Risk of Cancer in Patients with Autoimmune Pancreatitis: A Single-Center Experience from Germany. Digestion. 95. 172-180. 2017			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 3 **Study type:** Non-randomized controlled cohort / Follow-up study	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Patient characteristics:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Song, Tae Jun et al. Comparison of clinical findings between histologically confirmed type 1 and type 2 autoimmune pancreatitis. J. Gastroenterol. Hepatol. 27. 700-8. 2012

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 3 **Study type:** Non-randomized controlled cohort / Follow-up study	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Patient characteristics:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

NEWCASTLE - OTTAWA Checklist: Cohort: *80 Bewertung(en)*

Asada, Masanori et al. Identification of a novel autoantibody against pancreatic secretory trypsin inhibitor in patients with autoimmune pancreatitis. Pancreas. 33. 20-6. 2006

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 4 **Study type:** Case-control study	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Balasubramanian, Gokulakrishnan et al. Demystifying seronegative autoimmune pancreatitis. Pancreatology. 12. 289-94. 2012

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 4 **Study type:** Case-series	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**

	Dropout rates:		
Notes:	Volltext aktuell nicht vorliegend **Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Bang, Sung-Jo et al. Is pancreatic core biopsy sufficient to diagnose autoimmune chronic pancreatitis?. Pancreas. 36. 84-9. 2008			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 **Study type:** Case-series	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Bi, Yan et al. Obstructive jaundice in autoimmune pancreatitis can be safely treated with corticosteroids alone without biliary stenting. Pancreatology. 16. 391-6. 2016			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 **Study type:** Case-series	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Buijs, Jorie et al. The Long-Term Impact of Autoimmune Pancreatitis on Pancreatic Function, Quality of Life, and Life Expectancy. Pancreas. 44. 1065-71. 2015

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 3 **Study type:** Follow-up study	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Cebe, Katherine M et al. Increased IgG4+ cells in duodenal biopsies are not specific for autoimmune pancreatitis. Am. J. Clin. Pathol. 139. 323-9. 2013

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 4 **Study type:** Case-control study	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Chari, Suresh T et al. Diagnosis of autoimmune pancreatitis: the Mayo Clinic experience. Clin. Gastroenterol. Hepatol. 4. 1010-6; quiz 934. 2006

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 4 **Study type:** Case-series	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:			

	Author's conclusion:	
Outcome Measures/results	**Primary** **Secondary**	**Results:**

Chatterjee, Suvadip et al. Autoimmune pancreatitis - diagnosis, management and longterm follow-up. J Gastrointestin Liver Dis. 23. 179-85. 2014			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 3 **Study type:** Follow-up study	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Cheuk, Wah et al. Lymphadenopathy of IgG4-related sclerosing disease. Am. J. Surg. Pathol. 32. 671-81. 2008			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 **Study type:** Case-series	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Church, Nicholas I et al. Autoimmune pancreatitis: clinical and radiological features and objective response to steroid therapy in a UK series. Am. J. Gastroenterol. 102. 2417-25. 2007			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 3 **Study type:** Follow-up study	**Funding sources:** **Conflict of Interests:**	**Total no. patients:** **Recruiting Phase:**	**Interventions:**

	Randomization: Blinding: Dropout rates:	Inclusion criteria: Exclusion criteria:	Comparison:
Notes:	Author's conclusion:		
Outcome Measures/results	Primary Secondary	Results:	

Clark, Clancy J et al. Short-term and long-term outcomes for patients with autoimmune pancreatitis after pancreatectomy: a multi-institutional study. J. Gastrointest. Surg. 17. 899-906. 2013			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 3 Study type: Follow-up study	Funding sources: Conflict of Interests: Randomization: Blinding: Dropout rates:	Total no. patients: Recruiting Phase: Inclusion criteria: Exclusion criteria:	Interventions: Comparison:
Notes:	Author's conclusion:		
Outcome Measures/results	Primary Secondary	Results:	

Czakó, László et al. Autoimmune pancreatitis in Hungary: a multicenter nationwide study. Pancreatology. 11. 261-7. 2011			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 Study type: Case-series	Funding sources: Conflict of Interests: Randomization: Blinding: Dropout rates:	Total no. patients: Recruiting Phase: Inclusion criteria: Exclusion criteria:	Interventions: Comparison:
Notes:	Author's conclusion:		
Outcome Measures/results	Primary Secondary	Results:	

Deshpande, Vikram et al. Autoimmune pancreatitis: a systemic immune complex mediated disease. Am. J. Surg. Pathol. 30. 1537-45. 2006			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 **Study type:** Case-series	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Deshpande, Vikram et al. Subclassification of autoimmune pancreatitis: a histologic classification with clinical significance. Am. J. Surg. Pathol. 35. 26-35. 2011			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 **Study type:** Case-control study	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Detlefsen, Sönke et al. Clinical features and relapse rates after surgery in type 1 autoimmune pancreatitis differ from type 2: a study of 114 surgically treated European patients. Pancreatology. 12. 276-83. 2012			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 **Study type:** Case-series	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**

Notes:	**Author's conclusion:**	
Outcome Measures/results	**Primary** **Secondary**	**Results:**

Frulloni, Luca et al. Autoimmune pancreatitis: differences between the focal and diffuse forms in 87 patients. Am. J. Gastroenterol. 104. 2288-94. 2009			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 **Study type:** Case-series	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Frulloni, Luca et al. Exocrine and endocrine pancreatic function in 21 patients suffering from autoimmune pancreatitis before and after steroid treatment. Pancreatology. 10. 129-33. 2010			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 3 **Study type:** Follow-up study	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Hamano, Hideaki et al. Prevalence and distribution of extrapancreatic lesions complicating autoimmune pancreatitis. J. Gastroenterol. 41. 1197-205. 2006			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**

Evidence level: 4 **Study type:** Case-series	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Hardacre, Jeffrey M et al. Results of pancreaticoduodenectomy for lymphoplasmacytic sclerosing pancreatitis. Ann. Surg. 237. 853-8; discussion 858-9. 2003

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 3 **Study type:** Follow-up study	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Hart, Phil A et al. Long-term outcomes of autoimmune pancreatitis: a multicentre, international analysis. Gut. 62. 1771-6. 2013

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 3 **Study type:** Follow-up study	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		

Outcome Measures/results	**Primary** **Secondary**	**Results:**

Hart, Phil A et al. Clinical profiles and outcomes in idiopathic duct-centric chronic pancreatitis (type 2 autoimmune pancreatitis): the Mayo Clinic experience. Gut. 65. 1702-9. 2016			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 3 **Study type:** Follow-up study	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Hart, Phil A et al. Treatment of relapsing autoimmune pancreatitis with immunomodulators and rituximab: the Mayo Clinic experience. Gut. 62. 1607-15. 2013			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 3 **Study type:** Follow-up study	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Hirano, Kenji et al. Long-term prognosis of autoimmune pancreatitis in terms of glucose tolerance. Pancreas. 41. 691-5. 2012			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 3 **Study type:** Follow-up study	**Funding sources:** **Conflict of Interests:**	**Total no. patients:** **Recruiting Phase:**	**Interventions:** **Comparison:**

	Randomization: **Blinding:** **Dropout rates:**	**Inclusion criteria:** **Exclusion criteria:**	
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Hirano, Kenji et al. Outcome of Long-term Maintenance Steroid Therapy Cessation in Patients With Autoimmune Pancreatitis: A Prospective Study. J. Clin. Gastroenterol. 50. 331-7. 2016			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 3 **Study type:** Follow-up study	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Hirano, Kenji et al. Long-term prognosis of autoimmune pancreatitis with and without corticosteroid treatment. Gut. 56. 1719-24. 2007			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 3 **Study type:** Non-randomized controlled cohort / Follow-up study	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary**	**Results:**	

	Secondary	

Hirth, Michael et al. Monitoring and predicting disease activity in autoimmune pancreatitis with the M-ANNHEIM-AiP-Activity-Score. Pancreatology. 18. 29-38. 2018			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 3 **Study type:** Follow-up study	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Hocke, M et al. Contrast-enhanced endoscopic ultrasound in the diagnosis of autoimmune pancreatitis. Endoscopy. 43. 163-5. 2011			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 **Study type:** Case series	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Hocke, M et al. Three-dimensional contrast-enhanced endoscopic ultrasound for the diagnosis of autoimmune pancreatitis. Endoscopy. 43 Suppl 2 UCTN. E381-2. 2011			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 5 **Study type:** Case report	**Funding sources:** **Conflict of Interests:** **Randomization:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:**	**Interventions:** **Comparison:**

	Blinding: **Dropout rates:**	**Exclusion criteria:**	
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Ishikawa, Takuya et al. Endoscopic ultrasound-guided fine needle aspiration in the differentiation of type 1 and type 2 autoimmune pancreatitis. World J. Gastroenterol. 18. 3883-8. 2012			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 3 **Study type:** Case-series	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Kamisawa, T et al. Standard steroid treatment for autoimmune pancreatitis. Gut. 58. 1504-7. 2009			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 3 **Study type:** Non-randomized controlled cohort / Follow-up study	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Kamisawa, Terumi et al. Allergic manifestations in autoimmune pancreatitis. Eur J Gastroenterol Hepatol. 21. 1136-39. 2009			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 **Study type:** Case-series	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Kamisawa, Terumi et al. The natural course of autoimmune pancreatitis. Hepatogastroenterology. 56. 866-70. 2009			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 3 **Study type:** Follow-up study	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Kamisawa, Terumi et al. Clinical profile of autoimmune pancreatitis and its histological subtypes: an international multicenter survey. Pancreas. 40. 809-14. 2011			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 **Study type:** Case-series	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**

Notes:	**Author's conclusion:**	
Outcome Measures/results	**Primary** **Secondary**	**Results:**

Kamisawa, Terumi et al. Pancreatic endocrine and exocrine function and salivary gland function in autoimmune pancreatitis before and after steroid therapy. Pancreas. 27. 235-8. 2003			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 **Study type:** Case-series	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Kamisawa, Terumi et al. Appropriate steroid therapy for autoimmune pancreatitis based on long-term outcome. Scand. J. Gastroenterol. 43. 609-13. 2008			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 3 **Study type:** Non-randomized controlled cohort / Follow-up study	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Kamisawa, Terumi et al. Treating patients with autoimmune pancreatitis: results from a long-term follow-up study. Pancreatology. 5. 234-8; discussion 238-40. 2005

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 3 **Study type:** Follow-up study	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Kawa, Shigeyuki et al. Autoimmune pancreatitis complicated with inflammatory bowel disease and comparative study of type 1 and type 2 autoimmune pancreatitis. J. Gastroenterol. 50. 805-15. 2015

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 4 **Study type:** Case-series	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Kindle, Scott A et al. Dermatologic disorders in 118 patients with autoimmune (immunoglobulin G4-related) pancreatitis: a retrospective cohort analysis. Am J Clin Dermatol. 16. 125-30. 2015

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 4 **Study type:** Case-series	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:			

	Author's conclusion:	
Outcome Measures/results	**Primary** **Secondary**	**Results:**

Kubota, Kensuke et al. Clinical factors predictive of spontaneous remission or relapse in cases of autoimmune pancreatitis. Gastrointest. Endosc. 66. 1142-51. 2007			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 3 **Study type:** Follow-up study	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Kubota, Kensuke et al. Clinical course of type 1 autoimmune pancreatitis patients without steroid treatment: a Japanese multicenter study of 97 patients. J Hepatobiliary Pancreat Sci. 25. 223-230. 2018			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 3 **Study type:** Non-randomized controlled cohort / Follow-up study	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Kubota, Kensuke et al. Low-dose maintenance steroid treatment could reduce the relapse rate in patients with type 1 autoimmune pancreatitis: a long-term Japanese multicenter analysis of 510 patients. J. Gastroenterol. 52. 955-964. 2017			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**

Evidence level: 3 **Study type:** Non-randomized controlled cohort / Follow-up study	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Kubota, Kensuke et al. Factors predictive of relapse and spontaneous remission of autoimmune pancreatitis patients treated/not treated with corticosteroids. J. Gastroenterol. 46. 834-42. 2011

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 3 **Study type:** Non-randomized controlled cohort / Follow-up study	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Learn, Peter A et al. Pitfalls in avoiding operation for autoimmune pancreatitis. Surgery. 150. 968-74. 2011

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 4 **Study type:** Case-series	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		

Outcome Measures/results	**Primary** **Secondary**	**Results:**

López-Serrano, Antonio et al. Diagnosis, treatment and long-term outcomes of autoimmune pancreatitis in Spain based on the International Consensus Diagnostic Criteria: A multi-centre study. Pancreatology. 16. 382-90. 2016			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 3 **Study type:** Follow-up study	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Macinga, Peter et al. Simultaneous occurrence of autoimmune pancreatitis and pancreatic cancer in patients resected for focal pancreatic mass. World J. Gastroenterol. 23. 2185-2193. 2017			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 **Study type:** Case-series	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Maire, Frédérique et al. Outcome of patients with type 1 or 2 autoimmune pancreatitis. Am. J. Gastroenterol. 106. 151-6. 2011			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 3	**Funding sources:**	**Total no. patients:**	**Interventions:**

Study type: Follow-up study	**Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Maire, Frédérique et al. Does tobacco influence the natural history of autoimmune pancreatitis?. Pancreatology. 14. 284-8. 2014			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 3 **Study type:** Follow-up study	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Manser, Christine N et al. Unnecessary Procedures and Surgery in Autoimmune Pancreatitis. Digestion. 92. 138-46. 2015			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 3 **Study type:** Follow-up study	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary**	**Results:**	

	Secondary		

Maruyama, Masahiro et al. Autoimmune pancreatitis can develop into chronic pancreatitis. Orphanet J Rare Dis. 9. 77. 2014			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 5 **Study type:**	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	Case-series and Review **Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Matsubayashi, Hiroyuki et al. Determination of steroid response by abdominal ultrasound in cases with autoimmune pancreatitis. Dig Liver Dis. 45. 1034-40. 2013			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 3 **Study type:** Follow-up study	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Miyazawa, Masaki et al. Prognosis of type 1 autoimmune pancreatitis after corticosteroid therapy-induced remission in terms of relapse and diabetes mellitus. PLoS ONE. 12. e0188549. 2017			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 3 **Study type:** Follow-up study	**Funding sources:** **Conflict of Interests:** **Randomization:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:**	**Interventions:** **Comparison:**

	Blinding: **Dropout rates:**	**Exclusion criteria:**	
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Naitoh, Itaru et al. Clinical significance of extrapancreatic lesions in autoimmune pancreatitis. Pancreas. 39. e1-5. 2010			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 **Study type:** Case-series	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	Volltext aktuell nicht vorliegend **Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Negrelli, Riccardo et al. Type 1 and Type 2 Autoimmune Pancreatitis: Distinctive Clinical and Pathological Features, But Are There Any Differences at Magnetic Resonance? Experience From a Referral Center. Pancreas. 47. 1115-1122. 2018			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 **Study type:** Case-series	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Nishino, Takayoshi et al. Long-term outcome of autoimmune pancreatitis after oral prednisolone therapy. Intern. Med. 45. 497-501. 2006			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 3 **Study type:** Follow-up study	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Notohara, Kenji et al. Clinicopathological Features of Type 2 Autoimmune Pancreatitis in Japan: Results of a Multicenter Survey. Pancreas. 44. 1072-7. 2015			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 **Study type:** Case-series	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Ogoshi, Takaaki et al. Incidence and outcome of lung involvement in IgG4-related autoimmune pancreatitis. Respirology. 20. 1142-4. 2015			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 **Study type:** Case-series	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**

Notes:	**Author's conclusion:**	
Outcome Measures/results	**Primary** **Secondary**	**Results:**

Ohno, Yoshinori et al. Early pancreatic volume reduction on CT predicts relapse in patients with type 1 autoimmune pancreatitis treated with steroids. Orphanet J Rare Dis. 11. 103. 2016			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 3 **Study type:** Follow-up study	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Park, Sang Hyoung et al. The characteristics of ulcerative colitis associated with autoimmune pancreatitis. J. Clin. Gastroenterol. 47. 520-5. 2013			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 **Study type:** Case-series	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Raina, Amit et al. Evaluation and management of autoimmune pancreatitis: experience at a large US center. Am. J. Gastroenterol. 104. 2295-306. 2009			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**

Evidence level: 4 **Study type:** Case-series	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Rasch, Sebastian et al. Epidemiology, clinical presentation, diagnosis and treatment of autoimmune pancreatitis: A retrospective analysis of 53 patients. Pancreatology. 16. 73-7. 2015

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 4 **Study type:** Case-series	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Ravi, Karthik et al. Inflammatory bowel disease in the setting of autoimmune pancreatitis. Inflamm. Bowel Dis. 15. 1326-30. 2009

Evidence level	Methodical Notes	Patient characteristics	Interventions
Evidence level: 4 **Study type:** Case-series	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		

Outcome Measures/results	**Primary** **Secondary**	**Results:**

Sah, Raghuwansh P et al. Prevalence, diagnosis, and profile of autoimmune pancreatitis presenting with features of acute or chronic pancreatitis. Clin. Gastroenterol. Hepatol. 8. 91-6. 2010			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 **Study type:** Case-series	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Schnelldorfer, Thomas et al. Long-term results after surgery for autoimmune sclerosing pancreatitis. J. Gastrointest. Surg. 11. 56-8. 2007			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 3 **Study type:** Follow-up study	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Shimizu, Kyoko et al. Assessment of the Rate of Decrease in Serum IgG4 Level of Autoimmune Pancreatitis Patients in Response to Initial Steroid Therapy as a Predictor of Subsequent Relapse. Pancreas. 45. 1341-6. 2016			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 3	**Funding sources:**	**Total no. patients:**	**Interventions:**

Study type: Follow-up study	**Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Comparison:**
Notes:	Volltext aktuell nicht vorliegend **Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Shimizu, Shuya et al. Correlation between long-term outcome and steroid therapy in type 1 autoimmune pancreatitis: relapse, malignancy and side effect of steroid. Scand. J. Gastroenterol. 50. 1411-8. 2015			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 3 **Study type:** Follow-up study	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Shiokawa, Masahiro et al. Risk of cancer in patients with autoimmune pancreatitis. Am. J. Gastroenterol. 108. 610-7. 2013			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 3 **Study type:** Follow-up study	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary**	**Results:**	

	Secondary	

Suzuki, Daisuke et al. Relative Rise of Serum IgG4 Levels After Steroid Therapy for Autoimmune Pancreatitis Predicts the Likelihood of Relapse. Pancreas. 47. 412-417. 2018			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 3 **Study type:** Follow-up study	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	Volltext aktuell nicht vorliegend **Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Tabata, Taku et al. Differences between diffuse and focal autoimmune pancreatitis. World J. Gastroenterol. 18. 2099-104. 2012			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 **Study type:** Case-series	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Takahashi, Naoki et al. Possible association between IgG4-associated systemic disease with or without autoimmune pancreatitis and non-Hodgkin lymphoma. Pancreas. 38. 523-6. 2009			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 3 **Study type:** Follow-up study	**Funding sources:** **Conflict of Interests:** **Randomization:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:**	**Interventions:** **Comparison:**

	Blinding: **Dropout rates:**	**Exclusion criteria:**	
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Takuma, Kensuke et al. Metachronous extrapancreatic lesions in autoimmune pancreatitis. Intern. Med. 49. 529-33. 2010			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 **Study type:** Case-series	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Takuma, Kensuke et al. Short-term and long-term outcomes of autoimmune pancreatitis. Eur J Gastroenterol Hepatol. 23. 146-52. 2011			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 3 **Study type:** Follow-up study	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Terzin, Viktória et al. Association between autoimmune pancreatitis and systemic autoimmune diseases.

World J. Gastroenterol. 18. 2649-53. 2012			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 **Study type:** Case-series	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Tsushima, K et al. Pulmonary involvement of autoimmune pancreatitis. Eur. J. Clin. Invest. 39. 714-22. 2009			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 **Study type:** Case-control study	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Uchida, Kazushige et al. Long-term outcome of autoimmune pancreatitis. J. Gastroenterol. 44. 726-32. 2009			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 3 **Study type:** Follow-up study	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:			

	Author's conclusion:	
Outcome Measures/results	**Primary** **Secondary**	**Results:**

Uehara, Takeshi et al. Autoimmune pancreatitis-associated prostatitis: distinct clinicopathological entity. Pathol. Int. 58. 118-25. 2008			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 **Study type:** Case-series	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

van Heerde, M J et al. Prevalence of autoimmune pancreatitis and other benign disorders in pancreatoduodenectomy for presumed malignancy of the pancreatic head. Dig. Dis. Sci. 57. 2458-65. 2012			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 **Study type:** Case-series	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Yamamoto, H et al. Clinical features of central airway involvement in autoimmune pancreatitis. Eur. Respir. J. 38. 1233-6. 2011			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**

Evidence level: 4 **Study type:** Case-series	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Yukutake, Masanobu et al. Timing of radiological improvement after steroid therapy in patients with autoimmune pancreatitis. Scand. J. Gastroenterol. 49. 727-33. 2014

Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 3 **Study type:** Follow-up study	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

Yurci, Alper et al. Evolution in the diagnosis and treatment of autoimmune pancreatitis: experience from a single tertiary care center. Int J Clin Exp Pathol. 6. 1317-26. 2013

Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 3 **Study type:** Follow-up study	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		

Outcome Measures/results	**Primary** **Secondary**	**Results:**

Zhang, Li et al. Allergic diseases, immunoglobulin E, and autoimmune pancreatitis: a retrospective study of 22 patients. Chin. Med. J. 127. 4104-9. 2014			
Evidence level	**Methodical Notes**	**Patient characteristics**	**Interventions**
Evidence level: 4 **Study type:** Case-series	**Funding sources:** **Conflict of Interests:** **Randomization:** **Blinding:** **Dropout rates:**	**Total no. patients:** **Recruiting Phase:** **Inclusion criteria:** **Exclusion criteria:**	**Interventions:** **Comparison:**
Notes:	**Author's conclusion:**		
Outcome Measures/results	**Primary** **Secondary**	**Results:**	

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