

S3 Guideline (long version)

Dental implants with diabetes mellitus

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Leading scientific societies:

German Association of Oral Implantology (DGI)
German Society of Dentistry and Oral Medicine (DGZMK)

Participation of further professional societies belonging to the Association of the Scientific Medical Societies in Germany (AWMF):

German Society of Orthodontics (DGKFO)
German Society of Oral and Maxillofacial Surgery (DGMKG)
German Society of Periodontology (DG PARO)

Participation of other scientific societies/organisations:

German Academy of Oral and Maxillofacial Surgery (AGOKi)
Professional Association of German Oral Surgeons (BDO)
European Association of Dental Implantologists (BDIZ EDI)
Federal Dental Association (BZÄK)
German Society for Aesthetic Dentistry (DGÄZ)
German Society of Geriatric Dentistry (DGAZ)
German Society for Environmental Dentistry (DEGUZ)
German Association of Dental Implantology (DGZI)
National Association of Statutory Health Insurance Dentists (KZBV)
Association of German Dental Technicians Guilds (VDZI)
Association of Medical Specialists (VMF)
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The “Guidelines” of the Scientific Medical Societies are systematically developed aids for doctors/dentists to make decisions in specific situations. They are based on actual scientific findings and procedures proven in practice and ensure greater safety in medicine, but they should also take economic aspects into account. The “Guidelines” are not legally binding for doctors/dentists and, therefore, do not have a liability-creating effect to exonerate from liability.

Guidelines are subject to continuous quality control – comparing the new findings with the formulated recommendations for action is necessary at least every 5 years. The current version of the Guideline can always be found on the pages of the German Society of Dentistry and Oral Medicine (DGZMK) (www.dgzmk.de) or the Association of the Scientific Medical Societies in Germany (AWMF) (www.awmf.org). If you have not downloaded the present Guideline from one of the abovementioned websites, you should check again whether there is a more updated version on these sites.

1 What is new?

- A total of 40 additional titles of the primary literature and 17 of the aggregated literature could be included
- A new chapter on diagnostics incl. recommendations was added.
- The new recommendation, “As part of follow-up care, the treating doctor/dentist should inform himself about the HbA1c value of the patient and get further medical information if needed” highlights the importance of post-operative follow-up care as well as interdisciplinary cooperation.
- A new chapter with two key conclusions was added:
 - Dental rehabilitation with dental implants in people with intermediate elevated blood glucose values and diabetes mellitus is a safe and predictable procedure if the indications are correct and a risk-orientated approach is followed.
 - In this context, diabetes mellitus should be classified as a potential risk factor, and this should be considered in patient management, the treatment decision, and follow-up care.

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2 Publishing

2.1 Leading scientific society

- German Association of Oral Implantology (DGI)
- German Society of Dentistry and Oral Medicine (DGZMK)

2.2 Contact

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2.3 Citation

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2.4 Editorial note

Exclusively for reasons of better readability, masculine, feminine and other forms of language are not used simultaneously. This in no way implies discrimination against different genders. All references to persons in this document are to be understood as gender-neutral.

3 Scope and purpose

3.1 Prioritisation reasons

Reasons for updating the 2016 Guideline on the topic of dental implants in diabetes mellitus exist

- because the care of dental implants represents a standard procedure in dental rehabilitation and is widely used in our society today
- because diabetes mellitus shows an increasing incidence in our society and has for a long time been seen as a relative contraindication for implantology
- because more and more people with diabetes want dental rehabilitation with implants
- because metabolic disorders such as intermediate hyperglycaemia, which are considered risk factors for the manifestation of diabetes mellitus, are already recognised nowadays and dental rehabilitation is also sought for such patients
- because results regarding complications and long-term success are unclear
- to provide treating dentists and doctors with assistance in determining the indication with evidence-based recommendations based on new as well as established studies
- to ensure sustainable lifelong functional masticatory care

3.2 Objectives and research question

The aim of the Guideline is to outline decision-making support for or against dental implants for functional masticatory rehabilitation in people with diabetes mellitus. The treating doctor or dentist should be able to estimate the risk of the treatment, explain complications and take suitable measures. Patients should get recommendations for sustainable and safe care. Patients should have access to the current status of knowledge regarding the subject of dental implants with diabetes mellitus. The Guideline provides recommendations regarding implant-supported prosthetic rehabilitation of patients with diabetes mellitus, derived from the best available evidence after a systematic literature review and a structured consensus of experts.

The Guideline poses the central research question: Do people with diabetes mellitus show a higher rate of complications with dental implant treatment than those without diabetes mellitus?

The aim of the Guideline is to develop recommendations for the following research question:

- What influence does diabetes mellitus have on the healing of implants (osseointegration)?
- Does diabetes mellitus influence peri-implantitis?
- What survival rate do dental implants have with people without diabetes mellitus compared to people with diabetes mellitus?
- Does diabetes mellitus influence augmentative measures?
- Does the treatment quality (HbA1c) of diabetes mellitus influence the implant treatment?
- Does the duration of the disease of diabetes mellitus influence the treatment of implants?
- Are there adjuvant perioperative accompanying measures to increase the success of implant therapy?

- Does adapted pre- and postoperative care improve the success of the implant treatment?
- Open scientific questions and research recommendations.

3.3 Addressees of the Guideline

The Guideline addresses

- Dentists
- Specialist dentists of all disciplines
- Specialists for oral, maxillofacial and facial surgery
- Patients

It is intended to provide information for specialists in internal medicine, diabetology, and other interested parties.

3.4 Exceptions to the Guideline

This Guideline does not include recommendations regarding different implant systems (surface characteristics, implant shape, length, diameter, mini-implants or zygoma implants) or the indication of alternative forms of care. This Guideline did not consider evaluating the cost-benefit ratio of different therapy methods.

3.5 Patient target group

The Guideline serves as a source of information and decision-making support in dental rehabilitation with implant-supported dentures for people with and without diabetes mellitus and intermediary hyperglycaemia as well as their relatives.

3.6 Scope of treatment

This Guideline applies to outpatient dental and specialist (dental) care. This includes treatment in dental practices/dental clinics as well as dental practices/dental clinics with an oral surgical and/or periodontal and/or implantological/implant prosthetics focus and clinics for oral and maxillofacial surgery.

3.7 Further documents related to this Guideline

Guideline report with evidence tables

3.8 Links to other guidelines

- Implant treatment for oral rehabilitation in connection with head and neck radiation
- Treatment of type 1 diabetes
- National Healthcare Guideline type 2 diabetes: Treatment
- Implant prosthetic care of the edentulous maxilla
- Indications for implantological 3D X-Ray diagnostics and navigation-assisted implantology
- Peri-implant infections in dental implants, treatment
- Dental implant care with multiple tooth agenesis and syndromes
- Dental implants in medicinal treatment with bone antiresorptives (incl. bisphosphonates)
- Replacement of missing teeth with composite bridges
- Peri-implant soft tissue augmentation
- Dental implants in patients with immune deficiency
- Treatment of periodontitis stage 1 to 3

4 Introduction

4.1 Definition of the clinical picture

Diabetes mellitus is a common chronic disease with increasing prevalence. For example, from 1980 to 2008, the number of people with the disease increased from 180 to 350 million worldwide [1]. In 2017 approx. 462 million people were affected by type 2 diabetes, corresponding to 6.28% of the world's population or a prevalence rate of 6059 cases per 100,000. It is calculated that in 20 years, the number of people with diabetes mellitus will have risen to 600 million people, whereby the prevalence in developed regions such as Western Europe is higher than in other regions of the world [2]. Type 1 is defined as an absolute insulin deficiency due to damage to the beta cells of the pancreas, while a relative insulin deficiency causes type 2 due to insulin resistance. Type 2 is more common, mainly in the Western world, belongs to the metabolic syndrome, and mainly affects elderly patients. A disturbance of the carbohydrate metabolism leads to multiple secondary diseases that are caused by micro- and macroangiopathy. It is a known fact that people with diabetes mellitus are more often and more severely affected by periodontitis [3]. Periodontitis is one of the significant risk factors for the occurrence of peri-implant inflammations [4]. For a long time, diabetes mellitus was a contraindication for dental implantology as it was also assumed here that there were disturbances in wound healing and bone integration. An increased rate of peri-implantitis and implant failure was also postulated. In recent years, dental implantology has developed into a safe, predictable and, therefore, widely used treatment for dental rehabilitation. Due to the increasing prevalence of diabetes mellitus and the wide use of implantology, more and more people with diabetes mellitus wish to have implant insertions. Various recent studies have been published that question diabetes mellitus as a relative contraindication. People with intermediary elevated blood glucose values are at greater risk of getting ill with diabetes mellitus. Studies have shown that in 37% of those affected, manifest diabetes mellitus occurs within 4 years and in up to 50% of those affected within 10 years [5]. The prevalence of

intermediate elevated blood glucose is on the rise worldwide and is also seen as a general medical risk factor.

4.2 ICD 10 Codes

- E10.- Diabetes mellitus type I
- E11.- Diabetes mellitus type 2
- E12.- Diabetes mellitus associated with bad nutrition and malnutrition
- E13.- Other specified diabetes mellitus
- E14.- Non-specified diabetes mellitus
- K08.0 Tooth loss due to systemic causes
- K08.1 Tooth loss due to an accident, extraction or localised periodontal disease
- K08.2 Atrophy of the edentulous alveolar crest

4.3 Symptoms

Common symptoms of diabetes mellitus are:

- constant feeling of thirst
- frequent urination (also at night)
- loss of appetite or cravings
- weight loss or weight gain
- tiredness
- fatigue
- psychic problems
- declining vision
- itchiness
- erectile dysfunction in men
- low libido
- muscle cramps
- poorly healing wounds
- frequent infections
- sensory disturbances (e.g., pressure or temperature)

It must be noted that it is more likely that some of these symptoms may occur in the phase of a decompensated metabolic state, e.g., at the occurrence of the disease when it has not yet been diagnosed or during the course of the disease as a late complication.

5 Diagnostics

5.1 Necessary investigations for the treatment decision

Consensus-based recommendation 1 (new)	
Before the beginning of treatment, the anamnesis regarding risk factors, including diabetes mellitus should be recorded. Vote: 43/1/3 (yes, no, abstention)	Strong consensus
Expert consensus	
Level of evidence: IV	

Evidence-based recommendation 2 (reviewed)		
Before starting treatment, the attending doctor/dentist should inform himself about the onset of diabetes mellitus. The onset should correspond with the target range according to the National Care Guideline "Treatment of type 2 diabetes". Vote: 46/0/3 (yes, no, abstention)	Strong consensus	↑
Literature: [6-16]		
Level of evidence: IIa		
Quality of the evidence: moderate ⊕⊕⊕⊖		

Evidence-based recommendation 3 (new)		
A) Before starting treatment, the attending doctor/dentist should consider the periodontal health state in people with diabetes mellitus. B) If periodontal disease is present, it should be treated adequately according to the Guideline "The treatment of periodontitis stage I to III". Vote: 48/0/1 (yes, no, abstention)	Strong consensus	↑↑
Literature: [3, 17, 18]		
Level of evidence: IIa		
Quality of the evidence: moderate ⊕⊕⊕⊖		

Background

The specific diagnostics of diabetes mellitus, its sub-forms, and intermediate hypoglycaemia is not discussed in detail in this Guideline. In this regard, we refer to the Guidelines “Diagnostics, treatment and progress monitoring of diabetes mellitus in children and youths” as well as “Diagnostics, treatment and progress monitoring of diabetes mellitus in old age”. Fundamentally, the diagnostic criteria of the World Health Organisation (WHO) apply:

- Fasting plasma glucose \geq 126 mg/dl (7.0 mmol/l)
- Random plasma glucose \geq 200 mg/dl (11.1 mmol/l) with diabetes-like symptoms
- HbA1c \geq 6.5% (48 mmol/mol)

The HbA1c value corresponds with the percentage of glycosylated haemoglobin. It allows one to conclude the blood glucose levels of the last 8 to 12 weeks, thereby counting as a long-term value of blood glucose. The diagnostics of diabetes mellitus is made by a general practitioner, internist, endocrinologist, diabetologist or other qualified specialists. As part of the anamnesis and survey of findings, it is recommended that the attending doctor records potential risk factors and assesses the severity of risk factors to adequately inform the patient about prospects for success and risk. If intermediate elevated blood glucose levels are present, which represent a risk factor for the development of diabetes mellitus, further clarification regarding this should be recommended.

6 Treatment

6.1 Diabetes mellitus type and osseointegration

Evidence-based statement 1 (modified)	
Patients with poorly controlled diabetes mellitus appear to have delayed osseointegration after implantation, whereas the evidence for osseointegration in well-controlled diabetes mellitus is heterogeneous. After a year, however, there seems to be no difference in implant stability between people with diabetes mellitus and healthy persons. Vote: 47/0/2 (yes, no, abstention)	Strong consensus
Literature: [6,19-21]	
Level of evidence: IIa	
Quality of the evidence: moderate ⊕⊕⊕⊖	

Evidence-based recommendation 4 (modified)		
Based on the evidence of delayed osseointegration, the indication for immediate and early loading should be critical, especially in patients with poorly controlled diabetes mellitus. Vote: 51/0/1 (yes, no, abstention)	Strong consensus	↑
Literature: [6, 8, 22, 23]		
Level of evidence IIa		
Quality of the evidence: moderate ⊕⊕⊕⊖		

Background

Osseointegration describes the process of the implant’s bony healing through the formation of direct contact between the implant surface and bone without any soft tissue lying in between. This process is a precondition for implant stability and its survival without inflammation. After the insertion of the implant, changes occur in the surrounding bone with migration and proliferation of osteoblasts and the supporting tissue. Two prospective studies examine the influence of diabetes mellitus type 2 on osseointegration. The same lead author published them, but they are independent studies from different years [6, 19]. In both studies, the patients are grouped according to the HbA1c value, which counts as a marker for the blood glucose control of the last 2 to 3 months. An HbA1c value of 6.1% to 8% was seen as well controlled, moderately controlled HbA1c was around 8.1% to 10% and a value of $\geq 10\%$ was poorly controlled. In the healthy control group, the HbA1c value was $\leq 6\%$. Patients with poorly controlled diabetes mellitus showed lower stability of the implants in the first 2 to 6 weeks. In the following weeks, however, the stability returned to the baseline, but this took twice as long in the group of patients with poor blood glucose control as in the healthy treatment group. When observing the stability of the implants a year after insertion, no difference could be detected between the two groups, also not in the group with the poorly controlled HbA1c. As part of the update, a further two studies could be included: In a prospective clinical study, 22 implants were inserted in patients with diabetes and 21 implants in members of a healthy control group (with 12 patients in each group). At the time of implant insertion (ISQ 55.4 ± 6.5 vs. 59.6 ± 4.1 , $p = 0.087$) as well as of implant exposure, comparable stability values (ISQ 73.7 ± 3.5 vs. 75.7 ± 3.2 , $p = 0.148$) [20] could be shown after 4 months. In a further retrospective case-control study, 257 participants were included, comprising 121 participants with diabetes and 136 without diabetes, whereby the diabetes was well controlled with an HbA1c below 8%. In 17 cases, an implant failure was observed during the phase of osseointegration in the diabetes group (4.5%) and in 16 cases in the control group (4.4%), leading to the conclusion that the difference was not significant ($p = 0.365$) [21].

High primary stability, sufficient osseointegration, and healthy surrounding tissue are preconditions for concepts such as immediate or early care of the implants with prosthetic restoration. In 2 studies, the immediate loading in patients with type 2 diabetes was examined. In the retrospective cohort

study with 108 patients with diabetes mellitus, the implants that were immediately loaded showed an identical survival rate to those with 3-month delayed loading (100% respectively) [23]. In a prospective clinical study, the patients with diabetes mellitus were divided into two groups based on the HbA1c values (HbA1c 6.1% – 8% and 8.1% – 10%) and compared with a control group with a HbA1c of ≤ 6%. This shows an implant survival rate of 100% in the control group with an HbA1c of 6.1% – 8% and 95.4% in the group with an HbA1c of 8.1% – 10% [8].

Regarding the research question of osseointegration in a person with intermediate elevated blood glucose values, a study showing comparable success rates of implant healing could be included [24].

6.2 Diabetes mellitus and peri-implantitis

Evidence-based statement 2 (revised)	
<p>The immediate influence of diabetes mellitus on the development of peri-implant infections is unclear due to the heterogeneous availability of data. The risk for peri-implant infections seems to increase with time.</p> <p>Vote: 49/0/1 (yes, no, abstention)</p>	Strong consensus
Literature: [9-11, 13-16, 25-52]	
Level of evidence IIa	
Quality of the evidence: moderate ⊕⊕⊕⊖	

Evidence-based recommendation 5 (modified)		
<p>As patients with diabetes mellitus present a higher risk for peri-implantitis,</p> <p>A) the patient should already be informed about this before the beginning of treatment.</p> <p>B) there should be risk-oriented follow-up care after implant placement.</p> <p>Vote: 49/0/1 (yes, no, abstention)</p>	Strong consensus	↑
Literature: [9-11, 13-16, 24-26, 28-53]		
Level of evidence IIa		
Quality of the evidence: moderate ⊕⊕⊕⊖		

Background

The literature review resulted in two prospective, two cross-sectional and one retrospective study which examined the influence of diabetes mellitus on the disease of peri-implantitis. The conclusions are very heterogeneous. The study by Aguilar-Salvatierra examined implants 2 years after insertion in patients with diabetes mellitus for symptoms of peri-implantitis. It determined that the number of patients who suffer from peri-implant infections increases with higher HbA1c. The subjects were divided into well (HbA1c 6-8%), moderate (HbA1c 8-10%) and poorly adjusted (HbA1c > 10%), but there was no control group of healthy patients [8]. The 2 cross-sectional studies showed an increased relative risk for the occurrence of peri-implantitis of 1.9 after 6 months up to 5 years [25] and of 4.1 after 10 years [26] due to diabetes mellitus compared to the population without diabetes mellitus. However, in the existing retrospective study by Turkyilmaz, no indicator of lesser clinical success could be detected one year after the implant with patients with diabetes mellitus. There was no increased probing bleeding, no pathological probing depth and a marginal bone loss of 0.3 ± 0.1 mm in persons with type 2 diabetes [27]. The prospective study of Gomez-Moreno showed that patients with elevated HbA1c value had more peri-implant bone resorptions after 3 years but that this effect was not clinically significant. Bleeding on probing occurred more frequently in the patient group with bad diabetes control. The probing depth, however, was not heightened [16].

As part of the update, 23 studies could be included, including a finding about peri-implantitis and diabetes mellitus. Following the results of the initial literature review, the conclusions regarding the influence of hyperglycaemia on peri-implant inflammation remain heterogeneous. For example, 12 clinical trials (1 cross-sectional study, 5 prospective, 6 retrospective) did not show an increased risk for developing peri-implantitis with manifest diabetes mellitus [36, 38-43, 46-48, 50, 54]. On the other hand, 6 studies showed an increased risk of peri-implant inflammation, whereby the highest relative risk identified was 8.65 [49, 51, 52, 55]. Two publications showed this occurred particularly with poorly controlled diabetes mellitus with an HbA1c > 8%, increasing probing depth, bleeding on probing, and peri-implant bone resorption [10,37]. In 5 studies, no clear conclusion could be made from the collected data, so the question regarding a heightened risk could not be answered [9, 11, 44, 45, 56]. In contrast, the available aggregated literature uniformly concludes that diabetes mellitus is a risk factor for developing peri-implant infection. However, most papers point to a lack of high-quality and long-term studies [13-15, 28-35].

Two studies have examined the effect of regular professional oral hygiene measures on peri-implant infections in patients with diabetes mellitus. Apart from a reduction of clinical indicators of peri-implantitis, an improvement of the HbA1c value was also shown longitudinally [9,51].

Two studies about the research question of the influence of intermediate elevated blood glucose values on peri-implantitis were included. The prospective study by Al-Amri et al. with 24 subjects showed comparable clinical and radiological peri-implant findings during a one-year observation interval, so no increased risk was concluded [24]. The cross-sectional study by Alrabiah et al. with 79 studies, however, pointed to a higher incidence of peri-implant inflammations (probing depth, bleeding on probing, plaque index and peri-implant bone resorption) in patients with intermediate elevated blood glucose [53].

6.3 Diabetes mellitus and implant survival

Evidence-based statement 3 (new)	
Intermediate elevated blood glucose values seem to not influence implant survival. Vote: 47/0/3 (yes, no, abstention)	Strong consensus
Literature: [24, 53]	
Level of evidence IIa	
Quality of the evidence: moderate ⊕⊕⊕⊖	

Evidence-based statement 4 (modified)	
There are no significant differences in the survival rates in the first years with patients with diabetes mellitus compared to the comparison group. In the long term, however, the risk of implant loss seems to increase. Vote: 48/0/1 (yes, no, abstention)	Strong consensus
Literature: [11, 13, 19, 20, 22, 26-28, 31-34, 39, 47, 57-76]	
Level of evidence IIa	
Quality of the evidence: moderate ⊕⊕⊕⊖	

Background

Implant survival is a clearly defined and easily determined endpoint for the success of dental implant treatment, and nearly every study reports the survival rate of implants. In the original version, information was included in 18 publications. These studies were divided into two groups for evaluation: the first group comprises 7 studies with an observation period of up to one year (6 prospective, 1 retrospective study), and the second group includes studies with longer periods (4 prospective, 1 cross-sectional and 6 retrospective studies). In the short-term group, 5 studies have included a healthy control group. Implant survival in patients with diabetes mellitus here ranged from 100 to 96.4% and did not differ from that in the control group [19, 20, 22, 57, 58]. The 2 studies without a control group showed a survival rate of 100% at 4 months and 1 year after implantation, respectively [27, 59]. The periods of the studies in the long-term group range from 1 year to 20 years and are very heterogeneous. There were 4 prospective, 6 retrospective and 1 cross-sectional study. In 7 studies, the

survival rate was compared with a healthy control group, and the results are ambivalent. On the one hand, survival rates in patients with diabetes mellitus are comparable to the results of the healthy treatment group: 95.1 vs. 97%, 97.2% vs. 95%, 92% vs. 93.2% and 97% vs. 98.8% [60-63]. On the other hand, 2 studies report an increased relative risk for implant failure in patients with diabetes mellitus of 4.8 and 2.75 [26, 64]. Studies without a healthy comparison group show implant survival rates ranging from 100 to 86% after 2 years [8], 97.3% and 94.4% after 1 and 5 years [65] and 91% to 88% after 5 years [66] which are comparable with the implant survival rates of healthy patients. In contrast, one paper shows an implant survival rate of 85.6% after 6 years, which is lower than that of the control group. This study observed most failures in the first year after prosthetic care [77].

As part of the update, 2 studies were included that investigated implant survival in people with elevated blood glucose levels. The cross-sectional as well as the prospective study showed comparable values with the control group [24, 53].

The findings regarding diabetes and implant survival are heterogeneous. Thus, 5 studies demonstrate no negative influence [11, 39, 47, 67, 68], 2 a nonsignificant [78, 79], and 6 a significant negative influence of diabetes on implant survival (87.5 vs. 95.9%, 79.7% vs. 95.6%, hazard ratio 2.25) [69-73]. Eight aggregated literature references relating to this research question were included, whereby it was concluded in 7 cases that diabetes mellitus does not appear to significantly influence implant survival [13, 28, 31-34, 75, 76]. Two meta-analyses are included in them. One has a relative risk of implant loss of 1.43 with a confidence interval of 0.54 – 3.82 and a p-value of p = 0.07, corresponding to a statistically non-significant increased risk [31]. The other has a relative risk of 1.39 with a confidence interval of 0.58 - 3.30. This is also not statistically significant with a p-value of p = 0.46 [33].

6.4 Diabetes mellitus and bone formation

Evidence-based statement 5 (modified)	
<p>There is no evidence in the literature that augmentation procedures such as guided bone regeneration and sinus lift have a higher complication and error rate in patients with well-controlled diabetes mellitus than patients without diabetes mellitus.</p> <p>Vote: 48/0/1 (yes, no, abstention)</p>	strong consensus
Literature:[20, 47, 63]	
Level of evidence: IIa	
Quality of the evidence: moderate ⊕⊕⊕⊖	

Background

Two prospective studies examined augmentative measures in patients with diabetes mellitus. On the one hand, reconstructive osteoplasty after a sinus lift. On the other hand, augmentation through bone regeneration with a collagen membrane. The study by Erdogan compared patients with type 2 diabetes with good blood glucose control (HbA1c 6-7.5%) and an average duration of illness of 7.5 years with a healthy control group. For the augmentation of the maxilla, autologous bone of the ramus mandibulae was obtained with a bone scraper and then mixed with a synthetic bone substitute material. After covering it with a collagen material, guided bone regeneration followed. After 1 year, the result showed no significant difference between patients with and without diabetes mellitus regarding wound healing, the augmentation volume and the radiological findings [20]. The other study consisted of a group of subjects with type 2 diabetes mellitus and a healthy control group. These were treated with a dental implant, either with or without a sinus lift. The authors concluded from the post-examination results that patients with well-controlled diabetes mellitus with an average HbA1c of 7.2% showed the same success rate regarding the implants and the augmentation as healthy persons. No difference could be detected in examining bone resorption between persons with diabetes mellitus and persons without [63].

As part of this update, a further study was included. Krennmair et al. performed a sinus lift with two-time implant insertion in a prospective study with a 5-year observation interval. In the assessment, patients with diabetes mellitus with an HbA1c < 7.5% were included and compared to persons without diabetes mellitus. No difference was shown regarding bone augmentation, implant survival, and peri-implant bone alteration [47]. A study about the research question of the influence of intermediately elevated blood glucose values on the success of bone augmentation was not identified.

6.5 Influence of the quality of blood glucose control

Evidence-based statement 6 (new)	
Due to the heterogeneous study findings, it is unclear whether the quality of blood glucose control directly affects the success of the implant treatment. Vote: 47/0/2 (yes, no, abstention)	Strong consensus
Literature: [6, 8, 10, 11, 16, 22, 30, 33, 76]	
Level of evidence: IIa	
Quality of the evidence: moderate ⊕⊕⊕⊖	

Evidence-based recommendation 6 (new)

<p>As part of the follow-up care of persons with known diabetes mellitus, the treating doctor/dentist should inform himself about the HbA1c value of the patient and, if necessary, seek further medical clarification.</p> <p>Vote: 35/9/2 (yes, no, abstention)</p>	<p>Consensus</p>	<p>↑</p>
<p>Literature: [6, 8, 10, 11, 16, 22, 30]</p>		
<p>Level of evidence IIa</p>		
<p>Quality of the evidence: moderate ⊕⊕⊕⊖</p>		

Background

The question of how well the control of blood glucose is implemented is just as important as the determination of whether a patient has diabetes mellitus or not. In many studies, blood glucose control is simply described as “well controlled” or “poorly controlled” without defining these terms more precisely. The National Healthcare Guideline “Treatment of type 2 diabetes” has a target range for the HbA1c of 6.5% to 7.5% [7]. The literature review identified 7 studies with a clear definition of blood glucose control by providing the HbA1c value. Three studies defined an HbA1c value of 6% to 8% as well, 8% to 10% as moderately and > 10% as poorly controlled. Two studies defined an HbA1c value of < 8% as better and > 8% as less well-controlled. In a further publication, an HbA1c of < 7% was classified as well, 7% to 9% as moderately and > 9% as poorly controlled. While 4 of the studies showed better implant survival and fewer peri-implant complications in the well-controlled group [6, 8, 16, 22], the other 3 studies could not find any difference in the success rates, even in the group with poorly controlled blood glucose [19, 57, 63]. In the study of Khandelwal, only patients with poorly controlled blood glucose (HbA1c between 7.5% and 11.4%) were treated, and these showed an implant survival of 98% after 4 months. The author concluded that dental implantology is successful even with poorly controlled diabetes mellitus [59].

Within the scope of the update, two further studies were included that demonstrated the influence of the quality of blood glucose control on the treatment with dental implants. In the cross-sectional study of Al-Sowygh et al., 93 patients were included and divided into 4 groups according to the HbA1c (< 6%, 6.1% - 8%, 8.1% – 10%, > 10%). It was found that with increasing HbA1c, there was a significant worsening of the clinical indicators for peri-implantitis. A significant difference was found in the group comparison HbA1c 6.1% to 8% to > 8.1% [10]. The paper by Eskow et al., which calculates a positive correlation of the HbA1c value to peri-implant mucositis as well as implant failure, comes to a comparable result [11]. In the aggregated literature, 3 meta-analyses were included. One analysis concludes that with increasing HbA1c more frequent bleeding occurs with probing, but no increased probing depths [30]. The other 2, however, do not show any association between a higher HbA1c and implant loss [76] or a correlation between the HbA1c and clinical parameters of peri-implant complications [33].

6.6 Influence of the duration of the disease

Evidence-based statement 7 (new)	
There is insufficient evidence on the possible influence of the duration of diabetes mellitus on implant treatment. Vote: 47/0/1 (yes, no, abstention)	Strong consensus
Level of evidence: IV	

Background

It is plausible that systemic effects increase with a longer duration of diabetes mellitus, but the influence of disease duration on implantation outcomes is poorly studied. Most of the included studies (17 of 22) provide no data regarding the disease duration of diabetes mellitus. Five studies provided this data, but only 2 investigated the influence of the disease duration on implant survival. While Olsen concludes that the disease duration can be related to a higher implant failure [66], the investigation of Tawil shows no correlation [63]. As part of the update, information regarding the disease duration could be identified in 10 of 40 studies. However, the information was descriptive, and no evaluation of whether the disease duration influences the implant treatment can be found.

6.7 Influence of adjuvant treatment

Evidence-based recommendation 7 (modified)		
The prophylactic administration of an antibiotic as a preoperative single dose should be given to patients with diabetes mellitus at implantation. Vote: 47/1/1 (yes, no, abstention)	Strong consensus	↑
Literature: [6, 62, 80, 81]		
Level of evidence IIa		
Quality of the evidence: moderate ⊕⊕⊕⊖		

Evidence-based recommendation 8 (modified)		
The perioperative use of a disinfectant mouthwash should be done with people with diabetes mellitus for implantation.	Consensus	↑

Vote: 47/1/2 (yes, no, abstention)		
Literature: [62, 66]		
Level of evidence IIa		
Quality of the evidence: moderate ⊕⊕⊕⊖		

Background

The statement of the German Society for Dental, Oral and Maxillofacial Medicine (DGZMK) “Systematic antibiotics prophylaxis in patients without systemic diseases for the prevention of postoperative wound infections” recommends perioperative antibiotic prophylaxis with dental implants and augmentations [81]. In patients with diabetes mellitus, this is recommended for improved treatment success as well as infection protection for the patient. In the Commission for Hospital Hygiene and Infection Prevention recommendation of the Robert Koch Institute “Prevention of postoperative infections in the operation area” [80], perioperative preventive single-shot antibiotic treatment for patients with diabetes mellitus is also advised.

The literature review identified a prospective study that showed a clear benefit of perioperative antibiotic treatment both in people with and without type 2 diabetes mellitus. For implants in the patient group without diabetes mellitus, the implant survival improved with the application of the antibiotic by 4.5% after 3 years. The improvement of the survival rate at 10.5% was significantly higher in the group of patients with type 2 diabetes. These differences depict a significant clinical improvement [62]. Unfortunately, the authors neither stipulated the preparation, the dosage, nor the application period.

There was a marked improvement in the implant survival of 85.6% to 95.6% in patients with type 2 diabetes mellitus with the application of chlorhexidine mouth rinse solution at the time of implantation. This difference in the survival rate (9.1%) was sufficiently large to be considered clinically significant. In the control group without diabetes, this effect was not verifiable to this extent. With the CHX application, the implant survival was increased from 91.3% to 94.3% [62, 66]. In the literature, only chlorhexidine was investigated. Other topical antiseptics have not been used in any study, so no conclusions can be drawn.

The included literature was evaluated according to the abovementioned research question as part of the update. In nearly every study, the application of perioperative antibiotic prophylaxis and disinfectant mouth rinse was reported. The effect of the above-mentioned adjuvant treatments on the results of the implants compared to the control group without adjuvant treatment was not investigated in any publications.

7 Important research questions

- The influence of diabetes mellitus with larger augmentations (e.g., pelvic bone graft) and vertical augmentations
- The influence of the duration of the disease
- Influence of the quality of blood glucose control
- Material-technical influencing factors such as implant length, diameter, material, surface finish, prosthetic connection

8 Summary

While the literature review for the draft of the 2016 Guideline could include 42 studies, 40 primary literature titles, as well as 17 titles of the aggregated literature, were included as part of the update. This large number indicates the topicality of the subject and the multitude of open research questions. Despite the large number of scientific publications, the level of evidence is not always high, and the results are sometimes very heterogeneous.

In a synopsis of the available evidence, dental rehabilitation with dental implants in people with intermediate elevated blood glucose values and diabetes mellitus is a safe and predictable procedure if the indications are correct and a risk-orientated approach is followed. In this context, diabetes mellitus should be classified as a potential risk factor for delayed osseointegration, peri-implant inflammations, and lower long-term implant survival, and this should be considered in patient management, treatment decision, and follow-up care.

9 Information about this Guideline

9.1 Structure of the Guideline group

9.1.1 Coordination and contact address

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9.1.2 Authors

Lead author:

- PD Dr Hendrik Naujokat

Co-authors (in alphabetical order):

- Prof. Dr Henrik Dommisch
- Karola Will

9.1.3 Participating scientific societies and organisations

Scientific societies/organisations	Abbreviation	Mandate holders	Declaration of interest is available
German Academy of Oral and Maxillofacial Surgery	AGOKi	Prof. Dr Fouad Khoury	yes
European Association of Dental Implantologists	BDIZ EDI	Dr Stefan Liepe	yes
		Dr Wolfgang Neumann	yes
Professional Association of German Oral Surgeons	Professional Association of German Oral Surgeons (BDO)	Dr Markus Blume	yes
		Dr Wolfgang Jakobs	yes
		Dr Mathias Sommer, MSc	yes
		Dr Martin Ullner	yes
Federal Association for Laryngeal and Head and Neck Tumours (Bundesverband der Kehlkopferierten e.V.)		Karin Dick	yes
Federal Dental Association	BZÄK	Dr Jens Nagaba	yes
German Society of Geriatric Dentistry	DGAZ	Dr Jörg Munack, MSc, MSc	yes
German Society for Aesthetic Dentistry	DGÄZ	Dr Torsten Conrad	yes
		Dr Sarah Al-Maawi	yes
		PD Dr Jonas Lorenz	yes
		Dr Karina Obreja	yes
German Society of Oral Implantology	DGI	Prof. Dr Florian Beuer MME	yes
		PD Dr Kristian Kniha	yes
		Dr Daniel Thiem	yes
		Prof. Dr Knut A. Grötz	yes
		Dr Christian Hammächer	yes
		PD Dr Keyvan Sagheb	yes
		Dr Lena Katharina Müller-Heupt	yes

		Prof. Dr Bilal Al-Nawas	yes
		Dr Anette Strunz	yes
		Prof. Dr Shahram Ghanaati	yes
		Prof. Dr Robert Sader	yes
		Prof. Dr Frank Schwarz	yes
		Prof. Dr Hendrik Terheyden	yes
		Dr Jan Tetsch, MSc, MSc	yes
		PD Dr Hendrik Naujokat	yes
		Prof. Dr Jörg Wiltfang	yes
		Prof. Dr Christian Walter	yes
		PD Dr Eik Schiegnitz	yes
		Katrin Reinicke	yes
		Dr Jochem König	yes
		Dr Juliane Wagner	yes
		Prof. Dr h.c. mult. Anton Sculean	yes
		Dr Ausra Ramanauskaite	yes
		Prof. Dr Tobias Fretwurst	yes
		Dr Carla Schliephake	yes
		Prof. Dr Michael Stimmelmayer	yes
		Lorena Cascant Ortolano	yes
		Prof. Dr Benedikt Spies	yes
		PD Dr Kathrin Becker, MSc	yes
		Prof. Dr Ralf Kohal	yes
		Prof. Dr Robert Nölken	yes
		PD Dr Stefan Wentaschek	yes
		Dr Kawe Sagheb	yes
German Society of Orthodontics	DGKFO	Prof. Dr Christoph Bourauel	yes
		Prof. Dr Sebastian Zingler	yes
		Prof. Dr Christopher Lux	yes
German Society of Oral and Maxillofacial Surgery	DGMKG	Dr Martin Bonsmann	yes
		Dr Martin Keweloh	yes

		Dr Jörg Wiegner	yes
		Prof. Dr Henning Schliephake	yes
		Prof. Dr Jürgen Hoffmann	yes
German Society of Periodontology	DG PARO	PD Dr Raluca Cosgarea	yes
		Prof. Dr Henrik Dommisch	yes
German Society for Environmental Dentistry	(DEGUZ)	Lutz Höhne	yes
German Society of Dentistry and Oral Medicine	DGZMK	Dr Eleonore Behrens	yes
		Dr Mohamed Sad Chaar	yes
		Prof. Dr Anne Wolowski	yes
		PD Dr Aydin Gülses	yes
German Association of Dental Implantology	DGZI	Professor Dr Michael Gahlert	yes
		PD Dr Stefan Röhling	yes
		Dr Navid Salehi	yes
		Dr Elisabeth Jacobi-Gresser	yes
		Dr Arzu Tuna	yes
		PD Dr Pit Voss	yes
National Association of Statutory Health Insurance Dentists	KZBV	Dr Jörg Beck	yes
Self-help Network for Head, Neck and Mouth Cancer Association (Selbsthilfenetzwerk Kopf-Hals-M.U.N.D-Krebs e.V.)	SHG Mundkrebs	Thomas Müller	yes
Association of German Dental Technicians Guilds	Association of German Dental Technicians Guilds (VDZI)	Rainer Struck	yes
Association of Medical Specialists	VFM	Sylvia Gabel	yes
		Karola Will	yes

The following scientific societies were consulted in the process. There was no feedback regarding participation.

- German Society for Prosthetic Dentistry and Biomaterials (DGPro)
- German Society for Allergology and Clinical Immunology (DGAKI)
- German Society for Immunology (DGfI)
- German Society for Computer-Assisted Dentistry (DGCZ)

- Sichtbar
- Free Association of German Dentists
- Austrian Society for Implantology (ÖGI)

In addition to the above-mentioned scientific societies/organisations, the German Society of Internal Medicine (DGIM), the German Diabetes Society (DDG), the German Diabetic Association, the German Society for General Practice/Family Medicine (DEGAM), the German Society for Nutrition (DGE), the Federal Association of Naturopathic Dentists in Germany (BNZ) and the Interdisciplinary Working Group of Dental Anaesthesia (IAZA) were invited to collaborate. There was no feedback from the first 3 societies, and the other scientific societies declined to collaborate. After the adoption and before publication of the Guideline, an overall review of the contents was carried out by the German Society of Internal Medicine (DGIM) and the German Diabetes Society (DDG) (see chapter 3.8) to improve the acceptance and broader implementation of the Guideline.

This Guideline was developed in a **working group**. The members of this working group were:

Scientific societies/organisations	Abbreviation	Mandate holders	Declaration of interest is available
German Association of Oral Implantology	DGI	PD Dr Hendrik Naujokat	yes
German Association of Oral Implantology	DGI	Prof. Dr Jörg Wiltfang	yes
German Society of Periodontology	DG PARO	Prof. Dr Henrik Dommisch	yes
Association of Medical Specialists	VFM	Karola Will	yes

Furthermore, **Dr Juliane Wagner** from the University Hospital Schleswig-Holstein, Kiel campus, was involved in the literature review for this Guideline as an independent third party.

9.1.4 Patient participation

The Guideline was drafted with direct participation of patients. Both patient representatives listed below were fully entitled to vote.

Scientific societies/organisations	Abbreviation	Mandate holders	Declaration of interest is available
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Federal Association for Laryngeal and Head and Neck Tumours (Bundesverband der Kehlkopferierten e.V.)		Karin Dick	yes
Self-help Network for Head, Neck and Mouth Cancer Association (Selbsthilfenetzwerk Kopf-Hals-M.U.N.D-Krebs e.V.)	SHG Mundkrebs	Thomas Müller	yes

9.1.5 Methodology

- Prof. Dr Ina Kopp (Association of the Scientific Medical Societies in Germany (AWMF))
- Dr Monika Nothacker (Association of the Scientific Medical Societies in Germany (AWMF))
- Dr Cathleen Muche-Borowski (Association of the Scientific Medical Societies in Germany (AWMF) Certified Guideline Consultant)
- PD Dr Eik Schiegnitz, M.Sc. (German Association of Oral Implantology (DGI), Guideline officer)
- Dr Silke Auras (German Society of Dentistry and Oral Medicine (DGZMK), Guideline officer)
- Dr Birgit Marré (German Society of Dentistry and Oral Medicine (DGZMK), Guideline officer)
- Dr Anke Weber, M.Sc. (German Society of Dentistry and Oral Medicine (DGZMK), Guideline officer)

9.1.6 Further participation

The literature review was undertaken by **Dr Juliane Wagner**, research assistant at the Clinic for Oral and Maxillofacial Surgery, University Hospital Schleswig-Holstein, Kiel campus, Arnold-Heller-Strasse 3, 24105 Kiel.

9.2 Methodological foundations

The methodology for the drafting of this Guideline was guided by the regulatory framework of the Working Group of Scientific Medical Societies in Germany (AWMF) (version 2.0 of 19/11/2020).

Source: Association of the Scientific Medical Societies in Germany (AWMF) - Standing Committee Guidelines. Association of the Scientific Medical Societies in Germany (AWMF) regulatory framework “Guidelines”. 2. 2020 edition (<http://www.awmf.org/leitlinien/awmf-regelwerk.html>)

9.3 Literature review

A detailed description of the literature review can be found in the Guideline Report of this Guideline.

9.4 Evidence evaluation

A detailed description of the evidence evaluation can be found in the Guideline Report of this Guideline.

9.5 Structured consensus building

Structured consensus building followed the consensus conference moderated by the independent Working Group of Scientific Medical Societies in Germany (AWMF) moderator, Prof. Dr Ina Kopp. On the first day of the consensus conference, work was done in small groups, analogous to a nominal group process. The small groups were each led by moderators who had been methodologically trained beforehand and were temporarily audited by the Working Group of Scientific Medical Societies in Germany (AWMF) Guideline consultant, Prof. Ina Kopp. On the second day, the presentation and voting of the Guideline topics took place in the plenary as part of a structured consensus conference. A detailed description of the structured consensus building can be found in the Guideline report of this Guideline.

9.6 Grading of recommendations and determination of consensus strength

9.6.1 Determination of the strength of recommendation level

Besides the methodically prepared evidence, clinical experience and patient preference are considered when grading the recommendation. In addition, further criteria such as consistency of the research results; clinical evidence of the endpoint and the strength of evidence; benefit-harm-ratio; ethical, legal, and economic obligations; patient preferences; applicability to the patient target group and the German health system; as well as implementation in daily life/in different care areas were considered with the grading of recommendations.

The following table depicts the grading of recommendations that were used:

Table 1: Strength of recommendation scheme

Recommendation	Recommendation against an intervention	Description	Symbol
should/ we recommend	should not/ we do not recommend	strong recommendation	↑↑ or ↓↓
should/ we suggest	should not/ we do not suggest	Recommendation	↑ or ↓
can/ can be considered	can be avoided	Open recommendation	

9.6.2 Determination of the consensus strength

The consensus strength was classified according to the regulations of the Working Group of Scientific Medical Societies in Germany (AWMF) as follows:

Table 2: Classification of consensus strength of the Working Group of Scientific Medical Societies in Germany (AWMF)

Classification of consensus strength	
Strong consensus	Consent of > 95% of participants
Consensus	Consent of > 75% to 95% of participants
Majority consensus	Consent of > 50% to 75% of participants
No consensus	Consent of < 50% of participants

10 Editorial independence

10.1 Funding of the Guideline

The drafting of this Guideline was independent and neutral.

The German Society of Oral Implantology (DGI e.V.) funded the work to draft and update the Guideline. The funding organisation had no nominal influence on the content of the Guideline apart from the right to vote.

The Guideline conference's venues, hotel accommodations and catering were funded by the German Society of Oral Implantology (DGI e.V.). The travelling costs of the Guideline authors and the Guideline coordinators were provided by the German Society of Oral Implantology (DGI e.V.). The travel expenses of the mandate holders were borne by the respective scientific society that sent them. The external consultation and moderation by Working Group of Scientific Medical Societies in Germany (AWMF) certified Guideline consultants was supported by the German Society of Oral Implantology (DGI e.V.).

10.2 Disclosure and handling of conflicts of interest

All members of the Guideline groups (authors, participants of the Guideline conference) use the Working Group of Scientific Medical Societies in Germany (AWMF) form (as of 01/11/2020) to declare secondary interests and submitted these in advance to the 5th German Society of Oral Implantology (DGI) Guideline conference. The originals are kept at the German Society of Oral Implantology (DGI)

e.V.) office. The declaration of interest was evaluated by third parties (Prof. Kopp and PD Dr Schiegnitz) concerning topical relevance to the Guideline and degree of relevance (low, moderate, high) who also suggested measures for handling conflicts of interest. The evaluation and the suggested measures were presented in the plenary session at the beginning of the 5th German Society of Oral Implantology (DGI) Guideline conference. Given the thematic relevance to the Guideline, the following evaluation was made:

- **Low conflict of interest** was defined as: less than 10 presentations/conference contributions with direct thematic relevance to the Guideline topic, indirect interest through engagement in an implantology-oriented scientific society/foundation as well as the clinical and scientific focus in the field of implantology
- **Moderate conflict of interest** was defined as more than 10 presentations/conference contributions or advisory board/consultant activities with direct topical relevance to the Guideline topic
- **High conflict of interest** was defined as: Ownership interest in medicinal products/medical devices (e.g., patent, copyright, sales licence), ownership of shares, equities, and funds with participation in companies in the healthcare sector

Persons with a moderate conflict of interest abstained from voting. The coordinator of the Guideline abstained in principle. A tabular summary of the declarations, the evaluation, and the management of conflicts of interest is appended to this Guideline.

In order to minimise possible influences based on secondary interests, the Guideline was drafted jointly by a core team:

- Prof. Dr Jörg Wiltfang
- PD Dr Hendrik Naujokat
- Prof. Dr Henrik Dommisch
- Karola Will

The coordinator, Prof. Dr Jörg Wiltfang abstained from all votes.

11 Adoption by the Boards of the editing scientific societies/organisations

The Boards of the participating scientific societies approved the Guideline between 10/06/2022 and 10/08/2022. Finally, the Boards of the leading scientific societies approved publication from 08/12/2022 to 30/01/2023.

12 Period of validity and updating procedure

Guideline status as of: 02/12/2022

Valid until: 01/12/2027

This Guideline updates the corresponding Guideline from August 2016. The Guideline is valid from 2 December 2022 until the next update. The validity period is estimated to be 5 years. Regular updates are planned; if changes are urgently needed, these will be published separately. Comments and notes for the updating process are expressly welcome and can be sent to the lead author, PD Dr Hendrik Naujokat - Hendrik.Naujokat@uksh.de.

13 Implementation

- Publication on the homepage of the German Association of Oral Implantology (DGI), German Society of Oral and Maxillofacial Surgery (DGMKG), German Society of Dentistry and Oral Medicine (DGZMK)
- Publication in the Guideline register of the Association of the Scientific Medical Societies in Germany (AWMF)
- Publications in the German Dental Journal (DZZ), German Dental Journal International (DZZ International) and Dental Bulletins (zm)
- Scientific publications in the IJID

14 Exploitation rights

Participants of the Guideline group as the authors of scientific work were informed in writing about the transfer of the right of use for the publication of the Guideline on the websites of the Association of the Scientific Medical Societies in Germany (AWMF), German Society of Dentistry and Oral Medicine (DGZMK) and other scientific societies as well as the publication in scientific journals of the scientific societies, Dental Bulletins (zm), chamber journals, etc. Consent declarations of the participants are available at the Guideline office of the German Society of Dentistry and Oral Medicine (DGZMK). The free use of the contents of the Guideline by the addressees corresponds with the statutory purpose of the scientific societies.

15 Abbreviations used

Table 3: Abbreviations used

Abbreviation	Explanation
DGZMK	German Society of Dentistry and Oral Medicine

HbA1c	Haemoglobin A1c The HbA1c value corresponds with the percentage of glycosylated haemoglobin. It allows one to draw a conclusion regarding the blood glucose levels of the last 8 to 12 weeks, thereby counting as a long-term value of blood glucose.
ISQ	Implant stability quotient

16 Literature

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Attachment 1 - Declaration of conflict of interest: Tabular summary

The following is a tabular summary of the declarations of interest, as well as the results of the conflict of interest evaluation and actions that were decided by the Guideline Group after discussion of the issues and implemented during the consensus conference

	Consultant/expert activity	Participation in a scientific advisory board	Paid lecturing/or training activity	Paid author/-co-authorship	Research projects/ conducting clinical studies	Ownership interests (patent, copyright, shareholdings)	Indirect interests	Topics of the Guideline relating to conflicts of interest (COI), assessment regarding their relevance, consequence
Prof. Dr Bilal Al-Nawas	aQua Institute	none	Straumann, Camlog, Dentsply, Geistlich, Mectron, German Society of Oral Implantology (DGI), International Team for Implantology (ITI), Osteology	none	Straumann	none	Memberships: German Society of Oral Implantology (DGI), ITI, International Federation of Dental Educators (IFDAE) Focus of scientific/clinical activity: Infections, implantology, oncology, biomaterials, reconstructive surgery Congress of the German Society for Oral and Maxillofacial Surgery (DGMKG)/Professional Association of German Oral Surgeons (BDO), 3D Print Congress	Low, no consequence since no leadership role
Prof. Dr Knut Grötz	none	none	Training institutes of the State Dental Associations: State Dental Association of Hesse (LZKH)/Dental Training Academy Hesse (FAZH), Dental Training Centre Stuttgart (ZFZ Stuttgart), State Dental Association Saxony-Anhalt (ZÄK Sachsen-Anhalt), Advanced Training Forum for	none	none	none	Memberships: President of the German Society of Oral Implantology (DGI), ITI Fellow, German Society for Oral and Maxillofacial Surgery (DGMKG), Professional Association of German Oral Surgeons (BDO) Focus of scientific/clinical activity: Treatment of risk patients Congress presidencies	Low, no consequence since no leadership role

	Consultant/expert activity	Participation in a scientific advisory board	Paid lecturing/or training activity	Paid author/-co-authorship	Research projects/ conducting clinical studies	Ownership interests (patent, copyright, shareholdings)	Indirect interests	Topics of the Guideline relating to conflicts of interest (COI), assessment regarding their relevance, consequence
			Dentists Freiburg (FFZ Freiburg) Training institutes of the university: Münster University Hospital Companies/businesses: Straumann GmbH, Dentsply, Mectron GmbH, Cellpharm GmbH, Meisinger Publishers/service providers for congress organisation: Oemus Media AG, Med-Update GmbH, Boeld GmbH, Deutscher Ärzte-Verlag, Rosenberg Zürich scientific and professional societies: German Society of Oral Implantology (DGI) and regional associations (LVs)/quality circles (QZs) of the German Society of Oral Implantology (DGI), ITI, German Society for Oral and Maxillofacial Surgery (DGMKG), Professional Association of German Oral Surgeons (BDO),					

	Consultant/expert activity	Participation in a scientific advisory board	Paid lecturing/or training activity	Paid author/-co-authorship	Research projects/ conducting clinical studies	Ownership interests (patent, copyright, shareholdings)	Indirect interests	Topics of the Guideline relating to conflicts of interest (COI), assessment regarding their relevance, consequence
			German Society of Oral Implantology (DGOI), Dental Society Hesse (ZGH), Administrative Centre Stuttgart (VWZ Stuttgart)					
PD Dr Eik Schiegnitz	none	none	State Dental Association Rhineland-Palatinate Companies: Straumann, Septodont, Geistlich, Dentsply, Sanofi, Mectron Congress organisation: Oemus Media AG, Boeld GmbH, scientific and professional societies: German Society of Oral Implantology (DGI) and regional associations (LVs)/quality circles (QZs) of the German Society of Oral Implantology (DGI), ITI, German Society for Oral and Maxillofacial Surgery (DGMKG), German Society of Oral Implantology (DGOI)	none	Straumann, Botiss, Geistlich, Dentsply, ITI	none	Memberships: German Society of Oral Implantology (DGI), German Society for Oral and Maxillofacial Surgery (DGMKG), ITI Focus of scientific/clinical activity: Implantology, jaw necrosis, oncology, biomaterials, reconstructive surgery	Low, no consequence since no leadership role

	Consultant/expert activity	Participation in a scientific advisory board	Paid lecturing/or training activity	Paid author/co-authorship	Research projects/ conducting clinical studies	Ownership interests (patent, copyright, shareholdings)	Indirect interests	Topics of the Guideline relating to conflicts of interest (COI), assessment regarding their relevance, consequence
Dr Lena Katharina Müller-Heupt	none	Farmako GmbH (medical cannabis)	none	Springer, Spitta, MVG Verlag	Profil GmbH (metabolic disorders)	none	Memberships: 1. Chair DEVELOped. aid e.V. Focus of scientific/clinical activity: Oral microbiology, periodontitis, peri-implantitis, tissue engineering, metabolic disorders, cranio-maxillofacial surgery (MCG) research physician	No topical relevance, no consequence
Prof. Dr Robert Sader	German Research Foundation (DFG)	German Society for MCG Surgery (DGMKG), Int. Fed. of Esthetic Dentistry, Int. Foundation for Cleft Lip and Palate, Oral Reconstruction Found., Int. Fed. of Esthetic Dentistry, Intern. Congress of Oral Implantology, Osteo Science Foundation	Oral Reconstruction Found., Intern. Congress of Oral Implantology, German Society of Oral Implantology, Academy for Practice and Science (APW) of the German Society for Dental, Oral and Maxillofacial Medicine (DGZMK), Goethe University Frankfurt, Company Bien-Air, Camlog, Henry Schein, Geistlich, Straumann, Mectron	none	Camlog, Nobelbiocare, Straumann, Mectron, Geistlich, Bien-Air, Megagen	none	Scientific focus Replacement and regeneration of oral hard and soft tissues, cleft lip and palate surgery, oncological MCG surgery Clinical focus Cleft lip and palate, oncological MCG surgery, dental implantology Memberships: President of the German Society for Aesthetic Dentistry, German Society for MCG Surgery (scientific Advisory Board), German Society for Dental, Oral and Maxillofacial Medicine (DGZMK) (extended Board) Int. Federation Esthetic Dentistry (Board), Int. Cleft Lip and Palate Foundation (extended Board), German Society of Oral Implantology (DGI) (Board Hesse Section), German Society for Surgery (DGCH), Austrian Society for Surgery (OEGCH), Swiss Society for Maxillofacial Surgery (SGMKG), Europ. Society for MCG Surgery, Intern. Society for MCG Surgery, Working Group for Maxillofacial Surgery (AGKi) of the German Society for Dental, Oral and Maxillofacial Medicine (DGZMK), Austrian Society for Cleft Lip and Palate, American Cleft Palate Association, German	Low, no consequence since no leadership role

	Consultant/expert activity	Participation in a scientific advisory board	Paid lecturing/or training activity	Paid author/-co-authorship	Research projects/ conducting clinical studies	Ownership interests (patent, copyright, shareholdings)	Indirect interests	Topics of the Guideline relating to conflicts of interest (COI), assessment regarding their relevance, consequence
							Society of Plastic/Reconstructive Surgery, German Society of Oral Implantology (DGOI), International Congress of Oral Implantologists (ICOI) (Board), German Society for Ultrasound in Medicine (DEGUM), Pierre Fouchard Academy, Association for Medical Education, Dentista, Association of the Study of Internal Fixation (AO), Int. Bone Research Association (IBRA), German Society for Military Medicine and Military Pharmacy (DGWMP)	
PD Dr Keyvan Sagheb	none	none	Straumann, Geistlich, Nobel, Camlog	none	Camlog	none	Focus of scientific/clinical activity: Augmentations, implantology, oncology Memberships: German Society for Dental, Oral and Maxillofacial Medicine (DGZMK), German Society of Oral Implantology (DGI), German Society for Oral and Maxillofacial Surgery (DGMKG), German Society for Ultrasound in Medicine (DEGUM), Working Group for Maxillofacial Surgery (AGKi), Working Group for Radiology (ARö), International Association for Dental Research (IADR), Association of Oral Pathology and Oral Medicine (AKOPOM), Free Association of German Dentists (FVDZ), German-Austrian-Swiss Working Group for Tumours in the Maxillofacial Region (DÖSAK), ITI, Camlog Connect, FOR	Low, no consequence since no leadership role
Prof. Dr Christian Walter	none	none	Straumann	none	Straumann, Pluradent	none	Focus of scientific/clinical activity: Osteonecrosis associated with medicinal products, implantology, dentoalveolar surgery, implantology, periodontology, dermatosurgery	Low, no consequence since no leadership role

	Consultant/expert activity	Participation in a scientific advisory board	Paid lecturing/or training activity	Paid author/-co-authorship	Research projects/ conducting clinical studies	Ownership interests (patent, copyright, shareholdings)	Indirect interests	Topics of the Guideline relating to conflicts of interest (COI), assessment regarding their relevance, consequence
							Memberships: German Society for Dental, Oral and Maxillofacial Medicine (DGZMK), German Society of Oral Implantology (DGI), German Society for Oral and Maxillofacial Surgery (DGMKG), German Society for Ultrasound in Medicine (DEGUM), Working Group for Maxillofacial Surgery (AGKi), Working Group for Radiology (ARö), International Association for Dental Research (IADR), Association of Oral Pathology and Oral Medicine (AKOPOM), Free Association of German Dentists (FVDZ), German-Austrian-Swiss Working Group for Tumours in the Maxillofacial Region (DÖSAK), ITI, Camlog Connect, FOR	
Prof. Dr Shahram Ghanaati	none	none	Geistlich, Mectron, Camlog	none	Geistlich	none	Focus of scientific/clinical activity: Biomaterials research, biologisation of biomaterials, onco-surgery and reconstruction, platelet-rich-fibrin (PRF) Memberships: DGMKG	No topical relevance to the Guideline, no consequence
Prof. Dr rer.nat. Dipl.-Phys. Christoph BouraueI	none	none	Society for Orthodontics of Berlin and Brandenburg, State Dental Association Saxony (ZÄK Sachsen), State Dental Association Hesse (ZÄK Hessen), German Centre for Oral Implantology (DZOI e.V.), Dr Lentrodt, University of Zurich, State Dental Association	none	none	none	Work focused in the field of dental biomechanics, materials science, corrosion, biocompatibility, fatigue loading Not clinically active Memberships: German Institute for Standardisation (DIN), Obmann, Working Committee for Orthodontic Products, Conventor ISO 106, WG 17, orthodontic anchors (until 2018)	Low, no consequence since no leadership role

	Consultant/expert activity	Participation in a scientific advisory board	Paid lecturing/or training activity	Paid author/-co-authorship	Research projects/ conducting clinical studies	Ownership interests (patent, copyright, shareholdings)	Indirect interests	Topics of the Guideline relating to conflicts of interest (COI), assessment regarding their relevance, consequence
			Rhineland Palatine (LZK Rheinland-Pfalz), AI Wehda Medical Center, Company Work4smile					
Rainer Struck	none	none	none	none	none	none	Focus: none Memberships: Association of German Dental Technicians Guilds (VDZI)	none
PD Dr Aydin Gülses	none	none	none	none	none	none	Focus: none Memberships: none	none
Dr Jörg Beck	none	none	none	none	none	none	Focus: none Memberships: Employee of the National Association of Statutory Health Insurance Physicians (NASHIP)	none
Prof. Dr Henning Schliephake	none	none	none	none	none	none	Scientific focus: Oncological reconstructive surgery/regenerative medicine Clinical focus: Oncological reconstructive surgery/malformation surgery Memberships: European Association for Osseointegration (EAO)/President 2018-2020	none
Thomas Müller	none	none	none	none	none	none	Focus: none Memberships: none	none

	Consultant/expert activity	Participation in a scientific advisory board	Paid lecturing/or training activity	Paid author/-co-authorship	Research projects/ conducting clinical studies	Ownership interests (patent, copyright, shareholdings)	Indirect interests	Topics of the Guideline relating to conflicts of interest (COI), assessment regarding their relevance, consequence
Karola Will	none	none	none	none	none	none	Focus: none Memberships: none	none
Dr Jens Nagaba	none	none	none	none	none	none	Focus: none Memberships: Employee of the Federal Dental Association (BZÄK)	none
Dr Mohamed Sad Chaar	none	none	none	none	none	none	Focus: Dental prosthetics, materials science, implant prosthetics Memberships: none	none
Sylvia Gabel	none	none	none	none	none	none	Focus: none Memberships: none	none
Dr Christian Hammächer	none	none	Camlog	Scientific publications and book projects (Teamwork-media)	none	none	Scientific focus: Lectureship at the Clinic for Dental Prosthetics at the Rhine-Westphalia Technical University of Aachen (RWTH Aachen), lectureship at the Academy for Practice and Science (APW) and master’s degree programmes, publications in the fields of implantology/periodontology Clinical focus: Implantology, periodontology, prosthetics, in particular in the aesthetic field Memberships: Member of the Board of the German Society of Oral Implantology (DGI) Lead participation in further training: German Society of Oral Implantology (DGI), Academy for	Low, no consequence since no leadership role

	Consultant/expert activity	Participation in a scientific advisory board	Paid lecturing/or training activity	Paid author/co-authorship	Research projects/ conducting clinical studies	Ownership interests (patent, copyright, shareholdings)	Indirect interests	Topics of the Guideline relating to conflicts of interest (COI), assessment regarding their relevance, consequence
							Practice and Science (APW), congresses, workshops	
PD Dr Jonas Lorenz	Various courts	none	Geistlich Vertriebsgesellschaft mbH, Camlog, German Society of Oral Implantology (DGI), State Dental Association Hesse (LZÄK Hessen), German Society for Aesthetic Dentistry (DGÄZ)	Independent	third-party funding Geistlich, Camlog, Straumann, Oral Reconstruction Foundation	none	Scientific focus: Implantology, biomaterials research Clinical focus: Implantology, oral surgery Memberships: German Society of Oral Implantology (DGI), German Society for Dental, Oral and Maxillofacial Medicine (DGZMK), German Society for Aesthetic Dentistry (DGÄZ), Board of the Hesse National Association of the German Society of Oral Implantology (DGI)	Low, no consequence since no leadership role
PD Dr Hendrik Naujokat	none	none	Osteology Foundation	none	Dentsply Sirona, Osteology Foundation	none	Focus: none Memberships: none	Low, drafting the Guideline in a team to minimise possible influences
PD Dr Kristian Kniha	none	none	none	none	Working Group Start of the RWTH Aachen University, German Federal Ministry for Economic Affairs and Energy (BMWi) (Working Group of Industrial Research Associations (AIF)), ITI Large Grand	none	Scientific focus: Dental implants, ceramic implants, explantation with biophysical methods Clinical focus: Implantology Memberships: ITI, Professional Association of German Oral Surgeons (BDO)	Regarding ceramics: moderate, here abstention

	Consultant/expert activity	Participation in a scientific advisory board	Paid lecturing/or training activity	Paid author/-co-authorship	Research projects/ conducting clinical studies	Ownership interests (patent, copyright, shareholdings)	Indirect interests	Topics of the Guideline relating to conflicts of interest (COI), assessment regarding their relevance, consequence
Prof. Dr Jürgen Hoffmann	MSD	MSD	MSD, KLS Martin, Straumann, Geistlich	none	none	none	<p>Clinical focus: The treatment of patients with sarcoma diseases is part of the treatment spectrum of our clinic</p> <p>Memberships: German Society for Oral and Maxillofacial Surgery (DGMKG), Working Group for Maxillofacial Surgery (AGKi), Germany Society of Surgery (DGCh)</p> <p>Lead participation in further training/training institutions: Medical Director of the Clinic and Polyclinic for MCG Surgery</p>	Low, no consequence since no leadership role
Dr Elisabeth Jacobi-Gresser	none	none	Dentalpoint/CH	Research group Olmedo	Olmedo et al, University of Buenos Aires, Argentina	none	<p>Focus points: none</p> <p>Memberships: none</p>	Low, no consequence since no leadership role
Karin-Annette Dick	none	none	none	none	none	none	<p>Focus point: none</p> <p>Memberships: none</p>	none
Prof. Dr Fouad Houry	Dentsply, Sirona, Stoma, International Medical Center (IMC), Meisinger	Dentsply, Sirona	Dentsply, Sirona, Meisinger, German Society of Oral Implantology (DGI), Working Group for Osteosynthesis (AO USA), Individuals with Disabilities Education Act USA (IDEA USA), American Association of Oral and Maxillofacial Surgeons (AAOMS USA),	none	FDI, peri-implantitis study	none	<p>Scientific focus: Bone augmentation with autogenous bone, soft tissue management/soft tissue augmentation, peri-implantitis treatment</p> <p>Clinical focus: Implantology, oral surgery, bone augmentation with autogenous bone, soft tissue management/soft tissue augmentation, tooth transplantation, peri-implantitis treatment</p> <p>Memberships: Working Group for Maxillofacial Surgery (AGKi), Professional Association of German Oral Surgeons (BDO)</p>	Low, no consequence since no leadership role (consultant/expert activity and advisory board, not relevant to the topic)

	Consultant/expert activity	Participation in a scientific advisory board	Paid lecturing/or training activity	Paid author/-co-authorship	Research projects/ conducting clinical studies	Ownership interests (patent, copyright, shareholdings)	Indirect interests	Topics of the Guideline relating to conflicts of interest (COI), assessment regarding their relevance, consequence
			<p>New York University College of Dentistry (NYU USA), Santa Monica, Spain, EAO, ICOI, Spanish Society of Periodontics and Osseointegration (SEPA), Professional Association of German Oral Surgeons (BDO), Health AG, Quintessenz, NW, Urban Regeneration Institute Budapest, German Society for Implant Dentists (BDIZ), Catholic University of Murcia Spain (UCAM)</p> <p>Study group for restorative dentistry, Spanish Society of Dental Implantology (SCOI Spain), ITI, Portuguese Dental Association, Czech Society for Oral Surgery, World Dental Federation (FDI)</p>				Lead participation in further training/training institutions: Private Clinic Schloss Schellenstein	
Dr Arzu Tuna	none	none	none	none	none	none	Focus: none Memberships: none	none

	Consultant/expert activity	Participation in a scientific advisory board	Paid lecturing/or training activity	Paid author/-co-authorship	Research projects/ conducting clinical studies	Ownership interests (patent, copyright, shareholdings)	Indirect interests	Topics of the Guideline relating to conflicts of interest (COI), assessment regarding their relevance, consequence
Dr Wolfgang Jakobs, MSc	none	none	German Society of Oral Implantology (DGI), German Society of Oral Implantology (DGOI), German Society for Dental, Oral and Maxillofacial Medicine (DGZMK), Professional Association of German Oral Surgeons (BDO), German Society for Oral and Maxillofacial Surgery (DGMKG), University for Digital Technologies in Medicine and Dentistry (DTMD), University Luxembourg, etc.	Sedation, alveolaris inferior (LA), dental anaesthesia, implantology, sedation procedures	Implantology, local anaesthesia, dental anaesthesia	none	Scientific focus: Dental anaesthesia Clinical focus: Implantology, oral surgery Memberships: Professional Association of German Oral Surgeons (BDO) Lead participation in further training/training institutions: Private dental clinic IZI GmbH	Low, no consequence since no leadership role
PD Dr Raluca Cosgarea	none	none	New Working Group for Periodontology (NAGP), DTMD, State Dental Association Rhineland Palatine (ZÄK Rheinland-Pfalz), District Dental Association (BZK), German Society of Periodontology (DG Paro)	none	Bredent, Periotabs, Geistlich, Botiss	none	Scientific focus: Anti-infectious and anti-inflammatory therapies in the treatment of periodontitis, microbiological and immunological aspects in periodontitis/peri-implantitis, biomaterials for the regeneration of vertical intrabony defects and the surgical treatment of gingival recessions, periodontitis and rheumatoid diseases, treatments for oral lichen planus and other bullous diseases with oral manifestations Clinical focus: Surgical and non-surgical treatment of periodontitis, mucogingival periodontal surgery, surgical and non-surgical treatment of peri-implantitis	Low, no consequence since no leadership role

	Consultant/expert activity	Participation in a scientific advisory board	Paid lecturing/or training activity	Paid author/-co-authorship	Research projects/ conducting clinical studies	Ownership interests (patent, copyright, shareholdings)	Indirect interests	Topics of the Guideline relating to conflicts of interest (COI), assessment regarding their relevance, consequence
							Memberships: German Society of Periodontology (DG Paro), International Academy of Periodontology (IAP)	
Dr Jörg-Ulf Wiegner	none	none	Camlog, Geistlich, Dentsply	none	Camlog	none	<p>Scientific focus: Implantology</p> <p>Clinical focus: Implantology</p> <p>Membership: German Society for Oral and Maxillofacial Surgery (DGMKG), German Society for Dental, Oral and Maxillofacial Medicine (DGZMK), Germany Society of Surgery (DGCh), German Society of Oral Implantology (DGI), ICOI, European Centres for Dental Implantology (ECDI), Federal Association of Company Health Insurance Funds (BdB), British Association of Otolaryngologists (BAO), Belfast Dental Care (BDC)</p> <p>Lead participation in further training/training institutions: German Society for Oral and Maxillofacial Surgery (DGMKG) Professional Association (BV)</p>	Low, no consequence since no leadership role
Lutz Höhne	none	none	German Society for Environmental Dentistry (DEGUZ)	<p>University Medicine Göttingen (UMG)</p> <p>Professional journals of the environmental medical associations</p>	none	none	<p>Scientific focus: none</p> <p>Clinical focus: Practising dentist until the beginning of 2021, now working for the German Society for Environmental Dentistry (DEGUZ) and giving lectures</p> <p>Memberships: German Society for Environmental Dentistry (DEGUZ), Guideline officer, advisor, German Professional Association of Environmental Physicians (dbu), European</p>	none

	Consultant/expert activity	Participation in a scientific advisory board	Paid lecturing/or training activity	Paid author/-co-authorship	Research projects/ conducting clinical studies	Ownership interests (patent, copyright, shareholdings)	Indirect interests	Topics of the Guideline relating to conflicts of interest (COI), assessment regarding their relevance, consequence
							Academy for Environmental Medicine (Europaem) Lead participation in further training/training institutions German Society for Environmental Dentistry (DEGUZ), Head for the curriculum on environmental dentistry	
Dr Torsten Conrad, MSc	District Dental Association for Rhenish Hesse (BZK Rheinhessen)	none	Mectron, Camlog, District Dental Association for Rhenish Hesse (BZK Rheinhessen), State Dental Association Rhineland Palatine (LZK Rheinland-Pfalz), Oemus, German Society of Oral Implantology (DGI)	Multidisciplinary Digital Publishing Institute (MDPI)	Nanotechnology/Bioengineering Centre (NIBEC), University Hospital Frankfurt Clinic for Maxillofacial and Plastic Surgery (MKPG Frankfurt)	none	Scientific focus: none Clinical focus: none Memberships: DGI	Low, no consequence since no leadership role
Prof. Dr Anne Wolowski	none	Dentsply	none	none	none	none	Scientific focus: Psychosomatics, dentistry for the elderly, functional disorders Clinical focus: Prosthetics, psychosomatic, geriatric dentistry, functional disorders Memberships: German Society for Dental, Oral and Maxillofacial Medicine (DGZMK), German Society for Prosthetic Dentistry and Biomaterials (DG Pro), German Society for Functional Diagnostics and Therapy (DGFDT), Working Group for Psychology and Psychosomatics (AKPP), Konrad-Morgenroth Förderergesellschaft (KMFG)	Low, no consequence since no leadership role (advisory board not relevant to the topic)

	Consultant/expert activity	Participation in a scientific advisory board	Paid lecturing/or training activity	Paid author/-co-authorship	Research projects/ conducting clinical studies	Ownership interests (patent, copyright, shareholdings)	Indirect interests	Topics of the Guideline relating to conflicts of interest (COI), assessment regarding their relevance, consequence
							Lead participation in further training/training institutions: Teaching at the University of Münster, curriculum psychosomatic basic competence of the Working Group for Psychology and Psychosomatics (AKPP)/Academy for Practice and Science (APW)	
Dr Mathias Sommer, MSc	State Dental Association North Rhine-Westphalia (ZÄK NRW)	none	Dentsply, Academy for Practice and Science (APW) of the German Society of Oral Implantology (DGI)	none	none	none	<p>Scientific focus: Implantological case studies</p> <p>Clinical focus: General dental, oral surgery and implantological activities</p> <p>Memberships: Professional Association of German Oral Surgeons (BDO), German Society of Oral Implantology (DGI)</p>	Low, no consequence since no leadership role
Prof. Dr Jörg Wiltfang	Courts	DGMKG	German Society of Oral Implantology (DGI)/Academy for Practice and Science (APW), State Dental Association Kiel (ZÄK Kiel), Academy of Karlsruhe (Akademie Karlsruhe)	Multiple publications	Multiple studies	none	<p>Scientific focus: Bone regeneration, malformations, implantology</p> <p>Focus clinical tumour surgery, malformation surgery, implantology, traumatology, dysgnathia surgery</p> <p>Memberships: German Society for Oral and Maxillofacial Surgery (DGMKG), German Society for Dental, Oral and Maxillofacial Medicine (DGZMK), Schleswig-Holstein Society for Dental, Oral and Maxillofacial Medicine (SHGMZK), German Society of Oral Implantology (DGI), European Academy for Advanced Training in Medicine and Dentistry (EFMZ)</p> <p>Lead participation in further training/training institutions: State Dental Association Kiel (ZÄK</p>	Low, drafting the Guideline in a team to minimise possible influences. Due to the role as Guideline coordinator abstention from all votes.

	Consultant/expert activity	Participation in a scientific advisory board	Paid lecturing/or training activity	Paid author/co-authorship	Research projects/ conducting clinical studies	Ownership interests (patent, copyright, shareholdings)	Indirect interests	Topics of the Guideline relating to conflicts of interest (COI), assessment regarding their relevance, consequence
							Kiel) - curriculum for implantology/periodontology	
Dr Martin Keweloh	none	none	Humantech/Steinenbronn	Prof. Mertens, University of Heidelberg	Geistlich	none	<p>Scientific focus: Socket preservation, peri-implant soft tissue replacement</p> <p>Clinical focus: see above</p> <p>Memberships: none</p> <p>Lead participation in further training/training institutions: Curriculum for implantology, German Society for Oral and Maxillofacial Surgery (DGMKG)</p>	No topical relevance to the Guideline, no consequence
Prof. Dr Pit Voss	KLS Martin	none	none	none	none	none	<p>Scientific focus: Medication related osteonecrosis of the jaw (MRONJ)</p> <p>Clinical focus: Medication related osteonecrosis of the jaw (MRONJ)</p> <p>Memberships: none</p>	Low, no consequence since no leadership role
Prof. Dr Frank Schwarz	none	Osteology Foundation, Lucerne, Switzerland, Executive Board Member	Geistlich Pharma AG, Osteology Foundation	International journals	Osteology Foundation, Lucerne, Switzerland	none	<p>Scientific focus: Research focus: Aetiology, pathogenesis, diagnostics and treatment of peri-implant infections</p> <p>Clinical focus: Treatment peri-implant infections</p> <p>Memberships: none</p>	Regarding peri-implantitis: moderate, abstention here

	Consultant/expert activity	Participation in a scientific advisory board	Paid lecturing/or training activity	Paid author/-co-authorship	Research projects/ conducting clinical studies	Ownership interests (patent, copyright, shareholdings)	Indirect interests	Topics of the Guideline relating to conflicts of interest (COI), assessment regarding their relevance, consequence
Dr Jan Tetsch, MSc, MSc	none	none	German Society of Oral Implantology (DGI), Academy for Practice and Science (APW), State Dental Association (ZÄK)	none	none	none	<p>Scientific focus: Implantology/surgery and prosthetics/implants in the adolescent jaw</p> <p>Clinical focus: Implantology/surgery and prosthetics/implants in the adolescent jaw</p> <p>Memberships: German Society of Oral Implantology (DGI), German Society for Implant Dentists (BDIZ), German Society for Dental, Oral and Maxillofacial Medicine (DGZMK)</p> <p>Lead participation in further training/training institutions: Training courses German Society of Oral Implantology (DGI)/Academy for Practice and Science (APW) and State Dental Association (ZÄK)</p>	none
Dr Sarah Al-Maawi	none	none	none	none	none	none	<p>Scientific focus: Biomaterials research, biologisation of biomaterials</p> <p>Clinical focus: Regenerative medicine and biomaterials research</p> <p>Memberships: none</p>	none
Dr Anette Strunz	Camlog	none	Camlog, Geistlich, Sirona, Philipp Pfaff Institute	none	none	none	<p>Scientific focus: none</p> <p>Clinical focus: Implantology, navigation</p> <p>Memberships: Press spokesperson for the German Society of Oral Implantology (DGI)</p> <p>Lead participation in further training/training institutions: Curriculum for implantology, Philipp Pfaff Institute Berlin</p>	Low, no consequence since no leadership role

	Consultant/expert activity	Participation in a scientific advisory board	Paid lecturing/or training activity	Paid author/co-authorship	Research projects/ conducting clinical studies	Ownership interests (patent, copyright, shareholdings)	Indirect interests	Topics of the Guideline relating to conflicts of interest (COI), assessment regarding their relevance, consequence
Prof. Dr h.c. (mult.), MS, PhD Anton Sculean	none	Osteology Foundation, Lucerne, Switzerland, Board Member	Geistlich Pharma AG; Osteology Foundation, Straumann AG, Basel, Switzerland; Camlog, Wimsheim, Germany	International journals	none	none	<p>Scientific focus: Reconstructive periodontal surgery, management of soft tissue defects of the tooth and implant, treatment of peri-implant infections</p> <p>Clinical focus: Reconstructive periodontal surgery, management of soft tissue defects of the tooth and implant</p> <p>Memberships: none</p>	Low, no consequence since no leadership role
Prof. Dr Hendrik Terheyden	none	none	Dentaurum, Meisinger, Geistlich	none	none	none	<p>Scientific focus: Augmentation surgery</p> <p>Clinical focus: General jaw surgery at the Clinic, implant surgery in private practice</p> <p>Memberships: German Society of Oral Implantology (DGI), German Society for Dental, Oral and Maxillofacial Medicine (DGZMK), Association of University Teachers for Dentistry, Oral Medicine and Maxillofacial Medicine (VHZMK), EAO, International Association of Oral and Maxillofacial Surgeons (IAOMS), European Association for Cranio-Maxillofacial Surgery (EACMFS), Working Group for Maxillofacial Surgery (AGKi)</p> <p>Lead participation in further training/training institutions: Strasbourg Osteosynthesis Research Group (SORG) (Board member of the Section Preprothetic), International Academy for Oral and Facial Rehabilitation (IAOFR) (Board member of the Section Preprothetic)</p>	Low, no consequence since no leadership role

	Consultant/expert activity	Participation in a scientific advisory board	Paid lecturing/or training activity	Paid author/-co-authorship	Research projects/ conducting clinical studies	Ownership interests (patent, copyright, shareholdings)	Indirect interests	Topics of the Guideline relating to conflicts of interest (COI), assessment regarding their relevance, consequence
Dr Jörg Munack, MSc, MSc	none	none	none	none	none	none	none	none
Prof. (adj.) Dr Sebastian Zingler	none	none	none	none	none	none	Scientific focus: none Clinical focus: none Memberships: none	none
Dr Stefan Liepe	none	none	none	none	none	none	Scientific focus: none Clinical focus: none Memberships: European Association of Dental Implantologists (BDIZ EDI), Board	none
Dr Markus Blume	none	none	Cranium GbR	none	none	none	Scientific focus: Dental transplantation, implantology, oral surgery Clinical focus: Dental transplantation, implantology, oral surgery Memberships: German Society of Oral Implantology (DGI), Professional Association of German Internists (BDI) training advisor Lead participation in further training/training institutions: Dental volume tomography (DVT) diagnostics, further education	Low, no consequence since no leadership role
Dr Martin Ullner	Association of Statutory Health Insurance	none	none	none	none	none	Scientific focus: none Clinical focus: none	Low, no consequence

	Consultant/expert activity	Participation in a scientific advisory board	Paid lecturing/or training activity	Paid author/-co-authorship	Research projects/ conducting clinical studies	Ownership interests (patent, copyright, shareholdings)	Indirect interests	Topics of the Guideline relating to conflicts of interest (COI), assessment regarding their relevance, consequence
	<p>Dentists of Hesse (KZVH)</p> <p>Board officer for Oral Surgery</p> <p>Member of the Joint Complaints Committee and scaling and root planting (SRP)</p> <p>State Dental Association of Hesse (LZKH)</p> <p>Further Education Committee for Oral Surgery</p> <p>Delegate Association of Statutory Health Insurance Dentists of Hesse (KZVH), State Dental Association of Hesse (LZKH)</p> <p>Delegate for Federal Dental Association (BZÄK)</p>						Memberships: Professional Association of German Oral Surgeons (BDO), 2. federal chair	since no leadership role

	Consultant/expert activity	Participation in a scientific advisory board	Paid lecturing/or training activity	Paid author/-co-authorship	Research projects/ conducting clinical studies	Ownership interests (patent, copyright, shareholdings)	Indirect interests	Topics of the Guideline relating to conflicts of interest (COI), assessment regarding their relevance, consequence
Dr Martin Bonsmann	none	none	German Society of Oral Implantology (DGI), German Society for Oral and Maxillofacial Surgery (DGMKG), State Dental Association North Rhine (ZÄK Nordrhein), State Dental Association Westphalia/Lippe (ZÄK Westfalen/Lippe), numerous firms such as: Camlog, Nobel, Geistlich, Hager + Meisinger, Straumann, Dental Ratio	Springer Verlag	none	none	Scientific focus: none Clinical focus: none Memberships: German Society for Oral and Maxillofacial Surgery (DGMKG), German Society of Oral Implantology (DGI)	Low, no consequence since no leadership role
Dr Eleonore Behrens	none	none	none	none	none	none	Scientific focus: none Clinical focus: none Memberships: none	none
Prof. Dr Florian Beuer, MME	none	Henry Schein, Prosec	Academy for Practice and Science (APW), IvoclarVivadent, German Society of Oral Implantology (DGI), Nobel Biocare, Oral Reconstruction Foundation (ORF)	none	IvoclarVivadent, ORF, German Society of Oral Implantology (DGI), Bego	Mitsui	Scientific focus: Implantology, implant prosthetics, digital dentistry Clinical focus: Implantology, implant prosthetics, digital dentistry Memberships: German Society of Oral Implantology (DGI), Prosec Scientific Board, ITI Lead participation in further training/training institutions: Head of Dentistry Charité University	Low, no consequence since no leadership role (advisory board not relevant to the topic)

	Consultant/expert activity	Participation in a scientific advisory board	Paid lecturing/or training activity	Paid author/-co-authorship	Research projects/ conducting clinical studies	Ownership interests (patent, copyright, shareholdings)	Indirect interests	Topics of the Guideline relating to conflicts of interest (COI), assessment regarding their relevance, consequence
							Medicine Berlin, Steinbeis University of Applied Sciences	
Prof. Dr Michael Gahlert	none	Journal Ceramic Implants and European Society of Ceramic Implants	Straumann Group Basel	Pre-reviewed journals	ITI	none	Scientific focus: Research regarding ceramic implants with diverse scientific publications Clinical focus: Oral surgery, implantology Memberships: ITI, German Society of Oral Implantology (DGI), European Society of Ceramic Implantology	Low, no consequence since no leadership role
Dr Karina Obreja	none	none	Dental Training Academy Hesse (FAZH)/State Dental Association of Hesse (LZKH)	National and international journals	none	none	Scientific focus: Oral surgery, implantology, peri-implant infections Clinical focus: Oral surgery, implantology, peri-implant infections Memberships: none	Low, no consequence since no leadership role
Katrin Reinicke	none	none	none	none	none	none	Scientific focus: none Clinical focus: none Memberships: none	none
PD Dr, Stefan Röhling	none	European Society for Ceramic Implantology , vice president	Straumann Group	none	International Team for Implantology	none	Scientific focus: Ceramic implants Clinical focus: Implantology Memberships: ITI, European Society for Ceramic Implantology, vice president, German Society of Oral Implantology (DGI), German Society for Dental, Oral and Maxillofacial Medicine (DGZMK)	Low, no consequence since no leadership role

	Consultant/expert activity	Participation in a scientific advisory board	Paid lecturing/or training activity	Paid author/-co-authorship	Research projects/ conducting clinical studies	Ownership interests (patent, copyright, shareholdings)	Indirect interests	Topics of the Guideline relating to conflicts of interest (COI), assessment regarding their relevance, consequence
Dr Navid Salehi	none	none	none	none	none	none	Scientific focus: none Clinical focus: none Memberships: Board member German Society for Dental Implantology (DGZI)	none
Prof. Dr Henrik Dommisch	District Court Berlin, Regional Court Berlin, CP-GABA GABA Prevention Award, German Cancer Aid, expert opinions for national and international journals (Journal of Clinical Periodontology, Journal of Periodontology, Journal of Periodontal Research, German Dental Journal (DZZ), PLOS One, Connective Tissue, Journal of Dental Research, Periodontology, Junger Zahnarzt, wissen kompakt)	Charité Research Commission, Journal of Quintessenz Verlag, Journal ZM (Dental Bulletins) up-2-date, Thieme Verlag, German Dental Journal (DZZ), Deutscher Ärzte-Verlag (German Medical Publishers)	State Dental Association Hesse (Zahnärztekammer Hessen), Further Education Institute, German Society for Endodontology and Dental Traumatology (Deutsche Gesellschaft für Endodontologie und Zahnärztliche Traumatologie), State Dental Association Hamburg (Zahnärztekammer Hamburg), State Dental Association Freiburg (Zahnärztekammer Freiburg), Association of German Dental Hygienists (Bund Deutscher Dentalhygieniker), German Society for Prosthetic Dentistry and Biomaterials (DGPro), European Membrane	J Periodontal Res., J Dent Res., Hum Mol Genet, J Clin Periodontol, J. Periodontol, Eur J Hum Genet, Periodontol 2000, Sci Rep., Clin Oral Investig, Clin Epigenetics, Cells Tissues Organs, Tissue Barriers, Hypertension, Int. Endod J., German Physician's Insurance (DÄV),	Company Kreussler Pharmaceuticals Company Novartis Charité Foundation (Stiftung Charité) German Research Foundation (Deutsche Forschungsgemeinschaft)	none	Scientific focus: Genetic risk factors of periodontitis, innate immune response of oral cells and tissues, nanocarriers in the context of anti-inflammatory treatment of oral inflammatory diseases Clinical focus: Treatment of periodontal and peri-implant diseases and conditions (resective and regenerative surgical treatment), endodontological treatment of pulpal and periapical diseases Memberships: German Society of Periodontology (DG Paro), Berlin Society of Periodontology (DG Paro), EFP, German Society for Dental, Oral and Maxillofacial Medicine (DGZMK), Working Group for Basic Research (AfG), IADR, German Society for Endodontology and Dental Traumatology (DGET) Lead participation in further training/training institutions: Clinical Director of Advanced Training for Dental Hygienists, Philipp Pfaff Institute, State Dental Association Berlin (Zahnärztekammer Berlin)	Low, drafting the Guideline in a team to minimise possible influences

	Consultant/expert activity	Participation in a scientific advisory board	Paid lecturing/or training activity	Paid author/-co-authorship	Research projects/ conducting clinical studies	Ownership interests (patent, copyright, shareholdings)	Indirect interests	Topics of the Guideline relating to conflicts of interest (COI), assessment regarding their relevance, consequence
			Society (EMS) Webinar, University of Freiburg PPI, State Dental Association Berlin (Zahnärztekammer Berlin), PPI, State Dental Association Berlin (Zahnärztekammer Berlin), Zeiss, German Society of Oral Implantology (DGI) curriculum, Professional Association of German Oral Surgeons (BDO), German Society for Oral and Maxillofacial Surgery (DGMKG), PPI, State Dental Association Berlin (Zahnärztekammer Berlin), PPI, State Dental Association Berlin (Zahnärztekammer Berlin), State Dental Association Hamburg (Zahnärztekammer Hamburg), State Dental Association Lower Saxony (Zahnärztekammer Niedersachsen), State Dental Association Upper Palatine (Zahnärztekammer	Quintessenz Verlage				

	Consultant/expert activity	Participation in a scientific advisory board	Paid lecturing/or training activity	Paid author/-co-authorship	Research projects/ conducting clinical studies	Ownership interests (patent, copyright, shareholdings)	Indirect interests	Topics of the Guideline relating to conflicts of interest (COI), assessment regarding their relevance, consequence
			Oberpfalz), State Dental Association Schleswig-Holstein (Zahnärztekammer Schleswig-Holstein), Neue Gruppe, Med Update, European Federation of Periodontology (EFP), State Dental Association Berlin (Zahnärztekammer Berlin), German Society for Periodontology (DG Paro), Academy for Practice and Science (APW)					
Dr Juliane Wagner	none	none	none	none	none	none	Scientific focus: Inflammation research, peri-implantitis, periodontitis Memberships: none	none
Dr Jochem König	none	none	none	none	none	none	Scientific focus: Biometric-methodological publications (network meta-analysis), participation in clinical studies and healthcare research projects as a methodologist Clinical focus: none Memberships: Work Group German Society for Medical Informatics, Biometry and Epidemiology (FG GMDS), German Region of the International Biometric Society (IBS-DR), Classification Society	none

	Consultant/expert activity	Participation in a scientific advisory board	Paid lecturing/or training activity	Paid author/-co-authorship	Research projects/ conducting clinical studies	Ownership interests (patent, copyright, shareholdings)	Indirect interests	Topics of the Guideline relating to conflicts of interest (COI), assessment regarding their relevance, consequence
							(Gesellschaft für Klassifikation), International Society for Computational Biology (ISCB)	
Dr Daniel Thiem	none	none	Sanofi	none	none	none	Memberships: Professional Association of German Oral Surgeons (BDO) Focus of scientific/clinical activity: Reconstructive surgery, dysgnathia surgery, implantology	No topical relevance to the Guideline, no consequence
Dr Ausra Ramanauskaitė, PhD	none	none	none	International journals	Osteology Foundation, Lucerne, Switzerland	none	Scientific focus: Aetiology, pathogenesis, diagnostics and treatment of peri-implant infections Clinical focus: Treatment peri-implant infections Memberships: none	No topical relevance to the Guideline, no consequence
Dr Weber, Anke	none	none	none	none	none	none	Member: German Society for Dental, Oral and Maxillofacial Medicine (DGZMK), Guideline officer Member: German Society for Dental, Oral and Maxillofacial Medicine (DGZMK), member Research activities: none Clinical activities: none Participation in continuous training/training: none Personal relationship: none	none

	Consultant/expert activity	Participation in a scientific advisory board	Paid lecturing/or training activity	Paid author/-co-authorship	Research projects/ conducting clinical studies	Ownership interests (patent, copyright, shareholdings)	Indirect interests	Topics of the Guideline relating to conflicts of interest (COI), assessment regarding their relevance, consequence
Dr Birgit Marré	Certified expert for forensic dental age assessment	none	none	none	Randomised Shortened Dental Arch (RaSDA) study	none	Member: German Society for Dental, Oral and Maxillofacial Medicine (DGZMK) - Guideline officer Member: German Society for Dental, Oral and Maxillofacial Medicine (DGZMK), Working Circle for Forensic Odontostomatology (AKFOS), German Society for Functional Diagnostics and Therapy (DGFDT), German Society for Prosthetic Dentistry and Biomaterials (DGPro), Working Group for the Further Development of Teaching in Dentistry (AKWLZ) - member Scientific activity: dental prosthetics Participation in continuous training/training: yes Personal relationship: none	none
Dr Wolfgang Neumann	none	none	none	none	none	none	Scientific focus: none Clinical focus: none Membership: Treasurer for European Association of Dental Implantologists (BDIZ EDI)	none
Prof. Dr Tobias Fretwurst	none	National Osteology Group Germany	Camlog Germany, ITI, Medentis, Osteology Foundation, Geistlich	none	Oral Reconstruction Foundation	none	Scientific focus: Peri-implantitis treatment, complex augmentation Clinical focus: Peri-implantitis treatment, complex augmentation Memberships: German Society of Oral Implantology (DGI) (not a mandate holder), German Society for Dental, Oral and Maxillofacial Medicine (DGZMK) (not a mandate holder),	No topical relevance to the Guideline, no consequence

	Consultant/expert activity	Participation in a scientific advisory board	Paid lecturing/or training activity	Paid author/-co-authorship	Research projects/ conducting clinical studies	Ownership interests (patent, copyright, shareholdings)	Indirect interests	Topics of the Guideline relating to conflicts of interest (COI), assessment regarding their relevance, consequence
							Dental Association Upper Rhine (Oberrheinische Zahnärztesgesellschaft) (scientific advisory board)	
Dr Carla Schliephake	none	none	none	none	none	none	none	none
Prof. Dr Ina Kopp	German Accreditation Body (DakKS)	aQua Institute (aQua-Institut), Scientific Advisory Board for the Institute for Quality and Transparency in Healthcare (IQTIG), German Agency for Quality in Medicine (ÄZQ), Austrian Society for Dermatology and Venereology (ÖGDV),	German Society of Oral Implantology (DGI), German Digital Healthcare Act (DVG), 32nd German Cancer Congress (Deutscher Krebskongress), Foundation for Health Knowledge (Stiftung Gesundheitswissen), State Medical Association Hesse (LÄK), Academy of Public Health (Akademie Öffentliches Gesundheitswesen), German Pain Congress (Deutscher Schmerzkongress), Evidence-based medicine Frankfurt (EBM Frankfurt), 33rd German Cancer Congress (Deutscher Krebskongress), European Union	Schattauer Verlag	German Cancer Aid (DKH), German Federal Ministry of Health (BMG), German Research Foundation (DFG)	none	Scientific focus: Guidelines, quality management, healthcare research Memberships: Working Group of Scientific Medical Societies in Germany (AWMF), Clinical Cancer Register, Extended Planning Group for the Programme for National Health Services of the Federal Dental Association (BZÄK), National Association of Statutory Health Insurance Physicians (NASHIP) and Working Group of Scientific Medical Societies in Germany (AWMF), Steering Committee for the Guideline programme Oncology of the German Cancer Society, German Cancer Aid and Working Group of Scientific Medical Societies in Germany (AWMF), Steering Committee of the Cooperation Network for Quality Assurance through Clinical Cancer Registers, Standing Committee for the Guidelines for the Working Group of Scientific Medical Societies in Germany (AWMF) (Vice- Chair) Guidelines International Network, German Evidence-Based Medicine Network, German Society for Surgery, Expert Advisory Board for the National Healthcare Guidelines Programme of the Federal Dental Association (BZÄK), National Association of Statutory Health Insurance	none

	Consultant/expert activity	Participation in a scientific advisory board	Paid lecturing/or training activity	Paid author/co-authorship	Research projects/ conducting clinical studies	Ownership interests (patent, copyright, shareholdings)	Indirect interests	Topics of the Guideline relating to conflicts of interest (COI), assessment regarding their relevance, consequence
			Member State Exit (EUMSE) coordination, Institute for Medical Biostatistics, Epidemiology and Informatics (IMBEI), 34th Annual Meeting of the Ltd. (Jahrestagung AG der Ltd.) Hospital Doctors				Physicians (NASHIP) and Working Group of Scientific Medical Societies in Germany (AWMF) Lead participation in further training/training institutions: Guideline seminars of the Working Group of Scientific Medical Societies in Germany (AWMF) for guideline developers and the curriculum for guideline consultants, advanced seminars of the guidelines of the Working Group of Scientific Medical Societies in Germany (AWMF) for guideline developers, workshops of the guideline programme oncology	
Dr Cathleen Mueche-Borowski	none	none	Antibiotic Stewardship (ABS) course Bonn of the Westphalia-Lippe Pharmacy Foundation (Apothekerkammer Westfalen-Lippe), Berlin University of Mainz	none	German Research Foundation (DFG), German Federal Ministry of Education and Research (BMBF), Federal Joint Committee (G-BA) (Innovation Fund), Institute for Quality and Efficiency in Healthcare (IQWiG), Central Institute (Zi), Association of Statutory Health Insurance Physicians Hesse (KVH), Association of Statutory Health Insurance Physicians Schleswig-Holstein (KV-SH), National	none	Scientific focus: Co-author Multimorbidity Guideline, lead author publication on Multimorbidity Guideline, co-author Working Group of Scientific Medical Societies in Germany (AWMF) rulebook, publications on Allergy Prevention Guidelines, author Protection from Over- and Underuse Guideline, lead author publication on Protection from Over- and Underuse Guideline Clinical focus: none Memberships: German Network for Evidence-based Medicine (DNEbM), German Society for Epidemiology (DGEpi), German Health Literacy Network (DNGK), Westphalia-Lippe Pharmacy Foundation (Apothekerkammer Westfalen-Lipp), Berlin	none

	Consultant/expert activity	Participation in a scientific advisory board	Paid lecturing/or training activity	Paid author/-co-authorship	Research projects/ conducting clinical studies	Ownership interests (patent, copyright, shareholdings)	Indirect interests	Topics of the Guideline relating to conflicts of interest (COI), assessment regarding their relevance, consequence
					Association of Statutory Health Insurance Physicians (KBV), Authority for Labour, Social Affairs, Family and Integration (BASFI) Hamburg, German Society for General Practice/Family Medicine (DEGAM), Unna Foundation (Unna-Stiftung)			
Dr Monika Nothacker, MPH	none	1. Healthcare research project "ZWEIT" (relevance of second opinions) no remuneration 2. Healthcare research project INDiQ (Measurement of Indication Quality from Routine Data) –	Berlin School of Public Health	none	German Cancer Society (DKG) 1. Network University Medicine German Federal Ministry of Health (BMG) 2. Network University Medicine Federal Joint Committee (G-BA) Innovation Fund	none	Scientific focus: Guidelines and guideline methodology Prioritisation of guideline recommendations (Making smart decisions together), quality indicators, topic-related reviews Clinical focus: none Memberships: German Network for Evidence-based Medicine (Deutsches Netzwerk Evidenzbasierte Medizin) (member) German Cancer Society (Deutsche Krebsgesellschaft) (member until Dec 2020) Guidelines International Network/GRADE Working Group (member) Lead participation in further training/training institutions: Guideline seminar for guideline developers/consultants as part of the curriculum for guideline consultants of the Working Group of	none

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		remuneration 5000 euros institutional 3. Steering Committee National Cancer Plan no remuneration IQTIG					Scientific Medical Societies in Germany (AWMF) 1 – 3/Year	
Prof. Dr Michael Stimmelmayr	Geriatric Oral Research Group (GORG)	ORF Board	Camlog, Geistlich	none	none	none	Scientific focus: Implant surgery, augmentation surgery, implant prosthetics, plastic PA surgery Clinical focus: Implantology, periodontology, implant prosthetics Memberships: German Society of Oral Implantology (DGI), German Society for Dental, Oral and Maxillofacial Medicine (DGZMK), Dental Working Group Kempten (ZAK Kempten), Professional Association of German Oral Surgeons (BDO), Neue Gruppe	No topical relevance to the Guideline, no consequence
Lorena Cascant Ortolano	none	none	none	none	none	none	none	none
Prof. Dr Benedikt Spies	none	none	none	None, industrial	Oral Reconstruction Foundation	none	none	none

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PD Dr MSc Kathrin Becker	Osteology Foundation (Scientific Review Board)	Osteology Foundation (Expert Council)	Osteology Foundation (Osteology Research Academy)	none	Straumann AG, Dentaaid AG, Dentsply Sirona AG	none	<p>Scientific focus: Skeletal anchorage, 3D imaging, micro-CT</p> <p>Clinical focus: Orthodontics, treatment of patients with oral and craniofacial dysfunctions, skeletal anchorage</p> <p>Memberships: EAO, EAO Congress Committee, EAO Junior Committee, German Society of Oral Implantology (DGI), Stakeholder EAO for the European Society of Endodontology (ESE) Consensus Conference January 2023, Statistician Consensus Conference of German Society of Oral Implantology (DGI)/Osteology/Spanish Society of Periodontics and Osseointegration (SEPA) 2022</p> <p>Lead participation in further training/training institutions Committee for Curriculum Development for Licensing Regulations (University of Düsseldorf)</p> <p>Personal relationships (as partner or first-degree relatives) with representatives of a healthcare company:</p> <p>My husband owns shares/equities in the company Easy Radiology GmbH/Smart in Media AG</p>	No topical relevance to the Guideline, no consequence
Prof. Dr Christopher Lux	Member of the Board of Directors of the Academy for Further Dental Education in	Advisory board of the journal Oral Prophylaxis and Paediatric	Lectures for diverse state dental associations (Landeszahnärztekammer) and scientific societies (e.g., German	none	none	none	Membership of the German Society for Orthodontics (DGKFO) and Association of University Teachers for Dentistry, Oral Medicine and Maxillofacial Medicine (VHZMK)	none

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	Karlsruhe (Akademie für zahnärztliche Fortbildung Karlsruhe) and of the Orthodontics Further Education Committee (both belong to the State Dental Association (LZK) Baden-Württemberg) Attendance fees no relevance to the Guideline	Dentistry (Oralprophylaxe und Kinderzahneilkunde) no relevance to the Guideline	Society for Paediatric Dentistry (DGKiZ), German Society for Aesthetic Dentistry (DGÄZ) Lecture remuneration according to the state dental association (Landeszahnärztekammer) or the scientific society no direct relevance to the Guideline – topics of the Guideline (e.g., appropriate time of treatment, aplasia, etc.) are partly included in lectures				scientific activity: Studies about the effectiveness of certain orthodontic (KFO) appliances clinical activity: incl. functional orthodontics and dental trauma topic could be relevant to the Guideline	
Dr Silke Auras	none	none	none	none	none	none	Guideline officer of the German Society for Dental, Oral and Maxillofacial Medicine (DGZMK), Research activities: none Participation in continuous training/training: none Personal relationship: none	none
PD Dr Stefan Wentaschek	District courts Koblenz, Marburg, Zweibrücken	Reviewer for professional dentistry journals	25th Greifswald Symposium 2022, State Dental Association (LZÄK) Rhineland-Palatine, Implant	none	In vitro trials hybrid implant crowns	none	Clinical focus: Planning and implementation of tooth- and implant-supported dentures	No topical relevance to the Guideline, no consequence

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			Royally Seminar (Fürstlich Implantieren Seminar) 2020 – 2022, Study group Hofheim 2021, ITI Congress 2021, Straumann SMART 2.0, German Society of Oral Implantology (DGI) Online Event and Quality Circle 2020, Association of Democratic Dentistry (VDZM)/German Working Group on Dentistry (DAZ) 2019, Free Association of German Dentists (FVDZ) 2019, Academy for Practice and Science (APW) 2019		In vitro trials implant-abutment connections Patient studies immediate loading			
Prof. Dr Robert Nölken	none	none	Dentsply Sirona, ITI	none	Dentsply Sirona	none	Scientific focus: Immediate implantation Clinical focus: Immediate implantation and immediate restoration Memberships: none Lead participation in further training/training institutions: Courses with Dentsply + ITI	No topical relevance to the Guideline, no consequence
Prof. Dr Ralf Kohal	none	none	Zahngipfel (summit on dentistry), SIC invent AG	none	none	none	Scientific focus: Ceramic implants: preclinical and clinical studies – some publications on ceramic implants	none

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							<p>Clinical focus: prosthetic dentistry – care of edentulous and partially edentulous patients; care of (ceramic) implants</p> <p>Memberships: German Society for Dental, Oral and Maxillofacial Medicine (DGZMK), German Society of Periodontology (DG Paro), German Society of Oral Implantology (DGI), IADR, EAO, European Society for Ceramic Implant Dentistry (ESCI)</p> <p>Lead participation in further training/training institutions: Clinic for Dental Prosthetics, University of Freiburg, senior consultant</p>	
Dr Dipl.-Inf. Kawe Sagheb	none	none	none	none	none	none	<p>Scientific focus: dental prosthetics</p> <p>Clinical focus: dental prosthetics</p> <p>Memberships: German Society for Dental, Oral and Maxillofacial Medicine (DGZMK), German Society for Prosthetic Dentistry and Biomaterials (DGPro), German Society for Computer-Assisted Dentistry (DGCZ)</p>	none

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