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Aims

• Equipment Calibration & Set Up
• When and how to perform BC ABR
• Maximizing recording conditions
• Masking
• Interpreting Waveforms
Transducer Calibration

- **Transducer:**
  - Radioear Type B-71 Bone Vibrator (check impedance is correct for equipment)
  - Able to deliver stimulus to 60dBNHL at 4kHz (without distortion).
  - Calibrate to BSEN ISO 389-6:2007

# Equipment Set Up

<table>
<thead>
<tr>
<th>Parameter</th>
<th>4kHz or 2kHz Tone Pip (2:1:2 cycles)</th>
<th>1kHz or 500Hz Tone Pip (2:1:2 cycles)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Stimulus Rate</strong></td>
<td>45.1 – 49.1 /s (17.1 – 19.2 for wave 1 with BC)</td>
<td>35.1 – 39.1 /s</td>
</tr>
<tr>
<td><strong>Amplifier Filters</strong></td>
<td>30 – 1500 Hz</td>
<td>30 – 1500Hz</td>
</tr>
<tr>
<td><strong>Amplifier Reject Level</strong></td>
<td>± 5uV (+3uV to +10uV)</td>
<td>± 5uV (+3uV to +10uV)</td>
</tr>
<tr>
<td><strong>Window Length</strong></td>
<td>20ms</td>
<td>25ms</td>
</tr>
<tr>
<td><strong>Display Scales</strong></td>
<td>25 – 100nV = 1ms</td>
<td>25 – 100nV = 1ms</td>
</tr>
</tbody>
</table>
Performing BC Testing

• When do you perform BC?
  - After raised AC thresholds

• How many averages?
  – 2000 - 3000

• To what level do you test down to?
  • - test to 15dBeHL or lower.
Applying the Transducer

• Placement
• Force
Allowing For Age
(correction from nHL to eHL)

<table>
<thead>
<tr>
<th>Corrected age (weeks)</th>
<th>0.5 kHz</th>
<th>1 kHz</th>
<th>2 kHz</th>
<th>4 kHz</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤12 weeks (≤ 84 days)</td>
<td>5</td>
<td>5</td>
<td>-5</td>
<td>0</td>
</tr>
<tr>
<td>&gt;12– 24 weeks (85 – 168 days)</td>
<td>0</td>
<td>0</td>
<td>-10</td>
<td>-5</td>
</tr>
<tr>
<td>&gt;24 weeks – 2 years (169 – 730 days)</td>
<td>-5</td>
<td>-5</td>
<td>-10</td>
<td>-10</td>
</tr>
<tr>
<td>≥ 2 years (&gt;730 days)</td>
<td>-20</td>
<td>-15</td>
<td>-10</td>
<td>-10</td>
</tr>
</tbody>
</table>

E.g. 4kHz test stimulus
Baby at 4 weeks: 30dB dial threshold = 30dBeHL
Baby at 16 weeks: 30dB dial threshold -5 = 25dBeHL.
Order of testing

• Raised AC at 4kHz
  – perform BC testing.
• Test to 15dBNHL. If NCR at 15dB consider masking.
• Then test the other ear
• Then consider 1kHz, 2kHz 500Hz.
What if levels are elevated?

• Is masking needed?
The Masking Calculator
Guy Lightfoot 2013b
(www.abrpeerreview.co.uk)
Interpreting Waveforms – Case 1

4kHz AC Headphones
Interpreting Waveforms – Case 1

- 4kHz BC
Interpreting Waveforms – Case 2

• 4kHz AC Headphones
Interpreting Waveforms – Case 2

- 4kHz BC
Interpreting Waveforms – Case 3

- 4kHz AC Headphones
Interpreting Waveforms – Case 3

- 4kHz BC
How Much Masking?

**Stimulus Parameters**

<table>
<thead>
<tr>
<th>Label</th>
<th>Index</th>
<th>Intensity</th>
<th>Ear</th>
<th>Transducer</th>
<th>Polarity</th>
<th>Type</th>
<th>Frequency</th>
<th>Ramp</th>
<th>Rise/Fall</th>
<th>Plateau</th>
<th>Masking level</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
<td>35dB nHL</td>
<td>Left</td>
<td>Bone Oscillator</td>
<td>Alternating Tone Burst</td>
<td>4000</td>
<td>Blackman</td>
<td>0.50</td>
<td>0.25</td>
<td>30dB HL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A2</td>
<td>35dB nHL</td>
<td>Left</td>
<td>Bone Oscillator</td>
<td>Alternating Tone Burst</td>
<td>4000</td>
<td>Blackman</td>
<td>0.50</td>
<td>0.25</td>
<td>30dB HL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A3</td>
<td>25dB nHL</td>
<td>Left</td>
<td>Bone Oscillator</td>
<td>Alternating Tone Burst</td>
<td>4000</td>
<td>Blackman</td>
<td>0.50</td>
<td>0.25</td>
<td>20dB HL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A4</td>
<td>25dB nHL</td>
<td>Left</td>
<td>Bone Oscillator</td>
<td>Alternating Tone Burst</td>
<td>4000</td>
<td>Blackman</td>
<td>0.50</td>
<td>0.25</td>
<td>20dB HL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A5</td>
<td>15dB nHL</td>
<td>Left</td>
<td>Bone Oscillator</td>
<td>Alternating Tone Burst</td>
<td>4000</td>
<td>Blackman</td>
<td>0.50</td>
<td>0.25</td>
<td>10dB HL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A6</td>
<td>15dB nHL</td>
<td>Left</td>
<td>Bone Oscillator</td>
<td>Alternating Tone Burst</td>
<td>4000</td>
<td>Blackman</td>
<td>0.50</td>
<td>0.25</td>
<td>10dB HL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B1</td>
<td>25dB nHL</td>
<td>Left</td>
<td>Bone Oscillator</td>
<td>Alternating Tone Burst</td>
<td>4000</td>
<td>Blackman</td>
<td>0.50</td>
<td>0.25</td>
<td>20dB HL</td>
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<td></td>
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<td>B2</td>
<td>25dB nHL</td>
<td>Left</td>
<td>Bone Oscillator</td>
<td>Alternating Tone Burst</td>
<td>4000</td>
<td>Blackman</td>
<td>0.50</td>
<td>0.25</td>
<td>20dB HL</td>
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<td></td>
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Interpreting Waveforms – Case 4

- 4kHz AC Headphones
Interpreting Waveforms – Case 4

• 4kHz BC
Summary

• Ensure appropriate calibration and set up – refer to British Society of Audiology website. www.thebsa.org.uk/resources)

• Performing BC testing at 15dB avoids the need for masking.

• Use the masking calculator if necessary
References


COFFEE BREAK – 15.00

Foyer