5 Minute Friday:

What is (and isn’t) aEEG?

AUGUST 8, 2014

What is aEEG?

• A simple bedside-tool to aid NICU Clinicians with real-time **trending** information about the electrical function of an infant’s brain.

• A tool to **complement** other Neuro-assessments

• A **screening tool** to identify the need for consultations and/or diagnostic assessments

What aEEG isn’t?

• It’s NOT a replacement for full continuous EEG monitoring

• It’s NOT a diagnostic tool

• It’s NOT a new tool

How does it happen?

• EEG to aEEG –
  • aEEG is a high-level trend view of actual EEG values plotted on a new graph
  • Not really a transformation of EEG

Cerebral Function Monitor (CFM)

• 4 Step Processing of EEG Signal
  • From analog to digital
    • the process remains the same
Raw EEG waveforms contain + and − voltage spikes.

X axis = time ---- Y axis = voltage (in microvolts)

Amplitude-Integrated EEG (aEEG)

- The signal is written out on slow speed of 6cm/hr.

aEEG Processing: Peak Rectification

Makes all negative peaks positive.

aEEG Processing: Peak Smoothing

Traces the resulting high and low peaks.

Amplitude-Integrated EEG (aEEG)

Every 15 seconds, one single vertical line (pen stroke) is plotted on a semi-logarithmic scale.

This single line represents the absolute value (both min & max) of the voltage amplitude.
EEG is made up of background activity and transient spikes.

**Summary of aEEG Features**

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<tr>
<th>Strengths</th>
<th>Limitations</th>
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<td>- Can be applied by NICU bedside staff 24/7</td>
<td>- Limited channels = not all areas of the brain are assessed (can not see focal events or determine origin)</td>
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<td>- Can be reviewed by bedside staff 24/7</td>
<td>- Remote viewing is not available on all monitors</td>
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<td>- Trends are easy to read but can be contaminated by artifacts</td>
<td>- Time compression makes it difficult to identify short and/or low voltage &quot;events&quot;</td>
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<td>- Raw EEG is available on all aEEG monitors</td>
<td>- Reading Raw EEG is a skill that most NICU staff do not have</td>
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Lower voltage (background) EEG waveforms contribute to the lower margin of the aEEG.

High voltage EEG waveforms (bursts or spikes) contribute to the upper margin of the aEEG.