Auditory processing disorder:  
A guide to help your auditory perception

Neuro-otology Department

This booklet has been written by the department of Neuro-otology at the Royal National ENT and Eastman Dental Hospitals. It is intended for use by patients, their family, friends or carers to provide information about auditory processing disorder. It will also tell you how to manage your condition.

Please do not hesitate to contact the department directly if you have any further questions.

If you would like this document in another language or format, or require the services of an interpreter please contact the department directly.

We will do our best to meet your needs.
What is an auditory processing disorder (APD)?
An auditory processing disorder is a hearing disorder which means that the brain does not process sounds in the normal way. ‘Auditory processing’ refers to what happens to sound after it enters the brain.

Normally, hearing starts in the ear. The sounds are broken down here first, and then transmitted to the bottom of the brain (the brain stem). The sound is further analysed, processed and organised before being transmitted to the top of the brain (the cortex). When sound reaches the cortex it is recognised and meaningfully interpreted.

An APD may affect the listener’s ability to:
• localise (or pinpoint) a sound
• tell which sound comes before another
• tell two sounds apart
• distinguish one sound from another

People may experience listening difficulties with speech or non-speech sounds. They may also have a poor memory for sounds. APD is recognised by the World Health Organisation (International Classification of Diseases code H93.25.)

What causes APD?
There are many causes of APD. In children it can be caused by ‘glue ear’, or a severe illness at birth, epilepsy and some developmental disorders.

It may be present in adults who have suffered a head injury, stroke, or other brain injury. APD may develop later in life because of age related changes in the brain.

Sometimes adults may have an APD since childhood.

What are the symptoms of APD?
People suffering from APD are not able to recognise the subtle differences of sounds in words. As a result they may have difficulties understanding speech when there is background noise, or if more than one person is speaking at a time.

They may also have difficulties with:
• rapid speech
• ‘degraded’ speech (such as heard over a mobile phone, loudspeaker or in an “echoey” room)
• following spoken, multiple step instructions.
• APD affects the ability to appreciate music and adults with APD may not enjoy music as much as they used to. Children with APD may be inattentive and highly distractible and have difficulty with reading, spelling or other academic activity.

People with APD often report that others may find them slow or uncooperative and as a result their self confidence or mood may be affected. Awareness of APD amongst health professionals is improving.
How is APD diagnosed?

APD is diagnosed by performing specific tests, such as:

- **Hearing tests:** Patients are asked to respond to a certain sound to assess different parts of the hearing pathway.
- **Electrophysiological tests:** Sensors are placed on the skin to measure the brain's response to sound.
- **Other tests:** These may include psychological, cognitive, and speech and language assessments. We may also ask you to complete some questionnaires to help identify your needs.

How is APD managed?

The first step is to fully explain what is causing the symptoms and the results of the tests. There are three main areas for managing APD, these are:

**a) Environmental modifications**

This means making changes to the environment or the sound signal to improve the quality of the sound signal when it reaches the ear of the listener. For example, thick carpets in a room will absorb noise.

**b) Signal enhancement strategies**

These are changes to the sound signal which aim to improve the quality of the sound signal when it reaches the ear of the listener.

For example, asking someone to speak clearly, speak more slowly and to intonate well. Another strategy may be to use a special listening device. This consists of an ear piece that the listener wears and a microphone that the speaker uses (these are connected without wires). This device can transfer the speaker's voice to the listener's ear more accurately.

**c) Auditory training**

These are special exercises to train the brain to analyse sound better. These exercises should be practised regularly for the best results.

**d) Other compensatory strategies**

These make use of other resources and strategies of the brain. Therapists and professionals such as a hearing therapist, a psychologist, speech and language therapist or an occupational therapist may be able to help with these.
I have been diagnosed with APD. What can I do to help?

Your medical professional will advise you on the auditory training that is right for you. You can do this on your own, with the help of a CD or another professional such as a Speech and Language Therapist or a Hearing Therapist.

It is very important to do this training consistently, as your doctor has advised. It is also important to be able to understand your hearing difficulties and take some simple measures to help. The following can help:

Explain and educate
Communication is a two-way process. Your friends, family and others may not understand your hearing difficulties, or how to improve communication with you. Therefore:

- discuss your hearing difficulties with them (ask them to read this booklet if possible)
- they should get your attention before they start talking to you
- they should speak clearly and (a little) slowly
- they should emphasize their speech to highlight the key points of the message
- they should repeat or rephrase the message, and use additional visual or other cues

You may find it helpful to see a hearing therapist with your partner or family.

Be aware of room acoustics and how they affect you
Rooms with hard surfaces (such as hard tiles on the floor, walls and ceilings) will cause “echoes”. These rooms have poor acoustics and will make it more difficult for you to hear. Rooms with carpets, soft furniture and cushions, heavy curtains and acoustic ceiling tiles are best for your hearing. Where possible choose a room with good acoustics for meetings.

Minimise background noise
Switch off any radios or televisions; move away from any windows overlooking a busy road, fans, air conditioners or other noisy devices.

Localisation
Focus on the person speaking to you if you are in a crowded room. This will help you ‘localise’ and orient your hearing and visual systems to pick up on important cues.

Position
Position yourself directly in front of the person speaking to you. If you are talking, position yourself so that the person you are talking to is closer to any noise source than you.

Ask others:
- Not to cover their mouths when they are speaking to you. Explain to them that you need to see their face and mouth when they are talking, as this will help you to understand their speech better.
- To repeat, speak up or speak more slowly if you don’t understand what they are saying. Do this as soon as you realise you are not following the conversation. If you feel you are not following the conversation, stop the speaker and say, “please speak up / speak slower because I can’t hear you well”.
  Do not wait until you are into a lengthy conversation or the conversation is almost finished.
- To write down information that is extremely important such as directions, telephone numbers or schedules.
Concentrate and watch very carefully
When someone is talking to you:

• tell which sound comes before another. Give them your full attention. If someone else
  approaches you during a conversation, stop the conversation and ask them to wait until
  you are finished.

• Concentrate on key words.

• Watch gestures and facial movements very closely. This will help fill in the gaps with visual
  cues for things that you may miss or not quite understand.

Avoid
Being late for meetings. If possible, arrive early and position yourself close to the speaker.
If you are going to be late, ask someone to summarise what has happened so you get a good
idea of what is going on.

Telephone Conversations
Hold the receiver as close to your ear as possible (without blocking your ear). It should be
tight enough so that it covers the ear and keeps out other sounds. Foam rubber placed around
the outside of the receiver (which can fit over your ear and next to your head) can help reduce
background noise.

When using a mobile telephone it may be helpful to hear with both ears by using earphones
provided.

Where can I get more information?
www.apduk.org/

UCL Hospitals cannot accept responsibility for information provided by external organisations.

PALS – If you have any concerns
PALS is a patient-friendly, easy to access service designed to provide a personal contact point to
assist patients, relatives and carers. If you have a problem that you have not been able to sort
out we can help you to resolve it.

The PALS office is located in the main atrium of University College Hospital, 235 Euston Road,
London, NW1 2BU.

PALS are open: Monday to Friday: 10:00 till 16:00
Telephone: 020 3447 3042
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If you need a large print, audio, braille, easy read, age-friendly or translated copy of the document, please contact us on:
Telephone: 020 3456 5076.
We will try our best to meet your needs.

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Huntley Street is close to Euston, Warren Street and Goodge Street Underground Stations and there are bus stops nearby.