The Role of a Hearing Aid Specialist in Evidence-based Tinnitus Care

Brian Taylor, AuD
Fuel Medical Group
Objectives

Treating Medically Uncomplicated Tinnitus is a Business Opportunity:

1. There is an unmet need
2. Many current approaches recommended by physicians or found on the web are often ineffective
3. Provide examples of tinnitus interventions within a hearing care practice
Acknowledgement

• Rich Tyler, Professor, University of Iowa
Goal of Session

• Get on the path to offering tinnitus in your practice
• Address a common need in your community
• Generate revenue for your practice
Who sees you about their tinnitus

• 3 buckets:
  – The Curious
  – The Concerned (1 in 10)
  – The Debilitated (1 in 100)
Your Responsibilities

• Be sympathetic & patient
• Offer encouragement
• Be candid & honest
• Spend the time (it’s not about the device)
• Be confident you can help
Understand Your Role

• You can’t cure the condition
• You can make daily life easier
• Working together to find a solution
• Know when to refer to a specialist
• 50 million Americans have tinnitus
• 1 in 5 of this group have persistent and/or bothersome tinnitus
• Equates to approximately 6.5 million Americans (roughly the same number who have severe to profound hearing loss in at least one ear)
• According to AAO-HNS untreated or unmanaged tinnitus is a mounting clinical problem

Henry et al, 2016 & Goman & Lin, 2016
Tinnitus Defined & Described

• Persistent sensation of sound for which no acoustic source for the sound exists outside the head.
• Described most commonly as ringing, buzzing, cricket-like, hissing and whistling

Tinnitus Neurophysiology

Auditory
- Disruption to auditory pathway
- Brain works to compensate

Emotional
- ANS arousal
- Fight or flight
- Sleep & concentration disturbance
- Lack of control
- Fear and anxiety

Awareness
- Brain incorrectly labels tinnitus signal as harmful/threatening
- Perception is filtered into conscious awareness
Problems created by tinnitus
Most common difficulties

- Getting to sleep (57%)
- Understanding speech (38%)
- Depressed, annoyed (35%)
- Concentration (34%)
- Drug dependence (34%)

- **Counseling for Tinnitus (Activities Treatment)**
  - “patient must understand that the masker is not a cure and that the tinnitus will probably not go away with its continued use”
  - “Patients need reassurance that their tinnitus is not an indication of life-threatening disease”
  - “they should be informed of the high prevalence”
  - “Discussion with the spouse, companion, or family members are encouraged”
  - “patients usually benefit from a frank and sympathetic discussion about the nature of tinnitus..”
Impact of tinnitus on quality of life (n=3,431)

- No impact: 45%
- Ability to hear: 39%
- Ability to concentrate: 26%
- Ability to sleep: 20%
- Leisure activities: 12%
- Social life: 12%
- Personal relationships: 12%
- Emotional/mental health: 12%
- Ability to work: 7%
The Psychological Model of Tinnitus  (Tyler and Dauman, 1986)
Prevalence & Treatment Patterns

Figure. Subjective Severity of Tinnitus Symptoms by Age

from Bhatt, et al, 2016
Prevalence & Treatment Patterns

- 7.2% reported tinnitus has a “very big” or “big” problem
- 41.6% reported it as a “small” problem
- 49.4% discussed their tinnitus with a physician

_from Bhatt, et al, 2016 and Yoo et al 2015_
# Prevalence & Treatment Patterns

*from* Bhatt, et al, 2016

## Table 3. Treatment Options Discussed With Physicians Among Respondents Reporting Tinnitus

<table>
<thead>
<tr>
<th>Type of Therapy Discussed</th>
<th>Population in Millions (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Included in AAO-HNSF guidelines</strong></td>
<td></td>
</tr>
<tr>
<td>Medications</td>
<td>1.45 (45.4)</td>
</tr>
<tr>
<td>Hearing aids</td>
<td>0.30 (9.2)</td>
</tr>
<tr>
<td>Nutritional supplements</td>
<td>0.25 (7.8)</td>
</tr>
<tr>
<td>Stress reduction methods</td>
<td>0.21 (6.7)</td>
</tr>
<tr>
<td>Music treatment</td>
<td>0.13 (4.0)</td>
</tr>
<tr>
<td>Tinnitus retraining therapy</td>
<td>0.10 (3.0)</td>
</tr>
<tr>
<td>Biofeedback therapy</td>
<td>0.09 (2.8)</td>
</tr>
<tr>
<td>Wearable masking device</td>
<td>0.08 (2.6)</td>
</tr>
<tr>
<td>Nonwearable masking device</td>
<td>0.07 (2.3)</td>
</tr>
<tr>
<td>CBT</td>
<td>0.01 (0.2)</td>
</tr>
<tr>
<td><strong>All</strong></td>
<td>2.68 (83.8)</td>
</tr>
<tr>
<td><strong>Not included in AAO-HNSF guidelines</strong></td>
<td></td>
</tr>
<tr>
<td>Psychiatric therapy</td>
<td>0.01 (0.3)</td>
</tr>
<tr>
<td>Surgical transection of auditory nerve</td>
<td>0.04 (1.2)</td>
</tr>
<tr>
<td>Alternative medicine</td>
<td>0.12 (3.9)</td>
</tr>
<tr>
<td><strong>Other</strong></td>
<td>0.94 (29.5)</td>
</tr>
<tr>
<td><strong>All</strong></td>
<td>1.11 (34.9)</td>
</tr>
</tbody>
</table>
AAO-NHS recognized....

• Developed and published clinical guidelines in Oct. 2014
• “breaks down the brick wall” by encouraging engagement between clinician and patient
The Importance of a Good HIS/Audiology/ENT Relationship

1. Comprehensive audiological evaluation, if tinnitus is unilateral or chronic or associated with complaints of hearing loss
2. Triage patients with chronic tinnitus from those with bothersome tinnitus of recent onset
3. Educate patients with chronic, bothersome tinnitus about their intervention options
4. Hearing aid assessment for those with hearing loss and bothersome tinnitus
Key Points of AAO’s Evidence-based Guidelines

• No data to support use of herbal or supplemental treatments
• No data to support use of medical therapies (e.g., antidepressants)
Key Points of AAO’s Evidence-based Guidelines

• Cognitive Behavioral Therapy (CBT) was only clinical intervention supported by evidence
• Sound therapy was mentioned as an “option”
Developing a Tinnitus Management Program in your Practice
Taking Action

• Instead of patients going to the internet to find false or misleading information about their tinnitus, create a program based on Guidelines

• Use the Guidelines as a springboard for creating your own comprehensive tinnitus management program
Question

• Does an Hearing Instrument Specialist need to learn a special therapeutic approach, like TRT or CBT to provide tinnitus management services?
Tinnitus Pyramid

Population of adults who experience chronic tinnitus (10%–15% of all adults)

Nonbothersome tinnitus (~80% of all those who experience tinnitus)

Moderate

Mild

Severe

Debilitating tinnitus

Bothersome tinnitus—seek clinical intervention (~20% of all those who experience tinnitus)

Dobie, 2004
Formal Therapeutic Approaches

1. Sound Therapy:
   - Tinnitus Masking (Jack Vernon)
   - Tinnitus Re-Training Therapy (P. Jastreboff)
   - Hearing Aids/Combination Devices
   - Neuromonics/Desynchra/Otoharmonics

2. Counseling-based:
   - Mindfulness Training (Jennifer Gans)
   - Cognitive Behavioral Therapy (Robert Sweetow)
   - Motivational Interviewing (Linkoping University, Sweden)
   - Tinnitus Activities Treatment (Rich Tyler)
Multi-site RCT Involving 4 Treatment Approaches (Henry et al 2016)

- Tinnitus Masking (Vernon) and Tinnitus Retraining Therapy (Jastreboff) compared to 2 other interventions
- 2 other interventions: Tinnitus Education Group (TED) & 6-month wait list control (WLC)
- 4 VA sites, audiologists who conducted “therapies” were not experts in them, but received training via video conference
- 120 + Veterans were randomized and placed into 1 of the 4 groups (30 + in each group)
- Tinnitus Handicap Inventory (THI) used to evaluate effectiveness of treatments
Tinnitus Masking (Vernon)

• Use of ear level devices to mask (or partially mask) tinnitus to produce sense of tinnitus relief
• Follow-up is minimal, mainly to ensure devices are properly working
Tinnitus Retraining Therapy (Jastreboff)

• Neurophysiologic model with main objective to facilitate habituation to tinnitus
• Use of ear level “sound generators”
• Follow-ups over 1-2 years at specific intervals
• Use of ear level devices for “sound therapy”
• Generic counseling (audiogram, causes of tinnitus, treatments for tinnitus, etc.)
• Length and format was matched to TRT and TM groups
Wait List Control Group (WLC)

- Completed outcome assessments at 0, 3 and 6 months
- Started Treatment at 6 months
1. Over the first 6 months of treatment, TM and TRT will decrease tinnitus severity relative to TED & WLC, and TED will decrease tinnitus severity relative to WLC.

2. Over 18 months of treatment, TM & TRT will decrease tinnitus severity with bothersome tinnitus relative to TED.

3. When TM, TRT and TED are administered by VA audiologists for a period of 18 months, treatment effectiveness will not differ across the 4 sites.
Results

Fig. 2. THI-adjusted mean change from baseline to 3, 6, 12, and 18 months for TM, TRT, and TED and from baseline to 3 and 6 months for WLC. Standard errors of adjusted mean change can be found in Table 4. TED, tinnitus education; THI, tinnitus handicap inventory; TM, tinnitus masking; TRT, tinnitus retraining therapy; WLC, wait-list control.
Henry et al 2016 Findings

1. Over the first 6 months of treatment, TM and TRT will decrease tinnitus severity relative to TED & WLC, and TED will decrease tinnitus severity relative to WLC. **Partially supported**

2. Over 18 months of treatment, TM & TRT will decrease tinnitus severity with bothersome tinnitus relative to TED. **No support**

3. When TM, TRT and TED are administered by VA audiologists for a period of 18 months, treatment effectiveness will not differ across the 4 sites. **Support**
Conclusions (Henry, et al)

• A basic, non-specific approach, like the Tinnitus Education Group (TED), along with the provision of a device, may meet the needs of many patients with bothersome tinnitus.
A Common Sense Approach

1. Counseling Strategies (Focus on Reactions to Tinnitus):
   - Thoughts & Emotions
   - Hearing & Communication
   - Sleep
   - Concentration

2. Sound Therapy:
   - Hearing Aids & Combination Devices
   - Table Top Maskers
“Is CBT for Tinnitus Overemphasized?”
Tyler & Mohr, 2017

• Rather than focus on specific therapy or device, strive to listen and understand patients who suffer from tinnitus

• Create a safe and therapeutic relationship in which reactions to tinnitus can be explored

• The therapist is 9 to 10 times more important to the outcome than the therapy method of choice
A Common Sense Approach

• Step 1: Develop a trusted referral source
• Example: Local multi-specialty ENT-Audiology practice
  – Pulsatile tinnitus
  – Red Flag conditions
  – Hyperacusis
  – Debilitating tinnitus
  – Other complex cases
Step 2

- Scope out a clinical triaging protocol
- Hearing aid vs. tinnitus management candidate
A Triaging Approach

• “What shall we target first, hearing loss or tinnitus?”
Tinnitus & Hearing Survey (THS) Scoring, Henry et al 2015

- “A tool to guide a conversation with patients”
- No cut-off scores given by researchers
- Higher scores require more intervention
- Helps sort tinnitus intervention strategy & hearing intervention strategy
- Lower scores on tinnitus questions may indicate educating patient about coping skills – less intervention
## Tinnitus and Hearing Survey

### A. Tinnitus

<table>
<thead>
<tr>
<th>Statement</th>
<th>No, not a Problem</th>
<th>Yes, a small Problem</th>
<th>Yes, a moderate Problem</th>
<th>Yes, a big Problem</th>
<th>Yes, a very big Problem</th>
<th>Grand Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Over the last week, tinnitus kept me from sleeping.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Over the last week, tinnitus kept me from concentrating on reading.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Over the last week, tinnitus kept me from relaxing.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Over the last week, I couldn’t get my mind off of my tinnitus.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>

Total of each column: [Blank]

### B. Hearing

<table>
<thead>
<tr>
<th>Statement</th>
<th>No, not a Problem</th>
<th>Yes, a small Problem</th>
<th>Yes, a moderate Problem</th>
<th>Yes, a big Problem</th>
<th>Yes, a very big Problem</th>
<th>Grand Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Over the last week, I couldn’t understand what others were saying in noisy or crowded places.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Over the last week, I couldn’t understand what people were saying on TV or in movies.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Over the last week, I couldn’t understand people with soft voices.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Over the last week, I couldn’t understand what was being said in group conversations.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>

Total of each column: [Blank]

### C. Sound Tolerance

<table>
<thead>
<tr>
<th>Statement</th>
<th>No, not a Problem</th>
<th>Yes, a small Problem</th>
<th>Yes, a moderate Problem</th>
<th>Yes, a big Problem</th>
<th>Yes, a very big Problem</th>
<th>Grand Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Over the last week, sounds were too loud or uncomfortable for me when they seemed normal to others around me.*</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>

*If you responded 1, 2, 3, or 4 to the statement above:

Please list two examples of sounds that are too loud or uncomfortable for you, but seem normal to others:

________________________________________________________________________
________________________________________________________________________

*If sounds are too loud for you while wearing hearing aids, please tell your audiologist.

For office use only (□): □M □H □N
Target Hearing Aids

• Follow your clinic’s hearing aid selection and fitting process
• Select a device with a tinnitus masking/noise program
• Monitor every 3 to 6 months with THS
HEARING AIDS FOR TINNITUS
Figure 1. Tinnitus population (millions, 2008)

- Normal hearing: 12.72 (43%)
- Hearing-impaired non-adopters: 12.95 (44%)
- Hearing aid owners: 3.99 (13%)

Kochkin, Tyler & Born (2011)
Hearing Aids could help tinnitus because:

• Improve Communication
  • Therefore Reduce Stress
• Amplify Background Sound
  • external low-level sounds (distraction/partial masking)
Target Tinnitus

• Combination of Counseling and Sound Therapy
Tinnitus Activities Treatment

Richard Tyler, Audiologist, PhD
Tinnitus Activities Treatment

• Collaborative
  – Determine needs and understanding individual patient
• Uses Tinnitus Masking Therapy
  – Low levels of partial masking
• Include Activities, Coping / Management Strategies
• Programmatic counseling in 4 areas
  – Thoughts and emotions, Hearing, Sleep, Concentration
Masking Devices

• Table-top Maskers (e.g., Sound Oasis)
• Hearing Aids/Combination Devices
• Smartphone Apps
Picture-Based Tinnitus Activities Treatment Counseling

• A series of pictures that can help with your counseling session
• Provide orderly fashion
• Not overlook important concepts
• Easier for the patient to understand concepts
Counseling Sessions

• Introduction

• Session 1
  – Thoughts and Emotions
  – Give Activities (e.g. diary)

• Session 2
  – Review of Session 1 Activities
  – Hearing and Communication
  – Give Activities
Counseling Sessions

• Session 3 (optional)
  – Review of Session 2 Activities
  – Sleep
  – Give Activities (e.g. diary)

• Session 4 (optional)
  – Review of previous Session Activities
  – Concentration
  – Give Activities
How TAT Works
Overall Plan

1. Patient’s story
2. Information about hearing loss, tinnitus, and attention
3. Ways to make tinnitus less prominent
4. Changing things to manage better
5. Review of action plan
Where do you want to start?
How has tinnitus influenced your life?
How do you think we might be able to help you?
Tinnitus is an Increase in Spontaneous Nerve Activity

Normal Hearing

Hearing Loss (No Tinnitus)

Tinnitus

Hear Silence

Hear Sound

Hear Silence
Attention
Sounds Interpreted As Significant Are Not Ignored

Subconscious $\rightarrow$ Conscious

Blah, blah, blah, Fred, blah, blah

Fred

Jane
Things That Capture Our Conscious Attention

- Unusual
- Important
- Scary
- Unexpected
Part 3:
Ways to Make Tinnitus Less Disturbing and Prominent
Learning an Emotional Reaction

Doorbell → Neutral

Doorbell → Fire → Injury → Anxiety

Doorbell → Angry neighbor

Doorbell → Flowers → Friend → Prize → Happiness
Background Sound Masks a Barking Dog
Hearing and Communication

Session 2
Overview

1. Goals of treatment
2. Hearing and communication difficulties
3. Factors that affect hearing and communication
4. How tinnitus can affect hearing
5. How to improve your hearing
6. Activities for home
1. Goals of Treatment

• Reduce communication difficulties associated with hearing loss and/or tinnitus
  – What can we associate with your hearing loss
  – What can we associate with your tinnitus

• Reduce stress associated with communicating in general
3. Factors that Affect Communication

• Hearing loss
• Background noise
• Ability to see the talker
• Familiarity with talker
• Familiarity with topic of discussion
• Stress level
Activities

• Utilize the strategies discussed to improve hearing and communication.
  – List the most difficult listening situations for you
    1. __________________________________________
    2. __________________________________________
    3. __________________________________________
  – What can you do to improve those listening situations?
    1. __________________________________________
    2. __________________________________________
    3. __________________________________________
  – What can you do to reduce the background noise?
    1. __________________________________________
    2. __________________________________________
    3. __________________________________________
Sleep
Overview

1. Normal sleep patterns
2. Things that affect sleep
3. Daytime activities to facilitate sleep
4. Evening activities to facilitate sleep
5. Preparing for sleep
6. Waking up at night
7. Waking up in the morning
Things That Affect Sleep

- Stress and emotions (e.g. depression, anxiety)
- Environmental factors
  - Noise
  - Light
  - Temperature
- Irregular work schedules
- Jet lag/time zone changes
Things That Affect Sleep

• Medications
• Caffeine (coffee, tea, cola)
• Nicotine (smoking)
• Alcohol
• Tinnitus
Preparing for Sleep with Relaxation

Techniques:

• Progressive muscle relaxation
• Visual Imagery
Progressive Muscle Relaxation

• Two steps
  1. Deliberately apply tension to certain muscle groups
  2. Stop the tension and focus on how the muscles feel as they relax
Visual Imagery

• Similar to daydreaming
• Attention is focused on some type of sensory experience
  – Creating novel mental images
  – Recalling past places and events
Visual Imagery Exercise

1. Close your eyes
2. Think of a relaxing scene (e.g. the beach)
3. Try to imagine the scene as clearly as you can
4. Pay particular attention to your favorite things in the scene
5. Allow yourself to relax as you imagine the location in your mind
Concentration
Overview

A. What is concentration
B. Why concentration is important
C. Things that affect concentration
D. How tinnitus affects concentration
E. Strategies to improve your concentration
C. Things That Affect Concentration

• The environment
  – Noise
  – Distractions
  – Lighting
  – Temperature

• Your physical state
  – Hunger
  – Tiredness
  – Current health status
Things That Affect Concentration

• Your emotional state
  – Anxiety
  – Fear
  – Boredom
D. How Tinnitus Affects Concentration

• When you focus attention on your tinnitus it is harder to concentrate on other things
• We are only capable of focusing primarily on one thing at a time
E. Strategies to Improve Concentration

1. Interpret tinnitus as not important
2. Decrease prominence of tinnitus
3. Eliminate distractions
4. Adjust work habits
5. Stay focused
6. Take control of your attention
6. Take Control of Your Attention

• The focus of our attention is largely under voluntary control
• You can learn to control the focus of your attention under various conditions
• By bringing the focus of attention under control, tinnitus-related distress will be reduced at certain times
Attention Control Exercises

• Learn to switch attention from one stimulus (e.g. object, sensation, thought, activity) to another at will

• Allows you to refocus your attention from your tinnitus onto other stimuli, external or internal
Visual Attention Example

1. Focus on a nearby object (e.g. pencil, book, etc)
2. Study that object
3. Now switch your attention to looking in the distance (e.g. out the window, down the hall, etc)
4. Switch back and forth between the two several times
5. Notice that you can choose which item you visually pay attention to while ignoring other things around you
Sound Example

1. Listen for a prominent sound around you (e.g. talking, heater noise, etc)
2. Now listen to a different sound in the room
3. Continue to try and focus on certain sounds while ignoring others around you
Self Help Tools

- Internet
- Pamphlets
- Self help books
- The American Tinnitus Association
Self Help books for Tinnitus