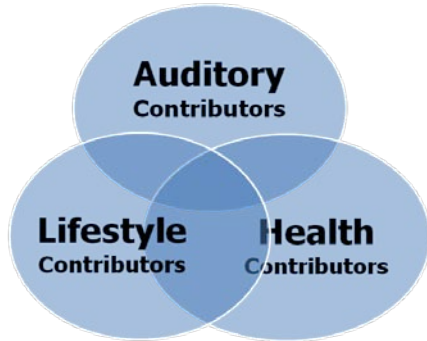


# Introduction to the DigiCare® Multimodal Tinnitus Management Program

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## The DigiCare® Multimodal Tinnitus Management Model



**Key: Homeostasis as a maintainable state.**

In the U.S. today, more than 50 million Americans experience tinnitus or noises of the ear (ringing, buzzing, roaring, hissing, crickets, etc.) at some time in their lives. About 12 million adults experience tinnitus so bothersome that they seek medical help for it only to be told that they must “learn to live with it”. The daily lives of about 2 million of these people are so disrupted that they cannot sleep or function normally.

Tinnitus is the body's way of telling us that something is wrong (acoustic trauma, disease, obstruction, allergy or hearing loss). Those that may be treated medically are usually called **Structural or Objective Tinnitus**—in other words, others under certain condition can actually hear the noise the sufferer hears. By far the most common of the permanent types of tinnitus is called Functional or Subjective Tinnitus, or that which can be heard only by the sufferer. In such cases, the problem usually lies in the delicate inner ear region or even further up into the central auditory pathways. Experience tells us that most sufferers of long-term tinnitus exhibit three major causal factors: **Auditory Contributors, Medical Contributors, and Lifestyle Contributors.**

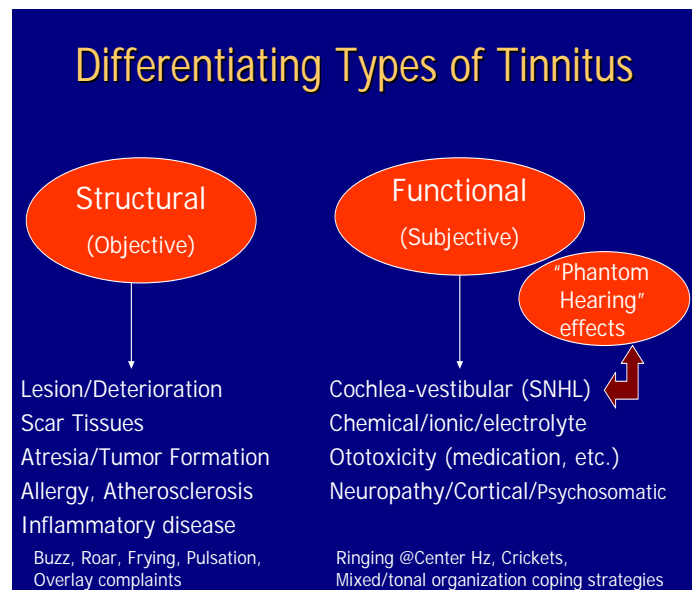
### Introducing the Multimodal Approach

The DigiCare® Multimodal Tinnitus Management Program utilizes time-tested principles from several models of tinnitus therapy and identifies causal explanations from within three areas of contributors:

- **Auditory Contributors** are those related to hearing impairment. These are addressed by one's hearing health practitioner who will utilize appropriate fitting of hearing aids, assistive devices, and counseling to help manage the tinnitus.

- **Lifestyle Contributors** are causal factors over which only the consumer has control, such as the use of tobacco, alcohol, caffeinated drinks, high sodium diet, MSG, etc. It also includes such lesser recognized—yet critical—factors as dehydration, lack of sleep, and psychosocial stress.
- **Health Contributors** are those primarily within the domain of the consumer's physician. These contributors may involve unresolved (or unrecognized) disease or injury, such as developing diabetes mellitus II, gout, osteoporosis, atherosclerosis, and allergy. Medication side-effects are paramount in many cases today. These aspects may be referred to community resources that specialize in addressing them.

Sometimes lifestyle contributors collide with medical contributors. Today, many older adults suffer from semi-dehydration, due to a declining sense of thirst. As a result, the Pituitary gland produces **Anti-Diuretic Hormone (ADH)** to prevent blood volume from dropping causing the kidneys retain sodium, causing blood pressure to rise. Rather than investigate potential dehydration, the busy medical practice tends to prescribe diuretic medication to lower the blood pressure.



Underlying causes continue to advance while medication side-effects wreak havoc (freezing feet, light-headedness) on the body, making a short-term problem (not enough water) become long-term (hypertension, high cholesterol, and resulting pH conditions, such as Diabetes Mellitus II....and tinnitus, hearing, and balance disorders.

Under the Multimodal your practitioner will address these issues with the latest available knowledge. For it is crucial that **all contributing factors** are addressed and accommodated for optimal tinnitus management and success. Doing so will depend upon the hearing care professional's skillful assessment and technical and counseling resources for those presenting with both tinnitus and hearing loss. Lifestyle and common sense health factors will need addressed by the consumer, and medical contributors will need to be addressed by one's medical doctor.

### What to Expect on Your First Visit

In preparation for your first visit several things need to take place:

- With your written permission, we will contact your physician for clearance to assess your hearing and tinnitus. If we find that you meet criteria, we will also be furnishing written reports to your doctor to make sure he or she is aware of our findings and recommendations.
- You will need to study this and other material enclosed in this packet.
- Please, complete the enclosed Questionnaire and bring your packet with you.
- Also, you will need to bring a detailed list of current medications, food supplements, and anything else that you feel may be contributive to your case.
- ***If married, it is imperative that your spouse come with you on your appointment.***

When you arrive on your appointed day, expect to spend at least two hours in the initial hearing health and tinnitus assessment. You will begin in the waiting room, where more material will be provided for further study, plus other brief questionnaires. This process will take about 15-20 minutes. This is important time for reflection over what you have learned thus far. For you become the most important partner in the process for optimizing tinnitus management.

Your formal hearing and tinnitus assessment will begin with a complete and thorough case history, video otoscopy biomarker investigation, and a complete evaluation of your auditory status, including such problems as abnormal loudness growth and loudness tolerance issues. Concurrent with the testing of your hearing will also be an assessment of your tinnitus. This will involve tinnitus description, pitch and loudness matching, and residual inhibition effects.

If you are now a hearing aid user, we will try to assess whether the parameters of your device are sufficient. In the vast majority of cases the bandwidth is too narrow, loudness growth accommodation insufficient at the center band of the tinnitus, and there is no on-off internal programming switch on the microphone noise

suppression. This often means starting with a more advanced device. For not all hearing aids are the same.



Most importantly, there are three main application parameters necessary for amplification to be optimally beneficial in cases of tinnitus:

- The bandwidth must be at or above 9 KHz, preferably 12 KHz or higher.
- There must be three adjustable (tertiary) peaks that can be manipulated to stimulate the tinnitus frequencies, as well as meet communicative needs.
- The Microphone Noise Reduction or Suppression feature must be turned off to provide a wide-band masking floor.
- The technicians designing and building the device must be well-versed in digital amplification tinnitus management.

**Remember**, the “best doctor in the house is one inside your body”. But that doctor can only do its job if given the right tools. In the foregoing, we've enumerated a number of those tools. In the final analysis, the most important tool is your motivation to make the program work for you.

### About the author

The author is a professor of Behavioral Medicine, and has researched and developed protocols of assessment and treatment of tinnitus for more than 35 years. Many of his innovations are incorporated in a number of therapeutic approaches to the treatment and management of tinnitus today.

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