

Periodontitis: all change please? Introduction to the new S3-level treatment guidelines

Précis: This article reviews the recently published EFP S3-level clinical practice guideline for the management of Stage I-III periodontitis, highlighting aspects of interest to dental professionals.

Abstract: In 2020, the European Federation of Periodontology published an S3-level clinical practice guideline for the management of Stage I-III periodontitis. This guideline discusses four steps of periodontal therapy and provides 62 individual recommendations for prevention and management of disease. Supporting information about the strength of recommendation and level of consensus for each recommendation is also provided. The S3 guideline represents a major milestone in the specialty, and is likely to play a major role in enhancing and standardising the approach to periodontal care among educators and clinicians. This article provides a review of the meeting framework and a commentary on the clinical practice guideline, highlighting key recommendations of interest to the dental team in each treatment step.

Introduction and background

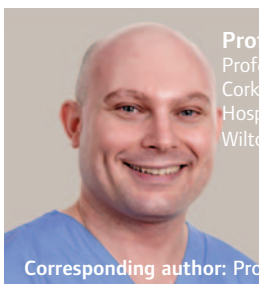
In November 2019, a European Federation of Periodontology (EFP)-led workshop was held in Spain to form a consensus on clinical guidelines for the treatment of periodontitis. This was the first attempt to produce an evidence-based treatment guideline to assist clinicians in their management of patients with Stage I-III periodontitis. The 15 systematic reviews that were undertaken to form the basis of the treatment guideline documents were subsequently published in July 2020.¹

The guideline recommends four steps of periodontal therapy, to be undertaken sequentially, alongside 62 individual recommendations that are rated according to the strength of consensus and grade of recommendation of each working group. The purpose of this article is to raise awareness among all clinicians in relation to contemporary thinking in the treatment of periodontitis, and to summarise the key aspects of the guideline document. The Spanish, German and British periodontal societies have been working through an 'adoption' process (adopt-adapt-develop) as part of implementation within their local frameworks, with publications emerging.



Ninety experts met in November 2019 at the European Federation of Periodontology (EFP)-led workshop in Spain, to form a consensus on clinical guidelines for the treatment of periodontitis.

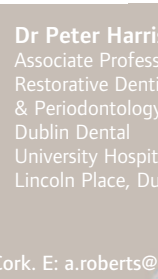
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Table 1: Grading scheme used for treatment guidelines (grade of each recommendation provided in online edition).

Grade of recommendation	Description	Syntax
A	Strong recommendation	We recommend (↑↑) We recommend not to (↓↓)
B	Recommendation	We suggest (↑) We suggest not to (↓)
0	Open recommendation	May be considered (↔)

Overview of the new framework

It is important to understand that a rigorous approach was undertaken to derive the clinical practice guideline. The guideline is 'S3-level', which is the highest quality level for the formulation and development of guidelines and centres on periodontitis Stages I (mild), II (moderate) and III (severe), as outlined in the 2017 classification of periodontal and peri-implant diseases and conditions.^{3,4} Several articles have recently been published in this *Journal* to summarise the 2017 classification,^{5,6} and to provide case examples of its suggested implementation in dental practice.^{7,8}

Alongside the sequential treatment steps in the EFP clinical treatment guideline, the original publication also provides the 'Grades of

Recommendation' and 'Strength of Consensus'. The recommendations consider the evidence but also cost-effectiveness and environmental effects. For example, recommendations on the use of systemic antibiotics were formed in the context of the impact of antibiotic stewardship. Clinicians can interpret the strength of recommendation using grades provided by the workshop (Table 1). The clinical guideline does not provide information on Stage IV periodontitis, which is the most severe disease with the potential for loss of the dentition and with complexities that need greater consideration. This will be the subject of a separate workshop and further EFP publication in due course, since Stage IV cases will frequently require prosthodontic, orthodontic and implant treatments as part of overall management.

The four treatment steps

Patients with periodontitis Stages I-III should be treated utilising a step-wise approach to therapy. Each step includes different interventions and builds incrementally on previous steps; the disease stage and response to treatment will impact on the interventions required.

Clinicians should discuss the periodontal diagnosis, risk factors, treatment alternatives, and the risks and benefits of treatment with each patient, and then agree a personalised care plan for each patient. A summary of the treatment steps approach is outlined in Table 2.

Table 2: Explanation of treatment steps approach.

Treatment step	Aim	Comments	Considerations
1	Guide behavioural change by motivating the patient to undertake: - supra-gingival biofilm removal; and, - risk factor control.	All periodontal patients (irrespective of stage) - Reviewed and reinforced regularly - This step is critical to allow appropriate response to ensuing steps	May include: - supragingival biofilm control; - OHI +/- adjunctive therapies for gingival inflammation; - clinician removal of supragingival plaque and calculus + plaque-retentive features that impair OH; and, - risk factor control – behaviour change to eliminate/mitigate risk factors for onset/progression of disease (e.g., smoking cessation, improved metabolic control of diabetes).
2	Control/eliminate subgingival biofilm and calculus (i.e., subgingival instrumentation).	All periodontal patients (irrespective of stage) - Individual response assessed once tissues are healed (periodontal re-evaluation) to assess if desired end points of therapy achieved	What are the desired end-points of therapy?: - no PPD >4mm with BOP; and, - no PPD >5mm. Scenario A: End points achieved → Enrol patient in supportive periodontal care (SPC) Scenario B: End points not achieved → Step 3
3	Treatment of areas not responding adequately to Step 2: allow further access to subgingival instrumentation.	- Patients with non-responding sites – not all patients require this step - Individual response assessed once tissues are healed (periodontal re-evaluation) - Ideally, this step should achieve desired end points of therapy	- Repeated sub-gingival instrumentation - Surgery (performed by a periodontal specialist or a dentist with additional appropriate training): - access flap; - resective surgery; and, - regenerative surgery.
4	Maintain periodontal stability in treated periodontal patient.	All treated periodontal patients - Delivered regularly and personalised to patient's needs - Combines preventive (Step 1) and therapeutic (Step 2) interventions (depending on perio status)	Characterise patient needs in association with assessment of periodontitis stability: - stable; - remission; or, - unstable.

Table 3: Summary of key recommendations.

Focused questions			Expert consensus-based recommendation
Intervention: supragingival dental biofilm control (by the patient)	1.1	What are the adequate oral hygiene practices of periodontitis patients in the different steps of periodontitis therapy?	We recommend that the same guidance on oral hygiene practices to control gingival inflammation is enforced throughout all the steps of periodontal therapy including supportive periodontal care.
Intervention: supragingival dental biofilm control (professional)	1.4	What is the efficacy of supragingival professional mechanical plaque removal (PMPR) and control of retentive factors in periodontitis therapy?	We recommend supragingival professional mechanical plaque removal (PMPR) and control of retentive factors, as part of the first step of therapy.
Intervention: risk factor control	1.6	What is the efficacy of tobacco smoking cessation interventions in periodontitis therapy?	We recommend tobacco smoking cessation interventions to be implemented in patients undergoing periodontitis therapy.
General recommendations for periodontal surgical procedures	3.6	What is the importance of adequate self-performed oral hygiene in the context of surgical periodontal treatment?	We recommend not to perform periodontal (including implant) surgery in patients not achieving and maintaining adequate levels of self-performed oral hygiene.
Intervention: management of furcation lesions	3.10	What is the adequate management of molars with Class II and III furcation involvement and residual pockets?	We recommend that molars with Class II and III furcation involvement and residual pockets receive periodontal therapy.
Supportive periodontal care: preliminary considerations	4.1	At what intervals should supportive periodontal care visits be scheduled?	We recommend that supportive periodontal care visits should be scheduled at intervals of three to a maximum of 12 months and ought to be tailored according to the patient's risk profile and periodontal conditions after active therapy.
Intervention: supragingival dental biofilm control (by the patient)	4.4	How should we choose an appropriate design of manual, powered toothbrushes and interdental cleaning devices?	We recommend taking into account patients' needs and preferences when choosing a toothbrush design, and when choosing an interdental brush design.
	4.6	How should interdental cleaning be performed?	If anatomically possible, we recommend that tooth brushing should be supplemented by the use of interdental brushes.
Intervention: risk factor control	4.18	What is the role of tobacco smoking cessation interventions in SPC?	We recommend tobacco smoking cessation interventions to be implemented in periodontitis patients in supportive periodontal care.
Examples of the most relevant recommendations (as determined by the authors) to general dental practitioners with 'Grade A/Strong recommendation' and with a 'Strong' or 'Unanimous consensus'.			

Recommendations by treatment step

The following sections describe the four steps of periodontitis management, as well as highlighting those elements of most interest to clinicians. A summary of key recommendations is presented in **Table 3**. A more detailed table, which overviews the individual recommendations – including information on the grade of recommendation and strength of consensus associated with each – is presented as an Appendix to this paper (**Appendix 1 – available on www.jida.ie**).

STEP 1: Guiding behaviour change by motivating the patient to undertake successful removal of supragingival dental biofilm and risk factor control.

Number of recommendations: 10.

Most relevant to dental healthcare professionals in daily practice: Questions 1.1, 1.4, 1.6, 1.7.

Summary

There was strong consensus that professional oral hygiene instruction (OHI) should be provided to patients; the same guidance can be provided/reinforced throughout the steps of care. Patients should be motivated to engage in the behavioural changes needed to maintain good plaque control.

There was unanimous consensus on the role of supragingival instrumentation to remove biofilm and calculus deposits (now often referred to as professional mechanical plaque removal, or PMPR) as an essential component of the first step of therapy. Plaque-retentive factors associated with inadequate restorative margins or complex tooth anatomy should also be addressed at this stage.

The workshop also strongly supported risk factor control interventions as part of the first step of therapy. Aligning with the formal incorporation of smoking and diabetes as risk factors for periodontitis in the 2017 classification, the workshop recommended implementation of tobacco smoking cessation interventions and diabetes control interventions in patients undergoing therapy for periodontitis. Conversely, consensus indicates that in the case of interventions aimed at increasing physical exercise, dietary counselling or interventions aimed to deliver weight loss through lifestyle modification, additional research is required before we can confirm that these methods may have a positive effect in periodontitis therapy.

STEP 2: Cause-related therapy, aimed at controlling (reducing/eliminating) the subgingival biofilm and calculus (subgingival instrumentation).

Number of recommendations: 16.

Most relevant to dental healthcare professionals in daily practice: Questions 2.3, 2.4, 2.7, 2.16.

Summary

There was unanimous consensus on the beneficial effect of subgingival instrumentation for the treatment of periodontitis. Subgingival instrumentation delivers pocket depth reduction and reduction in inflammation (as evidenced through reductions in bleeding on probing, or BOP). The desired end point of treatment is “pocket closure”; in periodontitis patients, this refers to probing pocket depths ≤ 4 mm and absence of BOP.

Subgingival instrumentation can be performed with hand or powered instrumentation, alone or in combination, and evidence suggests that treatment outcomes are not dependent on whether instrumentation is provided in a traditional quadrant-wise protocol or using a full-mouth treatment protocol (i.e., within 24 hours).

The workshop considered newer treatment approaches that have been suggested as adjuncts to subgingival instrumentation. There is insufficient clinical evidence to recommend adjunctive use of lasers and photodynamic therapy. Furthermore, in the context of the paucity of information on patient-reported outcomes, and the additional costs associated with use of these adjunctive approaches, the workshop consensus is to suggest not to use these adjunctive approaches in periodontitis patients, based on current evidence. The workshop also considered a variety of agents proposed in the literature as adjuncts to subgingival instrumentation (including but not limited to statins, probiotics, sub-antimicrobial-dose doxycycline, bisphosphonates and NSAIDs). Participants concluded that use of these agents adjunctive to subgingival instrumentation is not recommended at this time. Conversely, the use of antiseptic agents, specifically chlorhexidine mouth rinses, may be considered as a time-limited adjunctive agent to instrumentation in selected cases.

Adjunctive use of locally and systemically delivered antimicrobial agents was also considered. Locally delivered sustained-release chlorhexidine and specific antimicrobials may be considered as adjuncts to subgingival instrumentation in periodontitis patients. However, it must be recognised that evidence to support the benefit of such agents is generally short term (six to nine months), and in addition to a paucity of longer-term data, research study designs in this area exhibit significant heterogeneity. Consequently, the workshop provided open recommendations on this subject. Due to concerns about the impact of their use on patients (through side effects) and public health (through antibiotic resistance), routine adjunctive use of systemic antibiotics is not recommended, despite some evidence to suggest that clinical outcomes may be improved with some antibiotic agents. The use of systemic antibiotics may still be considered in specific categories of patients, for example in young patients with generalised severe (Stage III) periodontitis.

STEP 3: Treating areas that do not respond adequately to the second step of therapy, to gain further access to subgingival instrumentation or aiming at regenerating or resecting lesions that add complexity to the management of periodontitis (intra-bony and furcation lesions).

Number of recommendations: 16.

Most relevant to dental healthcare professionals in daily practice: Questions 3.1, 3.3, 3.6, 3.10.

Summary

Step 3 considers evidence on a range of interventions, which may or may not be necessary following completion of steps 1 and 2. A full periodontal re-evaluation, carried out three months after the completion of Step 2, is a prerequisite before potentially progressing to Step 3.

The guideline suggests that residual pockets of 4-5mm should be managed by repeated subgingival instrumentation with or without adjunctive therapies, whereas pocketing of ≥ 6 mm would benefit from surgical management, such as access flap surgery, resective periodontal surgery (pocket elimination), or regenerative periodontal surgery. The guideline recommends that surgical periodontal procedures be performed by a periodontal specialist, or a dentist with the additional appropriate training.

Periodontal surgery should be considered on a patient-, tooth-, and defect-specific basis. The desired end point of Stage 3 is the same as Stage 2 (pocket depths ≤ 4 mm and absence of BOP); however, this may be more difficult to achieve based on severity and extent of disease. Some of the key recommendations in relation to specific periodontal surgery procedures included:

- ▶ evidence favoured resective (pocket elimination) periodontal surgery over access flap surgery – this is due to the observed greater pocket probing depth reduction; however, a greater increase in gingival recession

associated with resective procedures should be a consideration;

- ▶ there was strong consensus that surgery should not be considered in patients who do not achieve and maintain adequate levels of self-performed oral hygiene; and,
- ▶ periodontal surgery should be considered in teeth with residual pocketing associated with Grade II and III furcation involvement – furcation involvement itself should **not** be considered an indication for extraction of teeth.

STEP 4: Supportive periodontal care (SPC), aimed at maintaining periodontal stability in all treated periodontitis patients, combining preventive and therapeutic interventions defined in the first and second steps of therapy, depending on the gingival and periodontal status of the patient's dentition.

Number of recommendations: 20.

Most relevant to dental healthcare professionals in daily practice: Questions 4.1, 4.4, 4.6, 4.11, 4.18, 4.19.

Summary

SPC comprises the continued monitoring of periodontal health, reinforcement of OHI, patient motivation towards continuous risk factor control, professional mechanical plaque removal, and localised subgingival instrumentation at residual pockets if required. In statements analogous to those for Step 1 of therapy, there was strong recommendation and strong consensus on the value of risk factor control and interventions for tobacco smoking cessation in SPC, with more limited evidence to suggest that periodontitis patients may benefit from promotion of diabetes control. Additional research is needed to determine if interventions aimed at increasing physical exercise, dietary counselling, or interventions aimed to deliver weight loss through lifestyle modification, may have a positive effect in SPC.

Regarding SPC interval, evidence suggested a patient-specific approach of between three and 12 months, with individual frequency determined by each patient's risk profile and periodontal status after Steps 1, 2 (and 3). Evidence suggested that SPC every three months may be sufficient to control periodontitis progression after periodontal surgery.

The guideline also covered practical issues such as professional oral hygiene recommendations. There was strong consensus that a powered toothbrush may be considered as an alternative to a manual toothbrush during SPC. Toothbrushing should also be accompanied by the use of interdental brushes (where anatomically possible) for all patients in SPC. However, there was unanimous consensus that the use of dental floss as the first choice method of internal dental cleaning should **not** be recommended. The use of other dental cleaning aids for interdental areas not reachable by brushes should be considered. There was consensus that use of adjunctive antiseptics may be considered in specific cases to help control gingival inflammation during SPC.

Comments and implications for dental practice

The EFP S3-level clinical treatment guideline summarised here represents the first comprehensive, evidence-based guideline for the management of patients with periodontitis. The guideline aims to improve the overall quality of periodontal treatment in Europe, reduce associated tooth loss, and improve overall systemic health and quality of life. The guideline currently applies to periodontitis Stage I-III, with a further workshop planned for the management of Stage IV periodontitis (2022). Stage IV periodontitis presents unique challenges due to the associated complex restorative rehabilitation issues, necessitating a multidisciplinary approach to management.

The workshop revealed areas of periodontitis management where there was currently lack of evidence, which meant that consensus on a recommendation was difficult to achieve. There was recognition that as future evidence emerges this may change, and guidelines should evolve as the evidence does.

From the practitioner's perspective, it is important to note that the S3-level treatment guidelines are indeed just that: 'guidelines'. Individual judgement and adaptation can of course be applied at the practitioner's discretion. However, the fact that these guidelines now exist and are currently being adopted by national societies and stakeholders across multiple European jurisdictions allows for standardisation and transparency in our approach to the management of periodontitis. This will be of benefit to both patients and practitioners alike.

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Quiz answers



Questions on page 240

1. Radiographs, and sensibility testing of associated teeth.
2. A poorly defined unilocular radiolucency affecting LR2, LR1, LL1, LL2. This does not cause resorption of the associated dentition; however, it does appear to have caused mild displacement of LR2.
3. Referral to your local oral and maxillofacial surgery unit for urgent biopsy.
4. In the oral soft tissues, gingiva is the most common site. This suggests the possible role of inflammation in attraction of pre-circulating malignant cells. Lesions regularly mimic simple odontogenic infections.