

Pediatric Counseling – Informational text

Topic	Informational Text
Causes of hearing loss?	<p>WHAT THE AUDIOLOGIST WANTS TO CONVEY:</p> <p>In about 50% of the cases we are unable to determine the exact cause of the hearing loss.</p> <p>It is estimated that about 1 in 35 people carries the gene for hearing loss If two of these people have a child, the child would have a 25% chance of having a hearing loss.</p> <p>That’s why all children with hearing loss should have a genetic evaluation.</p> <p>Almost all activities that a mother did before birth (food choices, accidental falls, etc) would not affect a child’s hearing.</p> <p>Sometimes if a mother had certain infections during pregnancy, the baby’s hearing could be affected.</p> <p>Sometimes hearing loss is only one of a number of differences a child is born with – which is why it is recommended that children with hearing loss be tested for heart, kidney, and visual problems. Because hearing loss is screened for at birth, it may be the first difference detected in the child. About 30% of children with hearing loss have additional health or development problems.</p> <p>Sometimes babies who are very small or sick at birth have treatments to save their lives that end up causing a hearing loss.</p> <p>Encourage the parent to ask the child’s doctor for more information.</p>
<i>Structure of the ear</i>	<p>WHAT THE AUDIOLOGIST WANTS TO CONVEY:</p> <p>We hear with our brains, our ears are the way the sound information gets to the brain.</p> <p>Anything wrong with the structures of the ear can cause hearing loss.</p> <p>Outer ear funnels the sound (acoustic energy) to the eardrum.</p> <p>Middle ear has a chain of 3 bones that transfer the sound signal (as mechanical energy) from the eardrum to the inner ear– this is where an ear infection develops and can cause temporary hearing loss.</p>

	<p>The cochlea has about 40,000 small structures that are called hair cells. The cochlea is similar to a piano keyboard in that hair cells are tuned to respond to certain pitches and levels of loudness.</p> <p>When a hair cell responds to sound, an electrical signal is transferred to the hearing nerve.</p> <p>The hearing nerve delivers this electrical signal to the auditory centers of the brain where it is processed.</p>
<i>Types of hearing losses</i>	<p>WHAT THE AUDIOLOGIST WANTS TO CONVEY: There are three types of hearing loss:</p> <p>Conductive hearing loss : Sound cannot pass normally (or be conducted) through the outer ear and/or the middle ear.</p> <p>This can be due to a birth defect that closes off the outer ear (atresia), ear infection in the middle ear, or deformities of the middle ear bones.</p> <p>This type of hearing loss is a blockage to sound getting into the cochlea and brain.</p> <p>The blockage tends to cause a hearing loss of similar degree across the pitch range.</p> <p>Treatment is to remove the blockage medically (i.e., medication for ear infection) or to make sound loud enough so that when it reaches the cochlea it can be delivered to the brain and processed similar to a normal ear. If a child has frequent middle ear fluid that is not resolved with medication the fluid can cause a conductive hearing loss. One treatment for children with chronic recurrent ear fluid is for a tiny tube to be placed in the eardrums to allow air into the middle ear space and help normalize the middle ear so that ear fluid does not build up.</p> <p>Sensory hearing loss: The hair cells or other structures of the cochlea are deformed or damaged reducing the ability to sense sound as loudly or clearly as a normal ear.</p> <p>Problems in the cochlea can be due to genetic reasons, very high fevers, drugs that are especially harmful to the ears, or some other health conditions.</p> <p>Sensory hearing loss can occur in a very narrow pitch range or it can affect hearing of all pitches – it is most common to have more hearing loss for the high pitch sounds than low pitch sounds.</p> <p>Treatment is to make speech sounds loud enough (by amplification) to trigger hair cell responses and/or to</p>

	<p>stimulate the auditory nerve so that the information can be passed on to the brain</p> <p>Neural hearing loss: Sound information is sent to the brain but it cannot be processed clearly.</p> <p>Neural hearing loss interferes with the clarity of speech.</p> <p>Children with auditory dys-synchrony have neural hearing loss – think of listening to talk on the radio when the radio station is not received clearly. The static interferes with understanding the words and increasing the loudness does little to help understanding.</p> <p>Treatment is to make sound louder to try to overcome minor problems with clarity. If a child cannot understand speech well enough to learn language through listening, then direct stimulation of the auditory nerve with a cochlear implant may be considered or learning language primarily through a visual means, like sign language or cued speech.</p> <p>Sensorineural hearing loss: There are problems in both the cochlea and the brain causing the loudness of speech and the clarity of speech to be reduced.</p> <p>Most children who have permanent hearing loss have a sensorineural type of loss.</p> <p>Mixed hearing loss: There are problems in the outer or middle ear and also in the cochlea (and often the brain).</p> <p>If the hearing loss cannot be treated medically (i.e., conductive hearing loss due to ear infection) then the first step is to amplify sound with hearing aids so that as much of the complete speech signal as possible can be delivered to the brain.</p>
<p>Your Child's Hearing</p>	
<p><i>Getting Started</i></p>	<p>WHAT THE AUDIOLOGIST WANTS TO CONVEY:</p> <p>Almost all children with hearing loss have parents with normal hearing with no experience with hearing loss.</p> <p>Having many questions is normal.</p> <p>All parents wonder about how their children will grow up and learn to become successful adults.</p>

There is a lot to learn, it will take time, there are many people who will help parents.

Ask what questions the parents have – and really listen to what is most important for them to learn NOW

Raising any child takes time, love, knowledge

The child is a child first –

she/he has a hearing loss that is a part of who s/he is and will be forever

parents may be angry that their child was found to have a permanent hearing loss

parents may want to question the diagnosis and this is very normal – any time we feel we have had bad news, we would rather it be a mistake than have it be true

parents may feel it is important to find out what caused the hearing loss in their child; many times this question cannot be answered quickly or completely

Children start to learn even before they are born and hearing loss reduces how the child hears their parents' voice, hears them come into a room, the tone of their voice. She/he needs their help to learn like other children that they are there for her and to bring the world to her so she/he can learn all she needs to know.

Parents are a child's first teachers and can learn everything they need to know to raise a child with hearing loss.

Parents have the greatest influence on how their child will develop, behave, and learn and they know their child better than anyone else.

We can have high goals for children with hearing loss. We can expect much but it will take much time, love and knowledge of the special needs a child has when there is a hearing loss. Only with this knowledge can you prevent or minimize the impact that the hearing loss has on your child's future.

Only by providing the child with the hearing aids, communication, and attention to language learning, will the child with hearing loss grow to be as much like children without hearing loss as possible.

Providing the child with the best hearing aids and special services or therapy is not enough – the parents are the key to surrounding the child with language and listening experiences every day, and that is what it takes for the child to develop like children without hearing loss.

	<p>What parents do makes the most difference - hearing aids help but it is the parent's love, time, and commitment to helping the child to develop and learn language that make the biggest difference in child success.</p> <p>THE AUDIOLOGIST SHOULD AVOID TO CONVEY:</p> <p>That the hearing aids are the whole solution to the child's hearing loss</p> <p>That the hearing loss can be 'fixed' by hearing aids, cochlear implants, or the result of therapies</p> <p>That the family is lucky that they are in this situation now because technology is now so much better than in years past</p> <p>That the family is lucky that the child has such a mild, moderate, unilateral hearing loss – the grieving process is the same regardless of degree</p> <p>That the hearing loss will definitely limit the child's future success OR that the hearing loss will definitely not limit the child's success</p> <p>That being hard of hearing is so much more advantageous than being deaf or visa versa – parents sometimes interpret 'Your child is not deaf' to mean that being hard of hearing is of little consequence and no real action is required (hearing aids, parent involvement in communication interactions, therapies, etc)</p>
<i>Audiogram</i>	<p>WHAT THE AUDIOLOGIST WANTS TO CONVEY:</p> <p>Sound is measured in decibels, like temperature is measured in Fahrenheit (or Celsius).</p> <p>The louder a sound is the bigger the number. Like temperature, loudness cannot be compared or described in percent - to say a 40 dB hearing loss is twice as much as a 20 dB loss or a 40% hearing loss does not make any more sense than saying that a 40° day is twice as warm as a 20° day or that it is a 40% warm day.</p> <p>Hearing tests determine the quietest sounds a child will hear at different pitches. These are called hearing thresholds.</p> <p>Hearing thresholds are recorded on graphs called audiograms. Loudness is on the side of the graph and pitch is across the top or bottom. Hearing thresholds are recorded in a loudness range from 0 to 120 dB.</p> <p>Some speech sounds are low pitch like “oooo” as in moon and others are high pitch like “ssss”. Some speech sounds are louder than others. Speech occurs over a 30dB range from the quietest sound to the loudest sound.</p>

	<p>People talk quieter or louder depending on their personality, how far they are from the person they are talking to, and the amount of noise around them.</p> <p>As people talk they adjust the loudness of their voice so that other people that they are talking to will be able to hear all or almost all of the speech sounds. All people will hear speech most clearly when in a quiet room and when they are close to the person talking.</p> <p>A person with a hearing loss will miss a little, some, most or all of speech sounds, depending on how much hearing loss they have, how noisy it is, how far away they are, and how much their hearing aids or cochlear implants help</p> <p>An audiogram is divided into different degrees of hearing loss. All hearing loss will cause problems in detecting speech under some conditions. The names of the degrees of hearing loss can be misleading – even a little hearing loss will cause learning delays if ignored.</p> <p>The descriptions of the impact by degree of hearing loss do not reflect listening or learning ability when hearing aids or cochlear implants are consistently worn.</p> <p>THE AUDIOLOGIST SHOULD <u>AVOID</u> TO CONVEY: Talking much about the details of how to interpret an audiogram; interpreting the graph does not readily build an understanding of what the child really hears or does not hear – use the ‘listening bubble’ concept</p> <p>Using the labels mild, moderate, etc. as they do not represent the impact of the hearing loss and are often used by a parent to minimize their concern and motivation to act (especially with regard to mild HL).</p> <p>Focusing on unamplified hearing ability more than is necessary to motivate the parents to understand why amplification is critical</p> <p>Unduly depressing parents with what the child is unable to hear; empower them with the next steps and encourage them that they will learn what they need to know to help their child</p>
<p>Recommendations</p>	<p>Listening is a distance sense. When someone has a hearing loss they cannot “listen as far” as a person with normal hearing. For young children especially, language is caught, not taught, meaning that to catch language the person speaking must be within earshot, or speaking within the size of the listening bubble of the child. Where a toddler with normal hearing may be able to hear mommy from the next room, a toddler with hearing loss without hearing aids may only be able to hear mommy when she is bending down, within arm’s length or when wearing hearing aids, when mommy is standing but only from a short distance away from the child. It is important that the parents and the child’s teachers understand the size of his or her listening bubble.</p>

Hearing Aids

WHAT THE AUDIOLOGIST WANTS TO CONVEY:

Hearing aids make the listening bubble bigger and allow more sound to get to the brain to stimulate the growth of auditory centers in the brain, even if a child has very little hearing

Analogy to keeping pipes from freezing by leaving the water dripping; if the parents possibly ever want to consider cochlear implantation, then early brain stimulation will set the stage for greater success with a CI

The critical time for the brain to be stimulated so brain pathways really grow is when a child is very young

Children with normal hearing learn to listen without effort

Children with hearing loss whose parents want them to learn spoken language need to learn to listen – they are already behind in listening from birth

A child needs to hear a sound hundreds of times before she/he is able to link that sound to the written version of the sound (has to hear ssss sound hundreds of time before linking it to the letter s). At a later age, this early hearing of many, many words is the foundation to the child learning to decode words they see in writing. Children who do not hear speech sounds and words as clearly as possible are at high risk for developing problems learning to read.

So the first step is hearing aids!

Hearing aids are the right thing to do when a child has hearing loss and you want the child to learn to use spoken language and learn through hearing

If his/her future is to be the best possible, hearing aids need to be worn

You probably do not want to be in this situation and do not want to see your child wearing hearing aids – but you know it is what needs to happen for you to take care of his/her needs

Your attitude toward the hearing aids is very important.

Children who have parents who understand the importance of hearing aids and make sure that the child wears them end up doing better in school, feeling better about themselves, and having more friends than children who have parents who try to hide the hearing aids or leave it up to the child to decide.

Hearing aids worn early on and every day become a part of who the child accepts himself to be – just

	<p>like brown hair, or blue eyes</p> <p>Parents who are inconsistent about having the child wear the hearing aids are conveying that they do not approve of their child having a hearing loss, that is he is bad, or not lovable. Having a hearing loss is a part of who the child is – if that part of him is rejected, he will feel bad about himself.</p> <p>If you had a child with red hair when the rest of your family had brown hair would you try to hide it? No. Your child's hearing loss is just as much a part of him as if his hair color was different from the rest of the family.</p> <p>All children go through periods of refusing to wear shoes, hats, and yes...hearing aids. It takes loving commitment and knowing that wearing hearing aids is making a lifelong difference in the child's future that gives parents the ability to persevere through this short period.</p> <p>Day by day wearing hearing aids makes a difference in your child's future and everyday is important.</p>
Consistent Hearing	<p>WHAT THE AUDIOLOGIST WANTS TO CONVEY</p> <p>Babies who wear hearing aids from a very young age become accustomed to hearing and do not want to be without the hearing aids The most important rule to convey to your young child – only an adult can put the hearing aids on or take them off</p> <p>Train the child from the beginning to let you know when something is wrong and to come to you for help</p> <p>If a child does take off a hearing aid, be very matter of fact and put it back on and then distract them. There may be a number of days when you replace the child's hearing aids many times – the more consistent you are and the more matter of fact your manner in putting them back on and turning the child's interest to something else, the shorter this period will be.</p> <p>Parents should be encouraged to talk with 'veteran' parents who have been through the "no-hearing-aids" stage for support. Additional ideas on how to keep hearing aids on young children can be found at www.listen-up.org</p> <p>When a child first begins to wear hearing aids it is not expected that they will wear them 100% of the time in the first day. Within a week or so you should be able to get into the routine of putting them on the child for almost all waking hours</p> <p>Babies that are only a few months old can wear hearing aids during nap time. Caution must be taken to not allow</p>

	<p>the hearing aids to be on the child without supervision once s/he begins to show an interest in them (batteries are poisonous)</p> <p>The hearing aids should not be exposed to water: no hearing aids during baths, showers, swimming. Make sure the child has a hat on or is under some sort of cover during rain or wet snow.</p> <p>Be consistent about where the hearing aids are kept – treat them like fine jewellery. Hearing aids are small and can easily be lost. Parents and children should learn to always keep the hearing aids in a ‘hearing aid house’ when they are not on the child. This can be the case they came in or a small jewellery box. In moist climates it may be best to keep the hearing aids in a Dri-aid kit when not in use.</p> <p>The parent should be prepared with spare batteries (i.e., in purse). It is unfortunate when a child loses a whole day of listening and language learning because an inexpensive hearing aid battery needed replacing.</p> <p>At the age of 3 the parent should start helping the child learn to put on their own earmolds and hearing aids. By age 4 they should be able to independently do so and to report if a hearing aid is not working.</p>
Binaural fitting	<p>A hearing aid is worn on each ear that has hearing loss. Having two hearing ears is critical to a child being able to grow, learn and function his or her best in everyday situations because:</p> <p>Our brains are programmed to process information from both sides of our head. The use of only one hearing aid will limit some brain growth, especially on the side not being stimulated by sound.</p> <p>We use our two ears together to be able to locate sounds (i.e., where mom is calling from, direction that a car is coming from, which student is answering in the classroom).</p> <p>Our ears work together to help us understand better in noise. We unconsciously place one ear slightly more toward the person we want to hear and the other ear toward the noise. In this way our brain is better able to sort the speech from the noise.</p> <p>Two ears working together actually hear better than one ear hearing primarily. Called the summation effect, it produces the benefit of a few precious dB that can provide an extra boost to listening.</p>
EARMOLDS	<p>Just like feet, ears grow too!</p> <p>The earmold is a custom-made plastic piece that fits your child’s ear exactly.</p> <p>The amplified sound from the hearing aid is delivered to the ear through the earmold.</p>

	<p>If a well-made earmold does not fit tightly this is typically due to the child's growth.</p> <p>If the earmold is even a tiny bit loose the amplified sound can leak out, get picked up by the hearing aid microphone and a feedback loop – or whistle, is heard by everyone around the person wearing the hearing aid.</p> <p>When your child's earmolds are loose and their hearing aids are just beginning to whistle it is time for a new set of earmolds to be made as soon as possible.</p> <p>Not only is the child not benefiting from the hearing aid when it whistles, whistling hearing aids are annoying! Plan ahead! When a child is less than a year old plan on a trip to the audiologist every 1-2 months. After 12 months of age an earmold and hearing aid check can occur every 2-3 months. Your audiologist will help you plan the best schedule of visits.</p> <p>Do not hesitate to make the audiology appointment as soon as you start to hear the whistling. DO NOT turn the volume of the hearing aids down. The hearing aids are set EXACTLY to allow your child hear speech loudly and consistently to maximize his or her speech understanding. Turning down the hearing aids robs your child of hearing speech!</p> <p>Finally, earmolds can be fun! Allowing a child their choice of earmold colors helps the child develop a healthy positive attitude toward the hearing aids and himself.</p> <p>For young children who sometimes take off their hearing aids unexpectedly, bright pink or orange earmolds can help them be spotted more easily. There are child-friendly retention devices to help keep aids and earmolds on the head!</p>
Technologies	<p>Directionality Directional microphones are designed to improve the signal-to-noise ratio for sounds coming from directly in front of the user by attenuating sounds originating from other directions. The main advantage of the directional microphone is that it allows the child to 'focus' on speech coming from the front, which is particularly advantageous for speech understanding in noisy environments such as classrooms.</p> <p>Today's technology automatically switches between the different modes/microphones (front or front/back) so the best signal with less noise and more of the speech information is chosen for each individual situation.</p> <p>There are three modes of directionality in many advanced directional hearing aids:</p> <p>Surround: Sounds from all directions are amplified – no matter content. If noise is present, this will be attenuated by the</p>

Noise Management System in the hearing aid.

Full directionality:

In full directionality the hearing aid focuses on speech coming from the front and dampens sounds from the back. However, full directionality will only be used when there is no speech coming from behind – if speech is coming from the back, the hearing aid will switch to Surround mode to ensure that the speech is available to the child. Sounds from behind are never completely removed so it will still be possible to hear warning sounds such as sirens and car horns.

Spilt directionality:

In split directionality the hearing aid also focuses on speech from the front – however, it does not attenuate sounds from the back as much as when the hearing aid is in full directionality. Split directionality can be used to improve the speech understanding in 'less noisy environments' where there is no need to reduce sounds from behind as much, e.g. a dinner situation with slight kitchen noise.

Noise Management

The purpose of Noise Management (NM) is to increase listening comfort by reducing background noise. The TriState Noise Management System is designed to do this without compromising important speech cues. This can be done by using the speech detector, VoiceFinder to determine if speech is present in the signal.

If only speech is present, the NM system is not activated. If both speech and noise are detected, the signal is reduced and speech relevant frequencies are protected. In a noise-only situation, the attenuation of the incoming signal is stronger. At no point in time will sounds be completely removed so it will still be possible to hear warning sounds such as sirens and car horns.

Noise Management is beneficial to children because it always ensures preservation of the important speech cues and thereby provides optimal comfort without affecting speech understanding.

Dynamic Feedback Cancellation

Feedback is the whistling sound that can be heard from a hearing aid from time to time. This is a well-known problem for children wearing hearing aids – and for parents or others in the vicinity. Putting on a hat, hugging or brushing the child's hair can trigger the whistling from the hearing aid. This does NOT mean that the parents should stop doing this.

The feedback can easily be managed with today's dynamic feedback management technology that does not compromise audibility. Oticon instruments have a feedback cancellation system called **Dynamic Feedback**

Cancellation (DFC).

Using DFC will minimize feedback whistling without reducing important speech information. The two-stage dynamic feedback cancellation system has been designed to minimize all occurrences of feedback by constantly monitoring input and output signals.

The digital phase cancellation will remove the whistling within milliseconds and ensure no reduction or distortion of the signal. Thus the child has full audibility by avoiding feedback, even if the earmold needs to be changed due to ear growth.

Use the four steps on the drawing to illustrate how the DFC system works.

Child friendly design

Volume control:

The volume control (VC) on a hearing aid can be enabled or disabled – depending on the individual child.

Volume controls are often enabled in order to prevent from accidental change of the volume setting – or if the child is too young to handle manual changes.

On the other hand, in the starting phase of the hearing aid fitting process, parents might like to be able to gradually increase or decrease the volume according to the child's reaction. In such cases the VC will be enabled. Furthermore, children up to school age have frequent middle ear problems. In these cases, parents can turn up the volume in order to compensate for the reduced conduction of sound through the middle ear.

Switches and buttons:

The switches and buttons on hearing aids are used to change programs. Pushing the button or flipping the switch will change the program. For many children there will only be one program – this eliminates the risk of the child accidentally changing to a program that is not suitable for the present situation. Also, many young children are not able to handle the manual program changes.

Batteries:

Hearing aids for children come with a tamper resistant battery drawer. This means that it is either difficult to get the battery out of the drawer when opened or that it is difficult to open the drawer. This is to prevent the child from accessing the battery and accidentally eating it.

BATTERIES ARE POISONOUS! KEEP ALL BATTERIES OUT OF REACH OF CHILDREN.

Colors	<p>Children love bright colors – make this part of your child’s life fun and beautiful.</p> <p>Colored hearing aids are a constant reminder – this is who my child is, I am proud of her, and we are working hard to help her be the best person she can be</p> <p>Your child is a child first and there is so much to do to care for young children! Hearing loss is invisible and can be forgotten in the hectic moments of every day. Colored hearing aid cases or earmolds can be that visual reminder to talk about the world, stay within the child’s listening bubble, and to take advantage of every opportunity to develop listening and language skills.</p> <p>Your child has much to teach you and the world – colored hearing aid cases or earmolds catch attention; this is your chance to inform the world how much people with hearing loss can accomplish; from sport stars, to beauty queens, to politicians!</p> <p>Children love to have choices – let your toddler or young child choose the earmold or hearing aid case color. This pride in being able to choose can improve the way that the child takes care of the hearing aids and how she/he feels about herself when wearing the aids.</p>
Daily checks	<p>Hearing aids are checked daily or more often if the child has been in moist, humid conditions or does not appear to be responding to sound as expected. The child should learn to use the hearing aids during all waking hours.</p> <p>Test the battery: Batteries only last 1-2 weeks when used daily. Because the child cannot tell you when the battery has died you need to check the batteries in the tester provided. If the battery ‘passes’ it can be used - if not, replace the battery. Battery life begins when the tape is removed from the top of the battery surface. BATTERIES ARE POISONOUS! KEEP ALL BATTERIES OUT OF REACH OF CHILDREN.</p> <p>Listen to the hearing aid: You will soon become skilled at knowing what your child’s hearing aid should sound like. Report changes you perceive to your audiologist who can test the aid further. Make sure the aid is “off” and the volume is turned down, if possible. Place the tip of the earmold in the tan colored cup at the end of the listening tube and put the ear tip in or near your ears. Special care must be taken when listening to high power instruments whose maximum loudness exceeds 132 dB SPL. Turn on the aid and turn up the volume until comfortable. Listen for any loud background hiss or scratchy sounds as you move the volume wheel (if there is one). Jiggle the hearing aid and listen for any cutting in and out of sound. Say the sounds oo, aw, ee, sh, s, m and listen to how clear the sounds are. Each sound represents a different pitch range in hearing so clarity of every sound is critical!</p>

	<p>Put the hearing aid on the child: Turn it on and to the correct volume setting. Say the sounds oo, aw, ee, sh, s, m and watch your child for a response from 6-12 inches and again from 6 feet or at your child's maximum listening distance. Encourage your child to repeat these sounds and participate in hearing aid checks. You can use this quick hearing aid check method for years!</p> <p>Earmolds: If you know the earmold is in the correct position and you hear any feedback (whistling) when the child chews, vocalizes, or moves around, immediately make an appointment with the audiologist for a new earmold impression to be made. A hearing aid that is whistling is not providing your child with the amount of amplification he or she needs to perceive and attend to speech and sounds in the environment.</p>
Daily care	<p>The hearing aids should never be exposed to water: no hearing aids during baths, showers, swimming. Make sure the child has a hat on or is under some sort of cover during rain or wet snow.</p> <p>Night time: The hearing aids should be kept in a 'hearing aid house' like the DriAid kit nightly – especially in moist climates. Remove the battery, open the battery door, seal tightly in the DriAid jar. One drop of moisture in the earmold tube or hearing aid can prevent a child from receiving amplified sound.</p> <p>Earmolds: Hearing aids should NOT get wet or be in moist places. If you see drops of water in the earmold tubing, remove the earmold and use the blower to dry out the tube. If the earmold looks dirty, clean it with the wax loop tool or remove it and let it soak in warm dishwater. Earwax will eventually discolor the earmold. Do not boil or use harsh cleaners on earmolds. Let dry overnight before attaching to hearing aids.</p> <p>Batteries: Battery life begins when the tape is removed from the top of the battery surface. BATTERIES ARE POISONOUS! KEEP ALL BATTERIES OUT OF REACH OF CHILDREN. The parent should be prepared with spare batteries (i.e., in purse). It is unfortunate when a child loses a whole day of listening and language learning because an inexpensive hearing aid battery needed replacing.</p> <p>Tubes: The tubing between the hearing aid and the earmold should be changed a couple of times a year or when it becomes discolored and hard. The audiologist can help change the tubing.</p>
FM	<p>In school, a child cannot learn what he cannot hear. Because classroom instruction occurs over distance and in the presence of background noise, many children are not able to access the teacher's instruction because of the limitations in the size of their listening bubble. In order to put the teacher's voice within the child's listening</p>

	<p>bubble (in learning distance!) an FM system must be used. With a microphone transmitter to pick up the teacher's voice and an FM receiver worn by the child it is as though the teacher is speaking close to the child's ears during all instruction – the FM puts the teacher in the child's listening bubble.</p>
<p>How FM helps</p>	<p>Children can't learn what they don't hear.</p> <p>They cannot catch language if they are too far away from the parent or teacher or if there is too much noise</p> <p>An FM lets the child hear what the parent or teacher is saying as though the adult was talking only a few inches from the child's ear</p> <p>This technology sends the adult's voice over an FM signal, like a one-person radio station.</p> <p>FM overcomes 3 major obstacles: Distance Noise Reverberation</p> <p>Distance : FM helps keep the child within the listening bubble. Once the child begins crawling they can easily move out of listening bubble range – using FM helps provide the child with access to speech within the listening bubble</p> <p>Noise: FM helps prevent noise from interfering with listening and from making the listening bubble smaller. Parents can continue to stimulate language when the child is in a car seat, grocery store, or other setting where there may be noise</p> <p>Reverberation: FM helps in situations where very reverberant rooms or areas can smear speech</p> <p>FM in classrooms: Children learn mainly through what they hear.</p> <p>Until children learn to read fluently they learn through verbal instruction – from what their teacher say or by discussing with other children Expectation is that the child has the vocabulary to understand what the teacher says and to apply new information – this may or may not be true for children with hearing loss</p>

	<p>Classrooms are often noisy and distracting</p> <p>Even if a child with hearing loss has wonderful language and listening skills she/he will still have some trouble in school because</p> <ul style="list-style-type: none"> Teachers stand outside their listening bubble Noise in the classroom interferes with listening making the listening bubble even smaller Classrooms are large spaces that are usually more reverberant than they should be - reverberation smears speech <p>Placing the child in the front row is NOT enough. Hearing aids do not restore normal hearing. The teacher would need to be talking right next to the child's ear to overcome the effect of background noise and reverberation in the classroom</p> <p>Children without hearing loss can learn with reverberation and background noise levels that are higher than a child with hearing loss</p> <p>Consider how well a child is able to repeat words in a quiet sound booth, and when noise is present (+5, +10 S/N). A child with normal hearing would have a score of almost 100%. This is the extra challenge that a noisy classroom poses to the child with hearing loss.</p> <p>Technology is <u>part</u> of the solution. An FM system overcomes the challenge of listening to the teacher across distance and in noise</p> <p>The teacher needs to be aware of the effect of the child's hearing loss on listening, especially during classroom discussions, group learning, and social situations</p> <ul style="list-style-type: none"> Refer to the Listening Inventory For Education (LIFE) www.hear2learn.com Refer to the COW (Children's Outcome Worksheets) <p>The child's function in the classroom should be monitored at least twice a year to be sure that they are able to access verbal instruction</p> <ul style="list-style-type: none"> Refer to the Screening Instrument For Targeting Educational Risk (Preschool SIFTER, SIFTER, Secondary SIFTER www.hear2learn.com)
FM technologies	<p>To get the benefits of an FM the parent or teacher must wear the FM transmitter. It is a microphone that picks up the person's voice and sends it to the child's FM receivers. The transmitter should be worn whenever the adult is in care of the child.</p> <p>The microphone/transmitter does NOT have to be on every minute but it does need to be available for 'teachable</p>

	<p>moments’.</p> <p>Remember, children with normal hearing can monitor where their parents are and what they are doing by listening to them and overhearing what they are saying. The only way a child with hearing loss can pick up language this same way is to use FM.</p> <p>The FM receiver attaches to the bottom of the hearing aids and ensures that the speech sent from the transmitter is received in the hearing aid</p>
<i>CI</i>	
<p>What is a cochlear implant?</p>	<p>Hearing aids put amplified sound into the ear through an earmold. A cochlear implant converts sound to coded electrical signals that are sent directly to the hearing nerve.</p> <p>A tiny wire with electrodes is put into the cochlea by a doctor. This electrode array takes the place of the hair cells in the cochlea and directly stimulates the hearing nerve.</p> <p>The goal is to allow a child to hear all of the speech sounds. If hearing aids provides the child with access to the whole speech range then there is no need for a cochlear implant</p> <p>If the child is unable to receive enough of the speech range to develop language – or if the speech is so unclear, like for children with auditory dys-synchrony – then the child can be considered for a cochlear implant</p> <p>The child still needs to go through all of the steps of learning to listen and developing language whether they hear speech through hearing aids or a cochlear implant</p> <p>Children who have heard and who have then developed hearing loss, or had progressive hearing loss are the best candidates because the auditory centers of their brains have been developed</p> <p>To be considered candidates for cochlear implantation children need to have worn hearing aids consistently at least 3-6 months to stimulate their auditory brain centers</p> <p>For success with hearing aids or cochlear implants, parents need to be committed to daily use of the technology, and surrounding their child with opportunities and encouragement to listen and learn language</p> <p>Parents who have a strong desire for their deaf child to learn to listen and speak should explore the possibility of cochlear implantation at a cochlear implant center</p> <p>Sometimes children wear one hearing aid and have a cochlear implant on the other ear. Often the child will use</p>

	<p>an FM system too especially at school</p>
<i>Early Intervention</i>	<p>As every parent knows, babies don't come with instructions!</p> <p>Infants and toddlers with hearing loss can develop and learn language very similarly to children without hearing loss but their parents need to understand what they need to do to help their child learn language.</p> <p>Early intervention is the term used to describe services given to the family to help them understand the special learning needs of their child and coach them on what to do. Early intervention can also mean a child receives services from someone specially trained in teaching young children with hearing loss, during which parents are involved in watching and learning techniques to use at home.</p> <p>Young children learn language by hearing it used around them and people communicating with them during every day activities, like feeding, diapering, bathing, playing, etc. Language is caught, not taught. This is why early intervention services are often provided to families in the home or in the child care setting.</p> <p>Early intervention services help the family to understand how the child's hearing loss effects his or her ability to catch language around them, the importance and daily use of amplification, and effective communication strategies, which can include using sign language or cued speech with the child, building listening skills, and/or focusing on developing verbal language and speech skills.</p> <p>Baby's brains are programmed to learn language, whether it be through their ears or their eyes! The families need to learn how to ensure the young child receives enough language to allow their language ability to grow at the same rate as a child without hearing loss. This is possible, but ONLY if the family is very involved in helping their child learn from a very young age.</p> <p>Early intervention provides the guidance and coaching to help families learn and cope with their child's hearing and language learning needs.</p>
<i>Resources</i>	
OtiKids	<p>The OtiKids program provides various support elements to parents, teachers, children and professionals. The program aim to provide materials that help understand hearing, hearing loss, hearing solutions and coping with life with a child with hearing loss.</p> <p>Several guides are available for parents and teachers and for the children books on hearing aids and FM as well as story books help explain the world of hearing loss and hearing solutions.</p> <p>Otto's World of Sounds is a multimedia tool for children that incorporates sounds and pictures with fun games to support the professional habilitation program</p>

	<p>www.otikids.com provides information for parents and teachers on hearing, hearing loss, networking and support and the site also contains the unique Kids Corner with information written for children at their level.</p>
Communication tips	<p>TIPS FOR COMMUNICATING WITH YOUR CHILD WITH HEARING LOSS</p> <p>Hearing aids all day, every day: Hearing aids are the child's lifeline to hearing your voice and learning spoken language; she needs to be able to listen all waking hours</p> <p>Communicate close: Know the size of your child's listening bubble and communicate within that distance</p> <p>Be heard clearly: Even a low level of noise in the background can make it impossible for your child to understand all or some of what you say; constantly having the TV or radio on will slow your child's learning</p> <p>Talk, talk, talk: Language is caught, not taught so be sure that there is plenty of meaningful language available in his environment</p> <p>Pay attention to what interests the child: Follow the child's lead; what is most interesting to her is the language that is most meaningful and that she is most ready to learn</p> <p>Move closer, do not make your voice louder: If your child does not hear you, move closer to him so he can hear you within his listening bubble; do not raise your voice as that also communicates anger or dissatisfaction</p> <p>Rephrase and expand: The child may not hear everything you say, but probably heard part so say the same thing in a different way, expand on it and respect the time and extra effort it takes to put the parts together</p> <p>Provide structure and responsibility: Structure helps build confidence; paired with responsibility it is the foundation for feeling successful and encourages him to compensate even if he does not hear everything; do not excuse him from being involved or following through because he may not hear</p>

	<p>Communicate your pride: Be matter of fact that your child's hearing loss and hearing aids are a part of who she is and that you love every part of her. Her self esteem, confidence, and her belief that she is acceptable to other children depend first and foremost on your attitudes</p> <p>Have high expectations: Hearing loss is a barrier to communication but one that can be dealt with and accommodated as much as necessary by the child, the family, the community</p>
Learning Language	<p>WHAT THE AUDIOLOGIST WANTS TO CONVEY</p> <p>Language is caught, not taught</p> <p>Babies and young children learn differently from school-age children and adult</p> <p>All children build an understanding of how language is used and specific words for about a year before they say their first word.</p> <p>Repetition – language learned from what is said during everyday activities: Time to put your bib on More juice? Go bye-bye</p> <p>Overhearing when other's talk and observing what happens: I need to go shopping It is raining out</p> <p>New words and concepts are learned most quickly when the baby is very interested, such as: Learning the dog's name (dogs move around in the baby's household) Learning the word 'cookie' Learning the word 'no'</p> <p>As children get older they expand on the words and concepts they know by 'catching language' and by explanations in directions or by having their questions answered: So children learn language by hearing it used around them in everyday situations</p> <p>Language can be thought of as having two parts: what the child understands, and what the child can use to get his or her wants and needs known.</p>

	<p>As more language is understood the child's ability to express himself will improve as well. Young children do not speak clearly as they begin to use language. Children with hearing loss do not hear all of the speech sounds or hear them incompletely so speech clarity is often not as good as a child with normal hearing. Typically for a child with hearing loss developing language understanding and use is the critical focus of the first couple of years of life. Precision of speech often becomes more of a focus of working with the child sometime after they pass their second birthday and are interacting using verbal language and may be experiencing frustration from not being understood.</p> <p>For young children the most important thing is to give them something to say rather than focus on how well they say it. Working on speech sound accuracy can wait often wait until school age if the child is able to be understood well enough to not be frustrated.</p>
<p><i>Language development</i></p>	<p>LANGUAGE DEVELOPMENT TIMELINE:</p> <p>Birth to 3 Months: Startled by loud sounds</p> <p>Soothed by caretakers' voices</p> <p>3-6 Months: Reacts to the sound of your voice.</p> <p>Turns eyes and head in the direction of the source of sounds</p> <p>Enjoys rattles and noisy toys</p> <p>7 to 10 Months: Responds to his/her own name</p> <p>Understands "mama," "dada," "no," "bye, bye" and other common words</p> <p>Turns head toward familiar sounds, even when he/she cannot see what is happening: Telephone Person's voice Dog barking or paper rustling Familiar footsteps</p>

11 to 15 Months

Locates or points to familiar objects when asked

Imitates and matches sounds with own speech production (though frequently unintelligible), especially in response to human voices or loud noises

Understands words by making appropriate responses or behaviour:

"Where's the dog?"

"Find the truck."

15 to 18 Months

Identifies things in response to questions, such as parts of the body

Uses a few single words; while not complete or perfectly pronounced, the words should be clearly meaningful

Follows simple spoken directions

2 Years:

Understands yes/no questions.

Uses everyday words heard at home or at daycare/school.

Enjoys being read to and shown pictures in books; points out pictures upon request.

Interested in radio/television as shown by word or action.

Puts words together to make simple sentences, although they are not complete or grammatically correct:

"Juice all gone"

"Go bye-bye car"

Follows simple commands without visual clues from the speaker:

"Bring me that ball."

"Get your book and give it to Daddy."

Says or sings short rhymes and songs; enjoys music.

Investigates noises or tells others when interesting sounds are heard:

Car door slamming.

Telephone ringing

Vocabulary approximately 270 words.

3 Years:

Understands and uses simple verbs, pronouns and adjectives:

Go, come, run, sing

Me, you, him, her

Big, green, sweet

Locates the source of a sound automatically.

Often uses complete sentences.

Vocabulary approximately 1,000 words.

4 Years:

Gives connected account of some recent experiences.

Can carry out a sequence of two simple directions:

"Find your shoe and bring it here."

"Get the ball and throw it to the dog."

5 Years:

Speech should be intelligible, although some sounds may still be mispronounced-such as the "s" sound, particularly in blends with other consonants (e.g., "street", "sleep", "ask").

Neighbours and people outside the family can understand most of what your child says and her grammatical patterns should match theirs most of the time.

Child carries on conversations, although vocabulary may be limited. •

Pronouns should be used correctly:

"I" instead of "me"

"He" instead of "him"

Parents of infants and children who do not exhibit age-level language and listening behaviours should seek professional advice from an audiologist.

Used with permission from ALEXANDER GRAHAM BELL ASSOCIATION FOR THE DEAF AND HARD OF HEARING, 2005

Maximizing language

WHAT THE AUDIOLOGIST WANTS TO CONVEY

Hearing is a distance sense, we listen to many sounds around us all the time

Hearing loss reduces our hearing range, or the size of our listening bubble

The greater the hearing loss the smaller the listening bubble

Children learn language by hearing it used around them. With a smaller listening bubble than normal a child is not exposed to as much language so they will not learn language as fast as a child with normal hearing

To 'catch language' the listening bubble needs to be as big as possible and the parents need to communicate within that range

To really understand what your child's hearing loss means to everyday listening in your home you need to discover more about the size of your child's listening bubble

The size of the listening bubble will change based on how loud someone speaks, the pitch of their voice, and how quiet it is (even a little noise will shrink a listening bubble, depending on the type of hearing technology a child has)

You will raise your child with hearing loss just like any other child with one exception – if the child is to learn language YOU need to make sure the language going on around the child is within earshot or eyesight

Hearing aids make the listening bubble bigger and allow more sound to get to the brain to stimulate the growth of auditory centers in the brain, even if a child has very little hearing

The critical time for the brain to be stimulated so brain pathways really grow is when a child is very young

Children with normal hearing learn to listen without effort

Children with hearing loss whose parents want them to learn spoken language need to learn to listen – they are already behind in listening from birth

If children with hearing loss are to learn language at the same rate as others, parents need to:

Have the child wear hearing aids during all waking hours

Recognize the size of the child's listening bubble

Actively work to help the child develop listening and language skills

KNOW THAT THERE ARE PEOPLE WHO CAN HELP PARENTS LEARN WHAT THEY NEED TO KNOW

Language is the path to reading, learning, and understanding; hearing loss will cause a delay in language learning unless the parents act to prevent it

Language can be learned through hearing but a child must be able to hear all or most of the speech sounds to learn language fully

Language can be learned through seeing by having all of the people in the child's life learn to communicate around him/her by using sign language or cued speech

Technology is very helpful in enlarging the size of a child's listening bubble BUT :
Sometimes the hearing loss is so big that hearing aids cannot make all of the speech sounds heard

Sometimes even when the child can detect speech sounds the auditory centers of the brain are unable to process the sound clearly, so it is still hard for the child to learn language through listening alone

The child will teach us - The rate the child learns language must be monitored regularly. Changes in amplification, changes to efforts to help the child on listening and language development, and use of visual communication all must be considered if a child is not learning language at the same rate as a child with normal hearing

Professionals are available who can help parents do this!

Language delays can be prevented or minimized – but it will take time, love, and knowledge!