

Regional Infant Hearing Programs

Ontario's Infant Hearing Program provides its services at no cost to you through the following regional offices:

Windsor-Essex and Kent-Chatham contact "Talk 2 Me" (519) 254-5577 ext. 52595

Middlesex, London, Oxford, Elgin-St. Thomas, Sarnia-Lambton, Huron-Perth and Grey Bruce Owen Sound contact "tykeTalk" (519) 663-5317 ext. 2224 www.tyketalk.com

Hamilton-Wentworth, Niagara, Brant and Haldimand-Norfolk contact "Early Words" (905) 381-2828

Peel, Halton, Waterloo, and Wellington-Dufferin (905) 820-7111

City of Toronto Toronto Preschool Speech and Language Services (416) 338-8255 www.tpsls.on.ca

Simcoe County and Muskoka-Parry Sound PSL/Infant Hearing/Children's Rehabilitation Services Intake (705) 739-5696 or 1-800-675-1979

York Region, Durham, Haliburton, Kawartha, and Pine-Ridge contact "Beyond Words" 1-888-703-5437 www.beyond-words.org

Kingston, Frontenac, Lennox and Addington, Leeds, Grenville and Lanark and Hastings Prince Edward contact "Baby Talk" (613) 549-1154 or 1-800-267-7875 X 565

Ottawa, Renfrew County and District, and Eastern Ontario contact "FirstWords" (613) 724-4179 www.pinecrest-queensway.com

Manitoulin-Sudbury, Algoma, Cochrane and Nipissing-Timiskaming contact "Wordplay/Jeux de Mots" 1-877-522-6655

Thunder Bay Thunder Bay District Health Unit (807) 625-5922 1-888-294-6630, ext. 5922

Kenora Rainy River contact "North Words" 1-877-553-7122 www.northwords.com

For more information, contact:

INFOline 1-800-268-1154
Toronto 416-314-5518
TTY 1-800-387-5559
www.gov.on.ca/health

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Infant Hearing Program

Identifying permanent hearing loss in infants



Information on the Ontario Infant Hearing Program

Every year in Ontario, about four in 1000 babies are born deaf or hard of hearing – or will develop progressive hearing loss in early childhood. Through new technology and accurate screening protocols, the process of identifying these babies can begin as early as a few hours post partum.

The Ministry of Health and Long-Term Care has implemented a comprehensive program to identify these babies and give them the supports and services they need. The screening and assessment services of the Infant Hearing Program are provided at no charge to residents of Ontario from birth to age two. Services are provided locally through 12 regional systems located across the province and listed at the end of this brochure.



Early identification gives a child the best start in life

Undetected hearing loss can delay language development, affect emotional and social development, and result in isolation, withdrawal and poor academic performance. Research indicates that deaf and hard of hearing children who are identified early and supported appropriately have better educational and social outcomes than those identified later. The key is finding them as early as possible and allowing them to take full advantage of the many options available for communication development.

The Infant Hearing Program has three main components:

- universal hearing screening
- audiology services
- communication development

Universal screening is the first important step

All parents will be offered hearing screening for their newborns before discharge from the hospital. Parents will also have access to screening in the community if their babies were born at home or missed the hospital screening.

To obtain the lowest possible false positive rates, some babies will receive up to three screening procedures. Children with risk factors for progressive early childhood hearing loss will be monitored up to three years of age.

About 10 per cent of all newborns have a risk indicator for hearing loss at birth or for developing hearing loss in early childhood. These indicators include illnesses or disorders resulting in a prolonged NICU stay, a family history of permanent childhood hearing impairment, and specific craniofacial anomalies. However, only about half of infants with significant permanent hearing loss present with one of these risk indicators. Screening every baby is therefore crucial to finding all those with congenital permanent hearing loss.

The first step for well babies

Through the Ontario Infant Hearing Program, well babies will be screened using Automated Distortion Product Otoacoustic Emissions (DPOAE) instrumentation. With this technology, a small probe is placed in the quiet or sleeping baby's ear. The probe emits two frequency-specific sounds and records the response from the cochlea.

DPOAE technology is safe, non-invasive, automatic and yields accurate information in a matter of minutes. A pass result indicates the baby's cochlear response to the test signals could be extracted from the ambient room noise.

A refer result indicates the response could not be detected and the baby requires a second screening with a more advanced technology: Automated Auditory Brainstem Response (AABR).

With AABR, sounds are generated from a small probe placed in the baby's ear. Electrodes placed on the baby's forehead and behind the ears monitor the brain's response to these sounds, and a computer automatically interprets the response. A pass result indicates the baby's auditory system, up to and including the brainstem, has responded to the sound.

Babies with a refer result on the AABR screen will be re-screened in the community two to four weeks later. This reduces the false positive results due to transient perinatal ear conditions. A refer result from the second AABR indicates the baby needs a comprehensive hearing assessment by an audiologist with specialized training.

The first step for at-risk babies

Congenital and neonatal risk factors for permanent hearing loss may include:

- birthweight < 1500 g
- APGAR (5 minute) 0-6
- perinatal TORCHES infection – toxoplasmosis, rubella, cytomegalovirus, herpes, syphilis (CMV is especially important)
- postnatal infections associated with hearing impairment, including bacterial meningitis, viral encephalitis or labyrinthitis
- hyperbilirubinemia at serum levels indicating exchange

- Ototoxic medication dosage risk (e.g., double dose error – standard courses of aminoglycoside antibiotics with normal trough levels are no longer considered a significant risk indicator)
- any condition requiring ECMO (extracorporeal membrane oxygenation)
- mechanical ventilation > 5 days
- PPHN (persistent pulmonary hypertension) associated with mechanical ventilation
- indicators of syndromes associated with hearing loss (e.g., Down, Goldenhar, CHARGE)
- craniofacial anomalies (including dysmorphic pinna/canal, ear tags)
- significant head trauma associated with loss of consciousness or skull fracture
- family history of childhood permanent hearing impairment

All newborns with risk indicators for hearing impairment will be screened before discharge from the hospital, using AABR instrumentation. Babies with any of the above indicators are at risk for progressive early childhood hearing loss and will be monitored by the Infant Hearing Program until they are three years old.

A refer result at any point indicates the baby should have a comprehensive hearing assessment. Because these babies have risk indicators, they will go directly to an audiology assessment with only one AABR refer result.

Audiology services

Hearing assessment

All babies with a refer result from an AABR screening will be seen by an audiologist. A number of pediatric audiologists have received advanced training in the latest methods, techniques and equipment to assess the hearing of infants.

There is an optimal time to assess a baby's hearing for the most accurate results and conclusive diagnosis. Assessment will not begin before the baby is four weeks old and should be completed by age three months. With older babies the assessment will begin without delay.

More than one visit may be needed to complete the assessment. The audiologist will arrange scheduling, discuss the results with the parents, and send a report to the baby's primary care physician. Babies with an identified permanent hearing loss should be referred to pediatric otolaryngology for consultation and evaluation.

Hearing aid evaluation

Following medical consultation and assessment, parents may choose for their baby to use a hearing aid or assistive device. The hearing aid evaluation is performed by an audiologist with specialized training in hearing aid prescription and verification for infants. The hearing aid fitting, including verification, should be completed by age six months, or as soon as possible for older babies.

Communication development

The Infant Hearing Program will provide support services to parents as they adjust to the knowledge that their child is deaf or hard of hearing and assist them in obtaining information on all communication development services, including:

- American Sign Language instruction
- Langue de Signe de Quebec instruction
- Auditory-Verbal Therapy
- Combined auditory techniques and sign language instruction
- Other services as determined locally

In addition, some children may access:

- Speech Language Pathology

Babies and their families will receive services to support the development of language and communication skills. These services will be provided by the regional systems in conjunction with the 32 local Preschool Speech and Language programs around the province.

The communication development services chosen by parents will be provided as close to home as possible, and will link closely with the services provided by local school boards and the Ministry of Education Provincial Programs for the Deaf.



The physician's role

Physicians play a crucial role in the Infant Hearing Program. Parents of babies with “refer” screening results are likely to turn to the primary care physician for advice even before a diagnosis is made.

Because early identification and management of hearing loss is so important, it is vital that the physician encourage families to continue with the process. Support for learning communication skills will be available to identified babies before they are six months old. Unless there are medical contraindications, parents should not wait to access these services.

Babies who were successfully screened at birth may be referred to the Infant Hearing Program up to the age of 24 months if they exhibit an acquired, late-onset or progressive risk factor for permanent hearing loss. Hearing screening and assessment services will be provided for these infants as soon as possible upon referral.

Referral must be based on evidence of a valid risk indicator for permanent hearing loss. The indicators include, but should not be limited to:

- postnatal infections associated with hearing impairment, including bacterial meningitis, viral encephalitis or labyrinthitis
- stigmata or other findings associated with a syndrome known to include a sensorineural and/or conductive hearing loss (e.g. neurofibromatosis, osteopetrosis, Usher's syndrome)

- neurodegenerative disorders, such as Hunter syndrome, or sensory motor neuropathies such as Friedreich's ataxia and Charcot-Marie-Tooth syndrome
- significant head trauma associated with loss of consciousness or skull fracture that required neurological consultation
- family history of childhood permanent hearing impairment

Please note that Otitis media (OM) is not an acceptable solitary indicator of permanent hearing loss for referral to the Infant Hearing Program. An evaluation of possible procedures in relation to OM and program candidacy is underway, but for now traditional practice for treatment and management should be followed.

As well, concerns about speech and language development alone, in the absence of any risk indicator, should be referred first to the local Preschool Speech and Language Program for services. Referral for hearing screening will be made if indicated.

At the end of the audiology assessment, a report will be sent to the baby's primary care physician. The audiologic assessment may yield evidence of a conductive, mixed or sensorineural hearing impairment. All infants identified with a hearing impairment will be referred to their primary care physician for medical investigation and management where indicated.

All babies with an identified permanent hearing loss should be referred to a pediatric otolaryngologist for an otologic assessment. This should include assessment for con-

traindications to non-medical management, including a trial of personal amplification, where applicable. The Assistive Devices Program requires that the otolaryngologist sign the form for personal amplification devices.

It is important that infants with sensorineural hearing impairment be referred back to the Infant Hearing Program for non-medical management as soon as possible, so that any services needed to support communication development can be determined.

Watching baby's communication development

Most newborns will pass the hearing screening, but it is still important for parents to watch a baby's communication development. Many signs of hearing loss or speech and language disorders can be detected and addressed at an early age. It is never too early to identify a communication disorder.



Ages and Stages

The following ages and stages list shows some of the milestones in communication and speech and language development. If at any time you suspect a problem, or a parent is concerned that a child is not meeting these milestones, please don't hesitate to refer the child to your local Preschool Speech and Language Program. If there is a suspicion of permanent hearing loss

in a child less than two years of age, contact one of the Regional Infant Hearing Programs listed at the end of this brochure.

Research suggests that parents' concern is the single most reliable risk indicator for both hearing loss and speech and language disorders. Their concerns should be addressed and investigations begun without delay.

Birth to 3 months

- looks at you while getting fed
- quiets when hearing familiar voices and sounds
- makes cooing and gurgling sounds
- gets startled by loud noises

What parents can do

- look at your baby when feeding, bathing or changing him/her
- talk to your baby
- make cooing and gurgling sounds back to your baby
- sing to your baby

3 to 6 months

- turns eyes or head toward sound
- responds to you by making sounds and/or moving arms and legs
- smiles and laughs
- begins to make speech-like sounds – “buh,” “ma,” “boo”

What parents can do

- smile and laugh with your baby
- show interest in the sounds your baby is making and repeat them back
- provide a variety of sounds e.g., music, outside noises, animal sounds, toys, and show delight in the sounds you hear
- tell your baby what you are doing when you feed, bath, dress him/her

6 to 9 months

- responds to hearing own name
- understands “no”
- looks at some common objects or family members when named
- babbles sounds in a series – “bababa,” “dadada,” “mamama”

What parents can do

- point to people, pictures and common objects and say their names
- look at books, point to the pictures and name them
- say sounds back and forth with your child as long as he/she is interested
- sing songs and nursery rhymes

Ages and Stages

9 to 12 months

- understands simple requests – “give it to mommy”, “don’t touch”
- understands simple questions – “Where’s the ball?”
- uses gestures or sounds to let you know what he/she wants or needs
- says first word
- begins to play “pat-a-cake” and “peek-a-boo”

What parents can do

- encourage your child to use gestures and respond to them, e.g., when child raises arms to be picked up say, “you want up?” and then pick the child up.
- talk about everything you are doing using simple words and short sentences
- listen carefully to the sounds your child makes. You may hear their first word, e.g., “ba” for “ball”, “u” for “up”, “mook” for “milk”
- play with your child and have fun

12 to 18 months

- follows simple spoken directions such as “get the ball”
- points to people, body parts or toys when asked
- uses connected sounds that sound like sentences in a different language (jibberish)
- uses 10 or more words
- uses common expressions – “oh no,” “all gone”

What parents can do

- look at books and tell stories about the pictures, choose books that your child can hold e.g., board, cloth, or bath books
- talk back to your child when he/she talks to you
- use real words, not baby talk e.g., say “Give me”, instead of “ta ta” and “bottle” not “baba”
- pay attention to what your child is saying, not how they say it
- play games and use toys and objects that your child enjoys

18 to 24 months

- uses 20 or more words
- combines two or more words, such as “more juice”
- uses many different speech sounds at beginning of words such as p, b, m, t, d, n
- takes turns “talking” back and forth with you
- listens to simple stories, rhymes and songs

What parents can do

- use different kinds of words when you talk with your child (in, big, happy, jumping)
- encourage your child to play with other children e.g., library story times, play groups
- name and copy different sounds your child hears e.g., dog barking, bird singing, fire engine siren
- use the adult way of saying words or phrases without correcting your child directly e.g., child says “Daddy car”, You say “yes, Daddy’s in the car. Let’s go.”