Distinguishing Between Hearing Loss, Tinnitus, and Hyperacusis:
A Recommended Tinnitus-Evaluation Protocol for Audiologists

By James A. Henry, PhD

What Is an Audiologist?

Audiologists are hearing healthcare specialists who hold an Audiology Doctorate (AuD) degree, which is the current requirement, or a master’s degree in audiology, which was the previous requirement. Audiologists are distinguished from hearing instrument specialists (dispensers), the basic differences being education and scope of practice. Although state requirements differ, dispensers generally must have completed high school, passed a licensing exam, and completed on-the-job training. With respect to scope of practice, audiologists are trained to conduct diagnostic evaluations of the entire auditory system (outer ear to brain); dispensers are trained to conduct evaluations for the purpose of fitting (dispensing) hearing aids.

Unfortunately for people with tinnitus, most audiologists do not receive comprehensive training in tinnitus management as part of their education. This lack of training seems rather inexplicable, given that 10 to 15 percent of all adults have tinnitus, but it is indeed the case. It should be acknowledged that some AuD programs provide excellent training in tinnitus management, but that is not the norm. Motivated audiologists typically seek tinnitus training from conference presentations, online courses, and multi-day training workshops. Because tinnitus management is not standardized, the type of training varies greatly. When individuals request tinnitus services from an audiologist, it is important for them to ask what kind of tinnitus training the audiologist acquired and what services that healthcare specialist offers.

Regardless of whether a particular audiologist specializes in tinnitus management, all audiologists have knowledge about tinnitus and can answer many patient questions.
Audiologists also know when a patient should be referred to an otolaryngologist (ear, nose, and throat physician — ENT) for a medical evaluation. Note that the American Academy of Otolaryngology — Head and Neck Surgery Foundation (AAO-HNSF) recommends that any person with tinnitus receive a medical evaluation by an otolaryngologist. This is best practice, although it may not be possible in some circumstances.

Is the Tinnitus Problem Actually a Hearing Problem?

It is obvious that a “hearing problem” refers to difficulty hearing, but a “tinnitus problem” is not so readily defined. It can be argued that the mere presence of tinnitus is a problem. The distinction of a “tinnitus problem” warranting intervention is that the tinnitus is bothersome. Tinnitus is bothersome for about 20 percent of people who experience it, whereas 80 percent of people are not particularly bothered by their tinnitus.

How can tinnitus be bothersome? Sleep disturbance is the most common effect. Tinnitus can affect any task that requires concentration, such as reading and writing. Also, ample evidence shows that tinnitus is associated with depression and anxiety.

An audiologist’s primary concern when conducting a tinnitus evaluation is determining whether the tinnitus is indeed bothersome. It might seem that use of a tinnitus questionnaire would enable such a determination. After all, tinnitus questionnaires are designed to assess the impact of tinnitus on a person’s life. Here is the problem with tinnitus questionnaires: Many people who have both hearing difficulties and tinnitus blame the tinnitus for the hearing difficulties. When this occurs, questions such as “How much of a problem is your tinnitus?” can prompt a person to respond, “It’s a huge problem, because it affects my hearing.” Such a response actually indicates a hearing problem. The questionnaire score, however, suggests a tinnitus problem. This scenario illustrates why a tinnitus questionnaire is not recommended as part of the initial evaluation by an audiologist.

My research group has conducted more than a dozen clinical trials to evaluate methods of intervention for tinnitus. Such trials require participants who have bothersome tinnitus. When we conducted our first trial, we screened people over the telephone to determine whether they had bothersome tinnitus. If they complained that their tinnitus was very bothersome, we scheduled them for a full assessment in our lab. In many cases, the full assessment revealed that they were very bothered by their hearing problem and that they were blaming their tinnitus for the hearing problem. They did not need to be treated for tinnitus — they needed to be treated for hearing loss, usually with hearing aids. Therefore, they did not qualify for the study, and we spent many hours doing assessments that were unnecessary to recruit participants for our trial. We remedied this conundrum by developing a questionnaire called the Tinnitus and Hearing Survey (THS), which is explained in detail below. Our continued use of the THS, and its use by clinicians and other researchers, has led to this instrument being recommended as part of the audiologic assessment of patients who complain of tinnitus.

Audiologic Assessment of Patients With Tinnitus

Our recommended protocol for the audiologic assessment of patients with tinnitus has been published in detail. The protocol is technically the Level 2 Audiologic Evaluation part of the stepped-care method of Progressive Tinnitus Management. What follows is a brief description of that protocol.

As mentioned, up to 90 percent of people who experience chronic tinnitus have some degree of hearing loss. Because hearing loss tends only to get worse, it is critical that a person with tinnitus receive a
hearing evaluation. For the person with tinnitus, the hearing evaluation is essentially the same as it is for the person without tinnitus.

A typical hearing evaluation includes pure-tone audiometry (finding the softest detectable level — the threshold — of hearing tones at different frequencies), speech audiometry (finding the threshold levels for detecting and understanding speech), and immittance audiometry (determining the condition of the eardrum and the middle-ear space behind the eardrum). Many other diagnostic tests can be performed, but pure-tone, speech, and immittance audiometry are the most basic tests to establish a person’s hearing function.

If the person also has tinnitus, then it is recommended they complete the THS in addition to the hearing evaluation. The 10-item THS includes three sections: A. Tinnitus; B. Hearing; and C. Sound Tolerance. (Please see Figure 1.)

**THS Section A: Tinnitus.** This section includes four items that describe typical tinnitus problems that would not be confused with a hearing problem. The four items address sleep disturbance, concentration difficulties, difficulty relaxing, and intrusiveness (inability to ignore tinnitus). The items are worded in such a way as to ensure the person completing the form is referring to effects specifically attributable to tinnitus and not to hearing problems. Each item is rated as “not a problem,” “small problem,” “moderate problem,” “big problem,” and “very big problem” — with a respective score of 0 to 4. For example, the person may rate sleeping as a “big problem” because of the tinnitus (score = 3), concentration as a “very big problem” (score = 4), relaxation as a “moderate problem” (score = 2), and intrusiveness as a “big problem” (score = 3). The four scores are added and, in this case, the total score is 12. It can be safely concluded that this person has a significant problem with tinnitus.

**THS Section B: Hearing.** This section includes four items that describe typical hearing problems that would not be caused by a tinnitus problem. The four items address: hearing in a noisy background, understanding speech on TV and in movies, understanding people with soft voices, and understanding speech in group conversations. The items are worded to ensure the person is referring to effects specifically due to hearing problems and not tinnitus. As in the Tinnitus section, responses are rated from “not a problem” to “very big problem,” with scores of 0 to 4. As an example, the person may rate hearing in a noisy background as a “very big problem” (score = 4), understanding speech on TV and in movies as a “moderate problem” (score = 2), understanding people with soft voices as a “very big problem” (score = 4), and understanding speech in group conversations as a “big problem” (score = 3). The grand total for these four scores is 13. Clearly, this person has a significant hearing problem.

**THS Section C: Sound Tolerance.** This section is included because so many people with tinnitus also report a sound tolerance problem. The first of the two items in this section states that “sounds were too loud or uncomfortable for me when they seemed normal to others around me.” As in the Tinnitus and Hearing sections, response options are 0 to 4 (“no problem” to “very big problem”). Only if the response is 1 or more is the second item completed, which asks the person to “list two examples of sounds that are too loud or uncomfortable to you, but seem normal to others.” On the basis of the responses to these two items, along with some follow-up questioning, the astute audiologist will have a good idea of what kind of sound tolerance problem the person is experiencing and its degree of impact on the person’s life.

It is beyond the scope of this article to go into detail about the different kinds of sound-tolerance problems, but to summarize: Hyperacusis is

"If the individual has a significant tinnitus problem, then hearing aids or combination instruments (hearing aids with a built-in sound generator) are generally the first option."
physical discomfort or pain when any sound reaches a certain loudness. Misophonia refers to emotional reactions only to certain sounds, regardless of their loudness. Noise sensitivity refers to general discomfort (annoyance or feeling overwhelmed) due to a perceived noisy environment. These definitions are not consensual, and distinguishing among them is nuanced and not well understood by most audiologists.¹³

Whereas a sound tolerance problem is reported to commonly occur in people who have tinnitus, in the experience of most audiologists, such a problem is usually in the mild to moderate category, whereas very few patients have a severe sound tolerance problem. A mild to moderate sound tolerance problem would normally be treated with sound therapy (using procedures that desensitize the person to sound), which can double as sound therapy for bothersome tinnitus. A severe sound tolerance problem would normally be treated separately from tinnitus.¹⁴

Tinnitus Problem? Hearing Problem? Or Both?

Results from the THS and hearing assessment can help an audiologist determine whether the patient has a tinnitus problem, a hearing problem, or both problems. The above examples of responses to the THS Tinnitus and Hearing sections illustrate a person who has significant problems with both tinnitus and hearing. In contrast, a person who blames the tinnitus for a hearing problem would typically have a low score for the Tinnitus section and a high score for the Hearing section. People with essentially normal hearing who complain of bothersome tinnitus typically have a high score for the Tinnitus section and a low score for the Hearing section.

Note that the specific scores on the THS are less important than the ensuing discussion between clinician and patient to develop an understanding of what the scores mean and to inform decisions about any future services that might be considered. Audiologists should ask patients whether they desire intervention for the types of problems described in the Tinnitus section. If so, then tinnitus-specific intervention should be made available.

Options for Tinnitus Therapy

With the hearing assessment and THS results in hand, the audiologist and individual will discuss options. If the individual has a significant tinnitus problem, then hearing aids are generally the first option. Hearing aids have been shown in numerous trials to work as a form of sound therapy to reduce the emotional and functional effects of tinnitus.¹⁵–¹⁹ Although there is no research evidence that hearing aids that include a built-in sound generator are more effective than hearing aids that only provide amplification, a built-in sound generator gives the capability of delivering constant sound to the ears in a very controlled fashion. Every major hearing aid company offers hearing aids with built-in sound generators. Many hearing aids also offer the ability to “stream” sound from a smartphone to the aids, enabling sound therapy using any number of apps that are available for this purpose. The audiologist can explain the different features of hearing aids and streaming-capable hearing aids to enable patients to make informed decisions about the potential use of ear-level devices for tinnitus management.

If the person starts wearing ear-level devices, then it is suggested that the tinnitus problem be reassessed after one or two months of wearing the devices. The THS can be used again for this purpose, followed by a discussion with the audiologist to determine whether further therapy is needed. If so, it is strongly suggested that the patient learn about the various interventions available and the evidence that exists for each. Some sources for this information are listed in the references below.²⁰–²²

A resource for knowing what apps are available for sound therapy is provided by the American Tinnitus Association (https://www.ata.org/sites/default/files/SoundTherapy_Apps_Page.pdf). Interventions for bothersome tinnitus include tinnitus retraining therapy, cognitive behavioral therapy, and Progressive Tinnitus Management.²³–²⁵ Sound therapy always is an option for intervention, and countless free or low-cost apps can be downloaded onto a smartphone to accomplish this purpose.

Before a patient receives intervention for bothersome tinnitus, they should complete a questionnaire assessing tinnitus impact. The questionnaire should be validated for “responsiveness,” that is, for assessing changes in tinnitus impact resulting from intervention. The Tinnitus Functional Index (TFI) is validated for responsiveness and is recommended for this purpose.²⁶ The patient should complete the baseline (pre-intervention)
TFI only after any hearing needs have been met and then complete it again following intervention. The desired result is a reduction in the TFI score, which would reflect a reduction in tinnitus impact.

It was explained above why a traditional tinnitus questionnaire, such as the TFI, is not recommended as part of the initial assessment. The point is that hearing problems and tinnitus problems tend to be conflated, which can artificially inflate the questionnaire score—exaggerating the degree to which tinnitus is a problem. Use of such a questionnaire is, however, an option to obtain additional information about how tinnitus impacts the individual. It can be very useful for this purpose provided there is awareness of the potential to blame the tinnitus for any hearing problems.

**Conclusion**

A protocol is recommended for audiologists to address the concerns of people who complain of tinnitus. This protocol is based on 25 years of continuous research, which has included numerous clinical trials. The essence of the protocol is to conduct a routine hearing evaluation, administer the THS, and fit hearing aids or combination instruments as needed. If tinnitus is bothersome following the assessment and use of ear-level devices, then various interventions are available. A tinnitus questionnaire, such as the TFI, should be administered both before and after intervention to assess for any changes in the emotional and functional effects of tinnitus.

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**Figure 1: The Tinnitus and Hearing Survey (THS)**

The THS is recommended for use by audiologists when conducting an evaluation of a person who complains of tinnitus. The THS is unique, because it separates items that pertain specifically to tinnitus from those that pertain specifically to hearing problems. Use of the THS enables an accurate assessment of whether tinnitus is bothersome apart from any hearing problems that might otherwise be ascribed to the tinnitus. Section C includes two items to screen for a sound tolerance (usually hyperacusis) problem.

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<thead>
<tr>
<th>A. Tinnitus</th>
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<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>
</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>
</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>
</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>
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<tr>
<td><strong>Grand Total</strong></td>
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<td><strong>Total of each column</strong></td>
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<th>B. Hearing</th>
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<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>
</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>
</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>
</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>
</tr>
<tr>
<td><strong>Grand Total</strong></td>
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<td><strong>Total of each column</strong></td>
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<tr>
<th>C. Sound Tolerance</th>
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</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>
</tr>
</tbody>
</table>

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

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For office use only (II): [ ] M [ ] H [ ] N
Using the Tinnitus and Hearing Survey: Guide for Audiologists

By Tara Zaugg, AuD, and James Henry, PhD

Sections A and B

The four items in the A (Tinnitus) subscale describe common problems with tinnitus that are unrelated to hearing problems. The four items in the B (Hearing) subscale describe common hearing problems that would not be caused by tinnitus. Step-by-step instructions for using the THS to collaboratively determine if intervention for tinnitus is desirable and appropriate are provided below. **With the patient’s filled-out THS in view:**

1. Explain that intervention for tinnitus can help with the problems in Section A
2. Explain that intervention for tinnitus would not help with any of the problems listed in Section B
3. Describe what would be required to engage in the tinnitus intervention that is offered (logistics, cost, etc.)
4. Be available to answer questions or concerns about the tinnitus intervention that is offered, or about tinnitus in general
5. Allow the patient to decide whether or not to engage in the intervention

Use of cut-off scores to determine candidacy for an intervention for tinnitus is strongly discouraged as it promotes decision making that does not take into account all of the factors in a patient’s life. The most effective use of the THS is as a tool to quickly and efficiently separate hearing problems from tinnitus problems, which then allows the clinician to describe the available interventions relative to the specific problems the patient is experiencing. The patient can then decide if any of the interventions being offered are a good match for their lifestyle and for problems they wish to address.

Section C

Sound tolerance problems are often reported by patients with tinnitus. The two items in the C (Sound Tolerance) subscale can be used to assist the clinician in developing an initial impression regarding the existence and type of sound tolerance problem. Item 1 is used to screen for the existence of a sound tolerance problem. Any answer other than zero indicates some level of difficulty with tolerating sound.

Item 2 is intended to elicit examples from the patient (that the clinician will discuss with the patient) to: (1) ensure the patient really is experiencing a sound tolerance problem (and not something else); and (2) inform the clinician’s opinion regarding the type of sound tolerance problem.

Examples for Item 2 that would suggest the patient may not have an abnormal reaction to sound include: (1) sounds that would be too loud for **anyone** (e.g., gunfire, nearby siren); (2) references to problems tolerating crowds or other situations for reasons other than sound tolerance (e.g., hypervigilance or other PTSD symptoms, trouble understanding what people are saying); and (3) complaints from hearing aid users who are only having trouble tolerating sounds that are commonly problematic for hearing aid users (e.g., silverware or dishes clanking, paper rustling).

After discussing the examples, if it appears the patient does have trouble tolerating sounds that most people can tolerate well, then the clinician will form an initial impression about whether the sound tolerance problem appears to be hyperacusis, misophonia, or a combination of the two. Use the definitions below to guide your impressions as you talk through the patient’s examples.

**Hyperacusis = physical discomfort caused by sound at levels that are comfortable for most people.** With hyperacusis, all sounds are uncomfortable once they reach a certain loudness level, which varies from person to person with hyperacusis.

**Misophonia = emotional reactions to sound.** With misophonia, it is not the loudness of a sound that causes discomfort (as is the case with hyperacusis), but an emotional reaction to the sound that causes it to be experienced as uncomfortable. It is common for a person with misophonia to find particular sounds to be uncomfortable at a relatively low level, but to find other sounds at the same level to be acceptable.

“For office use only (II)” refers to **Interviewer’s Impressions** as to whether/not the person has a sound tolerance problem.

- **M** would be checked if **Misophonia** was suspected.
- **H** would be checked if **Hyperacusis** was suspected.
- Both **M** and **H** would be checked if both were suspected.
- If **Neither** condition is suspected, then **N** would be checked.
Distinguishing Between Hearing Loss, Tinnitus, and Hyperacusis: A Recommended Tinnitus-Evaluation Protocol for Audiologists (continued)

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