



Topic Exploration Report ¹

Topic explorations are designed to provide a high-level briefing on new topics submitted for consideration by Health Technology Wales. The main objectives of this report are to:

- Determine the quantity of evidence available for a technology of interest.
- Identify any gaps in the evidence.
- Inform decisions on topics that warrant fuller assessment by Health Technology Wales (HTW).

Topic exploration report number	TER543
Topic	Auditory Verbal Therapy
Summary of findings	<p>As of 2022, approximately 2,329 children ages 0-19 in Wales are deaf and hard of hearing. For these children, it may be more challenging to develop communication skills than for their hearing peers. Auditory verbal therapy (AVT) is an early-intervention therapy that focuses on the development of communication skills for children with hearing aids or implants. AVT may be effective in maximising the child's ability to listen to and understand spoken language.</p> <p>Health Technology Wales identified five systematic reviews and one randomised case-control study on the effectiveness of auditory verbal therapy for children who are deaf and hard of hearing. Findings suggests that AVT may have a positive affect on the development of communication skills, but many of the studies identified note a lack of randomised, controlled evidence that prevents generalisability of findings.</p> <p>Areas of uncertainty include whether AVT is currently used in NHS Wales, how AVT would fit in to the care pathways for children who are deaf and hard of hearing, and concerns regarding the lack of controlled studies.</p>

¹ [Cyfieithu dogfennau HTW wedi'u cyhoeddi o'r Saesneg i'r Gymraeg](#)
Translation of published technical HTW documents from English into Welsh

Introduction and aims

As of 2022, there are approximately 2,329 deaf children aged 0-19 years old in Wales. It may be more challenging for children who are deaf and hard of hearing to learn communication, but with the right support, they can learn to communicate as effectively as hearing children.

Auditory verbal therapy (AVT) is a specialist early intervention therapy that focuses on development of auditory and verbal skills for young children (0-5 years old) who are deaf and hard of hearing that use hearing technology such as cochlear implants or hearing aids. AVT aims to support this development through play-based therapy sessions, which are usually delivered weekly and administered by a speech and language therapist who focuses on the child's listening skills for the duration of the session. AVT may be effective in maximising the child's ability to listen to and understand spoken language.

Health Technology Wales researchers searched for evidence on the clinical and cost-effectiveness of auditory verbal therapy for young children who are deaf and hard of hearing.

Evidence overview

Guidance

HTW were unable to identify any relevant UK and international guidance for auditory verbal therapy.

Secondary Evidence

A systematic review by Noel, et al (2023) evaluated the efficacy of AVT in children with cochlear implants, measured by auditory performance. 19 studies were included, with data from 2,767 participants. The review identified statistically substantial improvements in auditory skills, but the evidence base was comprised mostly of retrospective and prospective studies, with no randomised controlled trials (RCTs) identified.

A systematic review by Casoojee, et al (2021) evaluated the speech, language, and scholastic outcomes of deaf and heard of hearing children enrolled in AVT interventions. Twelve articles were included, with data from 2,349 participants. The review identified a limited evidence base, and authors were unable to conclude whether AVT positively affects speech, language, and scholastic outcomes in deaf and hard of hearing children.

A systematic review by Binos, et al (2021) evaluated the effectiveness of AVT for children with cochlear implants (CI). Eight articles were included, with data from 756 participants. The authors reported that children who receive AVT can achieve linguistic skills on par with their hearing peers, with positive effects observed for voice quality and limited evidence of benefit for speaking skills. The review concludes that AVT can be seen as the best clinical practice for children with cochlear implants, but authors note an overall lack of well-controlled studies.

A systematic review by Kaipa (2016) evaluated the efficacy of AVT in developing spoken language skills in deaf and hard of hearing children. Fourteen articles were included, with data from 355 participants. The authors noted that while current evidence suggests that AVT has a positive impact on developing the speech and language skills of children who are deaf and hard of hearing, findings are not generalisable due to limited evidence.

Evidence overview

A systematic review by Brennan-Jones, et al (2014) evaluated the effectiveness of AVT in promoting spoken language development in deaf and hard of hearing children. The authors were unable to identify any randomised controlled trials suitable for inclusion in the review and were therefore unable to draw any conclusions regarding the effectiveness of AVT for children with permanent hearing impairment.

Primary Evidence

A randomised case-control study by Ashori (2022) evaluated the impact of AVT on executive functions in children with cochlear implants. Data from 36 participants were included, plus their mothers. Participants in the study group (n=18) received 20 sessions of AVT in a 10-week period, while those in the control group (n=18) did not. The mothers of all participants filled out the Behaviour Rating Inventory of Executive Function Pre-school Version (BRIEF-P) before and after the intervention was delivered. The study reported a moderate improvement in scores of executive function subscales post-intervention. The authors concluded that AVT may lead to improved speech performance and cognitive ability and may enhance executive function for children with cochlear implants.

Areas of uncertainty

Areas of uncertainty include:

- Whether AVT is currently delivered in NHS Wales
- How AVT fits in to the current care pathways for children who are deaf and hard of hearing
- Whether there is sufficient evidence to judge the effectiveness of AVT, given the lack of randomised controlled trials.

Literature search results

Health technology assessments and guidance	
No evidence found.	
Evidence reviews and economic evaluations	
Binos P, Nirgianaki E, Psillas G. (2021). How Effective Is Auditory-Verbal Therapy (AVT) for Building Language Development of Children with Cochlear Implants? A Systematic Review. <i>Life (Basel)</i> . 11(3). doi: 10.3390/life11030239	
Brennan-Jones CG, White J, Rush RW, et al. (2014). Auditory-verbal therapy for promoting spoken language development in children with permanent hearing impairments. <i>Cochrane Database Syst Rev</i> . 2014(3): CD010100. doi: 10.1002/14651858.CD010100.pub2	
Casoojee A, Kanji A, Khoza-Shangase K. (2021). Therapeutic approaches to early intervention in audiology: A systematic review. <i>Int J Pediatr Otorhinolaryngol</i> . 150: 110918. doi: 10.1016/j.ijporl.2021.110918	
Kaipa R, Danser ML. (2016). Efficacy of auditory-verbal therapy in children with hearing impairment: A systematic review from 1993 to 2015. <i>Int J Pediatr Otorhinolaryngol</i> . 86: 124-34. doi: 10.1016/j.ijporl.2016.04.033	
Noel A, Manikandan M, Kumar P. (2023). Efficacy of auditory verbal therapy in children with cochlear implantation based on auditory performance - A systematic review. <i>Cochlear Implants Int</i> . 24(1): 43-53. doi: 10.1080/14670100.2022.2141418	
Individual studies	
Ashori M. (2022). Impact of Auditory-Verbal Therapy on executive functions in children with Cochlear Implants. <i>J Otol</i> . 17(3): 130-5. doi: 10.1016/j.joto.2022.04.002	

Date of search	23/05/24
Concepts used	Auditory verbal therapy, AVT, cochlear implant, hearing impairment, audiology

Proposed research question and evidence selection criteria (if selected)

Proposed Research question	What is the clinical and cost-effectiveness of auditory verbal therapy (AVT) for children who are deaf and hard of hearing?
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	Inclusion criteria	Exclusion criteria
Population	Children ages 0-5 years who are deaf or hard of hearing who have hearing aids or implants	
Intervention	Auditory verbal therapy	
Comparison/Comparators	Standard practice	
Outcome measures	Development of linguistic skills (auditory and verbal) Scholastic outcomes Health related QoL Resource use Economic outcomes	

Proposed speciality	
Proposed specialities	Paediatrics, physical disability