Developing the Musical Brain to Boost Pre-verbal Communication and Listening Skills through an Early Intervention Approach and Resource for Very Young Children with Hearing Loss

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Valeri V. Le Beau, MS, CCC,SLP, Consumer Education and Rehab Manager at Advanced Bionics brings a lifetime of personal and professional expertise to the field of hearing impairments. Working as a teacher for the hearing impaired and a speech language pathologist, she has trained, mentored, and lectured locally and internationally.

**Financial Disclosure:**
Valeri Le Beau joined Advanced Bionics in 2012 as the Consumer Education & Rehab Manager. Advanced Bionics is the manufacturer of the HiResolution Bionic Ear System, including the Naída CI Q70 and Neptune sound processors. Baby Beats™ early intervention resource is a rehAB resource exclusive to Advanced Bionics.

**Non-financial Disclosure:**
Baby Beats was developed by Christine Rocca and Valeri Le Beau while employed with Advanced Bionics. They do not receive any additional compensation for Baby Beats™.
Imagine life without music...
Using Music to Boost Early Pre-Verbal Communication & Listening Skills

- Musical processing activates multiple areas of the brain important for language development (Tervaniemi, 2009)
- Structural changes as a result of experiences (Shaw & McEachern, 2001)
- Musical experience boost implicit learning of both musical & linguistic structures (Franciosi, C., Schon, D., 2011)
- Immersion in consistent musical experiences allows developing brains to absorb sound, supporting development of communication & cognitive abilities (Patel, 2003)
• Intervention resources need to support the pre-verbal stage
• Lack of age appropriate early intervention resources for newly identified children with hearing loss (3 months)
• Lack of age appropriate early intervention resources for very young children ‘waiting’ for cochlear implantation
BabyBeats™

- Early Intervention resource that uses musical activities to foster development of early listening & communication milestones
- Fosters parent-child engagement through use of 4 “musical trails” to explore the musical aspects of sound, music and voice
- Opens the world of sounds, music and voice for very young children with hearing loss (3 months – 24 months)
- Used individually or with small groups
BabyBeats™

- Developed to fill this gap and supports families and their very young hearing impaired children in developing music, listening and language skills.
- Can start during the “wait time” after receiving hearing aids and waiting for cochlear implants

The goal of the resource is to improve:

- Early parent-child interaction
- Early listening behavior
- Early communication skills
- Social & emotional development
Demographics

Parent questionnaires (n=18)

Age Groups

12-18 mo
18-24 mo
## Baby Beats™ Survey

Elizabeth Foundation

### Demographics

<table>
<thead>
<tr>
<th>Devices</th>
<th>Parent Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use of Baby Beats</td>
<td>HA (pre-implant)</td>
</tr>
<tr>
<td>How often used BB?</td>
<td>12mo</td>
</tr>
<tr>
<td>Where used BB?</td>
<td>in center/home</td>
</tr>
</tbody>
</table>
Results: Rating the Musical Trails

* Not always used (some children were too young)
BabyBeats™ Survey
Elizabeth Foundation

Results: Parent Observations during Baby Beats session
## Results: How BabyBeats™ helped me as a parent

<table>
<thead>
<tr>
<th></th>
<th>Parent Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>More confident singing</td>
<td>Agree</td>
</tr>
<tr>
<td>More confident doing musical activities</td>
<td>Strongly agree</td>
</tr>
<tr>
<td>More confident attending music group</td>
<td>Strongly agree</td>
</tr>
<tr>
<td>More confident interacting/playing with child</td>
<td>Strongly agree</td>
</tr>
</tbody>
</table>
## Results: Rating the Resource

<table>
<thead>
<tr>
<th></th>
<th>Parent Guide</th>
<th>Movement</th>
<th>Instruments</th>
<th>Transport*</th>
<th>CD</th>
<th>Cards*</th>
<th>Ocean Drum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parent Group</td>
<td>Liked – Liked very much</td>
<td>Liked – Liked very much</td>
<td>Liked very much</td>
<td>Liked very much</td>
<td>Liked very much</td>
<td>Liked very much</td>
<td>Liked very much</td>
</tr>
</tbody>
</table>

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Advances in hearing technology have made music a reality for infants & children with hearing loss.
Future Directions

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