

Tinnitus: From Symptoms to Strategies

Natalie Hein, AuD
Starkey Hearing Technologies

© 2026 continued.com, LLC. All rights reserved. Unauthorized reproduction prohibited. See final page for complete terms.

What's in This Handout

INTRODUCTION.....	1
WHAT'S IN THIS HANDOUT.....	2
KEY TAKEAWAYS.....	3
COURSE CONTENT.....	4
Understanding Tinnitus.....	4
Classifying Tinnitus.....	5
Evaluating Tinnitus.....	6
Managing Tinnitus.....	7
Starkey Multiflex Tinnitus Pro.....	9
QUIZ SUMMARY.....	11
ADDITIONAL INFORMATION.....	12
ADDITIONAL INFORMATION (CONTINUED).....	13

Key Takeaways

Key Concept	Clinical Implication
Tinnitus classification: objective vs. subjective	Objective tinnitus (less than 1% of cases) can be heard by the clinician; subjective tinnitus (99% of cases) is heard only by the patient and requires detailed case history to classify further.
Primary vs. secondary tinnitus	Secondary tinnitus has an identifiable source (auditory or non-auditory). Primary tinnitus is typically idiopathic and commonly associated with sensorineural hearing loss.
Tinnitus and hearing loss are not directly correlated	A patient with mild hearing loss may report debilitating tinnitus while one with significant hearing loss may report minimal awareness; individualized management is essential.
Self-assessment tools guide evaluation	The THI (Tinnitus Handicap Inventory), TFI (Tinnitus Functional Index), and THS (Tinnitus and Hearing Survey) measure severity and functional impact across multiple domains.
Tinnitus aggravators are highly individual	Stress, anxiety, fatigue, noise exposure, caffeine, alcohol, sodium, medications, and cardiovascular factors can worsen symptoms; identifying personal triggers is a key part of management.
Management is multimodal	Effective tinnitus management may include counseling, sound therapy (masking, habituation, neuromodulation), hearing aids with tinnitus features, behavioral approaches (CBT, TRT), and lifestyle modifications.
Starkey Multiflex Tinnitus Pro offers flexible options	Eight stimulus options (white, pink, brown, blue, violet, audiogram-shaped, and custom) allow individualized sound therapy across all Starkey Omega AI, Edge AI, and Signature AI device styles.
The Starkey Relax app supports patient self-management	Twelve stimulus options with adjustable volume, modulation, and timer features give patients accessible, provider-aligned sound therapy tools for use outside the clinic.

Course Content

Learner Outcomes

- After this course, participants will be able to describe the different ways of classifying tinnitus: objective and subjective, and the symptoms associated with each classification.
- After this course, participants will be able to identify ways to evaluate tinnitus from self-assessments and audiological evaluation.
- After this course, participants will be able to describe management options for those that experience tinnitus from counseling, technology to behavioral approaches.

Understanding Tinnitus

Tinnitus is defined as a symptom characterized by the perception of sound in the absence of an external stimulus. It is one of the most common health conditions worldwide, affecting approximately 15% of adults globally. In the United States, 1 in 10 Americans experience some form of tinnitus throughout their life. The National Institute on Deafness and Other Communication Disorders estimates that approximately 2 million Americans experience debilitating tinnitus.

Tinnitus affects anyone regardless of age, gender, or hearing status, though it is more commonly seen in Caucasian males aged 60 years or older. A particularly affected population is veterans; over 2 million veterans received VA compensation for tinnitus in 2021. Other at-risk groups include individuals in occupationally loud environments, those with traumatic brain injury, and musicians or heavy music listeners.

Tinnitus is not static — it can change day to day or even hour to hour based on environment, physical state, and emotional state. Clinicians should help patients identify their personal triggers as a key part of successful management.

Impact on Quality of Life

The difference between tinnitus being a minor or major issue for a patient is less often related to loudness and more often related to how tinnitus impacts other areas of life. Sleep disturbance is one of the most common complaints; nearly two out of three tinnitus patients report difficulty falling or staying asleep. Clinicians and researchers have developed inventory tests to measure the subjective burden patients experience.

Common Aggravators

- Stress and anxiety — the brain becomes more aware of the tinnitus signal, increasing perceived loudness and emotional distress
- Fatigue and poor sleep — creates a cycle where tinnitus impacts sleep and sleep deprivation worsens tinnitus
- Noise exposure — occupational, recreational, or short-term loud sound
- Caffeine, alcohol, nicotine, and certain medications
- Jaw and neck tension
- High sodium intake
- Blood pressure changes and general illness

Classifying Tinnitus

There are two primary classifications of tinnitus based on whether the sound can be heard by someone other than the patient.

Objective Tinnitus: Can be perceived or heard by the clinician — typically detected by standing next to the patient, using a stethoscope, or recording from the ear canal. The source is internal (muscle spasm, vascular problem, or middle ear tumor). Objective tinnitus is rare, occurring in less than 1% of cases.

Subjective Tinnitus: Can only be heard by the patient. This is the most common form, representing approximately 99% of tinnitus cases. Subjective tinnitus is further classified using primary and secondary identifiers.

- Secondary tinnitus: has an identifiable source — either auditory (cerumen impaction, middle ear pathology, auditory nerve pathology, cochlear abnormalities) or non-auditory (vascular anomalies, metabolic diseases, neurologic abnormalities, ototoxic medications)
- Primary tinnitus: most common type; typically idiopathic (no identifiable underlying cause); commonly associated with sensorineural hearing loss

Primary tinnitus is further described by three characteristics:

- Temporal: Is it spontaneous (less than one minute), intermittent (a few hours per day, occasional), or constant (daily)?
- Duration: Has the patient experienced tinnitus for less than 60 days (recent onset) or longer (persistent)?
- Impact: Is it extremely bothersome, somewhat bothersome, or easily ignored?

Distinguishing Tinnitus from Other Phantom Auditory Perceptions

It is important to distinguish tinnitus from other phantom auditory perceptions:

- Auditory hallucinations: False perceptions of sound perceived as external and separate from the patient's own mental processes; can result from high fevers, certain infections (e.g., encephalitis, meningitis), or intense stress or trauma
- Musical ear syndrome: A subset of auditory hallucinations in which the patient hears music or singing with no external source
- Auditory imagination: A form of mental imagery (e.g., a song stuck in one's head); experienced by most people and not pathological

Q4

Quiz Hint: Objective tinnitus can be heard by the clinician and occurs in less than 1% of tinnitus cases. Subjective tinnitus, which can only be heard by the patient, accounts for approximately 99% of cases.

Evaluating Tinnitus

Evaluation of tinnitus begins with self-assessment tools and is followed by a detailed case history and formal audiologic assessment.

Self-Assessment Tools

Tinnitus Handicap Inventory (THI): A 25-item questionnaire that identifies the functional, emotional, and catastrophic response reactions to tinnitus. Not affected by age, gender, or hearing status. Used for initial evaluation of handicap and to measure treatment outcomes over time.

Tinnitus Functional Index (TFI): A 25-item questionnaire assessing tinnitus severity across 8 subscales — intrusiveness, sense of control, cognition, sleep, auditory, relaxation, quality of life, and emotional distress. Valuable in both clinical and research settings for its responsiveness to treatment-related change.

Tinnitus and Hearing Survey (THS): Assists clinicians and patients in determining how much of a reported problem is due to tinnitus versus hearing difficulties. Includes two items that screen for sound intolerance. Statistically validated and reliable for quickly determining whether tinnitus intervention is appropriate.

Q3

Quiz Hint: THI stands for Tinnitus Handicap Inventory. It is a 25-item questionnaire developed as a brief, easily administered tool to evaluate the disabling consequences of tinnitus.

Case History

A detailed case history is essential for defining temporal, duration, and severity characteristics and for determining whether tinnitus is primary or secondary. Questions range from basic (Which ear? Gradual or sudden onset? History of noise exposure?) to more comprehensive (What have you tried for relief? How has tinnitus affected your daily life? What support systems do you have?).

Risk Factors

Known risk factors for tinnitus include:

- Meniere's disease, sudden hearing loss, and ear infections
- Thyroid issues, head or neck trauma, and cardiovascular disease
- Over 500 prescription and OTC medications known to cause tinnitus as a side effect
- Smoking, anxiety, depression, and alcohol use
- Occupational or recreational noise exposure
- Traumatic brain injury (TBI)

Audiologic Assessment

A comprehensive audiologic evaluation may include:

- Air and bone conduction thresholds, speech testing
- Tympanometry and acoustic reflex thresholds
- Distortion product otoacoustic emissions (DPOAEs)
- Uncomfortable loudness level (UCL) testing
- Tinnitus pitch matching and loudness matching
- Minimum masking level (MML) and minimum detection level (MDL)

Managing Tinnitus

Management for tinnitus is centered on limiting negative thoughts associated with tinnitus, mitigating its emotional effects, and minimizing disruptions to daily life. There is rarely a one-size-fits-all solution. Management options include counseling and education, technology, and behavioral approaches — often used in combination.

Counseling and Education

One of the first responsibilities as a clinician is to explain what tinnitus is and why it may be occurring in a reassuring, approachable way. Key counseling topics include:

- Normalizing the experience and explaining the connection to hearing loss
- Setting realistic expectations for management and improvement
- Encouraging lifestyle changes: quitting smoking, improving sleep habits, dietary adjustments, relaxation techniques, and regular exercise
- Identifying personal aggravators and helping patients gain a sense of control
- Discussing support groups — in person or online — to reduce isolation

Diet and tinnitus: There is no universal tinnitus diet, but reducing excessive caffeine, alcohol, nicotine, or high-sodium intake may lessen symptoms for some patients. Staying hydrated and supporting cardiovascular health through healthy eating may also help. Some studies suggest that addressing a vitamin B12 deficiency may improve tinnitus for patients with that deficiency specifically.

Positive communication: Remind patients they are not alone. Rather than saying nothing can be done, reframe toward management and improvement. There is always something that can help — whether that is education, counseling, sound therapy, amplification, or a combination.

Technology: Sound Therapy

The most common provider-driven treatment for tinnitus is sound therapy, which uses habituation to help the brain reclassify the tinnitus signal as unimportant. There are four categories of sound therapy:

- **Masking:** An external sound at sufficient volume to partially or completely cover the tinnitus
- **Distraction:** External sound used to divert the patient's attention away from tinnitus
- **Habituation:** Helps the brain reclassify tinnitus as an unimportant sound that can be consciously ignored
- **Neuromodulation:** A specialized sound designed to minimize neural hyperactivity thought to underlie tinnitus

Sound therapy devices include:

- Sound masking devices: Tabletop devices offering a variety of sounds (commonly white noise); often used for sleep; also found in open office settings
- Bimodal stimulation: Simultaneous use of two sensory modalities (typically auditory and tactile, or auditory and electrical) to retrain the brain's response to tinnitus
- Hearing aids with maskers: Acoustic therapy via amplification or external sounds; each manufacturer has its own approach to onboard maskers; generally set below the patient's tinnitus level
- Sound/sleep apps: Smartphone applications providing stimulus options and self-management tools; research in 2023 found significant reduction in subjective tinnitus loudness and THI scores after 6 months of app use

Q2

Quiz Hint: Tinnitus aggravators include salt, anxiety/stress, and alcohol — all of the above are considered aggravators. Stress causes the brain to become more aware of the tinnitus signal; caffeine, alcohol, sodium, and other lifestyle factors can worsen symptoms for many patients.

Behavioral Approaches

Cognitive Behavioral Therapy (CBT): Shown to have great improvements in quality of life for patients with severe tinnitus. Focuses on building mindfulness skills, teaching sound enrichment strategies, and making behavioral changes that help patients cope with how tinnitus makes them feel.

Established treatment protocols include:

- Tinnitus Retraining Therapy (TRT): A 12-24 month protocol combining CBT and sound therapy
- Progressive Tinnitus Management (PTM): Five levels of treatment ranging from patient education to intensive, long-term intervention
- Tinnitus Activities Treatment (TAT): A variation of CBT addressing four impact areas — thoughts and emotions, hearing and communication, sleep, and concentration — using incremental learning and supplemental low-level sound therapy

Starkey Multiflex Tinnitus Pro

The Multiflex Tinnitus Pro is Starkey's solution for tinnitus management, available in all styles of Omega AI, Edge AI, and Signature AI devices. It offers eight different stimulus options that vary based on technology level.

Enabling Tinnitus in Profit Software

Tinnitus is accessible from the flyout menu within Profit software by clicking the tinnitus screen. The stimulus is selected from a drop-down menu. All options offer 10,000 Hz of bandwidth with 16 bands of adjustability.

- Tinnitus can be enabled on a per-program basis — a common approach is to create a duplicate of the patient's favorite program and add the tinnitus stimulus to that second program
- A program with microphones off and tinnitus stimulus only can also be created for patients who prefer that option
- When a tinnitus program is selected from the drop-down for the 24, 20, and 16 technology tiers, it defaults to the audiogram-shaped stimulus; the 12 technology tier defaults to white noise
- The stimuli play/pause feature allows the provider to pause the masker and select play before presenting it through the hearing aids — a pop-up prevents accidentally leaving the tinnitus screen with the stimulus not playing

Stimulus Options

White Noise: Equal energy distribution across all frequencies with a flat response; signal is based on the patient's pure tone average; vent interactions are accounted for; provider has full adjustability within Profit.

Audiogram-Shaped Stimulus: Uses the patient's hearing loss to shape the stimulus; eliminates the possibility of the signal being too loud or inaudible in certain frequency regions; gain is calculated per channel based on hearing loss and coupling.

Colored Noises: Volume-to-frequency relationship determines the color of noise. Options include:

- **Pink Noise:** Equal power per octave (intensity decreases ~3 dB/octave); more low-frequency content than white noise; sounds similar to rainfall; research has shown benefits for sleep quality, work efficiency, executive functioning, and memory in older adults
- **Brown (Red) Noise:** Even less high-frequency energy than pink (~6 dB/octave decrease); sounds like steady rain, thunder, or a waterfall; helpful for masking unwanted noise; a 2017 study found it improved concentration and reduced distraction in open office settings
- **Blue Noise:** Inverse of pink noise; intensity increases ~3 dB/octave; more energy in high frequencies
- **Violet (Purple) Noise:** Inverse of brown noise; intensity increases ~6 dB/octave; may be preferred by some patients with high-frequency hearing loss or high-pitched tinnitus

Custom Stimulus (available at 24 and 20 technology tiers): Uses the minimum masking level (MML) and minimum detection level (MDL) to design a noise that efficiently masks the patient's tinnitus. Only frequency bands effective at masking are included. The process takes approximately 4-6 minutes.

Adjustments and User Controls

- Tilt control: Adapts the gain function of frequency to adjust power emphasis
- Modulation: Adjusts the speed of the stimulus
- Microphone control: Mics can be turned on or off per program
- Fine-tuning: Low, mid, and high band adjustability
- Tinnitus volume user control: Provider can enable tinnitus volume in user controls with 2 dB step sizes; patients can then adjust volume and modulation rate within the My Starkey app (visible only if a tinnitus program has been programmed in Profit)

Q1

Quiz Hint: The Multiflex Tinnitus Pro stimulus options include white noise, audiogram-shaped noise, pink noise, brown noise, blue noise, violet (purple) noise, and custom stimulus. 'Ocean Noise' is not a Starkey stimulus option. 'Greek' is not a stimulus option.

Starkey Relax App

The Relax App is a free app available for Apple and Android devices. It serves as both an information resource for patients with tinnitus and a self-management tool designed to be implemented alongside the provider's sound therapy protocols.

- 12 stimulus options available (e.g., fan, fire, rain, guitar, and more)
- Patients can adjust volume, modulation, and set a timer
- Custom stimulus creation and saving available
- Goal of reducing the loudness or prominence of the patient's tinnitus
- A "Learn" section provides additional resources for patients

Q5

Quiz Hint: The Starkey Relax app offers 12 different stimulus options. Patients can adjust volume, modulation rate, and set a timer for the stimulus of their choosing.

Quiz Summary

The following quiz hints appeared throughout the course content. Use this section as a quick study reference.

Q1

Quiz Hint: The Multiflex Tinnitus Pro stimulus options include white noise, audiogram-shaped noise, pink noise, brown noise, blue noise, violet (purple) noise, and custom stimulus. 'Ocean Noise' is not a Starkey stimulus option. 'Greek' is not a stimulus option.

Q2

Quiz Hint: Tinnitus aggravators include salt, anxiety/stress, and alcohol — all of the above are considered aggravators. Stress causes the brain to become more aware of the tinnitus signal; caffeine, alcohol, sodium, and other lifestyle factors can worsen symptoms for many patients.

Q3

Quiz Hint: THI stands for Tinnitus Handicap Inventory. It is a 25-item questionnaire developed as a brief, easily administered tool to evaluate the disabling consequences of tinnitus.

Q4

Quiz Hint: Objective tinnitus can be heard by the clinician and occurs in less than 1% of tinnitus cases. Subjective tinnitus, which can only be heard by the patient, accounts for approximately 99% of cases.

Q5

Quiz Hint: The Starkey Relax app offers 12 different stimulus options. Patients can adjust volume, modulation rate, and set a timer for the stimulus of their choosing.

Additional Information

Presenter Bio

Dr. Natalie Hein joined Starkey as the Government Services Audiologist for the Mid-Atlantic region in 2017. She transitioned to the trainer role on the Education & Training team in 2025.

Natalie received her undergraduate education at the University of Maryland and completed her Doctor of Audiology at Gallaudet University. Prior to joining Starkey Hearing Technologies, she worked as a clinical audiologist in private practice and in hospital settings. Her clinical interests include amplification and counseling techniques. Natalie currently assists in the development of educational materials, leads training classes, and serves as the liaison for Starkey's university and student initiatives.

Presenter Disclosure

Natalie Hein is an employee of Starkey Hearing Systems and has no other relevant financial or non-financial disclosures.

Additional Information (continued)

Handout Information

About This Document

This document is created for accessibility and is an AI-generated supplement synthesized directly from the presentation's PowerPoint content.

Reference Use & Links

This handout is for reference only. Non-essential images have been removed. Any links are current at the time of the live webinar but are subject to change.

Copyright

Images used in this course comply with copyright laws; permission has been secured where required. All use of these images outside this course may violate copyright laws and is strictly prohibited.

Social Workers

For additional information regarding standards and indicators for cultural competence, please review the NASW resource: [Standards and Indicators for Cultural Competence in Social Work Practice](#)

Need Help?

Select the "Help" option in the member dashboard to access FAQs or contact us.

Limitations/Risks

- The applicability and accuracy of the course content may vary by the clinical, geographical, and cultural context; you should evaluate the course accordingly.
- As healthcare is rapidly evolving, new findings may change the validity of the information presented in this course. Providers should always consult the latest research and guidelines from professional associations.
- The interventions discussed in this course may be limited in generalizability, requiring practitioners to consider specific individual and population factors.
- The course may not cover all possible risk factors, diagnostic methods, or treatment options, and complex cases may require additional considerations.
- Healthcare providers should apply cultural competence and sensitivity to ensure effective and respectful care based on their patients' diverse needs.
- Providers should always evaluate the limitations of diagnostic and screening tools, considering their potential for false results as well as any ethical implications.
- It is the responsibility of course participants to critically evaluate the evidence from multiple sources to guide professional practice.

No part of the materials available through the continued.com site may be copied, photocopied, reproduced, translated or reduced to any electronic medium or machine-readable form, in whole or in part, without prior written consent of continued.com, LLC. Any other reproduction in any form without such written permission is prohibited. All materials contained on this site are protected by United States copyright law and may not be reproduced, distributed, transmitted, displayed, published or broadcast without the prior written permission of continued.com, LLC. Users must not access or use for any commercial purposes any part of the site or any services or materials available through the site.