



Auditory Processing Disorder

What is Auditory Processing Disorder (APD)?

Auditory Processing Disorder (APD) is a hearing disorder in which the ears process sound normally but the hearing centres and circuits of the brain don't correctly process incoming information. Sounds are jumbled during neural processing (in the brain).

People with APD do not have a sensory hearing loss¹ so APD cannot be identified from a regular hearing test but requires specialised assessments.

How does Auditory Processing Disorder (APD) affect learning?

People with APD may have difficulty hearing a single voice in noisy situations or understanding spoken information in difficult listening situations or when the information is not brief and clear. APD can also affect the clarity of the sound heard by the student.

Little research has been completed to date that looks specifically at the effect of APD on learning outcomes. The research evidence gathered so far shows that APD often occurs along with a variety of learning difficulties. It is not yet clear if the learning difficulties are directly caused by the APD or if APD is one part of a range of difficulties experienced by some learners.

What is clear is that learners with severe APD will struggle to hear the teacher's voice in many classroom situations and are likely to miss whole class instructions much of the time. Further, and more importantly, learners with severe APD will struggle to hear even in smaller group situations if there is background noise.

How do I know if a student has APD or they are just not listening?

APD can only be diagnosed by a specialised paediatric audiologist but there are some factors to help you decide if a referral to a specialist is appropriate.

As with many conditions a student may have mild or severe APD. Some students will be on the margin between normal auditory processing and having APD.

Students with APD will miss both highly rewarding instructions as well as instructions that they may wish to avoid. If there are any concerns about APD and/or attention, formal assessment is recommended.

If a learner has APD they may:

- miss class instructions and have to watch or ask others what to do after instructions are given
- ask for instructions to be repeated even though they appeared to be focused and trying to listen the first time
- have difficulty retaining information when it is only given verbally
- appear overwhelmed in noisy situations especially when there are a lot of different noises at the same time.

APD often coexists with other learning difficulties and can have similar presentations. For this reason it can sometimes be difficult to identify the cause of learning difficulties.

¹ Children with hearing loss may also have poor auditory processing, however, the term APD is not used for these cases

What school and classroom strategies can help students to hear?

Students diagnosed with APD need more help than can be offered by improving classroom acoustics, but for some students mild to moderate difficulty hearing, simple changes can be useful.

Poor acoustics can greatly influence learning, particularly for young children. Many older-style classrooms have poor acoustics.

The Ministry of Education provides a [Innovative Learning Environment tool](#) and encourages boards of trustees to self-assess classrooms and judge whether their acoustic performance needs to be improved. Improvements, such as installing acoustic ceiling tiles and acoustic wall linings, can then be carried out.

The board of trustees can use the property grant to install classroom sound field systems. These systems distribute the teacher's voice throughout the classroom (via speakers) and can benefit a number of students by improving the level of the teacher's voice relative to background noise at the student's location in the classroom.

There are also a number of classroom strategies that can support an individual student who has some difficulty with auditory processing. These include:

- seating the student to minimise background noise, such as away from fans, computers, heaters and road traffic
- checking that the teacher's voice is clearly heard at the student's location in the classroom
- taking care to gain the student's attention before giving verbal instructions (e.g. "whakarongo mai")
- giving clear, well spoken instructions (e.g. speak at the pace of a news reader, but also use intonation and pauses to help convey the message)
- giving short snippets of information if possible rather than longer and more complex multi-step instructions
- checking students' understanding by asking them to rephrase
- presenting verbal information in at least one other format to support comprehension, such

as by adding images, written instructions, graphic organisers or multimedia presentations

- teaching and reinforcing the learning of specific listening skills and behaviours, such as active listening, questioning, restating
- allocating a peer or buddy to support the student with listening difficulties and encouraging them to use the buddy to check their understanding of tasks and instructions.
- using other teaching strategies such as pre-teaching vocabulary, providing keywords and allowing time for students to process spoken information.

What should I do if I suspect a student has APD?

APD can only be diagnosed by a specialised paediatric audiologist. Before this step is taken it is important to have a standard hearing test to make sure that the learner does not have a sensory (peripheral) hearing loss.

If the standard hearing test shows normal hearing but you suspect that a learner is having difficulty with auditory processing it may be useful to keep a log or diary to track specific instances that concern you. You could also ask others to do the same so that you can see if this problem occurs in multiple environments or is specific to one situation.

If APD is still suspected the family should make a referral to a qualified audiologist for a full auditory processing assessment. If diagnosis is confirmed the audiologist will recommend a range of management strategies to help the student to develop their auditory processing skills.

What support is available through the Ministry of Education?

The Ministry provides specialist support based on learners' individual educational needs. There are Ministry of Education initiatives and services available to those with high levels of need.

A medical diagnosis of APD alone will not automatically result in the allocation of additional learning support.

Staff support

If a student with APD is identified by their school as having additional learning needs, the school can allocate extra resources to support them.

This support could be directly from the school or through other initiatives such as Resource Teachers Learning and Behaviour (RTLB) or speech language therapy.

Specialist assistive technology

In severe cases, students with significant learning needs who are diagnosed with APD may be advised by their audiologist to trial a personal frequency-modulation (FM) system (also called remote microphone hearing aids) to see if it will make a difference for them in classroom situations. FM systems should be considered as a part of a comprehensive management plan and not as the sole management strategy for students with APD.

Personal FM listening devices allow learners to hear one voice (via a microphone) directly into their ears (through an FM receiver). This is different from a classroom sound field system that distributes sounds throughout the room via speakers.

The personal FM system can only receive one voice at a time so does not help with general hearing. Modern personal FM systems do not block the ear so the student can hear other students speaking in the classroom in the normal way, but the teacher wearing the microphone will be the most audible. These systems are only useful for hearing when there is only one primary speaker. This includes situations such as whole class and group teaching or during formal discussions or speeches.

Eligibility for specialist assistive technology

The personal FM system is allocated under the Ministry's assistive technology initiative only when the learner needs this support to overcome specific barriers to learning. If a student with a diagnosis of APD is learning well, they will not be eligible for this Ministry of Education support.

To be eligible for consideration of a personal FM system under the assistive technology initiative, individual learners must:

- have a formal diagnosis of APD from a specialised paediatric audiologist²
- be receiving support to address their learning needs through one of the Ministry's initiatives (see below)
- show that the use of an FM system makes a difference to their learning outcomes.

Retrospective funding is not available.

Eligibility through ministry initiatives

Students are eligible to apply for assistive technology through one of the following education initiatives:

- Ongoing Resourcing Scheme (ORS)
- Speech-Language (Communication) Initiative
- Resource Teachers: Learning and Behaviour (RTLB)
- The Special Education Grant (SEG). This option is only used if the student is not eligible under any other initiative. To be eligible under SEG, the student must:
 - have a current IEP
 - be receiving 2.5 hours (individual) or 4 hours (small group) of teacher's aide support each week
 - be supported by the school SENCO
 - have had SEG support (as per above three bullet points) in place for a minimum of 3 months.

In addition the student must be:

- enrolled in a registered school (compulsory education) or formally exempted from school
- aged between five and 19 years (or up to the end of the year in which they turn 21 if they have an individual agreement with the Ministry of Education such as a section 9 special education agreement).

Once you are sure the student is eligible please contact your local District Technology Coordinator to ensure that an application to the Ministry of Education is appropriate.

² If a formal diagnosis cannot be made because the student is under 7 years of age or they have other disabilities that mean diagnosis is impossible please contact your Regional Technology Coordinator for advice.

Trial

A trial of a personal FM system is undertaken to see what difference the FM system makes to learning behaviours and outcomes. The school based trial does not test hearing. The trial may be arranged by school staff or an audiologist but always includes the school team. The school team will include the teacher, specialist support staff (such as the RTL, ORS teacher, SENCO) and any other ministry staff if relevant.

Schools who wish to initiate a trial for an eligible student should contact their local Ministry office for support to fit the trial FM system and set up data collection systems.

Before the trial the team will identify the learning behaviours they expect the FM system to support. During the trial, school staff will monitor use of the equipment and the targeted learning behaviours to see what difference the FM system is making for the student. In cases where APD specifically affects speech discrimination in noise, it is likely that changes in learning behaviours will be evident immediately.

Trial lengths are usually between two weeks and one month but longer trials are sometimes necessary to ensure that the technology is being used well to show accurate listening benefit and results. If no significant changes to the targeted learning behaviours are noted after the trial period the learner may not meet the Ministry of Education funding criteria.

Application

If the trial is successful, an assistive technology application is completed so that a personal FM system can be allocated to the school to support the individual student.

Can I use the FM at home?

Items allocated through the Ministry's assistive technology service are allocated to, and owned, by the school. FM systems can go home as long as the school principal agrees.

Each school has insurance cover to at least the equivalent level of that provided by the Ministry of

Education's 'Risk Management Scheme for School Contents' policy. This insurance policy covers all assistive technology while it is being used for educational purposes at school as well as off-site, in transit and at home.

The principal may also make an agreement with parents about the responsibilities for the care and safety of equipment when it is at home. This is more likely if the items have previously been lost or broken at home and have been replaced.

Please refer to our [insurance and repairs fact sheet](#) for more information about the Ministry's ongoing support in case of loss or damage.

Transitions

Students with FM systems who are changing schools, should take their technology with them.

The transition should be planned and completed so that information about the purpose of the technology and the way it is used is shared with the new school. With permission from the family/whānau, this might include specific examples of the purpose and use of the assistive technology shared between teams.

- a written report and copy of the assistive technology application shared between schools
- a meeting between the teams at the old and new school where information is shared
- a video or multimedia presentation prepared by the student or team explaining assistive technology need and use

For more ideas and resources see the [Inclusive Education Online Knowledge Centre guide - managing times of change](#).

More information

If you have any queries or need advice on an individual case please contact your local Ministry district technology coordinator.

Thanks to audiologists Suzanne Purdy and Anne Greville who peer reviewed this fact sheet and provided specialist information about audiologist assessments and APD.