

Tinnitus Management in Private Practice

Capstone Project

Presented in Partial Fulfillment of the Requirements for the Degree of Doctor of
Audiology in the Graduate School of The Ohio State University

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2014

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Abstract

Tinnitus is defined as the perception of sound in the absence of an external auditory stimulus. Approximately 50 million people in the general population report experiencing some form of tinnitus; however, a very small percentage of this population experience tinnitus that is bothersome to the point of seeking intervention. Currently, there are several evidence-based tinnitus management approaches audiologists are qualified to provide. Unfortunately, few audiologists provide tinnitus treatment, and therefore, it can be difficult for patients to find services. Treatment may require several lengthy appointments over the course of several months, which may present as challenging for the private practice audiologist who wishes to provide services that are cost-effective for both patients and the business. The primary purpose of this document is to review commonly used tinnitus management approaches and the evidence to support their use with the intent to aid audiologists in determining which approaches benefit their patients and could fit within their business model. A secondary purpose is to provide audiologists in private practice with ideas on how incorporation of tinnitus services into the operation of their practice can be accomplished efficiently and effectively.

Dedication

Dedicated to the Combs Family and Knight Family

Acknowledgments

I thank the professors, advisors, and staff of The Ohio State University for their inspiration, encouragement, and wealth of knowledge. I thank my clinical supervisor at the UNCG Speech & Hearing Center for the experience I gained working with the tinnitus population, which greatly contributed to the content of this document. Lastly, I thank my fellow classmates with whom I have laughed, cried, learned, and shared unforgettable memories.

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Chapter 1:

Commonly Used Approaches to Tinnitus Management

Introduction

Tinnitus is recognized as the perception of sound that occurs without the presence of auditory stimuli from the environment. Tinnitus is most often a subjective perception that has many descriptions (e.g., ringing, buzzing, hissing, etc.) (Gabriels, 2001; Henry, Zaugg, Myers, & Schechter, 2008; Henry & Hall, 2011). Tinnitus is an experience that an estimated 50 million people in the general population share, but only a small percentage (10-12 million) of these people perceive it as bothersome to the point of seeking intervention (American Academy of Audiology, 2000). Approximately 80% of people who experience tinnitus are able to become less aware or less bothered (i.e., habituate) without the need for intervention (Jastreboff & Hazell, 1998). Tinnitus can be caused by a multitude of insults to and/or disorders of the auditory system and is often a concomitant symptom to hearing loss, sound tolerance issues (e.g., hyperacusis), and psychological issues, such as anxiety and depression.

Several theories have been developed on how to assess and manage bothersome tinnitus effectively, but a standardized protocol that guides clinicians in linking diagnosis with appropriate treatment is yet to be achieved. For example, Hoare and Hall (2011) discussed the lack of a standardized protocol for tinnitus management in the United

Kingdom as reflected by differences between recommendations made in national-level and international-level clinical guideline documents, the Good Practice Guide (GPG) and Tinnitus Research Initiative (TRI). The GPG focuses away from standardization and concentrates on a patient-centered, holistic approach to management while the TRI emphasizes a medical model of care. These guideline documents differ in their stance on which hearing health care professional these patients should be referred to first (an audiologist or a neuro-otological specialist), standard of assessment, and standard in choice of treatment. Additionally, neither document presents strong evidence to support their recommendations nor does either provide a clear link between diagnostic findings and treatment. As a result of continued discontinuity and lack of powerful evidence, modern strategies for tinnitus management are still based on varying theories of how relief from bothersome tinnitus can and should be achieved; no uniform or standardized treatment protocol for the overall management of tinnitus currently exists (Dobie, 1999, 2004a; Hoare & Hall, 2011; Henry, Zaugg, & Schechter, 2005).

Although the need for a standardized approach remains, various treatment approaches currently utilized by audiologists have proven successful in the abatement of bothersome tinnitus which is the reason for these services to be continually sought after. Unfortunately, due to the limited number of hearing health care professionals offering tinnitus management services, finding a nearby provider has proven difficult. According to Tyler, Haskell, Gogel, and Gehringer (2008), the shortage of providing audiologists may be due to the perception that incorporating tinnitus management into one's practice is daunting and requires extensive training to master regimented protocols. However, these authors provided encouragement for the motivated audiologist to begin with focus

on essential elements of tinnitus management and utilize them in a way in which the audiologist is confident to do so. For audiologists in private practice, where patients and a business must be equally considered, the idea that tinnitus management can be made to suit the audiologist and the clinical setting in which he or she works is an ideal concept. The following are important considerations an audiologist must make relative to the incorporation of tinnitus management services into a private practice setting: 1) what his/her level of comfort with treating tinnitus is and how that might impact the depth of treatment provided, 2) what treatment options (i.e., sound therapy devices, individual vs. group therapy) will be offered to patients, 3) how much clinical time will be allotted for appointments, and 4) the amount to be charged for services to obtain adequate reimbursement.

The purpose of this document is to provide audiologists with information pertaining to currently available tinnitus management strategies and ideas on how incorporating these services can be accomplished in a private practice. By doing so, it is the hope that more audiologists in the private sector will offer these unique services thereby increasing their availability to patients in need. In the remainder of Chapter One, evidence to support current tinnitus treatment options and approaches are discussed. Chapter Two focuses on what the private practitioner should consider when deciding if tinnitus management services are to be a part of their practice, both from clinical and business perspectives.

Counseling and Sound Therapy

Counseling and sound therapy are the tools by which audiologists treat bothersome tinnitus. Counseling is the most widely employed and perhaps most important tinnitus management strategy of the two. Information provided to patients can be very general or may need to include details that cater to the patient's specific needs or questions. In addition to information, it may also be required of the audiologist to modify patients' negative perceptions of their tinnitus and provide coping strategies (Hall, 2013; Tyler et al, 2008). Sound therapy is defined as "the use of external sound to provide relief from tinnitus," (Tyler et al, 2008, p. 27). Sound therapy may be delivered via the acoustic environment or at the level of the ear. It can be utilized for purposes of completely masking or partially masking a patient's tinnitus, depending on the goal of treatment, and there is a wide range of stimuli (e.g., music) and device (e.g., hearing aids) options available. The following sections of this chapter review the various and common methods of tinnitus treatment that use both counseling and sound therapy, including the supporting evidence for their use.

Environmental Sound and Personal Listening Devices (PLD)

Examples of personal listening devices (PLD) are mp3 players, iPods, compact disc (CD) players, or tabletop sound generators. These devices are widely available to the public, many patients already own them, and they offer patients a less expensive alternative to more costly sound therapy options. Additionally, access to online sound tracks (e.g., iTunes) affords patients the ability to download a variety of sounds to their PLDs, like music, that they find to be pleasing and effective for masking their tinnitus.

Henry et al (2005b) recommended patients be informed of the potential benefits, such as reduction in tinnitus perception and relaxation, that they could obtain from the use of PLD. A portion of the informational counseling provided should focus on identifying situations in which the patient's tinnitus is most problematic and whether PLDs or tabletop sound generators would be useful. PLDs have mobility as an advantage to their use whereas a tabletop sound generator device is stationary (Tyler et al, 2008).

A common complaint of those with bothersome tinnitus is difficulty maintaining healthy sleep hygiene due to their tinnitus acting as a distraction. As demonstrated by Handscomb (2006), using a sound therapy device, like a tabletop sound generator, is an effective strategy for these individuals by reducing the tinnitus perception and allowing them to relax to more pleasing auditory stimuli. Handscomb (2006) conducted a study with 39 patients with tinnitus-related sleep disturbance to determine commonly chosen stimuli delivered from a bedside sound generator (BSSG), the reasons for their selections, and whether bedside sound generators improved the quality of their sleep. Thirty-five of the 39 subjects proceeded through follow-up stages of the study. Results of the outcome measures administered revealed that all 35 of the remaining test subjects experienced significant improvement in quality of sleep when using a BSSG. When asked why a particular sound was chosen, the majority of subjects reported a positive emotional effect while others chose a sound for its quality or its ability to positively affect their tinnitus perception.

Hearing Aids and Wearable Sound Generators

A hearing aid is one type of ear-level device categorized under the umbrella terms *sound generator* or *tinnitus masker*. A wearable sound generator and/or hearing aid can be worn in behind-the-ear or in-the-ear styles. These devices come available as stand-alone masker units or a masker circuit can be combined within an amplification device. Patients are typically given control over the volume of the masker stimulus in order to set it at their desired intensity level. However, the patient should be counseled on appropriate setting of the volume level so as to achieve goals of treatment but not to set it at a volume that becomes problematic. For example, some tinnitus management approaches recommend setting the volume at the “mixing point”, or the point at which the sound intertwines with the tinnitus rather than making it completely (Jastreboff & Hazell, 1998). A problematic volume level would be a level that could potentially worsen hearing loss, tinnitus, and/or diminish speech understanding (Bentler & Tyler, 1987; Coles & Hallam, 1987; Tyler et al, 2008).

Amplification may be beneficial to a tinnitus patient with concomitant hearing loss in the following ways: 1) amplification can have a masking effect on tinnitus perception leading to a decrease in perceived loudness, 2) stress associated with communication difficulties, as a result of hearing loss, are mitigated, and 3) the user’s auditory system, where once deprived, receives stimulation (Henry, Zaugg, Myers, & Schechter, 2008a; Sweetow & Jeppesen, 2012). Appropriately fit hearing aids are shown to be beneficial for a wide range of hearing loss severities, but can also provide positive results for individuals with bothersome tinnitus (Tyler et al., 2008). Trotter and Donaldson (2008) investigated tinnitus perception of 2,153 patients whom were fit with

hearing aids over the course of 25 years. They found that 82% of those fit monaurally and 96% of those fit binaurally with digital hearing aids experienced some improvement in tinnitus perception. Henry et al (2008c) strongly recommended that any patient with aid-able hearing loss should address their amplification needs prior to or during their pursuit of tinnitus treatment, which will only further the effectiveness of intervention. Even those whom would be considered marginal hearing aid candidates are encouraged to try amplification as a form of tinnitus treatment (Henry et al., 2008).

Widex Zen Therapy

Sweetow and Jeppesen (2012) explained Widex Zen Therapy (WZT) as an integrated approach to tinnitus management designed to address all major contributors to distressful tinnitus, including sleep disturbance, and maladaptive thoughts and behaviors. WZT uses a hearing aid that offers the Zen fractal tones (combination device of hearing aid and sound generator) while also integrating principles of both Tinnitus Retraining Therapy (general and adjustment-based counseling) and cognitive behavioral therapy (CBT) (addressing maladaptive thoughts and behaviors). Sweetow and Jeppesen (2012) supported the use of combination devices for their success at addressing both hearing loss and problematic tinnitus. In addition, they championed the accompaniment of appropriate counseling with the fitting of Widex Zen for its role in relieving tinnitus-related distress (e.g., teaching of coping strategies). Therefore, the use of WZT is comprised of four major components: 1) counseling, 2) amplification, 3) fractal tones, and 4) relaxation strategy program (Henry et al, 2005b; Sweetow & Jeppesen, 2012; Sweetow & Sabes, 2010).

The fractal tones used by Widex are shaped, or filtered, to accommodate for the individual's hearing loss (if any) and are used as an alternative to pre-recorded music, which is deemed to have limited impact on stress reduction. Using a patented algorithm, these fractal tones are designed to repeat in a way that seems familiar and pleasant, but unpredictable. Furthermore, the user has the option of listening to a Zen program alone or in addition to the amplification of external sound (Beauvieux, 2007; Kuk & Peeters, 2008). Widex Zen features five pre-defined tonal patterns from which the patient can choose. The patient can also choose to have the stimulus adjusted in volume, pitch, and tempo to achieve maximum relaxation and desirability. Moreover, the Zen fractal tones can be accompanied by a low-level broadband noise stimulus (Kuk & Peeters, 2008).

As an early effort to demonstrate the benefits of fractal tone use, Kuk and Peeters (2008) conducted a study with 14 hearing-impaired adults without tinnitus (ages 61-87 years) to determine if fractal tones would be perceived as relaxing to individuals with hearing loss. Degree of sensorineural hearing loss across participants ranged from mild to moderately-severe. After listening to four Zen patterns in the default setting, participants were asked to describe the emotions they experienced with relation to each pattern and then give a rating (five-point scale) to determine whether or not they found the pattern to be relaxing. Then the participants were allowed to further fine-tune the volume, pitch, and tempo and they were asked to give an additional rating afterwards. Prior to fine-tuning, the majority of the 14 participants rated all four patterns to be either "very relaxing" or "somewhat relaxing". After fine-tuning, ratings were found to improve. In addition, 11 of the 14 subjects participated in a task assessing the Zen fractal

tones impact on concentration. The results of this experiment revealed that concentration was statistically better with Zen fractal tones “on” than “off”.

Sweetow and Sabes (2010) further investigated the effect that fractal tones had on annoyance, perceived handicap, and relaxation in tinnitus patients. The participants were 14 hearing impaired adults whose primary complaint was tinnitus. They were asked to wear a hearing aid (Widex Mind) that incorporated separate programs created so subjects could listen in an amplification-only, fractal tones only, and a combination condition (broadband noise + amplification + fractal tones). Outcome measures for tinnitus handicap and tinnitus reaction were completed throughout the trial period and again 6 months post-fitting. Results revealed that 13 of the 14 participants experienced some reduction of tinnitus annoyance in at least one of the experimental conditions when compared to the unaided condition, and nine of the 14 participants experienced reduced tinnitus annoyance while listening to the fractal tones alone compared to amplification-only. Relaxation was reported to be more easily achieved when listening to fractal tones by 86% of the participants. Moreover, for over half of the participants, improvement on the two outcome measures was statistically significant.

Like Widex, other manufacturers of hearing instruments have recognized the benefit of including therapy features in their devices for the dual purpose of addressing hearing loss as well as bothersome tinnitus. Siemens Hearing Instruments offers four pre-programmed, customizable, noise signals (white, pink, speech, and high-tone) that are available in six different hearing aid models (“Tinnitus relief”, n.d.). GN ReSound offers the ReSound TS, which incorporates a white noise tinnitus sound generator (TSG)

that can be customized through frequency-shaping. The TSG also has the option to add amplitude-modulation (Piskosz & Kulkarni, n.d.). Phonak offers the Tinnitus Balance noise generator which is only available in the Audeo Q hearing aids (three models: 10, 312, and 312-T). Dependent upon the needs of the patient, the generator signal can be programmed as white noise, pink noise, or be customized by its bandwidth and volume (“Phonak tinnitus”, n.d.). Additionally, Starkey Hearing Technologies offers tinnitus therapy using their proprietary Multiflex Tinnitus Technology, the Xino Tinnitus device, and the SoundPoint tool which allows the patient to pinpoint their sound preferences themselves (<http://www.starkey.com/hearing-aids/technologies/xino-tinnitus>).

SoundCure

Insult to the peripheral auditory system is recognized as a contributor to the perception of tinnitus, but there is also evidence to support a contribution from abnormal neuronal activity in the auditory cortex (Eggermont & Roberts, 2004). SoundCure has recently developed the Serenade, a sound therapy device designed to alter and potentially restructure abnormal neural activity in the brain. Unlike other treatments that focus on habituation via tinnitus masking and counseling, the focus of SoundCure’s Serenade is tinnitus suppression. There are four tracks of treatment sound on the device, three of which are customizable (Strom, 2012). These signals are temporally patterned (frequency and amplitude modulated) to evoke cortical arousal and synchrony higher than that evoked by steady-state signals. The signals can be received through acoustic stimulation (earphones) and electrical stimulation (cochlear implant) (Reavis, Chang, & Zeng, 2010).

Tinnitus suppression differs from masking in three ways. First, tinnitus suppression utilizes external stimuli presented at an intensity level lower than that of the patient's tinnitus. Second, masking typically has an immediate effect while suppression takes time. Lastly, masking is achieved most effectively using a stimulus with similar spectral and temporal properties to the patient's tinnitus. Suppression is achieved using a stimulus that differs in these same characteristics (Reavis et al, 2010).

Reavis et al. (2012) investigated the suppressive ability of low-rate modulated signals in 20 adults with chronic (lasting >6 months) tinnitus in one or both ears and varying degrees of hearing loss. Subjects were asked to complete an extensive audiologic evaluation, tinnitus matching experiment, loudness growth experiment, and a main experiment. The purpose of the main experiment was for subjects to listen to 17 different stimuli for 3 minutes at a time then setting the loudness of the signal just below that of their perceived tinnitus. Every 30 seconds the subjects were asked to report the perceived loudness of both the external stimulus and tinnitus. A total of 340 trials with the different test stimuli in the main experiment were conducted between the 20 subjects.

Results of the Reavis et al. (2012) study revealed tinnitus suppression was achieved in one-third of trials for 90% of participants with an average of 39% reduction in perceived loudness achieved. Some subjects experienced 100% suppression at different time intervals and some also experienced residual inhibition of their tinnitus after the stimulus was turned off. In addition, data analysis revealed two modulated signals and two high-frequency signals that produced significantly more tinnitus suppression than a white noise stimulus (control). Interestingly, white noise was found to

be the least effective than any other experimental stimulus at suppressing tinnitus. Reavis et al. (2012) concluded that “low-rate amplitude-modulated tones with a high carrier frequency in the tinnitus pitch range are the most effective in reducing tinnitus loudness” (p. 569).

Neuromonics Tinnitus Treatment

According to Sweetow (2013), music has the ability to stimulate as many areas of the cortex as the perception of tinnitus itself. A modulated signal, like music, is a more effective suppressor of tinnitus than a steady-state stimulus (e.g., white noise) due to the prominent trigger response elicited from the central auditory system (Reavis et al., 2012; Sweetow, 2013). Hann and colleagues (2008) suggested that music used to treat tinnitus be that which evokes positive feelings without being distracting. The Neuromonics Tinnitus Treatment (NTT) program utilizes relaxing music inside a wearable device to positively activate the limbic system, which plays a major role in the negative emotions and reactions related to tinnitus, as well as for its ability to draw the brain’s attention. The overall goal of NTT is to systematically desensitize the patient to their tinnitus perception (Sweetow, 2013).

Although Neuromonics has recently introduced a range of devices (Sanctuary, Haven, and Oasis) that vary in flexibility and cost, the information presented here is focused on the Oasis, the oldest, most flexible, and most expensive device available from Neuromonics. The selected tracks used in NTT are filtered to encompass a wider frequency range (up to 12,500 Hz) than that capable by hearing aids. To further address individual needs, the music is filtered, or customized, according to the listener’s

audiometric profile. Because music is a highly dynamic stimulus with low frequency bias, customization to accommodate for hearing loss allows for greater tinnitus interaction to be achieved without the need for higher listening volumes (Davis, Paki, & Hanley, 2007). The music is intended to be delivered to the patient via high-fidelity headphones at an intensity level that “mixes” with their tinnitus. In the standard protocol, patients are instructed to listen to the Neuromonics device for 2-4 hours per day, especially at times when they are most disturbed by their tinnitus. The first phase of treatment (first two months) consists of music combined with a broadband noise (BBN) stimulus to completely mask the tinnitus during the intensity troughs in the music. The second phase of treatment (next four months) requires the patient to utilize the device in the same manner as the first phase except the broadband noise stimulus is removed and the tinnitus becomes audible during the troughs (Hanley, Davis, Paki, Quinn, & Bellekom, 2008; Sweetow & Sabes, 2010; Sweetow, 2013). The traditional NTT protocol is explained in full detail by Davis (2005) and is available to the audiologist interested in beginning to incorporate this approach into their clinical practice.

In order to investigate the clinical efficacy of NTT, Davis, Wilde, Steed, and Hanley (2008) performed a randomized controlled study which compared a group of tinnitus patients receiving NTT to two control groups: one group receiving counseling in conjunction with use of a broadband masking signal and one group receiving counseling only. This study showed that after six months of treatment, 86% of the NTT group achieved clinical success, which was defined as a 40% reduction in tinnitus disturbance. Only 47% of the counseling and broadband signal group and 23 % of the counseling-only group achieved clinical success. The authors reported a mean improvement in the NTT

group of 66% while the mean improvement of the other two groups was 22% and 15% respectively.

Davis et al (2007) conducted a clinical trial comparing the clinical effectiveness of two variations of the NTT protocol. Thirty-five subjects with moderate-to-severe tinnitus-related distress were randomly divided into two treatment groups. Sixteen of the subjects received phase two (intermittent perception of tinnitus) throughout the duration of treatment. The other 19 subjects received the two-stage treatment protocol (2 months of complete masking followed by 4 months of intermittent perception). A subjective questionnaire was administered at two, four, six, and 12 month marks post-treatment to assess treatment outcomes. At all four marks, both groups demonstrated clinical success (same definition as Davis et al, 2008) in tinnitus distress, awareness, minimum masking levels, and loudness discomfort levels. Ninety-one percent of all participants across both groups were reported as having achieved clinical success after six months of treatment with a mean improvement of 65%. The authors found that inter-group differences were not statistically significant. However, there was evidence to support a more consistent long-term benefit for subjects who had received complete tinnitus coverage during the first phase of the two-stage protocol.

Tinnitus Retraining Therapy

Tinnitus Retraining Therapy (TRT) (Jastreboff & Jastreboff, 2006) is based up on the neurophysiological model of tinnitus perception as conceptualized by Dr. Pawell Jastreboff. This model postulates that in order to achieve relief from tinnitus, the patient must habituate to both the tinnitus itself, and to the emotional reactions it induces

(Jastreboff & Hazell, 1993). TRT looks to achieve habituation through the utilization of directive counseling and sound therapy. The counseling portion of the TRT approach is considered the most important component. It is a structured educational program designed to eliminate the fears, anxiety, and misconceptions associated with tinnitus. Sound therapy is used in this approach as the tool for habituation to the tinnitus perception itself. The goal is to inundate the patient's auditory system with pleasing stimulation to move the brain's focus away from the tinnitus thereby reducing the patient's tinnitus perception. TRT advocates the delivery of sound therapy through wearable and non-wearable devices; however, it is thought that habituation to the emotional responses must occur before sound therapy can be effective. Importantly, the patient is advised to set the volume of the therapeutic signal at the "mixing point", or the point at which the signal begins to interact with the patient's tinnitus, rather than at a level that has a complete masking effect (Henry, Jastreboff, Jastreboff, Schechter, & Fausti, 2003; Henry, Schechter, Zaugg, et al., 2006; Jastreboff, 2000; Jastreboff & Jastreboff, 2006).

To assess efficacy of TRT in comparison to tinnitus masking, Henry, Schechter, Zaugg, Griest, et al. (2006a) conducted a controlled clinical trial using 123 participants at the VA Medical Center in Portland, OR. Outcomes were assessed at 0, 3, 6, 12, and 18 months using the Tinnitus Handicap Inventory (THI) (Newman, Jacobson, & Spitzer, 1996), Tinnitus Handicap Questionnaire (THQ) (Kuk, Tyler, Russell, & Jordan, 1990), and Tinnitus Severity Index (TSI) (Meikle, Griest, Stewart, & Press, 1995). Data analysis for 118 of the 123 participants revealed reductions in tinnitus handicap and severity for both TRT and the masking groups. Reductions were found to be greater in

the TRT group, especially for participants that reported more severe tinnitus prior to treatment. Further analysis of all 123 participants revealed tinnitus masking to have a more immediate effect that remained constant over time while the TRT group demonstrated a greater treatment effect at 12 months that increased incrementally by 18 months (Henry, Schechter, Zaugg, Griest, et al., 2006b).

Aazh, Moore, and Glasberg (2008) investigated the efficacy of a simplified version of TRT, on the premise that most clinicians that use TRT modify it to fit their needs and the needs of their patients. In the first session of the simplified approach, patients received counseling that touched on four major points: 1) reassurance that tinnitus annoyance would reduce over time, 2) reduction of tinnitus annoyance and distress promotes habituation and reduction of the tinnitus perception, 3) hearing loss is to blame for listening and communication difficulties; not the tinnitus, and 4) the importance of avoiding silence. The sound therapy protocol in the simplified version was essentially the same as the standard version. In the simplified version, patients with bothersome tinnitus who were without hearing loss and sound tolerance issues were counseled on uses of sound therapy but were not given wearable sound generators unless requested. The simplified version was delivered to 42 patients: 23 males and 19 females ages 28-81 years with average tinnitus duration of 6.4 years. Patients varied widely in hearing status and level of perceived tinnitus severity. Treatment was conducted for 3-23 months depending on how much continued follow-up each patient required. The simplified version of TRT performed differed in its duration of counseling (30 minutes vs. 90 minutes) and in the amount of information included.

In the simplified TRT, the use of sound therapy was essentially the same with the exception that table top sound generators were offered for patients with no hearing loss and no sound tolerance issues. If a patient expressed a need to utilize ear-level sound generators, they would be fit accordingly. Each patient was required to be seen for at least two therapy sessions and that these follow-up sessions occur in 1, 2, 3, or 6 month intervals. Patients would receive approximately one to three and a half hours of counseling. The outcome measures utilized measured perceived handicap caused by tinnitus, as well as measured tinnitus loudness, annoyance, and effect on life. Results revealed significant improvement for all patients when pre- and post-treatment outcomes were compared. Aazh et al (2008) concluded that at least some benefit can be ascertained from an approach that does not completely adhere to the structured protocol of TRT.

The TRT approach, albeit well-known and well-established, has not been without criticism. One criticism is the lack of significant evidence to support substantial effectiveness of TRT over other management approaches. Other criticisms include lack of standardization, as well as making a point to note that a directive counseling approach has been a long-standing recommendation (before 1990). Moreover, a major criticism is that, in order to deliver TRT, providers must attend expensive training courses (Henry, Dennis, & Schechter, 2005; Henry & Wilson, 2001; Wessex Institute for Health Research and Development, 1998; Wilson, Henry, Andersson, Hallam, & Lindberg, 1998).

Progressive Audiologic Tinnitus Management

Progressive Audiologic Tinnitus Management (Progressive ATM) (Henry et al, 2008a, 2008b) is an expanded and updated version of Audiologic Tinnitus Management

that developed from clinical and research work of the creators and other audiologists. Some of the methods incorporated into Progressive ATM were adapted from tinnitus masking and TRT (Henry et al, 2005b). Progressive ATM is a structured protocol that incorporates a five-level hierarchy designed for delivery of the appropriate degree of intervention based on patient needs. This five-level hierarchy includes: 1) Triage, 2) Audiologic Evaluation, 3) Group Education, 4) Tinnitus Evaluation, and 5) Individualized Management. Although structured, the creators of Progressive ATM championed the flexibility of the approach to accommodate for the highly variable nature of the tinnitus population.

To support the use of Progressive ATM with tinnitus patients, the creators conducted clinical trials to evaluate effectiveness of different treatment methods and to identify essential elements of tinnitus management to incorporate into their comprehensive program. Henry et al. (2006a, 2006b) alternately placed 123 participants into TM (tinnitus masking) or TRT groups for 18 months of intervention. Outcome measures revealed that both groups achieved significant improvement in tinnitus handicap and severity, but the TRT group's improvement was significantly greater than that of the TM group. Additionally, the TM group demonstrated greater benefit early into intervention, but the TRT group showed continued improvement at the 12 and 18 month marks that the TM group did not. The authors concluded that TM may be a beneficial treatment for immediate relief while long-term benefits are better achieved with an approach like TRT.

To support the inclusion of a group education level in the Progressive ATM protocol, Henry et al. (2007) conducted another study to investigate what benefit could be achieved from group education based on TRT counseling methods. Two hundred sixty-nine participants with significantly bothersome tinnitus were randomized into three groups: group educational counseling, traditional support, and no-intervention. Outcomes were assessed at baseline, 6 months, and 12 months. Analysis of those outcomes revealed the TRT-based group education provided significant and sustained (over 12 months) benefit while the other groups received no significant benefit. The authors discovered that a critical component to the long-term benefit achieved with the TRT-based group education was due to the emphasis placed on the patient's use of ongoing background sound.

Conclusion

In general, each one of the tinnitus treatments discussed in this chapter has demonstrated the capability of providing significant improvement in tinnitus-related symptoms for the majority of the patients treated. They each differ in how much emphasis and/or time is placed on the use of sound therapy versus counseling; however, it can be concluded that the combination of these two components achieves the greatest amount of clinical success. Another conclusion is that if an audiologic evaluation reveals the presence of aid-able hearing loss in a tinnitus patient, the first step in treatment should be to address the hearing loss with amplification. However, this may be contra-indicated depending on the presence of sound tolerance issues and/or patient preferences. A final conclusion, due to the evidence that demonstrates a non-existent one-size-fits-all

treatment, is that it would behoove audiologists in any clinical setting to offer more than one treatment option to their tinnitus patients. The next chapter will focus on clinical and business aspects of implementing tinnitus management services into a private audiology practice.

Chapter 2:

Implementation of Tinnitus Services into Private Practice

Introduction

Since the 1940s when audiology was first recognized as its own profession, three decades passed before the first self-employed audiologist practiced independently. Over time, the number of audiologists in private practice has significantly increased. As the primary marketers of audiological services to the public, private practitioners have greatly contributed to the public's recognition of skills and credentials audiologists possess. Despite many challenges, private practice can be a very rewarding experience (Gnewikow, Gnewikow, & Cieliczka, 2009).

In all practice settings, audiologists must be concerned with patient care as well as the success of the business or place of work. However, with maintaining and growing a private practice come variables to consider that audiologists in other settings (e.g., VA hospitals, medical centers, etc.) may not need to be concerned with. Examples of these variables include: business expenses, sources of revenue, and marketing of the practice, to mention a few. Incorporation of tinnitus management services into practice will greatly impact the aforementioned variables and the practice's business plan as a whole. Developing a tinnitus management program can easily seem like an intimidating and daunting task with the multitude of treatment options available and the seemingly great

amount of clinical time some tinnitus patients require (Gabriels, 2001). Even if provision of tinnitus management is outside of the audiologist's comfort zone, implementation in a private practice setting is possible. This chapter discusses the variables to consider when implementing tinnitus management services into private practice, both from clinical and business perspectives.

Education

As stated in clinical guidelines set forth by the American Academy of Audiology (2000), "Audiologists are qualified to evaluate, diagnose, develop management strategies, and provide treatment and rehabilitation for tinnitus patients," (Scope of Practice section, para. 2). Based upon the knowledge audiologists possess, they should be the leading professionals in the provision of tinnitus management (Henry et al, 2005b). Audiologists are the experts with regards to the auditory system and understand the role it plays in tinnitus perception. Audiologists are also the providers of sound therapy which has shown to be a vital aspect of many different management protocols (Sweetow & Sabes, 2010; Tyler et al, 2008). Furthermore, the proportion of tinnitus patients with hearing loss (80%) qualifies audiologists as being crucial in the management of tinnitus (American Speech-Language-Hearing Association, 2006; Jastreboff & Hazell, 2004).

Despite the expertise that audiologists possess to appropriately serve the hearing and balance impaired populations, many find themselves lacking in education about tinnitus management services (Piskosz, n.d.), while others report receiving specialized training in the area of tinnitus from their university program (Gabriels, 2001; Hoare & Hall, 2011; Hogan, 2013). Henry et al (2005b) sent a survey to 60 accredited AuD

programs to determine what level, if any, of tinnitus training they provided. Forty-seven of the programs responded to the survey. Although 41 of these programs agreed that tinnitus management should be included in audiologists' scope of practice, thirty-four of them did not offer dedicated courses in the curriculum. It was also observed that those programs that did offer tinnitus training widely varied in their approach or philosophy concerning tinnitus management. For audiologists that have not received tinnitus training, there are numerous and yearly conferences held by organizations, such as the Tinnitus Practitioners Association (TPA), courses, and literature (Flasher & Fogle, 2004; Henry & Wilson, 2001) available to help bring audiologists up to speed on the latest techniques and how they can be implemented into clinical practice. Manufacturers may also offer training and support to promote the effective use of their products that are targeted at patients who experience tinnitus (Strom, 2012). Therefore, the opportunity to learn about tinnitus management strategies are available to audiologists wishing to add these skills to their practice.

Measurement of Outcomes

From a clinical and business viewpoint, the measurement of outcomes is essential to success. Questionnaires are a concrete method of measuring aspects of a patient's case (hearing health status, tinnitus severity, tinnitus handicap, etc.), will help guide the clinician to make decisions about appropriate course of treatment, and measure the clinical success of that treatment. Consistent use of the same questionnaires will also help the clinician gauge his/her development, effectiveness of service delivery, and are beneficial for documenting benefits of treatment for service payers. Use of reliable and

valid questionnaires is recommended (American Academy of Audiology, 2000; Gabriels, 2001; Piskosz, n.d.; Tyler et al, 2008). For reviews on tinnitus questionnaires, see Noble (1998) and Tyler (1993). Aside from assessing clinical outcomes of treatment, it is recommended for practitioners to assess themselves. A SWOT (strengths, weaknesses, opportunities, & threats) analysis may be conducted at certain time intervals to keep abreast of one's own performance on current tasks and opportunities for self-improvement. This kind of on-going analysis will also help the private practice audiologist be aware of threats to business and opportunities to improve the business (Wright, 2011).

Establishment of a Protocol

In the first chapter, structured protocols (e.g., NNT and TRT) and sound therapy options were discussed, as well as the evidence to support their use. Research continues to attempt to create a standardized protocol for tinnitus management that will foster uniformity in this area, but until that is established audiologists will continue to differ in their approaches to address tinnitus for an individual patient. Some audiologists in private practice prefer to offer the more structured approach (e.g., Gabriels, 2001) while others encourage creating one's own protocol (for an example of an outline of a self-created tinnitus protocol, see Appendix A). Another option may be to modify an already well-established protocol to best meet the needs of each patient, as well as the practice (Aazh, Moore, & Glasberg, 2008). Significant variability within the population of individuals with tinnitus and the restrictions of one's clinical setting greatly impact how closely protocols can be followed. Regardless, a protocol for tinnitus management

should be in place that is flexible and that has several treatment options incorporated into it (Piskosz, n.d.; Tyler et al, 2008; Henry et al, 2008b).

The assessment of tinnitus and hearing loss are similarly conducted across the different protocols. Apart from obtaining a thorough case history, Gabriels (2001) outlined a list of the components determined to be necessary in a tinnitus evaluation. The list of components is presented in Table 1. First, the audiologic evaluation is performed to determine the presence and severity of hearing loss, if any, followed by psychoacoustic measurement of the tinnitus perception [i.e., matching of tinnitus pitch, loudness, and minimum masking level (MML)]. Pure tone stimuli are used to best match the patient's perceived tinnitus pitch and loudness while MML is determined with a broadband stimulus. Loudness discomfort levels (LDL) may also be measured to investigate the presence of sound tolerance issues. Quantification of the tinnitus perception through psychoacoustic measurements provides confirmation to the patient what they experience is a real phenomenon, allows the clinician to monitor any changes in the perception over time or over the course of treatment, and may provide insight into possible etiology. In addition, these measurements can aid in the fitting of sound therapy devices (Tyler et al, 2008).

Once the tinnitus evaluation is completed and necessary information collected, the next step is to determine the direction of treatment. As an example of constructing one's own treatment framework, Tyler et al (2008) framed components for their tinnitus management protocol, called Tinnitus Activities Treatment, into modules organized

- Otoscopy
- Impedance testing
- DPOAEs
- Air conduction
- Bone conduction
- Tinnitus pitch and loudness match
- Minimum masking level
- Tests for residual inhibition
- Masking decay
- Loudness discomfort levels
- Masking the audiogram if required

Table 1. Tinnitus assessment battery (Gabriels, 2001).

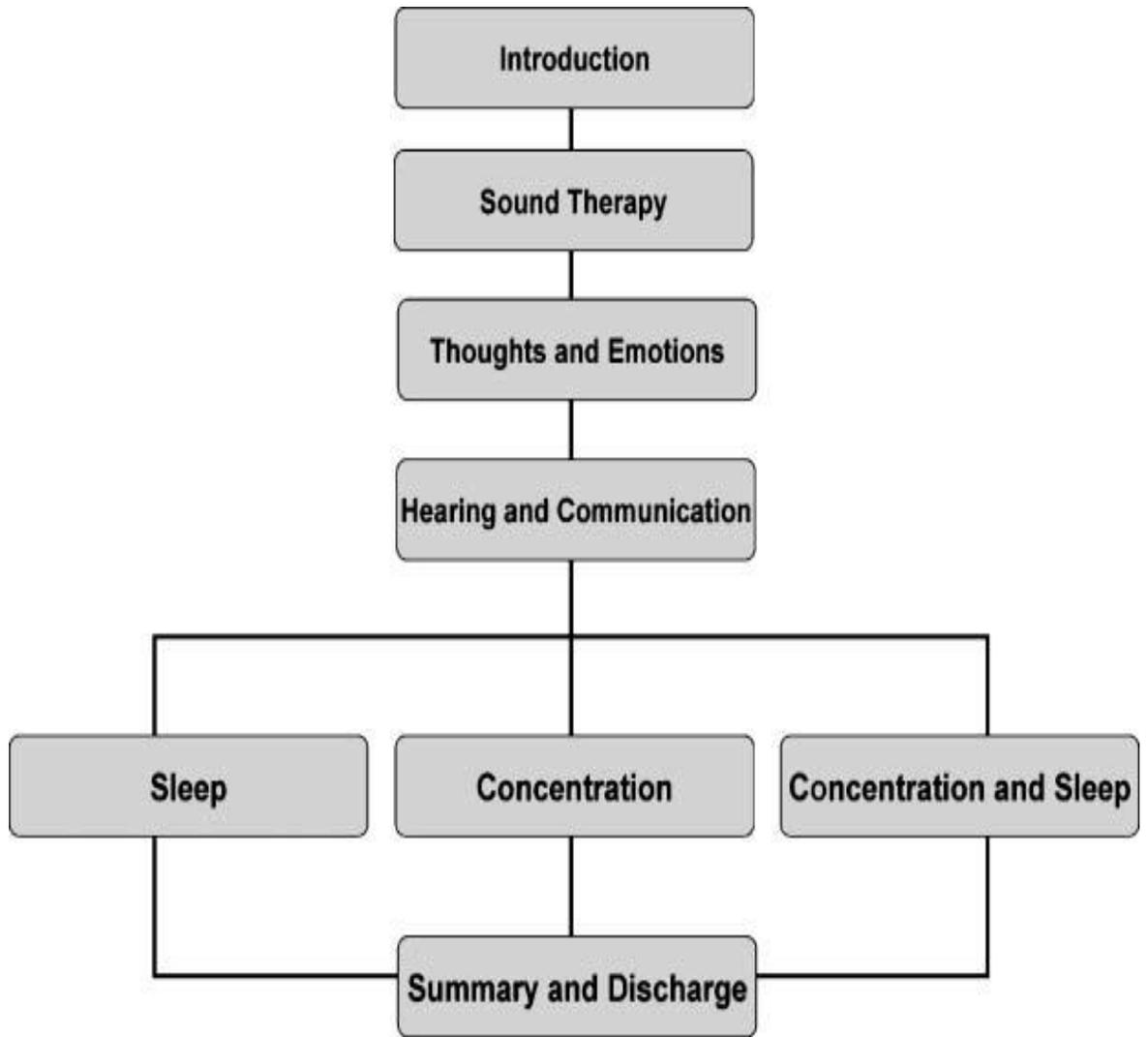


Figure 1. Flowchart of Tinnitus Activities Treatment modules. Adapted from Tyler et al. (2008).

within a treatment hierarchy. The Tinnitus Activities Treatment hierarch is presented in Figure 1.

Tinnitus Activities Treatment begins with an introduction at which time case history information is obtained and a problems list is created. Because each patient is different, modules that comprise the treatment plan are determined by answers to completed questionnaires and a problems list the patient and clinician create together. The *Sound Therapy* module is when tinnitus measurements are made, sound therapy options are discussed, and a hearing aid evaluation is completed (if necessary). The *Thoughts and Emotions* module is when patient-specific information and counseling is provided with the goal of demystifying tinnitus, providing coping strategies, and helping the patient understand the difference between their tinnitus perception and their emotional reaction to it. The *Hearing and Communication* module serves to help patients with tinnitus and hearing loss recognize the connection between the two but also understand the negative impact each has on communication independently. Hearing aid information as well as communication strategies are also discussed. The *Sleep* module is incorporated if a patient experiences tinnitus-related sleep disturbance. Normal, healthy sleep hygiene is discussed and the patient is provided with strategies for promoting better sleep (e.g., relaxation exercises). A *Concentration* module is included if a patient experiences difficulty concentrating on daily tasks due to the amount of attention dedicated to their tinnitus. By training patients how to actively control what holds their attention, patients are given a sense of control over their tinnitus. The *Summary and Discharge* module acts as a review session of all that was learned and how the patient

should utilize learned strategies in daily life. Additionally, any further questions or concerns are addressed and a follow-up plan is established.

Another strategy audiologists may consider when constructing their tinnitus management protocol is patient categorization. Authors of both TRT and Tinnitus Activities Treatment support placing tinnitus patients into treatment categories based upon their specific problems, needs, and/or symptom severity. In TRT, patients are placed into one of five categories (*C0-C4*) and in Tinnitus Activities Treatment patients are categorized as *curious*, *concerned*, or *distressed*. Both protocols support flexibility of categorization since each patient is different and a patient can fall in and out of categories as they proceed through treatment. The reasoning behind this strategy is to aid in understanding what each individual requires, thereby, allowing the clinician to formulate a treatment plan that is most effective for meeting the needs of the patient which leads to more effective use of clinical time (Jastreboff & Hazell, 2004; Tyler et al, 2008).

Managing Use of Clinical Time

Efficiency and effectiveness are critical components of service delivery for the audiologist in private practice. This is especially true when working with a population with varying degrees of need in which it is more difficult to standardize a protocol. The audiologist must determine how much time is adequate to accomplish goals and how much he or she is also willing to sacrifice should time be wasted. If one is not familiar with strategies for using clinical time efficiently, it may be helpful to have insight into successful strategies recommended by other audiologists serving the tinnitus population.

Gabriels (2001) provided straightforward answers to several questions pertaining to the logistics of dedicating clinical time to tinnitus management based on her own experiences. First, she reported allotting 1.5 hours per individual appointment. She determined this is adequate time to achieve goals during the appointment, but also an amount of time she would be willing to lose should something happen (e.g., patient doesn't show up). In contrast, Tyler et al (2008) reported making it a rule that each appointment be one hour in length, even if covering one treatment module cannot be completed at that appointment and must be completed at the next appointment. However, given the clinical environment and the protocol employed in an individual practice, each appointment may vary in length. It is possible for the initial consultation to be longer in duration than follow-up appointments and it is likely that follow-up sessions will become shorter over the course of treatment (Piskosz, n.d.). Overall, the audiologist has to determine the amount of time that he or she is willing to dedicate, and can afford to schedule, to each appointment.

Another means of managing clinical time more efficiently is having some aspects of the clinical treatment accomplished outside of the clinic. For example, time during an initial consultation could potentially be saved if the patient has already been to see a physician. This may increase the odds that a treatable medical etiology for a patient's symptoms has been ruled out and that his or her fears of a sinister etiology would be mitigated; thus, treatment may have the opportunity to begin sooner (Gabriels, 2001; Newman, Sandridge, Meit, & Cherian, 2008). Another example is giving the patient the responsibility of completing tasks at home prior to their scheduled appointment time. This may include having them complete case history information and/or subjective

questionnaires, sending them home with written information to read that will supplement what was discussed during the appointment, and/or give them assignments to complete that will be used to begin the next session and facilitate treatment (Gabriels, 2001; Tyler et al, 2008).

Another strategy to consider is basing one's protocol on a sequence. According to Henry et al (2008b), the sequence-based approach utilized in Progressive ATM "effectively reduces the effort and expenses incurred by the patient and conserves hearing health care management costs," (p. 171) (for the Progressive ATM flowchart see Appendix B). Newman et al (2008) shared this opinion of an effective sequence-based protocol as demonstrated in their Tinnitus Management Clinic at the Cleveland Clinic. Following the audiologic evaluation, both approaches incorporate an opportunity for group education, which has been reported to increase efficacy in reducing tinnitus severity for participants when compared to a control group (Henry et al., 2007). Other reported advantages to utilization of group education were as follows: 1) more patients receive education at once and in less time, 2) patients feel empowered to make decisions about management of their tinnitus, and 3) patients receive support from others and realize they are not alone in what they experience. The two approaches do, however, differ in the time course of group education. Progressive ATM group education includes two sessions two weeks apart whereas the Tinnitus Management Clinic includes one session lasting approximately 1.5 to 2 hours in length (Henry et al, 2008b; Newman et al, 2008).

Automating as much of the process as possible could be another potential means of using clinical time efficiently. Holmes (2010) proposed the use of a software program specifically designed for the evaluation of tinnitus that would assist the audiologist in obtaining and organizing information in a cost and time effective manner. The Tinnitus Evaluation Software Program™ (TEP) was developed by researchers at Melmedtronics, Inc., a medical device company specializing on disorders of hearing and tinnitus. This software can be utilized in conjunction with any tinnitus treatment approach and is available in four different versions (Research, Clinical, Express, and Super Express). In Table 2, included components and approximated clinical time to complete an evaluation using each version of TEP is outlined to demonstrate the flexibility of the program to cater to the needs of the patient, audiologist, and/or the practice setting. TEP is purported to help the audiologist collect various types of patient information (e.g., insurance, demographic information, medical information, tinnitus measurements, etc.), which is then efficiently organized into a comprehensive report. This design allows the audiologist to easily generate, and avoid duplicating, documentation to be submitted to referring physicians and for reimbursement purposes. Additionally, TEP was reported to meet the criteria for Current Procedural Terminology (CPT) code 92625, or the code which can be reimbursed for the assessment of tinnitus.

	Research	Clinical	Express	Super Express	Follow-up
Approximate time to administer	30-40 min	20-30 min	10-20 min	8-12 min	8-12 min
Typing of Tinnitus	X	X	X	X	X
Tinnitus Matching: Pitch	X	X	X	X	X
Tinnitus Matching: Loudness	X	X	X	X	X
Tinnitus Matching: Masking	X	X	X	X	X
Location of Tinnitus	X	X	X	X	X
Treatment of Tinnitus	X	X	X	X	X
Report	X	X	X	X	X
Letter of Medical Necessity	X	X	X	X	X
Insurance Information	X	X	X	X	X
History	X	X	X	X	X
Current Health Conditions	X	X	X		
Current Health: Medications	X	X	X		
Tinnitus Handicap Inventory	X	X			
Beck Depression Inventory-II	X				
Beck Anxiety Inventory	X				

Table 2. Description of each available TEP version. Adapted from Holmes (2010).

Reimbursement

Reimbursement that can be expected from third-party payers and government agencies, like Medicare, is continuously shifting causing major concern in the profession of audiology and a challenge for professionals in private practice. It is critical for the audiologist to stay abreast of issues, fee schedules, and requirements mandated by health insurance providers (Gnewikow et al, 2009). It is then also critical for audiologists to understand the coding system pertaining to any billable services he or she provides and “work...with billing authorities to determine appropriate avenues for reimbursement” (Tyler et al, 2008, p. 33). Not all clinical settings and reimbursement plans allow

audiologists to bill for provision of tinnitus treatment. One reason tinnitus treatments may not be covered by insurance is due to the lack of evidence to support treatment effectiveness and many are still viewed by insurance companies as experimental or investigational (Tyler et al, 2008; White, 2009). According to the American Speech-Hearing-Language Association, Medicare will cover audiologic diagnostic testing (including aspects of a tinnitus assessment) when an evaluation is ordered by a physician as an adjunct to their own medical evaluation or to determine appropriate medical intervention for audiologic disorder. The referral must be obtained prior to any evaluation by the audiologist in order to be covered (“Medicare Coverage of Audiologic”, n.d.).

Currently, International Classification of Diseases, 9th Revision, Clinical Modification codes (ICD-9-CM) are used to describe a diagnosis and CPT codes are used to describe the procedures and/or treatments performed by a medical professional. The ICD-9-CM codes relating to tinnitus include: tinnitus, unspecified (388.30); subjective tinnitus (388.31); and objective tinnitus (388.32). As previously mentioned, 92625 is the CPT code which can be reimbursed for the assessment of tinnitus; however, this only includes pitch matching, loudness matching, and masking. To date, there is no CPT code specifically for tinnitus intervention (White, 2009). Because patients with tinnitus often require an audiologic evaluation, audiologists can bill and be reimbursed using codes specific to the evaluation (e.g., 92557 Comprehensive audiometry threshold evaluation and speech recognition). Other services, like hearing aid evaluations for wearable devices, may have CPT codes that apply and may be covered by insurance as well (Tyler et al, 2008; White, 2009). It may also be the case that services are reimbursed by a

combination of individual and third-party payment. Billing patients directly in the form of a per-service fee or the bundling of services will be essential for adequate reimbursement, especially if dedicating an entire session to counseling (Tyler et al, 2008).

Marketing and Cost of Services

For any business to be successful, Wright (2012) stated that the business must offer something of value for which there is a want/need at a price people are willing to pay. He added that whatever is offered should exceed the expectations of the consumer and be a sufficient revenue source to make it worthwhile for the business owner. In a private practice of a healthcare professional, the demographic area in which the practice resides, how much time the clinical staff has to dedicate to services, and if there are any alternative resources available for consumers of those services in the area must be considered (Tyler et al, 2008). Therefore, it would behoove the private practitioner to market any specialized services, like tinnitus management, that may set them apart from the competition. The offering of specialized diagnostic and treatment services capitalizes on providing services within the full range of the audiologist's scope of practice, allows the practice to offer services that are unique and appealing, and helps to further the success of the business (Smriga, 2006).

According to Gnewikow et al (2009), the role marketing plays is two-fold: advance the image of the profession and generate revenue. Marketing should be directed towards both the public and the medical community. There are two types of marketing: internal and external. The goal of internal marketing is to promote the return of patients

to the practice, to have current patients refer others to the practice, and increase revenue. The audiologist might choose to do things like pre-appoint patients and/or establish a referral program in order to develop a successful internal marketing program. The purpose of the external marketing is help consumers realize they need the services one's practice provides. To accomplish a successful external marketing program, the audiologist might chose to print newsletters, send out direct mail, do public speaking events, hold seminars, etc. (Wright, 2011).

Marketing of available services, professionalism, and expertise is important when advertising one's practice to consumers and promotes development of a referral network with other professionals in the area. Audiologists are strongly urged to market one's expertise, credentials, and training over products; it is more important to *educate* than to *sell*. One way of accomplishing marketing through the education of both the consumer and potential referral sources is by providing educational seminars. Many patients seeking intervention for tinnitus do not know where to receive services as well as many professionals of other disciplines are not up-to-date on the current tinnitus management strategies. An educational seminar may be a very effective method to create public awareness, distinguish one's practice from another, and cultivate an interdisciplinary network of healthcare professionals (Gnewikow et al, 2009; Piskosz, n.d.).

When incorporating a new set of services into a practice, it can be difficult to determine how much one should charge for those services. As Wright (2012) pointed out, one of the keys to a successful business is the offering of services that generate enough revenue to justify providing them. The fact that intervention for bothersome

tinnitus is an unmet need in many areas of the country has already been established. Tinnitus management is a specialized service and some patients seeking this service will require an increased amount of clinical time and an appropriate fee must be collected for that time. The concern for many audiologists is that the cost of their professional time will cause the expense of services to be too high for patients to afford. However, if an audiologist does not charge enough to cover the cost of the service, the services are no longer justified based on the revenue they bring to the practice. To reconcile these two opposing opinions, having a financial assistance program for qualifying lower-income patients and/or offering less expensive sound therapy options (e.g., PLDs) are recommended.

Newhouse (2013) commented on what an audiologist needs to consider when setting one's own hourly rates. The audiologist must first estimate the number of billable and non-billable hours. Non-billable hours are any hours spent on something other than patient contact (e.g., travel, time spent on paperwork, phone calls, etc.). The audiologist should expect non-billable time to be at least equal to billable time. Once the number of desired patient contact (billable) hours per day is determined, that number should be multiplied by the number of days the audiologist will work throughout the year. This number is the total billable hours. The next step in the equation is to calculate all expenses (fixed and variable) that accrue over a year plus enough to cover unexpected expenses. Total expenses should then be divided by total billable hours. The result is how much patients would be charged per hour in order for the audiologist to break even. Then, to determine what the hourly rate would be with a profit figured in, the desired

profit (for the year) should be added to total expenses and divided by total billable hours. An example of these calculations are provided below.

Step 1: Calculate billable hours per year:

8 hours/day x 5 days/week x 48 weeks (4 weeks of vacation) = 1920 hours per year

Step 2: Calculate expenses + desired profit:

Expenses = \$200,000 per year; desired profit = \$100,000 per year; Total = \$300,000

Step 3: Divide total expenses + profit (step 2) by total billable hours (step 1)

$\$300,000 / 1920 = \sim\156.00

\$156.00 = hourly rate

Bundling vs. Unbundling

The term “bundling” refers to combining the cost of products and services together into a lump sum while “unbundling” refers to charging for products and services separately (Sjoblad & Uhlman, 2010). According to Nemes (2004), a survey of audiologists and hearing aid dispensers revealed that 87% of audiologists in private practice bundle the cost of their services into the cost of hearing aids. Only 14% of respondents to this survey reported charging separately. An example of partially unbundling would be charging one fee for hearing devices and charging separately for each follow-up appointment. Supporters of unbundling costs assert that an itemized bill not only demonstrates to patients the monetary value of professional services but also allows for a more steady flow of revenue. There are, however, audiologists that continue to support the bundling method. These audiologists argue that bundling costs of products

and services into one bill helps to avoid patient confusion as well as encourages continued follow-up. It is a major concern for many that patients paying for each follow-up visit individually will lead to them opting out of these crucial appointments, which could be detrimental to their success with hearing aids (Nemes, 2004). The same question (to bundle or to unbundle) can be posed when determining how to charge for tinnitus management services. One method may be to bundle the cost of services with the cost of treatments that require scheduled follow-up appointments (e.g., Neuromonics Tinnitus Treatment and hearing aids). Other sound therapy options could be presented as unbundled cost, such as sound generators or SoundCure Serenade. Below is a theoretical price list of bundled and unbundled sound therapy options using the previously calculated hourly rate example (\$156.00/hour).

Neuromonics Oasis (Bundled) - \$4500

Includes the programmable device with two-step treatment (Phase One and Phase Two), fitting, six scheduled follow-ups, plus additional visits as needed.

Hearing Aids (Bundled) - \$1500 - \$3000 each

Includes instrument fitting and follow-ups as needed for the lifetime of the manufacturer warranty.

- 1) Widex Zen: 1-3 years
- 2) Siemens Micon: 1-2 years
- 3) Phonak Audeo Q: 1-2 years
- 4) ReSound Verso TS: 1-3 years

Sound Generators (Unbundled) - \$900 - \$1000 each

Includes fitting only. Follow-ups are recommended at 1 month, 3 months, 6 months, 9 months, and 1 year (\$156/hour).

SoundCure Serenade (Unbundled) - \$2000

Includes Serenade device and fitting. Follow-ups are recommended at 1 month, 3 months, 6 months, 9 months, and 1 year (\$156/hour).

Tinnitus Retraining Therapy (Unbundled) - \$156/hour

After the tinnitus assessment and sound therapy option has been decided, follow-ups are recommended at 1 month, 2 months, 3 months, and 6 months plus additional follow-ups as needed.

Discussion

The medical aspects of tinnitus were not the focus of this document; however, it is the responsibility of the audiologist to recognize when a patient requires a referral to a physician. Tinnitus can be caused by a multitude of insults to and/or disorders of the auditory system, including excessive noise exposure, vascular issues, structural issues (e.g., temporomandibular joint dysfunction), physical injury to the head and/or neck, autoimmune disorders, and ototoxic agents (e.g., chemotherapeutic medications) (see reviews by Henry et al, 2005 and Searchfield, 2011). An appropriate referral must also be made with patients who experience psychological symptoms. Some patients that experience bothersome tinnitus also experience severe anxiety and/or depression. These patients may benefit from a more psychology-based treatment method, cognitive-behavioral therapy (Andersson, 2002). Not all tinnitus symptoms can be mitigated by an audiologist alone; therefore, the private practice audiologist could utilize strategies (e.g., educational seminars) to make the presence of one's practice and services known to the professional

community (American Academy of Audiology, 2000; Newman et al, 2008; Piskosz, n.d.; Sweetow & Sabes, 2010).

Despite the abundance of options for tinnitus management available, it has been suggested that the clinician base his or her selection of provided treatments on the breadth, rather than depth, of supportive evidence in current research. It is of the utmost importance, no matter the strategy utilized, for the clinician to help the patient cope rather than find a “cure” for the tinnitus. The first step to the clinician’s approach will often come from professional judgment based on clinical experience, trial and error, available resources in the work environment, and the desires of the patient (Hoare & Hall, 2011; Searchfield, 2011; Tyler et al, 2008).

Research reviewed in chapter one of this document has produced ample evidence to support the use of many different tinnitus treatments. Therefore, audiologists in private practice can justify offering several tinnitus treatment options to their patients; however, they must decide which ones fit into their operation. The amount of clinical time dedicated to tinnitus management services will depend highly on the needs of the patient, their preferences, and the protocol one’s tinnitus management follows. Patients that receive treatment approaches like NTT or TRT may require follow-up lasting for months. Then there are treatment options, like hearing aids, Widex Zen, and SoundCure patient that will likely require less clinical time even with an acclimatization period and can be easily incorporate into the practice’s operations (Henry et al, 2008c; Strom, 2012; Sweetow & Sabes, 2010).

With patients that do require longer appointments and continuous follow-up, the concern becomes the cost of treatment. As discussed, private practice audiologists have to be concerned with more than effective patient care; they have to also be concerned with making services profitable. Professional time is valuable. If the cost for comprehensive tinnitus treatment in one's practice costs the patient thousands of dollars, many may not be able to afford it. If charges for treatment are not adequate for making profit, then the provision of the treatment may not be justifiable from the business owner's point of view. Throughout chapter two, several methods of using clinical time efficiently, managing tinnitus services in ways that are cost-effective, and how one might charge for sound therapy options (bundling vs unbundling) were discussed. Apart from the cost of treatment, the feasibility of offering one particular management option over another will also depend on the comfort level of the audiologist. In a case where a tinnitus patient requires more comprehensive services than can be provided, it is appropriate to refer them elsewhere and/or provide them with alternative resources, like the American Tinnitus Association (American Academy of Audiology, 2000; Hall, 2013).

Conclusion

The purpose of this document was to first provide an overview of the evidence to support the use of common tinnitus management strategies followed by what the audiologist needs to consider when incorporating these strategies into a private practice. If a management protocol is not already in place and the audiologist is not already trained to deliver tinnitus management services, taking on the tinnitus population can seem

intimidating, but it is certainly not impossible. It is important to remember all of the training and education resources available to audiologists that wish to obtain the knowledge on tinnitus they did not receive in their training program. These resources will also serve to keep audiologists current on the latest evidence-based practices which are critical for providing research-verified services (Tyler et al, 2008). Realistically, not every audiologist should provide comprehensive tinnitus management; however, every audiologist should have a basic understanding of tinnitus, the effect it can have on quality of life, and how even general counseling and simple sound therapy strategies can be helpful (Hall, 2013; Sweetow & Sabes, 2010). For purposes of a private practice, some treatment options may not fit into the operations of the practice but it is appropriate to construct one's own protocol to best serve patients and the practice simultaneously (Hall, 2013; Piskosz, n.d.; Tyler et al, 2008).

Overall, an audiologist in private practice can make the choice to serve the population of patients with tinnitus. This model can be beneficial to both the patient and the practice. Offering specialized services will add credibility, provide an edge over competitors, generate revenue, promote professional networking, and further the profession of audiology as a whole.

References

- Aazh, H., Moore, B.C.J., & Glasberg, B.R. (2008). Simplified form of tinnitus retraining therapy in adults: A retrospective study. *BMC Ear, Nose and Throat Disorders*, 8(7). Retrieved from: <http://www.biomedcentral.com/1472-6815/8/7>.
- American Academy of Audiology. (October 18, 2000). *Audiologic guidelines for the diagnosis & management of tinnitus patients*. Available from www.audiology.org/resources.
- American Speech-Language-Hearing Association. (n.d.). *Medicare coverage of audiologic diagnostic testing*. Available from [www.http://www.asha.org/practice/reimbursement/medicare/aud_services.htm](http://www.asha.org/practice/reimbursement/medicare/aud_services.htm).
- American Speech-Language-Hearing Association. (2006). *Preferred practice patterns for the profession of audiology* [Preferred practice patterns]. Available from www.asha.org/policy.
- Andersson, G. (2002). Psychological aspects of tinnitus and the application of cognitive-behavioral therapy. *Clin Psychol Rev*, 22(7), 977-990.
- Beauvieux, M.W. (2007). Quantifying aesthetic preference and perceived complexity for fractal melodies. *Mus Percep*, 24, 247-264.
- Bentler, R.A. & Tyler, R.S. (1987). Tinnitus management. *ASHA*, 29, 27-32.
- Coles, R.R.A. & Hallam, R.S. (1987). Tinnitus and its management. *British Medical Bulletin*, 43, 983-998.
- Davis, P.B. (2005). Music and the acoustic desensitization protocol for tinnitus. In: Tyler, R.S. (Ed.) *Tinnitus treatments: clinical protocols* (146-160). New York, NY: Thieme.
- Davis, P.B., Paki, B., & Hanley, P.J. (2007). The neuromonics tinnitus treatment: Third clinical trial. *Ear and Hearing*, 28, 242-259.
- Davis, P.B., Wilde, R.A., Steed, L.G., & Hanley, P.J. (2008). Treatment of tinnitus with a customized acoustic neural stimulus: A controlled clinical study. *Ear Nose & Throat Journal*, 87, 330-339.
- Eggermont, J.J. & Roberts, L.E. (2004). The neuroscience of tinnitus. *Trends Neurosci*, (27), 676-682.

- Flasher, L.V., & Fogel, T. (2004). *Counseling skills for speech-language pathologists and audiologists*. Clifton Park, NY: Thomson Delmar Learning.
- Gabriels, P. (2001). What the practitioner should know about tinnitus assessment and management. *The Hearing Journal*, 54(11), 43-48.
- Gnewikow, D., Gnewikow, D.W., & Cieliczka, D.J. (2009). Private practice audiology: Coming of age. *Seminars in Hearing*, 30, 129-138.
- Hall, J.W. (2013, September 30). Siemens expert series: Evidence-based management of troublesome tinnitus – practical guidelines for the practicing professional. Retrieved from: <http://www.audiologyonline.com/articles/siemens-expert-series-evidence-based-12166>
- Handscomb, L. (2006). Use of bedside sound generators by patients with tinnitus – related sleeping difficulty: Which sounds are preferred and why? *Acta Otolaryngologica*, 126(s556), 59-63.
- Hanley, P.J., Davis, P.B., Paki, B., Quinn, S.A., & Bellekom, S.R. (2008). Treatment of tinnitus with a customized, dynamic, acoustic neural stimulus: Clinical outcomes in general private practice. *Annals of Otolaryngology, Rhinology, & Laryngology*, 117(11), 791-799.
- Hann, D., Searchfield, G.D., Sanders, M., & Wise, K. (2008). Strategies for the selection of music in the short-term management of mild tinnitus. *Australian and New Zealand Journal of Audiology*, 30(2), 129-140.
- Henry, J.A., Dennis, K.C., & Schechter, M.A. (2005). General review of tinnitus: Prevalence, mechanisms, effects, and management. *J Sp Lang Hear Res*, 48, 1204-1235.
- Henry, J.A., Jastreboff, M.M., Jastreboff, P.J., Schechter, M.A., & Fausti, S.A. (2003). Guide to conducting tinnitus retraining therapy initial and follow-up interviews. *Journal of Rehabilitation Research and Development*, 40(2), 157-178.
- Henry, J.A., Loovis, C., Montero, M., Kaelin, C., Anselmi, K.A., Coombs, R., et al. (2007). Randomized clinical trial: Group counseling based on Tinnitus Retraining Therapy. *Journal of Rehabilitation Research and Development*, 44(1), 21-32.
- Henry, J.A., Schechter, M.A., Zaugg, T.L., Griest, S.E., Jastreboff, P.J., Vernon, J.A., et al. (2006a). Outcomes of clinical trial: tinnitus masking vs. tinnitus retraining therapy. *J Am Acad Audiol*, 27, 104-32.
- Henry, J. A., Schechter, M. A., Zaugg, T. L., Griest, S.E., Jastreboff, P. J., Vernon, J. A., et al. (2006b). Clinical trial to compare tinnitus masking and tinnitus retraining therapy. *Acta Oto-Laryngologica*, 126(S556), 64-69

- Henry, J.A., Schechter, M.A., Zaugg, T.L., Griest, S.E., Jastreboff, P.J., Vernon, J.A., et al. (2006b). Outcomes of clinical trial: Tinnitus Masking vs. Tinnitus Retraining Therapy. *Journal of the American Academy of Audiology*, 17, 104-132.
- Henry, J.L., & Wilson, P.H. (2001). *The psychological management of chronic tinnitus: A cognitive behavioral approach*. Boston: Allyn & Bacon.
- Henry, J.A., Zaugg, T.L., & Schechter, M.A. (2005a). Clinical guide for Audiologic Tinnitus Management I: Assessment. *American Journal of Audiology*, 14, 21-48.
- Henry, J.A., Zaugg, T.L., & Schechter, M.A. (2005b). Clinical guide for Audiologic Tinnitus Management II: Treatment. *American Journal of Audiology*, 14, 49-70.
- Henry, J.A., Zaugg, T.L., Myers, P.J., & Schechter, M.A. (2008a). Using therapeutic sound with Progressive Audiologic Tinnitus Management. *Trends in Amplification*, 12(3), 188-209.
- Henry, J.A., Zaugg, T.L., Myers, P.J., & Schechter, M.A. (2008b). *How to manage your tinnitus: A step-by-step workbook*. Portland, OR: VA National Center for Rehabilitative Auditory Research.
- Henry, J.A., Zaugg, T.L., Myers, P.J., & Schechter, M.A. (2008c). The role of audiologic evaluation in Progressive Audiologic Tinnitus Management. *Trends in Amplification*, 12, 170-187.
- Hoare, D.J. & Hall, D.A. (2011). Clinical guidelines and practice. A commentary on the complexity of tinnitus management. *Evaluation & the Health Professions*, 34(4), 413-420.
- Hogan, M. (2013). Richard Tyler, PhD, on the past, present, and future of tinnitus management. *The Hearing Journal*, 66(5), 26-28.
- Holmes, D.W. (2010, March 15). Development of a tinnitus evaluation software program. Retrieved from <http://www.audiologyonline.com/articles/development-tinnitus-evaluation-software-program-864>
- Jastreboff, P.J. (2000). Tinnitus habituation therapy (THT) and tinnitus retraining therapy (TRT). In: Tyler, R.S. (Ed.). *Tinnitus handbook*. (pp.357-376). San Diego: Singular Publishing Group.
- Jastreboff, P.J., & Hazell, J.W. (1993). A neurophysiological approach to tinnitus: clinical implications. *British Journal of Audiology*, 27(1), 7-17.
- Jastreboff, P.J., & Hazell, J.W. (1998). Treatment of tinnitus based on a neurophysiological model. In: Vernon J.A. (Ed.). *Tinnitus treatment and relief*. (pp. 201-217). Needham Heights: Allyn & Bacon.
- Jastreboff, P.J. & Hazell, J.W. (2004). *Tinnitus retraining therapy: Implementing the neurophysiological model*. United Kingdom: Cambridge University Press.

- Jastreboff, P.J., & Jastreboff, M.M. (2006). Tinnitus Retraining Therapy: A Different View on Tinnitus. *Orl*, 68, 1, 23-30.
- Kuk, F. & Peeters, H. (2008). The hearing aid as a music synthesizer. *Hearing Review*, 15(10), 28-38. Retrieved from: www.hearingreview.com/issues/articles/2008-10_03.asp.
- Kuk, F.K., Tyler, R.S., Russell, D., Jordan, H. (1990). The psychometric properties of a tinnitus handicap questionnaire. *Ear Hear*, 11, 434-45.
- Meikle, M.B., Griest, S.E., Stewart, B.J., & Press, L.S. (1995). Measuring the negative impact of tinnitus: a brief severity index. In: Ryan A. (Ed.). *Abstracts of the Eighteenth Midwinter Research Meeting, Association for Research in Otolaryngology*. (pp.167). Des Moines: Association for Research in Otolaryngology.
- Nemes, J. (2004). To bundle or not to bundle? That is the question. *The Hearing Journal*, 57(4), 19-24.
- Newhouse, M. (2013, March 01). In private practice: Am I charging too much? Not enough? The ASHA Leader.
- Newman, C.W., Jacobson, G.P., Spitzer, J.B. (1996). Development of the Tinnitus Handicap Inventory. *Arch Otolaryngol Head Neck*, 122, 143-8.
- Newman, C.W., Sandridge, S.A., Meit, S.S., & Cherian, N.C. (2008). Strategies for managing patient with tinnitus: A clinical pathway model. *Seminars in Hearing*, 29, 300-310.
- Newman, C., Wharton, J., & Jacobson, G. (1995). Retest stability of the Tinnitus Handicap Questionnaire. *Ann Otol Rhinol Laryngol*, 104, 718-723.
- Noble, W. (1998). *Self-assessment of hearing and related functions*. London: Whurr.
- Noble, W., & Tyler, R.S. (2007). Physiology and phenomenology of tinnitus: Implications for treatment. *International Journal of Audiology*, 46, 569-574.
- Phonak tinnitus balance portfolio* [Brochure]. (n.d.). Retrieved at: http://www.phonak.com/content/dam/phonak/gc_hq/b2b/en/products/tinnitus/Product_Information_Tinnitus_027-0108.pdf
- Piskosz, M. (n.d.). *Running a successful tinnitus clinic*. Retrieved at: http://www.resound.com/~media/DownloadLibrary/ReSound/Products/Verso%20OTS/Whitepapers/Running_a_successful_tinnitus_clinic.pdf

- Piskosz, M. & Kulkarni, S. (n.d.). *ReSound TS: An innovative tinnitus sound generator device to assist in tinnitus management*. Retrieved at: <http://www.gnresound.com/~media/Images/ReSound/Countries%20mix/US/MembersPdf/ReSound%20LiveTS%20Whitepaper.pdf>
- Reavis, K.M., Chang, J.E., & Zeng, F.G. (2010). Patterned sound therapy for the treatment of tinnitus. *The Hearing Journal*, *63(11)*, 21-24.
- Reavis, K.M., Rothholtz, V.S., Tang, Q., Carroll, J.A., Djalilian, H., & Zeng, F.G. (2012). Temporary suppression of tinnitus by modulated sounds. *Journal of the Association for Research in Otolaryngology*, *13*, 561-571.
- Searchfield, G. D. (2005). Hearing aids and tinnitus. In R. S. Tyler (Ed.), *Tinnitus treatment: Clinical protocols* (pp. 161-175). New York: Theime.
- Searchfield, G. (2011). A commentary on the complexity of tinnitus management: Clinical guidelines provide a path through the fog. *Evaluation & Health Professions*, *34(4)*, 421-428.
- Searchfield, G.D., Kaur, M., & Martin, W.H. (2010). Hearing aids as an adjunct to counseling: Tinnitus patients who choose amplification do better than those that don't. *International Journal of Audiology*, *49*, 574-579.
- Sjoblad, S.J. & Uhlman, M.L.J. (2010). *Breaking up is easy to do: A successful model for unbundling*. [Powerpoint slides].
- Smriga, D.J. (2006). For audiology, dentistry offers a good model for preserving independent private practice. *The Hearing Journal*, *59(9)*, 36-44.
- Strom, K.E. (2012). Novel sound therapy: SoundCure harnesses research on brain science in fighting tinnitus. *Hearing Review*, *19(8)*, 52-54.
- Sweetow, R.W. (2013). An integrated approach to tinnitus management. Retrieved from: <http://www.audiologyonline.com/articles/integrated-approach-to-tinnitus-management-11598>
- Sweetow, R.W. & Sabes, J.H. (2010). An overview of common procedures for the management of tinnitus patients. *The Hearing Journal*, *63(11)*, 11-15.
- Sweetow, R.W. & Sabes, J.H. (2010). Effects of acoustical stimuli delivered through hearing aids on tinnitus. *J Am Acad Audiol*, *21(7)*, 461-473.
- Tinnitus relief: Valuable information, practical solutions, and helpful tips* [Brochure]. (n.d.). Retrieved from <http://hearing.siemens.com/us/en/hearing-loss/tinnitus/tinnitus.html>

- Trotter, M.I. & Donaldson, I. (2008). Hearing aids and tinnitus therapy: A 25-year experience. *Journal of Laryngology and Otology*, 122(10), 1-5.
- Tyler, R.S. (1993). Tinnitus disability and handicap questionnaires. *Seminars in Hearing*, 14, 377-384.
- Tyler, R.S., Chang, S.A., Gehringer, A., & Gogel, S. (2008). Tinnitus: How you can help yourself! *Audiological Medicine*, 6, 85-91.
- Tyler, R.S., Haskell, G.B., Gogel, S.A., & Gehringer, A.K. (2008). Establishing a tinnitus clinic in your practice. *American Journal of Audiology*, 17, 25-37.
- Wessex Institute for Health Research and Development. (1998). Development and evaluation committee report (No 83): Tinnitus retraining therapy. Retrieved from: <http://www.hta.nhsweb.nhs.uk/rapidhta/publications/dec83.pdf>.
- White, S. (2009, March 3). Bottom line: Tinnitus evaluation and intervention. Retrieved from: <http://www.asha.org/Publication/leader/2009/090303/blo90303.html>.
- Wilson, P. H., Henry, J. L., Andersson, G., Hallam, R. S., & Lindberg, P. (1998). A critical analysis of directive counselling as a component of tinnitus retraining therapy. *British Journal of Audiology*, 32, 273–287.
- Wright, M.R. (2011). *What is marketing?* [Powerpoint slides].
- Wright, M.R. (2012). *Managing finances*. [Powerpoint slides].
- Xino tinnitus. (n.d.). Retrieved from <http://www.starkey.com/hearing-aids/technologies/xino-tinnitus>

Appendix A:

Example of a Tinnitus Protocol

Prior to Initial Visit

- Office staff is first contact – obtain all necessary documentation and referral for insurance purposes
- Case history forms and subjective questionnaires mailed to patient – must fill out before appointment
- Ask patient to bring any other pertinent paperwork with them to the initial appointment (i.e., previous hearing tests)

Initial Consultation (1.5 hours)

- 1) Review case history forms and subjective questionnaires before patient contact and again with the patient. Information collected should be detailed.
 - a. May administer other questionnaires during this visit to obtain more accurate information about the patient, their tinnitus, and their priorities
- 2) Audiological evaluation (if not already performed)
- 3) Tinnitus evaluation (if not already performed)
- 4) Review and discussion of test results with patient
 - a. Provision of informational counseling in conjunction with test results
 - b. If present, address sound tolerance issues
- 5) Schedule follow-up appointment

Treatment Selection (2nd appointment – 1 hour)

Note: Steps incorporated into this session could be added into the initial consultation if time allows.

- 1) Briefly review test results again and answer questions patient may have after initial visit
- 2) Conduct an in-clinic trial of appropriate sound therapy devices
 - a. If patient has hearing loss, it will be beneficial to start with amplification device(s)
- 3) Discuss realistic expectations and goals of treatment and continue with necessary counseling
- 4) Determine appropriate time frame before next follow-up appointment
 - a. Can depend on course of treatment selected – it may be the case that a structured protocol (e.g., Neuromonics) is desired by the patient and offered by the clinician, in which case there are recommendations for when follow-up appointments should occur.
 - b. Otherwise, follow-up appointments should be planned to occur 2 weeks, 4 weeks, 2 months, 4 months, and 6 months post-fitting. Expect that some patients may require follow-up appointments beyond 6 months post-fitting.

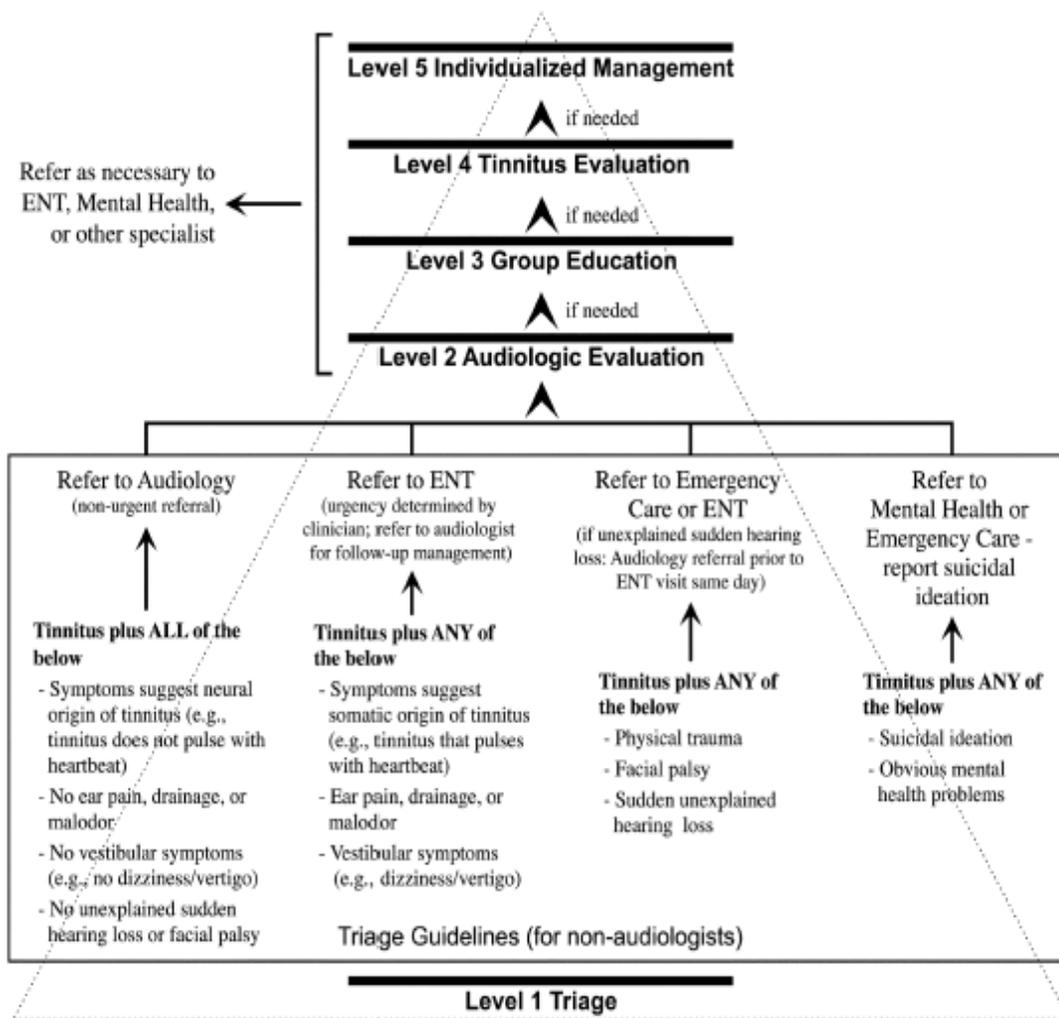
Follow-up Visits (1 hour)

- 1) Re-administer subjective questionnaires and obtain feedback from patient about the following with regards to treatment:
 - a. Tinnitus perception

- b. Impact of tinnitus on the patient
 - c. Patient reactions to treatment
- 2) Further tinnitus counseling with regards to progress and realistic expectations
 - a. Encourage/discourage positive/maladaptive thoughts and behaviors
- 3) Make necessary adjustments (i.e. hearing aids or combination devices)

Appendix B:

The Progressive ATM Flowchart



The Progressive ATM Flowchart. Adapted from Henry et al. (2008).