Hyperacusis Device Clinical Trial

A clinical trial has started for a novel hyperacusis hybrid device, developed by Dr. Craig Formby and Dr. David Eddins of the University of South Florida.

Dr. Formby spoke at our Roadmap to a Cure event several years ago during a Mid-winter meeting of the Association of Research for Otolaryngology. Here, Dr. Formby heard stories of the challenging lives faced by many with severe hyperacusis. Realizing that current treatment approaches do little to help those people manage everyday noise that can suddenly rise to very high volumes and result in significant setbacks, he believed that a better sound-limiting and treatment combination device could help these patients.

Dr. Formby and Dr. Eddins collaborated to submit a grant application to NIH, which was awarded in 2017. Bryan Pollard, president of Hyperacusis Research, assisted with the grant application by providing a supporting document explaining the critical patient need for such a volume-limiting device, including results from an online survey showing significant interest in the device.

Dr. Formby partnered with Dr. Eddins and a device developer to formulate an NIH Grant for $235,965.

The device software is tunable so that patients are provided with a set of parameters personalized to their needs. For example, the dampening for loud sounds will be customized to a patient’s Loudness Discomfort Levels.

With earplugs, a patient knows only approximately how much sound reduction is achieved by the Noise Reduction Ratings (NRR), which must be derated under real-world circumstances. In this setup, exact measurements will be able to provide precise NRRs so both patient and research team will know the reduction amount.

This is a novel approach and an exciting opportunity for an advanced clinical option for hyperacusis sufferers. The additional sound therapy component to the device will enable clinicians to test the value of maintaining a low level of sound in quiet situations while capping the noise level in loud environments.
2019 Emerging Research Grant
Along with our partner, the Hearing Health Foundation, we announced our Emerging Research Grant for 2019. We are grateful for the donor support that makes this grant possible. The grant went to David Martinelli, Ph.D., of the University of Connecticut Health Center.

While the presence of outer hair cell afferent neurons is known, it is not known what information the outer hair cells communicate to the brain through these afferents. This project’s hypothesis is that the function of these mysterious afferents is to communicate to the brain when sounds are intense enough to be painful and/or damaging, and that this circuitry is distinct from the cochlea-to-brain circuitry that provides general hearing. The hypothesis will be tested using a novel model in which a certain protein that is essential for the proposed “pain” circuit is missing. The absence of this protein is predicted to cause a lessening of the perception of auditory pain when high intensity sounds are presented. If true, this research has implications for those suffering from hyperacusis.

Recently, Bryan met David at his lab and reviewed the project plans. David was especially interested in the nature of the pain that hyperacusis patients experience, for which Bryan provided detailed information.

Hearing Journal Article
As part of our aim to help hyperacusis patients obtain better clinical care, Hyperacusis Research president Bryan Pollard authored a piece in the October 2019 Hearing Journal, whose audience is doctors and audiologists.

Clinicians generally have an insufficient understanding of the most severe and impacting characteristics of hyperacusis. As a result, the needs of the most severe sufferers are misunderstood. A mini-survey we did earlier in the year showed the real impact of this devastating condition, noting that ear pain caused by sound was the single biggest problem for patients. This was followed by loudness sensation, increased tinnitus from sound, aural fullness and a thumping/fluttering sensation.

A word cloud generated from responses to the question: “Describe the actions you take to avoid setbacks.”

Around 4 in 10 patients reported different symptoms between ears, primarily because the initial injury involved more noise on one side. Around half reported setbacks weekly.

In some cases, people never recover from these setbacks. This population represents the most challenging and overlooked group of hyperacusis sufferers. Setback prevention is a key focus for many
hyperacusis sufferers and should be a top priority of clinical treatment programs.

**Tinnitus Talk Podcast**

In December 2019, Tinnitus Talk recorded and released a podcast interview with Bryan discussing hyperacusis. Tinnitus Talk is the leading online patient discussion site for ear disorders including tinnitus and hyperacusis. The podcast on hyperacusis is Episode 8. Tinnitus Talk estimated that within a few weeks of release, it had been listened to more than 50,000 times.

The extensive interview with Bryan is one hour and 15 minutes in length. Bryan covers many aspects of hyperacusis, including models of how pain hyperacusis works, the challenge of setbacks, the hybrid hyperacusis device, research developments, and how patients and their families can help push research forward. He also explained how the funds raised by Hyperacusis Research become amplified, as the ideas and awareness they generate directly result in larger government grants.

The podcast may be found here (closed captions and a transcript also are available):

https://www.tinnitustalk.com/podcast/episode/transfomring-hyperacusis-research-bryan-pollard/

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**Boston Fundraising Dinner**

A vital part of our annual fundraising season is our Boston-area benefit dinner. At the 2019 dinner, held in October, Professor Charlie Liberman of Harvard Medical School gave a presentation that explained how the ear transforms sound waves into the melodies we love. The dinner was a great success and helped bring the year to a close with total fundraising exceeding $42,000 to find a cure for hyperacusis.

**2020 Conferences**

Bryan will attend two conferences in 2020. These conferences provide important opportunities to raise awareness and understanding of hyperacusis among the research community.

- **Association for Research in Otolaryngology**, attended by researchers in otolaryngology clinical and biological sciences. *Hyperacusis Research will hold discussions with medical researchers on hyperacusis.*

- **Tinnitus Research Initiative**, attended by clinical practitioners and researchers. *Hyperacusis Research will be presenting: “Characteristics of the Onset of Hyperacusis.”*

**Looking Ahead**

2019 was another year of strong progress, with research collaboration activities continuing to accelerate. As we start the new decade in 2020, we are setting a vision to double our fundraising to enable us to double our grants to speed the research that will lead to a cure.

Our work is made possible thanks to your generous support. We rely on your donations for our entire budget and appreciate your continued help.

As always, we continue to be grateful for contributions by check mailed to our address (printed on the last page of this newsletter) and for online contributions by credit card through our website, [www.hyperacusisresearch.org](http://www.hyperacusisresearch.org) and via our Facebook page at [Facebook.com/HyperacusisResearch](https://Facebook.com/HyperacusisResearch).

“We are seeing $3-$4 million more per year in research grants from the government for hyperacusis. That’s the way we look to use the money that we raise - to multiply it by 100 with these larger sources of funding.”

– Bryan Pollard in Tinnitus Talk Podcast
Hyperacusis Research is a 501(c)(3) non-profit organization devoted to finding a cure for hyperacusis by accelerating research for novel treatment therapies and by connecting patients to researchers. Contributions are fully tax-deductible as allowed by law and are gratefully welcomed by credit card online at www.hyperacusisresearch.org or by check to our mailing address above.

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