

Tinnitus

Tinnitus is the perception of a sound or sounds that is not associated with an external stimulus. There are rarer subtypes of tinnitus, often classified as pulsatile tinnitus or subjective/conductive tinnitus, which is the result of sound transmitted from within the body which includes infections, tumours and vascular abnormalities. Otherwise the vast majority of tinnitus is the result of some damage somewhere within the auditory pathway. It is impossible to have tinnitus without such damage. It is important to realise that this can be minor and you can have essentially normal hearing. Conversely you can have severe hearing loss and minimal tinnitus. As a general rule, however, the worse the hearing, the worse the tinnitus can become.

What then results in the tinnitus?

A good explanation is that following some damage to the hearing pathways, the ear and the brain set up a series of alternate neural pathways. These ultimately reach the auditory cortex, so you actually hear the sound. A number of years ago it was dismissed as a fictitious or imaginary sound.

The problem is that these alternate neural pathways travel through different parts of the brain including those that control the neck and jaw muscles and an area called the limbic system. This area controls our fight and flight response and as such is our 'stress' centre. What this means is that any form of muscular, emotional, psychologic, hormonal, metabolic, or chemical stressor can modulate the way in which the brain perceives the degree of tinnitus.

Unfortunately, sometimes the intrusiveness of the tinnitus leads to a feedback loop to the limbic system where this further increases the level of the tinnitus. Once this occurs, tinnitus has become essentially a brain or neurologic problem. The model is very similar to the generation of chronic pain or phantom limb sensation. Whilst we (ENT surgeons) are important (or think we are) in the initial assessment of tinnitus, our role is that of ruling out serious underlying causes by coordinating appropriate investigations, and then educating and coordinating management.

In the vast majority of cases the holistic approach of downregulating physiologic and emotional stress in combination with sound stimulation (amplification if required) is the management plan. This requires a multi-disciplinary team involving GPs, audiologists, clinical psychologist (tinnitus retraining therapy), physiotherapists, chiropractors, acupuncturists, dieticians. The ultimate goal is not to 'cure' the tinnitus but to use a number of tools to have the brain not focus or register the tinnitus.

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What is important initially?

Anyone with persistent tinnitus requires a formal hearing test, even if there is no sensation of hearing loss. A comprehensive medical assessment is important, often involving blood tests, blood pressure check and awareness of muscular issues. Obviously otologic examination (ear) is essential and if there are any concerns, an ENT surgeon should become involved. What we worry about is asymmetry: either in the sensation of tinnitus, level of hearing or otologic examination. This is when we would arrange an MRI scan of the brain and inner ear to exclude the unlikely presence of more serious pathology such as a vestibular schwannoma (acoustic neuroma). The other role of an ENT surgeon is the correction of or improvement in hearing if possible. In summary, the management after assessment and exclusion of serious pathology can be divided into otologic (ear) and non-otologic streams.

In the advent of a sudden onset of tinnitus, this should be investigated urgently. A formal hearing test within a few days is very important to ensure that there has not been a sudden sensorineural hearing loss, and, if there is, an urgent ENT appointment should be made.

How is benign tinnitus managed?

The two absolute evidence based components of tinnitus management are the use of hearing aids if there is a degree of hearing loss and **tinnitus retraining therapy (TRT)**, a form of **cognitive behavioural therapy (CBT)**. There is emerging evidence that **bimodal neuromodulation** can also be beneficial in select cases. The otologic options include stimulating the auditory pathway to assist the brain to ignore the tinnitus. This starts with sound stimulation, which is often as simple as having a broad spectrum noise (fan on at night, white noise, waves breaking etc), all the way to fitting of hearing aids, a very important and often under recognised component if you have anything more than mild hearing loss. Maintaining ear health: avoid significant noise exposure, manage wax and minimise ear infections. Occasionally there are medical and surgical options to improve hearing.

The non-otologic components are improving overall physical and emotional health, with sleep being a very important factor. Tinnitus retraining therapy (managed by a clinical psychologist with a subspeciality interest in the area) is central. Then anything that can minimise neck and jaw tension can be important.

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Summary

- Explanation and exclusion of significant underlying pathology
- Avoidance of triggering factors: ear infections, dental and temporomandibular problems, cervical neck disease
- Ensure adequate rest and relaxation, manage stress.
- Tinnitus retraining therapy (a type of cognitive behavioural therapy) is very important, and run by an experienced clinical psychologist and/or specialised audiologist.
- Hearing rehabilitation: hearing aids and assistive listening devices often very important
- Sound therapy: white noise such as the radio off the station is a good initial trial. A lot can be said of the old-fashioned advice to live close to the sea. There are a number of apps such as White Noise or Sleep Pillow that can be used. The principle is to use a sound that does not drown out the tinnitus and that has a pleasant, emotionally soothing quality.
- Bi-modal Neuromodulation: [Lenire Device](#)
- Alternative therapies: Of herbal remedies, ginkgo biloba has some anecdotal benefit, albeit minimal. Additionally vitamin B2 (riboflavin), magnesium and feverfew are supplements that have a role in migraine and as such may help with neural hypersensitivity. Massage and acupuncture can be useful adjuncts.
- Very rarely, short to medium term sedatives can be helpful when managed by your GP. In select cases the involvement of a psychiatrist and use of anxiolytic or antidepressant medications may be required to gain initial control.

Contacts and resources

- If you are in crisis call Lifeline on 131144, or 000.
- Audiologists have a great understanding of hearing and tinnitus and are an essential part of the team in tinnitus management (see our Audiologist List for more information)
- Tinnitus retraining therapy: (see our Clinical Psychologist List for more information)
- Programs and apps:
 - Tune out: A program to manage tinnitus. www.tuneout.com.au
 - Mindear app <https://www.mindear.com/en-au>
 - [Soundcore sleep buds](#)
- Australian Tinnitus Association: www.tinnitus.asn.au
- American Tinnitus Association: www.tinnitus.org.uk www.ata.org
- British Tinnitus Association: www.tinnitus.org.uk
- Articles

Sound of silence. NewScientist, April 20 2024

I've had tinnitus for 20 years. Here's a promising solution. The Sunday Times. January 14 2024

Many treatments promise relief from tinnitus. Here's what actually help. The Washington Post. August 14 2026

Got a buzzing or ringing in your ears ? Here's what the experts say about tinnitus. Explainer, Sydney Morning Herald, August 30 2026