

**TECHNICAL STANDARDS COMMITTEE 2010-2011**

**STANDARD TWO:**

**MINIMAL TECHNICAL STANDARDS CLINICAL  
ELECTROENCEPHALOGRAPHY:  
ROUTINE PEDIATRIC  
(8 WEEKS POST TERM AND OLDER)**

**INTRODUCTION:**

The recommendations outlined in the “*Minimal Technical Standards Clinical Electroencephalography: Routine Adult*” are relevant to acquiring pediatric recordings, particularly in the instances of older children and adolescents. Some modifications to routine set-up and recording practices are necessary when testing infants and young children. The following guidelines for pediatric recordings are numbered to correspond with the appropriate sections in the adult standards.

**A) EQUIPMENT**

**2.0 ELECTRODES:**

- 2.1 The use of disk electrodes for recording the EEG in infants and children is recommended.
- 2.2 Subdermal electrodes should not be used to record the EEG in infants and children.

**B) TEST PREPARATION**

**1.0 DOCUMENTATION/PATIENT PREPARATION:**

- 1.1 Clinical information should include relevant birth and developmental information.
- 1.2 Infants should be comfortable and if feasible, fed prior to or during recording in order to encourage sleep.
- 1.3 To encourage sleep, children, ages four years and younger should not be allowed to sleep for three to four hours prior to recording. Caregivers should be advised to prevent “napping” en route to the EEG appointment.

## **2.0 ELECTRODE PLACEMENT/APPLICATON/REMOVAL:**

- 2.1** When the infant's/child's head circumference exceeds 36 centimeters (cm), the full electrode array as defined by the International 10-20 System of Electrode Placement is required.
- 2.2** A reduced electrode array may be used when the infant's/child's head circumference measures less than 36 cm. Either of two systems of head measurement is acceptable:
  - 2.2.1** the International 10-20 System of Electrode Placement using the following sites: Fp1, Fp2, C3, C4, T3, T4, O1, O2, Fz, Cz, Pz, A1 and A2 (or mastoids, M1/M2).
  - 2.2.2** the 12.5 – 25 System of Electrode Placement as proposed by the International Federation of Societies for Electroencephalography and Clinical Neurophysiology (IFSECN). It maps 12 equally-distributed electrode positions over the scalp.
  - 2.2.3** Excessive skin abrasion to minimize electrode impedances should be avoided, particularly in the very young.
  - 2.2.4** Because children tend to move frequently, head wrapping with gauze or a conforming bandage is recommended to further secure well-applied electrodes. Compliance with institutional/laboratory entanglement policy is important.

## **C) RECORDING PROCEDURE**

### **4.0 MONTAGES:**

- 4.1** Montages used to record pediatric EEGs should be unchanged from those used to examine adults.

### **5.0 ANNOTATIONS:**

- 5.1** Clear and frequent documentation throughout the pediatric EEG recording is essential. Head, eye and limb movement, and patient state must be noted as a minimum.

### **6.0 SENSITIVITY SETTINGS:**

- 6.1** All pediatric recordings should begin at a sensitivity setting of 7 uV/mm.

- 6.2** Sensitivity adjustments should be made to allow recorded signals to be free from amplifier blocking and signal distortion. Consequently, sensitivities of 10 uV/mm and 15 uV/mm may be commonly required in pediatric recordings.

**10.0 RESPONSE TESTING:**

- 10.1** When the child's age and level of compliance permit, periods of eye opening and closure should be recorded in each montage.
- 10.2** Minimally, two, 5-second epochs of artefact-free EEG should be acquired with the child's eyes closed. Usually, in infants this can be achieved by gently holding the patient's eyes closed.

**12.0 VIDEO MONITORING:**

- 12.1** If available, simultaneous, video monitoring of the infant/child is recommended in order to capture clinical events.

**D) ACTIVATION**

**1.0 HYPERVENTILATION:**

- 1.1** Hyperventilation should be attempted in all patients able to comply with protocol instructions. Demonstrating the technique is helpful.
- 1.2** In cases of suspected absence seizures or to augment irregularities arising during hyperventilation, the protocol should be prolonged and/or repeated according to laboratory standards.

**2.0 PHOTIC STIMULATION:**

- 2.1** Intermittent photic stimulation (IPS) should be routinely performed emphasizing the 1 – 5 Hz flash frequencies.
- 2.2** In the pediatric population, IPS is essential when patients present with neuro-developmental regression (i.e. ceroid lipofuscinosis) and when seizures/epilepsy are suggested (with the exception of neonates).

**3.0 SPONTANEOUS SLEEP:**

**3.1** Natural sleep should be encouraged in all children. The recording environment should be conducive to sleep (i.e. quiet, darkened).

**6.0 SEDATION:**

**6.1** Sedation is not recommended for routine, pediatric recording. When indicated, only qualified healthcare professionals, in keeping with hospital and professional standards of practice, should undertake sedation administration and patient monitoring.