

NEW ZEALAND GUIDELINES ON AUDITORY PROCESSING DISORDER 2019: SUMMARY FOR PROFESSIONALS IN EDUCATION, SPEECH-LANGUAGE AND PSYCHOLOGY

Definition and prevalence

Auditory processing disorder (APD) is a generic term for hearing disorders that result from atypical processing of auditory information in the brain. The symptoms of APD bear many similarities to other types of hearing disorder, but APD differs in that it is not detected by standard hearing tests. APD can affect learning and academic achievement, psychosocial development, participation, and career opportunities. The overall prevalence in children in New Zealand is estimated at 6.2%, with higher rates in some populations.

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Behavioural Manifestations

The following behavioural signs, in the absence of other hearing disorder, may indicate the presence of APD:

- poor oral comprehension, for example, difficulty following spoken instructions unless brief and simple
- difficulty understanding speech in competition, for example, in the presence of other talkers or background noise
- slowness in processing and responding to auditory information
- poor ability to interpret prosody cues that convey emotion, humour, and nuances of meaning in speech
- poor listening skills, difficulty maintaining attention on auditory tasks
- poor auditory memory
- heightened sensitivity to loud sounds and noise.

Secondary difficulties associated with APD may include:

- speech and language delay/disorder including difficulties with phonological and phonemic awareness
- academic difficulties, including reading, spelling, and/or learning problems
- psychosocial difficulties
- exhaustion after school from listening effort.

The Teacher Evaluation of Auditory Performance (TEAP) questionnaire (Appendix 3, New Zealand Guidelines

on Auditory Processing Disorder 2019) is a quick and useful tool for teachers to assess hearing and listening problems in children. Referral for audiological assessment is advised if APD is suspected.

Conditions that can commonly occur with APD

APD frequently occurs with developmental language disorder and reading disorder/dyslexia. There is growing evidence that APD may be an underlying cause in these frequently associated conditions, especially dyslexia. Poor phonological perception, a common consequence of APD, is implicated as an underlying cause of dyslexia. APD commonly occurs with autism spectrum disorder, and is sometimes seen as a co-existing disorder with attention deficit (hyperactivity) disorder. APD can be a consequence of auditory deprivation secondary to middle ear infections during critical early developmental periods.

APD frequently co-occurs with language and reading disorders including dyslexia and may be an underlying cause in these conditions.

Diagnosis

APD is diagnosed by audiologists using specialised audiological tests as recommended in the Guidelines (New Zealand Guidelines on Auditory Processing Disorder, 2019). Teacher assessment of hearing ability in the classroom provides invaluable input to the diagnostic process. Assessments of cognitive, learning, and language abilities by relevant professionals are also required as part of an APD assessment in order to rule out or allow for potential confounding effects on audiological test results. Early detection of auditory processing difficulties and subsequent early intervention are recommended. The Guidelines encourage APD testing below the traditional age of seven years, using validated assessment tools developed for younger children.

Management

Management of APD is best carried out by a multi-disciplinary team. Speech-language therapists (SLTs), teachers, learning support personnel, psychologists, and other professionals may need to be involved in treatment along with audiologists.

Management of APD includes treatment of the APD; treatment of accompanying or consequential effects such as language disorder, phonological and reading problems, and coping difficulties; further referral if required; and the provision of information and support.

Treatment

The three main recommended approaches to treatment are **amplification with remote microphone hearing aid systems (RMHAs), auditory training** with selected evidence-based programmes, and **language therapy** including phonological processing therapy.

Audiologists carry out most auditory training, and prescribe and fit hearing aids including RMHAs. RMHAs consist of a wireless microphone worn by the speaker (e.g., parent, teacher, coach, friend) and wireless receiver hearing aids worn by the child. The Guidelines recommend that the fitting and verification of RMHAs is always carried out by a qualified audiologist with real ear measurement equipment and functional (behavioural) verification of fittings, and that fittings are reviewed annually. RMHA fittings to both ears are essential to prevent causing amblyaudia (“lazy ear”) resulting from lesser stimulation to one ear. RMHAs dramatically improve ability to hear in difficult listening situations including classroom environments and multiple life situations outside school. Improvements are seen in attention, participation, academic achievement, phonological awareness, reading, and social adjustment. Use of RMHAs has been shown to reduce classroom stress in children with autism spectrum disorder. Also, over time, the mild amplification engenders neuroplastic change in the auditory parts of the brain, leading to improvement in hearing abilities. Consequently, assistive hearing technology is not usually required long term. Two to three years of use is common. Teacher cooperation and support from Advisors on Deaf Children or other education personnel trained in APD are critical factors in achieving success with the use of remote microphone hearing technology in schools.

Auditory training may be used to treat specific auditory deficits such as amblyaudia and difficulty hearing in noise. Phonological processing therapy should be provided to children with difficulties in this area. A suggested approach is provided in Appendix 5 of the Guidelines. SLTs, reading and learning disability specialists, and teachers frequently help children needing extra assistance with phonics skills and

phonological awareness. Language therapy may need to be provided by an SLT, and phonological perception and phonemic awareness training may need to be provided by an SLT or education personnel. Psychologists may need to be involved in cases where there are additional learning difficulties or when psychosocial effects of APD are severe.

Management includes treatment of accompanying or consequential effects such as language disorder, phonological and reading problems, and coping difficulties.

Alternative purported APD treatments offered by providers without audiological qualifications, involving listening to processed music, lack scientific basis and a credible body of peer-reviewed evidence and are not endorsed by professional organisations. Conversely, formal musical instrument (including voice) training is beneficial for auditory processing skills.

Strategies to assist at school

Basic strategies to assist children with APD in school include:

- placement close to the teacher (within about two meters) unless remote microphone hearing aids are worn
- gain the child's attention before speaking and face the child when speaking
- use of clear speech by the teacher at a slightly reduced rate and slightly raised volume
- limit noise and visual distractions
- repeat or rephrase as needed and ensure message has been understood
- schedule breaks between listening intensive tasks
- brief, clear, and simple teaching instructions with verification that the instructions have been understood
- a hearing buddy beside the child with APD to assist in explaining instructions
- complementary aids such as visual materials to support oral communication, including pre-teaching materials and written instructions
- special accommodation for assignments and tests if necessary.

Summarised from:

Keith, W. J., Purdy, S. C., Baily, M. R., & Kay, F. M. (2019). *New Zealand Guidelines on Auditory Processing Disorder*. New Zealand Audiological Society. <https://www.audiology.org.nz/>

The New Zealand Guidelines on Auditory Processing Disorder are located on the New Zealand Audiological Society website under Menu/For the Public/Other Hearing Conditions/Auditory Processing Disorder or can be downloaded from the following link. [NZ APD GUIDELINES 2019](#)
