5 Minute Friday:
July 18, 2014

aEEG CHANNELS &
IMPACT ON INTERPRETATION
Electrode Locations (Montage)

Heart electrical activity

Brain electrical activity
10-20 System for EEG Electrode Placement

Left = Odd
Right = Even

F = Frontal
C = Central
P = Parietal
O = Occipital
T = Temporal
A = Ears
aEEG Electrode Placement for Neonates

F = Frontal
C = Central
P = Parietal
O = Occipital
T = Temporal
A = Ears
Advantages of Multi-Channel aEEG

- Assess and compare voltage from different areas of the brain
- Assess the presence of symmetry
- Assess for (some) focal changes or events
One pair of sensors = One channel

Created from the LEFT & RIGHT hemispheres
The “Classic” Single-Channel aEEG

- Single Channel - Cross Cerebral (XC) - P3-P4

- Established background amplitude NORMS are based on cross-cerebral data (P3 – P4)

- Cross-cerebral aEEG upper margin >10 μV and lower margin > 5u μV

- Sleep-wake cycling can be visualized more easily on cross-cerebral tracings
The three most common channels of aEEG

- Bilateral (C3-P3/C4-P4) electrodes are closer together; so these aEEG bands will be slightly LOWER voltage than the cross-cerebral data (P3-P4) by 1-2 microvolts.
Advantages of Multi-Channel aEEG

- Assess and compare voltage from different areas of the brain
- **Assess the presence of symmetry**
- Assess for (some) focal changes or events
Asymmetry of Electrical Activity Secondary to Unilateral Cerebral Insult

Visible on a 2-Channel aEEG tracing
Asymmetry of Electrical Activity Secondary to Unilateral Cerebral Insult

Asymmetry or Unilaterally depressed tracing is not possible to assess on a 1-Channel aEEG tracing

Shah, 2008, J Pediatrics – Some infants with abnormal MRI had “normal” XC aEEG but showed unilateral depression on 2-channel aEEG; correlated to poor ND outcome at 2 years
Advantages of Multi-Channel aEEG

- Assess and compare voltage from different areas of the brain
- Assess the presence of symmetry
- Assess for (some) focal changes or events