Ideal Candidates for the Audibility Extender

A patient who has:

- A hearing loss that fits into the shaded area of Figure 1.
- Insufficient high frequency gain from hearing aids to hear high frequency sounds (e.g., birds, consonants) because of:
  - limitation of chosen HA model
  - limitation in open fit
- A dead region in the high frequencies.
- Tolerance problem with high frequency sounds.

STEPS IN FITTING THE AUDIBILITY EXTENDER

I. Basic fitting (for more detailed instruction on how to perform a basic fitting please consult your fitting guide)

- Measure basic sensogram (500 Hz, 1000 Hz, 2000 Hz, and 4000 Hz).
  - Test desired inter-octave frequencies along slope of audiogram (expanded sensogram).
  - Enter audiometric threshold at 250 Hz as sensogram threshold (other than élan version).
- Perform feedback test for each ear.
- Ensure optimal fit. Verify using Frequency-Output curve, predicted aided threshold, SoundTracker or REM.
- Select AE program – After feedback test, click [Next] to continue to [Program Selection]. Choose [Audibility Extender] program and click arrow button. Click [Next].

II. Determine if AE is necessary

- While patient is using the Master program in the test booth, say /s/ at 30 dB HL.
- Use [SoundTracker] to visualize audibility of /s/ (Figure 2).
- If /s/ is identified with [Master] program, then [AE] program may not be required. Delete [AE] program. STOP.
- Proceed to [AE] program if patient:
  - Is unable to hear /s/, or
  - Hears /s/ with distortion

III. Verify default AE settings

- Repeat previous steps with [AE] program to determine audibility of /s/.
- Use [SoundTracker] to visualize audibility (see Figure 3).
  - Adjust [AE gain] if necessary (see Figure 4).
  - Adjust start frequency if necessary and possible.
  - Use [Basic] transposition (3 bands of transposition) when start frequency is 2500 Hz or higher.
  - Use [Expanded] transposition (5 bands of transposition) when start frequency is at or below 2000 Hz (not possible in some models).
IV. Facilitate Initial Adjustment

a. **Use SoundTracker to counsel on frequency transposition.**
   - Demonstrate insufficient audibility in [Master] program. Use a high frequency sound such as a birdsong from LifeSounds or use conversational speech as stimuli (Figure 5).
   - Next, switch to [AE] program and demonstrate sufficient audibility with the same sounds (Figure 6).

b. **Facilitate real-life use.**
   - **Encourage use of [AE] program** - Go back to [Program Selection]. Keep [Master] and [AE] programs. Switch order of programs so that the [AE] program is in the first position (use arrows inside program box).
   - **Keep track of the use of each program** - Go to [Sound Explorer], activate long-term logging in [Sound Diary].
   - **Increase awareness of “new” sounds** - Review List of Everyday Sounds checklist with patient (or assign listening exercises). Ask patient to compare [Master] and [AE] programs in all sound environments.
   - **Follow-up** - Schedule patient to return for a follow-up visit in two weeks.

V. Potential Fine-Tuning of the Audibility Extender

a. **Use Sound Diary to validate complaints.**
   - Use Sound Diary to monitor frequency of program use (Figure 7) and listening environments encountered.
     - If [AE] program is used frequently, it is probably satisfactory.
     - If [Master] program is used exclusively, fine tuning of AE settings may be needed.

b. **AE Fine-tuning steps** (also see Table 1):
   1. Connect hearing aids to NoahLink and [Detect] hearing aids.
   2. Select [Fine Tuning]. Go to [AE] program.
   3. Change [View] to [SoundTracker].
   5. Begin with AE start frequency **three steps above default start frequency** or at 6000 Hz, e.g., Figure 8 shows the default and initial start frequencies (not possible in some models).
   6. Present /s/ sound at 30 dB HL.
      - If the patient hears and identifies /s/, **stop**.
      - If the patient is unable to hear /s/ or hears /s/ with distortion, increase AE gain until:
        - /s/ is identified or
        - maximum AE gain (+14) is reached.
   7. If /s/ is still not identified, decrease AE start frequency to the **next lower start frequency**. Repeat step 6.
   8. When patient identifies /s/, record AE start frequency and AE gain.
   10. It may take up to one month to acclimatize to AE, on average.
   11. Consider the use of consonant training CD for motivated patients.

<table>
<thead>
<tr>
<th>AE Parameters</th>
<th>Complaints</th>
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<tbody>
<tr>
<td></td>
<td><strong>Echo/Hollow</strong></td>
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<tr>
<td>Start Frequency</td>
<td>Increase</td>
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<tr>
<td>AE Gain</td>
<td>Decrease</td>
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<tr>
<td>Basic or Expanded</td>
<td>—</td>
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**Table 1: Fine-tuning tips**

NOTE: The Audibility Extender provides more information (audibility) along the slope of the audiogram. The frequencies that are inaudible with the master program are now audible.