Patient information

Normal hearing test but hearing difficulties

Audiology Department

Introduction

This leaflet has been designed to help patients who are experiencing hearing difficulty but have been told their hearing levels are normal.

It will provide information about why this may happen, what could be causing it and suggest ways to manage these challenges.

Hearing Test

The standard hearing test performed by an audiologist is called Pure Tone Audiometry (PTA). This is where you press a button in response to a beep through headphones in a soundproof room. It measures the quietest sound you can hear at different pitches (frequencies).

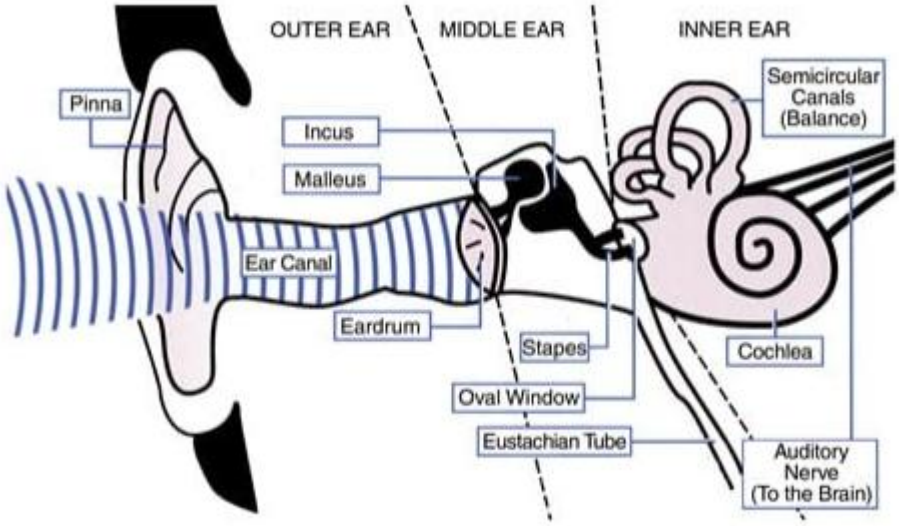
Sometimes you will have been referred for Speech Audiometry. This is a test where you listen to single words via headphones and repeat what you hear. This test measures more of the brain's ability to process sound but will not fully represent your ‘real world’ experience, as it is ear specific, and in a controlled environment.

When you are told that your hearing is ‘normal’ this means you can detect quiet sounds in the normal range and that you do not have a detectable hearing loss. This could leave you feeling frustrated as you are having difficulties with your hearing and may have hoped to find out when the problem was and be offered treatment.

Do I need a hearing aid?

You may know someone with a hearing aid, or family and friends might have told you that you need one. However, as hearing aids are programmed from your test results, which are normal, you will see little or no benefit. In fact, as hearing aids increase the overall volume of sound this will also include the background noise and may make it more difficult to pick out the speech you want to hear.

The Hearing Pathway



Your ear consists of three parts: the outer, middle and inner ear. Soundwaves enter the outer ear and vibrate the eardrum, this moves the three bones in the middle ear which transmits the sounds to the organ of hearing: the cochlea, in the inner ear. From here electrical signals are sent up the hearing nerve to the brain where the signals are interpreted into what we hear as sound.

A normal hearing test tells us that the parts of the ear collecting the sound and sending it to the hearing nerve are working. However, it doesn't tell us of subtle changes such as any 'hidden' damage to the cochlea or how well the nerves and the brain are converting this sound into words.

When a lot of sounds enter the ear, the brain is working hard in 'real-time' to process the information coming in: what the word is, where it is coming from, and filter it out from any background noise. You may find you can detect sound but not necessarily understand it.

Other factors such as how much importance we attribute to the sound will influence how our brain attends to it. For example, you may notice we 'tune in' to overhearing our name in a conversation or the phone ringing, but sounds we hear constantly, such as a fridge humming, or a clock ticking, our brain learns to ignore, and we filter out as background noise.

This is a very complex process, and it helps us make sense of sounds coming from the world around us.

This process is often referred to as auditory processing.

What is a normal level of ‘auditory processing’ difficulty?

As this is a very complex and individual process there is no ‘normal’ level. Most people will find it more difficult to hear in a noisy place, but there will be varying degrees of difficulty. Like how some people are more or less sensitive with other senses processed in the brain, such as smells or tastes, the same applies with hearing.

Sometimes when we notice we don’t hear as well as others might it is easy to focus on it, like we would a sore tooth, or an itch and it comes to the forefront of your attention. Family and friends can unintentionally reinforce this by assuming the problem is yours rather than due to the difficulties in the listening environment.

What could be causing my difficulty in processing sounds?

It is possible you have a disorder with your ear, but there is also the possibility your ears are entirely normal, this can be very difficult to determine.
But it is worth noting there are many things that can affect our concentration and make it more difficult to process information. In our busy lives distractions and over-stimulation can split our attention. Stress and tiredness can make it harder for us to focus on what someone is saying, and the anxiety and mental fatigue of worrying about not being able to hear can then make things worse.

As already mentioned, most people have increased difficulty hearing in the presence of background noise, sometimes called the ‘cocktail party effect’, and we are surrounded by noise in the modern world! Working in open plan offices, with competing conversations, phone calls and machines. Busy environments such as hospitals, factories and noisy classrooms. Many modern restaurants and venues have poor acoustics: high ceilings, hard surfaces, and music.

It may feel natural to want to avoid these noisy situations as they are difficult to hear in, but this can make the issue worse. The more we practice picking out the sounds from the background noise the better we become at it. Also lack of exposure to different voices, words, and expressions means we may be slower to determine the most likely word heard in conversation. The brain uses previous listening experiences to build up a ‘memory bank’ of words and scenarios, to improve its ability to ‘fill in the gaps’ in what we hear. This is often more difficult for children with their limited ‘real world’ experience, and since the covid pandemic when people were socially isolated and often working from home in a quiet environment. Re-adjusting to trying to hear in the presence of background noise may take some practice. Normal ageing of the brain can affect understanding as auditory processes slow down. Keeping up with conversation can become harder as we become less effective at processing speech. Additionally, anything that makes the sound more difficult to understand in general will have a negative effect. You may find listening in a language that is not your first, or if you miss the beginning of a conversation, or are not sure of the topic, it might be harder to ‘catch-up’.

Everyone, even those who don't report any difficulty hearing will mishear things occasionally and find certain situations more difficult than others.

Auditory Processing Disorder

APD is a condition where people have difficulty understanding speech and other sounds, because of the way their brains process sound.

It is not known what causes APD, but it appears to be more common in people who had a high number of ear infections when a child. Perhaps resulting in a slightly different 'wiring' in their brain which means their cells are unable to message each other as effectively as usual. There may be a genetic component, and people with dyspraxia, dyslexia, ADHD or autism may be likely to experience it, but this isn't always the case.

Potential difficulties:

- Identifying where a sound or voice is coming from
- Maintaining attention
- Hearing speech in background noise (eg. in a restaurant)
- Understanding and remembering verbal instructions unless short and simple
- Maintaining concentration with long conversations
- Reading and spelling may be affected
- Distinguishing similar sounds
- Understanding unfamiliar speakers
- Mental fatigue at end of day from straining to follow conversation
- Avoiding social situations due to difficulty in hearing

However, people without APD can also experience similar problems, so if you have some or all of the above difficulties it doesn't necessarily mean you have APD.

Can I be tested for APD?

APD is very challenging to diagnose due to the following reasons:

- The typical symptoms of APD overlap with a range of other disorders
- Although there are tests available to assess auditory processing abilities, there are no nationally accepted tests that we can use to say someone has APD.

We understand it may be frustrating to think you have this condition but not have it confirmed. However, there is no medicine or procedure that can 'cure' APD, and there are no treatments specially funded by the NHS for APD, so having a diagnosis would not affect whether you would have access to the below resources.

The information and advice below are both for people who have suspected APD as well as anyone experiencing daily hearing difficulties.

Practical suggestions you can try to help you hear better

- Explain that you have difficulty hearing.
- Don’t stand too far away from the speaker. 1-2 metres distance is ideal.
- Concentrate on what they are saying and look for expressions and gestures.
- Ask others to speak more slowly, louder or enquire specifically about what you missed. For example, you might say ‘what time did you say we are going out?’
- Instead of asking people to repeat themselves, request that they ‘rephrase’ the statement. Hearing it in different words might help you to understand it better.
- It’s important to remind your family and friends about your needs and not take it personally if they get frustrated.
- Eliminate background noise: turning off the TV during conversations or using headphones for TV or music.
- Keep in mind that in noisy household environments, such as having the kettle, or oven fan on, in the background will make it harder to hear.
- Take notes if you are listening to important information or instructions.
- Listening is tiring so having breaks during the day for relaxation can help.
- Try and stay positive!

Listening environment

You may find changing aspects of the room where you are can help

- Sitting in a corner or against a wall can help, especially in restaurants or open plan offices. Try not to sit near the bar or near a door where you have people constantly walking past.
- Some furnishings can help absorb background noise.
- In meetings or lectures sit near the front or close to the main speaker
- Choose a restaurant with alcoves, or one similar to an old-fashioned tearoom with tablecloth and carpets.
- Avoid sitting near competing noises, like an open window next to a busy road, or a noisy printer.

Tips for family and friends to help you hear better

- Attract your attention before beginning a conversation and talk face-to-face.
- Try to switch off any distractions, such as the TV; or electronic devices such as phones.
- Introduce the topic of conversation early on. For example, ‘we’re talking about…’
- Try not to shout but speak clearly and at a steady pace...
- Remove anything covering the face, such as sunglasses, a cup, or hand.
- Make sure their face is well lit.
- Rephrase if needed rather than repeat.
- Be patient and understanding as communication is a two-way process

Technology and Equipment

There are some devices that may help you hear better; these are called Assistive Listening Devices (ALD's). They are not available on the NHS but can be purchased (and maintained) privately.

- **Remote Microphone Systems.** Wireless devices that can transmit sounds directly from a small microphone (worn by the speaker) into an ear-level receiver worn by the recipient. These devices can be useful in meetings, lectures or restaurants, by reducing the effect of distracting background noise and allowing you to hear the speaker more clearly.

An example of a remote microphone system widely available would be the Phonak Roger Focus II system, suitable for adults and children. Further information and purchasing details can be found on these websites:

https://www.connevans.co.uk/catalogue/1163924/Phonak-Roger-Focus-II-Receiver---bundles-with-transmitter

https://www.phonak.com/en-int/hearing-devices/microphones/roger-focus-ii

- **Hearing loop/telecoil** uses a magnetic field to send sound directly from a microphone into a telecoil receiver when in the presence of a 'loop system'. Traditionally used with hearing aids but can be used with earphones instead.

- **Headphones or earphones** may help when listening to the TV or phone as they help to cut out the background noise and deliver sound to both ears. Some wireless earphones, such as AirPod pro have features such as conversation boost to amplify speech over background noise.

- **Subtitles** on the TV may help you follow the programme more easily.

Applications

- **Speech to Text Apps.** They work by allowing you to read a transcription of everything that is said in a conversation. It can be helpful for group meetings or work situations and is widely available in apps for smartphones and tablets.
- **Voice amplifier Apps.** They may help you hear as you can direct the devices towards the speaker, and you can wear headphones which should block out some of the background noise. Some phones also have a Sound Amplifier in their settings.

You can search and access both free and paid apps available for Apple, Android and other smartphone models via your mobile app store. It is important to remember these apps are being developed all the time and some are designed better than

others. It is recommended you do your own research to decide what might work best for you. These are some online guides you may wish to look at:

https://rnid.org.uk/information-and-support/technology-and-products/speech-to-text-smartphone-apps

https://www.hearinglink.org/technology/useful-apps-for-hearing-loss

This sector is evolving rapidly. Technology using Bluetooth, WIFI, and audio sharing is currently in design to utilise smart-phones, tablets or laptops to deliver sound directly into the ears via headphones/earphones in public places.
See the RNID website for news stories and up-to-date information.

Listening Practice

Listening is a conscious active function and with practice we may be able to do things to improve it. Our hearing pathways can benefit from regular workouts similar to how we can strengthen our muscles through exercise. Auditory training programmes are designed to address specific issues or daily listening practice to improve listening, and concentration can be effective if practiced regularly.

Currently the NHS doesn't supply any formal auditory training programmes, however there are a number that can be purchased privately

These include:

- **The Listening Programme** https//www.learning-solutions.co.uk/the-listening-program - This is a therapeutic music-based listening programme aimed at enchanting listening and learning skills. It involves listening to modified instrumental music through headphones to boost concentration, self-regulation, learning and memory. The program is particularly beneficial for individuals who struggle with background noise or need information or instructions to be repeated.

- **Fast ForWord programme** https://smartprocessing.co.uk/fast-forword - This programme provides cognitive training exercises, presented in the form of games, designed to help improve language, reading, and learning abilities.

- **Listening and Communication Enhancement (LACE)** - LACE is a computer-based auditory training and rehabilitation software designed to improve listening skills. Examples of scenarios include: speech in background noise, rapid speaking, and speaking in a quiet voice. The training consists of 20–30-minute sessions over a period of 20 days.

Please note the LACE programme is being replaced with a new product called LACE AI Pro. This is currently only available in the United States but should be coming to the UK soon. Check this web address for up-to-date information: Lace AI Pro: Better Hearing Starts Here (laceauditorytraining.com)

Wellbeing

Stress, tiredness, physical or mental health issues can negatively impact our listening skills. Focusing on ways to improve these can also help enhance your hearing ability.

You might like to try mindfulness, or relaxation exercises. There are many apps available for these, the most well-known being Calm or Headspace.

Talking therapies (including Cognitive Behavioural Therapy) may help you deal with negative thoughts, feelings and make positive changes. Wellbeing Suffolk is a talking therapies provider you can contact on https://www.wellbeingnands.co.uk or call 0300 123 1503.

Supporting organisations and additional resources:

- **The British Society of Audiology**: www.thebsa.org.uk
- **RNID**: UK charity providing information and support for people who are deaf, have hearing loss or tinnitus. An option to purchase a range of equipment. www.rnid.org.uk 0808 808 0123
- **Connevans**: Equipment provider for Deaf and hard-of-hearing people. https://www.connevans.co.uk
- **Access to Work**: Providing help and support (including equipment) at work. - www.gov.uk/access-to-work
- **Sensing Change**: Provide support with information about hearing loss, communication skills, equipment and technology support. - https://www.sensingchange.org.uk 01473 260030

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