

PERIODONTAL DISEASE

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Prevalence estimates

Characteristic	Severe Periodontitis, % (Standard Error)	Nonsevere (Mild or Moderate) Periodontitis, % (Standard Error)	Total Periodontitis, % (Standard Error)
Total	7.8 (0.5)	34.4 (1.2)	42.2 (1.4)
Age, y: 30-44	4.1 (0.3)	25.3 (1.4)	29.5 (1.5)
Age, y: 45-64	10.4 (0.8) [†]	35.6 (1.4) [†]	46.0 (1.6) [†]
Age, y: 65 or older	9.0 (1.0) [†]	50.7 (1.9) [†]	59.8 (2.1) [†]
Sex: Male	11.5 (0.8) [†]	38.8 (1.2) [†]	50.2 (1.4) [†]
Sex: Female	4.3 (0.4)	30.2 (1.4)	34.6 (1.5)

Prevalence estimates

2 in 5 ADULTS

1 in 10 adults: severe periodontitis

HIGHER WITH AGE

DIAGNOSIS

Diagnosis

- 2017-2018 overhaul of diagnostic criteria and systems for periodontal disease.
- Staging and grading system.
- Aggressive Periodontitis no longer an established unique entity.
- Definition of Periodontal health and Peri-implant health.
- Focus more on attachment loss than pocket depths.

Diagnosis

Three Steps to Staging and Grading a Patient



Step 1: Initial Case Overview to Assess Disease

Screen:

- Full mouth probing depths
- Full mouth radiographs
- Missing teeth

Mild to moderate periodontitis will typically be either Stage I or Stage II

Severe to very severe periodontitis will typically be either Stage III or Stage IV

Step 2: Establish Stage

For mild to moderate periodontitis (typically Stage I or Stage II):

- Confirm clinical attachment loss (CAL)
- Rule out non-periodontitis causes of CAL (e.g., cervical restorations or caries, root fractures, CAL due to traumatic causes)
- Determine maximum CAL or radiographic bone loss (RBL)
- Confirm RBL patterns

For moderate to severe periodontitis (typically Stage III or Stage IV):

- Determine maximum CAL or RBL
- Confirm RBL patterns
- Assess tooth loss due to periodontitis
- Evaluate case complexity factors (e.g., severe CAL frequency, surgical challenges)

Step 3: Establish Grade

- Calculate RBL (% of root length x 100) divided by age
- Assess risk factors (e.g., smoking, diabetes)
- Measure response to scaling and root planing and plaque control
- Assess expected rate of bone loss
- Conduct detailed risk assessment
- Account for medical and systemic inflammatory considerations

Stage descriptions drawn from Tonetti, Greenwell, Kornman. J Periodontol 2018;89 (Suppl 1): S159-S172.

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DIAGNOSIS

PERIODONTITIS: STAGING

Staging intends to classify the severity and extent of a patient's disease based on the measurable amount of destroyed and/or damaged tissue as a result of periodontitis and to assess the specific factors that may attribute to the complexity of long-term case management.

Initial stage should be determined using clinical attachment loss (CAL). If CAL is not available, radiographic bone loss (RBL) should be used. Tooth loss due to periodontitis may modify stage definition. One or more complexity factors may shift the stage to a higher level. See perio.org/2017wwdc for additional information.

	Periodontitis	Stage I	Stage II	Stage III	Stage IV
Severity	Interdental CAL <i>(at site of greatest loss)</i>	1 – 2 mm	3 – 4 mm	≥5 mm	≥5 mm
	RBL	Coronal third (<15%)	Coronal third (15% - 33%)	Extending to middle third of root and beyond	Extending to middle third of root and beyond
	Tooth loss <i>(due to periodontitis)</i>	No tooth loss		≤4 teeth	≥5 teeth
Complexity	Local	<ul style="list-style-type: none"> • Max. probing depth ≤4 mm • Mostly horizontal bone loss 	<ul style="list-style-type: none"> • Max. probing depth ≤5 mm • Mostly horizontal bone loss 	In addition to Stage II complexity: <ul style="list-style-type: none"> • Probing depths ≥6 mm • Vertical bone loss ≥3 mm • Furcation involvement Class II or III • Moderate ridge defects 	In addition to Stage III complexity: <ul style="list-style-type: none"> • Need for complex rehabilitation due to: <ul style="list-style-type: none"> – Masticatory dysfunction – Secondary occlusal trauma (tooth mobility degree ≥2) – Severe ridge defects – Bite collapse, drifting, flaring – < 20 remaining teeth (10 opposing pairs)
Extent and distribution	Add to stage as descriptor	For each stage, describe extent as: <ul style="list-style-type: none"> • Localized (<30% of teeth involved); • Generalized; or • Molar/incisor pattern 			

DIAGNOSIS

PERIODONTITIS: GRADING

Grading aims to indicate the rate of periodontitis progression, responsiveness to standard therapy, and potential impact on systemic health.


Clinicians should initially assume grade B disease and seek specific evidence to shift to grade A or C.

See perio.org/2017wwdc for additional information.

	Progression		Grade A: Slow rate	Grade B: Moderate rate	Grade C: Rapid rate
Primary criteria <i>Whenever available, direct evidence should be used.</i>	Direct evidence of progression	Radiographic bone loss or CAL	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	Heavy biofilm deposits with low levels of destruction	Destruction commensurate with biofilm deposits
Grade modifiers	Risk factors	Smoking	Non-smoker	<10 cigarettes/day	≥10 cigarettes/day
		Diabetes	Normoglycemic/no diagnosis of diabetes	HbA1c <7.0% in patients with diabetes	HbA1c ≥7.0% in patients with diabetes

Peri-implant conditions

- Peri-implant mucositis – presence of profuse BOP with no progressive bone loss past initial remodeling
- Peri-implantitis – In the presence of previous records – progressive bone loss after 1 year of loading, deepening of pockets after crown delivery
- In the absence of previous records: $\geq 6\text{mm}$ Probing depth, $\geq 3\text{mm}$ of bone loss from implant platform with bleeding and/or suppuration



TREATMENT AND GUIDELINES

TREATMENT









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CLINICAL PRACTICE GUIDELINE

Journal of Clinical
Periodontology WILEY

Treatment of stage I–III periodontitis—The EFP S3 level clinical practice guideline

Mariano Sanz¹  | David Herrera¹  | Moritz Kepschull^{2,3,4}  | Iain Chapple^{2,3}  |
Søren Jepsen⁵  | Tord Berglundh⁶  | Anton Sculean⁷  | Maurizio S. Tonetti^{8,9}  |

On behalf of the EFP Workshop Participants and Methodological Consultants

Treatment

- 1: Patient motivation, behavior modification and risk factor control
- 2: Professional removal of supra, sub gingival plaque and calculus
- 3: Consideration of adjunct antimicrobial/ host modulating agents in special cases
- 4: Re-evaluation. A good endpoint: No >4mm pocket with bleeding or >6mm pocket without bleeding
- 5: Residual areas treated with repeated instrumentation and/or surgery.
- 6: After re-evaluation, personalized maintenance program is commenced

Treatment

R4.2 | Is adherence to supportive periodontal care important?

Expert consensus-based recommendation (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.

Supporting literature Costa et al. (2014), Sanz et al. (2015), Trombelli et al. (2015)

Grade of recommendation Grade A—↑↑

R4.5 | Should we recommend a powered or a manual toothbrush?

Evidence-based recommendation (4.5)

The use of a powered toothbrush **may be considered** as an alternative to manual tooth brushing for periodontal maintenance patients.

Supporting literature Slot et al. (2020)

Quality of evidence Five RCTs (216 patients) with high risk of bias

Grade of recommendation Grade 0—↔

Treatment

R3.10 | What is the adequate management of molars with Class II and III furcation involvement and residual pockets?

Evidence-based recommendation and statement (3.10)

- A **We recommend** that molars with Class II and III furcation involvement and residual pockets receive periodontal therapy.
- B Furcation involvement is no reason for extraction.

Supporting literature Dommisch et al. (2020); Jepsen et al. (2019)

Quality of evidence

Regenerative treatment: 20 RCTs (575 patients)

Resective treatment: Seven observational studies (665 patients)
with low quality of evidence

Grade of recommendation

- A. Grade A—↑↑
- B. Statement

A. **Strength of consensus** Strong consensus (1.5% of the group abstained due to potential Col)

B. **Strength of consensus** Consensus (1.5% of the group abstained due to potential Col)

Treatment

R3.1 | How effective are access flaps as compared to repeated subgingival instrumentation?

Evidence-based recommendation (3.1)

In the presence of deep residual pockets (PPD \geq 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.

Supporting literature Sanz-Sanchez et al. (2020)

Quality of evidence Thirteen RCTs (500 patients) with moderate-to-high risk of bias. Five studies were restricted to pockets associated with intrabony defects. Limited number of studies presented data for quantitative analyses. High consistency of results.

Grade of recommendation Grade B— \uparrow

Strength of consensus Consensus (1.4% of the group abstained due to potential Col)

R3.6 | What is the importance of adequate self-performed oral hygiene in the context of surgical periodontal treatment?

Expert consensus-based recommendation (3.6)

We recommend not to perform periodontal (including implant) surgery in patients not achieving and maintaining adequate levels of self-performed oral hygiene.

Supporting literature Expert opinion

Grade of recommendation Grade A— $\uparrow\uparrow$

Strength of consensus Strong consensus (0% of the group abstained due to potential Col)

Treatment

R4.1 | At what intervals should supportive periodontal care visits be scheduled?

Expert consensus-based recommendation (4.1)

We **recommend** that supportive periodontal care visits should be scheduled at intervals of 3 to a maximum of 12 months and ought to be tailored according to patient's risk profile and periodontal conditions after active therapy.

Supporting literature Polak et al. (2020), Ramseier et al. (2019), Sanz et al. (2015), Trombelli et al. (2020), Trombelli et al. (2015)

Grade of recommendation Grade A—↑↑

Strength of consensus Strong consensus (0% of the group abstained due to potential CoI)

Treatment

R4.6 | How should interdental cleaning be performed?

Evidence-based recommendation (4.6)

If anatomically possible, we **recommend** that tooth brushing should be supplemented by the use of interdental brushes.

Supporting literature Slot et al. (2020)

Quality of evidence Seven comparisons from four RCTs (290 patients) with low to unclear risk of bias

Grade of recommendation Grade A—↑↑

Strength of consensus Unanimous consensus (5.4% of the group abstained due to potential Col)

R4.13 | Which antiseptic is the most effective in mouth rinses?

Evidence-based recommendation (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.

Supporting literature Escribano et al. (2016); Figuero, Herrera, et al. (2019); Figuero, Roldan, et al. (2019); Serrano et al. (2015)

Quality of evidence CoE Class I—24 RCTs with, at least, 6-month follow-up

Grade of recommendation Grade B—↑

Strength of consensus Consensus (17.9% of the group abstained due to potential Col)



PERIO-SYSTEMIC CONNECTIONS

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Gum disease increases the risk of heart attacks and strokes



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How gum disease could lead to cancer

Is oral health even more important than we thought? Well, new research from Finland has pointed to a surprising link between gum disease and the development of some cancers. And even worse, it has been linked to the risk of cancer-related death.



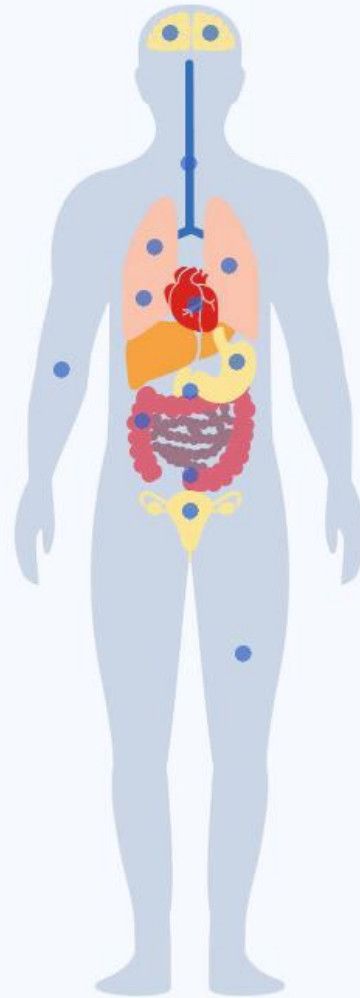
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Are Periodontitis, Stroke, and Alzheimer's Disease Linked?

Carla Nieto Martínez
June 15, 2023

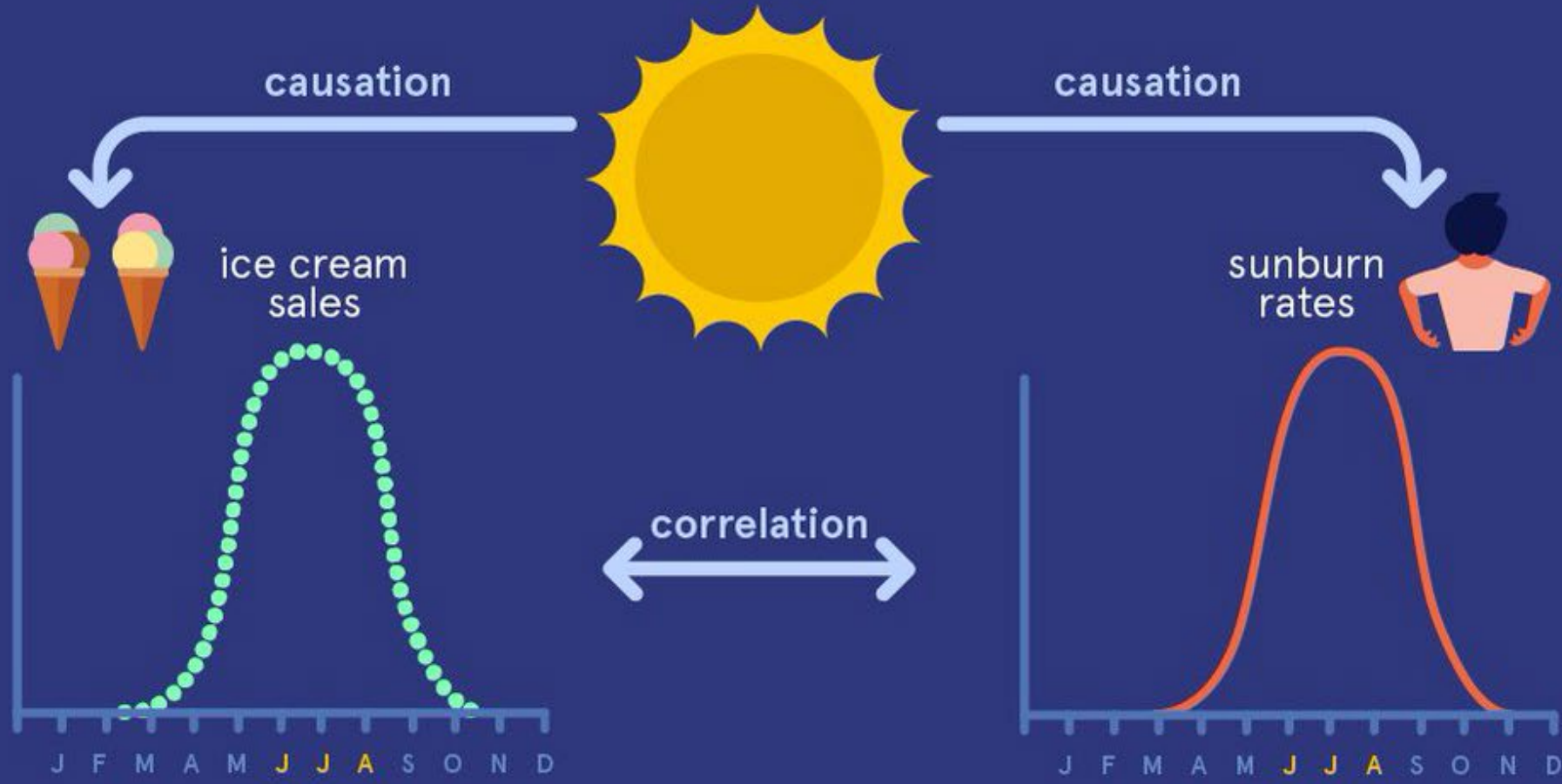
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<https://whole-body-health.fdiworlddental.org/>

correlation does not imply causation



ARTIFICIAL INTELLIGENCE

[Dent J \(Basel\)](#). 2023 Feb; 11(2): 43.

Published online 2023 Feb 8. doi: [10.3390/dj11020043](https://doi.org/10.3390/dj11020043)

PMCID: PMC9955396

PMID: [36826188](https://pubmed.ncbi.nlm.nih.gov/36826188/)

Artificial Intelligence in Periodontology: A Scoping Review

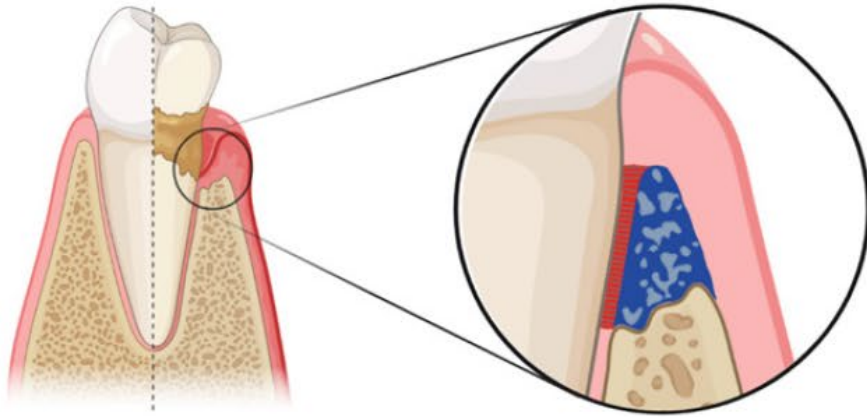
[James Scott](#),^{1,*} [Alberto M. Biancardi](#),² [Oliver Jones](#),¹ and [David Andrew](#)¹

Christos Rahiotis, Academic Editor and Nikolaos Gkantidis, Academic Editor

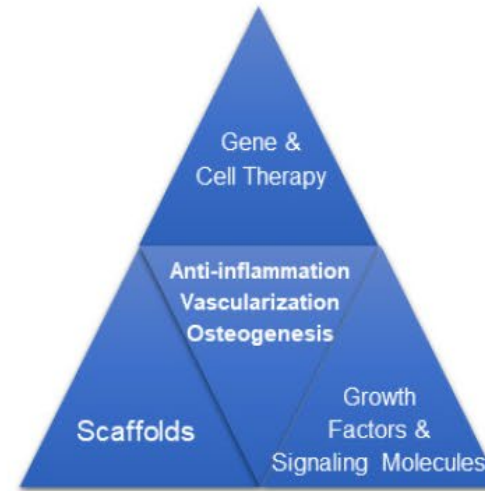
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Tissue Engineering

A



B



C

Current Status



Collagen membrane



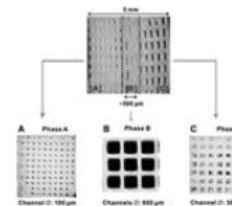
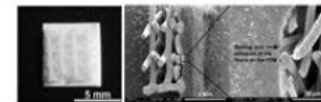
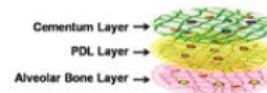
Xenograft



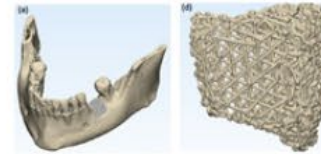
Gel +
Enamel matrix derivative

D

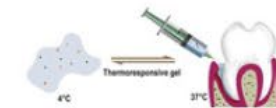
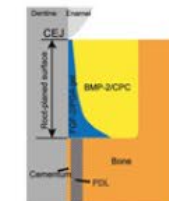
Future Trends



Multiphase Scaffolds
Coordinated responses of
soft and hard tissues



3D-printed constructs
Customized shapes



Hydrogels
Easy-handling

Implants vs Teeth

- Maybe there will come a day when implants are better than natural teeth but today is not the day. Until then consider retaining teeth for as long as possible.
- Never was and should be implants versus teeth.
- Implants don't replace teeth. They replace an already missing tooth.
- Not everyone is an implant candidate

THANK YOU

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