

Infant Hearing Program (IHP) Remote Audiology Assessment (RA) Manual

Training Objectives

The purpose of this manual is to provide IHP staff, including coordinators, audiologists and screening technicians, with a comprehensive, yet easy to use training guide to Remote Audiology Assessments (RA). This manual also provides how-to and practical information about the various aspects of RA which includes information on personnel, video conference protocol, equipment, infection control, the assessment and follow-up with families.

The contents of this guide have been designed to help RA providers:

- **Set up equipment properly**
- **Troubleshoot equipment problems**
- **Prepare the child and family for the assessment**
- **Complete the appropriate paperwork**
- **Communicate results to families**

This manual is not intended as an assessment guide. Providers should refer to the IHP Infant Assessment Protocol document for relevant information.

Remote Site Technician Requirements

The Remote Assessment (RA) program allows for the assessment of infant hearing via a video conference link on the Ontario Telehealth Network (OTN). The testing is performed by an IHP trained audiologist at a host site. The infant is located at a remote site, and is prepared for testing and monitored by a screening technician under the direct supervision of the testing audiologist. Screeners must be trained on this protocol prior to performing remote assessment activities.

Remote Site Technician qualifications

Technicians at remote sites should be trained IHP Stage II screening technicians and should have sufficient Stage II screening experience to be able to perform a Stage II screen without re-training or refreshing skills. Exceptions to these qualifications will require prior IHP approval.

Training personnel

Technicians shall be trained in techniques associated with RA by IHP ABR audiologists. The trainer and scheduling of training will be arranged between the RA coordinating office and the IHP regional office in which the screener is located. Initial training will occur in person, and will not be done via any remote means. Technicians should have experience with an actual test on at least one infant before participating in a remote assessment.

Training Objectives

The purpose of this document is to provide a training resource for RA, and includes information on:

- Video conference protocol
- Equipment unpacking, connections and re-packing
- Infection control
- Preparing for the assessment
 - Communicating with the Family
 - Infant Preparation for Sleep
 - Electrode Site Preparation
- Assessment procedures
 - Insert Earphones
 - Bone Oscillator
 - OAE Probe
 - Infant Monitoring

Videoconference Protocol

All videoconference scheduling, room booking and in-call issues will be the responsibility of the remote site Ontario Telehealth Network (OTN) coordinator who will, in most cases, be available at the remote site. The coordinator will be able to operate all OTN equipment, access the help desk if necessary and assist in technical details.

The audiologist at the host site will initiate and terminate the call and will also be able to manipulate the camera angle and zoom control from their site in order to view the infant. Be aware that the camera may move during testing.

It is important to be aware of some of the issues that may be encountered during a video conference call. Some tips for videoconference calls are listed below:

- Be aware at all times that you, the infant and the parent(s) are on camera.
- Be aware that audio feed is live unless you mute your microphone. The mute button is on the remote control.
- Others participating in the call will usually have their systems muted, but if you should hear distracting conversation over your audio, remind the others that their microphone is live.

Equipment

The NavPro equipment used in the testing will be shipped to the remote site community prior to testing. The equipment is shipped in a durable yellow shipping container with a padlock. The scheduling coordinator will inform the technician of the combination prior to shipping the equipment.

The equipment must be unpacked and all cabling connected to the laptop and headbox prior to the infant's arrival. The network cable from the switch must be plugged in to the OTN network port as well. The OTN coordinator will know which port this is and can assist. All equipment is labeled and numbered and the following instructions are included in the shipping container.

1. Connect the following to the laptop:
 - a. USB to Headbox cable
 - b. Mouse
 - c. Network cable (to switch)
 - d. Power supply
2. Connect the following to the Headbox
 - a. USB from computer
 - b. Power supply
 - c. Patient cable (blue connector), insert phones (yellow connector), OAE probe (black connector)
 - d. Bone oscillator (small grey connector)
3. Connect the following to the Switch:
 - a. Network cable from OTN port
 - b. Network cable to video conference equipment
 - c. Network cable to laptop
 - d. Power supply
4. Connect the following to the Main Power Supply
 - a. Power for laptop, headbox and switch.

The patient cable has 4 cables attached that connect to the infant electrodes. They connect as follows:

- Input 1, Ch 1 & 2 (connected to jumper) to center of forehead, as close to the hairline as possible.
- Input 2, Ch1 to left mastoid, behind and below the ear.
- Input 2, Ch2 to right mastoid, behind and below the ear.
- Common to forehead, to left or right of the Input 1 electrode, at least 3 mm away from the Input 1 electrode.

Once the assessment is complete, the technician will remove the electrodes, earphones, bone oscillator and band from the infant. Electrodes and insert earphones are to be discarded. The equipment will be wiped with a surface disinfecting wipe and packed into the shipping case in a neat and orderly fashion. Care must be taken not to wrap cables too tightly and to avoid damage to all equipment. The screener will ensure that all equipment is re-packed in the shipping case and will notify the coordinating site that the equipment is ready for pick up.

Infection Control

All RA procedures shall comply with all pertinent infection control standards of the remote site facility. Equipment will be delivered with clean probe tips and new disposables. In the absence of specific facility standards, the relevant regional IHP standards shall apply.

Preparing for the Assessment

Communication with the Family

Remote site technicians will introduce themselves to the family and explain the procedures associated with setting up for the videoconference connection. Once connected, the technician will introduce the host audiologist who will describe the purpose of the testing and the process involved in the remote diagnostic assessment. During testing, the audiologist will advise the family and prompt the technician of the ongoing assessment process, for example, placement of insert phones, bone oscillator etc. The technician will not convey any information on the results of, or rationale for test processes. The technician will advise the families to direct questions to the host audiologist following the assessment. At the completion of the appointment, the technician will ensure that the family has information referred to, or recommended by the audiologist, including contact information and next steps.

Infant Preparation for Sleep

The safety and comfort of the infant are the paramount concern, and all reasonable steps shall be taken to ensure them. The infant shall be supervised closely throughout the testing by the technician. Local protocols must comply with all relevant local safety standards and with generally accepted standards of care.

Scheduling will have been arranged around the infant's sleep schedule so as to have the infant arrive at the test site ready to sleep. Parents and caregivers will have been advised that the infant should not sleep prior to, or on the way to testing. The infant may be irritable and may awaken during preparation for electrodes, so this should be done as soon as possible upon the infant's arrival. Swaddling the infant at this time may be helpful for inducing sleep once the prep work is done.

Presence of family members/caregivers during ABR testing is at the discretion of the IHP audiologist. In many remote site locations, space will limit attendance of family members to one. Siblings should not be included in the test environment, as their ability to remain quiet during the testing is generally limited.

Family members differ widely in their knowledge and skills related to infants' sleeping habits. They may distract or excite the child, may use inappropriate strategies to promote sleep, or may otherwise compromise testing. Some parents however, are genuinely skilful, so allowing them to try and get their child to sleep may be helpful. It will be left to the audiologist's and the technician's discretion as to whether it is best to have the family wait in another room

Electrode Site Preparation

Four recording electrodes are used for diagnostic assessment, as opposed to three with the ABAer screening. Electrode impedances (or contact to the skin) can have significant effects on successful testing and more attention is needed for diagnostics than with the ABAer. For this reason, the audiologist will need to be sure that the appropriate impedance values are met. Site preparation using alcohol pads and a mild abrasive gel (Nu-Prep) shall be done as directed by the audiologist. Excessive abrasion must be avoided, but careful preparation to each electrode site is essential for a successful test.

Once the electrodes are placed, the audiologist will check impedance to determine the suitability for testing. If it is found that impedances are not appropriate, the audiologist will direct the technician in placing new electrodes.

Assessment Procedures

Insert Earphones

The insert earphones used for ABR testing differ slightly from those used in screening. The tips used will be a foam type, pre-cut to fit infant ears. The tips are placed on the ends of the red and blue tubes on the insert earphones. The technician should ensure that the tips are on all the way and are secure. The red earphone is for the right ear and the blue goes to the left ear. Prior to inserting the tips, the technician shall visually examine the infant's ear canals for debris or occluding cerumen. Any apparent abnormality or obstruction shall be reported to the audiologist. Earphones are to be inserted in both ears prior to testing. To insert the tips, they are gently rolled between thumb and forefinger to compress the foam. Once compressed, the tips are gently, but firmly placed in the infant's ear canals. The tips should be at least halfway in the ear canal and no further than the end of the foam (10 mm). It is important not to push the ear tip in deeper than 10 mm as it may harm the infant. The tips should be held gently in place for approximately 30 seconds while the foam expands.

Bone Oscillator

The bone oscillator is a required component of the assessment protocol and the audiologist may direct the technician to fit the oscillator to the infant during testing. It is placed on the side of the head to be tested, above and slightly behind the infant's ear, with the protrusion against the infant's skull. It must be placed in such a way that it is not angled against the head. The bone oscillator is held in place with a band of elastic fabric with Velcro attachments. It is recommended that the band be placed on the infant once the electrodes are in place. This way, there is less chance of awakening the infant when use of the bone oscillator is required. If needed, the bone oscillator is then slipped under

the band and moved into place above and slightly behind the ear. The audiologist will visually check the placement of the bone oscillator and will advise if adjustment is necessary.

OAE Probe Tip

The probe used for otoacoustic emissions is the same probe used with Stage I and Stage II screening equipment and is handled and inserted in the same manner.

Infant Monitoring During Testing

The assessment can only be performed if the infant is in a state of relaxed sleep. During the test, the audiologist will be monitoring the infant's state and will 'pause' the test should the infant show signs of waking or of movement. However, it is important that the technician monitor the baby during the test and be ready to act to soothe the baby back to sleep. The test can be 'paused' to accommodate feeding, burping, changing and re-settling as necessary.

End of Assessment

Upon completion of the assessment, the audiologist will convey the appropriate information to the family. Once the assessment is complete and the audiologist has signed off, the screening technician will gently remove the electrodes, insert earphones, bone oscillator and Tensor wrap from the infant. Electrodes and insert earphones are to be discarded. The equipment will be wiped with a surface disinfecting wipe and packed into the shipping case in a neat and orderly fashion. Care must be taken not to wrap cables too tightly and to avoid damage to all equipment. The screener will ensure that all equipment is re-packed in the shipping case and will notify the coordinating site that the equipment is ready for pick up.