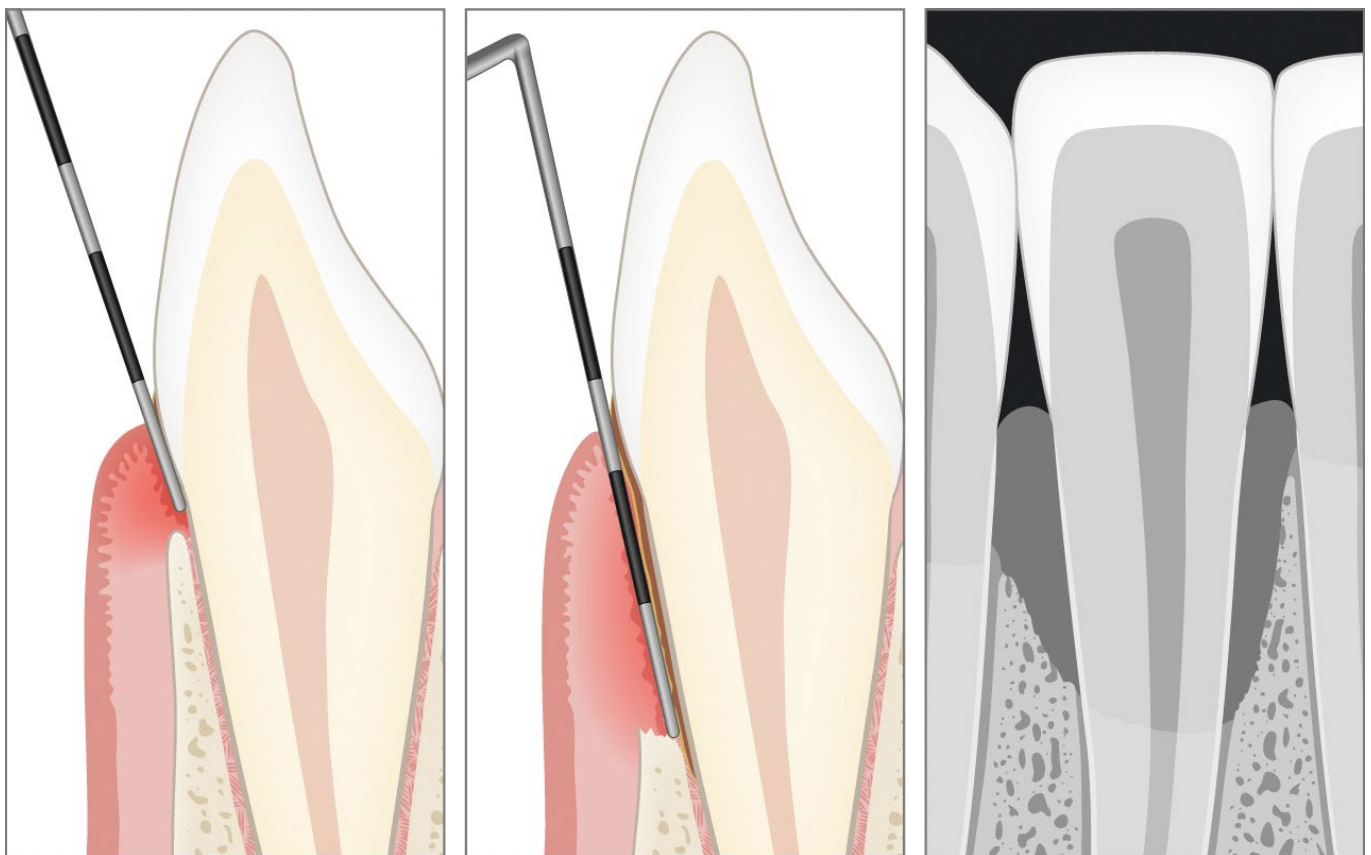


# Section 4 – Diagnosing periodontitis



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The website [www.periodontal-health.com](http://www.periodontal-health.com) is an information platform about the causes, consequences, diagnosis, treatment, and prevention of periodontitis. The contents were created in media dissertations for a doctorate at the University of Bern.

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### **Declaration of no-conflict-of-interest**

The production of this website and its hosting was and is being funded by the lead author. The translation of this website into the English language was funded by the European Federation of Periodontology (EFP). The production of the images was supported by the School of Dental Medicine of the University of Bern.

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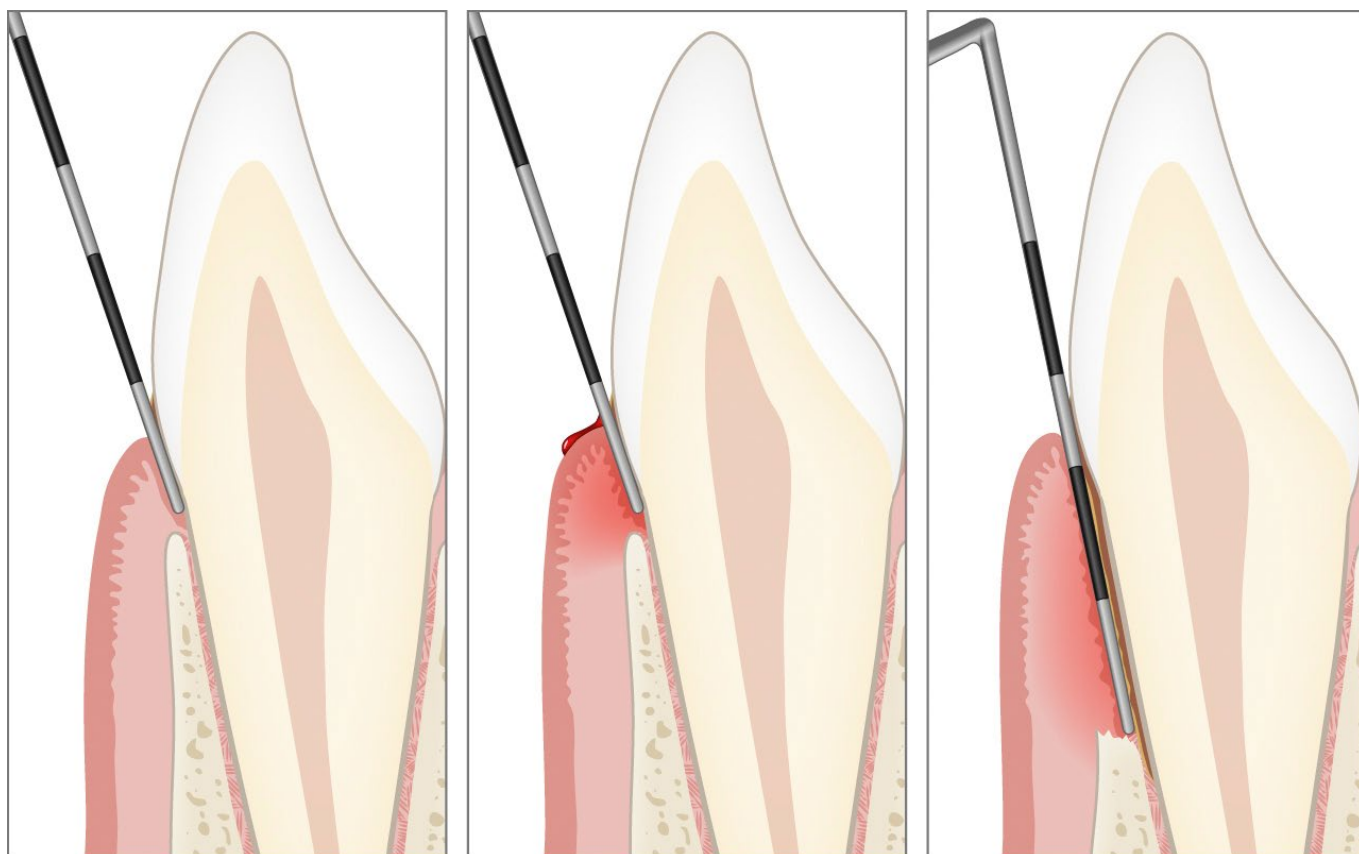
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## Section 4 – Diagnosing periodontitis

### 4.1 Clinical examination

The clinical examination in the dental practice is the only way to properly assess the condition of the gums.



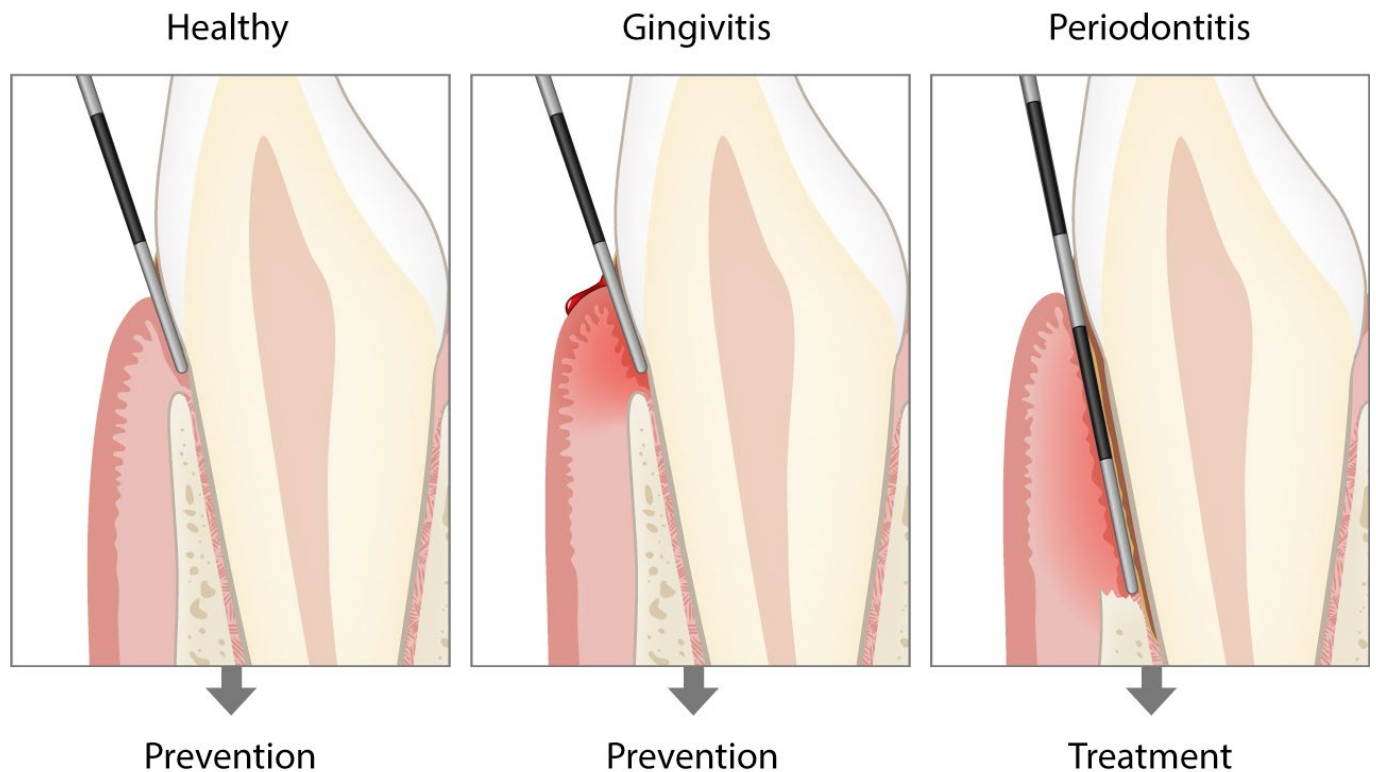
Self-assessment of the gums, for example at home in front of a mirror, is not sufficient for a correct evaluation because it is impossible to determine on your own whether the anchoring structures of the tooth have already been damaged by inflammation of the gums. Gum pockets can also not be detected on your own.

Only a proper clinical examination in the dental practice with what is called a gum probe (periodontal probe) can provide information on whether the gums are healthy, whether there is gum inflammation (gingivitis), or whether a disease of the anchoring structures of the teeth (periodontitis) is present.

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### 4.2 Basic periodontal examination

In a first checkup, the dentist or dental hygienist can carry out what is known as a basic periodontal examination that takes only a few minutes.



The basic periodontal examination is done to determine quickly whether there are any gum problems. It is a simple way of determining if there is gingivitis or detecting periodontitis.

Using a gum probe (periodontal probe), the depth of penetration at the gum line is measured gently and precisely.

After this short examination, further investigations are carried out only there is evidence of damage to the structures holding the teeth in the jawbone. These further investigations include what is called the periodontal status and additional X-rays.

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### Basic periodontal examination (BPE)

The goal of the basic periodontal examination (BPE) is to obtain the following information about the periodontal status in a relatively short time:

- Healthy periodontium or presence of gingivitis with the recommendation for prophylaxis and appropriate long-term preventive care
- Diseased periodontium with presence of periodontitis and recommendation for appropriate periodontal treatment

Every tooth must be assessed individually. For probing with a graduated periodontal probe (markings at 3, 6, 8, and 11 mm), only slight pressure of 0.25 N (25 g) should be applied. The tip of the probe (diameter 0.5 mm) is inserted gently along the axis of the tooth into the gingival sulcus. The probing depth (PB) is read from the markings on the probe. Four sites are examined at every tooth; implants are not included in the BPE.

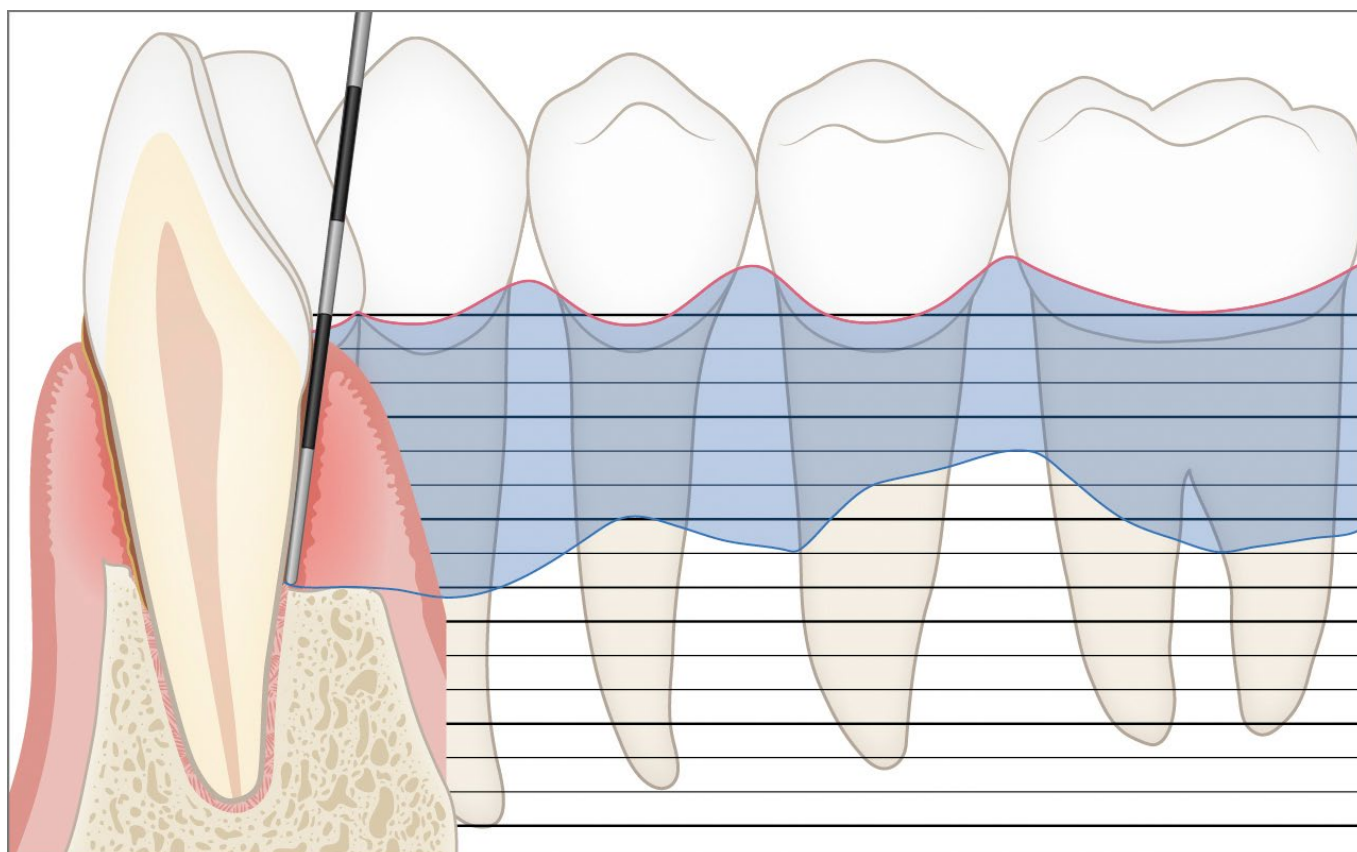
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- Ainamo, J., Barmes, D., Beagrie, G., Cutress, T., Martin, J. & Sardo-Infirri, J. (1982) Development of the World Health Organization (WHO) community periodontal index of treatment needs (CPITN). *Int Dent J* 32, 281-291. <https://www.ncbi.nlm.nih.gov/pubmed/6958657>

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### 4.3 Periodontal chart

**The precise clinical probing with the gum probe to measure the gum pockets and height of the jawbone within a millimeter is indispensable for diagnosing periodontitis.**



In the clinical examination with the gum probe (periodontal probe), the penetration depth of the probe into the gum pocket is measured at up to six sites per tooth to within a millimeter. Specifically, the length between the gum line and the bottom of the pocket is measured. This is called the probing depth. At healthy sites, the probing depth is 3 mm at most. At sites where the periodontitis has already led to a breakdown of the tooth anchoring, the probing depth can be 4 mm or more.

In addition, in what is termed a periodontal chart, the height of the jawbone (attachment level) is recorded precisely. A periodontal chart is indispensable for the diagnosis and planning treatment. The periodontal chart can be recorded online in any dental practice free of charge and reused: [www.parodontalstatus.ch](http://www.parodontalstatus.ch).

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### Periodontal chart

The objective of making a periodontal chart is to record the probing depth and attachment level precisely at six sites per tooth or implant for the entire dentition. For all measurements made with the periodontal probe, the value read on the probe is rounded up. At each site, the following is measured:

- First the gingival margin is measured precisely to the millimeter. This is the distance from the clinical gingival margin to a reference point such as the enamel/cementum border. If the edge of an existing crown or filling is no more than 3 mm apical from the original enamel/cementum border, these edges are used as reference points. Otherwise a virtual reference point at the level of the original enamel/cementum border is selected and documented so that the same point can be used for a later measurement.
- Additionally, the probing depth is measured at the same site. This is the value in mm read on a periodontal probe up to the bottom of the periodontal pocket.

The value for the attachment level is calculated using the formula:

Attachment level (mm) = Probing depth (mm) – Gingival margin (mm)

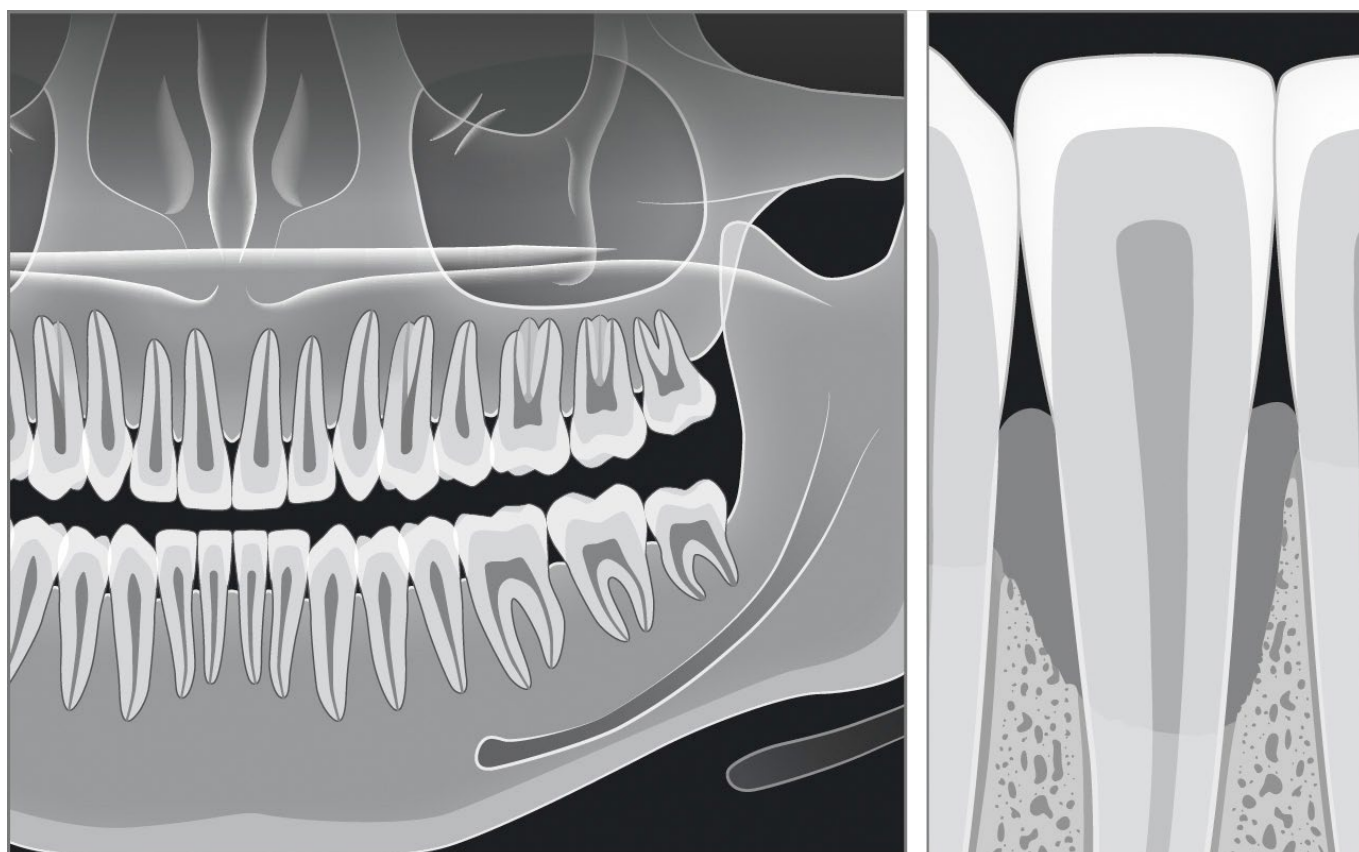
### References or external links

- Free online periodontal chart from the University of Bern:  
[www.parodontalstatus.ch](http://www.parodontalstatus.ch)

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### 4.4 X-ray finding

The measurements with the gum probe can detect places in the dentition with greater probing depths that require additional assessment with an X-ray.



The diagnosis of periodontitis can be definitely confirmed only with the necessary X-rays. The selection of the X-rays necessary to diagnose periodontitis can be made only after the clinical examination. This can prevent excessive exposure to radiation.

In the simplest case, an X-ray finding consists of 2 images (bite wing images) and in the most extensive case, it consists of what is termed an X-ray study with up to an additional 14 X-ray images or a panoramic X-ray. The X-ray images made must show the jawbone surrounding the tooth and make it possible to estimate the severity of bone loss.

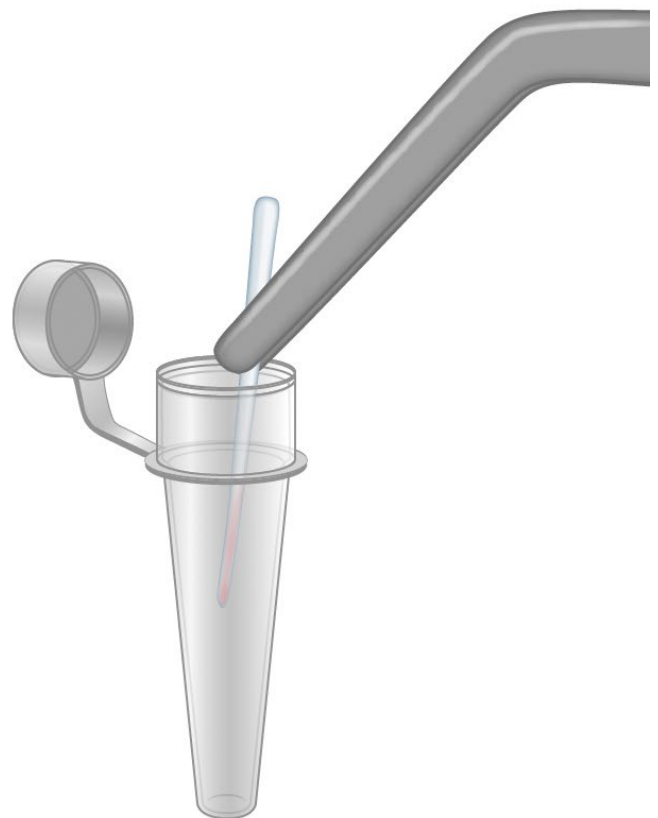
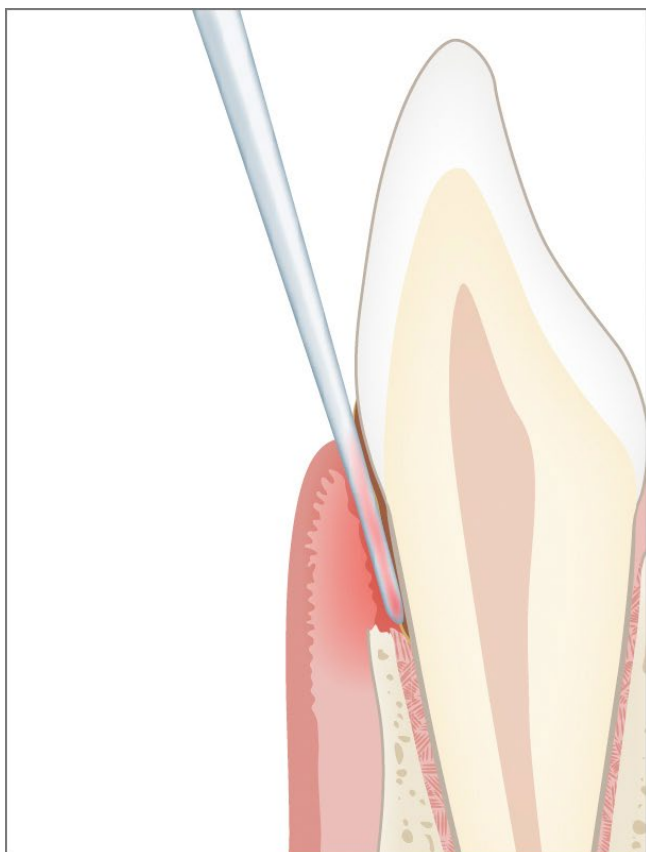
In each X-ray made on the dental practice, the dentition must be checked for caries as well as for periodontitis.



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### 4.5 Microbiological test

Today, microbiological methods give us access to information that was not possible to obtain using conventional test methods.



With modern microbiological tests, the composition of the dental plaque is tested for the following harmful kinds of bacteria:

- *Prevotella intermedia*
- *Porphyromonas gingivalis*
- *Agregatibacter actinomycetemcomitans*
- *Treponema denticola*

The cost of this additional diagnostic effort is justified if the information obtained leads to improved treatment or if unnecessary treatment can be avoided.

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### 4.6 Classification of periodontal disease

The diagnosis of gingivitis and periodontitis is based on the internationally recognized classification of periodontal disease.



In 1999, the first international workshop for the classification of periodontal disease was held in the US. The most important new feature compared with the European classification of 1993 was that the forms of the disease were no longer defined primarily based on the age of the patient at the time of the first diagnosis, (e.g. juvenile and adult periodontitis). The new forms chronic and aggressive periodontitis were introduced, as well as, for example, periodontitis that can be associated with systemic diseases.

However, the new classification since 2018 no longer differentiates between chronic and aggressive periodontitis. Periodontitis is now described – in line with the classification of diabetes – using staging and grading.

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### Classification of periodontal disease

The former classification of 1999 included the following diseases:

- Gingival diseases (G)
  - Plaque-induced or non-plaque-induced gingivitis
- Chronic periodontitis (CP)
- Aggressive periodontitis (AP)
- Periodontitis as manifestation of a systemic disease (PS)
- Necrotizing periodontal disease (NP)
  - Necrotizing gingivitis (NG) or necrotizing ulcerative periodontitis (NUP)
- Periodontal abscess
- Periodontitis associated with endodontic lesions
- Developmental or acquired deformities and conditions
  - e.g. recessions or missing keratinized gingiva

The classification of 2018 no longer differentiates between chronic or aggressive periodontitis. It now classifies periodontal diseases using staging and grading.

#### References or external links

- Tonetti, M. S., Greenwell, H. & Kornman, K. S. (2018) Staging and grading of periodontitis: Framework and proposal of a new classification and case definition. *J Periodontol* 89 Suppl 1, S.159–S.172. doi:10.1002/JPER.18-0006. <https://www.ncbi.nlm.nih.gov/pubmed/29926952>



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