



Hearcentres Guide to Hearing Aid Terminology

Sophisticated modern hearing aids use a number of complicated technologies and techniques to ensure great improvements in hearing. Not only are the terms used to describe these features unfamiliar to most people, but a feature is often given a name by a manufacturer for marketing purposes that can confuse the issue. This guide summarises some of the main terms you are likely to encounter. It is intended as a reference tool and we hope you find it useful.

- Age related hearing loss** Typically a reduction in sensitivity to high pitch sounds, such as children's voices or consonants. Sufferers sometimes experience it as "everybody mumbles these days". Thought to be due to a combination of wear-and-tear, noise, alcohol, medication, disease and the general ageing process.
- Amplifier** Increases the volume of sound during processing. These days, this processing is done digitally (see "Digital").
- Analogue** An older type of hearing aid (no longer used) where all sounds were simply made louder, usually with some control over "treble" and "bass" tones.
- Audiogram** A record of your hearing test result in a standard form that can be interpreted by trained personnel elsewhere. It describes how the hearing varies with the pitch of sound, and usually includes several tests designed to identify problems other than just reduced hearing sensitivity.
- Battery** All hearing aids need a power source; some batteries may be rechargeable, most are not. Typically hearing aid batteries are of the type known as Zinc-Air batteries. A small tab on the back of battery is removed to allow oxygen to reach the zinc based compounds inside – generating electricity. Once the tab is removed, the battery will start to slowly run down (over about six weeks) even if the hearing aid is switched off.
- Battery Life** The life of a hearing aid battery depends on its size, how hard the hearing aid is working (i.e. how much current is required) and how they have been stored. Smaller batteries, such as size 10, have a typical life of 3 to 5 days. Size 312; 7 to 10 days. Size 13 and 675 usually around 10 to 20 days. Batteries stored in a hot place may degrade faster and, even though still in date, may not perform well. Heat can loosen the glue holding the battery tab in place (see "Battery") leading it to discharge prematurely, even if not being used. Batteries typically have a shelf life of three to four years. Different manufactures of batteries use different techniques; some will perform significantly better than others and some can degrade hearing aid performance. Cheap batteries are not always a "bargain" as a result!
- Battery Size** Batteries come in a range of sizes from small to large - known as 10 (yellow colour), 312 (brown), 13 (orange), 675 (blue). They are not compatible with each other and cannot be interchanged. Smaller batteries generally last for a shorter time, but the hearing aids can be smaller. Some very powerful

hearing aids will also have a short battery life, even though they may use a large battery, as they are working very hard.

Bluetooth Some hearing aids allow direct connection with other devices, such as a mobile phone or TV, via some form of wireless connection (Bluetooth), often via a remote control. For example, you can have a phone conversation via the hearing aids and you hear the caller wirelessly through the hearing aids and speak to them via the hearing aid's microphone or the remote control.

BTE The traditional **Behind-The-Ear** hearing aid. Powerful, easy to clean, good battery life but sometimes large, uncomfortable and not always discreet. Still the best option for very severe hearing losses.

Channels Modern digital hearing aids are able to process and amplify different sounds across the frequency range to give the best result for an individual hearing loss. In order to do this, frequencies are divided up into "channels" and independently programmed.

Concha See ear diagram

CIC Completely-In-the-Canal a style of hearing aid that fits deeply into the ear canal and is nearly invisible. Not suitable for all type of hearing loss.

Cochlea A spiral shaped organ located inside the skull that converts sound waves into nerve impulses. Carries out some processing of the incoming sound before the signal is sent into the nervous system.

Compression Adjusts the range between very soft and very loud sound; more compression means loud sounds are amplified less than quiet sounds – so the range of sound is "compressed". Can increase comfort in noise, but can also distort sound.

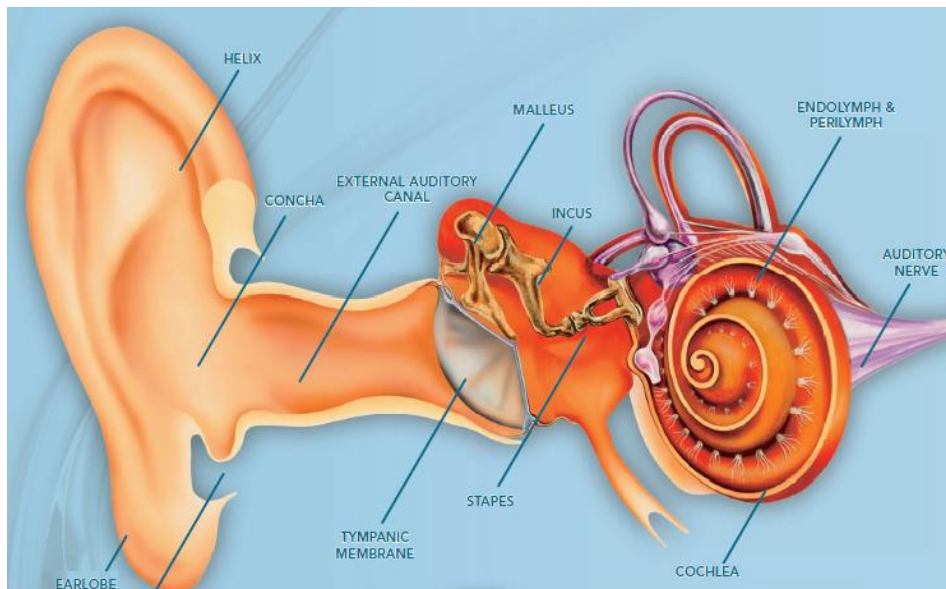
Digital In the case of hearing aids; sound is converted to a series of numbers; these are then processed by the electronics inside the aid to modify the sound; finally they are converted back to sound. A very powerful technique that allows hundreds of changes to be applied in real time. More correctly called Digital Signal Processing.

Directional Microphone See Microphone

Distortion Introduces abnormal variation into the sound; generally something to avoid as it is usually detrimental.

Dynamic range The range between the quietest sound and the loudest sound; can apply to someone's hearing, or to the characteristics of a CD for example.

Ear See diagram below:



Earmould A method for holding a hearing aid in place and for transferring the sound into the ear. Many sizes and shapes are possible but all have an important influence on comfort, performance and sound. Normally applies to a BTE instrument.

Extended Wear All hearing aids are designed to be worn daily for lengthy periods to suit your lifestyle. As such, they are robust instruments which will last for many years.

Feedback Feedback (sometimes referred to as whistling or howling) results where some sound from the loudspeaker finds its way back to the microphone; this is known as a feedback loop. It sounds like a high pitch whistle. Hearing aids produce a powerful output from a loudspeaker than is very close to the microphone (as their size is dictated by the size of the ear and the desire for a discrete product). It is a fundamental property of sound and difficult to overcome; however, finally, modern hearing aids have the computing power to recognise and reduce feedback in all but the most difficult situations. This helps greatly on the telephone and with the Open Fit style of hearing aids that provide the best comfort.

FM System A method for transmitting an external signal, for example, from a microphone at the front of a classroom, directly to a suitably equipped hearing aid.

- Frequency** A measure of the pitch of sound; the higher the pitch, the higher the frequency. Consonants of speech tend to be high pitch and quiet and are often amongst the first sounds to be lost in normal age-related hearing loss.
- Gain** A measure of the amplification provided by a hearing aid; the higher the figure, the more powerful the aid and the more severe the hearing loss it is capable of assisting.
- Helix** See ear diagram
- IIC** Invisible-In-Canal; a new type of CIC hearing aid that fits very deeply inside the ear canal and is virtually invisible. Suitable for average to larger size ear canals with no history of medical problems.
- Inner Ear** The organ of balance and for receiving sounds and transmitting them to the nervous system (see also cochlea).
- ITE** An In-the-Ear hearing aid can be either a *canal*, *half-shell* or *full-shell* style. The smaller *canal* size fits inside the ear canal, the *half* and *full shell* styles either partly or completely fill the concha and helix areas of the ear. The large size allows for more power, longer lasting batteries and easy handling in cases of reduced dexterity or eyesight.
- OTE** See Open Fit
- Open Fit** A small tube conducts sound down from the hearing aid (which sits behind the ear) to the ear canal. More discrete and smaller than a traditional BTE; now often superseded by the more modern and powerful RIC products.
- Output** A measure of the maximum output of a hearing aid; needs to be higher for more severe hearing losses
- Presbycusis** See Age related hearing loss
- Microphone** Picks up sound from all around and sends it to be processed by the hearing aid. Directional microphones (sometimes called twin microphones, but can include more than two) allow a hearing aid to tell where a sound is coming from (i.e. front, back or side) and adjust how the sound is treated as a result.
- Middle Ear** The area behind the ear drum (or tympanic membrane); consists of a chamber containing the three well known bones of the ear (see Ear diagram). Transfers, and amplifies, sound to the cochlea.
- Outer Ear** The outer part of the ear; the earlobe, pinna, helix and so on (see "Ear")
- Programmes** Many digital hearing aids now offer the wearer multiple choices of settings which can be set up by a hearing aid dispenser to suit different environments chosen by the wearer. Each setting option is referred to as a "programme".
- Programming** All digital hearing aids are "programmed" by a hearing aid dispenser to match the wearer's hearing loss. After the initial fitting, hearing aids are often fine-tuned or Re-programmed to match the user's individual requirements.

- Receiver** This is a term for the loudspeaker that delivers sound into the ear (by various means). More powerful hearing aids (for more serious hearing losses) need larger receivers; and must therefore be bigger to accommodate the powerful loudspeakers. This is one reason why very small hearing aids are not for everyone. Technology continues to improve and small hearing aids are getting ever more powerful.
- Remote Control** Many hearing aids are now so small and discreet that it is difficult to adjust them using conventional controls. Most hearing aid manufacturers offer small remote control devices to give much more control of their devices. These remote controls can also be incorporated into your "smart" phone.
- RIC** Receiver-In-the-Canal; the loudspeaker (or receiver) is separate from the body of the hearing aid and is worn inside the ear canal. One of the most modern styles of hearing aid, it allows the aid to be much more powerful, yet be very small and discrete. Suitable for many, but not all, hearing losses.
- Streaming** Some hearing aids are now capable of receiving sound "streamed" from another device such as a television, hifi or telephone. The sound is wirelessly transmitted from the devices allowing you to hear it directly into your hearing aids.
- Telecoil/Loop** A method for transmitting an external signal, for example, from a microphone in front of a bank cashier (who is behind a screen) directly to a hearing aid. Uses a wire installed in the room to transmit the signal to a suitably equipped hearing aid.
- Threshold** Usually refers to the quietest sound that someone can hear – the threshold of their hearing.
- Tinnitus** A sound perceived by someone that does not have an external cause; it originates either in the ear, the brain or the nervous system. Many tinnitus sufferers are helped by wearing hearing aids.
- Vent** Allows a controlled amount of "ventilation" of the ear; allows air flow, minimises moisture build-up, allows pressure changes to equalise and effects the characteristics of how a hearing aid sounds and performs. An important consideration taken into account when an audiologist prescribes a hearing aid.
- Whistling** See "Feedback"
- Wireless** See Bluetooth.