Ears

Summary

- The ears are organs of hearing and balance.
- Sound waves are picked up by the ear, converted into electrical impulses and sent to the brain where they are processed.

The ear has two important roles. It is our organ of hearing and our organ of balance.

Parts of the ear

The ear is made up of three different parts, including:

- the outer ear – this is the part you can see. Its shape helps to collect sound waves. The lining of the ear canal is coated with wax, a type of lubrication that stops the tissue from drying out, as well as helping to fight infection and clearing dead skin from the ear
- the middle ear – is made up of the ear drum and three small bones. These amplify and carry the sound waves to the inner ear
- the inner ear – sound waves are changed into electrical impulses and sent to the brain. The organs of balance are located here too.

How ears hear

Sound waves are vibrations through the air. When we hear a sound (such as somebody’s voice), sound travels along the ear canal and causes the eardrum to vibrate. The vibration of the eardrum causes movement of the three bones in the middle ear. These bones move against the cochlea (the hearing organ) and pass the vibrations to thousands of special hair cells inside it.

The hair cells then send the sound as an electrical signal along the nerve to the brain, where we perceive the sound (our brain interprets the signal as sound).

Ears and balance

Our sense of balance is controlled by signals to the brain from three sensory systems:

- vestibular system – inner ear
- vision
- proprioception – movement sensors in the skin, muscle and joints.

The organs of balance in the inner ear are called the vestibular system. This system includes three fluid-filled loops (semi-circular canals) which respond to the rotation of the head. Near the semicircular canals are the utricle and saccule, which detect gravity and back-and-forth motion. When the head is moved, signals from these organs are sent via the vestibular nerve to the brain where they are processed.

The brain uses the information from the inner ear, our vision and proprioception to pinpoint the position of the body.

Common ear problems

Some common ear problems include:

- deafness – can be permanent or temporary, mild or significant. Can be due to many causes, including aging, disease and injury
- ear infection – inflammation, often caused by bacteria
- dizziness – this is often used to describe symptoms ranging from a sense that the patient or the room
spinning or moving (vertigo), to a loss of balance, giddiness, unsteadiness, light-headedness, or weakness

- tinnitus – a sensation of ringing or other noises in the ears
- wax – a build-up of wax can cause temporary deafness.

**Where to get help**

- Your [GP (doctor)]
- [Pharmacist]
- [Audiologist]

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**This page has been produced in consultation with and approved by:**

Royal Victorian Eye and Ear Hospital (RVEEH)

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