DISCUSSION

EVIDENCE-BASED CLINICAL PRACTICE GUIDELINE FOR TREATMENT OF STAGE IIII PERIODONTITIS

PURPOSE/QUESTIO This review aims to summarize the clinical guidelines and recommendations for the treatment of Stage IIII periodontitis developed and overseen by the European Federation of Periodontology (EFP) Workshop Committee.

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Article Title and Bibliographic Information
Sanz M, Herrera D, Kebschull M, Chapple I, Jepsen S, Berglund T, Sculean A, Tonetti MS; EFP Workshop Participants and Methodological Consultants. Treatment of stage I-III periodontitis-The EFP S3 level clinical practice guideline. J Clin Periodontol. 2020 Jul;47 Suppl 22:4–60. doi: 10.1111/jcpe.13290. PMID: 32,383,274.

SORT SCORE

A	B	C	N/A

SORT, Strength of Recommendation Taxonomy.

LEVEL OF EVIDENCE

NA

See article 101482 for complete details regarding SORT and LEVEL OF EVIDENCE grading system.

SUMMARY

Subjects or Study Selection

Well-established guidelines from major periodontal societies in the world were electronically searched for potentially applicable guideline texts for critical appraisal. A total of 15 systematic reviews (SRs) were conducted to support the development of the guideline, and all SRs utilized electronic search of at least two different databases, supplemented by a manual search of periodontal journals and the reference lists of included studies. Evidence-based statements were established using the results from the 15 SRs, and the recommendations were debated and voted by the guideline panel to ensure the quality of the scientific evidence and the strength of the consensus.

Key Study Factor

The European Federation of Periodontology (EFP) invited delegates who are experts in the periodontology field to participate in the development of clinical guidelines and consensus for treatment of stages I-III periodontitis. This article is intended to help clinicians in decision-making when developing treatment plans for patients with stages I–III periodontitis.[1] This present guideline did not provide direct recommendations for treatment of the following: gingivitis, stage IV periodontitis, necrotizing periodontitis, periodontitis as manifestation of systemic diseases, and mucogingival deformities.

The grading scheme of the strength of the recommendations:

1) A: Strong recommendation **to** (↑↑) or **not to** (↓↓)
2) B: Recommendation **to** (↑) or **not to** (↓)
3) 0: Open recommendation, may be considered, unclear and additional research needed

SOURCE OF FUNDING
Internal funds of the European Federation of Periodontology.

TYPE OF STUDY/DESIGN
Clinical guideline and recommendations developed based on 15 systematic reviews and consensus from the experts in the field of periodontology.

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KEYWORDS
Periodontitis, Guideline, Systematic review, Therapy

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The strength of consensus based on the voting from the expert members was guided by the following:

1) Unanimous consensus: Agreement of 100% of participants.
2) Strong consensus: Agreement of > 95% of participants.
3) Consensus: Agreement of 75%-95% of participants.
4) Simple majority: Agreement of 50%-74% of participants.
5) No consensus: Agreement of < 50% of participants.

Main Outcome Measure

For the development of this clinical practice guideline, probing depth (PD) reduction was used as the primary outcome. When reviewing regeneration procedures, clinical attachment level (CAL) gains were utilized as the outcome measure. Only studies with a minimal follow-up period of at least 6 months were included.

Main Results

Sequence for the treatment of periodontitis stages I, II and III:

Step 1: Guide behavior changes in patients: provide the periodontitis patients with the adequate preventive and health promotion tools to facilitate his/her compliance with the control of supragingival dental biofilm and related local and systemic risk factors. Frequent review with the patient is essential to ensure continuation of motivation and adherence.

- Supragingival dental biofilm control.
  Interventions to improve the effectiveness of oral hygiene [motivation, instructions (oral hygiene instructions, OHI)].
  Adjunctive therapies for gingival inflammation.
  Eliminating/mitigating the recognized risk factors for periodontitis onset and progression.

Step 2: Cause-related therapy: reducing/eliminating the subgingival biofilm and calculus (subgingival instrumentation). In addition to this, the following interventions may be included:

- Use of adjunctive physical or chemical agents.
- Use of adjunctive host-modulating agents (local or systemic).
- Use of adjunctive subgingival locally delivered antimicrobials.
- Use of adjunctive systemic antimicrobials.

Periodontal re-evaluation should be carried out after the therapy and when the periodontal tissue has healed. Patients who do not demonstrate periodontal stability should be considered moving forward with the step 3 therapy; patients who has been successful in achieving the endpoints of therapy can be placed on supportive periodontal care (step 4).

Step 3: This phase of therapy is aimed at treating the areas not responding adequately to the second step of therapy, such as dentitions with presence of pockets ≥4 mm with bleeding on probing or presence of deep periodontal pockets (≥6 mm). It may include the following interventions:

- Repeated subgingival instrumentation with or without adjunctive therapies.
- Access flap periodontal surgery.
- Resective periodontal surgery.
- Regenerative periodontal surgery.

Step 4: Supportive periodontal care: maintain periodontal stability in all treated periodontitis patients combining preventive and therapeutic interventions.

The following table summarizes the statements from the workshop and their strength of the evidence and consensus.

Statement	Strength of the recommendations	Strength of consensus
Step 1: Guide behavior changes in patients		
1.1 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.	Grade A ↑↑	Strong
1.2 We *recommend* emphasizing the importance of oral hygiene and engaging the periodontitis patient in behavioral change for oral hygiene improvement.	Grade A ↑↑	Strong
1.3 To improve patient's behavior towards compliance with oral hygiene practices, psychological methods such as motivational interviewing or cognitive behavioral therapy *have not* shown a significant impact.	Grade 0	Strong
1.4 We *recommend* supragingival professional mechanical plaque removal (PMPR) and control of retentive factors, as part of the first step of therapy.	Grade A ↑↑	Unanimous
1.5 We *recommend* risk factor control interventions in periodontitis patients, as part of the first step of therapy.	Grade A ↑↑	Strong
1.6 We *recommend* tobacco smoking cessation interventions to be implemented in patients undergoing periodontitis therapy.	Grade A ↑↑	Unanimous
1.7 We *recommend* diabetes control interventions in patients undergoing periodontitis therapy.	Grade A ↑↑	Consensus
1.8 We *do not know* whether interventions aimed to increasing the physical exercise (activity) have a positive impact in periodontitis therapy.	Grade 0	Consensus
1.9 We *do not know* whether dietary counselling may have a positive impact in periodontitis therapy.	Grade 0	Consensus
1.10 We *do not know* whether interventions aimed to weight loss through lifestyle modification may have a positive impact in periodontitis therapy.	Grade 0	Strong
Step 2: Cause-related therapy		
2.1 We *recommend* that subgingival instrumentation *be employed* to treat periodontitis in order to reduce probing pocket depths, gingival inflammation and the number of diseased sites.	Grade A ↑↑	Unanimous
2.2 We *recommend* that subgingival periodontal instrumentation *is performed* with hand or powered (sonic/ultrasonic) instruments, either alone or in combination.	Grade A ↑↑	Unanimous
2.3 We *suggest* that subgingival periodontal instrumentation *can be performed* with either traditional quadrant-wise or full mouth delivery within 24 h.	Grade B ↑	Strong
2.4 We *suggest not to use* lasers as adjuncts to subgingival instrumentation.	Grade B ↓	Simple majority
2.5 We *suggest not to use* adjunctive antimicrobial photodynamic therapy (aPDT) at wavelength ranges of either 660-670 nm or 800-900 nm in patients with periodontitis.	Grade B ↓	Consensus
2.6 We *recommend not to use* local administration of statin gels (atorvastatin, simvastatin, rosuvastatin) as adjuncts to subgingival instrumentation.	Grade A ↓↓	Strong consensus

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Statement	Strength of the recommendations	Strength of consensus
2.7 We *suggest not to use* probiotics as an adjunct to subgingival Instrumentation	Grade B ↓	Consensus
2.8 We *suggest not to use* systemic sub-antimicrobial dose doxycycline (SDD) as an adjunct to subgingival instrumentation.	Grade B ↓	Consensus
2.9 We *recommend not to use* locally delivered bisphosphonate (BP) gels or systemic BPs as an adjunct to subgingival instrumentation.	Grade A ↓↓	Strong consensus
2.10 We *recommend not to use* systemic or local non-steroidal anti-inflammatory drugs (NSAIDs) as an adjunct to subgingival instrumentation	Grade A ↓↓	Strong consensus
2.11 We *recommend not to use* omega-3 polyunsaturated fatty acids (PUFA) as an adjunct to subgingival instrumentation.	Grade A ↓↓	Consensus
2.12 We *recommend not to use* local administration of metformin gel as adjunct to subgingival instrumentation.	Grade A ↓↓	Strong consensus
2.13 Adjunctive antiseptics *may be considered*, specifically chlorhexidine mouth rinses for a limited period of time, in periodontitis therapy, as adjuncts to mechanical debridement, in specific cases.	Grade 0	Consensus
2.14 Locally administered sustained-release chlorhexidine as an adjunct to subgingival instrumentation in patients with periodontitis *may be considered*.	Grade 0	Consensus
2.15 Specific locally administered sustained-release antibiotics as an adjunct to subgingival instrumentation in patients with periodontitis *may be considered*.	Grade 0	Consensus
2.16 A Due to concerns about patient's health and the impact of systemic antibiotic use to public health, its routine use as adjunct to subgingival debridement in patients with periodontitis is *not recommended*.	Grade A ↓↓	Consensus
2.16 B The adjunctive use of specific systemic antibiotics *may be considered* for specific patient categories (eg, generalized periodontitis Stage III in young adults).	Grade 0	Consensus
Step 3: Interventions aimed at treating the areas not responding adequately to the second step of therapy		
3.1 In the presence of deep residual pockets (PPD ≥ 6 mm) in patients with Stage III periodontitis after the first and second steps of periodontal therapy, *we suggest* performing access flap surgery. In the presence of moderately deep residual pockets (4-5 mm), *we suggest* repeating subgingival instrumentation.	Grade B ↑	Consensus
3.2 In cases of deep (PPD ≥ 6 mm) residual pockets and intrabony defects in patients with Stage III periodontitis after adequate first and second steps of periodontal therapy, there is insufficient evidence for a recommendation on the choice of flap procedures. Access periodontal surgery can be carried out using different flap designs.	Grade 0	Consensus
3.3 In cases of deep (PPD ≥ 6 mm) residual pockets in patients with Stage III periodontitis after an adequate second step of periodontal therapy, *we suggest* using resective periodontal surgery, yet considering the potential increase of gingival recession.	Grade B ↑	Simple majority

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Statement	Strength of the recommendations	Strength of consensus
3.4 Surgical treatment is effective but frequently complex, and we *recommend* that it is provided by dentists with additional specific training or by specialists in referral centres. *We recommend* efforts to improve access to this level of care for these patients.	Grade A ↑↑	Consensus
3.5 As a minimum requirement, *we recommend* repeated scaling and root debridement with or without access flap of the area in the context of high-quality step 1 and 2 treatment and a frequent program of supportive periodontal care including subgingival instrumentation.	Grade A ↑↑	Consensus
3.6 *We recommend not to* perform periodontal (including implant) surgery in patients not achieving and maintaining adequate levels of self-performed oral hygiene.	Grade A ↓↓	Strong consensus
3.7 *We recommend* treating teeth with residual deep pockets associated with intrabony defects 3 mm or deeper with periodontal regenerative surgery.	Grade A ↑↑	Consensus
3.8 In regenerative therapy, *we recommend* the use of either barrier membranes or enamel matrix derivative with or without the addition of bone-derived grafts.	Grade A ↑↑	Consensus
3.9 *We recommend* the use of specific flap designs with maximum preservation of interdental soft tissue such as papilla preservation flaps. Under some specific circumstances, we also recommend limiting flap elevation to optimize wound stability and reduce morbidity.	Grade A ↑↑	Consensus
3.10 A *We recommend* that molars with Class II and III furcation involvement and residual pockets receive periodontal therapy.	Grade A ↑↑	Strong consensus
3.10 B Furcation involvement is no reason for extraction.	Grade 0	Consensus
3.11 *We recommend* treating mandibular molars with residual pockets associated with Class II furcation involvement with periodontal regenerative surgery.	Grade A ↑↑	Consensus
3.12 *We suggest* treating molars with residual pockets associated with maxillary buccal Class II furcation involvement with periodontal regenerative surgery.	Grade B ↑	Consensus
3.13 *We recommend* treating molars with residual pockets associated with mandibular and maxillary buccal Class II furcation involvement with periodontal regenerative therapy using enamel matrix derivative alone or bone-derived graft with or without resorbable membranes.	Grade A ↑↑	Simple majority
3.14 In maxillary interdental Class II furcation involvement non-surgical instrumentation, (open flap debridement) OFD, periodontal regeneration, root separation or root resection *may be considered*.	Grade 0	Consensus
3.15 In maxillary Class III and multiple Class II furcation involvement in the same tooth nonsurgical instrumentation, OFD, tunneling, root separation or root resection *may be considered*.	Grade 0	Strong consensus
3.16 In mandibular Class III and multiple Class II furcation involvement in the same tooth nonsurgical instrumentation, OFD, tunneling, root separation or root resection *may be considered*.	Grade 0	Unanimous
Step 4: Supportive periodontal care		

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Statement	Strength of the recommendations	Strength of consensus
4.1 *We recommend* that supportive periodontal care visits should be scheduled at intervals of 3 to a maximum of 12 mo and ought to be tailored according to patient's risk profile and periodontal conditions after active therapy.	Grade A ↑↑	Strong consensus
4.2 *We recommend* that adherence to supportive periodontal care should be strongly promoted, since it is crucial for long-term periodontal stability and potential further improvements in periodontal status.	Grade A ↑↑	Unanimous
4.3 *We recommend* repeated individually tailored instructions in mechanical oral hygiene, including interdental cleaning, in order to control inflammation and avoid potential damage for patients in periodontal supportive periodontal care (SPC).	Grade A ↑↑	Unanimous
4.4 *We recommend* taking into account patients' needs and preferences when choosing a toothbrush design, and when choosing an interdental brush design.	Grade A ↑↑	Strong consensus
4.5 The use of a powered toothbrush *may be considered* as an alternative to manual tooth brushing for periodontal maintenance patients.	Grade 0	Strong consensus
4.6 If anatomically possible, we *recommend* that tooth brushing should be supplemented by the use of interdental brushes.	Grade A ↑↑	Unanimous
4.7 We *do not suggest* flossing as the first choice for interdental cleaning in periodontal maintenance patients.	Grade B ↓	Consensus
4.8 In interdental areas not reachable by toothbrushes, we *suggest* supplementing tooth brushing with the use of other interdental cleaning devices in periodontal maintenance patients.	Grade B ↑	Consensus
4.9 We recommend utilizing the "First Step of Therapy" section of this guideline.	See individual guideline	Strong consensus
4.10 The basis of the management of gingival inflammation is self-performed mechanical removal of biofilm. Adjunctive measures, including antiseptic, *may be considered* in specific cases, as part of a personalized treatment approach.	Grade 0	Consensus
4.11 A. The use of adjunctive antiseptics *may be considered* in periodontitis patients in supportive periodontal care in helping to control gingival inflammation, in specific cases.	Grade 0	Consensus
4.11 B We *do not know* whether other adjunctive agents (such as probiotics, prebiotics, anti-inflammatory agents, antioxidant micronutrients) are effective in controlling gingival inflammation in patients in supportive periodontal care.	Grade 0	Consensus
4.12 If an antiseptic dentifrice formulation is going to be adjunctively used, we *suggest* products containing chlorhexidine, triclosancopolymer and stannous fluoride-sodium hexametaphosphate for the control of gingival inflammation, in periodontitis patients in supportive periodontal care.	Grade B ↑	Consensus
4.13 If an antiseptic mouth rinse formulation is going to be adjunctively used, we *suggest* products containing chlorhexidine, essential oils and cetylpyridinium chloride for the control of gingival inflammation, in periodontitis patients in supportive periodontal care.	Grade B ↑	Consensus
4.14 We *suggest* performing routine professional mechanical plaque removal (PMPR) to limit the rate of tooth loss and provide periodontal stability/improvement, as part of a supportive periodontal care program.	Grade B ↑	Strong consensus

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Statement	Strength of the recommendations	Strength of consensus
4.15 We *suggest not* to replace conventional professional mechanical plaque removal (PMPR) with the use of alternative methods (Er:YAG laser treatment) in supportive periodontal care.	Grade B ↓	Strong consensus
4.16 We *suggest not* to use adjunctive methods (sub-antimicrobial dose doxycycline, photodynamic therapy) to professional mechanical plaque removal (PMPR) in supportive periodontal care.	Grade B ↓	Strong consensus
4.17 We *recommend* risk factor control interventions in periodontitis patients in supportive periodontal care.	Grade A ↑↑	Strong consensus
4.18 We *recommend* tobacco smoking cessation interventions to be implemented in periodontitis patients in supportive periodontal care.	Grade A ↑↑	Strong consensus
4.19 We *suggest* promotion of diabetes control interventions in patients in maintenance therapy.	Grade B ↑	Consensus
4.20 We *do not know* whether physical exercise (activity), dietary counselling or lifestyle modifications aiming at weight loss are relevant in supportive periodontal care.	Grade 0	Strong consensus

CONCLUSIONS

Based on the currently available evidence, this evidence-based clinical practice guideline offers knowledge regarding the available and effective treatment options for treatment of Periodontitis Stage I-III.

COMMENTARY AND ANALYSIS

The 2017 World Workshop that took place in Chicago on November 9 to 11, 2017 was co-sponsored by the American Academy of Periodontology (AAP) and EFP.[2] In this conference, major changes from the 1999 periodontitis classification[3] were updated as well as the establishment of a classification system for peri-implant diseases.[2] One of the major updates for the classification of periodontitis is the development of the stage and grade framework: Staging based on the severity, extent and complexity of the disease while grading aims to estimate the future risk and potential systemic health impact of periodontitis.[1] Moreover, according to the frequently asked questions and statement that was released by AAP,[4] the updated staging and grading scheme for periodontal classification does not help clinicians to arrive at a diagnosis that will drive future treatment, instead, a diagnosis of periodontitis should be determined first, and supplemented with the information of staging and grading.[4] The world workshop article mainly discusses the merits of a periodontitis case definition system based on the newly proposed staging and grading, with brief discussion regarding the treatment planning of different stages of periodontitis patients. Therefore, the EFP clinical practice guide article supplements excellent information in terms of phasing and sequencing treatment plan for periodontitis patients.

This present article was based on the results from a EFP workshop that took place in La Granja de San Ildefonso Segovia, Spain, on November 10 to November 13, 2019. Fifteen systematic reviews were conducted in order to support the clinical recommendations with scientific evidence and the statements were further discussed and voted by the experts in the conference to determine the strength of the consensus. The manuscripts present phases of comprehensive treatment plan for stage I-III periodontitis patients and proposed evaluation of the patient's periodontitis stability based on probing depth and bleeding on probing. The periodontal treatment endpoint proposed in this article includes no periodontal pockets >4 mm with bleeding on probing or no deep periodontal pockets ≥6 mm. Although probing depth and bleeding on probing might not be the most accurate clinical parameters when evaluating periodontal attachment level, deep periodontal pockets and bleeding on probing are still commonly used by clinicians to indicate periodontal instability which requires periodontal treatment. Absence of bleeding on probing is a reliable predictor for periodontal stability and has a high negative predictive value of 98%.[5] Compared with sites with probing depth less than 3 mm, probing depth ≥6 mm represented a risk factor for tooth loss at site and tooth levels with odds ratios of 9.3 and 11.0, respectively, and for sites with probing depth ≥7 mm the odds ratio are 37.9 and 64.2.[6] The study also presents step-by-step treatment approaches to reach the end point. Hence,

the study meets the objective of helping clinicians follow the evidence-based clinical guideline for treatment of stages I-III periodontitis especially with Grade A (Strong recommendation) and Grade B (Recommendation) recommendations.

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