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# The periodontal probe for use with the community periodontal index of treatment needs (CPITN)



WHO Expert Group on Equipment and  
Materials for Oral Care (EGEMOC)

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THE PERIODONTAL PROBE FOR USE WITH  
THE COMMUNITY PERIODONTAL INDEX OF TREATMENT NEEDS (CPITN)

The introduction of the Community Periodontal Index of Treatment Needs (CPITN) demanded the development of an appropriate sensing instrument. The type of instrument needed was originally described in the WHO Technical Report Series (TRS) No.621 Epidemiology, Etiology and Prevention of Periodontal Diseases, 1978 (1). The probe was described in more detail by Emslie 1980 (2) and the 4 graduations proposed in TRS No.621 were reduced to 2.

The Joint WHO/FDI Working Group 1 on Integrated Planning of Oral Health Services with Special Attention to Periodontal Diseases was formed to field-test and evaluate the new method and the prototype probes. The work of this Group was completed in 1981 and the CPITN method was defined (3), (4). Since that time, it has become the standard epidemiological method for assessing periodontal conditions, and is now included in the WHO manual Oral Health Surveys Basic Methods, 3rd Edition, 1987 (5).

The Expert Group on Equipment and Materials for Oral Care (EGEMOC), established in 1986, was requested to develop formal recommended specifications for the design and performance parameters of this instrument.

The results of the work of EGEMOC are presented in this document.

CPITN PROBE

1. SCOPE

This specification details dimensions and performance requirements for the CPITN probe.

2. REQUIREMENTS

2.1 Dimensions

The dimensions of the CPITN probe should be as shown in Figure 1.

2.2 Overall Weight

The maximum overall weight of the probe should be not more than 5.00 grams.

2.3 Finish

2.3.1 Surface: All surfaces should be appropriate for cleansing, sterilizing and proprioceptive requirements.

2.3.2 Handle and Point: All surfaces should be free of machining marks and sharp edges which could cause injury during normal use.

2.4 Resistance to Dry Heat and Chemical Sterilization

2.4.1 Appearance: When subjected to the procedures in 4.2, the instrument should show no change in physical appearance and the coloured bands should remain intact, firmly in position and not change in colour.

2.4.2 Corrosion: After being subjected to procedures in 4.2, the instrument should show no evidence of corrosion. Water marking should not constitute a cause for rejection.

2.5 Mechanical Requirements

2.5.1 Static Test: When tested in accordance with the procedures given in 4.3, the tip should not fracture or exhibit a permanent deformation.

2.5.2 Dynamic Test: When tested in accordance with the procedures given in 4.4, the tip should not fracture or exhibit a permanent deformation after 100 drops. The tip should not fracture or exceed a permanent deformation of 0.5 mm after 500 drops.

3. SAMPLING AND INSPECTION

3.1 Sampling

Ten (10) instruments should be provided for testing for compliance with the requirements of this specification.

3.2 Inspection

3.2.1 Surface, Handle and Point: Visual inspection for finish (2.3), without magnification should be used.

3.2.2 Corrosion: Visual inspection for resistance to dry heat and chemical sterilization (2.4), with 5x magnification, should be used.

4. TEST EQUIPMENT AND PROCEDURES

4.1 Dimensions

The dimension of ten (10) instruments should be determined as follows:

4.1.1 Equipment: The dimensions should be measured using a shadow-graph, tool makers measuring microscope, or other suitable equipment capable of equal accuracy.

4.2 Resistance to Dry Heat and Chemical Sterilization

4.2.1 Dry Heat: The instruments should be placed in a dry heat sterilizer at 160 °C for one hour. The instrument should then be inspected by visual examination (3.2.1 and 3.2.2) for compliance with sections 2.4.1 and 2.4.2.

4.2.2 Chemical: The instruments should be chemically sterilized in accordance with manufacturer's instructions provided with the chemical solution. The instruments should then be inspected by visual examination (3.2.1 and 3.2.2) for compliance with sections 2.4.1 and 2.4.2.

4.3 Tip Resistance to Static Loading

A sample of ten (10) instruments should be tested for tip resistance to static loading. All instruments should be subjected to procedures detailed in section 4.2 before testing.

4.3.1 Equipment: Equipment for determining the Static Loading test should be as shown in Figure 2.

4.3.2 Procedure: Test probes should be placed in the supporting arm fixture. Immediately after, a 50 grams load should be applied to the probes for 10 seconds. A 10x magnification tracing of probes should be made before and after loading. The tested probe will be acceptable if it does not fracture or exhibit a permanent deformation.

4.4 Tip Resistance to Dynamic Loading

A sample of ten (10) instruments should be tested for tip resistance to dynamic loading. All instruments should be subjected to procedures detailed in section 4.2 before testing.

4.4.1 Equipment: Equipment for determining resistance to the Dynamic Loading test should be as shown in Figure 3.

4.4.2 Procedure: The test probes should be placed in the supporting arm fixture. The tip should be aligned on top of the cam shaft, held at the maximum height of 30 mm and should be in the vertical plane containing the axis of rotation of the cam shaft as shown in Figure 3. A hard paper guide should be fitted on top of the probe to allow a straight drop. The cam assembled to the motor should be operated with a speed controller at 30 RPM in a counterclockwise direction. The drop cycle should be counted by a stroke counter. A 10x magnification tracing should be made to compare changes before and after 100 and 500 drops. After 100 drops, the tip should not fracture or exhibit a permanent deformation. After 500 drops, the tip should not fracture or exhibit a permanent deformation exceeding 0.5 mm.

4.5 Reporting of test results

Test results for each instrument, as well as a mean figure should be reported for dimensions, resistance to sterilization and static loading and mechanical drop tests as shown in Tables 1 and 2.

5. PREPARATION FOR DELIVERY

Packaging

The periodontal probes should be prepared and packaged in accordance with good manufacturing practices.

6. NOTES

6.1 Sources of testing equipment

Engineering drawings and other information can be made available on request.

6.2 Time period

This specification is effective from December 1989. Whenever appropriate, or at least once every five years, the recommended specification will be reviewed.

7. REFERENCES

1. World Health Organization (1987) Epidemiology, Etiology and Prevention of Periodontal Diseases. Report of a WHO Scientific Group World Health Organization Technical Report Series No.621, Geneva.
2. Emslie R.D. (1980) The 621 periodontal probe. Int. Dent. J. 30, 287-288.  
  
Ainamo J., Barmes D., Beagrie G., Martin J. and Sardo-Infirri J. (1982) Development of the World Health Organization (WHO) Community Periodontal Index of Treatment Needs (CPITN). Int. Dent. J. 32, 281-291.
4. Cutress T.W., Ainamo J. and Sardo-Infirri J. (1987) The Community periodontal index of treatment needs (CPITN) procedure for population groups and individuals. Int. Dent. J. 37, 222-233.
5. World Health Organization (1987) Oral Health Surveys, Basic Methods, 3rd edn.



Figure 2.

EQUIPMENT FOR TIP RESISTANCE TO STATIC LOADING

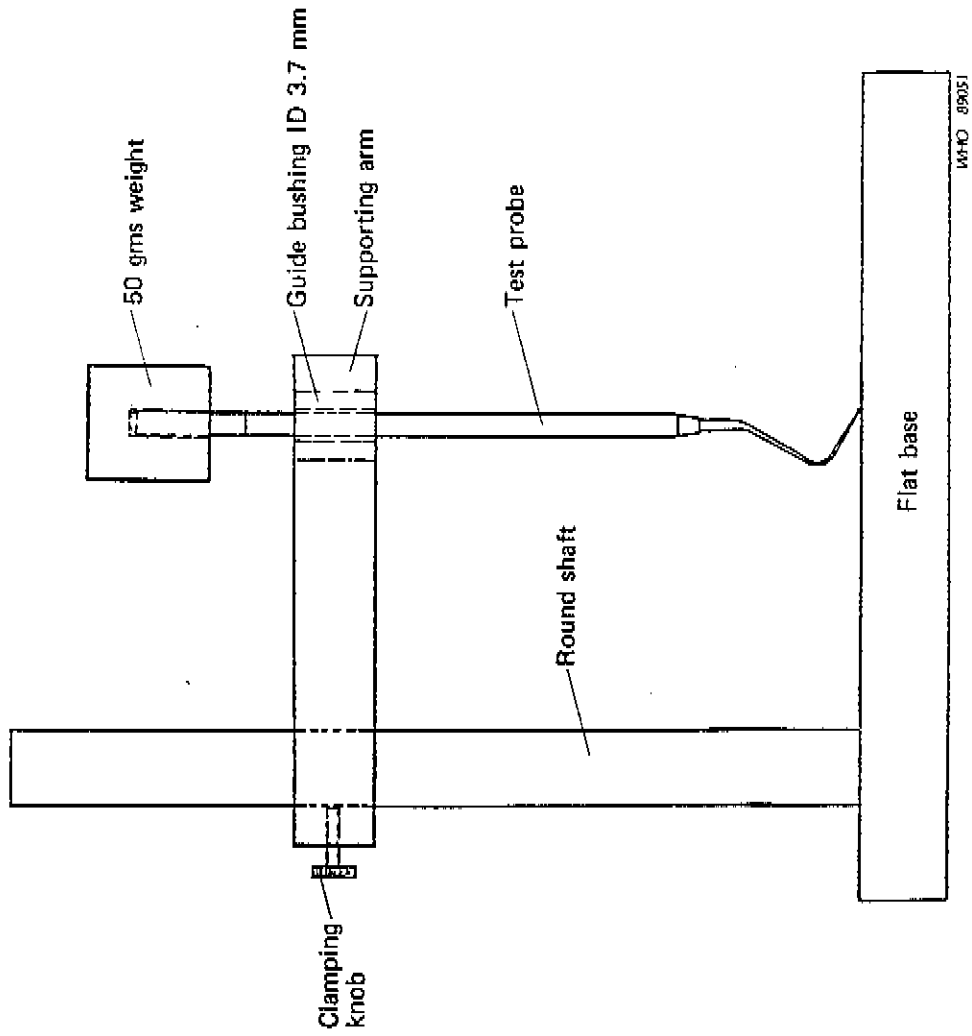


Figure 3.  
EQUIPMENT FOR TIP RESISTANCE TO DYNAMIC LOADING

