Hearing aids have been used to treat tinnitus for almost as long as they have been used to help hearing. Because tinnitus frequently accompanies hearing loss, it should be no surprise that hearing aids have been used to help both conditions. The ways in which hearing aids have been found to help tinnitus include improving quality of life, amplifying background sounds to mask tinnitus, moving attention from tinnitus to other sounds, and possibly modifying the auditory pathways in the brain to reduce or reverse tinnitus-related activity.

As hearing-aid technology has improved, with more complex processing becoming possible, new tinnitus solutions have become available. This new processing may change how sound is amplified or it may enable the generation of new sounds. When a hearing aid can play sounds as well as amplify sound, it commonly is called a combination aid. Combination hearing aids traditionally could present simple sounds, such as a hissing noise. Current combination hearing aids can produce more complex sounds, such as ocean waves.

But are these new devices and sounds better than hearing aids alone? Do they really help with tinnitus? In this review of selected publications from 2017, I hope to provide some answers.

A study from China found that almost 90 percent of tinnitus patients with hearing loss benefitted from hearing aids. In a study from Sweden, hearing aids also appeared to help cognition (e.g. memory), as well as tinnitus. In this study, hearing aids reduced the impact of tinnitus and improved reading span in a study of 46 patients with tinnitus and hearing loss.

Not all new hearing-aid developments reduce tinnitus. Frequency lowering is a method designed to move high frequency (pitched) sounds from areas of very poor hearing to areas that have better hearing. It has been suggested that this type of strategy might be able to reorganize pitch maps in the brain that may be responsible for tinnitus. We did not find benefit with one type of frequency lowering strategy; in fact, normal hearing-aid processing was much superior in reducing tinnitus.

A novel approach to hearing-aid amplification has been trialed in a small group of participants. The approach notched filtered (removed) background sound at the tinnitus. Narrow notching of sound has been suggested to suppress tinnitus through a process called lateral inhibition. The notched background sound had a slightly stronger effect than normal amplification. Another pitch-based method at early stages of development is Acoustic Coordinated Reset Therapy applied through a hearing aid. This therapy is usually applied through headphones and uses tonal stimuli in an attempt to change the firing patterns of brain regions that are thought to cause tinnitus. In a case study with one person, the sounds used were sent to hearing aids through a wireless connection. It was found to be useful for this person. Both studies provide only preliminary information and need to be supported by further research.

Pitch-based therapies are heavily reliant on the accuracy of pitch measurement, which can change with time. A different use of tones is to create a pattern of sound resembling chimes, which some people find relaxing. These computer-generated chimes are called fractal sounds. A pilot study showed that hearing aids and fractal sounds were both useful, but the study did not directly compare the two treatment parts.

A comparison between normal hearing aids, deep-canal hearing aids worn for long periods, and combina-
tion hearing aids with noise sounds found all achieved similar results. Another study found that Tinnitus Retraining Therapy (TRT), which uses counseling and combination aids, improved tinnitus; and standard care, with counseling and hearing aids, improved tinnitus. However, the combination of counseling with combination aids provided greater improvement.

The degree and pattern of hearing loss, as well as tinnitus pitch, are examples of individual characteristics that may be important to consider when selecting therapy to treat tinnitus. In a review of sound therapy over 10 years (2006-16), we found that few tinnitus therapies were truly customized for the individual with tinnitus. While hearing loss might be accommodated and sounds might differ depending on tinnitus pitch, most studies did not consider the individual’s needs and personality. Choosing sounds for therapy based on how they affect the individual are probably very important for success. We anticipate that future work in this area will involve tailoring sound therapy based on individual characteristics, and this will improve outcomes.

Do hearing aids really help?

Evidence continues to accumulate that hearing aids are an effective tool in tinnitus management. Counseling should accompany their use to address any negative emotional or behavioral aspects of tinnitus.

But are these new devices and sounds better than hearing aids themselves?

The answer to this question is... possibly. Sound helps, but there is no strong evidence that adding sounds to hearing-aid amplification is superior to hearing aids alone. Results vary from person to person, so careful selection and trial may make the difference in achieving a reduction of tinnitus.

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Conflict of interest statement: Dr. Searchfield is the scientific director of Tinnitus Tunes, an online subscription-based tinnitus resource.