THE OHIO STATE UNIVERSITY
WEXNER MEDICAL CENTER

ADVANCED BIONICS
POWERFUL CONNECTIONS

Interprofessional Auditory Rehabilitation

Meeting the Needs of Adults with Cochlear Implants

Components of Adult AR: Assessment and Treatment

Kara J. Vasil, AuD, CCC-A
Erin Stefancin Taylor, MA, CCC-SLP
Christy Ray, PhD, CCC-SLP

A Sonova Brand 1

Need Technical Support?

Contact AudiologyOnline at:

1-800-753-2160 or
customerexperience@continued.com

Any opinions of non-AB employees are their own and not those of the company.

This webinar is being recorded.

Presented in Partnership with

CONTINUED

Outline

- Outcomes of interest
- Clinical assessment tools
- Treatment planning following a comprehensive communication assessment
- Evidence and theories that drive AR treatment

The Ohio State University
Wexner Medical Center

Presented in Partnership with

Learner Outcomes

1. Identify 2-3 key component outcomes that can be collected to develop a patient-centered treatment plan.
2. Describe clinician-guided tasks that can be used to target bottom-up and top-down skills during auditory training tasks.
3. Discuss ways in which clinicians can scaffold learning during auditory rehabilitation.

How do you define success for your patients?

You tell us!

Use the chat box to tell us!

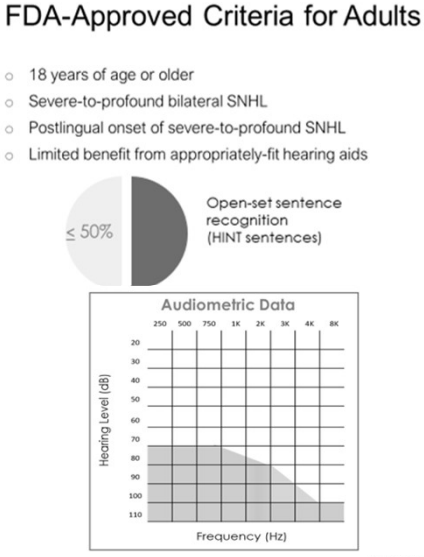
How do our patients define success?

Outline

- **Outcomes of interest**
- Clinical assessment tools
- Treatment planning following a comprehensive communication assessment
- Evidence and theories that drive AR treatment

Audiological Assessment Outcomes

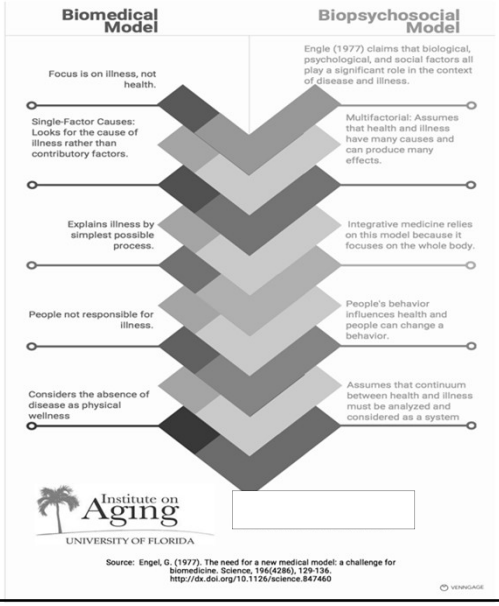
- **Candidacy requirements**
  - Unaided thresholds
  - Sentence recognition (AzBio; HINT)
    - Quiet
    - Noise (+10 or +5 dB SNR)
- **Follow-up testing**
  - Aided thresholds
  - Sentence recognition
    - Quiet
    - Noise (+10 or +5 dB SNR)
  - Word and phoneme recognition



THE OHIO STATE UNIVERSITY
WEXNER MEDICAL CENTER

Theoretical Basis

Biomedical model:
Hearing loss (audibility)



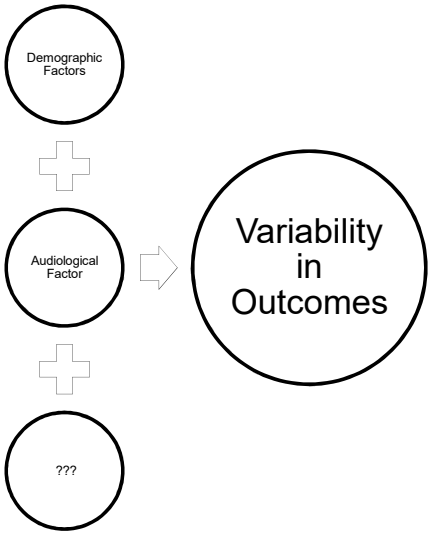
Biopsychosocial model:
Long-term communication impairment

THE OHIO STATE UNIVERSITY
WEXNER MEDICAL CENTER

Presented in Partnership with

CONTINUED

Variability in Outcomes



What deficits do we see in older adults?

- Speech recognition
- Listening comprehension
- Motivation
- Device knowledge
- Psychosocial function
- Communication confidence
- Listening effort
- Self-efficacy
- Social participation/isolation
- Executive functioning and cognition
- Quality of life

Neurocognitive Changes in Aging

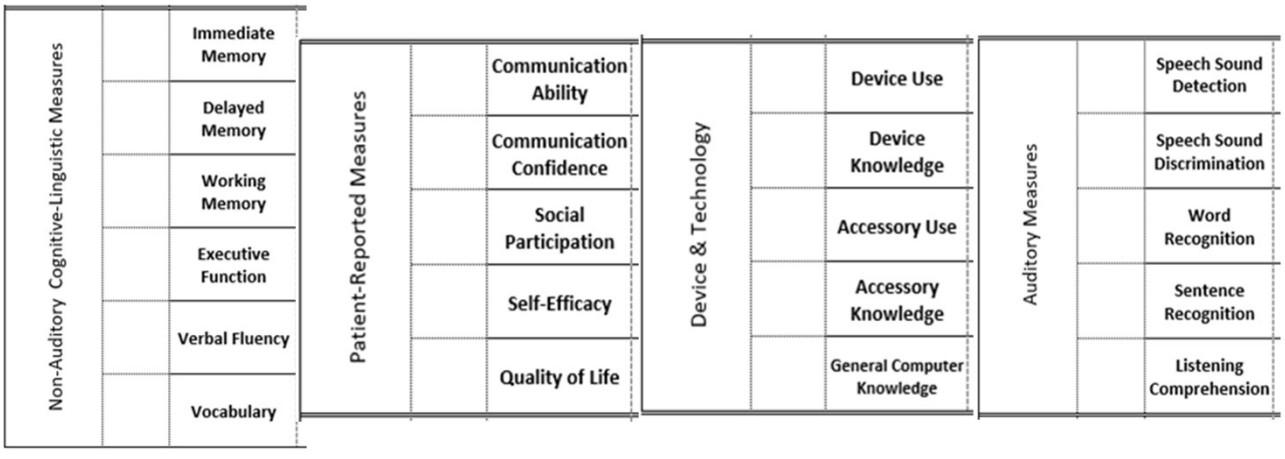
Impacted

- Processing Speed (Harada et al., 2013)
- Divided/Selective Attention (Harada et al., 2013 & Salthouse et al., 1995)
- Working Memory (Glisky, 2007)
- Explicit Memory (Ronnlund, 2005)
- Language: Verbal Fluency (Salthouse, 2010)
- Executive Functions: concept formation, abstraction and mental flexibility (Howieson, 1993)
- Visuospatial /Construction (Howieson, 1993)

Resilient

- Simple auditory attention (Lezak et al., 2012)
- Implicit Memory (Harada et al., 2013)
- Visuospatial Abilities (Howieson, 1993)
- Language: overall language skills & vocabulary (Harada et al., 2013)
- Executive functions: understanding and similarities (Harada et al., 2013)

Communication Assessment Outcomes for AR



Presented in Partnership with

CONTINUED

When does all of this happen?

	PRE-CI		POST-CI		POST-ACTIVATION					
	VISIT 1	VISIT 2	1-2 WEEKS	2-4 WEEKS	2 WEEKS	1 MONTH	2 MONTHS	3 MONTHS	6 MONTHS	1 YEAR
SURGEON	Medical Exam		Post-op Exam		*as needed*					
AUDIOLOGIST	CI Eval	Device Selection	Activation	Programming, etc	Programming, etc	Programming, etc	Programming, etc	Programming, etc	Programming, etc	Programming, etc
SLP		Communication Eval				AR Eval	AR Tx		Post-AR Eval	*as needed*

Outline

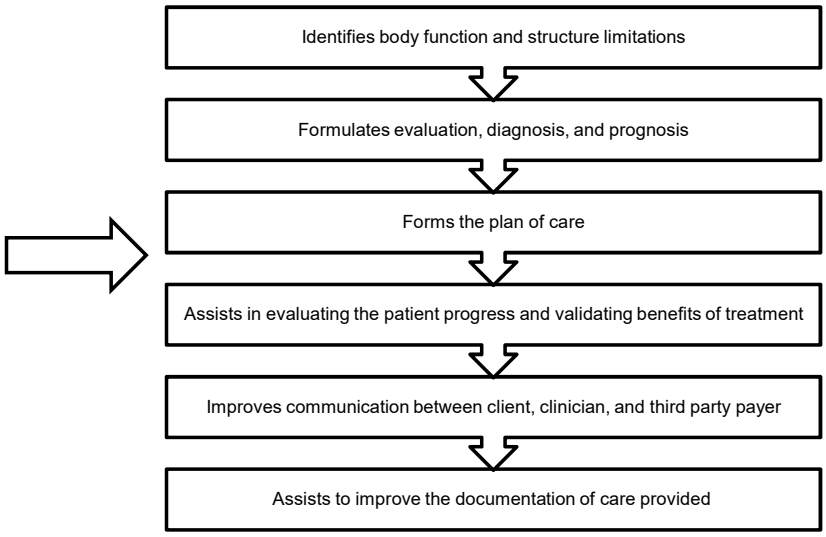
- Outcomes of interest
- **Clinical assessment tools**
- Treatment planning following a comprehensive communication assessment
- Evidence and theories that drive AR treatment

THE OHIO STATE UNIVERSITY
WEXNER MEDICAL CENTER

We know what outcomes we want to look at, so now what?

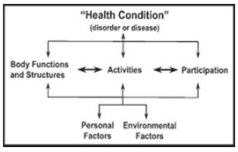
Functional Outcome Assessment

Utilizing standardized outcome assessments, questionnaires & tools



(Lesher, et al., 2016; Potter, et al., 2011; Schenk, et al. 2016)

AR Assessment Measures



(WHO, 2001)

ICF Category		Measure	Professional
Body Function	Sound detection	• **Pure tone thresholds** □ Unaided audiogram □ Aided audiogram	Audiologist
		• **Speech sound detection** □ Ling Six Sound Test (Ling, 1976)	SLP or Audiologist
	Sound discrimination	• **Speech sound discrimination** □ Ling Six Sound Test (Ling, 1976) □ Vowel & consonant discrimination • **Word discrimination**	
	Localization of sound	• **Spatial hearing** □ Speech, Spatial and Qualities of Hearing Scale (SSQ; Gatehouse & Noble, 2004)	
	Emotional functions	• **Positive affect; General self-efficacy** □ NIH Toolbox (Emotional) questionnaires (Salsman et al., 2013) • **Hearing-related psychosocial function** □ Cochlear Implant Quality Of Life Profile (CIQOL-35; McRackan et al., 2019) □ Hearing Handicap Index (HHIE; Ventry & Weinstein, 1982) □ Hearing Handicap Index-Significant Other (HHI-SO; Newman & Weinstein, 1986)	
	Cognitive functions; Functions of language	• **Attention; Processing speed; Memory; Verbal fluency; Verbal learning; Vocabulary** □ NIH Toolbox (Cognition) subtests (Weintraub et al., 2013) □ RBANS-H (Claes et al., 2016) □ Cognitive-Linguistic Quick Test (CLQT; Helm-Estabrooks, 2001) • **Reading fluency** □ Test of Word Reading Efficiency- 2nd edition (TOWRE-2; Torgesen et al., 2012) • **Cognitive Screening** (SLP or Audiologist) □ Montreal Cognitive Assessment (MocA; Nassridene, et al., 2005) □ Hearing-impaired MoCA (Lin et al., 2017)	SLP

ICF Category		Measure	Professional
Body Structure	Inner ear; Head and neck region	• **Electrode placement** □ Intraoperative x-ray or fluoroscopy □ Post-operative CT	ENT (Radiologist)
		• **Auditory nerve electrically evoked compound action potential (ECAP)** □ Intraoperative and post-operative neural response telemetry	Audiologist
Activity and Participation	Listening	• **Aided word recognition** □ CNC word lists (Peterson & Lehiste, 1962) • **Aided sentence recognition** □ AzBio sentence lists (Spahr et al., 2012) □ HINT sentence lists (Nilsson, Soli, & Sullivan, 1994)	Audiologist
		• **Listening comprehension** • **Quality of life: effort, entertainment, environmental** □ CIQOL-35 (McRackan et al., 2019) • **Self-efficacy/confidence** □ Listening Self Efficacy Questionnaire (LSEQ; Smith et al., 2011)	SLP or Audiologist
	Communicating; Conversing with people; Interpersonal interactions; Social relationships	• **Communication ability** □ CIQOL-35: Communication (McRackan et al., 2019) □ Personal Assessment of Communication Abilities (PACA; EARTrack, 2015) □ Client Oriented Scale of Improvement (COSI; Dillon, James, & Ginis, 1997) • **Communication confidence** □ Communication Confidence Profile (CCP; Sweetow & Sabes, 2007) □ LSEQ (Smith et al., 2011) □ CIQOL-35 (McRackan et al., 2019) • **Social participation and isolation** □ HHIE (Ventry & Weinstein, 1982) □ Hearing Handicap Index-Significant Other (HHI-SO; Newman & Weinstein, 1986) □ NIH Toolbox (Emotion) questionnaires (Salsman et al., 2013)	
	Communication device use	• **Time spent wearing device; environments** □ Data logging	
	Solving problems; Handling stress	• **Self-efficacy, perceived stress** □ NIH Toolbox (Emotion) questionnaires (Salsman et al., 2013)	

THE OHIO STATE UNIVERSITY
WEXNER MEDICAL CENTER

AR Tools: Cognitive-Linguistic Measures

Measure	Length	Tasks Assessed	Access	Audibility
MoCA	10 minutes	Visuospatial. executive, naming, memory, attention, language, abstraction, delayed recall, orientation	Free for health care providers	Yes
RBANS	30 minutes	Immediate Memory, Visuo-Spatial, Language, Attention, Delayed memory	Purchase	Yes
CVLT-II	60 minutes	Immediate recall, short delay free/cued recall, long delay free/cued recall, and long delay recognition	Purchase	Yes
TOWRE	5-10 minutes	Lexical and phonological access and fluency	Purchase	No

THE OHIO STATE UNIVERSITY
WEXNER MEDICAL CENTER

Presented in Partnership with

CONTINUED

AR Tools: Cognitive-Linguistic Measures

Measure	Length	Tasks Assessed	Access	Audibility
MoCA	10 minutes	Visuospatial. executive, naming, memory, attention, language, abstraction, delayed recall, orientation	Free for health care providers	Yes
RBANS	30 minutes	Immediate Memory, Visuo-Spatial, Language, Attention, Delayed memory	Purchase	Yes
CVLT-II	60 minutes	Immediate recall, short delay free/cued recall, long delay free/cued recall, and long delay recognition	Purchase	Yes
TOWRE	**5-10 minutes**	**Lexical and phonological access and fluency**	**Purchase**	**No**

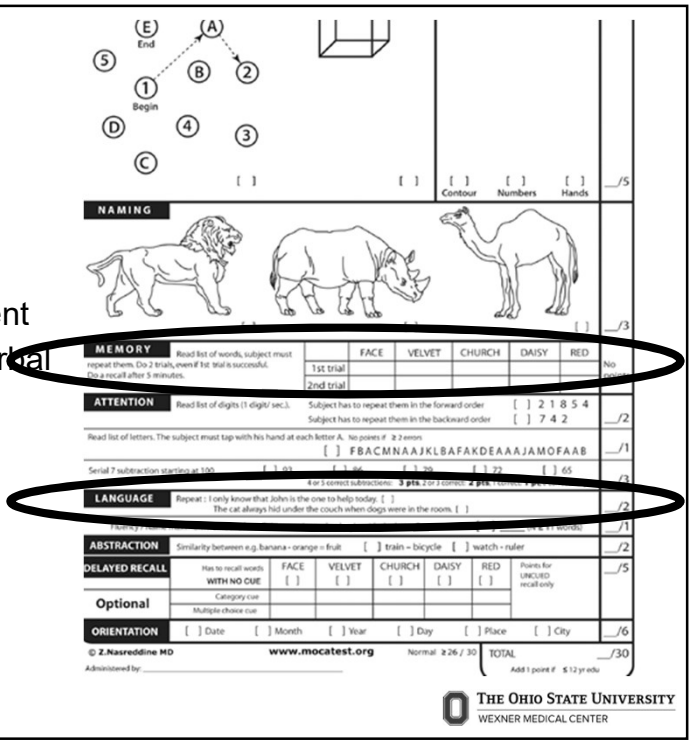
THE OHIO STATE UNIVERSITY
WEXNER MEDICAL CENTER

How do I know if I am assessing audibility or cognitive-linguistic skills?

THE OHIO STATE UNIVERSITY
WEXNER MEDICAL CENTER

Alternative Formats

- HI-MoCA (Lin et al., 2017)
  - Montreal Cognitive Assessment
  - Administration without any verbal instructions/prompts (verbal instructions into visual PowerPoint)



Alternative Formats

- Visual California Verbal Learning Test (Visual CVLT-II)
  - CVLT-II and speech recognition (Heydebrand et al, 2007)
  - Visually based version of CVLT-II (a neuropsychological measure of verbal learning and memory) (Pisoni et al., 2018)
  - List learning on CVLT-II

Alternative Formats

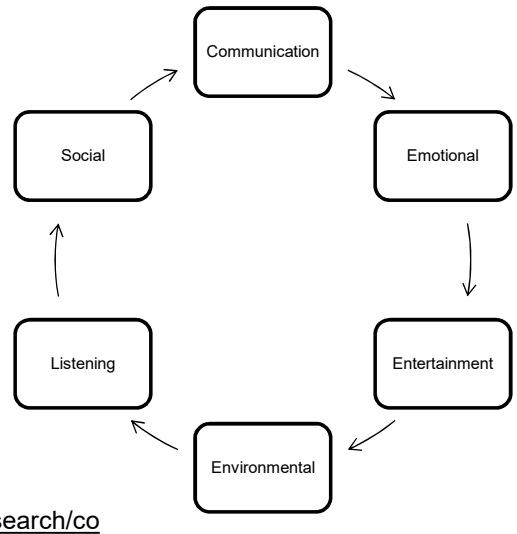
- The Repeatable Battery for the Assessment of Neuropsychological Status for Hearing Impaired Individuals (RBANS-H) (Claes et al., 2016)
- Changes:
  - Test administered with PowerPoint presentation
  - Subtests: list learning, story memory, digit span, list recognition are presented auditorily and visually

AR Tools: Patient-Reported Measures

Target	Measure	Description	Access	Audibility
QoL	**CIQOL**	6 quality of life domains: communication, emotional, entertainment, environment, listening effort, and social	Free to request through Medical University of South Carolina	No (self-administered)
Device Skills & Management	**CIMS**	CI device skills & management	Free to access online	No (self-administered)
Communication Ability	**PACA**	Self-perceived communication abilities in real-world situations and interactions	Free to access online	No (self-administered)
Self-Efficacy	**LSEQ , GSE**	The confidence individuals have in their abilities to understand speech in a variety of listening situations	PROMIS questionnaire	No (self-administered)
Social Participation	**Social Isolation**	Measures social connectedness and participation	PROMIS questionnaire	No (self-administered)

Quality of Life

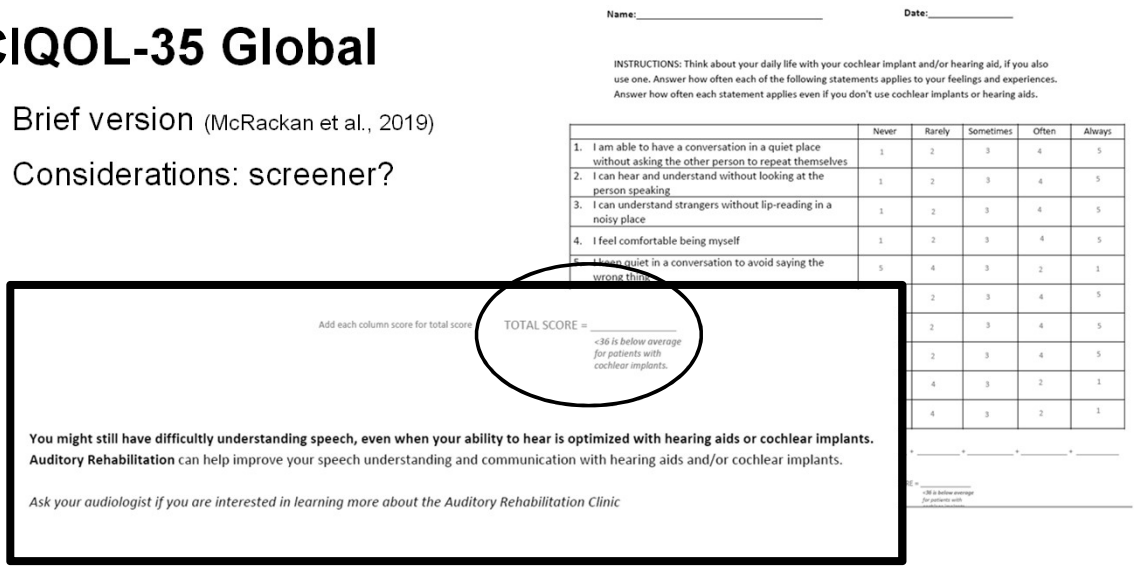
Cochlear Implant Quality of Life (CIQOL-35) (McRackan et al., 2016) questionnaire is a patient-reported outcome measure that uses a 5-point Likert scale, with higher scores indicating greater quality of life in each of the following domains:



For access to this tool, visit:
https://medicine.musc.edu/departments/otolaryngology/research/cochlear-implant/instruments

CIQOL-35 Global

- Brief version (McRackan et al., 2019)
- Considerations: screener?



Name:_____ Date:_____

INSTRUCTIONS: Think about your daily life with your cochlear implant and/or hearing aid, if you also use one. Answer how often each of the following statements applies to your feelings and experiences. Answer how often each statement applies even if you don't use cochlear implants or hearing aids.

	Never	Rarely	Sometimes	Often	Always
1. I am able to have a conversation in a quiet place without asking the other person to repeat themselves	1	2	3	4	5
2. I can hear and understand without looking at the person speaking	1	2	3	4	5
3. I can understand strangers without lip-reading in a noisy place	1	2	3	4	5
4. I feel comfortable being myself	1	2	3	4	5
5. I keep quiet in a conversation to avoid saying the wrong things	5	4	3	2	1
		2	3	4	5
		2	3	4	5
		2	3	4	5
		4	3	2	1
		4	3	2	1

Add each column score for total score: _____ + _____ + _____ + _____ + _____

TOTAL SCORE = _____

<36 is below average for patients with cochlear implants.

You might still have difficultly understanding speech, even when your ability to hear is optimized with hearing aids or cochlear implants. Auditory Rehabilitation can help improve your speech understanding and communication with hearing aids and/or cochlear implants.

Ask your audiologist if you are interested in learning more about the Auditory Rehabilitation Clinic

Presented in Partnership with

CONTINUED

CI Skills and Management: CIMS

Cochlear Implant Management Skills (CIMS)

(Bennett et al., 2017)

Appendix 1
Items from the CIMS-self survey

Q1	Are you confident with your ability to remove your hearing implant device (speech processor)?
Q2	Are you confident with your ability to turn your device off and on? (disconnecting the battery, muting the device or switching off at the device are all acceptable methods)
Q3	Are you confident with your ability to charge your rechargeable batteries and/or change your disposable batteries?
Q4	a) Are you confident with your ability to clean your hearing implant device? (includes wiping down processor, coil and magnet) b) Are you confident with your ability to change the microphone cover? (not applicable to all devices)
Q5	a) Are you confident with your ability to use your dry store unit? b) How often do you change your dry store unit tablet?
Q6	a) Are you confident with your ability to put your hearing implant device on? b) Is your device comfortable and not causing pressure sores?
Q7	a) Is your hearing implant device set up with a volume control? b) Are you confident with your ability to adjust the volume of your device? (using the processor or remote control to do this are both acceptable methods) c) Are you confident in knowing what volume level to set your device in different situations?
Q8	a) Is your hearing implant device set up with multiple programmes? b) Are you able to adjust the programme setting of your device? (using the processor or remote control to do this are both acceptable methods) c) Are you confident in knowing what programme to select in different situations?
Q9	a) Is your hearing implant device set up with a telecoil (use for the telephone and loop systems)? b) Are you able to access your telecoil? (using the processor or remote control to do this are both acceptable methods) c) Do you know how to hold the phone in the optimal position when using the telecoil?
Q10	Are you confident with your ability to use your remote control?
Q11	Would you like us to arrange an appointment for you to see your audiologist to review any of the above items?

THE OHIO STATE UNIVERSITY
WEXNER MEDICAL CENTER

Communication Abilities

Communication Abilities

Name: GWR (Female, 82 years) Date: 3 Mar 14 ☑ Unaided ■ Aided 3 June 14

How much difficulty do you have hearing in the following situations?

	No difficulty	Slight difficulty	Moderate difficulty	Quite a lot of difficulty	Very much difficulty	Not relevant
One to one conversation	■	□	□	☑	□	□
Conversation in small groups	■	□	□	□	☑	□
Conversation in large groups	□	■	□	□	☑	□
Outdoors	□	■	☑	□	□	□
Concert/movie	■	□	☑	□	□	□
Place of worship/lectures	□	■	□	☑	□	□
Watching TV	■	□	□	☑	□	□
In a car	□	■	□	☑	□	□
Workplace	□	□	□	□	□	☑
Telephone - Landline	□	□	□	□	□	☑
- Mobile	□	■	☑	□	□	□
Restaurant/café	□	□	■	☑	□	□
Other (specify)	□	□	□	□	□	

PACA (Personal Assessment of Communication Abilities) by EARtrak ©2015 www.eartrak.com

Above/ *Example 2 PACA*

- Personal Assessment of Communication Abilities (PACA) (Taylor et al., 2016)
- Access:

https://www.eartrak.com/paca

National Acoustic Laboratories
A division of Australian Hearing

NAL
CLIENT ORIENTED SCALE OF IMPROVEMENT

Name : Category. New
Audiologist : Return
Date : 1. Needs Established
2. Outcome Assessed

Degree of Change

Final Ability (with hearing aid)
Person can hear
10% 25% 50% 75% 95%

SPECIFIC NEEDS

Indicate Order of Significance

(Dillon et al., 2007)

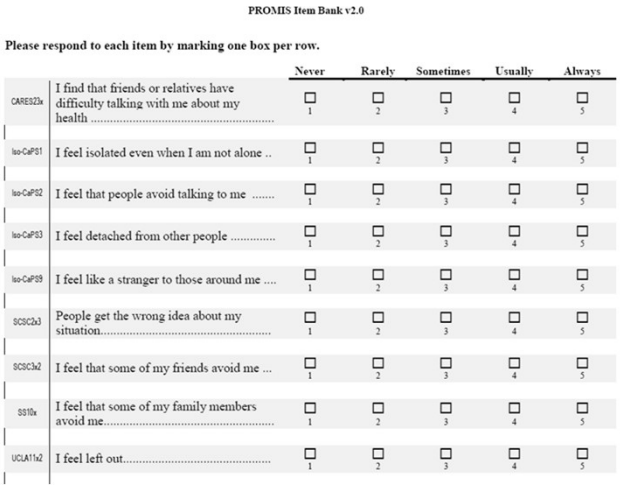
THE OHIO STATE UNIVERSITY
WEXNER MEDICAL CENTER

Presented in Partnership with

CONTINUED

Social Isolation

- PROMIS Social Isolation Questionnaire
- Social Isolation Effects:
  - Participation in everyday life
  - Goal setting
  - Quality of life (Hughes et al., 2018)



PROMIS Item Bank v2.0

Please respond to each item by marking one box per row.

		Never	Rarely	Sometimes	Usually	Always
CARES23x	I find that friends or relatives have difficulty talking with me about my health	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
Iso-CaPS1	I feel isolated even when I am not alone	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
Iso-CaPS2	I feel that people avoid talking to me	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
Iso-CaPS3	I feel detached from other people	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
Iso-CaPS9	I feel like a stranger to those around me	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
SCSC2a3	People get the wrong idea about my situation	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
SCSC3a2	I feel that some of my friends avoid me	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
SS10x	I feel that some of my family members avoid me	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
UCLA11x2	I feel left out	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

THE OHIO STATE UNIVERSITY
WEXNER MEDICAL CENTER

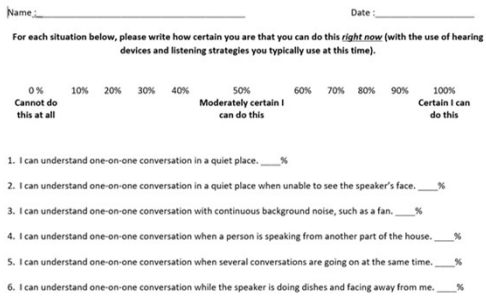
Self-Efficacy

- What is self-efficacy?
  - "Beliefs in one's capabilities to organize and execute the courses of action required to produce given attainments" (Bandura, 1997, p. 3)
  - Self-efficacy has been shown to improve following rehabilitation (Jennings, 2005)

General Self-Efficacy Scale (GSE)

	Not at all true	Hardly true	Moderately true	Exactly true
1. I can always manage to solve difficult problems if I try hard enough	☐	☐	☐	☐
2. If someone opposes me, I can find the means and ways to get what I want.	☐	☐	☐	☐
3. It is easy for me to stick to my aims and accomplish my goals.	☐	☐	☐	☐
4. I am confident that I could deal efficiently with unexpected events.	☐	☐	☐	☐
5. Thanks to my resourcefulness, I know how to handle unforeseen situations.	☐	☐	☐	☐

(Schwarzer & Jerusalem, 1995)



Name :_____ Date :_____

For each situation below, please write how certain you are that you can do this *right now* (with the use of hearing devices and listening strategies you typically use at this time).

0 % Cannot do this at all — 10% — 20% — 30% — 40% — 50% Moderately certain I can do this — 60% — 70% — 80% — 90% — 100% Certain I can do this

1. I can understand one-on-one conversation in a quiet place. ____%
2. I can understand one-on-one conversation in a quiet place when unable to see the speaker's face. ____%
3. I can understand one-on-one conversation with continuous background noise, such as a fan. ____%
4. I can understand one-on-one conversation when a person is speaking from another part of the house. ____%
5. I can understand one-on-one conversation when several conversations are going on at the same time. ____%
6. I can understand one-on-one conversation while the speaker is doing dishes and facing away from me. ____%

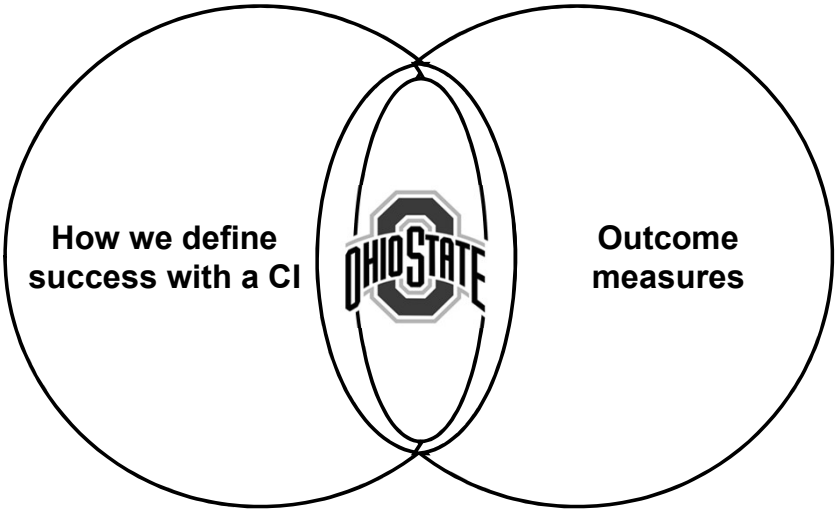
(Smith et al., 2011)

THE OHIO STATE UNIVERSITY
WEXNER MEDICAL CENTER

Presented in Partnership with

CONTINUED

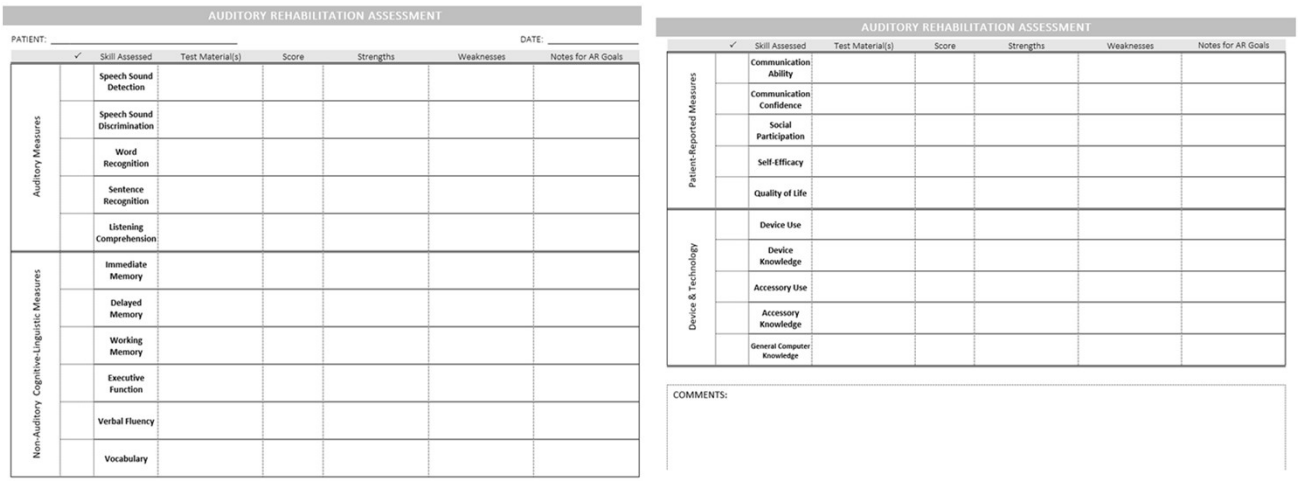
Wrapping up AR assessment tools...



Outline

- Outcomes of interest
- Clinical assessment tools
- **Treatment planning following a comprehensive communication assessment**
- Evidence and theories that that drive AR treatment

Communication Assessment Outcomes for AR



AUDITORY REHABILITATION ASSESSMENT

PATIENT: _____ DATE: _____

	✓	Skill Assessed	Test Material(s)	Score	Strengths	Weaknesses	Notes for AR Goals
Auditory Measures		Speech Sound Detection					
		Speech Sound Discrimination					
		Word Recognition					
		Sentence Recognition					
		Listening Comprehension					
Non-Auditory Cognitive-Linguistic Measures		Immediate Memory					
		Delayed Memory					
		Working Memory					
		Executive Function					
		Verbal Fluency					
		Vocabulary					

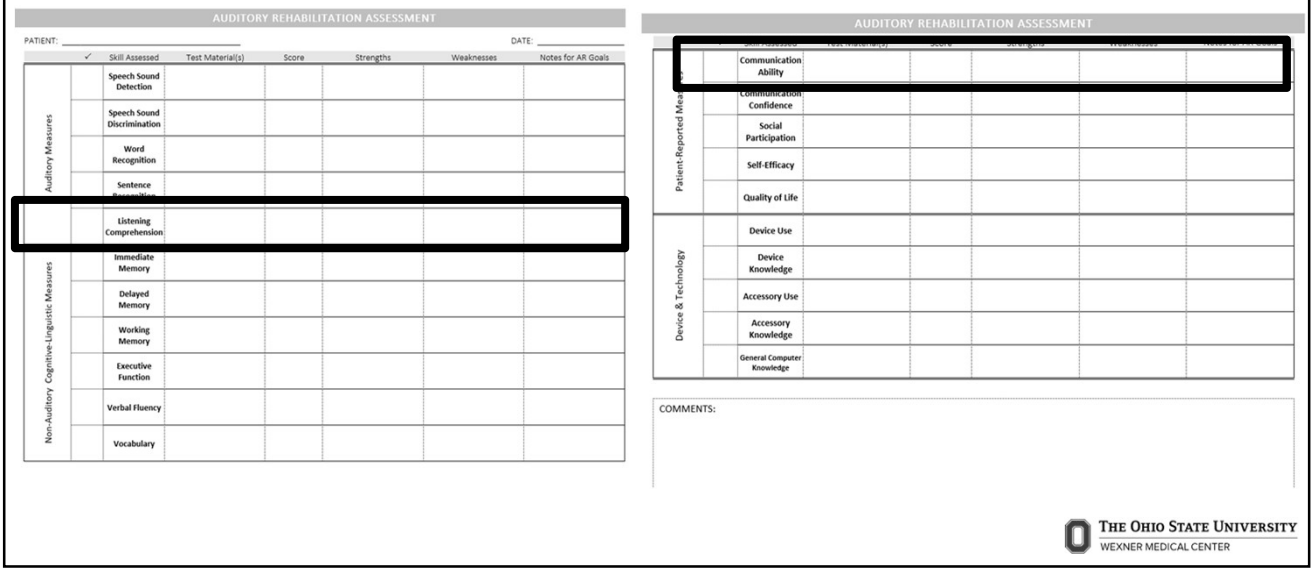
AUDITORY REHABILITATION ASSESSMENT

	✓	Skill Assessed	Test Material(s)	Score	Strengths	Weaknesses	Notes for AR Goals
Patient-Reported Measures		Communication Ability					
		Communication Confidence					
		Social Participation					
		Self-Efficacy					
		Quality of Life					
Device & Technology		Device Use					
		Device Knowledge					
		Accessory Use					
		Accessory Knowledge					
		General Computer Knowledge					

COMMENTS:

THE OHIO STATE UNIVERSITY
WEXNER MEDICAL CENTER

Communication Assessment Outcomes for AR



AUDITORY REHABILITATION ASSESSMENT

PATIENT: _____ DATE: _____

	✓	Skill Assessed	Test Material(s)	Score	Strengths	Weaknesses	Notes for AR Goals
Auditory Measures		Speech Sound Detection					
		Speech Sound Discrimination					
		Word Recognition					
		Sentence Recognition					
		Listening Comprehension					
Non-Auditory Cognitive-Linguistic Measures		Immediate Memory					
		Delayed Memory					
		Working Memory					
		Executive Function					
		Verbal Fluency					
		Vocabulary					

AUDITORY REHABILITATION ASSESSMENT

	✓	Skill Assessed	Test Material(s)	Score	Strengths	Weaknesses	Notes for AR Goals
Patient-Reported Measures		Communication Ability					
		Communication Confidence					
		Social Participation					
		Self-Efficacy					
		Quality of Life					
Device & Technology		Device Use					
		Device Knowledge					
		Accessory Use					
		Accessory Knowledge					
		General Computer Knowledge					

COMMENTS:

THE OHIO STATE UNIVERSITY
WEXNER MEDICAL CENTER

Presented in Partnership with

CONTINUED

Patient-Centered Approach

- Holistic approach
- Self-management
  - Patient knowledge
  - Adherence to treatment
  - Social support
- Assess:
  - Auditory processing
  - Cognitive-linguistic skills
  - Patient-reported measures of
    - Communication ability and confidence
    - Self-efficacy
    - Social participation
    - Quality of life
- Develop patient (and clinician) goals

Topics for Promoting Self-Management

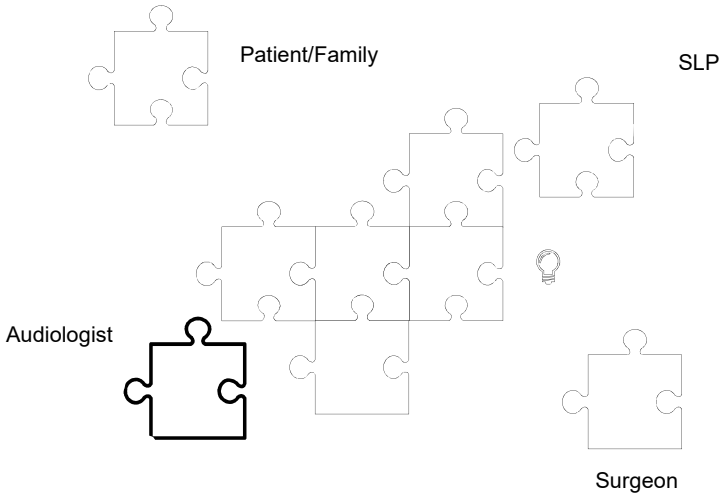
Counseling

- ☐ Patient goals and current function/ability
- ☐ Auditory processing strengths and weaknesses
- ☐ Adjustment period and expected progress
- ☐ Hearing vs. listening
- ☐ Levels of auditory skill
- ☐ Supports for auditory training (e.g., use of context, lipreading, bimodal benefits)
- ☐ Communication facilitation strategies
- ☐ Communication repair strategies
- ☐ Support group options
- ☐ Employment needs (as applicable)
- ☐ Accommodation options
- ☐ Motivation and compliance with recommendations

Instruction

- ☐ CI device knowledge: parts and functions
- ☐ Use and function of device accessories
- ☐ Device and accessory troubleshooting
- ☐ Recommendations for device settings
- ☐ Recommendations for daily use and practice

Goal setting



THE OHIO STATE UNIVERSITY
WEXNER MEDICAL CENTER

Presented in Partnership with

CONTINUED

Outline

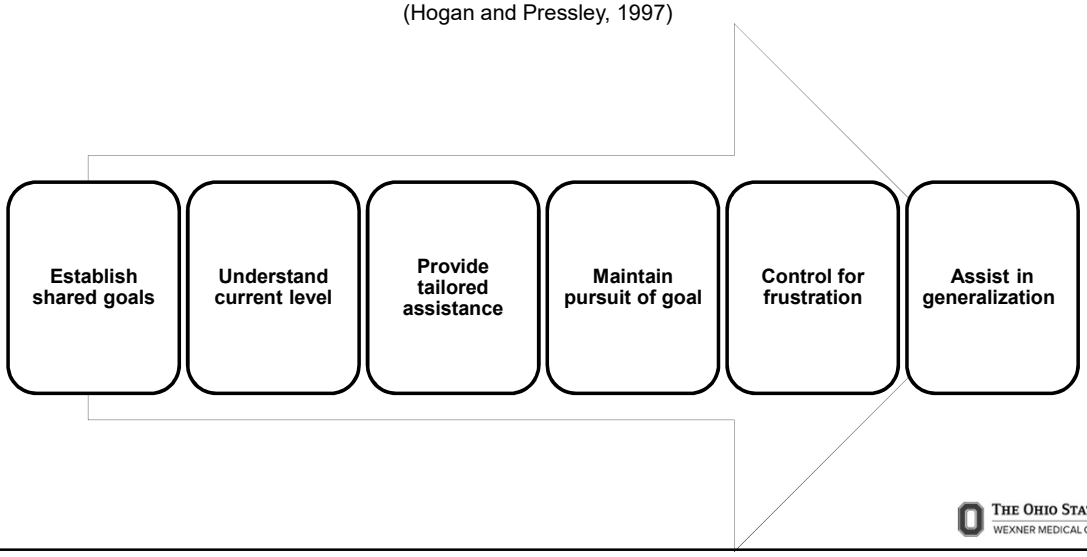
- Outcomes of interest
- Clinical assessment tools
- Treatment planning following a comprehensive communication assessment
- **Evidence and theories that drive AR treatment**

Learning Theory & Zone of Proximal Development

- Zone of proximal development is defined as " the distance between the actual developmental level as determined by independent problem solving and the level of potential development" (Vygotsky, 1978, p. 86)
- Supports can be adjusted (i.e., "faded") to maintain learning within the ZPD (Rogoff,1990)
- Scaffolding + ZPD to teach a skill focuses on ways to increase motivation and improvement performance and focus tasks less on weaknesses (Brown & Reeves, 1987), therefore allowing achievement in a skill that is beyond what the learner is capable of independently (Bruner, 1986)

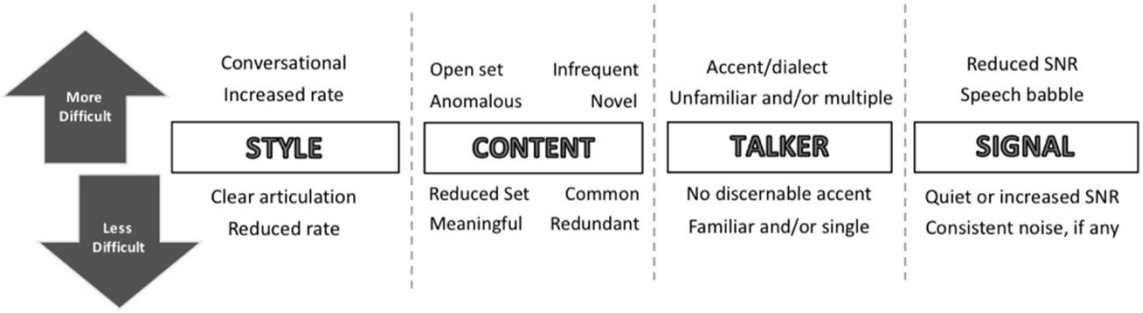
Zone of Proximal Development: SLP Skillset

Fundamental components of scaffolding:
(Hogan and Pressley, 1997)



THE OHIO STATE UNIVERSITY
WEXNER MEDICAL CENTER

ZPD AR Example



THE OHIO STATE UNIVERSITY
WEXNER MEDICAL CENTER

Presented in Partnership with

Compliance

Five Ideas to Better Meet the Hearing Needs of Older People

Robert W. Sweetow

Suggestions to improve patient compliance:

1. Compliance generally increases if patients are given clear and understandable information about their condition and progress in a sincere and responsive way.
2. Simplify a patient's instructions or treatment regimen as much as possible.
3. Have systems in place to generate patient treatment or appointment reminders.
4. Listen and respect your patients' concerns.
5. Determine your patients' attitudes and past experiences. If, for example, your patient is firmly opposed to engaging in therapy, ask open-ended questions such as "When you came in today, what were you hoping I might do for you instead of prescribing this therapeutic approach?", "What are your main concerns about doing this therapy?", and "What do you think might happen if you do it?"
6. For home-based aural rehabilitation, conducting the first session face to face with the patient, and then having the patient proceed with training at home, can significantly increase compliance rates (Kingham, 2008).

Compliance

114 Hearing Care for Adults 2009 CHAPTER TEN

Five Ideas to Better Meet the Hearing Needs of Older People

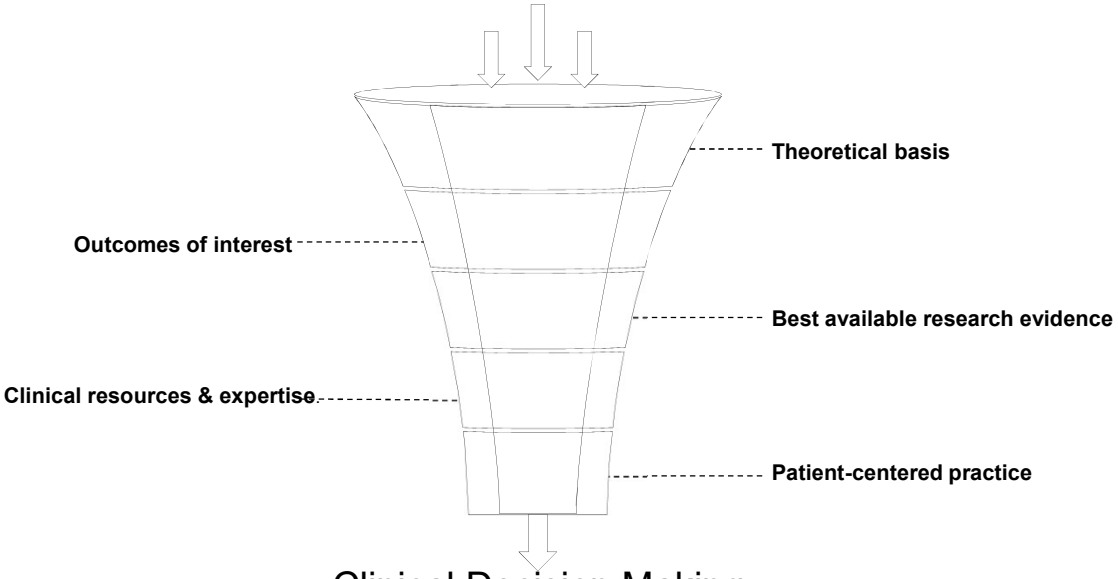
Robert W. Sweetow

Suggestions to improve patient compliance:

1. Compliance generally increases if patients are given **clear and understandable information** about their condition and progress in a sincere and responsive way.
2. **Simplify a patient's instructions** or treatment regimen as much as possible.
3. Have systems in place to generate patient **treatment or appointment reminders**.
4. Listen and respect your **patients' concerns**.
5. Determine your patients' **attitudes and past experiences**. If, for example, your patient is firmly opposed to engaging in therapy, ask open-ended questions such as "When you came in today, what were you hoping I might do for you instead of prescribing this therapeutic approach?", "What are your main concerns about doing this therapy?", and "What do you think might happen if you do it?"
6. For home-based aural rehabilitation, conducting the **first session face to face with the patient**, and then having the patient proceed with training at home, can significantly increase compliance rates (Kingham, 2008).

THE OHIO STATE UNIVERSITY WEXNER MEDICAL CENTER

What do we do with all this information?



Clinical Decision Making

REFERENCES

Bandura A. 1997. Self Efficacy: The Exercise of Control. New York: Freeman.

Bennett, R. J., Jayakody, D. M., Eikelboom, R. H., & Atlas, M. D. (2017). Self-reported cochlear implant management skills: development and validation of the self-administered cochlear implant management skills (CIMS-self) survey. *Clinical Otolaryngology : Official Journal of Ent-Uk ; Official Journal of Netherlands Society for Oto-Rhino-Laryngology & Cervico-Facial Surgery*, 42(1), 164–171.

Bernstein, C., Brewer, D., Hume, K., & Presley, R. (2015). COCHLEAR IMPLANT SKILLS REVIEW (CISR). Deaf/Hard of Hearing Technology Rehabilitation Engineering Research Center. https://www.deafhhtech.org/rerc/wp-content/uploads/2017/06/COCHLEAR-IMPLANT-SKILLS-REVIEW-SCALE-2016.11.21.pdf

Bruner, J. (1986). Actual minds, possible worlds. Cambridge, MA: Harvard University Press.

Claes, A., Mertens, G., Gilles, A., Hofkens-Van den Brandt, A., Fransen, E., Van Rompaey, V., & Van de Heyning, P. (2016). The repeatable battery for the assessment of neuropsychological status for hearing impaired individuals (RBANS-H) before and after cochlear implantation: A protocol for a prospective, longitudinal cohort study. *Frontiers in Neuroscienc*e, 15.

Dillon H, James A and Ginis J (1997). The Client Oriented Scale of Improvement (COSI) and its relationship to several other measures of benefit and satisfaction provided by hearing aids. *Journal of the American Academy of Audiology*, 8:27-43.

Glisky EL. Changes in cognitive function in human aging. In: Riddle DR, editor. Brain aging: models, methods, and mechanisms. Boca Raton (FL): CRC Press; 2007.

Harada, C. N., Natelson, L. M. C., & Triebel, K. L. (2013). Normal cognitive aging. *Clinics in Geriatric Medicine*, 29(4), 737–52.

Heydebrand, G., Hale, S., Potts, L., Gotter, B., & Skinner, M. (2007). Cognitive predictors of improvements in adults' spoken word recognition six months after cochlear implant activation. *Audiology and Neurotology*, 12(4), 254–264.

Hogan, K., & Pressley, M. (Eds.). (1997). Scaffolding student learning: Instructional approaches and issues. Cambridge, MA: Brookline Books.

Howieson, D., Holm, L., Kaye, J., Oken, B., & Howieson, J. (1993). Neurologic function in the optimally healthy oldest old. neuropsychological evaluation. *Neurology*, 43(10), 1882-6.

Hughes, S. E., Hutchings, H. A., Rapport, F. L., McMahon, C. M., & Boisvert, I. (2018). Social connectedness and perceived listening effort in adult cochlear implant users: a grounded theory to establish content validity for a new patient-reported outcome measure. *Ear and Hearing*, 39(5), 922–934.

Jennings, S. 2005. Factors that influence outcomes from aural rehabilitatoin of older adutls: The role of perceived self-efficacy. Unpublished disseration.

Kingham N. (2008) A simple but effective method for maximizing LACE compliance. http://www.neurotone.com/lace-success-stories.html#story9. Accessed December, 2009. Presented at AudiologyNow.

THE OHIO STATE UNIVERSITY WEXNER MEDICAL CENTER

Presented in Partnership with

CONTINUED

REFERENCES

Lin, V., Chung, J., Callahan, B., Smith, L., Gritters, N., Chen, J., . . . Masellis, M. (2017). Development of cognitive screening test for the severely hearing impaired: Hearing-impaired MOCA. The Laryngoscope, 127, 11. doi:10.1002/lary.26590

McRackan, T. R., Hand, B. N., Velozo, C. A., & Dubno, J. R. (2019). Association of Demographic and Hearing-Related Factors With Cochlear Implant-Related Quality of Life. JAMA Otolaryngology-Head & Neck Surgery, 145(5), 422–430. https://doi.org/10.1001/jamaoto.2019.0055

McRackan, T. R., Hand, B. N., Velozo, C. A., Dubno, J. R., & Cochlear Implant Quality of Life Development Consortium. (2019). Cochlear implant quality of life (ciqol): development of a profile instrument (ciqol-35 profile) and a global measure (ciqol-10 global). Journal of Speech, Language, and Hearing Research : Jslhr, 62(9), 3554–3563. https://doi.org/10.1044/2019_JSLHR-H-19-0142

Pisoni, D. B., Broadstock, A., Wucinich, T., Safdar, N., Miller, K., Hernandez, L. R., … Moberly, A. C. (2018). Verbal learning and memory after cochlear implantation in postlingually deaf adults: some new findings with the cvlt-ii. Ear and Hearing, 39(4), 720–745.

Rogoff, B. (1990). Apprenticeship in thinking: Cognitive development in social context. New York: Oxford University Press.

Rönnlund, M., Nyberg, L., Bäckman, L., & Nilsson, L. (2005). Stability, growth, and decline in adult life span development of declarative memory: Cross-sectional and longitudinal data from a population-based study. Psychology and Aging, 20(1), 3-18.

Salthouse, T. (2010). Selective review of cognitive aging. Journal of the International Neuropsychological Society, 16(5), 754-60.

Salthouse, T., Fristoe, N., Lineweaver, T., & Coon, V. (1995). Aging of attention: Does the ability to divide decline? Memory & Cognition, 23(1), 59-71. doi:10.3758/BF03210557

Schwarzer, R., & Jerusalem, M. (1995). Generalized Self-Efficacy scale. In J. Weinman, S. Wright, & M. Johnston, Measures in health psychology: A user's portfolio. Causal and control beliefs (pp. 35-37). Windsor, UK: NFER-NELSON.

Smith, S. L., Kathleen Pichora-Fuller, M., Watts, K. L., & La More, C. (2011). Development of the listening self-efficacy questionnaire (lseq). International Journal of Audiology, 50(6), 417–425. https://doi.org/10.3109/14992027.2011.553205

Taylor, B., Manchaiah, V., & Clutterbuck, S. (2016). Using the personal assessment of communication abilities (paca) tool: gauging listening difficulties experienced by working-age adults with normal audiograms.(research: normal & mild hearing loss). The Hearing Review, 23(3), 20.

Vygotsky, L.S. (1978). Mind in society: The development of higher psychological processes. Cambridge, MA: Harvard University Press.

World Health Organization. International Classification of Functioning, Disability and Health, Geneva, World Health Organization; 2001.

THE OHIO STATE UNIVERSITY
WEXNER MEDICAL CENTER

THE OHIO STATE UNIVERSITY
WEXNER MEDICAL CENTER

Questions?

Thank you for joining us!

Kara.Vasil@osumc.edu
Christin.Ray@osumc.edu
Erin.Stefancin@osumc.edu
hear@advancedbionics.com
866.844.4327

Presented in Partnership with

CONTINUED