

Introduction

In audiology, clinicians are expected to possess certain essential skills and attributes. The Ontario Council of University Programs in Rehabilitation Sciences (OCUPRS) has a guideline outlining the skills required for successful study, completion, and entry into a rehabilitation science field. Specifically, for audiology students and practicing clinicians they must demonstrate skills in sensorimotor function, cognition, communication, and professionalism.

Ideally, CARL training sessions will provide practice in each skill area by providing clinicians with a unique learning environment to build sensorimotor skills, use clinical reasoning and judgment to apply skills, communicate information effectively, and display professionalism by gaining a deeper understanding and improving on clinical skills.

Implementation

Each week, clinicians will spend at least 30 minutes, in the morning, on CARL training sessions. The 30-minute session length will reduce/prevent any impact on the clinic schedule and provide the clinician with an efficient and effective session on a specific topic. Since the training sessions are conducted over short periods of time, each session will be targeted to add, refine, and build the clinicians skill set.

The learning strategy will include spaced practice (practicing over time not all at once), elaboration (clinicians providing answers to thought-provoking questions), and retrieval practice (bringing learned information into practice); all proven learning strategies from cognitive science. This strategy will help to ensure that clinicians get the most out of the training since it is appropriate/relevant to the clinician, valued by the clinician to improve skills thereby creating a better patient experience, and with minimal effort and maximum efficacy.

Example Learning Schedule

Note: This schedule is for example purposes only. Please consult your organization or AHead Simulations for implementation schedules for your environment and requirements.

Learning Schedule Overview

	Mon	Tues	Wed	Thurs	Fri	Sat	Sun
Week 1	9am (30min) Session 1: Get to Know CARL & Otoscopy		9am (30min) Session 2: On-ear Verification 1				
Week 2	9am (30min) Session 3: On-ear Verification 2		9am (30min) Session 4: On-ear Verification 3				
Week 3	9am (30min) Session 5: Assessment of Skills & Survey						

Session 1: Get to know CARL & Otoscopy

Time	Breakdown	Overview of Skills
Week 1, Monday at 9am	5-10 min: Reading 15 min: Practice 5min: Written portion	CARL: Using CARL, available CARL ear anatomies, CARL uses. Otoscopy: Speculum size selection, maneuvering, bracing, visualizing CARLs tympanic membrane, communication of procedures Clinicians will complete a written component.

Session 2: On-ear Verification (Probe-tube Placement)

Time	Breakdown	Overview of Skills
Week 1, Wednesday at 9am	5-10 min: Reading 15 min: Practice 5min: Written portion	Machine calibration, proper placement of probe mic on-ear, using probe tube marker, average probe tube marker placements (i.e. men, women, children), proper insertion depth and checking, communication of procedures Clinicians will complete a written component.

Session 3: On-ear Verification (RECDs)

Time	Breakdown	Overview of Skills
Week 2, Monday at 9am	5-10 min: Reading 15 min: Practice 5min: Written portion	Using skills from day 2 to perform a RECD. Calibration of machine. Using inserts and/or a pre-made mold, selection of insert, proper placement of insert, complete RECD, understand how to see placement issues (probe tube or insert) or probe tube issues (clog), and communication of procedures

Session 4: On-ear Verification (Complete session with probe-tube placement, RECD, Hearing Aid Insertion)

Time	Breakdown	Overview of Skills
Week 2, Wednesday at 9am	5-10 min: Reading 15 min: Practice 5min: Written portion	Using skills from day 2 and 3 to perform a complete on-ear verification session including: otoscopy, probe tube placement, RECD, hearing aid insertion, fine tuning, communication of procedures Clinicians will complete a written component.

Session 5: Assessment of Skills & Survey

Time	Breakdown	Overview of Skills
Week 3, Monday at 9am	10-15min: Assessment 10min: Survey	Evaluation of skills by management using REM protocol/competency list (see below). Clinicians will complete a survey

REM Assessment Checklist

Verifit Calibration

- ☐ Test box reference microphone
 - ☐ Check curve
- ☐ RECD transducer
 - ☐ Check curve
- ☐ On-ear probe microphone
 - ☐ Check curve

Verifit Calibration

- ☐ CARL software running probe tube module
- ☐ Hearing loss entered into Noah
- ☐ Hearing loss entered in Verifit
- ☐ Hearing aid connected to software
- ☐ Hearing aid muted
- ☐ Hearing aid in "verification mode"
- ☐ Hearing aid specifications:
 - ☐ Proper selection of hearing aid end/coupler based on CARLs ear size and hearing loss entered
 - ☐ Proper selection of hearing aid receiver wire length
 - ☐ Proper selection of hearing aid receiver strength

Otoscopy

- ☐ Explanation of procedure
- ☐ Correct speculum size
- ☐ Proper grasp of otoscope
- ☐ Proper bracing with otoscope
- ☐ Small, smooth movements with otoscope
- ☐ Pull pinna up and back
- ☐ Visualization of tympanic membrane (TM)
- ☐ Description of ear (i.e. clear, unremarkable)

RECD

- ☐ Explanation of procedure
- ☐ Proper placement of probe tube marker
- ☐ Proper placement of on-ear probe module on ear (mark end with black marker for cameraCARL)
- ☐ Proper insertion depth of probe tube (2-5mm of TM)
 - ☐ Check insertion depth with camera
- ☐ Proper size foam tip selected
- ☐ Proper placement of RECD transducer with foam tip
 - ☐ No movement of probe tube marker
 - ☐ Check insertion depth with camera (optional)
- ☐ Accurate RECD of CARLs ear
 - ☐ Check curve
 - ☐ No/minimal venting

On-Ear Hearing Aid Verification

- ☐ Explanation of procedure
- ☐ Remove foam insert without moving probe tube
- ☐ Ensure proper probe tube placement
- ☐ Insert hearing aid without moving probe tube
- ☐ Fit hearing aid to 100% target gain using a prescriptive formula
- ☐ Address any issues that may arise during the fitting (i.e. unable to reach targets due to receiver strength)
- ☐ Save and print session

- ❑ Remove all equipment and hearing device from ear

Extensions

- ❑ Fit to target using different formulas noting the differences and similarities
- ❑ Fit a device to a hearing loss that requires frequency lowering
- ❑ Determining CARLs ear canal resonance
- ❑ Partially plug probe tube and see how this effects measurements
- ❑ Perform RECD and hearing aid fitting using a custom earmold
- ❑ Insertion (and verification) of Lyric
- ❑ Insert large, non-occluding piece of 'cerumen' to see the effects on measurements

Conclusion

With this in-depth REM overview, training, and assessment, your staff should have the knowledge, tools, and hands-on experience to go above and beyond standard of care for your clinic and give the best patient experience you can. By enforcing education and competency criteria for your staff, you ensure a consistent and high quality experience for all of your clients that walk into your doors every day.