Periodontal disease Indices

❖ Indices used for oral hygiene (plaque, calculus) assessment:

1- Plaque Index (PlI) : dental plaque can be defined as soft highly variable specific material resulting from colonization and growth of microorganism on the tooth surfaces, restoration and oral appliances **…PlI** which was introduced by Silness and Löe in 1964:

-Used together with GI, and should precede the gingival examination.

-Wisdom teeth are excluded.

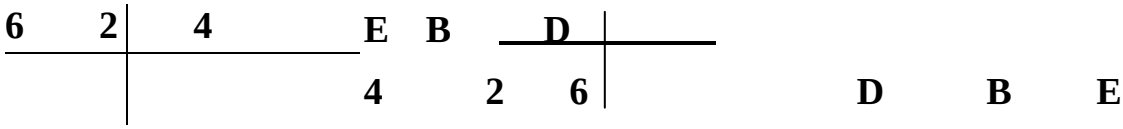
-Used on all teeth (28) or selected teeth (six index teeth).

-No substitution for any missing tooth.

- Four surfaces: distal, facial or buccal, mesial, and lingual, are examined. Each of the four surfaces of the teeth is given a score from 0 to 3.

-This index measures the **thickness** of plaque on the gingival one third. -this index is widely used with good validity and reliability, but its disadvantage is the subjectivity in estimating plaque, therefore, it is recommended that a single examiner be trained and used throughout clinical trial.

-**The six index teeth are:**



-The mouth mirror ,a light source ,a dental explorer and air drying of the teeth and gingiva are used in the scoring of this index .The surfaces examined are the four gingival areas of the tooth i.e. ,the distal—facial , facial , mesial – facial and lingual surfaces.

-Dental plaque is first detected visually, if it can be seen by the naked eye then the score either 2 (Moderate amount) or 3 (Abundant amount) .**But if the dental**

plaque cannot be seen by the naked eyes, so the dental probe will be passed on the gingival one third of the tooth surface to detect the presence or absence of dental plaque and the score will be either 0 (No plaque) or 1(dental plaque can be seen on the tip of the probe)

Score	Criteria
0	No plaque
1	A film of plaque adhering to the free gingival margin and adjacent area of the tooth, which cannot be seen with the naked eye. But only by using disclosing solution or by using probe.
2	Moderate accumulation of deposits within the gingival pocket, on the gingival margin and/ or adjacent tooth surface, which can be seen with the naked eye.
3	Abundance of soft matter within the gingival pocket and/or on the tooth and gingival margin.

Calculation:

1- Individual:

$$PII = \frac{\text{Total scores}}{\text{No. of surfaces exa.}}$$

2- Population:

$$PII = \frac{\text{Total indices}}{\text{No. of subjects exa.}}$$

The score range from 0-3

Interpretation for PlI Scores:

Rating	evaluation
Excellent oral hygiene	0
Good oral hygiene	0.1-0.9
Fair oral hygiene	1-1.9
Poor oral hygiene	2-3

2- Periodontal Disease Index (PDI)……. Which was introduced by Ramfjord in 1959

-Which is composed of three components:

1-Gingival and periodontal component.

2-Plaque component.

3-Calculus component

Calculus: It is a hard deposit that forms by mineralization of dental plaque and is generally covered by a layer of unmineralized plaque. It is of two types: -

Supragingival calculus—denotes deposits, usually white to yellowish-brown in colour. Present occlusal to the free gingival margin.

-Subgingival calculus—denotes deposits apical to the free gingival margin. These deposits usually are light brown to black in colour.

Calculus component of Periodontal Disease Index (PDI)

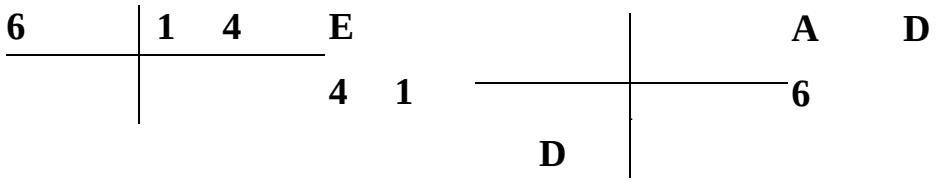
Scoring criteria:

0	Absence of calculus
1	Supragingival calculus extending only slightly below the free gingival margin (not more than 1 mm)
2	Moderate amount of supragingival and sub gingival calculus or sub gingival calculus alone
3	An abundance of supra gingival and sub gingival calculus

-This index measured the **extension** of calculus.

- Only facial and lingual surfaces are evaluated, and scored from 0 to 3.

-The six index teeth are:



Calculation:

1- Individual: **2- Population:**

calI = Total scores calI = Total indices No.

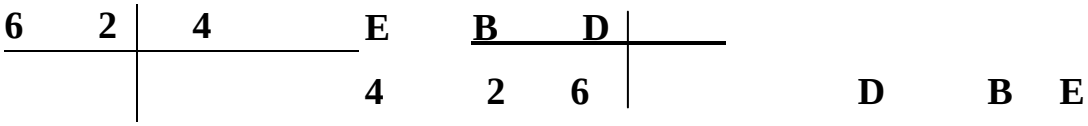
of surfaces exa. No. of subjects exa.

❖ **Gingival Index (GI)**....measure the severity of gingivitis (reversible gingival inflammation),which was introduced by Löe and Silness in 1963 . 1- GI could be used in all or selected teeth and four surfaces are examined for each tooth. Each surface is given a score range from 0-3 .

2- The examination done by blunt probe(CPI probe).

3- **Partially erupted teeth, retained roots, teeth with periapical lesion and third molars should be excluded and there is no substitution**.

4- The six index teeth are:



-To obtain the GI the examiner will need sufficient lighting a mouth mirror and WHO CPI probe .The teeth and the gingiva should be dried .

-The tissues surrounding each tooth are divided into four gingival scoring units :distal –facial papilla ,facial margin ,mesial-facial papilla and the entire lingual gingival margin(the lingual surface is not subdivided).

-First, the gingiva is inspected visually, if there is no inflammation and the gingiva is healthy (pale pink in color, knife edge gingival margin, flat interdental papilla, stippled surface), then, the score will be 0.

-But if the gingiva inflamed (redness and edema) ,then tip of the WHO CPI probe is inserted between the gingiva and the tooth(in gingival sulcus) to assess absence or presence of bleeding response. If there is no bleeding on probing then the score will be 1(mild inflammation) and if there is bleeding on probing then the score will be 2(Moderate inflammation).Score 3(Severe inflammation) is given in case of inflammation with tendency to spontaneous bleeding.

-The sensing force used should be no more than 20 g. A practical test for establishing this force is to ask examiners to place the probe point under their thumbnail and press until blanching occurs.

Score Criteria

0 No inflammation.

1 Mild inflammation, slight change in color, slight edema, no bleeding on probing.

2 Moderate inflammation, moderate glazing, redness, edema and hypertrophy, bleeding on probing.

3 Severe inflammation, marked redness and hypertrophy, ulceration, tendency to spontaneous bleeding.

Calculation:

1-Individual

$$GI = \frac{\text{Total scores}}{\text{No. of surfaces exa.}}$$

2-Population

$$GI = \frac{\text{Total indcies}}{\text{No. of subjects exa.}}$$

clinical interpretation:

0.1	_____	1	Mild gingivitis
1.1	_____	2	Moderate gingivitis
2.1	_____	3	Severe gingivitis

******** The maximum score for gingival index is **3**

$$GI = \frac{\text{Total scores}}{\text{No. of surfaces exa.}} \qquad GI = \frac{3 * 4 * 6}{4 * 6} = \frac{3 * 24}{24} = 3$$