



Policies & Procedures

Electrode
Preparation & Placement Protocol

ALL Locations

Initial Procedure Date: 02/2002

Review Date: 02/2002

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A. Preparation and Maintenance of Electrodes

Always clean the electrodes between patients to remove residual paste, hair and other contaminants that could produce artifacts in the tracing. The electrodes should be soaked in hot soapy water to remove EEG paste. If necessary the electrodes may be cleaned using a soft bristled brush, but avoid vigorous scrubbing. To remove leftover 10/20 paste, the electrodes may be wiped down with alcohol and rinsed under hot water.

B. Patient Preparation

The patient's scalp must be clean and dry. The patient should wash his hair before the test and not use any oils or sprays. Each electrode site should be cleaned by rubbing with a cotton-tipped applicator dipped in a skin-prep or alcohol.

C. Electrode Measurement

1. EEG:

Electrode sites are measured according to the International 10-20 placement system. The routine recording sites for polysomnograms are C3, C4, O1, the left Mastoid (A1) and the right Mastoid (A2). The four "landmarks" for measuring are:

- a) The *nasion*. This is the middle point of the junction of the forehead and the two nasal bones.
- b) The *inion*. This is the external protuberance or "bump" at the back of the head (occiput).
- c) The *left and right pre-auricular points*. This is identified by the "notch" above the small tab at the front of the ear canal.

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To Measure:

- Find the inion and mark with a china marker.
- Measure the distance along the midline of the head from the inion to the nasion. The nasion is the point where the nose meets the forehead.
- Mark the point along the midline which is 50% of this distance.
- Measure from the left pre-auricular notch to the right pre-auricular notch, making sure that the tape passes through your central mark. Write down this distance.
- Measure up along the midline 30% of this distance from the left pre-auricular notch. Mark this point as C3. Repeat for the right side to mark C4.
- Repeat the above step, measuring up 10% from each pre-auricular notch and mark as T3 and T4 respectively.
- Measure up from the inion, along the midline, 10% of the total distance measured between nasion and the inion. Mark this point (Oz).
- Measure the distance between Oz and T3. Mark a point 20% of this distance from Oz as the site for O1. Repeat this for the right side to mark O2.
- A1 and A2 are placed directly behind the left and right ear respectively, on the Mastoid process.

2. EOG (Electro-Oculogram)

Standard EOG placements include the left outer canthus (LOC) and the right outer canthus (ROC). The outer canthus is the outer corner of the eye. The EOG electrodes should be offset from the horizontal midline, with one about 1 cm above the midline and the other about 1 cm below. The recording montage references each outer canthus to FP_Z.

3. Chin EMG

Three (3) electrodes should be applied over the mentalis/ submentalis muscles. If bruxism is being considered, then an alternate site would be to place one (1) electrode over the masseter muscle.

4. Leg EMG

Place one electrode over the anterior Tibialis muscle on each leg.

5. EKG/ECG

Two (2) electrodes are usually used with one placed over the clavical referenced to the second placed at the 5th intercostal space (V5). EKG may also be recorded by placing an electrode at the left and right clavicle.

6. Intercostal EMG

This pair of electrodes are placed in the 6th and 7th intercostal spaces close to the midline of the body.

D. Application of Electrodes

Electrodes must be attached to the scalp or other recording sites in a manner that provides a tight, stable contact. Each electrode disk should be filled with the conductive paste; avoid "over-filling" as this may cause problems with sealing the site with collodion. After pressing the electrode onto the recording site it should be covered with a collodion soaked gauze pad and air dried. After applying all the appropriate electrodes, they should be "grouped" together to avoid picking up 60 Hz cycle interference.