CSASK

Pediatric Audiology Practice Guideline (0-5 Years)

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Preamble

This document provides guidance regarding safe, ethical and effective practice for audiologists who are new to the profession, new to practice with infants and very young children or are expanding their expertise in a specific clinical practice area with this population. This document does not prescribe specific step-by-step instructions for service provision. It is the responsibility of audiologists who provide care to infants and very young children to develop or adopt detailed clinical protocols or procedures appropriate to the population they serve. This document cites relevant examples of such protocols, which are published for reference and use.

Registered audiologists licensed to practice in Saskatchewan meet the minimum competencies outlined in the National Audiology Competency profile (1). The Code of Ethics of the College of Speech-Language Pathologists and Audiologists of Saskatchewan (CSASK) states that registrants must “engage only in the provision of services that fall within their professional competence, considering their level of education, training and experience”(2). The committee recognizes that audiology practice is evolving and that audiologists require continuing education to remain competent throughout their careers. In order to move beyond entry-to-practice competencies, advanced skills training in specific areas or procedures is required. Members must have accurate and honest assessments of their own abilities and experience to engage in ethical practice.

Standards of care for audiological practice involving children aged 0 to 5 years are informed by the principles of Early Hearing Detection and Intervention (EHDI) as outlined in the Joint Committee on Infant Hearing 2019 Position Statement (3). Audiologists working in EHDI must have the necessary competencies, resources, and equipment to meet evidence-based standards of practice, given the risk of harm from delayed or inaccurate identification and management of hearing loss during the sensitive language development period. If an audiologist lacks the required resources, training, or experience to meet established standards of practice, they should refer to an audiologist who does possess these skill sets.

How this guideline should be used:

- This guideline is to be used as a framework for clinical service provision for infants and very young children aged zero to five years.
- This guideline is not a tutorial and does not provide all the information required to practice in the area.
- Clinicians must document and be prepared to fully explain departures from this guideline.
- This guideline may be referred to for the purposes of clinical practice assessments, skill development in advanced pediatric audiology practices and disciplinary proceedings.
- Any evaluation of an audiologist's adherence to this guideline for the purpose of disciplinary or other licensing considerations should be conducted with the support of an audiologist with expertise in the practice area.

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1. IDENTIFICATION

1.1 Background

Any infant or very young child requiring a detailed hearing assessment will be referred to a pediatric audiologist with the qualifications, training, and equipment to conduct and interpret age-appropriate, frequency-specific air- and bone-conduction audiometry, otoacoustic emissions, and immittance testing.

1.2 Rationale

Hearing has a significant impact on the speech-language, cognitive, and psychosocial development of the infant and child. Early identification of significant PHL is critical to ensure the best outcomes (3). Accurate assessment of hearing levels can occur within the first month of life. For infants, evaluation will consist of objective measures including otoacoustic emissions (OAEs), frequency-specific Auditory Brainstem Response (ABR) audiometry and age-appropriate immittance and acoustic reflex measures. Evidence-based clinical protocols are available to determine measurement parameters and what results are required for different hearing profiles (4,5). Infants who "refer" on newborn hearing screening or are identified with high-risk indicators for PHL should receive timely referral to a qualified pediatric audiologist. Infants assessed in the first three months of life are more likely to sleep during their evaluation. This leads to a timely diagnosis if hearing loss is present and minimizes the burden on families of attending repeat testing. ABR thresholds will be used for fitting of amplification if indicated.

Children over six months of age can be tested using behavioural audiological procedures, including sound-field and ear-specific testing in the sound booth, OAEs, and age-appropriate immittance/acoustic reflex measures. Evidence-based clinical protocols are available to determine measurement parameters and the results required for different hearing profiles (6).

The main goals of hearing assessment for infants and children are:

- To confirm or deny the presence of a hearing loss.
- To provide the most complete audiometric record possible to allow for intervention to proceed as indicated.
- To provide surveillance of hearing levels in populations at risk for later onset or progressive hearing loss.

The specific objectives of a hearing evaluation in infants and children are:

- Accurate ear-specific and frequency-specific threshold estimation
- Identification of the type of hearing impairment if present (conductive, sensorineural, mixed, neural)
- Identification of children who may require higher-order audiological evaluation (e.g. central auditory processing evaluation).

1.3 Resource Requirements

- An audiometric test environment compliant with current standards for maximum permissible ambient noise levels (4, 5, 7).

- Dual channel audiometer capable of presenting pure tone and frequency modulated warbled tone stimuli from 250 Hz through 8000 Hz to profound levels with insert earphones, TDH headphones, bone conductor and sound-field speakers, all meeting current ANSI standards
- Visual Reinforcement Audiometry (VRA) system (if evaluating infants and children under four years of age)
- Auditory evoked potential system(s) with the capability of measuring OAEs and conducting frequency-specific air and bone conduction testing (if providing ABR testing)
- Acoustic Immittance system with appropriate capabilities for the age of the infant/child evaluated
- Otoscope
- Required single-use disposable supplies
- Infection control materials

As a minimum requirement, clinicians should adhere to all infection prevention and control policies at their site. Infection control guidelines specific to audiology are available to support the establishment of such procedures or policies where they do not already exist (11).

Equipment must be installed by a qualified/certified audiometric instrument specialist, authorized and trained by the equipment manufacturer, and calibrated to ANSI specification standards (ANSI/ASA S3.6-2010) for Audiometers. Equipment should be routinely checked to ensure proper function and calibrated at least annually, where indicated. All equipment must be maintained in accordance with industry standards, and service records must be kept in accordance with CSASK guidelines (12).

Infants and young children should be supervised throughout the assessment by an individual familiar with relevant safety procedures and adequately trained in handling young infants. Workplace safety standards must be observed and should be considered when establishing site-specific protocols.

1.4 Best Practice

- The audiologist must ensure they have training and experience evaluating infants and children less than five years of age. This should include coursework in infant and pediatric diagnostic audiology, as well as demonstrated experience and competence with frequency-specific air and bone audiometry in modalities appropriate for the age range being tested (e.g., ABR, VRA, CPA).
- Specialized training is required to maximize understanding of, and to fulfill a highly specific standard of care with many mandatory elements (4,5,6).
- If an audiologist doesn't have training and experience in this area, they will refer to an audiologist who does have these competencies.

The following components will be included in all evaluations:

- The audiologist will obtain a complete case history as is relevant to the presenting concerns.
- The audiologist will choose appropriate evaluation protocols for the client's needs, age and developmental level.
- The audiologist will complete appropriate documentation on each client in their care. This includes consent, case history, evaluation results and correspondence with the family and/or other care providers (12).

- The audiologist must refer to the appropriate professionals when presenting conditions outside the area of competency for an audiologist.
- The audiologist will communicate results and recommendations clearly to the family of the client, including implications for development.
- The audiologist will refer the family to other health services and community-based resources as indicated by the client's needs.
- The audiologist will include the family in any decisions regarding the care of their infant or young child.
- The audiologist will discharge the child from care when evaluation and/or treatment goals are met.

2. INTERVENTION: AMPLIFICATION

2.1 Guideline Principles

The Saskatchewan Pediatric Audiology Amplification guideline is based on four key principles:

1. This guideline is science-based. The content of the protocol is based on the best available scientific evidence in the field of pediatric amplification, whenever possible.
2. The provision of amplification should occur at the earliest possible time after the confirmation of hearing loss to minimize the negative developmental consequences associated with untreated hearing loss.
3. The goal of providing hearing aids for infants and young children should be to make speech audible and, in cases of unilateral hearing loss, to promote binaural hearing when possible. Candidacy decisions about amplification are based on the degree to which audibility is reduced by the child's hearing loss, and hearing aid verification is designed to confirm that the audibility of speech has been optimized with amplification.
4. The provision of amplification for infants and young children is a partnership between the parents/caregivers, audiologists, otolaryngologists and early intervention providers.

2.2 Competencies and Facility Requirements

A. Personnel; Test Environment; Equipment, Supplies and Calibration:

This guideline lists standard competencies and facility requirements for pediatric audiology and amplification.

Clinics providing pediatric amplification services must have all hardware (e.g., otoscope, audiometer, computer, verification equipment), software (e.g., NOAH database, hearing aid programming software), and consumables and supplies (e.g., specula, probe tubes, foam eartips, pediatric BTE parts). A sample list of equipment and supplies is available in the BCEHP Amplification Protocol (9).

B. Data and Documentation

All clinical data and documentation must be maintained in accordance with the requirements outlined in the CSASK Documentation and Record Management Guideline (12) and retained in the child's record. Documentation requirements include: client personal information, clinical visit dates, medical clearance date, audiometric results, immittance results, OAE results, Real-Ear to Coupler Difference (RECD) measurement values, ear-specific hearing device model/serial numbers, and hearing aid verification printouts.

The information will be used to determine eligibility for funding, confirm the accuracy of invoicing, and track intervention services. Information about individual children may be shared with other professionals who provide services to families as part of the program. These professionals may include other hearing clinics, hospitals, health units, child development centers, early intervention programs, and education centers. Consent to the disclosure of personal health information to other professionals will be obtained in accordance with provincial Health Information Protection legislation (13).

2.3 Amplification Candidacy and Audiological Data

This guideline determines candidacy for amplification by considering the degree of hearing loss and Speech Intelligibility Index (SII) value, medical clearance, age at fitting, audiometric thresholds, and RECDs.

Children with unaided SII values $\leq$80 in at least one ear should be considered candidates for amplification. Binaural amplification is recommended for all infants with confirmed PHL in both ears (SII $\leq$ 80 for both ears), and includes any hearing loss for which there is reasonable evidence that a child's development will be compromised without intervention (8,9).

This guideline supports the provision of amplification by six months of age (corrected age) in all appropriate cases (3,8,9). Fitting of amplification should be based on a minimum of two confirmed thresholds per ear (2000 Hz and 500 Hz). If moderately severe to profound hearing loss is clearly confirmed, the child should be referred to the appropriate services for cochlear implant candidacy assessment and consultation.

Audiologists should refer children with PHL for medical evaluation as soon as the hearing loss is confirmed. A referral for medical evaluation is important for confirming that non-medical intervention is appropriate and for identifying potential medical conditions related to hearing loss (8, 10). Best practice includes referral to an otolaryngologist for assessment of etiology and medical clearance prior to hearing aid fitting. As of the time of this document, referral to the most responsible physician (family doctor or pediatrician), with a request to refer to otolaryngology and the inclusion of a full audiology report, has been the standard process in Saskatchewan. This document supports direct referral to Otolaryngology, Otology or Neurotology for etiology investigation and medical clearance where such a pathway exists. In some cases, families may experience delays in accessing otolaryngology care due to distance, lack of a family physician, or other personal factors. Where obvious medical contraindications are absent (ie, ear drainage) and the family has elected amplification, medical clearance is not required before the audiologist can take earmold impressions or begin trial amplification with loaner devices (8,9).

Amplification For Different Types Of Hearing Loss:

This guideline identifies important considerations for the provision of amplification for infants and young children with:

- Unilateral Hearing Loss (UHL) - aidable and unaidable
- Mild Bilateral Hearing Loss (MBHL): PTA of 20 to 40 dBHL in both ears
- Long-term Conductive Hearing Loss (CHL)
- Auditory Neuropathy Spectrum Disorder (ANSD)

2.4 Contralateral Routing Of Sound (CROS), Bone Conduction Devices, and Bimodal Stimulation

This guideline recommends individualized decisions regarding CROS devices (air conduction or bone conduction) for young children 0-5 years with severe or profound unilateral hearing loss (UHL). This is an area of audiology practice which is evolving rapidly. Severe unilateral sensorineural hearing loss may contraindicate fitting with a Behind-the-Ear hearing aid (BTE) due to the risk of masking of the better-hearing ear by crossover. Careful consideration should be given to device recommendations for unilateral hearing loss. Any decisions regarding an individual infant or child will be evidence-based.

Bone Conduction devices should be considered for unilateral and bilateral CHLs, and for mixed hearing losses (BC PTA < 45 dBHL) that can't be fit with a BTE. At least one low-frequency and one high-frequency bone conduction threshold should be confirmed for the selection and fitting of a bone conduction device. Typically, thresholds at 500, 2000 and 4000 Hz will be obtained. Bilateral Bone Conduction devices may be indicated for bilateral conductive hearing loss, but the benefit should be clearly established for individual clients before recommending purchase. Conductive hearing loss should be shown to be long-term (lasting a period of over six months), and medical clearance should be provided prior to proceeding with intervention.

Evidence suggests that bimodal stimulation is beneficial to children and adults for speech recognition and sound localization, and children who receive a unilateral cochlear implant and have residual hearing in the opposite ear should be considered candidates to continue using conventional amplification in the non-implanted ear.

Further decision-making support regarding device recommendations for mild bilateral conductive and unilateral hearing loss can be found in published amplification protocols (8,9).

2.5 Criteria for Hearing Instrument Selection

Hearing instruments chosen for inclusion in this guideline have several features that are mandatory and/or desirable for pediatric hearing aid fittings. These include non-electroacoustic characteristics of BTEs (e.g. compatibility with RM-HAT, tamper-proof BTE hook and battery doors, IP68 moisture resistance rating, parental controls and indicators) and important electroacoustic characteristics (e.g. sufficient gain to meet target levels, flexible fitting range). These features are outlined in the following sections.

2.6 Earmolds: Style, Material, Tubing

This guideline defers to the audiologist's discretion for choice of style, but states that shell style earmolds with no vent are often recommended for infants in order to maximize retention, durability, and avoid feedback. A helix-lock may help if retention is a problem, but caution parents to ensure proper insertion. For older children, venting may be desired, depending on the degree and configuration of the child's hearing loss, to avoid unnecessary occlusion of the ear canal.

This guideline identifies the two main choices of pliable earmold material to be considered for infants: PVC (vinyl) or silicone, with consideration for any allergies. PVC is stiffer and can allow tubing to be glued, so it may be preferable for children less than six months of age, or for children with unusually small ear canals.

2.7 Prescriptive Targets and Verification of Electroacoustic Characteristics

Audiologists will employ independent, pediatric-focused, and pediatric-validated prescriptive targets, normative data, and fitting methods that account for the developmental and auditory needs of children. Fitting with the manufacturer's proprietary prescriptive approaches alone is not supported by this guideline. Hearing aid manufacturer prescriptions are typically developed for proprietary use with their hearing aids, may be based on adult fitting prescriptions and are not standardized or subjected to external scrutiny. Validation studies indicate high levels of speech recognition in controlled and real-world environments when hearing aids are fit using prescriptive targets generated by independently developed formulae such as the Desired Sensation Level (DSL) or National Acoustics Laboratories (NAL) prescriptions and when the individualized fitting is verified through real-ear, probe microphone measurements (10).

Audiologists will decide the specific method of verification on a case-by-case basis. This guideline supports the use of simulated real-ear aided measurements (SREM) using a measured RECD to estimate the output in the individual child's ear. With infants and young children, this method is often more practical than direct real-ear aided response measurements with children because it requires less cooperative time from the child and is not affected by head movement. Signals used to verify maximum output are also loud and may startle young children. For these reasons, simulated coupler measurements of maximum output using RECD may be preferable over real-ear measurements. RECD is measurable in most cases with routine practice. Predicted RECD should be used where measured RECD is contraindicated.

This guideline recommends that hearing aid fittings should be matched within 5dB of prescriptive targets at input levels for soft (55 dBSPL), average (65 dBSPL) and loud speech (75 dBSPL), in addition to Maximum Power Output (85 or 90 dBSPL). SII for soft and average speech should be compared to the normative SII range (8,9). If the hearing aid fitting deviates more than 5dB from prescriptive targets, or SII is outside of the normative SII range, the reason for such deviation should be documented.

2.8 Advanced Signal Processing Features: Activation And Verification Of Feedback Suppression, Frequency Lowering, Noise Management, and Directional Microphones

This guideline notes that many advanced signal processing algorithms and features in hearing aids are designed based on adult listening preferences and perception, and that there is limited research on their benefits for children. To measure the effects of such advanced features, speech-based verification should occur when any advanced processing feature is activated and not using the manufacturer's "verification mode," except for verification of the maximum power output (MPO).

Advanced signal processing features can benefit children, but the effects on audibility must be quantified when employing any advanced processing features (e.g., feedback suppression, frequency lowering, noise management), and such strategies should be activated prior to verification. Adaptive directional microphones can provide better auditory access to speech; however, because young children do not always orient themselves to the talker of interest, they should not be activated until the child is older.

2.9 Outcome Validation

The goal of amplification is to ensure that a child's own speech and that of others is audible, comfortable and clear, and identifies measures for outcome validation for monitoring a child's functional abilities with their hearing aids over time, including behavioral assessment of Aided Speech (Aided/Unaided Speech Awareness Threshold (SAT) or Speech Reception Threshold (SRT), and Word Recognition Score (WRS)) and Functional Assessment Questionnaires.

Outcome validation involves ongoing collaboration among the team, including qualified early interventionists. Further diagnosis is required when minimal progress in auditory development is identified after a trial with amplification. This may involve a referral for ABR, referral to the Cochlear Implant Program or counselling regarding communication modality.

2.10 Follow-up Guidelines for Amplification

This guideline recommends a regular follow-up schedule for audiological appointments, which includes earmold check, BTE listening check, probe microphone measurements, electroacoustic analysis and aided behavioural audiometric evaluations.

The Saskatchewan Guideline supports the use of caregiver-report questionnaires as the main method for monitoring young children with hearing aids. The Ontario Protocol for the Provision of Amplification can be directly referred to for recommended amplification outcome monitoring tools. This protocol expands on previous versions referenced in the former PedAmp guideline and is designed to aid audiologists in monitoring and tracking hearing outcomes for children ages 0-6 years. A sample detailed follow-up schedule can be found in the Ontario protocol (8).

3. INTERVENTION: ASSISTIVE LISTENING DEVICES/REMOTE MICROPHONE

3.1 Background and Rationale

According to the US Food and Drug Administration (FDA), Assistive Listening Devices (ALDs) are defined as a large variety of devices designed to help you hear sounds in everyday activities (14). The College of Health and Care Professionals of British Columbia (formerly the College of Speech and Hearing Health Professionals of British Columbia) defined Remote Microphone Hearing Assistance Technology (RMHAT) as a microphone placed close to the talker's mouth where the decibel level of acoustic speech is well above that of interfering noise and reverberation resulting in a high quality signal delivered to the listener via a personal RMHAT such as FM or infrared receiver, sound field loudspeaker or induction loop receiver (15).

The benefits of ALDs and RMHAT with children who have hearing loss have been well established in the educational setting. We know that these technologies help improve listening in environments with poor signal-to-noise ratios, when the distance between the listener and the talker is great, and when reverberation is present (16). These benefits may also be applied to home and daycare settings to overcome the same issues as in the classroom and to aid in the development of language acquisition.

ALDs and RMHAT need to have guidelines and protocols established to help aid the individuals who will be diagnosing and fitting children of Saskatchewan with amplification.

3.2 Recommendations/Guidelines for CSASK Audiologists

AAA's Clinical Practice guideline provides clarification in determining candidacy for RMHAT (16).

Step 1 - Potential candidacy for RMHAT

Does the child have hearing loss, auditory processing deficit, a learning disability, ANSD, language deficit, attention deficit or is an English language learner? If so, is there documented evidence of hearing, listening or learning problems?

Step 2 - Considerations

Acoustic environment, social/emotional, functional and support. If there are no contraindications, move to the next step.

Step 3 - Device Selection

Involves examining audiological information, developmental concerns, the child's listening environments, and technological issues.

Step 4 - Fitting and Verification

After the selection of the RMHAT has been completed, the device needs to be verified before it can be fitted on a child. Verification includes both audibility and intelligibility.

Step 5 - Implementation and Validation

AAA recommends that an RMHAT plan be developed for the child, including information on orientation, instructions for use, and guidelines for an appropriate follow-up schedule. Validation for the RMHAT would include either objective or subjective measurements and should be conducted in or reflect the child's typical listening environment. Validation tools include self-assessment, observational questionnaires completed by parents or caregivers, and functional evaluations performed in the child's typical listening environment.

Step 6 - Monitoring

AAA's Clinical Practice guideline also recommends that any child who is fitted with an RMHAT device should have it checked regularly to ensure it is working properly. If repairs are needed, they should be completed in a timely manner, with a loaner provided when possible. A monitoring plan should be established that outlines who will do the monitoring, along with the location and schedule of the monitoring. The child using the RMHAT device should be evaluated to determine whether they are meeting their auditory and listening goals and can communicate with their peers.

4. INTERVENTION – AUDITORY (RE)HABILITATION

4.1 Evidence-based Practice

Decisions about intervention planning will be based on evidence and in collaboration with the family. Evidence will include information from current research, assessments, objective and subjective outcome measurements, as well as family observations and values. Intervention may include fitting with hearing technology, speech-language pathology services, auditory (re)habilitation, medical intervention, sign language learning, and other interventions. Families will be provided with information about intervention options without bias. Decision-making regarding intervention, in collaboration with the caregiver(s), will be revisited based on need and assessment at regular intervals.

4.2 Family-Centred Care

Family-Centred Care refers to the principle and practice that puts the family at the heart or centre of services, recognizing family strengths and competence. Core features include:

- Parent-service relationship that is considered a partnership
- Family choice and decision making
- Provision of flexible services
- Family strength used as a resource
- Respect for family diversity
- Empowering assistance

4.3 Individualized and Flexible Intervention Services

- Recognition of the uniqueness of every child and family, and that no one method, approach or specific curriculum will meet the needs of all families
- Services will be provided by qualified individuals
- Need for telehealth services to reach families and professionals working with families

4.4 Support, Communication and Collaboration

- All reasonable efforts should be made to ensure the family receives all necessary support through the auditory (re)habilitation process. This may include access to services and information within the immediate health care team, as well as community-based organizations.
    - Members of the early interventionist teams serving infants and children will communicate and collaborate with other professionals working with the family to optimize outcomes.

4.5 Recommended Standards for CSASK Audiologists

Standard 1: Initiate Intervention Services by Six Months of Age

Infants should begin receiving appropriate Early Intervention Services by six months of age, wherever possible.

- Frequency of service
    - Families of young children and infants with bilateral moderate or greater hearing loss should be seen at frequent regular intervals.
    - Families of young children and infants with bilateral mild losses, unilateral losses or chronic conductive losses should be seen for several sessions until amplification is established. Once established, monitoring is required to ensure appropriate progress and identify any significant changes in hearing levels.
    - Frequency may be adjusted based on individual needs.
- Outreach programs to develop skills for working with young children with hearing loss should be delivered by a specialist with audiological intervention qualifications.

Standard 2: Provide Full and Unbiased Information

- Caregivers will be provided with full and unbiased information about options for their children. Audiologists providing pediatric services will be familiar with evidence on the potential benefits and limitations of recommended interventions and will counsel caregivers accordingly. Audiologists will also be familiar with organizations in the community offering services to infants and children with hearing loss and their caregivers, and help direct families to services at their request.

Standard 3: Assessments

- Ongoing audiological evaluation will occur as indicated by individual client needs or risk factors. Audiometric thresholds should be reviewed on at least a yearly basis and may be reviewed more frequently if hearing levels are suspected to have changed or if new risk factor(s) for progressive or fluctuating hearing loss are identified.

Standard 4: Individualized Family Service Plan (IFSP)

- Where significant hearing loss is identified, the audiologist should collaborate with the family to develop an IFSP or similar document addressing the following outcome areas:
    - Auditory development
    - Communication and language development
    - Cognitive development
    - Speech development
    - Social-emotional development
    - Emergent literacy development
    - Other (e.g. motor development)
- The IFSP should identify appropriate objective and subjective measures for tracking the outcome areas and be regularly reviewed with the family.

5. REMOTE SERVICES AND TELEHEALTH

5.1 Background and Rationale

Telepractice is the delivery of services through videoconferencing. It is becoming widely used by audiologists and other health professionals across Canada and the United States (4, 18, 19, 20).

Saskatchewan has many rural and remote communities, which makes it difficult to provide timely and consistent services to children with hearing loss. The implementation of telepractice may allow audiologists and early interventionists to provide regular service without the restriction of travel and disruption to family schedules. Telepractice can improve access to care for families who must travel great distances with young children to receive timely diagnosis or regular services. This guideline supports the provision of telepractice where appropriate to improve access to audiological services. Services aided by telehealth must meet the practice standards described in this guideline and in the CSASK Virtual Care Guidelines (21).

5.2 Telepractice in Infant Hearing Assessment

Teleaudiology utilizes telecommunication technology to deliver diagnostic audiological information and treatment-related services. The use of telepractice in audiology has been evaluated and is supported as a reliable service delivery model (18, 19, 20, 21). Saskatchewan's newborn hearing screening program aims to meet EHDI guidelines by screening all infants by one month of age, diagnosing hearing loss by three months of age, and initiating early intervention by six months of age. One of the most significant challenges to meeting this standard is the distance between audiologists who provide infant hearing services and families who require these services. Infant hearing assessment by nap ABR can be successfully completed when delivered by telehealth when appropriate resources and processes are in place (4, 18). The use of teleaudiology in the province of Saskatchewan may enable these timelines to be met by connecting families who live in rural and remote areas with audiologists who specialize in working with pediatrics.

5.3 Telepractice in Pediatric Audiology Intervention

Teleintervention (TI) utilizes telecommunication technology to deliver early intervention services to families. Evidence supports the effectiveness of TI in achieving intervention outcomes through increased access to intervention services (19, 20). Even with timely diagnosis, the frequency of sessions required to meet best-practice guidelines may not be feasible for families living in remote or rural communities due to increased travel time and disruptions to family routines. This guideline supports the use of teleintervention to help maintain a consistent therapy schedule for all children with hearing loss, including those living in rural or remote areas of Saskatchewan.

6. FUNDING & ADVOCACY

As of the publication of this guideline, Saskatchewan does not provide guaranteed funding or subsidy for pediatric audiology services, hearing aids, assistive technology or therapy. Families covered by provincial Supplementary Health or Family Health Benefits, or federal Non-Insured Health Benefits, have coverage for audiology assessments and conventional hearing aids, with pre-approval every five years. Families with third-party insurance may have part of the cost of

conventional hearing aids and services covered. The audiologist should recommend that families check their existing policies to determine the extent of coverage and inform them of known external funding opportunities for uncovered portions.

Potential funding sources include:

- Saskatchewan Royal Purple and Elks
- Kinsmen Foundation
- Jordan's Principle
- Manufacturer's hearing foundations

All funding organizations will have their own requirements, which are subject to change. The audiologist should provide a letter in support of a funding request, if required, including the rationale for the choice of device/service, the estimated cost, and the expected benefit to the client.

Audiologists serving pediatric populations should be familiar with organizations that serve Deaf and Hard of Hearing children and their families at the community, provincial, and national levels. Relevant information on these organizations and their services should be provided to families without bias. These agencies may include therapy services, education and family support networks.

Some organizations include*:

- Saskatchewan Deaf and Hard of Hearing Services (SDHHS) http://sdhhs.com/
- Saskatchewan Cochlear Implant Program - Room 25 Ellis Hall Royal University Hospital 306-655-1320 HHS@SASKATCHEWANHEALTHAUTHORITY.CA
- Saskatchewan Newborn Hearing Screening Program SKNEWBORNHEARING@saskhealthauthority.ca
- Saskatchewan Public and Separate school divisions student supports https://www.saskatchewan.ca/residents/education-and-learning/prek-12-education-early-learning-and-schools/supporting-students-with-additional-needs
- Children Communicating Connecting, and in Community Preschool Programs https://drive.google.com/file/d/1RSOpehNr8thgXTov9XXcXJalwMlPPrA1/view
- Hands and Voices https://www.handsandvoices.org/
- Family Centred Early Intervention Lab and HearOn videos https://www.uwo.ca/nca/fcei/hearon/index.html
- Speech Language and Audiology Canada https://www.sac-oac.ca/professional-resources/sac-action
- Canadian Academy of Audiology https://canadianaudiology.ca/what-we-do/advocacy/
- Canadian Hearing Services www.chs.ca
- Canadian Infant Hearing Task Force http://www.infanthearingcanada.ca/

*This is not a complete listing of agencies and is subject to change.

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