

Building Foundations: The Vital Role of Audiology in Auditory-Verbal Therapy and Collaborative Care for Children with Hearing Loss

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Hear and Say

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- Early Intervention
- Diagnostic Audiology
- Cochlear Implant Program
- School Support Programs
- Group Social Skills Programs
- Speech Pathology
- Adult Intervention
- Research
- Professional Training

Learning Objectives



Participants will be able to:

- 1. Describe the foundational role of audiology in AVT** and how it supports optimal listening and spoken language outcomes in children with hearing loss.
- 2. Explain the principles of A-V therapy**, including how audiological management (e.g., hearing aids, cochlear implants) directly impacts therapy success.
- 3. Identify key components of effective collaboration** between audiologists, listening and spoken language specialists, educators, other related professionals, and families in family-centred care.

Learning Objectives



4. Evaluate the importance of **early and ongoing audiological intervention**, including diagnostic assessments, device fitting, and monitoring for maximising auditory access.

5. **Understand the role of speech acoustics** in auditory access, speech perception, and A-V therapy.

6. Recognise **common challenges** and solutions in interdisciplinary collaboration.

7. Interpret **case examples** that illustrate how collaborative care leads to improved developmental and communicative outcomes for children with hearing loss.

What is Collaborative Care?



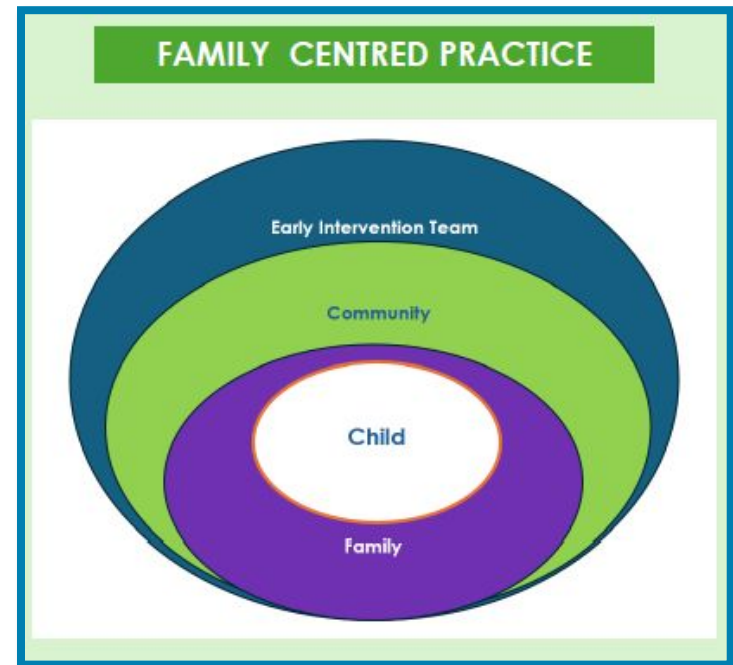
Collaborative care is:

- a structured, goal-oriented, and family-driven approach that aligns multiple disciplines to support the child's development
- It is more than just working alongside other professionals



Collaborative Care Model

- A coordinated, family-centred approach integrating professionals and parents.
- Shared goals, clear roles, and mutual respect across disciplines.
- Often a case manager or key worker
- Families are active partners in therapy and decision-making.
- Guided by clinical governance, evidence-based practice, and regular outcome monitoring.
- Supports continuous learning, shared knowledge, and job satisfaction.



Clinical Governance



- Clear policies and procedures.
- Consistent outcome measures and progress tracking.
- Regular team meetings including case discussions and planning.
- Risk management strategies that support a positive, proactive team culture.
- Ensures every team member, including parents, understands the child's goals and progress.



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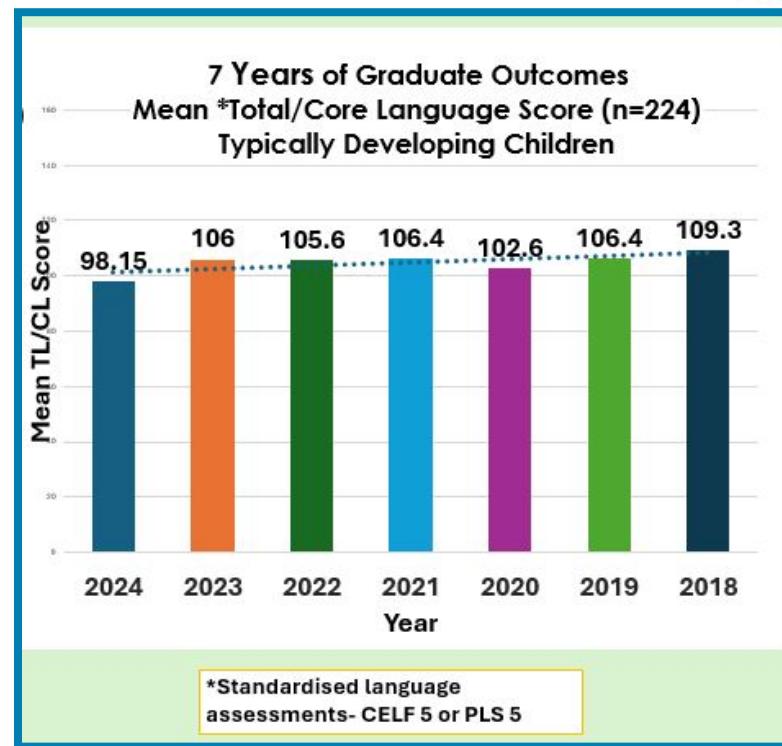
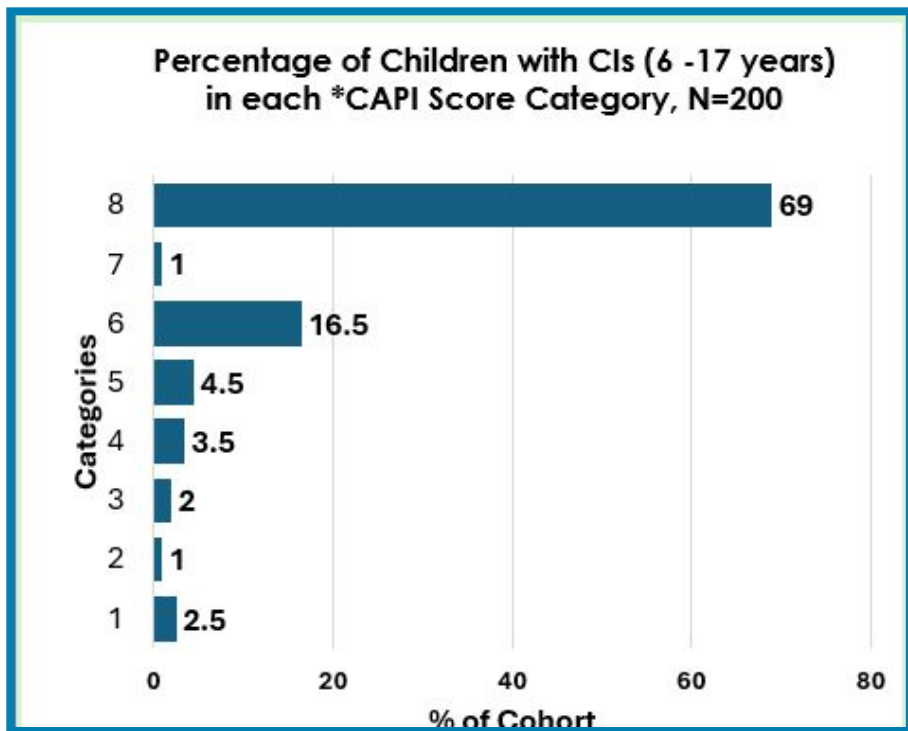
Individual Education Plan (IEP)

Nine areas of development:

- Audition
- Early Communication
- Language
- Speech
- Early Literacy
- Cognition
- Social Interaction
- Fine Motor
- Gross Motor

Category	Goal	Date Achieved	Comments
Audition	Wears hearing aids/cochlear implants for all waking hours		
Audition	Indicates when hearing aids/cochlear implants/FM system are not working		
Audition	Is aware of hearing aid feedback		
Audition	Demonstrates spontaneous awareness of sound (responds to noisemakers, environmental sounds and speech sounds without his/her attention being directed towards the sound)		
Audition	Demonstrates awareness of sound by making a conditioned response (looks to spinning toy upon hearing <i>round and round</i>)		
Audition	Responds to music/singing by dancing, singing or clapping		
Audition	Attempts to localize sounds/voice (turns towards sound/voice)		
Audition	Listens to singing or talking for several minutes		
Audition	Understands that some things do not make a sound		

Outcome Measure Examples



Audiologist + AVT Collaboration

Audiologist collaboration with AVT is critical for listening and spoken language development and success.



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The Foundational Role of Audiology in AVT



- Ensures optimal access to sound through technology (e.g., hearing aids, cochlear implants).
- Accurate diagnosis and ongoing hearing assessments guide therapy planning.
- Collaborates with AVTs to monitor hearing and device performance- this is a partnership.
- Regular hearing checks and device programming are critical.
- Supports spoken language through consistent auditory access
- Audiological management is individualised and family-centered.



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Principles of A-V Practice



- Focuses on developing listening and spoken language skills.
- Emphasises auditory input over visual cues (no signing/lip reading).
- State of the art hearing technology.
- Early intervention is essential.
- Guiding and coaching parents.
- Parents are primary language facilitators.
- Sessions are family-centered and goal-oriented.



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Effective Collaboration in Family-Centred Care



- Shared goals centered on the child's listening and spoken language outcomes.
- Open, ongoing communication among professionals and with the family.
- Respect for family priorities, values, and cultural context.
- Defined roles and responsibilities within the care team.
- Coordinated service planning and information sharing.
- Empowering families as active partners in decision-making.

Speech Acoustics

- Speech Acoustics – the acoustic properties of speech sounds
- Audiologists and AVTs/LSLSs will work with children with a wide range of hearing levels

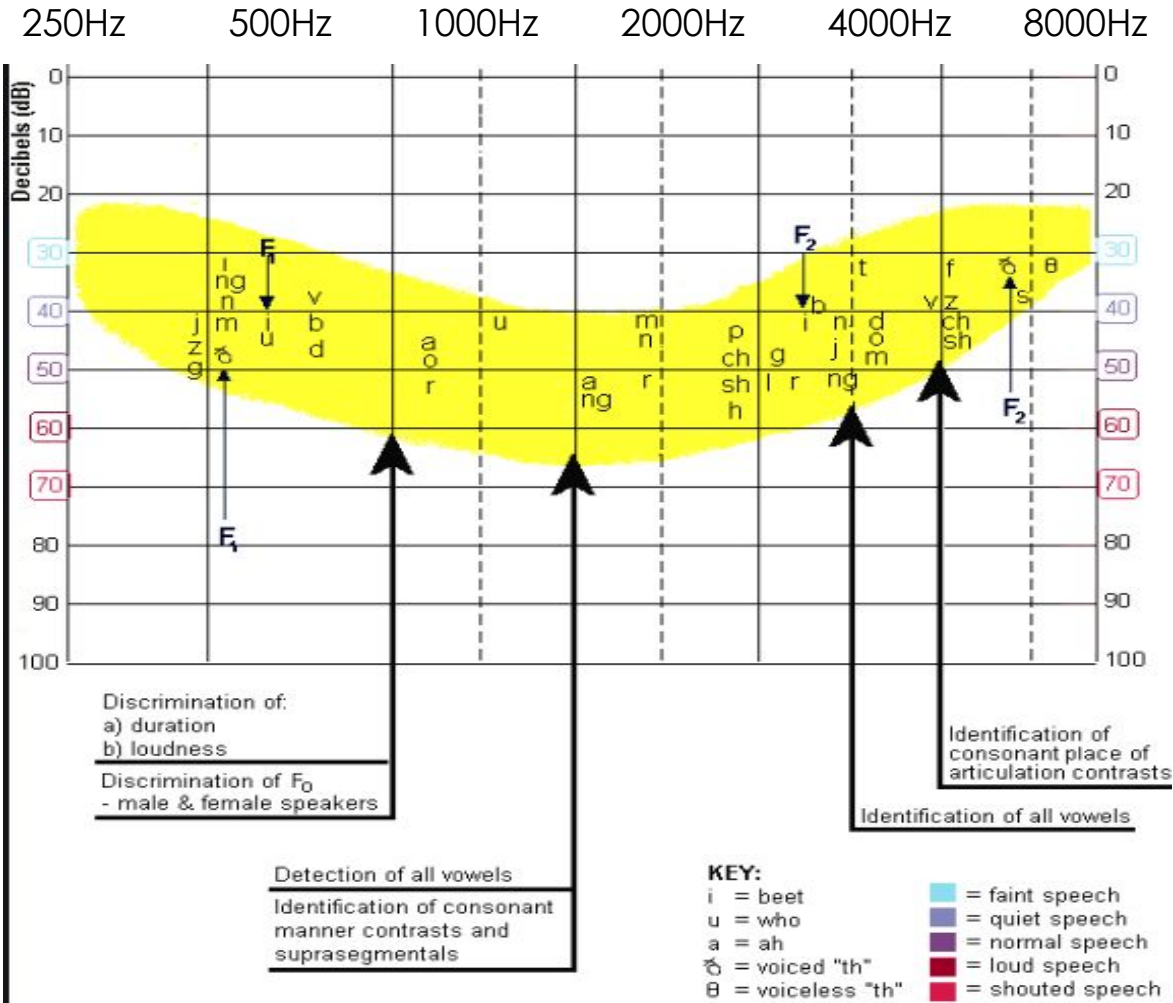
What do speech acoustics tell us?

- Help us:
 - understand how children are receiving sounds of speech
 - understand a child's auditory perception
 - understand speech production
 - evaluate missing or distorted phonemes
 - ability to hear at different distances
 - identify changes in hearing

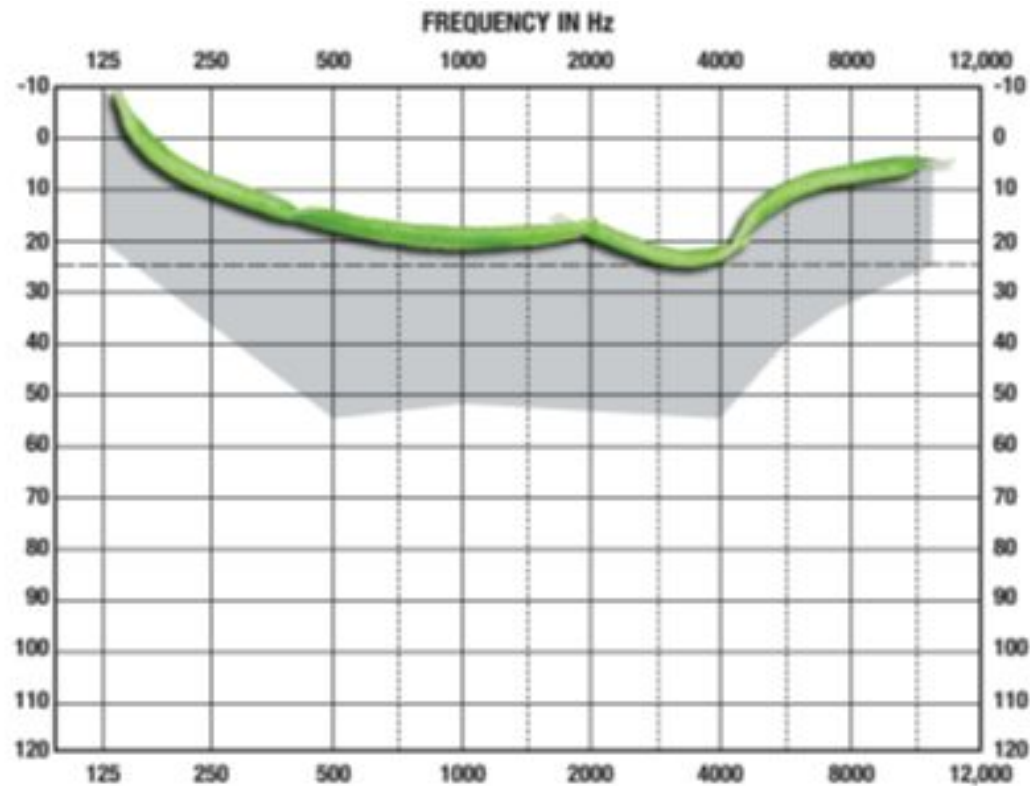


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Speech Banana



The String Bean



Formants English Vowels

English Vowel Sounds

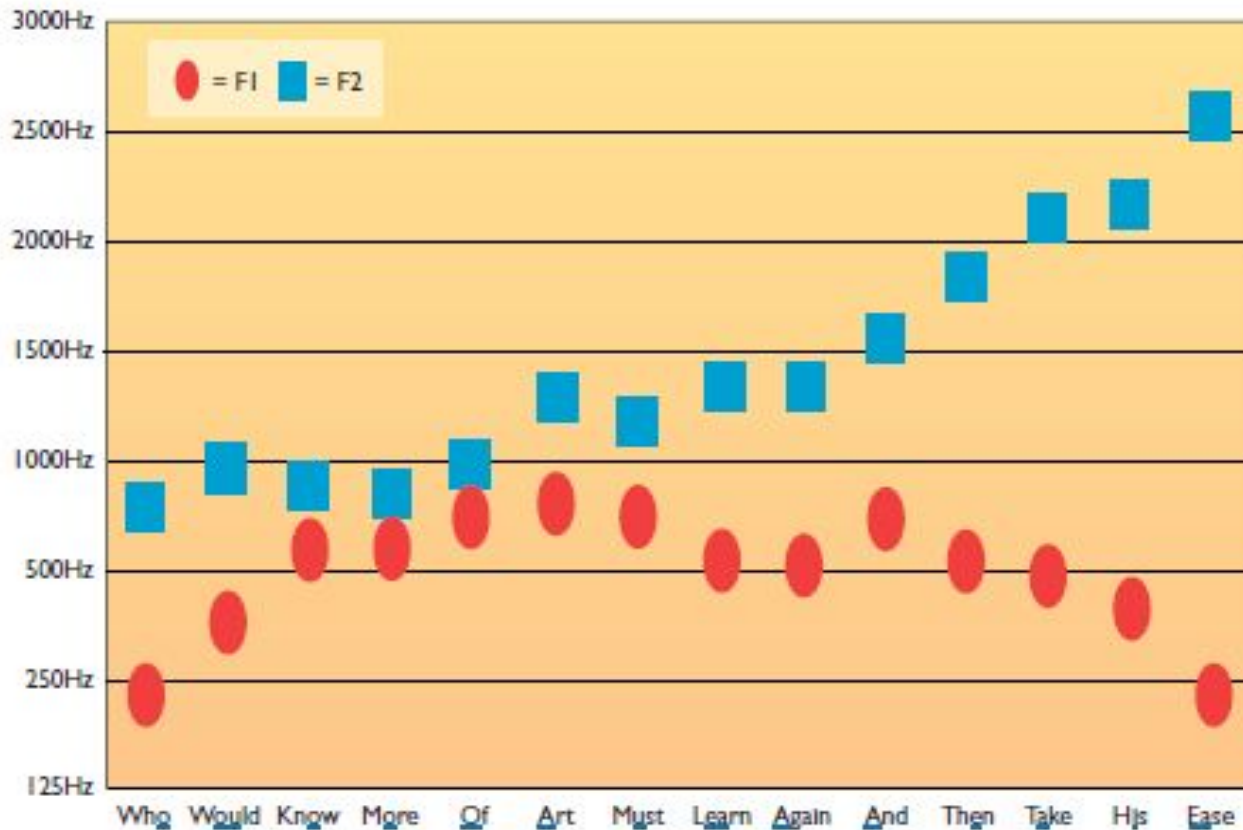


Image of English Vowel Sounds (English Vowel Sounds, n.d.)



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Formants English Consonants

English Consonants Adapted from Ling, Daniel (1976) Speech and the Hearing Impaired Child: Theory and Practice				
Consonant	1st Formant	2nd Formant	3rd Formant	4th Formant
/p/			1,500–2,000	
/t/			2,500–3,000	
/k/	300–400		2,000–2,500	
/d/	300–400		2,500–3,000	
/b/	300–400		2,000–2,500	
/g/	200–300		1,500–2,500	
/m/	250–350	1,000–1,500	2,500–3,500	
/n/	250–350	1,000–1,500	2,000–3,000	
/ng/ (wing)	250–350			4,500–6,000
/f/				4,000–5,000
/s/				5,000–6,000
/sh/			1,500–2,000	4,500–5,500
/th/ (thin)				6,000
/h/			1,500–2,000	
/v/	300–400			3,500–4,500
/z/	200–300			4,000–5,000
/TH/ (that)	250–400	1000-1,500	2,000-3,000	
/ch/	200–300		1,500–2,000	4,000–5,000
/dg/ (jot)	200–300		2,000–3,000	
/l/	250–400		2,000–3,000	
/r/ (err)	600–800	1,000–1,500	1,800–2,400	

(Advanced Bionics, 2009)



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Co-treatments – an example of collaborative care

- **Combined appointment** with AVT and CI Audiologist with parent/ carer.
- CI Mapping: Audiologist performs CI mapping while AVT provides support.
- Therapy Lesson: Post map a short, focused therapy lesson to target auditory skills and spoken language goals.
- Functional Listening Check: Ensures the child can respond to sounds in real-life situations.
- Efficiency: Designed to streamline care by combining multiple services into one session.
- Family-Centered: Reduces burden on families by eliminating the need for multiple appointments.
- Increased Collaboration: Promotes a unified approach to cochlear implant use and language development.



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Co-treatment pilot case study



Outcomes:

- Improved Accessibility for Families:
 - Comprehensive care in one appointment
 - Significant benefit to families in regional and remote areas.
- Interdisciplinary Collaboration
- Efficiency: Reallocation of 240 audiology hours enhancing audiology capacity.
- Family Satisfaction: Positive feedback has led to the co-treatment program becoming the standard offering for children under seven receiving cochlear implants.



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Case Study



- 4-year-old child with bilateral CIs.
- Ling sound checks revealed consistent confusion between /ee/ and /oo/
- Previously able to discriminate and produce these sounds consistently.
- **What should the AVT consider?**
- **What action should be taken?**
- Potential mapping issue
- **/ee/** – high-frequency vowel; F2 ~2500–3000 Hz
- **/oo/** – low-frequency vowel; F2 ~800–1000 Hz
- F1 ~250–300 Hz.



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Case Study – Speech acoustics



- AVT raised concern with audiologist
- Remap performed

Outcomes Post-Remap

- Improvement in discrimination of /ee/ and /oo/ in AVT sessions
- Parents reported better vowel clarity in the child's speech production.
- Child's auditory access, speech perception, and spoken output improved quickly through collaborative care.



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Challenges and Barriers to Collaborative Care

- Communication Barriers
- Role Clarity
- Conflicting Priorities
- Time Constraints
- Cultural Differences
- Geographical Barriers
- Professional Ego
- Lack of Trust



How can we overcome challenges & barriers?



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Possible Solutions

- Enhance Communication
- Clarify Roles
- Align Goals
- Commit Time for Collaboration
- Mutual respect
- Build Trust
- Mitigate Geographical Barriers



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Summary



- Collaborative care is a structured, goal-oriented, and family-driven approach that aligns multiple disciplines to support the child's development.
- It is more than just working alongside other professionals – team approach.
- Audiologist collaboration with AVT is key to listening and spoken language development and success.
- Clinical governance, evidence-based practice, and regular outcome monitoring and reporting essential.
- The principles of Auditory-Verbal Therapy (AVT) are closely aligned with the core values of collaborative care.
- Collaborative goal setting and knowledge sharing essential.
- Challenges and barriers can be mitigated.



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References and Recommended Reading

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