



Periodontal health and gingival diseases and conditions on an intact and a reduced periodontium: Consensus report of workgroup 1 of the 2017 World Workshop on the Classification of Periodontal and Peri-Implant Diseases and Conditions

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INTRODUCTION

- **Periodontal health ?**

Is the state free from Inflammatory periodontal disease that allow an individual to function normally and avoid consequences due to current or past disease .

- **Periodontitis can remain stable or enter periods of exacerbation.**

- **Periodontal health is critical to establish :**

- 1- Ideal therapeutic end points to periodontal therapies .

- 2- Assess the biological of periodontal inflammation .

- 3- Categorize gingival and periodontal disease prevalence

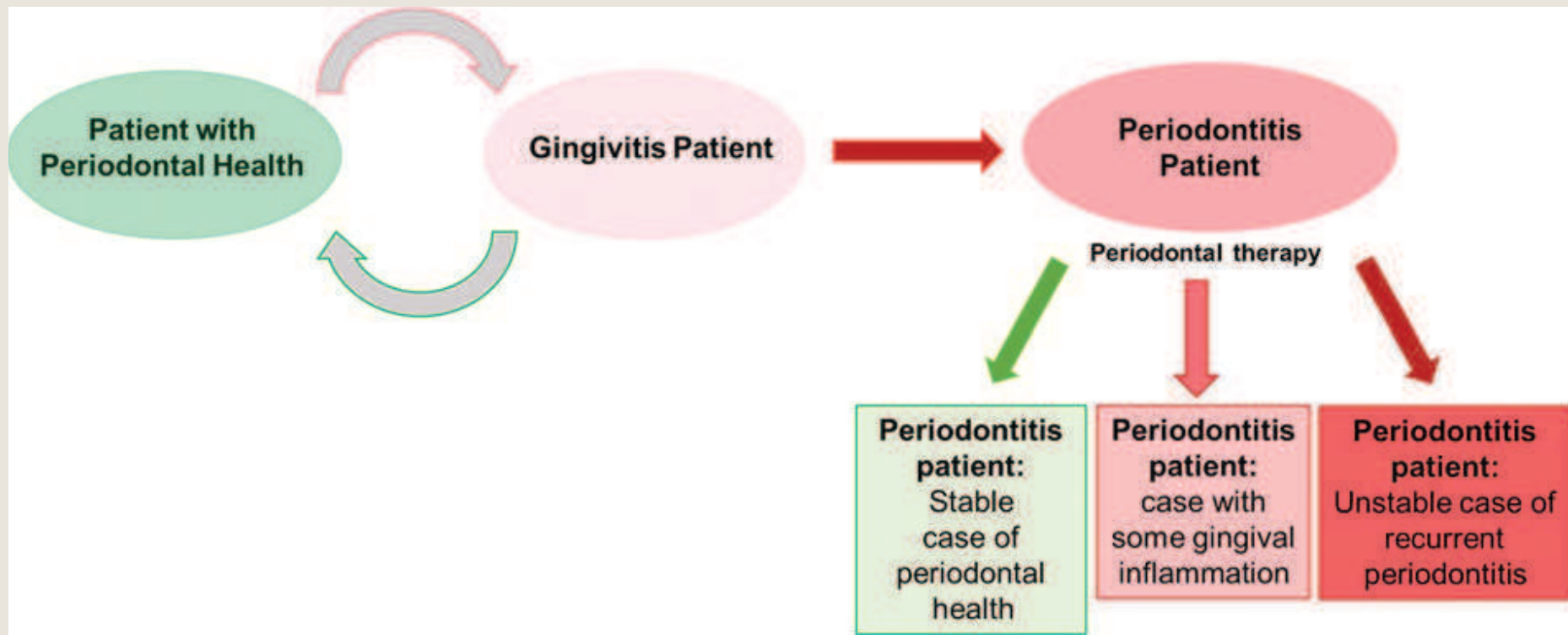
- 4- Evaluate individualized risk for future disease development .

CLASSIFICATION OF GINGIVAL HEALTH

- **Clinical gingival health on an intact periodontium**
- **Clinical gingival health on a reduced periodontium**
 - **Stable periodontitis patient**
 - **Non-periodontitis patient**

❖ **what are the clinical features of gingival health on :**

	BOP	erythema & edema	Clinical attachment and normal bone level
An intact periodontium	✘	✘	Presence
A reduced periodontium	✘	✘	Reduced
Following treatment of gingivitis on an intact periodontium	✘	✘	Presence
Following successful treatment of periodontitis	✘	✘	Reduced



- How to define a case of **gingival health** on intact and reduced periodontium for epidemiological & clinical purposes ?
 - ✓ For Intact , reduced and stable periodontium gingival health is defined as < 10% bleeding sites with probing depth \leq 3mm .
 - ✓ A case of gingival health on an intact and reduced periodontium would be with no signs of gingivitis .
- **What are the characteristics of periodontal stability ?**
 1. Control local and systemic risk factor
 2. BOP < 10% of sites
 3. No probing depth of 4 mm or more that bleed on probing
 4. Optimal improvement in other clinical parameter
 5. Lack of progressive periodontal destruction

GINGIVAL DISEASE

- ❖ **Dental plaque biofilm - induced gingivitis**
- ❖ **Non-dental plaque - induced gingival disease**
- **Whether dental plaque induced gingival inflammation occurs on an intact or reduced periodontium , or in a patient diagnosed with periodontitis , gingivitis can be further classified as :-**
 - ❑ **Gingivitis on an intact periodontium .**
 - ❑ **Gingivitis on a reduced periodontium in a non-periodontitis patient (e.g. , recession , crown lengthening)**
 - ❑ **Gingival inflammation on a reduced periodontium in a successfully treated periodontitis .**

DEVELOPMENT OF GINGIVITIS ITS SEVERITY AND EXTENT

**Local risk factors
(predisposing factor)**

**Dental plaque
biofilm retention**

Oral dryness

**Systemic risk factors
(modifying factors)**

Smoking

Metabolic factor

**Nutritional
factors**

**Pharmacological
agent**

**Elevation in sex
steroid hormones**

**Hematological
conditions**

Gingivitis is a clinical diagnosis

Signs of inflammation :
Erythema ,Edema ,Pain & Heat

Manifest clinically as :
Swelling
Bleeding and discomfort on gentle probing
Redness

**Clinical ,radiological and
biological Signs and
symptoms for gingivitis case**

Symptoms :
Bleeding gum
Pain
Halitosis
Difficulty eating
Reduced oral health

**Radiographic cannot be
used to diagnose gingivitis**

DENTAL PLAQUE BIOFILM –INDUCED GINGIVITIS

- Methods of defining gingivitis may include mild , moderate and sever ,, but there is no strong evidence to clearly differentiate mild , moderate and sever gingivitis and definition remain a matter of professional opinion .
- How to define a case of **dental plaque – induced gingivitis** on intact and reduced periodontium for epidemiological & clinical purposes ?
 - ✓ Gingivitis on an intact periodontium and gingivitis on a reduced periodontium in a patient without history of periodontitis is defined as ≥10% bleeding sites with probing depth ≤ 3mm .
 - ✓ Localized gingivitis is defined as 10% - 30% bleeding sites
 - ✓ Generalized gingivitis is defined as > 30% bleeding sites .

DENTAL PLAQUE BIOFILM –INDUCED GINGIVITIS

- ✓ In clinical practice , periodontitis patient , if successfully treated can achieve a reduced and stable periodontium where probing depth are $\leq 4\text{mm}$ and there is an absence of clinical inflammation .
- ✓ **Gingival inflammation** may arise at specific site , and where probing depth are $\leq 3\text{mm}$ is termed *gingival inflammation in a stable periodontitis patient* .

DENTAL PLAQUE BIOFILM –INDUCED GINGIVITIS

TABLE 1 Diagnostic look-up table for gingival health or dental plaque-induced gingivitis in clinical practice

Intact periodontium	Health	Gingivitis
<i>Probing attachment loss</i>	No	No
<i>Probing pocket depths (assuming no pseudo pockets)^a</i>	≤3 mm	≤3 mm
<i>Bleeding on probing^a</i>	<10%	Yes (≥ 10%)
<i>Radiological bone loss</i>	No	No
Reduced periodontium		
Non-periodontitis patient	Health	Gingivitis
<i>Probing attachment loss</i>	Yes	Yes
<i>Probing pocket depths (all sites & assuming no pseudo pockets)^a</i>	≤3 mm	≤3 mm
<i>Bleeding on probing^a</i>	<10%	Yes (≥ 10%)
<i>Radiological bone loss</i>	Possible	Possible
<p>NB: In conditions where there is treatment but not cure, e.g. rheumatoid arthritis, periodontitis, the post-treatment parameters that define stability/health or gingivitis may differ from the parameters for health/gingivitis in a non-periodontitis patient. The threshold for “clinical health” in a treated and stable periodontitis patient is therefore set at ≤ 4 mm.</p>		
Successfully treated stable periodontitis patient	Health	Gingivitis in a patient with a history of periodontitis
<i>Probing attachment loss</i>	Yes	Yes
<i>Probing pocket depths (all sites & assuming no pseudo pockets)^a</i>	≤4 mm (no site ≥ 4 mm with BOP) ^b	≤3 mm
<i>Bleeding on probing^a</i>	<10%	Yes (≥ 10%)
<i>Radiological bone loss</i>	Yes	Yes

NON-DENTAL PLAQUE-INDUCED GINGIVAL CONDITIONS

- Non-dental plaque-induced gingival conditions encompass a variety of conditions that are not caused by plaque and usually do not resolve following plaque removal.

TABLE 2 Classification of gingival health and gingival diseases/conditions

- 1. Periodontal health²**
 - A.** Clinical health on an intact periodontium
 - B.** Clinical gingival health on a reduced periodontium
 - (i) Stable periodontitis patient
 - (ii) Non-periodontitis patient
- 2. Gingivitis – dental plaque-induced: intact periodontium; reduced periodontium in non-periodontitis patient; reduced periodontium in successfully treated periodontitis patient.⁷**
 - A.** Associated with biofilm alone
 - B.** Mediated by systemic or local risk factors
 - i.** Systemic risk factors (modifying factors)
 - (a) Smoking
 - (b) Hyperglycemia
 - (c) Nutritional factors
 - (d) Pharmacological agents (prescription, non-prescription and recreational)
 - (e) Sex steroid hormones
 - Puberty
 - Menstrual cycle
 - Pregnancy
 - Oral contraceptives
 - (f) Hematological conditions
 - ii.** Local risk factors (predisposing factors)
 - (a) Dental plaque biofilm retention factors (e.g., prominent restoration margins)
 - (b) Oral dryness
 - C.** Drug-influenced gingival enlargement
- 3. Gingival diseases – non-dental plaque-induced²⁶**
 - A.** Genetic/developmental disorders
 - i.** Hereditary gingival fibromatosis^a
 - B.** Specific infections
 - i.** Bacterial origin
 - (a) *Neisseria gonorrhoeae*^a
 - (b) *Treponema pallidum*^a
 - (c) *Mycobacterium tuberculosis*^a
 - (d) Streptococcal gingivitis
 - 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, e.g., histoplasmosis, aspergillosis
- 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 erythematosus
Discoid lupus erythematosus
 - iii.** Granulomatous inflammatory lesions (orofacial granulomatoses)
 - (a) Crohn's disease^a
 - (b) Sarcoidosis^a
- 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
 - i.** 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 pigmentation
 - i.** Melanoplakia^a
 - ii.** Smoker's melanosis
 - iii.** Drug-induced pigmentation (antimalarials, minocycline)
 - iv.** Amalgam tattoo

^aConditions marked with an "a" have associated systemic involvement or are oral manifestations of systemic conditions; therefore, other health-care providers may be involved in diagnosis and treatment.

FUTURE RESEARCH NEEDS

Regarding classification and diagnosis of periodontal health and gingival diseases/conditions, future research is needed on the:

- 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 ISO periodontal probe:

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



FIGURE 1 Participants of Workgroup 1

THANK YOU

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