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The Future of Tinnitus Research and Treatment

### FUTURE OF TINNITUS RESEARCH AND TREATMENT

We are still working for the care for tinnitus, but there have been major advances in our treatment of the physiologic and psychologic triggers for the condition. Going forward what are the most important investigations always used in tinnitus research. You are listening to ReachMD XM157, The Channel For Medical Professionals. Welcome to the Clinician's Roundtable.

I am your host Dr. Mark Nolan Hill, Professor of Surgery and practicing General Surgeon.

Our guest is Dr. Richard Salvi, Professor in the Department Of Communicative Disorders and Sciences and Director Of The Center For Hearing And Deafness at the State University Of New York at Buffalo School Of Medicine. Dr. Salvi is an internationally respected expert on tinnitus.

#### DR. MARK DOLAN HILL:

Welcome Dr. Salvi.

#### DR. RICHARD SALVI:

Glad to be here to talk to your audience about tinnitus.

#### DR. MARK NOLAN HILL:

We are discussing the future of tinnitus research and treatment. Dr. Salvi would you please review for us if you would some of the main treatments currently available for tinnitus.

#### DR. RICHARD SALVI:

I would put the main treatment as being a combination of sound therapy, counseling and education, and there are number of these involved usually having a sound generator coupled with counseling to the patient to reduce the anxiety associated with it and educating about the causes of tinnitus. Another very effective treatment would be the use of a hearing aid if the patient has hearing loss, the hearing aid will amplify the sound in the environment often times to the point that it reduces the tinnitus perception, makes you largely

unaware of it and you get some hearing benefit. So, these are very effective treatments that are currently available for patients. There are more experimental treatments that are out there right now. One of them is transcranial magnetic stimulation. This is a technique where you inject a focus magnetic field into the areas of the brain where you think tinnitus might be generated in the auditory cortex and this magnetic field basically sets up a miniature electric field and disrupts the tinnitus generator. This often times will give relief for minutes, hours, or some cases weeks or may be even months. It is largely experimental right now, but may become more common in the future. We are waiting more results to see whether this is going to become more common place.

**DR. MARK NOLAN HILL:**

Now, thinking about when I was a youngster, I had a transistor radio and an ear plug, and the ear plug never seemed loud enough and it certainly didn't have good acoustics, but nowadays you get the special ear plugs and ear phones that sound like you have stereophonic speaker system right in your head and with rock concerts that have such loud sounds and people driving in automobiles that have very fancy stereo systems, can we expect the number of cases of tinnitus to rise in the coming years?

**DR. RICHARD SALVI:**

I think that is a very distinct possibility. I talked to some clinicians who claim that they are seeing young children with what are called noise notches, hearing losses in the 4 to 5 kilohertz range and these are often associated with being around automobiles that have these very souped up stereo systems in them, listening to music players at very high levels over a long periods of time. These all expose young people to the risk of getting hearing loss at a very early age and once this gets started, it is pretty much irreversible.

**DR. MARK NOLAN HILL:**

In the market there are some special headphones that are called noise-canceling headphones. Are these in any way related to some of the devices and theories used in tinnitus treatment?

**DR. RICHARD SALVI:**

Yeah, the noise-canceling ear phones are basically designed to capture sounds that sort of get through the earmuff. Once these sounds get pass the earmuff, they put in an anti-sound that cancels the sound out, so it effectively gets rid of the sound by putting in an anti-sound that is 180 degrees out of phase. These are actually very effective for reducing low-frequency sounds in the environment. There has been some thought about using an anti-sound to suppress tinnitus and this in fact might work if, in fact, tinnitus was generated in the inner ear. Unfortunately, we think that tinnitus is generated in the brain and these noise-canceling devices, I am unaware of any that have proved effective in suppressing tinnitus because the generator for tinnitus resides in the brain, not in the sound environment that sort of reaches our ear.

**DR. MARK NOLAN HILL:**

Is there any future for medication therapy involving serotonin metabolism or dopamine or other neurotransmitters?

**DR. RICHARD SALVI:**

Yes, there are some patients that actually can benefit from medications. Dr. Levine at Howard has done some work with a special group of patients who report having tinnitus that sounds like a typewriter. This is called a typewriter tinnitus and he has had some reports out saying that these people respond well to Tegretol or carbamazepine. So, there may be a subclass of people tinnitus patients that might be treated with drug therapies. Another drug company in Germany or Europe called Merz is experimenting with a compound that interferes with glutamate receptor called the NMDA receptor, and they are working with the drugs that block the NMDA receptor and these drugs are some of the same drugs that are used to treat Alzheimer's patient. One of the drugs is called Namenda, I think, that is used for Alzheimer's and the compound Merz has, they are testing it out right now to see if it effective for treating tinnitus patients, so Merz has clinical trials ongoing and I have not seen the data yet for it, but they obviously are optimistic because they are running an expensive clinical trial to see if it is effective. I have heard <\_\_\_\_> reports from some people that have tried these NMDA antagonists and they say they have not had any benefit. I have heard reports from other people that they have proved beneficial, but we really need a wide scale clinical trial to see if they are effective. The other point that I would make about drug trials is there probably are drugs that work, but we have to find out which drugs work with which patient, so in the example I gave you with typewriter tinnitus, if you can categorize that tinnitus is being a particular type of tinnitus, you may have a drug that will work for that particular type of tinnitus.

If you have just joined us, you are listening to the Clinician's Roundtable on ReachMD XM 157. I am your host Dr. Mark NOLAN Hill and our guest is Dr. Richard Salvi, Professor in the Department Of Communicative Disorders and Sciences and Director Of The Center For Hearing And Deafness at the State University Of New York at Buffalo School Of Medicine. Dr. Salvi is an internationally respected expert on tinnitus. We are discussing the future of tinnitus research and treatment.

**DR. MARK NOLAN HILL:**

Dr. Salvi are there any side effects to the current treatments?

**DR. RICHARD SALVI:**

The sound therapies there are very little side effects from it and so I often recommend that because the side effects are really minimal. The downside to most of the sound therapy and counseling is they don't work instantaneously. It usually takes a matter of 6 months or a year for people to really experience significant benefit. The other treatment strategies that involve drugs. These always have some risks associated with them. So, I would put them in the second line or third line of approaches to treating tinnitus. I think it would be wise I think to start most patients to start off with sound therapy and counseling because these have proven to be relatively effective for most patients.

**DR. MARK NOLAN HILL:**

Do most commercial insurance companies cover treatment for tinnitus?

**DR. RICHARD SALVI:**

Unfortunately, most insurance companies do not cover treatment for tinnitus. I think the problem is unrecognized as it is not considered significant and it doesn't effect a large enough patient population has really not captured the attention of the healthcare professionals. This may be changing. The VA has programs now for military personnel that suffer from intractable tinnitus and so are some programs within the VA to treat patients at sort of the expense of the Veterans Administration Hospitals, but this has taken a long time. I think it will

take some years to get this approved by the health insurance companies.

**DR. MARK NOLAN HILL:**

Are these devices using sound therapy very expensive?

**DR. RICHARD SALVI:**

You are really paying for 2 things. You are paying for the counseling as well as the sound devices and because of therapies run for 6 months to a year, they run upwards of about \$2500 up to \$5000 to \$6000. The many patients are more than willing to pay for the treatments because they feel that is very beneficial.

**DR. MARK NOLAN HILL:**

You mentioned that there is research going on in many different countries as well as the United States. How is all of this coordinated?

**DR. RICHARD SALVI:**

One of the means for coordinating this is an organization that started few years ago in Europe called the Tinnitus Research Initiative. They have made a strong effort to develop research teams that coordinate activities between Europe, Asia, South America, North America, and they have developed some working groups, and they have been very effective in terms of bringing researchers and clinicians together to try to push various treatment modalities and to develop the research programs to focus on different aspects of tinnitus.

**DR. MARK NOLAN HILL:**

Are there multicenter extensive clinical trials on the way to evaluate the longer-term ramifications of treatment for tinnitus?

**DR. RICHARD SALVI:**

There have been a few small-scale clinical trials. Usually, one or two centers doing this. I would not put any of them in terms of the very large scale where we have 10 or 15 different centers. Our university is participating in 1 clinical trial that is being orchestrated from the University of Iowa and so we are one of the sub-sites of this, but there are relatively few programs like this. Most of the programs right now tend to be a single center doing 1 particular aspect of tinnitus.

**DR. MARK NOLAN HILL:**

Are medical professionals providing enough attention to this disorder?

**DR. RICHARD SALVI:**

I would generally say that most family practice or ENT physicians have not given tinnitus serious consideration. Most of them are unaware of the fact that there are some treatment strategies available for patients and the treatment strategies that we recommend most often are sound therapy, counseling and education. A good way to find an audiologist or other clinician that works from this area with treating tinnitus patients is to contact the American Tinnitus Association in Portland, Oregon. Their web site is [www.ata.org](http://www.ata.org) and that is organization has compiled the list of clinicians that are involved in treating tinnitus patients, so when a patient contacts me from another part of the United States, I usually refer them to the American Tinnitus Association asking them to find a clinician in their area that has experience in working with tinnitus patients. So, I think the general practitioners, the ENT doctors could use the ATA as the resource for helping them to find treatments for their patients.

**DR. MARK NOLAN HILL:**

I want to thank our guest, Dr. Richard Salvi.

We have been discussing the future of tinnitus research and treatment. I am Dr. Mark Nolan Hill and you have been listening to the Clinicians Roundtable on ReachMD XM157, The Channel For Medical Professionals. Be sure to visit our web site at [reachmd.com](http://reachmd.com) featuring on demand podcasts of our entire library. For comments and questions, please call us toll free at (888 MD XM157) and thank you for listening.

This is Dr. Mitchell Cohen with Elma Family Medicine in Elma Washington and you are listening to ReachMD XM 157, the channel For medical professionals.