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Abstract

The Progressive Audiologic Tinnitus Management (Progressive ATM) model is based on a series of clinical studies that were completed at the NCRAR, and on many years of clinical experience with veteran tinnitus patients. The model is designed to be maximally efficient to have the least impact on clinical resources, while still addressing the needs of all veterans who complain about tinnitus. The model involves five hierarchical levels of management: (1) Triage, (2) Audiologic Evaluation, (3) Group Education, (4) Tinnitus Evaluation, and (5) Individualized Management. The goal of Progressive ATM is to minimize the impact of tinnitus on the patient's life as efficiently as possible for both the patient and the audiologist. This approach minimizes the effort and expenses incurred by the patient and conserves hearing healthcare management costs.

Why Progressive ATM?

- The Tinnitus Pyramid (Fig. 1) shows how tinnitus affects people differently (Dobie, 2004)
 - The majority either are not bothered by the tinnitus or they require only some basic education
 - About 20% have tinnitus that requires clinical intervention
 - Relatively few patients are severely affected by their tinnitus
- This range of needs necessitates a progressive management approach

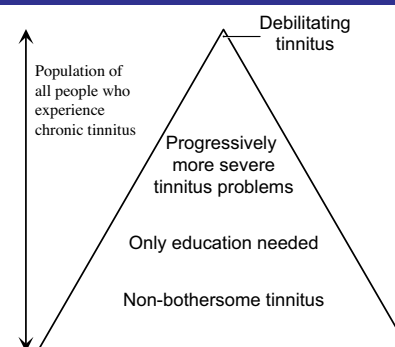


Figure 1. The Tinnitus Pyramid

Progressive ATM Flowchart

- Shows the five levels of Progressive ATM (Fig. 2)
- Levels 2-5 are conducted by audiologists
- Appropriate referral is critical at each level

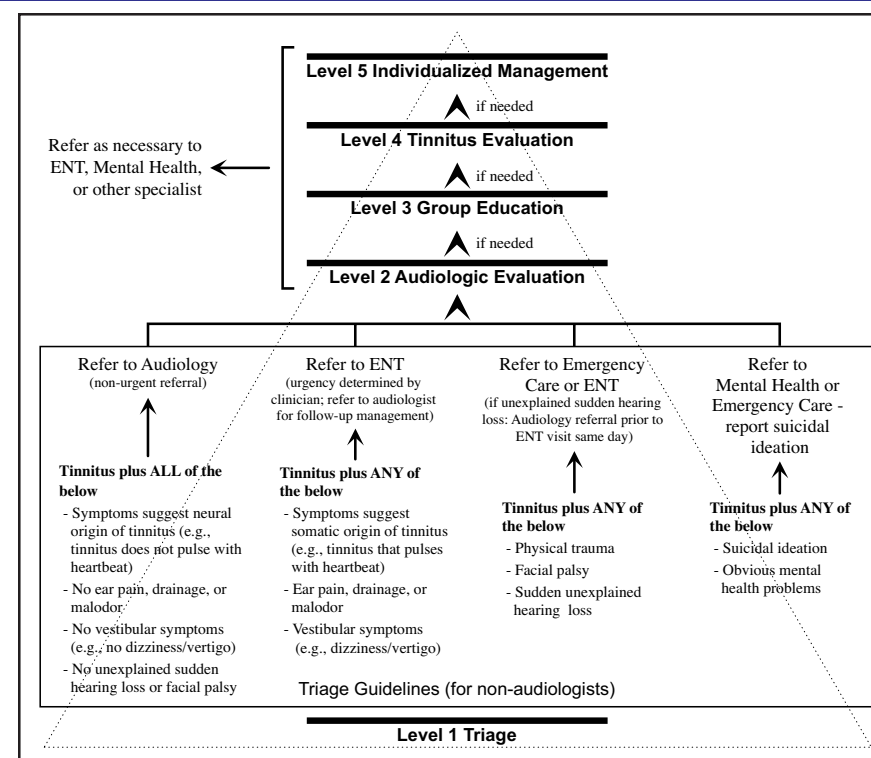


Figure 2. Progressive ATM Flowchart

Level 1 Triage

- Patients report tinnitus to healthcare providers in many different clinics
 - Providers may be unaware of tinnitus management resources that are available
- The triage guidelines (Fig. 2) are designed mainly for non-audiologists who encounter patients complaining of tinnitus
- The guidelines reflect accepted clinical practices

Level 2 Audiologic Evaluation

- Tinnitus usually is associated with some degree of hearing loss (Dobie, 2004)
 - Tinnitus patients thus need to be evaluated audiologically
- Purpose of evaluation: assess the potential need for medical and audiologic intervention
 - Audiologic intervention refers to both hearing intervention and tinnitus intervention
 - It may also be necessary to screen for mental health conditions

- The Level 2 Audiologic Evaluation includes the following components:
 - Administer written questionnaires (Tinnitus Handicap Inventory, Hearing Handicap Inventory)
 - Administer Tinnitus and Hearing Survey (to determine if the complaints are tinnitus-specific, or due mainly to hearing problems) (Fig. 3)
 - Evaluate auditory function
 - Determine potential need for ENT exam
 - Administer Tinnitus-Impact Screening Interview (if warranted)
 - Evaluate for hearing aids (if warranted)
 - Evaluate for mental health referral (if warranted)
 - Provide take-home workbook (if needed) (Fig. 4)
- Hearing aids often can result in satisfactory tinnitus management with minimal education and support
- If further tinnitus intervention is needed, then patients are referred to Level 3 Group Education

Figure 3. Tinnitus and Hearing Survey

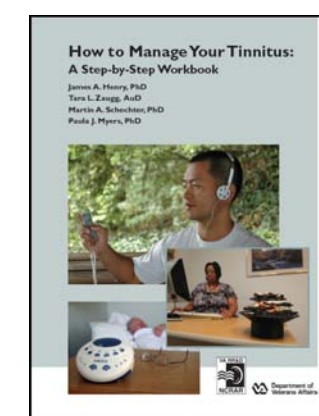


Figure 4. Patient Take-Home Workbook

Level 3 Group Education

- Normally consists of two sessions separated by about 2 weeks
- Session 1
 - Principles of using sound to manage tinnitus are explained, based on the Tinnitus-Management Sound Grid (Fig. 5)
 - Patients use the Sound Plan Worksheet (Fig. 6) to develop an individualized "sound plan" to manage their most bothersome tinnitus situation
 - Patients use the sound plan until the next meeting
- Session 2
 - Patients discuss their experiences using the sound plan and its effectiveness
 - Further information about managing tinnitus is presented, and patients revise their sound plan
 - Additional sessions are scheduled if needed
- Advantages to a group education format:
 - Education and support are provided to more patients in less time—maximizing resources
 - Patients are empowered to make informed decisions about tinnitus management
 - Patients support and encourage each other
- Recent evidence supports the use of group education as basic tinnitus intervention (Newman and Sandridge, 2005; Henry et al., 2007)
- Patients who need more support and education can progress to the Level 4 Tinnitus Evaluation to determine their needs for further intervention

Use of Sound	Type of Sound		
	Environmental Sound	Music	Speech
Calming	✓	✓	✓
Background	✓	✓	✓
Interesting	✓	✓	✓

Figure 5. Tinnitus-Management Sound Grid

Figure 6. Sound Plan Worksheet

Level 4 Tinnitus Evaluation

- Includes an intake interview, tinnitus psychoacoustic assessment, and (if indicated) evaluation for ear-level devices
- Administration of intake interview is the primary means of determining if individualized tinnitus management is needed
- In-clinic trial use is recommended to select devices for tinnitus management, including ear-level noise generators and combination instruments, and personal listening devices
- Screening for referral to a mental health clinic is recommended
- Requirements for receiving Level 5 Individualized Management include:
 - Levels 1-4 of Progressive ATM have not met the patient's needs
 - Patient has been referred as appropriate to other healthcare disciplines
 - Patient is motivated and capable of participating in Level 5 procedures
- If requirements are met, then a management plan is developed (including device options and potential duration of management)

Level 5 Individualized Management

- Needed by relatively few patients
- Involves the same principles of using sound to manage tinnitus as presented in Level 3 Group Education
- Patients receive individualized education and support
- Some patients use ear-level sound generators or combination instruments
- Further management options can include (in alphabetical order):
 - Cognitive-Behavioral Therapy
 - Neuromonics Tinnitus Treatment
 - Tinnitus Masking
 - Tinnitus Retraining Therapy
- There is no definitive evidence that any one behavioral method is more effective than any other

Future Directions

- With PATM, patients determine how to use sound in each tinnitus-problem situation—they then use whatever sound-generating devices are available, or they purchase special equipment, to perform the specified sound therapy
 - A wearable device that is capable of performing all of the sound therapy combinations described by the Grid (Fig. 5) is needed
 - Efforts are underway to develop a low-cost, flexible, tinnitus sound-management device that will incorporate all of the capabilities of the Grid
- CBT has been shown to be effective with tinnitus patients, and the incorporation of CBT is expected to improve overall outcomes
 - CBT is currently being added to the PATM protocol

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