2017-NEW CLASSIFICATION FOR PERIODONTAL AND PERI-IMPLANT DISEASES AND CONDITIONS

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INTRODUCTION

- The work- shop was co-sponsored by **the American Academy of Periodontology (AAP)** and **the European Federation of Periodontology (EFP)** and included expert participants from all over the world. Planning for the conference, which was held in Chicago on November 9 to 11, 2017, began in early 2015.
- The authors were charged with updating the 1999 classification of periodontal diseases and conditions and developing a similar scheme for peri-implant diseases and conditions.
- The intent of the workshop was to base classification on the strongest available scientific evidence, lower level evidence and expert opinion were inevitably used whenever sufficient research data were unavailable.
- The scope of this workshop was to align and update the classification scheme to the current understanding of periodontal and peri-implant diseases and conditions.

110 experts participated in the World Workshop in Chicago, November 2017

CLASSIFICATION OF PERIODONTAL AND PERI-IMPLANT DISEASES AND CONDITIONS 2017

Periodontal Diseases and Conditions

Periodontal Health, Gingival Diseases and Conditions

Chapple, Mealey, et al. 2018 Consensus Rept link

Trombelli et al. 2018 Case Definitions link

- Periodontal Health and Gingival Health
- Gingivitis: Dental Biofilm-Induced
- Gingival Diseases: Non-Dental Biofilm-Induced

Periodontitis

Papapanou, Sanz et al. 2018 Consensus Rept link

Jepsen, Caton et al. 2018 Consensus Rept link

Tonetti, Greenwell, Kornman. 2018 Case Definitions link

- Necrotizing Periodontal Diseases
- Periodontitis
- Periodontitis as a Manifestation of Systemic Disease

Other Conditions Affecting the Periodontium

Jepsen, Caton et al. 2018 Consensus Rept link

Papapanou, Sanz et al. 2018 Consensus Rept link

- Systemic diseases or conditions affecting the periodontal supporting tissues
- Periodontal Abscesses and Endodontic-Periodontal Lesions
- Mucogingival Deformities and Conditions
- Traumatic Occlusal Forces
- Tooth and Prosthesis Related Factors

Peri-Implant Diseases and Conditions

Berglundh, Armitage et al. 2018 Consensus Rept link

- Peri-Implant Health
- Peri-Implant Mucositis
- Peri-Implantitis
- Peri-Implant Soft and Hard Tissue Deficiencies

PERIODONTAL HEALTH,GINGIVAL DISEASES AND CONDITIONS

PERIODONTAL HEALTH, GINGIVAL DISEASES AND CONDITIONS

Periodontal health and Gingival Health

Gingivitis: Dental Biofilm-Induced

Gingival Disease: Non-Dental Biofilm-Induced

PERIODONTAL HEALTH, GINGIVAL DISEASES/CONDITIONS

1. **Periodontal health and gingival health**

   Lang & Bartold 2018 link

   a. Clinical gingival health on an intact periodontium
   b. Clinical gingival health on a reduced periodontium
      i. Stable periodontitis patient
      ii. Non-periodontitis patient

2. **Gingivitis – dental biofilm-induced**

   Murakami et al. 2018 link

   a. Associated with dental biofilm alone
   b. Mediated by systemic or local risk factors
   c. Drug-influenced gingival enlargement

3. **Gingival diseases – non-dental biofilm induced**

   Holmstrup et al. 2018 link

   a. Genetic/developmental disorders
   b. Specific infections
   c. Inflammatory and immune conditions
   d. Reactive processes
   e. Neoplasms
   f. Endocrine, nutritional & metabolic diseases
   g. Traumatic lesions
   h. Gingival pigmentation

1. PERIODONTAL HEALTH AND GINGIVAL HEALTH

- **"Health is a state of complete physical, mental and social well- being and not merely the absence of disease or infirmity."(WHO,March,2018)**
- Periodontal health should be defined as a state free from inflammatory periodontal disease that allows an individual to function normally and not suffer any consequences (mental or physical) as a result of past disease.
- **State free from inflammatory periodontal disease.** This, in turn, **means that absence of inflammation associated with gingivitis or periodontitis, as assessed clinically, is a prerequisite for defining periodontal health.**
- **Pristine Clinical Health**
- **Clinically Healthy**

PERIODONTAL HEALTH AND GINGIVAL HEALTH

- Clinical Gingival Health on an Intact Periodontium
- Clinical Gingival Health on Reduced a Periodontium
  - Stable Periodontitis Patient
  - Non-Periodontitis Patient

- However, it should be recognized that successfully treated and stable periodontitis patients remain at increased risk of recurrent progression of periodontitis. In non-periodontitis patients, there is no current evidence for increased risk of periodontitis.
- **A case of gingival health on a reduced periodontium in a stable periodontitis patient must be distinguished from a case of periodontal health in a reduced periodontium in a non-periodontitis patient (recession, crown lengthening), because there is a difference in risk for periodontal disease progression.**
- **Gingivitis at a site level (gingivitis site) is completely different from defining a gingivitis case (GC) & a one gingivitis site does not equate to a GC.**

PERIODONTAL HEALTH AND TREATMENTS TARGETS FOR A DISEASED OR REDUCED PERIODONTIUM

It is proposed that there are 4 levels of periodontal health, depending upon whether the periodontium has normal attachment and bone level or reduced support, as well as the ability to control modifying factors and relative treatment outcomes.

These 4 categories include:

1) **Pristine periodontal health**, defined as a total absence of clinical inflammation periodontium with normal support (no attachment or bone loss). Pristine periodontal health is not likely to be observed clinically.

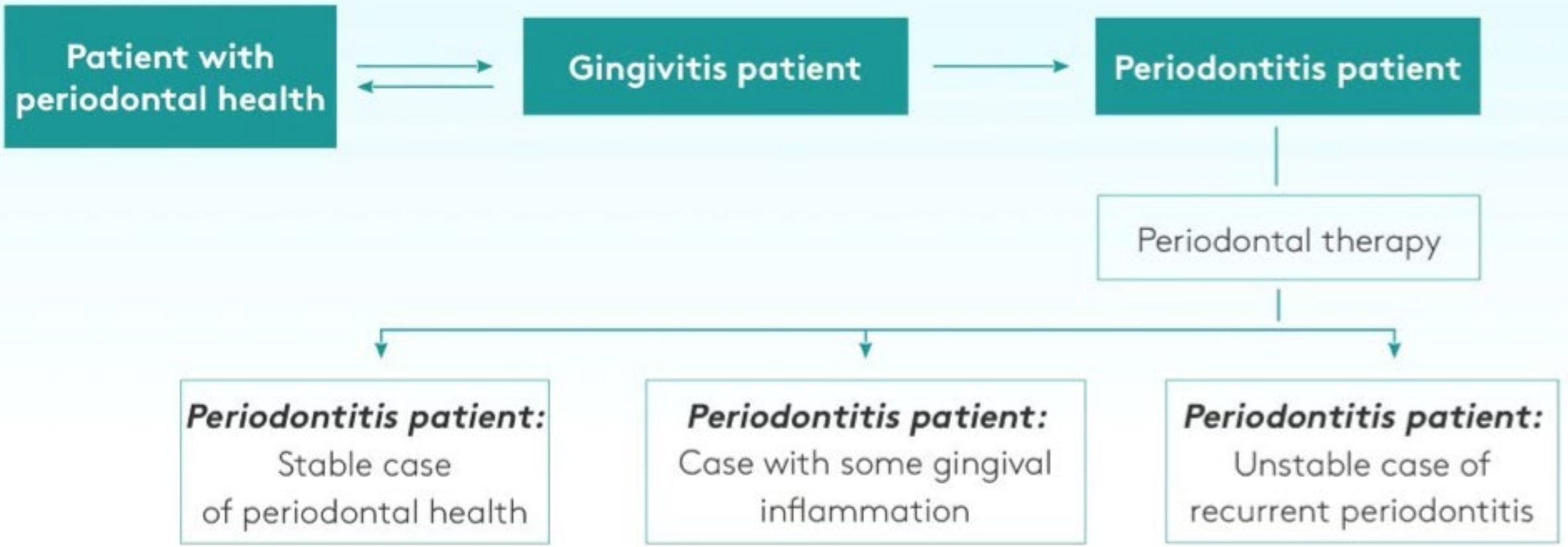
2) **Clinical periodontal health**, characterized by an absence or minimal levels of clinical inflammation in a periodontium with normal support;

3) **Periodontal disease stability in a reduced periodontium;** defined as a state in which periodontitis has been successfully treated through control of local and systemic factors, resulting in minimal BoP, optimal improvements in PPD and attachment levels, and a lack of progressive destruction. The principal signs of successful periodontal treatment would be as detailed above with regard to BoP, PPD, and clinical attachment levels. In addition, control of modifying factors such as reduction of daily cigarette smoking and good control of diabetes are achieved. In many respects, attainment of periodontal disease stability can be considered a prognostic definition.

4**) Periodontal disease remission/control in a reduced periodontium;** defined as a period in the course of disease during which treatment has resulted in reduction **(although not total resolution)** of inflammation and some improvement in PPD and attachment levels, but **not optimal control of local or systemic contributing factors.** This may be a reasonable treatment outcome for individuals with uncontrollable modifying factors. Indeed for many chronic inflammatory medical conditions (eg, diabetes, cardiovascular disease, hyperlipidemia, and rheumatoid arthritis.

★Ideally, restoration to **periodontal stability** should be a major treatment goal while **remission/control** should be a clear target, based on available evidence.

Figure 1: **Health & gingivitis on an intact & reduced periodontium: Underpinning principles**



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2. GINGIVITIS: DENTAL BIOFILM-INDUCED

★Gingivitis can be classified as;

1. **Gingivitis** on an intact periodontium
2. **Gingivitis** on a reduced periodontium in a non-periodontitis patient (e.g., recession, crown lengthening)
3. **Gingival inflammation** on a reduced periodontium in a successfully treated periodontitis patient (Note that recurrent periodontitis cannot be ruled out in this case)

CLASSIFICATION OF PLAQUE-INDUCED GINGIVITIS AND MODIFYING FACTORS

Associated With Bacterial Biofilm Alone

Mediated By Systemic or Local Factor

Drug-Influenced Gingival Enlargement

i. **Systemic Risk Factors / Modifying Factors:**

a. Smoking.
b. Hyperglycemia.
c. Nutritional factors (Malnutrition).
d. Sex Steroid Hormones(puberty, Menstrual cycle,Pregnancy, Oral contraceptives).
e. Hematological Conditions (Leukemia).

ii. **Local Risk Factors/Predisposing factors:**

a. Dental plaque biofilm retention factors (e.g., prominent restoration margins)
b. Oral Dryness(Hyposalivation)

Gingivitis in an Intact Periodontium

	Localized Gingivitis	Generalized Gingivitis
Probing attachment Loss	No	No
Radiographic bone Loss	No	No
Bop Score	> or equal 10%, <or equal 30%	>30%

Gingivitis in a Reduced Periodontium Without History of Periodontitis

	Localized Gingivitis	Generalized Gingivitis
Probing Attachment Loss	Yes	Yes
Radiographic Bone Loss	Possible	Possible
Probing Depth(all Sites)	< or equal 3mm	< or equal 3mm
Bop Score	> or equal 10%, < or equal 30%	>30%

OUTCOMES OF PERIODONTAL HEALTH FOR PLAQUE ASSOCIATED PERIODONTAL DISEASE

				Periodontitis (reduced periodontium)	
	Pristine periodontal health	Clinical periodontal health (intact periodontium)	Gingivitis	Periodontal disease stability	Periodontal disease remission/control
Bleeding on probing	No	No/Minimal	Yes	No/Minimal	Significantly reduced
Normal gingival sulcus depth	Yes	Yes	Yes	No	No
Normal bone heights	Yes	Yes	Yes	No	No
Modifying factors	Controlled	Controlled	May be present	Controlled	Not fully controlled
Predisposing factors	Controlled	Controlled	May be present	Controlled	Not fully controlled

Gingival condition would be described as :

- **Localized when < 30% of the teeth** are affected.
- **Generalized would reflect when ≥30% of the teeth** are affected by gingival inflammation.
- M**ild gingival inflammation would be an area with a minor change in color and little change in the texture of the tissue.**
- **Moderate gingival inflammation would be an area with glazing, redness, edema, enlargement, and bleeding upon probing;**
- **Severe gingival inflammation would be an area of overt redness and edema with a tendency toward bleeding when touched rather than probed**.

T**he extent of gingival enlargements** were defined as either **localized or generalized**.

L**ocalized gingival enlargement** was limited to the gingiva in relation to a **single tooth or group of teeth.**

Generalized enlargement involves the gingiva **throughout the mouth**.

To be considered a gingival enlargement resulting from medications, the size of the gingival unit must be greater than would normally be expected from purely an inflammatory reaction in the gingival tissues.

- **Mild gingival enlargement** involves enlargement of the **gingival papilla**;
- **Moderate gingival enlargement** involves enlargement of the **gingival papilla and marginal gingiva**, and
- **Severe gingival enlargement** involves enlargement of the **gingival papilla, gingival margin, and attached gingiva**

3. GINGIVAL DISEASES: NON-DENTAL PLAQUE- INDUCED

A. Genetic/Developmental Disorders:

Hereditary gingival fibromatosis [a]

Patient - centered care in PDM (Precision Dental Medicine) . The conditions marked with an 'a' have associated systemic involvement or are oral manifestations of systemic conditions other health care providers may be involved in diagnosis and treatment.

B. Specific Infections:

i. Bacterial Origin.

(a) *Neisseria gonorrhoeae*[a]

(b) *Treponema pallidum*[a]

(c) *Mycobacterium tuberculosis*[a]

(d) Streptococcal gingivitis

(e) Necrotizing Periodontal

ii. Viral Origin.

(a) Coxsackie virus (hand-foot-and-mouth disease)[a]

(b) Herpes simplex I & II (primary or recurrent)[a]

(c) Varicella zoster (chicken pox & shingles – V nerve)[a]

(d) Molluscum contagiosum[a]

(e) Human papilloma virus (squamous cell papilloma; condyloma acuminatum; verruca vulgaris; focal epithelial hyperplasia)

iii. Fungal Origin:

(a) Candidosis.

(b)Other Mycoses

C. Inflammatory and Immune Conditions:

i. Hypersensitivity Reactions.

(a) Contact allergy[a]

(b) Plasma cell gingivitis[a]

(c) Erythema multiforme[a]

ii. Autoimmune Diseases of skin and mucous Membranes.

(a) Pemphigus vulgaris[a]

(b) Pemphigoid[a]

(c) Lichen planus[a]

(d) Lupus erythematosus[a]
Systemic lupus erythematosis Discoid lupus erythematosis

iii. Granulomatous Inflammatory

(a) Crohn's disease[a]

(b) Sarcoidosis[a]

GINGIVAL DISEASES: NON-DENTAL PLAQUE- INDUCED

D. Reactive processes:

i. Epulides

(a) Fibrous epulis

(b) Calcifying fibroblastic granuloma

(c) Vascular epulis (pyogenic granuloma)

(d) Peripheral giant cell granuloma[a]

E. Neoplasms.

i. Premalignancy

(a) Leukoplakia

(b) Erythroplakia.

ii. Malignancy:

(a) Squamous cell carcinoma[a]

(b) Leukemic cell infiltration[a]

(c) Lymphoma[a] Hodgkin, Non-Hodgkin

F. Endocrine,nutritional & metabolic diseases.

Vitamin deficiencies[a]

(a) Vitamin C deficiency (scurvy)

G. Traumatic lesions

i. Physical/mechanical trauma

(a) Frictional keratosis

(b) Mechanically induced gingival ulceration

(c) Factitious injury (self-harm)

ii. Chemical (toxic) burn

iii. Thermal insults

(a) Burns to gingiva

H. Gingival Pigmentationi.

i. Melanoplakia[a]

ii.Smoker's melanosis

iii.Drug-induced pigmentation (antimalarials, minocycline)

iv.Amalgam tattoo

FUTURE RESEARCH NEEDS

- Development and validation of non-invasive diagnostic tools (e.g., saliva-based diagnostics), especially as they relate to detection of gingival inflammation;
- Identification of the characteristics (e.g., genetic factors) that distinguish persons who are resistant to the development of dental plaque biofilm-induced or non-dental plaque biofilm–induced gingival diseases from those who are susceptible;
- Expansion of our limited knowledge of the determinants that affect the reliability of currently available diagnostic tools (e.g., effects of probe design on bleeding on probing responses);
- Characterization of the possible differences (e.g., molecular determinants) between gingivitis on an intact periodontium and other forms of gingival inflammatory disease.
- Regarding the current primary periodontal diagnostic tool, the graduated periodontal measuring probe, the following are recommendations for an International Organization for Standardization periodontal probe– ISO 21672
  The reliability and reproducibility of any case definition for health, gingival or periodontal conditions relies upon standardization of probing protocols, which is only possible with the implementation of an ISO probe.
- The current International Organization for Standardization (ISO) for periodontal probes is – ISO 21672, but requires updating in order to define the features of a global standard periodontal probe. These characteristics are:
  1. Tip diameter 0.5 mm.
  2. Cylindrical tine structure.
  3. Constant force limiter of 0.25 N.
  4. 15-mm scale with precise individual or banded millimeter markings.
  5. A taper of 1.75°

FIGURE 1 Participants of Workgroup 1

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