European Prosthodontic Association	Phophi Kamposiora
European Association of Dental Public Health	Paula Vassallo
European Federation of Conservative Dentistry	Laura Ceballos
Other organisations	
Council of European Chief Dental Officers	Kenneth Eaton
Council of European Dentists	Paulo Melo
European Dental Hygienists' Federation	Ellen Bol-van den Hil
European Dental Students' Association	Daniela Timus
Platform for Better Oral Health in Europe	Kenneth Eaton

Table 1b. Key stakeholders contacted and participants.

Institution	Acronym	Answer*	Representative
Association for Dental Education in Europe	ADEE	no answer	no representative
Council of European Chief Dental Officers	CECDO	participant	Ken Eaton/Paula Vassallo
Council of European Dentists	CED	participant	Paulo Melo
European Association of Dental Public Health	EADPH	participant	Paula Vassallo
European Dental Hygienists Federation	EDHF	participant	Ellen Bol-van den Hil
European Dental Students' Association	EDSA	participant	Daniella Timus
European Federation of Conservative Dentistry	EFCD	participant	Laura Ceballos
European Orthodontic Society	EOS	no answer	no representative
European Prosthodontic Association	EPA	participant	Phophi Kamposiora
European Society of Endodontology	ESE	participant	Lise Lotte Kirkevang
Platform for Better Oral Health in Europe	PBOHE	participant	Kenneth Eaton

*Messages sent March 20th, 2019; reminder sent June 18th.

Table 2. Results of the guideline search.

Database	Identified, potentially relevant guidelines	Critical appraisal
Guideline International Network (GIN) International Guidelines Library [#1]	Comprehensive periodontal therapy: a statement by the American Academy of Periodontology. American Academy of Periodontology. NGC:008726 (2011)	8 years old, recommendations not based on systematic evaluation of evidence, ***not applicable***
	DG PARO S3 guideline - Adjuvant systemic administration of antibiotics for subgingival instrumentation in the context of systematic periodontitis treatment (2018)	Very recent, high methodological standard, very similar outcome measures - ***relevant***
	HealthPartners Dental Group and Clinics guidelines for the diagnosis & treatment of periodontal diseases. HealthPartners Dental Group. NGC:008848 (2011)	8 years old, unclear methodology, ***not applicable***
Guidelinecentral.com "Dentistry" category	Health Partners Dental Group and Clinics Caries Guideline	***not applicable***
The National Institute for Health and Clinical Excellence (NICE) [#2]	No thematically relevant hits	***not applicable***
National Guideline Clearinghouse (Agency for Healthcare Research and Quality) [#3]	No thematically relevant hits	***not applicable***
Canadian Health Technology Assessment (CADTH) [#4]	Periodontal Regenerative Procedures for Patients with Periodontal Disease: A Review of Clinical Effectiveness (2010)	9-year-old review article, ***not applicable***
	Treatment of Periodontal Disease: Guidelines and Impact (2010)	9-year-old review article, ***not applicable***
	Dental Scaling and Root Planing for Periodontal Health: A Review of the Clinical Effectiveness, Cost-effectiveness, and Guidelines (2016)	Unclear methodology (follow-up, outcome variables, recommendations, guideline group), ***not applicable***
	Dental Cleaning and Polishing for Oral Health: A Review of the Clinical Effectiveness, Cost-effectiveness and Guidelines (2013)	Unclear methodology (follow-up, outcome variables, recommendations, guideline group), ***not applicable***
European Federation of Periodontology (EFP) [#5]	No thematically relevant hits	***not applicable***
American Academy of Periodontology (AAP) [#6]	The American Journal of Cardiology and Journal of Periodontology Editors' Consensus: Periodontitis and Atherosclerotic Vascular Disease (2009)	Unclear methodology, 10 year-old consensus-based article, only limited clinically applicably recommendations,

		not applicable
	Comprehensive Periodontal Therapy: A Statement by the American Academy of Periodontology (2011)	Unclear methodology (follow-up, outcome variables, recommendations, guideline group), almost a decade old, ***not applicable***
	Academy Statements on Gingival Curettage (2002), Local Delivery (2006), Risk Assessment (2008), Efficacy of Lasers (2011)	Unclear methodology, 10-year-old consensus-based article, only limited clinically applicably recommendations, ***not applicable***
American Dental Association (ADA) [#7]	Nonsurgical Treatment of Chronic Periodontitis Guideline (2015)	Outcome variable CAL (not PPD), no minimal follow-up – ***not applicable***

#1. https://g-i-n.net/home

#2. https://www.nice.org.uk/guidance/published?type=csg,cg,mpg,ph,sg,sc

#3. https://www.ahrq.gov/gam/index.html

#4. https://www.cadth.ca/

#5. http://www.efp.org/publications/index.html

#6. https://www.perio.org/publications

#7. https://ebd.ada.org/en/evidence/guidelines

Table 3. PICOS questions addressed by each Systematic Review.

Reference	Systematic Review title	Final PICOS (as written in manuscripts)
(Suvan et al., 2019)	Subgingival Instrumentation for Treatment of Periodontitis. A Systematic Review.	#1. In patients with periodontitis, what is the efficacy of subgingival instrumentation performed with hand or sonic/ultrasonic instruments in comparison with supragingival instrumentation or prophylaxis in terms of clinical and patient reported outcomes?
		#2. In patients with periodontitis, what is the efficacy of nonsurgical subgingival instrumentation performed with sonic/ultrasonic instruments compared to subgingival instrumentation performed with hand instruments or compared to the subgingival instrumentation performed with a combination of hand and sonic/ultrasonic instruments in terms of clinical and patient reported outcomes?
		#3. In patients with periodontitis, what is the efficacy of full mouth delivery protocols (within 24 hours) in comparison to quadrant or sextant wise delivery of subgingival mechanical instrumentation in terms of clinical and patient reported outcomes?
(Salvi et al., 2019)	Adjunctive laser or antimicrobial photodynamic therapy to non-surgical mechanical instrumentation in patients with untreated periodontitis. A systematic review and meta-analysis.	#1. In patients with untreated periodontitis, does laser application provide adjunctive effects to non-surgical mechanical instrumentation alone?
		#2. In patients with untreated periodontitis, does application of aPTD provide adjunctive effects to non-surgical mechanical instrumentation alone?
(Donos et al., 2019)	The adjunctive use of host modulators in non-surgical periodontal therapy. A systematic review of randomized, placebo-controlled clinical studies	In patients with periodontitis, what is the efficacy of adding host modulating agents instead of placebo to NSPT in terms of probing pocket depth (PPD) reduction?

(Sanz-Sanchez et al., 2020)	Efficacy of access flaps compared to subgingival debridement or to different access flap approaches in the treatment of periodontitis. A systematic review and metanalysis.	#1. In patients with periodontitis (population), how effective are access flaps (intervention) as compared to subgingival debridement (comparison) in attaining PD reduction (primary outcome)?
		#2. In patients with periodontitis (population), does the type of access flaps (intervention and control) impact PD reduction (primary outcome)?
(Polak et al., 2020)	The Efficacy of Pocket Elimination/Reduction Surgery Vs. Access Flap: A Systematic Review	In adult patients with periodontitis after initial non-surgical cause-related therapy and residual PPD of 5 mm or more, what is the efficacy of pocket elimination/reduction surgery in comparison with access flap surgery?
(Teughels et al., 2020)	Adjunctive effect of systemic antimicrobials in periodontitis therapy. A systematic review and meta-analysis.	In patients with periodontitis, which is the efficacy of adjunctive systemic antimicrobials, in comparison with subgingival debridement plus a placebo, in terms of probing pocket depth (PPD) reduction, in randomized clinical trials with at least 6 months of follow-up.
(Herrera et al., 2020)	Adjunctive effect of locally delivered antimicrobials in periodontitis therapy. A systematic review and meta-analysis.	In adult patients with periodontitis, which is the efficacy of adjunctive locally delivered antimicrobials, in comparison with subgingival debridement alone or plus a placebo, in terms of probing pocket depth (PPD) reduction, in randomized clinical trials with at least 6 months of follow-up.
(Nibali et al., 2019)	Regenerative surgery versus access flap for the treatment of intrabony periodontal defects. A systematic review and meta-analysis.	#1. Does regenerative surgery of intraosseous defects provide additional clinical benefits measured as Probing Pocket Depth (PPD) reduction, Clinical Attachment Level (CAL) gain, Recession (Rec) and Bone Gain (BG) in periodontitis patients compared with access flap?
		#2. Is there a difference among regenerative procedures in terms of clinical and radiographic gains in intrabony defects?
(Jepsen et al., 2019)	Regenerative surgical treatment of furcation defects: A systematic review and Bayesian network meta-analysis of randomized clinical trials	#1. What is the efficacy of regenerative periodontal surgery in terms of tooth loss, furcation conversion and closure, horizontal clinical attachment level (HCAL) and bone level (HBL) gain as well as other periodontal parameters in teeth affected by periodontitis-related furcation defects, at least 12 months after surgery?
		#2. NM: to establish a ranking in efficacy of the treatment options and to identify the best surgical technique.

(Dommisch et al., 2020)	Resective surgery for the treatment of furcation involvement – a systematic review	What is the benefit of resective surgical periodontal therapy (i.e. root amputation or resection, root separation, tunnel preparation) in (I) subjects with periodontitis who have completed a cycle of non-surgical periodontal therapy and exhibit class II and III furcation involvement (P) compared to individuals suffering from periodontitis and exhibiting class II and III furcation involvement not being treated with resective surgical periodontal therapy but were not treated at all, treated exclusively by subgingival debridement or access flap surgery (C) with respect to 1) tooth survival (primary outcome), 2) vertical probing attachment (PAL-V) gain, and 3) reduction of probing pocket depth (PPD) (secondary outcomes) (O) evidenced by randomized controlled clinical trials, prospective and retrospective cohort studies and case series with at least 12 months of follow-up (survival, PAL-V, PPD) (S), respectively.
(Slot et al., 2020)	Mechanical plaque removal of periodontal maintenance patients. - A Systematic Review and Network Meta-Analysis-	#1. In periodontal maintenance patients, what is the effect on plaque removal and parameters of periodontal health of the following: Power toothbrushes as compared to manual toothbrushes?
		#2. In periodontal maintenance patients, what is the effect on plaque removal and parameters of periodontal health of the following: Interdental oral hygiene devices compared to no interdental cleaning as adjunct to toothbrushing?
		#3. In periodontal maintenance patients, what is the effect on plaque removal and parameters of periodontal health of the following: Different interdental cleaning devices as adjuncts to toothbrushing
(Carra et al., 2020)	Promoting behavioural changes to improve oral hygiene in patients with periodontal diseases: a systematic review of the literature.	What is the efficacy of behavioural interventions aimed to promote OH in patients with periodontal diseases (gingivitis/periodontitis), in improving clinical plaque and bleeding indices?
(Ramseier et al., 2020)	Impact of risk factor control interventions for smoking cessation and promotion of healthy lifestyles in patients with periodontitis: a	What is the efficacy of health behaviour change interventions for smoking cessation, diabetes control, physical exercise (activity), change of diet, carbohydrate (dietary sugar) reduction, and weight loss provided in patients with periodontitis? ".

	systematic review	
(Figuero et al., 2019)	Efficacy of adjunctive therapies in patients with gingival inflammation. A systematic review and meta-analysis.	In systemically healthy humans with dental plaque-induced gingival inflammation (with or without attachment loss, but excluding untreated periodontitis patients), what is the efficacy of agents used adjunctively to mechanical plaque control (either self-performed or professionally delivered), as compared to mechanical plaque control combined with a negative control, in terms of changes in gingival inflammation (through gingivitis or bleeding indices)?
(Trombelli et al., 2020)	Efficacy of alternative or additional methods to professional mechanical plaque removal during supportive periodontal therapy. A systematic review and meta-analysis	#1. What is the efficacy of alternative methods to professional mechanical plaque removal (PMPR) on progression of attachment loss during supportive periodontal therapy (SPT) in periodontitis patients?
		#2. What is the efficacy of additional methods to professional mechanical plaque removal (PMPR) on progression of attachment loss during supportive periodontal therapy (SPT) in periodontitis patients?

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Carra, M. C., Detzen, L., Kitzmann, J., Woelber, J. P., Ramseier, C. A. & Bouchard, P. (2020) Promoting behavioural changes to improve oral hygiene in patients with periodontal diseases: a systematic review. *Journal of Clinical Periodontology*. doi:10.1111/jcpe.13234.

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Polak, D., Wilensky, A., Antonoglou, G. N., Shapira, L., Goldstein, M. & Martin, C. (2020) The Efficacy of Pocket Elimination/Reduction Compared to Access Flap Surgery: A Systematic Review and Meta-analysis. *Journal of Clinical Periodontology*. doi:10.1111/jcpe.13246.

Ramseier, C. A., Woelber, J. P., Kitzmann, J., Detzen, L., Carra, M. C. & Bouchard, P. (2020) Impact of risk factor control interventions for smoking cessation and promotion of healthy lifestyles in patients with periodontitis: a systematic review. *Journal of Clinical Periodontology*. doi:10.1111/jcpe.13240.

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Table 4. Strength of Recommendations: Grading Scheme (German Association of the Scientific Medical Societies (AWMF) and Standing Guidelines Commission, 2012)

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

*If the group felt that evidence was not clear enough to support a recommendation, Statements were formulated, including the need (or not) of additional research.

References

German Association of the Scientific Medical Societies (AWMF) & Standing Guidelines Commission (2012) AWMF Guidance Manual and Rules for Guideline Development. [WWW document]. URL http://www.awmf.org/leitlinien/awmf-regelwerk.html

Table 5. Strength of Consensus: Determination Scheme (German Association of the Scientific Medical Societies (AWMF) and Standing Guidelines Commission, 2012)**.**

Unanimous consensus	Agreement of 100 % of participants
Strong consensus	Agreement of > 95 % of participants
Consensus	Agreement of 75 – 95 % of participants
Simple majority	Agreement of 50 – 74 % of participants
No consensus	Agreement of <50 % of participants

Table 6. Timeline of the guideline development process.

Time point	Action
April 2018	Decision by European Federation of Periodontology (EFP) General Assembly to develop comprehensive treatment guidelines for periodontitis
May-Sept 2018	EFP Workshop Committee assesses merits and disadvantages of various established methodologies and their applicability to the field
Sept 2018	EFP Workshop Committee decides on/invites (i) topics covered by proposed guideline, (ii) working groups and chairs, (iii) systematic reviewers, and (iv) outcomes measures
EOY 2018	Submission of PICO(S) questions by systematic reviewers to group chairs for internal alignment Decision on consensus group, invitation of stakeholders
January 21st, 2019	Organizing and Advisor Committee meeting. Decision on PICO(S) and information sent to reviewers
March – June 2019	Submission of Systematic reviews by reviewers, initial assessment by workshop committee
June – Oct 2019	Peer review and revision process, *Journal of Clinical Periodontology*
Sept 2019	Submission of declarations of interest by all delegates
Before workshop	Electronic circulation of reviews and guideline draft
10.-13.11.2019	Workshop in La Granja with moderated formalized consensus process
Dec 2019-Jan 2020	Formal stakeholder consultation, finalisation of guideline method report and background text
April 2020	Publication of guideline and underlying Systematic Reviews in the *Journal of Clinical Periodontology*

Table 7. Criteria for defining stages of periodontitis. Taken from (Tonetti et al., 2018).

TABLE 3 Periodontitis stage – Please see text and appendix A (in online *Journal of Clinical Periodontology*) for explanation

Periodontitis stage		Stage I	Stage II	Stage III	Stage IV
Severity	Interdental CAL at site of greatest loss	1 to 2 mm	3 to 4 mm	≥5 mm	≥5 mm
	Radiographic bone loss	Coronal third (<15%)	Coronal third (15% to 33%)	Extending to middle or apical third of the root	Extending to middle or apical third of the root
	Tooth loss	No tooth loss due to periodontitis		Tooth loss due to periodontitis of ≤4 teeth	Tooth loss due to periodontitis of ≥5 teeth
Complexity	Local	Maximum probing depth ≤4 mm Mostly horizontal bone loss	Maximum probing depth ≤5 mm Mostly horizontal bone loss	In addition to stage II complexity: Probing depth ≥6 mm Vertical bone loss ≥3 mm Furcation involvement Class II or III Moderate ridge defect	In addition to stage III complexity: Need for complex rehabilitation due to: Masticatory dysfunction Secondary occlusal trauma (tooth mobility degree ≥2) Severe ridge defect Bite collapse, drifting, flaring Less than 20 remaining teeth (10 opposing pairs)
Extent and distribution	Add to stage as descriptor	For each stage, describe extent as localized (<30% of teeth involved), generalized, or molar/incisor pattern			

The initial stage should be determined using CAL; if not available then RBL should be used. Information on tooth loss that can be attributed primarily to periodontitis – if available – may modify stage definition. This is the case even in the absence of complexity factors. Complexity factors may shift the stage to a higher level, for example furcation II or III would shift to either stage III or IV irrespective of CAL. The distinction between stage III and stage IV is primarily based on complexity factors. For example, a high level of tooth mobility and/or posterior bite collapse would indicate a stage IV diagnosis. For any given case only some, not all, complexity factors may be present, however, in general it only takes one complexity factor to shift the diagnosis to a higher stage. It should be emphasized that these case definitions are guidelines that should be applied using sound clinical judgment to arrive at the most appropriate clinical diagnosis.

For post-treatment patients CAL and RBL are still the primary stage determinants. If a stage-shifting complexity factor(s) is eliminated by treatment, the stage should not retrogress to a lower stage since the original stage complexity factor should always be considered in maintenance phase management.

CAL = clinical attachment loss; RBL = radiographic bone loss.

References

Tonetti, M. S., Greenwell, H. & Kornman, K. S. (2018) Staging and grading of periodontitis: Framework and proposal of a new classification and case definition. *Journal of Clinical Periodontology* **45 Suppl 20,** S149-S161. doi:10.1111/jcpe.12945.

Table 8. Criteria for defining grades of periodontitis. Taken from (Tonetti et al., 2018).

TABLE 4 Periodontitis grade – Please see text and appendix A (in online *Journal of Clinical Periodontology*) for explanation

Periodontitis grade			Grade A: Slow rate of progression	Grade B: Moderate rate of progression	Grade C: Rapid rate of progression
Primary criteria	Direct evidence of progression	Longitudinal data (radiographic bone loss or CAL)	Evidence of no loss over 5 years	<2 mm over 5 years	≥2 mm over 5 years
	Indirect evidence of progression	% bone loss/age	<0.25	0.25 to 1.0	>1.0
		Case phenotype	Heavy biofilm deposits with low levels of destruction	Destruction commensurate with biofilm deposits	Destruction exceeds expectation given biofilm deposits; specific clinical patterns suggestive of periods of rapid progression and/or early onset disease (e.g., molar/incisor pattern; lack of expected response to standard bacterial control therapies)
Grade modifiers	Risk factors	Smoking	Non-smoker	Smoker <10 cigarettes/day	Smoker ≥10 cigarettes/day
		Diabetes	Normoglycemic / no diagnosis of diabetes	HbA1c <7.0% in patients with diabetes	HbA1c ≥7.0% in patients with diabetes
Risk of systemic impact of periodontitis[a]	Inflammatory burden	High sensitivity CRP (hsCRP)	<1 mg/L	1 to 3 mg/L	>3 mg/L
Biomarkers	Indicators of CAL/bone loss	Saliva, gingival crevicular fluid, serum	?	?	?

Grade should be used as an indicator of the rate of periodontitis progression. The primary criteria are either direct or indirect evidence of progression. Whenever available, direct evidence is used; in its absence indirect estimation is made using bone loss as a function of age at the most affected tooth or case presentation (radiographic bone loss expressed as percentage of root length divided by the age of the subject, RBL/age). Clinicians should initially assume grade B disease and seek specific evidence to shift towards grade A or C, if available. Once grade is established based on evidence of progression, it can be modified based on the presence of risk factors.

[a]Refers to increased risk that periodontitis may be an inflammatory comorbidity for the specific patient. CRP values represent a summation of the patient's overall systemic inflammation, which may be in part influenced by periodontitis, but otherwise is an "unexplained" inflammatory burden that be valuable to assess in collaboration with the patient's physicians. The grey color of the table cells refers to the need to substantiate with specific evidence. This element is placed in the table to draw attention to this dimension of the biology of periodontitis. It is envisaged that in the future it will be possible to integrate the information into periodontitis grade to highlight the potential of systemic impact of the disease in the specific case. Question marks in the last row indicate that specific biomarkers and their thresholds may be incorporated in the table as evidence will become available.

HbA1c, glycated hemoglobin; hsCRP, high sensitivity C-reactive protein; PA, periapical; CAL, clinical attachment loss.

References

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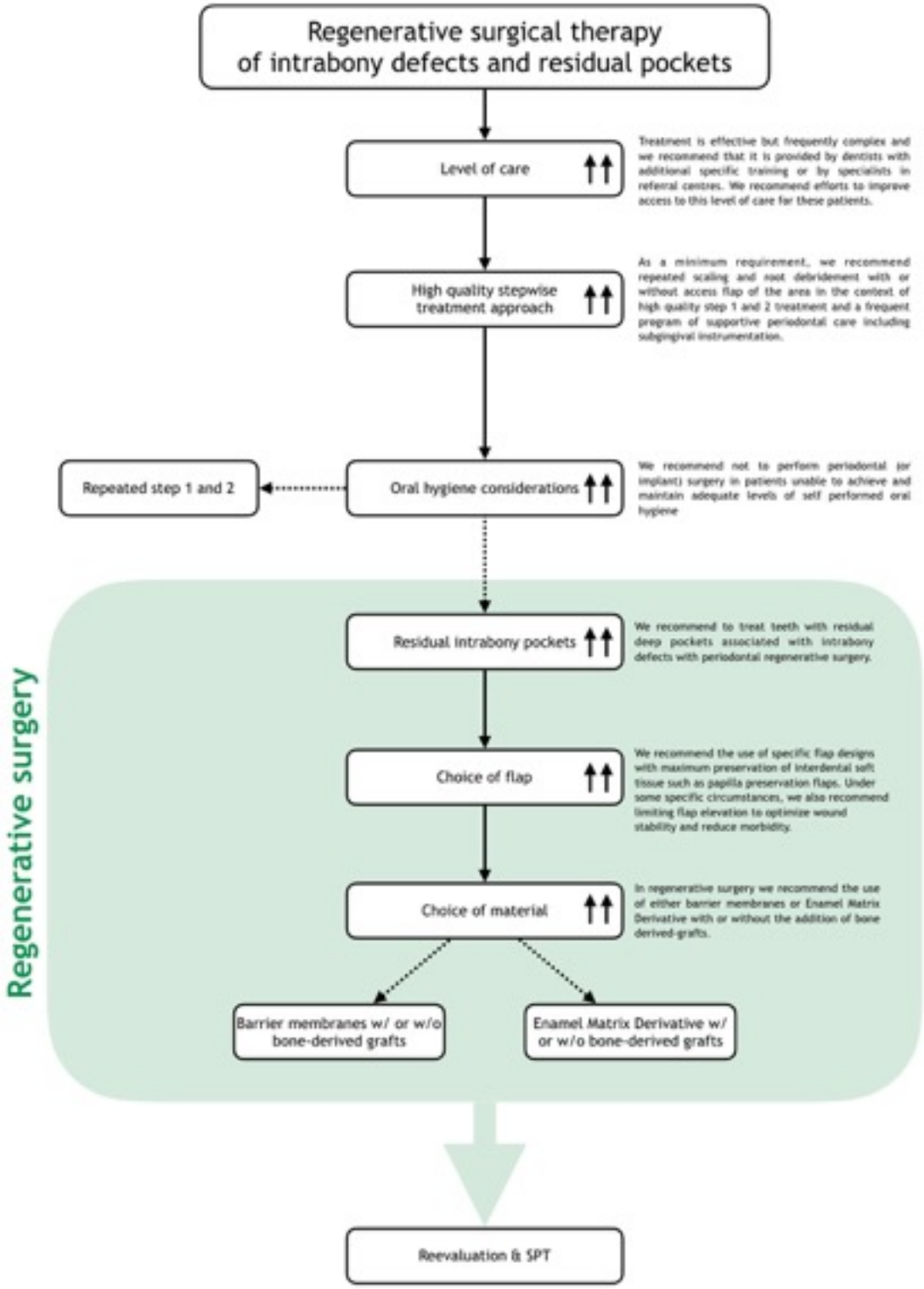

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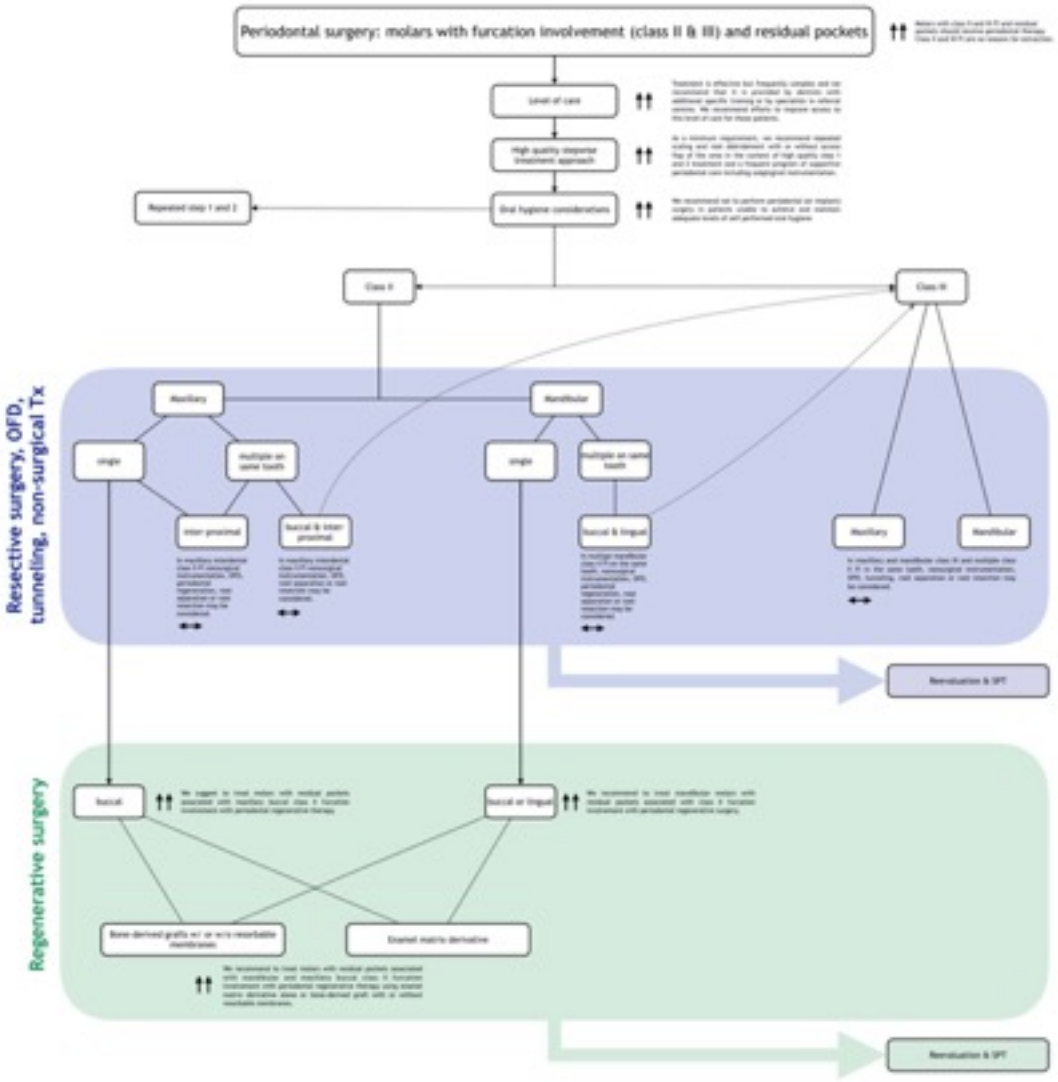

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