

Cochlear Implants



The Department of Ear, Nose & Throat (ENT) - Head & Neck Surgery provides a wide range of surgical services for adult patients with ENT, head and neck diseases. Patients are referred from polyclinics, general practitioners, emergency services or transferred from other departments within the Ng Teng Fong General Hospital or other healthcare facilities, including nursing homes, community and other hospitals. Our team of highly-trained ENT-Head & Neck surgeons and allied healthcare professionals aim to provide the best possible care to our patients.

Welcome

This brochure provides you with information you need to consider a cochlear implant for yourself or someone important in your life.

It will help you understand how hearing works, how hearing with a cochlear implant works and address the common concerns about receiving a cochlear implant.

You're not alone

Hundreds of millions of people around the world experience some form of hearing loss. While hearing aids can help, more than 75 million people still find the most powerful hearing aids inadequate. Around the world, more than 300,000 people have received a cochlear implant and have achieved excellent hearing results through it.



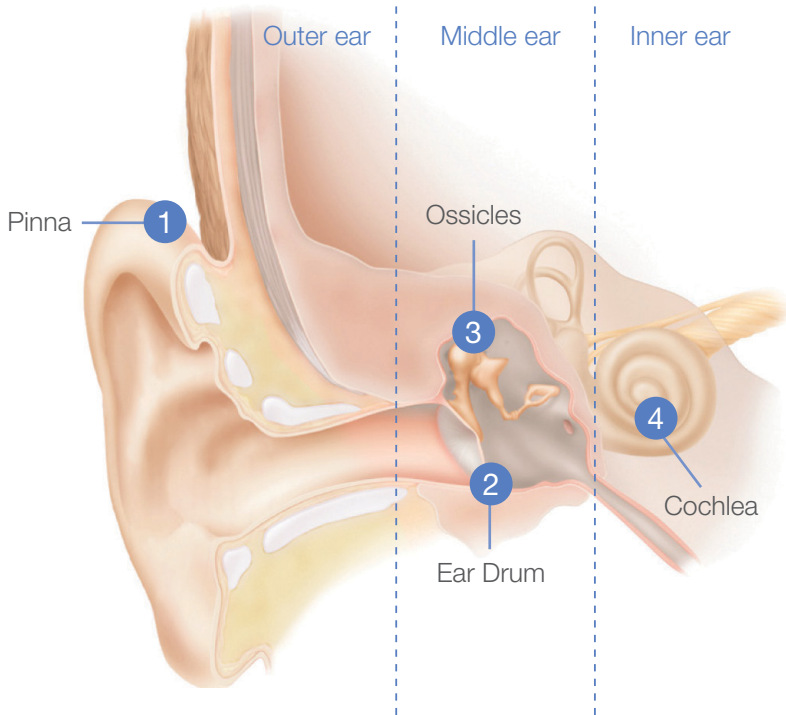
The JurongHealth implant team

Here at JurongHealth we have over 20 years of combined implant audiology experience and the expertise of Singapore's pioneer cochlear implant audiologist. Our three implant surgeons were trained in internationally renowned centres in the USA, UK and Australia. We work in close collaboration with Ear Science Institute Australia, a world-class facility dedicated to improving ear and hearing outcomes through research and clinical work.



How do we hear?

Hearing is a sense by which sound is perceived. It consists of four distinct steps and the whole process only takes a fraction of a second.



1. Sound waves are guided down your ear canal by the pinna.
2. The sound waves hit your eardrum, making it vibrate.
3. The small ossicles vibrate with the eardrum, transferring the sound across the middle ear to the cochlea.
4. These vibrations cause the fluid inside the cochlea to move, carrying them to the thousands of tiny hair cells. These hair cells convert this movement into electrical impulses which are sent along the auditory nerve to the brain. The hearing centre of the brain interprets these impulses as sound.

Types of Hearing Loss

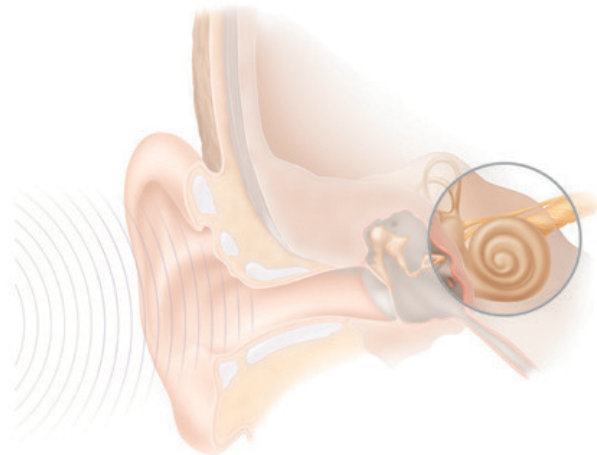
Sensorineural Hearing Loss

Sensorineural hearing loss is caused by damage to the cochlea, or the nerve pathways between the cochlea and brain. Sensorineural hearing loss can be mild, moderate, severe, or profound. It can affect one or both ears, and is usually permanent.

Mild-to-moderately severe sensorineural hearing loss can usually be helped with hearing aids or a middle ear implant. Moderately severe to profound hearing loss can be helped with a cochlear implant.

Sensorineural hearing loss can be caused by:

- Inherited hearing loss
- Ageing (presbycusis)
- Viral infections such as rubella, measles, mumps and cytomegalovirus
- Drugs which damage the hearing system
- Birth trauma
- Complications from premature birth
- Trauma (e.g. long term exposure to extremely loud noise or head injury.)

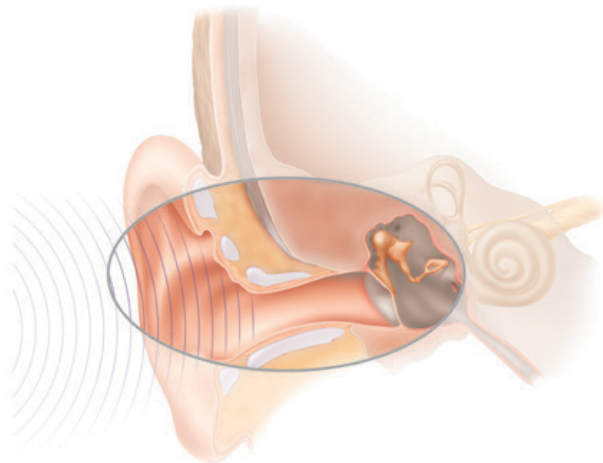


Conductive Hearing Loss

Conductive hearing loss occurs when there is a problem with the outer or middle ear. The sound is unable to travel or 'conduct' from the outer ear to the eardrum and tiny bones, or ossicles, of the middle ear. A conductive hearing loss may occur in both ears or just one ear, and can often be helped by medical or surgical treatment.

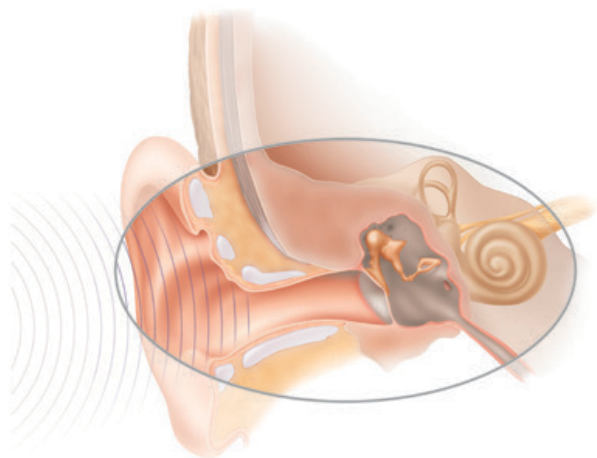
Conductive hearing loss can be caused by:

- Congenital factors
- Excess wax or a foreign object in the ear canal
- Outer ear infection
- Chronic 'glue ear' or middle ear infection, called otitis media
- A hole in the eardrum (perforation)



Mixed Hearing Loss

Mixed hearing loss combines problems with the conductive pathway (outer and middle ear) and the cochlea or auditory nerve (the inner ear). Mixed hearing loss can occur in both ears, or just one.



When you need more than a conventional Hearing Aid

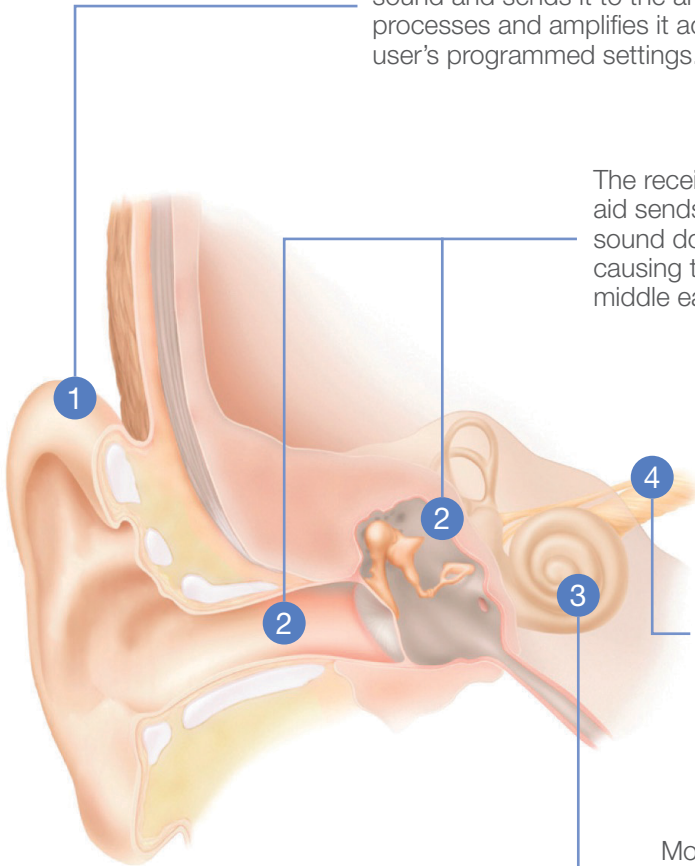
Hearing aids help many people with hearing loss. However not everyone benefits from them. For some, even the most advanced hearing aids can sound like a badly tuned radio. While you can hear the broadcast, it is broken up and hard to understand.

Modern hearing aids can select and amplify specific sounds. For some people speech can still be difficult to understand. When people with severe to profound hearing loss do not benefit from hearing aids, a cochlear implant may be a more effective long term solution.

How a Hearing Aid works

The microphone in the hearing aid picks up sound and sends it to the amplifier which processes and amplifies it according to the user's programmed settings.

The receiver of the hearing aid sends the processed sound down the ear canal, causing the eardrum and middle ear bones to vibrate.



These impulses are sent to the brain via the acoustic nerve where they are perceived as sound.

Motion transferred to the cochlea fluids is converted into electrical impulses by tiny hair cells inside the cochlea.

Ask yourself these questions when you wear Hearing Aids:

- Do you ask people to repeat themselves, even in one-on-one conversations in a quiet room?
- Do you rely on lip reading to understand what is being said?
- Do you find it difficult to follow a group conversation? Do you avoid social situations where this occurs?
- Is it difficult for you to talk on the phone and does it make you avoid answering the phone?

If you answered yes to any of these questions it is likely you could benefit from a cochlear implant.

How are Cochlear Implants different?

Unlike hearing aids, cochlear implants do not amplify sounds but mimic and replace the hearing function of the inner ear through electronic stimulation.

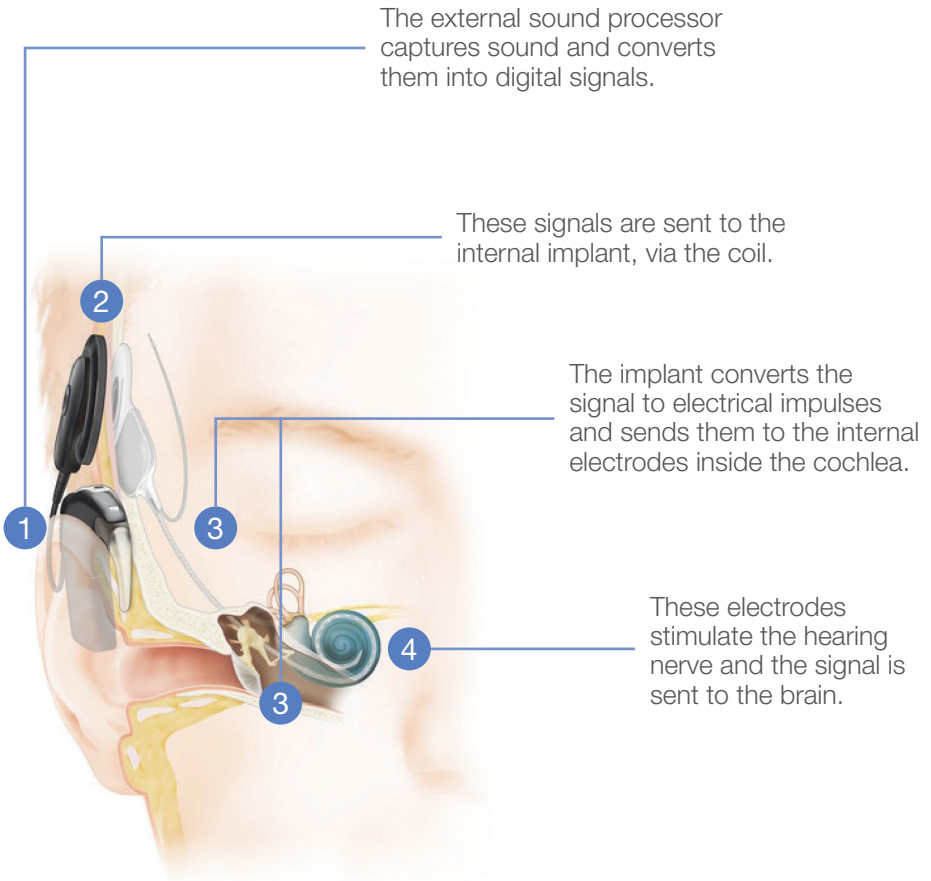
The system has two parts – an external sound processor and the actual cochlear implant. Incoming sounds are processed into electrical signals and then transmitted directly to the hearing nerve, bypassing the damaged parts of the inner ear.

Internal implant



External sound processor

How a Cochlear Implant works



Benefits of Cochlear Implants

The sooner you receive a cochlear implant, the sooner you can start hearing, interacting and enjoying life to the fullest.

Instead of the isolation and loneliness that often accompanies significant hearing loss, you can look forward to rediscovering activities you put on hold because of your hearing. You won't just reconnect with the world of sound, but with a whole world of enjoyment and opportunities.

For suitable candidates, cochlear implants can deliver rapid improvements over hearing aids, especially in the crucial area of speech perception. Adults can achieve 70-80% sentence understanding (on average) after using a cochlear implant for 6 months, as compared to 20-30% previously, with hearing aids.

It's important to realise that not all hearing losses are the same. Results vary and people may experience different hearing outcomes with their cochlear implant. Speak to your implant audiologist or surgeon about your individual situation and raise any questions you may have. For people with severe-to-profound hearing loss in both ears, cochlear implants in both ears (bilateral) may provide you with a more natural hearing experience.



Considerations

How good is a Cochlear implant for understanding speech?

Understanding speech is considered the most important goal in any form of treatment for hearing loss. How well you understand speech after implantation is mostly dependent on how long you have had hearing loss and the type or degree of hearing loss.

Your audiologist or surgeon will discuss your specific situation with you.

Will my daily activities be limited by a cochlear implant?

Contact sports that cause blows to the head are not advised. Processors may need to be removed before you engage in water sports, however there are aqua accessories available. Check with your audiologist if you are scheduled to go for an MRI scan or a brain scan as these procedures can damage your cochlear implant.

Will I be able to keep up with developments in cochlear implant technology?

Today's implant systems are designed to let you benefit from future technologies without the need for further surgery. Your implant audiologists will inform you of any new product releases.

Will I be able to afford a cochlear implant?

Subsidies and additional funds are available (subject to means testing) to help pay for the cost of surgery and the implant. Replacement or upgrades to processors need to be accounted for approximately every 8-10 years.

What if the implant stops working?

With any technical device there is a risk of failing. This occurs very rarely (less than 1% of the time) but if it does, a new device can be implanted.

What if the cochlear implant is not suitable for my hearing loss?

The implant team at JurongHealth's Ear, Nose & Throat (ENT) - Head & Neck Surgery department are specialists in complex hearing solutions. If a cochlear implant is unsuitable there are other devices we can consider including bone-anchored hearing aids, middle ear implants or electro-acoustic systems.

Your pathway to better hearing

Assessment

As a potential cochlear implant candidate you will undergo a number of tests to make sure a cochlear implant is the right solution for you:

- Audiology tests that determine your hearing thresholds with and without hearing aids, your speech perception and auditory nerve function.
- Medical tests and scans to evaluate your general health, possible causes of hearing loss and the hearing anatomy of your ears.
- Psychological tests to confirm your ability to cope with surgery and participate in managing your cochlear implant after surgery.
- Speech and language testing as a benchmark for ongoing assessment of speech and language development.

Surgery

The cochlear implant procedure is considered to be low risk minor surgery that lasts between 1 to 3 hours. Thousands of cochlear implant surgeries are performed each year and the risks are small. Your surgeon will discuss them with you.

Activation

Within a week or two of surgery, your audiologist will be able to activate the cochlear implant and turn on the sound. The audiologist will program the device to suit your unique hearing needs and fine tune the settings over the course of your follow-up sessions.

Notes:

For more information

Ng Teng Fong General Hospital and Jurong Community Hospital

1 Jurong East St 21, Singapore 609606

www.ntfgh.com.sg | www.jch.com.sg

Clinic opening hours

Monday – Friday: 8.30am – 5.30pm

Saturday: 8.30am – 12.30pm (Selected clinics only*)

Dental Clinic: Monday – Thursday: 8.00am – 5.30pm, Friday: 8.00am – 5.00pm

*Please refer to our websites for more details.

General enquiries & appointments

General enquiries line: 6908 2222 (24-hr)

Fax: 6716 5500 | Email: contactus@nuhs.edu.sg

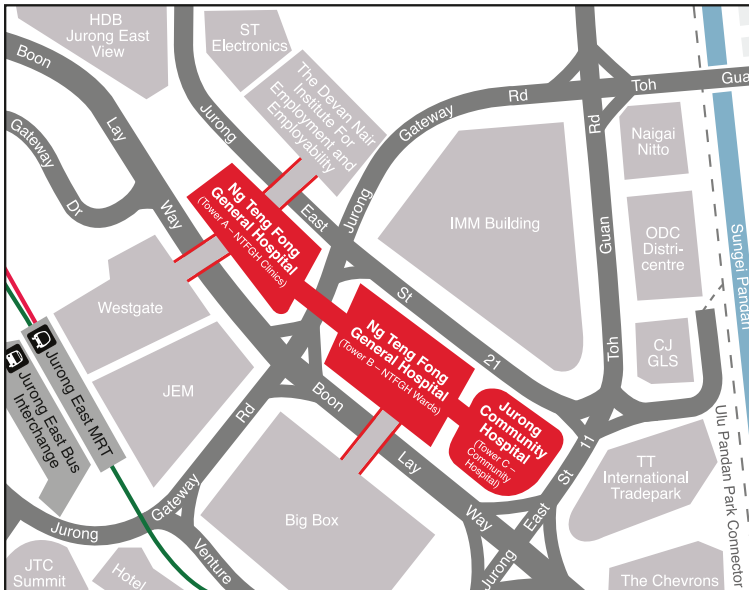
Appointment line: 6908 2222 (Monday – Friday: 8.00am – 5.30pm, Saturday: 8.00am – 12.30pm)

Fax: 6716 2200 | Email: appointment@nuhs.edu.sg

Dental appointment line: 6716 2233 (Monday – Friday: 8.00am – 5.30pm)

Fax: 6716 2200 | Email: JHCampus_Dental@nuhs.edu.sg

Getting there



By train

Alight at Jurong East MRT Station

By bus

Jurong East Bus Interchange

41, 49, 51, 52, 66, 66B, 78, 78A, 79, 79A, 97, 97E, 98, 98M, 105, 143, 143M, 160, 160A, 160M, 183, 183B, 197, 333, 334, 335, 506

Along Boon Lay Way

49, 99, 333, Private bus service 625, 990

Disclaimer:

The information in this brochure is meant for educational purposes and should not be used as a substitute for medical diagnosis or treatment. Please seek your doctor's advice before starting any treatment or if you have any questions related to your health, physical fitness or medical condition. Information is accurate at the time of printing.