

INFORMATION PACKAGE

Did You Know...

Estimates for hearing loss (from middle ear problems) range from 5-15% for non-First Nations children, but range from 15-55% for First Nations children?

It is because of statistics like those above that it is so important to have consistent early detection and treatment of hearing problems for all children, and *especially* for First Nations children. The ability to learn and develop language skills is greatly hindered if a child is unable to receive important information, and First Nations students' learning can only be impacted in positive ways by the early identification and effective treatment of hearing problems.

This information package has been compiled to assist you as you care for First Nations children and youth. It is an initiative of the focus group, Hearing Screening and Support Services for First Nations Communities, which meets regularly to tackle this important issue. Members of the focus group include provincial and federal health care officials, Infant Development Programs, First Nations schools, and other professionals who are working to support hearing impaired students.

Recognizing that one of the difficulties is that hearing screening and support services are often scattered and difficult to arrange, it is our focus group's hope that this information package will be a useful and readily-available resource tool for you and your community. Please note that this package includes handouts to assist you in setting up local services and locating support services.

We ask that you read this package and share/distribute the information with your co-workers and the parents in your community.

Sincerely,

Karen Horner
Chair, *Hearing Screening and Support Services for First Nations Communities Focus Group*

Karen Horner is also the Coordinator of the *First Nations Special Education Resource Line*
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Call with your Special Education questions!

*NO CHILD IS TOO YOUNG
TO HAVE THEIR HEARING TESTED*

*By Susan Lane, B.C. Family Hearing Resource Centre and
Carolyn Graves, Hearing Loss Resource Team
Sunnyhill Health Centre for Children*

Mary's daughter had unclear speech and frequent temper tantrums when she was three years old. Mary worried about her daughter. She told her doctor she wanted her daughter's hearing tested. Her doctor told her not to worry. He told her that her daughter was too young to have a hearing test. He said many children outgrow these speech and behaviour problems by Kindergarten. When Mary's daughter was four they finally got her hearing tested and they found out that she had a hearing loss. Mary was very upset when she realized how much her daughter had missed by not being able to hear during her first four years of life. She became angry when she learned **no child is too young to have their hearing tested.**

Parents are often the first to suspect a hearing loss in their child. Once parents have any questions about their child's hearing, or if they have family members with hearing loss, they need to have their child's hearing tested by an audiologist. This first step is very important. A hearing loss that is never diagnosed can significantly impair a child's speech and language development and their ability to do well in school. Remember, the early years in a child's life are the most important years for their speech and language learning.

Here are some important hearing milestones to watch for in your young child. If you suspect your child has a hearing loss have your child's hearing tested by an audiologist in your community. If you are unsure how to contact your community audiologist, ask your family doctor, community health nurse, or infant development consultant.

Does your child show these behaviours?

Birth to Six Months:

- Startles or cries at loud sounds
- Stirs or wakens when someone makes a noise
- Recognizes your voice and quiets when you speak
- Makes cooing sounds

Six to Twelve Months:

- Responds to his or her name
- Babbles and makes lots of different sounds
- Understands simple words like "no" and "bye-bye"
- Appears to be listen when spoken to
- Turns head towards soft sounds

Twelve to Eighteen Months:

- By one year of age says two to three words; by 18 months says 8-10 words
- Points to objects or familiar people by name
- Imitates simple sounds or words

Eighteen Months to Two Years:

- Able to follow simple commands
- At 18 months uses about 10 to 20 words
- Starts to say two words together such as "more juice"

Two to Three Years:

- By 2 your child says about 450 different words
- Says short sentences like "I want ball"
- Understands words like "big" and "little"
- By age 3 adults can understand most of what your child is trying to say

GROWING UP WITH A HEARING LOSS

By Dana Brynelsen

Provincial Advisor

Infant Development Program of BC

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February 26, 2002

I first wrote this article many years ago for our IDP News Journal in a special edition which focused on young children and hearing loss. I hoped that by sharing my experiences, parents would be encouraged to seek out early screening and audiology assessments for their young children. It was also my hope at that time that we would soon have universal screening for hearing loss in BC and that all infants would be routinely checked for hearing loss on a regular basis. Sadly, we are not much closer to that reality today than we were years ago. This concerns me deeply.

Hearing is such a key piece to our development in all areas and it is so unfair that parents and their children remain heavily penalized by our failures as a society to offer support and remediation for hearing loss as early in infancy as possible.

My own experiences living with an undiagnosed and then 'untreated' hearing loss for thirty years have made me acutely aware of the importance of early detection. This is not just for the child and his or her development but also for the parents, family, friends, teachers and others who struggle greatly in their efforts to understand the child and offer the right kind of support.

Although I spoke from an early age, my grandmother became worried about my hearing when I was an infant and pressured my mother to take me in for an assessment. My mother was very reluctant to do this. It is difficult for many parents to accept the idea that there could be something wrong with their child and my mother was no exception to this. However, my mother became concerned herself and we began the diagnostic process. Every year from the time I was three until I was seven, my mother and I would visit the Ear, Nose and Throat (E.N.T.) doctor. Every year my mother would say, "I am very worried about Dana's hearing" and every year the doctor would say, "Her speech is good. If she had a hearing loss, she would not speak as well as she does." When I was seven, during

our annual office visit he put a sheet of paper in front of his mouth while speaking to me, and realized finally how dependent I was on 'reading' his lips. I was tested for the first time that day and diagnosed as having a sensorineural, moderate, bilateral hearing loss.

Sensorineural is the type of hearing loss caused by damage to or malfunctioning of the cochlea or auditory nerve. This type of hearing loss is nearly always irreversible. Hearing loss is categorized by severity. A moderate loss involves a 45-70 dB loss. My loss was then, and remains, a 50-65 dB loss in both ears (bilateral). It was thought then that my speech had developed in spite of a hearing loss because I was the first born in my family and had parents with very clear speaking voices. There was a lot of adult attention, aunts, uncles, grandparents and family friends who spent a great deal of time with me. I grew up in the era of 'elocution' and, because I did have difficulty with many sounds (those I could not hear) like 's', I had 'voice' lessons from age three until five.

During this visit, my mother was advised by the doctor to consider hearing aids for me if my marks in school went down. At this point I was in grade two and was doing well, at least in terms of my marks. This advice from the doctor reflects the value in our society of academic achievement. There was no consideration for the multitude of other sounds that are important in life, birds singing, clocks ticking, wind in leaves, rain on pavement, conversation across a room, friends laughing, music. Unfortunately for me, my marks in school did not go down. There were many sounds that I did not hear until I was in my late twenties and purchased my first hearing aid.

My parents did not discuss my hearing loss with me. The only reference to it that I remember was my father insisting it was inherited from my mother's side of the family. Mother's great uncle had become, at age 80, 'deaf as a post'. It is understandable to me now why we never discussed my hearing loss. The stigma attached to any disability is strong so there is a natural reluctance to deal with it. Hearing loss is an invisible disability, there are no visible reminders that a person can't hear. There was no professional support to my parents to help them understand what the loss meant for them as parents or for me as a child. None of us knew what a 50-60 dB loss meant. I certainly didn't. As far as I was concerned, my hearing was 'normal'. I had no idea what or how other people heard so I had no basis for comparison. Because my hearing impairment was congenital (from birth),

I hadn't 'lost' anything so I felt no sense of deprivation. Also, there was no real need for my parents to discuss my hearing because it didn't seem to be a real problem for me (e.g., my marks didn't go down). My parents learned through experience not to talk to me if my back was turned or if I was in another room, or if I was occupied with something and not looking at them when they were speaking to me. It must have been very frustrating for them but I remember little frustration in my early years, only later in school.

I went to school as a 'hearing' child in a hearing world. The problem was that I was not a 'hearing' child; I was a 'hard of hearing' child. Although there were some advantages to never wearing a disability label, I wore lots of other labels in school that were much more negative and were directly related to my hearing loss. I was 'naughty', 'talked a lot', 'erratic', 'rude', 'disobedient', 'inattentive', and a 'clown'. My report cards are filled with comments such as 'Dana must learn to pay attention in class'. Because my marks in school did not 'go down', my parents and teachers did not associate my behaviour with the hearing loss.

Many hard of hearing children display similar behaviours. For myself, I think it partly related to the energy required to follow a conversation, particularly a teacher at a distance blackboard; the embarrassment of responding wrongly; the relief at being able to turn that into a comical exchange, to the delight of the class and anguish of the teacher. I was the happiest and, I suppose, most secure when I was talking and in control. When others were talking, chances were high I would miss part or all of what was going on in class. Some children become passive and withdrawn in response to situations like this, others like myself 'act out'. Withdrawing or acting out are normal human responses to stressful environments and there is no question that there are huge stresses and frustrations in many settings when you are constantly struggling to make sense out of what is going on.

By the time my parents realized that my behaviour might be a result of my hearing loss, I was a teenager and no force on earth could convince me to try a hearing aid. 'I am just fine, thank you very much'. This attitude stayed with me until I was in my late twenties and purchased (under coercion by friends) my first wonderful, wonderful hearing aid.






Today, children with hearing loss and their parents are less likely to have the experiences that I did. Disability has come a little further out of the closet and

there are supports for families that were not there in earlier years. Audiology assessments, electronic improvements in hearing aids, FM systems, speech therapists, teachers of the deaf and hard of hearing, and more knowledgeable classroom teachers all contribute to better management of a hearing loss. The existence of these services, however, does not necessarily mean that all will go well.

Professionals too often dismiss parental concerns. Routine universal screening is not available for young children in BC. Children with mild and moderate hearing losses are often not diagnosed until school age. Children with more severe hearing loss are missed too and lose the most precious months and years for their language development. For some children hearing aids may be fitted but their use not encouraged because 'the child manages so well without them'. Hearing aids are not covered by our medical plan and some families cannot afford to pay for them. Speech therapists have long waiting lists or are available only for assessment. Classroom teachers working alone may not solve the behaviour 'puzzles' presented by a hard of hearing student and teachers of the deaf and hard of hearing, in short supply in many school districts, may not have the time to do the team work necessary to ensure good outcomes for students. In every one of the above areas, parents must seek out professionals and, in some cases, work hard to persuade them that help (or more help, or different help) is needed.

We can do better in this Province. And we have the necessary expert knowledge and skills to do better. We need the concerted will across many sectors, however, to bring about the changes we need to make to our systems to ensure that every child with a hearing loss and their family has access to early identification, service and support. From my perspective as a hard of hearing person, improving a child's ability to hear and to comprehend his or her world is one of the most important contributions we can make to the child and his or her family. It isn't enough to say we 'can do better', we must do better.

Developmental Chart For Hearing and Speech

Yes	No	Hearing and Understanding	Child's Age	Talking	Yes	No
		<ul style="list-style-type: none"> ✓ Does your child startle or cry at loud sounds? ✓ Does your child smile to friendly voices? ✓ Does your child look around for sounds? ✓ Does your child recognize mother's voice? ✓ Does your child notice toys that make sound? 	<p>0 to 6 Months</p> 	<ul style="list-style-type: none"> ✓ Does your child make cooing and comfort sounds? ✓ Does your child cry differently for different needs? ✓ Does your child make many different types of sounds? ✓ Does your child make sounds in response to speech? 		
		<ul style="list-style-type: none"> ✓ Does your child listen when spoken to? ✓ Does your child turn or look up when you call his/her name? ✓ Does your child understand simple requests? ✓ Does your child understand a few words or phrases? 	<p>7 Months to 1 Year</p> 	<ul style="list-style-type: none"> ✓ Does your child laugh a lot? ✓ Does your child shout to get your attention? ✓ Does your child make sounds like talking, but without real words? ✓ Does your child try to name familiar toys, people or things? ✓ Does your child try to imitate words? 		
		<ul style="list-style-type: none"> ✓ Does your child recognize the name of many familiar things? ✓ Does your child follow simple commands? ✓ Does your child listen to simple stories? ✓ Does your child recognize pictures of familiar people or objects? 	<p>1 to 2 Years</p> 	<ul style="list-style-type: none"> ✓ Has your child started to name pictures? ✓ Has your child started to use 1- 2 words together? ✓ Is your child saying more and more words every month? ✓ Does your child use many different consonant sounds at the beginning of words? 		
		<ul style="list-style-type: none"> ✓ Can your child answer simple questions about familiar events? ✓ Does your child understand most sentences directed to them? ✓ Can your child follow 2 step directions? ✓ Does your child understand differences in meaning ("go - stop": "in - on")? 	<p>2 to 3 Years</p> 	<ul style="list-style-type: none"> ✓ Does your child use 3 to 4 word sentences? ✓ Does your child ask "what" and "where" questions? ✓ Does your child mispronounce many sounds, but uses some correctly? ✓ Does your child use "no" and "not" in phrases? ✓ Can you understand your child's speech most of the time? ✓ Does your child have a word for almost everything? 		
		<ul style="list-style-type: none"> ✓ Does your child hear you when you call them from another room? ✓ Does your child hear television at the same loudness level as other family members? ✓ Does your child answer simple "who", "what", "why" questions? 	<p>3 to 4 Years</p> 	<ul style="list-style-type: none"> ✓ Does your child ask many questions, including why? ✓ Does your child use sentences about 4 - 5 words long? ✓ Can your child tell a simple story? ✓ Can your child generally be understood by strangers? 		

Find your child's age and answer the questions about their talking, hearing and understanding.

All Yes: Good ! .
Your child is developing hearing, speech and language normally.

1 -2 No: Caution!
Your child may have delayed hearing, speech, and language development.

3 or more No: Action!
Take your child for professional help.

No child is too young to be assessed. If you are concerned about your child's development, talk to your physician and ask for a referral to the appropriate health professional.

POSSIBLE INDICATIONS OF HEARING LOSS

*Author: Brian Holmes, Audiologist
Interior Health Authority, Williams Lake, BC*

PHYSICAL SYMPTOMS:

- complains of frequent earaches
- has discharge from ears
- has dizziness; headaches
- tugs at ear
- complains of noise in the ear (ringing, buzzing, hissing sounds)

SPEECH SYMPTOMS:

- omits some speech sounds
- substitutes some speech sounds
- mispronounces common words
- speaks too loudly or too softly

CLASSROOM BEHAVIOURS:

- seems not to work up to potential
- requests repetition frequently
- turns one side of head towards speaker
- is inattentive; seems withdrawn; daydreams
- is chatty all the time
- has abrupt behaviour changes
- seems impatient, irritable or edgy
- habitually watches speaker's lips
- strains to hear
- makes mistakes in following oral directions
- appears unaware when spoken to
- gives inappropriate or irrelevant answers to questions
- frequently watches others before beginning a task
- tends to imitate actions of others
- has improved performance in face to face communication
- has poor performance in a noisy environment
- has temper tantrums
- turns up volume on radio or TV excessively loud
- appears constantly tired

POSSIBLE ACADEMIC IMPLICATIONS
OF EVEN A MILD HEARING LOSS:

- language and vocabulary delay (i.e. may not know common words, idioms, expressions, syntax; may omit endings such as s, es, ed, ing)
- difficulty with time concepts and math abstraction
- difficulty with reasoning (i.e. cause/effect, judgments, inferences)
- difficulty with word attack (sound symbol associations, phonics)
- auditory memory problems (i.e. may forget rules and routines)
- difficulty with comprehension due to lack of language experiences (especially with inferential questions)
- lack general information (i.e. "What's an Irish?")
- is disorganized with timetable and homework
- seems socially immature (doesn't know to take turns, fights frequently, etc.)
- doesn't participate in groups
- appears to lack confidence (always asks for help or repetition of instructions)



HEARING AND MIDDLE EAR SCREENING OF SCHOOL AGED CHILDREN PROTOCOL

*(as suggested by the Sunnyhill Hospital
Hearing Loss Resource Team)*

This protocol can be carried out by the Community/Public Health Nurse (CHN/PHN) in the community. It is assumed that the CHN/PHN has had training in the use of a portable audiometer, an otoscope, and a tympanometer. They may contact the following individuals for assistance with equipment issues or techniques:

- Health Region audiologist
- Sunnyhill Health Centre for Children audiologist

Please refer to the appropriate form to document results and identify the appropriate follow-up plan.

Protocol:

1. Ensure the audiometer has been calibrated within the past 12 months.
2. Secure a quiet room (i.e. away from the music room, gym, heavy traffic area), either in the school or in the nursing station.
3. Plug in and perform a listening check of the equipment. Check the cords for fraying or damage. Place the earphones on own ears and listen to each of the test tones (500 Hz, 1000 Hz, 2000 Hz, and 4000 Hz) at 40 dB and again at 20 dB, in one ear and then in the other ear. Listen for changes in loudness or distorted tones. Also ensure the buttons/dials for right ear and left ear are producing the sound in the correct earphone.
4. Screening levels recommended by ASHA (American Speech and Hearing

Association) for use in non-soundproofed rooms: 25 dB, at 500 Hz, 20 dB at 1000 Hz, 20 dB at 2000 Hz, and 25 dB at 4000 Hz.

5. Give the child instructions to raise his/her hand when a tone is heard, along with demonstration (act it out) to illustrate clearly to younger children what is expected.
6. Seat the child facing away from the examiner. This is critical to ensure the child does not inadvertently respond to visual cues (facial cues, eye movement, etc. can easily give away the timing of the tones being presented).
7. Place the earphones carefully on the child's head, red earphone on the right and blue earphone on the left.
8. You can start by presenting a loud tone (60 dB) to the child initially to ensure the instructions are understood and the child responds clearly. Then proceed with presenting tones at screening levels. Two responses at each screening level are required to 'pass' at that frequency. Record the findings by placing a check-mark in the appropriate box after two responses have been correctly observed.
9. If a child does not respond after two to three presentations at the screening level, mark the box with NR (no response) and move on to the next tone. It is helpful to screen all tones in both ears, even if there was no response at the beginning.
10. Carry out otoscopy and record findings (i.e. wax accumulation, eardrum appearance, presence of ear infection or middle ear effusion, presence of pressure equalization tubes).
11. Carry out tympanometry and record findings. Tympanometric findings can be categorized into one of four types:
 - 1) normal tympanogram;

- 2) flat tympanogram with normal volume;
- 3) flat tympanogram with large volume; and
- 4) negative pressure

12. Carefully document child's name, date, history of ear findings, and personal or family hearing difficulties if known.

*HEARING AND
MIDDLE EAR SCREENING
DOCUMENTATION AND FOLLOW-UP PLAN*

(as suggested by the Sunnyhill Hospital
Hearing Loss Resource Team)

1. Fill out the follow-up form and identify which of the four categories the child's results fall into.

2. Categories consist of:

- All screening findings are within normal limits

No follow up required.

- Abnormal middle ear function (purulent otitis media, ear drum perforation, ear wax) and abnormal hearing screening results

Refer for medical attention immediately and follow up with ENT specialist and audiologist. Include copies of screening findings with referrals. Refer to a Hearing Resource Teacher if available.

- Middle ear fluid suspected. Needs further nursing and/or medical intervention

If there is evidence of middle ear pathology (abnormal tympanogram) and hearing screening is within normal limits, the nurse is to follow up with repeat tympanometry and otoscopy at one month intervals. If there is no change after two to three months, provide all documentation regarding abnormal middle ear function to the family doctor with a request for ENT consultation. Contact a Hearing Resource Teacher if possible, and obtain school progress reports to accompany the ENT referral.

- Hearing loss suspected (abnormal hearing screening results with normal tympanograms and otoscopic examination)

Refer immediately to Audiologist and if available, a Hearing Resource Teacher. Include copies of screening findings with referral.

TRAINING OF SCREENING TEAM / MAINTENANCE OF SCREEN EQUIPMENT

*As suggested by the Sunnyhill Hospital
Hearing Loss Resource Team*

Annual review of screening techniques and optimal functioning of screening equipment are essential.

These responsibilities could be coordinated by the Community and Public Health Nurses as a collaborate effort in order to maintain screening standards. This is particularly important as new nurses are employed. Further, collaboration between the medical and nursing staff is critical when requesting funding for the maintenance and updating of screening equipment. The Teacher of the Deaf, if applicable, could also provide support and act as the liaison between parents, schools and nursing stations on many of these issues.

CHILDREN WITH UNILATERAL HEARING LOSS

*Author: Carolyn Graves, Nurse Clinician,
Sunny Hill Hospital Hearing Loss Resource Team*



Children with unilateral hearing loss may never be identified as "hard of hearing" children. Those who are identified may receive minimal, if any, services to support their invisible handicap. Their handicap is simply a hearing loss that is like "an invisible acoustic filter that distorts, smears, or eliminates incoming sounds, especially sounds from a distance" (C. Flexor, 1995).

What do Parents, Teachers and Health Care Specialists Need to Know About Unilateral Hearing Loss?

Parents, teachers and health care specialists need to fully understand unilateral hearing loss from the following perspectives:

- definition and types
- causes
- incidence
- affect on children
- support (health care, equipment, family/professional)

What is Unilateral Hearing Loss and What are the Types?

Unilateral hearing loss is when one ear does not function normally. The other ear has normal hearing.

The types of unilateral hearing loss include:

sensorineural (permanent) - absence of or damage to some or most of the nerve endings in the inner ear or cochlea;

conductive (permanent) - abnormalities of the ear canal or middle ear structures that cannot be medically or surgically corrected;

conductive (temporary) - temporary abnormalities of the ear canal or middle ear, usually caused by fluid/infection in the middle ear;

mixed - a combination of sensorineural and conductive hearing loss that may be permanent or temporary. A temporary conductive hearing loss is usually caused by fluid or infection in the middle ear

A unilateral hearing loss may be stable or progressive. A progressive loss may get worse and remain at that level, or may fluctuate (get better or worse). With fluctuating hearing loss, the sounds of speech are inconsistent from day to day.

The degree of hearing loss may range from mild to profound. If the loss is mild, it is still possible for the child to hear many sounds through that ear. If the loss is profound, no sounds will be heard in that ear, although with normal hearing in the other ear, children with profound unilateral hearing loss will still hear sounds.

When a child has frequent episodes of middle ear disease (fluid or infection) in the normally hearing ear, they then have a bilateral hearing loss. Middle ear infection can cause a moderate degree of hearing loss. This state in combination with the permanent hearing loss in the unilateral loss ear can seriously affect speech, language and learning if present over a long period.

What are the Causes of Unilateral Hearing Loss?

A hearing loss can be present at birth or develop later in life. It may be hereditary or caused by problems during pregnancy or delivery. Among the most common causes are illnesses (such as meningitis or mumps), head trauma, syndromes, or serious ear infections.

What is the Incidence of Unilateral Hearing Loss?

The number of school-age children with unilateral sensorineural hearing loss greater than a moderate loss in the affected ear is estimated to be 2/1000 children (Oyler, Oyler & Matkin, 1988). The Early Hearing Detection and Intervention (EHDI) Program (cited in Developmental Disabilities Branch, Hearing Impairment Among Children Internet Site, 2002) stated that "EHDI programs identify 2-3 infants per 1000 with a bilateral hearing loss. When infants with mild and unilateral losses are included, 5-6 infants per 1000 are identified."

How Can Unilateral Hearing Loss Affect a Child?

Most children with unilateral hearing loss will hear well in ideal listening situations, but may have significant problems (particularly if the loss in their affected ear is severe or profound):

- understanding speech in a noisy background, especially if the good ear is close to the noise or non-speech sound(s) such as in a moving car;
- hearing sounds or speech directed toward the affected ear;
- locating the source of sounds, particularly in traffic;
- hearing faint sounds or speech from a distance.

These problems may lead to:

- fatigue (sometimes shown by overactivity and lack of attention);
- difficulty holding attention;
- problems following discussions and people's instructions;
- lack of confidence in social activities (misunderstand rules of games, conversations);
- "acting out" or withdrawn behaviours;
- more dependence on parents and the classroom teacher;
- mild communication problems;
- difficulty with language-based school work (reading, writing, spelling).

Research indicates that children with right unilateral hearing loss may be more at risk for developing speech and language difficulties. Bess, Tharpe & Gibler (1986) found that 62.5% of children with right-sided loss failed a grade in school. This suggests that the nerve pathways from the right ear have a connection with the language center located on the left side of the brain.

It is important to remember that children who have had a unilateral hearing loss from birth have never known any other way of hearing. So, they do not realize that they have never heard accurately. They have simply used a number of coping strategies over time to deal with their difficulties. The literature indicates that these children do so much better when they get the right kind of support to manage their health and environment as soon as their unilateral hearing loss is identified.

What Support Does a Child With Unilateral Hearing Loss Need?

Health Care Support

As soon as a unilateral hearing loss is suspected, health care should include: hearing tests by an audiologist to find out the exact degree and type of hearing loss;

- an examination by a doctor specializing in the ears, nose and throat (ENT specialist/otolaryngologist) to 1) determine the cause of the hearing loss, if possible, 2) see if the hearing loss can be medically or surgically treated, and 3) proceed with medical investigations to see if the loss is associated with any other health problems.

Ongoing health care support should include:

- at least yearly hearing tests by the community audiologist until the hearing loss is stable;
- visits to an ENT specialist if middle ear fluid or infections are present or persist.

Equipment Support

Equipment that should be considered includes:

- custom ear plugs or headphones to prevent further hearing loss when consistently near loud noises such as power tools, fire crackers, firearms, loud music, lawnmowers, snowmobiles or snow blowers;
- wearing a hearing aid in the affected ear (dependent on a child's degree of hearing loss and how well they manage in school);
- personal FM system to reduce the effects of background noise (child wears headphones and teacher uses a microphone);
- free field system installed in the classroom (teacher uses a microphone for the benefit of the whole classroom).

Parents need to discuss these options with their child's classroom teacher and audiologist on a periodic basis throughout their child's school years.

Family/Professional Support

Family members, teachers and health care specialists can help by:

encouraging safety:

- teach the child to be aware of traffic by using their vision and hearing when crossing busy streets;
- place side mirrors on the child's bicycle.

teaching assertiveness:

- teach the child to sit or ask to be allowed to sit with their normally hearing ear close to the speaker;
- role play how a child can explain their hearing loss to others.

minimizing background noise:

- use carpeted rooms, acoustic ceilings and soft wall surfaces where possible;
- place play centers and group circle times away from air conditioners, ceiling fans, noisy hallways, pencil sharpeners;
- reduce/remove background sounds from televisions, radios, tape or cassette players.

getting the child's visual

attention before speaking:

- speak at the child's level;
- call their name or tap their shoulder gently to get eye contact.

using/modeling good communication:

- speak to the child's normally hearing ear;
- rephrase rather than repeat sentences that are not understood;
- use visual cues (facial expressions, gestures);
- speak clearly (not too loud nor soft; not too fast nor slow);
- use appropriate facial expressions and body language;
- have visual aids on hand (pictures, books, toys);
- keep your face visible (not covered by a book, picture, hand or another child or shadowed by standing in front of a window);
- use cues (naming or pointing) that identify speakers in a group.
- checking the child's understanding;

- rephrase information that is not understood;
- ask the child to repeat what he has heard;
- clarify by using "who, what, where, when and why" questions.

monitoring the child's social and academic skill development:

- arrange classroom observation and consultation with a speech and language pathologist or hearing resource teacher in the child's school district.

Every child with unilateral hearing loss, their family members and classroom teachers manage unilateral hearing loss in their own special ways. Recognizing these differences, this information offers some guidelines for health care, personal communication, and environmental support that can help a child with unilateral hearing loss develop optimal hearing, learning, communication and social skills.

Quotes have been provided from Ken Mulligan who has had a profound unilateral hearing loss since childhood and who is the father of a hard-of-hearing child. Ken says that hearing is difficult when he is:

" in a large crowd of people where everyone is talking at the same time"

" talking on the phone"

"listening to someone calling me from another room or across a large area such as a gym, department store, playground"

"sitting at the back of a class or off to one side where the speaker is on my bad side"

"listening to someone with a soft voice or someone who is speaking too fast"

Ken suggests to parents that they:

"Make sure other people know about your child's hearing loss, that it is still a problem even if they hear well with one ear. Don't hesitate to... speak up for your child or have them speak up for themselves if you think they are having difficulty in school or any situation. Make sure that you are aware of the hearing loss at home and DON'T ASSUME THAT YOUR CHILD HEARS EVERYTHING."

For more information, please contact any of the listed service providers. It is our intent to update this information every two years.

Carolyn Graves, Team Leader & Clinical Nurse Specialist
Hearing Loss Team, Sunny Hill Health Center for Children (affiliated with Children's and Women's Health Center), Vancouver, British Columbia

Laurie Usher, Coordinator Audiology Services, Children's and Women's Health Center

Susan Lane, Director BC Family Hearing Resource Center, Surrey, British Columbia

Public Health Audiology Council, British Columbia

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WHAT IS MIDDLE EAR INFECTION?

*Author: Carolyn Graves, Nurse Clinician,
Sunny Hill Hospital Hearing Loss Resource Team*

A middle ear infection, also called otitis media, is an infection or inflammation of the lining of the middle ear cavity when viruses or bacteria travel to the middle ear from the nose and throat, or when bacteria enter through a perforated eardrum (abnormal hole in the eardrum).

Serous otitis media is accumulation of non-bacterial fluid in the middle ear space (usually from having a viral infection such as a cold or allergies). Serous refers to the serous component of the blood.

Purulent otitis media (acute) is accumulation of bacterial (pus) fluid in the middle ear cavity due to bacteria.

What are the Signs and Symptoms of a Middle Ear Infection (Purulent Otitis Media)?

Children experience the discomfort of ear infections in different ways. Parents need to learn how their child typically responds and make sure that their child sees their family doctor at the first signs of an ear infection. Signs and symptoms may include:

- immobile, red and swollen eardrum
- feeling of fullness in the ear
- hearing loss in the mild to moderate range
- pain/discomfort
- severe, stabbing pain that may wake children up in the night
- moderate discomfort noticeable when children pull or poke at their ears
- subtle behaviour changes such as irritability and difficulty hearing

How is an Ear Infection Treated?

At the first signs of an ear infection, it is important to have your child:

- increase fluid intake

- eliminate dairy products to decrease the production of mucous, making it easier for the ear to drain
- increase room humidity (dry climates)
- sleep with the head elevated
- see the family doctor who may prescribe antibiotics and pain relievers such as Tempra, Tylenol, Panadol.

If antibiotics are ordered by your doctor:

- ensure that your child completes a full course of the antibiotics to prevent re-infection;
- contact your doctor again if your child still has an earache or fever after 2 full days on the antibiotic, or;
- check with your doctor if your child has had three ear infections in six months or four ear infections in one year.

What are the Complications of a Middle Ear Infection?

Complications can occur. On rare occasions, infection may spread to a portion of the bone behind the ear called the mastoid process. The pressure of pus accumulating in the middle ear may perforate (open) the eardrum (tympanic membrane) if untreated. There will be bloody, pus-like discharge from the affected middle ear. A large eardrum perforation can cause significant hearing loss that will recover once the eardrum has healed. However, when children experience repeated eardrum perforations over time, the eardrum becomes permanently damaged due to the development of scar tissue. The location of the perforation or hole also has an affect on the degree of hearing loss.

Is There Surgical Treatment for a Perforated Eardrum?

There are a variety of surgical procedures to treat a perforated eardrum, but all basically place tissue across the perforation or hole allowing it to heal. Surgery is usually quite successful in closing the perforation permanently and improving the child's hearing.

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For more information, please contact any of the listed service providers. It is our intent to update this information every two years.

- Carolyn Graves, Team Leader & Clinical Nurse Specialist, Hearing Loss Team, Sunny Hill Health Centre for Children (affiliated with Children's and Women's Health Centre, Vancouver, British Columbia)
- Laurie, Usher, Co-ordinator Audiology Services, Children's & Women's Health Centre

Thanks to Karin Rennert, Head Audiology Services, Surrey Memorial Hospital, Surrey British Columbia for her initial participation in the preparation of this document.

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CHILDREN WITH MIDDLE EAR FLUID

*Author: Carolyn Graves, Nurse Clinician,
Sunny Hill Hospital Hearing Loss Resource Team, 2002*

What is Middle Ear Fluid?

Middle ear fluid occurs when the lining of the middle ear dies from lack of oxygen. The middle ear lacks oxygen when the eustachian tube (connects the middle ear to the back of the throat) is blocked or swollen due to viral infections or allergies, and the middle ear cavity does not receive a good exchange of air. The trapped air in the middle ear cavity causes pressure on the eardrum causing it to retract. A build-up of fluid occurs and if the eustachian tube remains blocked, the fluid cannot drain away.

Characteristically, middle ear fluid:

- occurs more commonly in young children who have Eustachian tubes that are smaller, shorter and lie more horizontally than those in adults;
- can persist for many weeks and may occur along with an ear infection (otitis media), lasting after the ear infection has cleared up;
- can also occur before an ear infection or just simply on its own;
- often affects both ears at the same time;
- is usually not painful or associated with a fever;
- and results in a conductive hearing loss in the mild to moderate range of hearing.

What are the Signs and Symptoms of Middle Ear Fluid?

- swollen and immovable eardrum(s)
- feeling of fullness in the affected ear(s)
- snapping sensation when swallowing, yawning or blowing the nose

How is Middle Ear Fluid Identified?

It is difficult to identify middle ear fluid without otoscopic and tympanometry examinations conducted by doctors, audiologists and public health nurses.

- Pneumatic otoscope examination checks the condition and movement of the eardrum when fluid behind the eardrum cannot be seen. Looking at the eardrum with a lighted otoscope, the examiner can check the movement of the eardrum by stimulating it with a puff of air. An eardrum that does not move indicates middle ear fluid.
- Tympanometry examination also tests the movement of the eardrum. A small soft plug is inserted into the opening of the ear canal. The plug contains a speaker, microphone and a device that is able to change the air pressure in the ear canal allowing the examiner to measure how the eardrum works. *The child feels air pressure changes in the ear or hears a few brief tones.* Flat tympanograms indicate minimal or no movement of the eardrum caused by middle ear fluid.

Who are the Children at Greatest Risk for Acquiring Middle Ear Fluid?

Children at greatest risk:

- have personal, sibling or family histories of conductive hearing loss, middle ear fluid and ear infections;
- are frequently exposed to cigarette smoke;
- are bottle-fed babies;
- are boys;
- are First Nations children;
- and have craniofacial syndromes involving the palate.

Therefore, middle ear fluid may be prevented or reduced by:

- reducing exposure to cigarette smoke;
- breast feeding babies when possible;
- bottle feeding babies in an upright position;
- keeping children away from playmates who are ill;
- and avoiding the spread of respiratory infections with good hand-washing techniques.

How is Middle Ear Fluid Treated?

Middle ear fluid goes away without treatment in approximately 60% of affected children. While present, symptoms may be relieved by:

- drinking lots of fluids;
- increasing the humidity in the room (dry climates);
- and sleeping with the head elevated.

When middle ear fluid becomes chronic, a myringotomy with ear tube(s) may be done by the ear, nose and throat (ENT) specialist.

A myringotomy is a minor operation done under general anaesthetic to make a small opening in the eardrum and gently suck out the fluid. Tiny, plastic tubes are then inserted into the opening to help balance the pressure between the middle ear and the ear canal, allowing the fluid to drain. The ENT specialist may recommend ear tubes because the child has had a number of ear infections or fluid build-up over time or because the eardrum is not vibrating freely. A child's hearing returns to their actual hearing range immediately following this procedure. *This is the best time to have a child's hearing tested by an audiologist, particularly if a sensorineural hearing loss is suspected.*

Most ear tubes will slip out of the eardrum(s) by themselves, and the eardrum(s) will heal again. This usually takes 5-12 months. The ENT specialist will want to check the tubes and ears 3-6 months after the tubes have been inserted. In situations where middle ear fluid repeatedly builds up, a number of ear tubes may be inserted in order to reduce the number of repeat ear infections.

What Precautions Should be Taken Following Myringotomy With Ear Tubes?

- It is not safe to clean theirs with cotton swabs or to put anything deep inside the ear canal. "Nothing smaller than your elbow."
- The child may be more comfortable covering the ears in cold, windy weather.
- If the ENT specialist prescribes eardrops, follow the directions carefully.
- The ENT specialist may or may not recommend ear protection for bathing and swimming. A cotton ball covered with petroleum jelly (Vaseline) can usually protect the ears of young children. Older children, who swim frequently, may benefit from specially made

- earplugs called *swim molds*. These molds can be bought where hearing aids are sold.
- The ENT specialist should be contacted if there is yellow and/or smelly drainage from the ear(s), a persistent earache or if the child has a fever.

When are Parents and Teachers Likely to Suspect Middle Ear Fluid?

Middle ear fluid is suspected when a child has:

- subtle behaviour changes (pulls at the ear, complains of a feeling of fullness in the ear)
- draining fluid
- unclear speech
- delayed speech and language
- inattentiveness
- repeated problems correctly hearing information
- the need to increase the volume on the television or sit too close
- difficulty communicating
- the habit of withdrawing in noisy groups of people
- poor balance
- daily changes in the ability to hear
- difficulty with learning, behaviour and social skills
- a tendency to lip-read carefully

How Should Parents and Teachers Respond?

Parents need to contact their family doctor, public health nurse, or community audiologist at the first suspicion that their child has middle ear fluid or infection. If their suspicion is correct, the middle ear fluid or infection needs to be diagnosed and managed as soon as possible. The family doctor may make a referral to the ENT specialist.

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For more information, please contact the following service providers. It is our intent to update this information every 2 years.

- Carolyn Graves, Team Leader & Clinical Nurse Specialist, Hearing Loss Team , Sunny Hill Health Centre for Children (affiliated with Children's & Women's Health Centre), Vancouver British Columbia
- Laurie Usher, Coordinator Audiology Services, Children's & Women's Health Centre

Thanks to Karin Rennert, Head Audiology Services, Surrey Memorial Hospital, Surrey British Columbia for her initial participation in the preparation of this document.

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CHILDREN WITH MINIMAL HEARING LOSS

*Author: Carolyn Graves, Nurse Clinician,
Sunny Hill Hospital Hearing Loss Resource Team, 2002*

Children with minimal hearing loss may never be identified as "hard of hearing" children and those who are identified may receive minimal, if any, services to support their invisible handicap. Their handicap is simply a hearing loss that is like "an invisible acoustic filter that distorts, smears, or eliminates incoming sounds, especially sounds from a distance" (C. Flexor, 1995).

What do Parents, Teachers and Health Care Specialists Need to Know About Minimal Hearing Loss?

Parents, teachers and health care specialists need to fully understand minimal hearing loss from the following perspectives:

- definition and types
- causes
- incidence
- affect on children
- support (health care, equipment, family/professional)

What is Minimal Hearing Loss?

A minimal or slight hearing loss occurs when a child's hearing is distorted in the 16 to 25 decibel range of hearing, just below normal hearing (0 to 15 decibels).

The type of minimal hearing loss may be:

sensorineural (permanent) - absence of or damage to some of the nerve endings in the inner ear or cochlea;

conductive (permanent) - sound waves that are permanently altered because of the malformation of the ear canal and/or middle ear bones;

conductive (temporary or chronic) - sound waves that are altered because of ear wax in the ear canal, fluid in the middle ear, or infected fluid (ear infection) in the middle ear;

A minimal hearing loss may be stable, fluctuate (move up and down), or progress depending on the cause of the hearing loss.

What are the Causes of Minimal Hearing Loss?

A hearing loss can be present at birth or develop later in life. It may be hereditary or caused by problems during pregnancy or delivery. Among the causes are illnesses (such as meningitis or mumps), head trauma, syndromes and chronic middle ear fluid or infections. Children with chronic middle ear fluid or infections usually have fluctuating hearing over a long period of time. This is one of the most common causes of minimal hearing loss.

What is the Incidence of Minimal Hearing Loss?

According to one American researcher, "one-fourth to one-third of kindergarten and grade one children in regular classrooms did not hear normally on any given day" (Flexor, 1997, p. 8). It is assumed that a significant proportion of these children experienced mild to minimal hearing losses.

How Can Minimal Hearing Loss Affect a Child?

Most children with minimal hearing loss will hear well in ideal listening situations. However, they usually have difficulty hearing a variety of speakers clearly and consistently in different environments. School classrooms where they spend much of their time are generally less than ideal listening environments. Specifically they have difficulties:

- hearing faint or distant speech;
- missing conversation cues (e.g. rules of games that children discuss before playing);
- keeping up with rapid speakers;
- hearing word endings (ed, ing, s, er), tenses (past, future, present), possessives (mine, yours, his, hers).

These problems may lead to:

- fatigue;
- difficulty holding attention;

- frustration trying to follow conversations and instructions;
- “acting out” or withdrawn behaviours;
- more dependence on parents and the classroom teacher;
- mild communication problems; and/or
- difficulty with language-based school work (reading, writing, spelling).

It is important to remember that children who have had a minimal hearing loss from birth or early childhood have never known any other way of hearing. They do not realize that they have never heard accurately. So, when they cannot measure something that they have never heard they tend to deny having any hearing loss at all.

What Support Does a Child With Minimal Hearing Loss Need?

Health Support

As soon as a minimal hearing loss is suspected, health care should include:

- hearing tests by the community audiologist to find out the exact degree and type of hearing loss; and
- an examination by a doctor specializing in the ear, nose & throat (ENT specialist/otolaryngologist) to 1) determine the cause of the hearing loss, if possible, 2) see if the hearing loss can be medically or surgically treated and 3) proceed with medical investigations to see if the loss is associated with any other health problems.

Ongoing health care support should include:

- at least yearly hearing tests by the community audiologist until the hearing loss is stable; and
- visits to an ENT specialist if middle ear fluid or infections are present or persist.

Equipment Support

Equipment that should be considered includes:

- custom ear plugs or headphones to prevent further hearing loss when consistently near loud noises such as power tools, fire crackers, firearms, loud music, lawnmowers, snowmobiles or snow blowers;

- personal FM system to reduce the effects of background noise (child wear headphones and teacher uses a microphone); and
- free field system installed in the classroom (teacher uses a microphone that amplifies her voice for the whole class).

Parents need to discuss these options with their child's classroom teacher and audiologist on a periodic basis throughout their child's school years.

Family/Teacher/Health Care Specialist Support

Family members, teachers and health care specialists can help by:

improving clarity of speech:

- avoiding shouting (the child hears more sound but the speaker's speech clarity is poorer); and
- speaking clearly (not too loud nor soft; not too fast nor slow).

teaching assertiveness:

- teaching the child to sit or ask to be allowed to sit close to the speaker; and
- role playing how a child can explain their hearing loss to others.

minimizing background noise:

- using carpeted rooms, acoustic ceilings and soft wall surfaces where possible;
- placing play centres and group circle times away from air conditioners, ceiling fans, noisy hallways, pencil sharpeners; and
- reducing/removing background sounds from televisions, radios, tape or cassette players.

getting the child's attention before speaking:

- speaking at the child's level; and
- calling their name or tapping their shoulder gently to get eye contact.

using/modeling good communication:

- rephrasing rather than repeating sentences that are not understood;
- using visual cues (facial expressions, gestures);
- using appropriate facial expressions and body language;
- having visual aids on hand (pictures, books, toys);

- keeping your face visible (not covered by a book, picture, hand or another child or shadowed by standing in front of a window; and
- using cues (naming or pointing) that identify speakers in a group.

checking the child's understanding:

- rephrasing information that is not understood;
- asking the child to repeat what he has heard; and
- clarifying by using "who, what, where, when and why" questions.

monitoring the child's social and academic skill development:

- arranging classroom observation and consultation with a speech and language pathologist or hearing resource teacher in the child's school district.

Every child with minimal hearing loss, their family members and classroom teachers manage minimal hearing loss in their own special ways. Recognizing these differences, this information offers some guidelines for health care, personal communication, and environmental support that can help a child with minimal hearing loss develop optimal hearing, learning, communication and social skills.

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- Laurie, Usher, Co-ordinator Audiology Services, Children's & Women's Health Centre
- Susan Lane, Director, BC Family Hearing Resource Centre, Surrey, BC, Public Health Audiology Council, British Columbia

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Explanation of Hearing Test Results

Normal Hearing	(1 to 15 dBHL)	This child will detect speech even at soft conversational level.
Borderline Hearing Loss	(16 to 25 dBHL)	This child can miss up to 10% of speech when the teacher is at a distance greater than 3 feet and when the classroom is noisy.
Mild Hearing Loss	(26 to 40 dBHL)	The child with a 30 dB hearing loss can miss 25-40% of speech. Without amplification, the child with a 35-40 dB loss may miss at least 50% of class discussions.
Moderate Hearing Loss	(41 to 55 dBHL)	This child understands conversational speech at a distance of 3-5 feet (face to face) only if the vocabulary is controlled. Without amplification, the amount of speech missed can be 50-75% with greater than a 40 dB loss, and 80-100% with a 50 dB loss.
Moderate/Severe Hearing Loss	(56 to 70 dBHL)	Without amplification, conversation must be very loud to be understood. A loss greater than 55 dB can cause a child to miss up to 100% of speech.
Severe Hearing Loss	(71 to 90 dBHL)	Without amplification, this child may hear loud voices at about 1 foot from the ear. When amplified optimally, children with hearing ability of 90 dB or better should be able to identify environmental sounds and detect all the sounds of speech.
Profound Hearing Loss	(Greater than 90 dBHL)	This child is aware of vibrations more than sounds. Many children with a profound hearing loss rely on vision rather than hearing as the primary avenue for communication and learning.
Unilateral Hearing Loss	(Loss in only one ear)	This child may have difficulty hearing faint or distant speech. He usually has difficulty localizing sounds and has difficulty understanding speech in background noise.



ADAPTATIONS AND RESOURCES - HEARING LOSS IN CHILDREN

*Susan Lane B. C. Family Hearing Resource Centre, April 2002
First Nations Schools Association 6th Annual Conference*

Making Adaptations

The typical classroom containing a class of students can often be a very noisy situation that is very stressful for someone with a hearing loss. Hearing aids amplify all sounds, including all the unwanted noise created by scraping chairs, shuffling feet, tapping pencils and more than one student talking at the same time. Most normal classrooms are not built with good acoustics in mind. Many rooms have very little to absorb sound. Sound bounces off hard surfaces, which makes a poor listening environment for a child with a hearing loss.

PHYSICAL ADAPTATIONS:

Here are some changes in the visual or auditory environment that would make the learning environment more accessible to the deaf or hard of hearing child:

- eliminate or minimize background noise if possible, e.g. turn off background music, put old tennis balls on the bottom of chairs
- avoid using a classroom near a gym or music room
- ensure there is good lighting without glare
- position child so that he can see the speaker clearly and is seated away from source
- of background noise (e.g. a noisy fan or overhead projector)
- put carpet or rugs on the floor to help absorb sounds of chairs, feet, objects dropping
- place curtains on the windows as sound bounces off hard surfaces like glass, making it more difficult to hear
- add absorbent material on the walls and ceiling such as acoustic tiles or cork squares

TEACHING ADAPTATIONS:

There is a difference between real inclusion and physical inclusion.

Physical inclusion: Child with a hearing loss is allowed to be physically present in a classroom.

Real/Inclusion: Child has the same access to all the information and to all the learning and social experiences that children with normal hearing have.

Deaf and hard of hearing children can do well in school when they have equal access to information, learning, and social opportunities as their hearing peers. Here are some strategies you can use to help ensure your class is accessible to the child with a hearing loss:

When you talk:

- get the child's attention before communicating with him
- speak clearly, using a rate and loudness level that is appropriate
- make sure your mouth is easy to see - do not obstruct it with your hand or paper
- stay within the vision of the child to enable speech reading--do not "speak" to the blackboard.
- make sure the light is on your face and not behind you
- if the child uses an F.M. system (assistive listening equipment) be sure it is working and use it consistently.
- use visual aids to supplement the auditory message (e.g. flannel stories, props, books, pictures, overheads)
- write information about assignments and events or activities on the board as a visual clarification for information given auditorally
- signal transitions with a visual clue (e.g. flick the lights) and give directions individually as well

When you have group discussions:

- make a "one speaker at a time" rule in your classroom - it is very difficult to understand a spoken message when more than one person is speaking at the same time
- during a class discussion, point towards the child who is speaking so that the child with a hearing loss will know where to look
- if another child says something that was not heard by the child with a hearing loss, make sure to repeat what the child has said
- use small group discussions whenever possible--child with a hearing loss may have difficulty in large group discussions (remember, though that it will be very difficult for the child to hear if many small groups are talking at the same time!)

When you ask child a question:

- provide a "wait" time for the child to respond (child needs more time to process the message that may not be clearly heard)

- do not assume that the child understands something just because they nod their head- the child may feel embarrassed that they did not hear or understand what you said
- repeat and rephrase to ensure child's comprehension

Other important strategies to remember:

- alert the child to changes in routine
- do not assume that just because a child's speech is clear that this means they are able to hear everything clearly
- make sure the child is seated in the middle of a semicircle or where he can see the teacher clearly
- inform the child what is going to happen next

You are not alone

Support Team for the child with a hearing loss

	Name	Phone
Family		
Classroom teacher		
Audiologist		
Teacher – deaf/hard of hearing		
Speech-Language Pathologist		
Outreach Services		
Ear, Nose, Throat Specialist		
Child's doctor		
Infant Development Consultant		
Early Child Educator		
Physiotherapist		
Occupational Therapist		
Other		

PROVINCIAL OUTREACH RESOURCES ***Hearing Loss in Children***

Consultation & Resources for teachers with school-age children

Susan van Gorp, Ph.D.
Outreach Consultant
B.C. School for the Deaf
5455 Rumble Street
Burnaby, BC V5J 287
(604) 664-8300 voice, (604) 664-8304 tty, (604) 664-8308 fax

Karen Horner
First Nations Special Education Resource Line
khomer@uniserve.com
Ph/F: 1-877-547-1919
(Mon- Thurs 12:30-4:30)
11011 Taylor Way
Delta, BC V4C 4K2
(Contact Karen for referral to itinerant speech/language pathologist & special education services for First Nations schools)

Programmes for Children Birth to Five

Susan Lane
Outreach Consultation & Provincial Resource Library
B.C. Family Hearing Resource Centre
No.8, 15355 102A Avenue
Surrey, B.C. V3R 7K1
(604) 584-2827 (voice), (604) 584-2800 (fax), (604) 584-9108 (I1Y)

Cheryl Collins
Deaf Children's Society
7355 Canada Way
Burnaby, B.C. V3N 426
(604) 525-6056 (Voice), (604) 525-7307 (Fax), (604) 525- 9390 (I1Y)

Marietta Patterson
Vancouver Oral Centre
3575 Kaslo Street
Vancouver, B.C. V5M 3H4
(604) 437-0255 (Voice), (604) 437-0268 (Fax)

For Assessment and Diagnosis:

Carolyn Graves
Hearing Loss Resource Team
3644 Slocan Street
Vancouver, B.C. V5M 3E8
(604) 434-1331 (Voice), (604) 436-1743 (Fax)

**Public Health Audiology Services
Clinic Phone List**

Region or CHSS	Location	Clinic Phone No.
East Kootenay	Cranbrook	250-426-1375
W. Kootenay – Boundary	Trail	250-364-0721
North Okanagan	Vernon	250-549-5760
Okanagan – Similkameen	Kelowna	250-868-7758
Thompson Valley	Kamloops	250-851-7355
Fraser Valley	Chilliwack	604-702-4944
South Fraser	Langley Guildford North Delta	705-532-2302 604-587-4751 604-507-5448
Coast Garibaldi	Powell River Squamish	604-892-2293
Central Vancouver Island	Nanaimo	250-755-6269
North Island / Mid Coast	Comox	250-339-6543
Cariboo	Williams Lake 100 Mile House	250-398-4632 250-395-7676
North West	Terrace	250-638-2233
Peace Liard	Fort St. John	250-787-3363
Northern Interior	Prince George	250-565-7371
Simon Fraser	Burnaby Health Dept. Burnaby South Secondary South Slope Elementary New Westminster Maple Ridge	604-918-7663 604-664-8560 604-660-5498 604-660-8819 604-460-7070
Capital	Victoria West Communities	250-388-2250 TTY 388-2269 250-474-2433 TTY 474-5822
Vancouver - Richmond	Richmond Vancouver	604-233-3188 604-659-1100