



ILLINOIS SCHOOL FOR THE DEAF OUTREACH

FREE training and consultation for
Illinois children with hearing loss

bit.ly/ISDOutreach



Search for Illinois School for the Deaf Outreach



State of Illinois
Dept. of Human Services
Illinois School for the Deaf

Bruce Rauner, Governor
James Dimas, Secretary
Julee Nist, Superintendent



DESIGNATED
SERVICE
COORDINATOR
TRAINING
2018

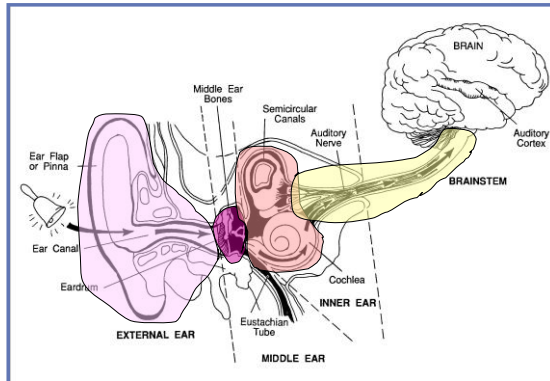
*Supporting Families who have children who are deaf,
hard of hearing, visually impaired, blind or deaf-blind*

Welcome to DSC training year 2, Bridges Conference 2018 in Bloomington at the ISU Alumni Center.

DEAF AND HARD OF HEARING

HOW DOES THE EAR WORK?

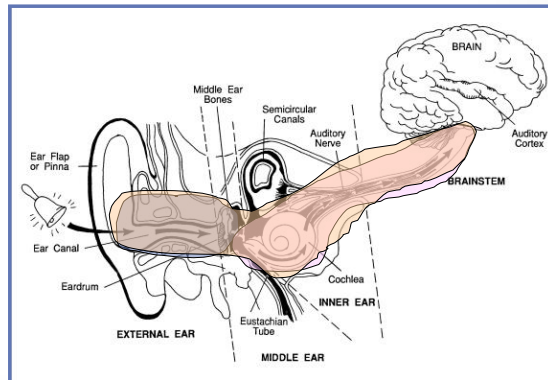
- ❖ Outer Ear
- ❖ Middle Ear
- ❖ Inner Ear
- ❖ Auditory Nerve



- The Middle Ear--vibrations cause three tiny bones in the middle ear to generate movement in the fluid in the cochlea in the inner ear.
- The Inner Ear--the thousands of tiny hair cells that line the cochlea bend and trigger electrical impulses that are sent to the auditory nerve. If you unrolled the cochlea, it would be like a piano keyboard with high sounds at one end and low sounds at the other.
- The Auditory Nerve--carries the signals to the brain where they are interpreted as sound.

TYPES OF HEARING LOSS

- ❖ Conductive
- ❖ Sensori - neural
- ❖ Mixed



When problems occur in the outer or middle ear, the loss is conductive. This kind of loss can usually be fixed. Surgery can correct problems with the small bones (the smallest in our body) of the middle ear. Even a prosthetic bone may be used.

Problems in the inner ear, or the auditory nerve, are usually permanent. These problems are nerve related. If the problem occurs in the cochlea, sometimes a cochlear implant may be an option. If the damage is in the auditory nerve, nothing that is done in the part of the ear preceding that will do any good.

CAUSES OF HEARING LOSS

Conductive Loss

- ❖ Excessive or impacted ear wax
- ❖ Ear infections
- ❖ Collapsed ear canal
- ❖ Perforated ear drum
- ❖ Fluid in the ear
- ❖ Malformation
- ❖ Fixation of ossicles



What are some of the causes of a hearing loss occurring in the outer or middle ear?

Otitis Media - ear infection in the middle ear

Otitis Externa - outer ear infection--in the canal

Otosclerosis - the bones of the middle ear become fixed

Collapsed ear canal - can sometimes occur in older people or in persons with Down Syndrome, when the ear canal is soft. It can happen during testing of hearing.

Malformations may cause Atresia - when the pinna is missing

Fixation of the ossicles - the bones of the middle ear don't move

CAUSES OF HEARING LOSS

Sensorineural Loss

- ❖ Heredity
- ❖ Syndromes
- ❖ Maternal illness during pregnancy
- ❖ Meniere's Disease
- ❖ Noise induced
- ❖ Ototoxic drugs
- ❖ Head trauma



Some causes of sensory neural hearing loss include:

Heredity

Syndromes such as Treacher-Collins, Wardenburg, Usher Syndrome

Illness during pregnancy. i.e. Rubella, etc.

Meniere's Disease - a ringing in the ears

Noise induced hearing loss

Ototoxic drugs - some antibiotics given to the infant after birth, and even excessive amounts of aspirin, may cause hearing loss

SEVERE/PROFOUND LOSS



- ❖ May hear loud voices about one foot from ear.
- ❖ With best amplification, should be able to identify environmental sounds and detect speech sounds.
- ❖ If loss is prelingual, oral language and speech may not develop spontaneously, or will be severely delayed.

It is sometimes possible for the child to learn speech only through a lot of work by the parents, child and speech teacher. Speech is not heard clearly enough for the child to learn it auditorily.

MODERATE HEARING LOSS

- ❖ Conversational speech.
- ❖ 40-45 dB loss
- ❖ 50 dB loss.
- ❖ Syntax and vocabulary
- ❖ Speech production and voice quality.



- A moderate hearing loss is identified later than the severe loss because the child does hear some speech sounds, even though they aren't clear and the speaker needs to be very near the child for him to hear them.
- Understands conversational speech at 3-5 feet only if face to face, and if structure and vocabulary are controlled.
- Will miss 50%-75% of speech signal at 40-45 dB, and 80%-100% with 50 dB loss.
- Likely to have delayed or defective syntax, limited vocabulary, imperfect speech production, and atonal voice quality.
- As you can see, the farther away the speaker, or the softer the sound, the less likely the person is to understand.
- If you can't hear complete language, you will have trouble with the syntax (language structure), and with speech production. Voice quality is usually impaired.

MILD HEARING LOSS



❖ 15 dB loss

❖ 30 dB loss

❖ 35-40 dB loss.

❖ Consonant sounds

Often a child sits in school with a mild hearing loss and it is undetected.

At 15 dB, student can miss up to 10% of speech when teacher is farther than 3 feet away.

At 30 dB, can miss 25-40% of the speech signal.

At 35-40 dB, will miss at least 50% of class discussions.

Will miss consonant sounds, especially with high frequency loss.

Even with a mild loss, look how much the child misses. Think about learning to speak and learning language when you can only hear about half of what is being said, and when you mainly hear the vowel sounds. Consonants are what usually distinguish one word from another....without hearing them, just think how hard it would be to understand what was being said to you, much less repeat it using understandable speech.

PROFOUND HEARING LOSS

❖ Vibrations

❖ Vision

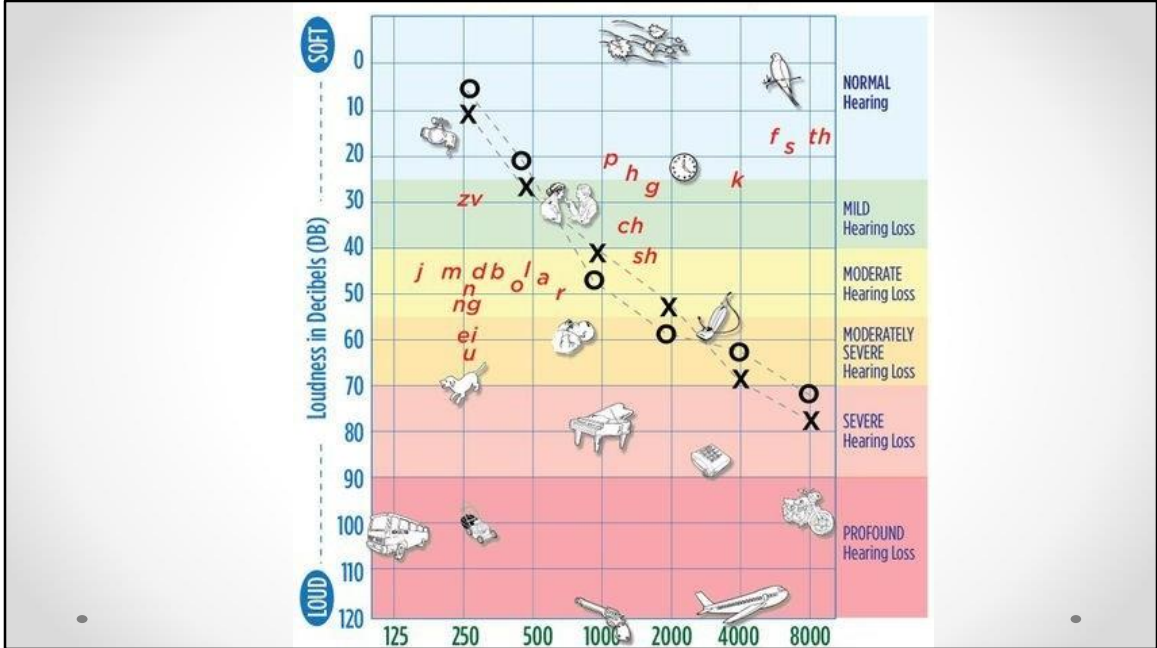
❖ Speech and language



We will discuss each of the degrees of hearing loss, and will give you a spelling test which will allow you to hear what a person with that hearing loss is hearing.

A person with a profound loss:

- is probably more aware of vibration than of actual sound.
- Most rely on vision rather than hearing as primary avenue for communication and learning.
- Speech and language will not develop spontaneously
- It is unlikely that this person will develop understandable speech without a great deal of speech training which is carried out at home also.



- This is an audiogram, the background image represents familiar sounds. This particular audiogram represents a hearing loss which is mild in the lower frequencies but progresses to severe in the higher frequencies. On this audiogram the O represents the RIGHT HEAR and the X represents the LEFT ear.
- All sounds below the X or O CAN be heard by the listener, those above CANNOT be heard.
- This particular example notes that the sounds p, h, g, ch, sh, k, f, s and th cannot be heard. Similarly wind, birds, ticking clock and soft sounds are likely being missed.
- Remember DB is the loudness of sounds and HZ is the tone or frequency in sounds.
- This example would confirm that this person cannot get full access to speech sounds without some form of assistance whether amplification or visual.

WHAT A CHILD MIGHT HEAR:

- ❖ **Normal:** Freddie thought he should find a whistle.
- ❖ **Mild loss:** Freddie though- -e -ould -ind a whistle.
- ❖ **Moderate loss:** -reddie -ough- -e -ould -i-- a -i--le.
- ❖ **Profound loss:** LOUDsoft LOUDsoft soft LOUDsoft LOUDsoft

If this is what the child hears, this is what he will say.
As hearing decreases, so does intelligibility.

CONSONANTS CARRY THE MEANING...

a _ou_ _ea_ _i_ _ue_io_ _i_ o_ _e
_o_e_?

C_n y_ r_d th_s q_st_n w_th _nly th_
c_ns_n_ts?

- If you look at the first group of words, with the consonants missing, it doesn't make any sense...
- For students who are hard of hearing, it is more often the consonants that they don't hear rather than the vowels.
- The second group of words is understandable, even though the vowels aren't there.
- Many consonants are "unvoiced" or are softer than vowel sounds. They are also higher pitched. Many hearing losses are in the high frequencies, therefore eliminating those sounds from what can be heard.
- Remember, when someone is talking, a person doesn't have extra time to figure out what might have been said.

SO....

...What would you have missed in your household this morning if you couldn't hear?



Imagine what it would be like if you couldn't hear.

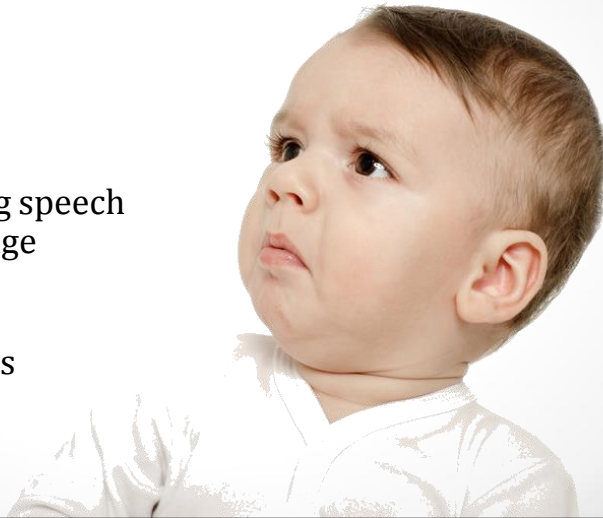
Did you listen to the TV news while you were getting ready in the bathroom? Did you over hear a conversation in the hallway and gain some information that no one told you directly? Did you have a conversation with your family members before you came, and do you know what each of them are doing today? Did you understand the conversation that was going on in the front seat of the car while you were riding in the back, or visa-versa?

There are many examples which just let us think about how much we gain from the opportunity for incidental learning. Children with a hearing loss don't have all of those opportunities.

IT'S MORE THAN JUST A HEARING LOSS!

It affects:

- ❖ Connecting
- ❖ Developing speech and language
- ❖ Learning
- ❖ Social skills



There is so much we need to do to fill in the gaps for our students who miss what is learned auditorily.

It's much more than just a hearing loss, it can mean:

- ❖ Losing the ability to connect with those around you
- ❖ Not having the input

needed to develop speech and language

❖ Not having the communication to learn in school

❖ Not having the language to develop social skills

❖ Not having the academic and social skills to have a good job.

RECEPTIVE LANGUAGE MILESTONES

- | | |
|-------------|---------------------------------|
| ❖ 1 year | ❖ Points to one named body part |
| ❖ 20 months | ❖ Follows 2 step commands |
| ❖ 2 years | ❖ Follows 3 step commands and |
| ❖ 2 years | ❖ Understands 200 words |
| ❖ 3 years | ❖ Understands 800 words |
| ❖ 4 years | ❖ Understands 1500 words |

while in EI

Here are milestones for a hearing child. Remember that the child with a mild hearing loss isn't identified until school age. The vocabulary of a 4 year old is 1500 words.....how do you think that the child with a mild loss compares to his normally hearing classmates?

Do you think this loss might be misdiagnosed by a teacher as an attention deficit problem? Just remember what it sounded like when you had a mild loss and were taking the test. How long do you think a 6 year old can patiently continue to try to understand what's going on when all of the other kids are getting it and he isn't?

A child who has never heard normally doesn't **KNOW** what he is missing and is not able to alert you to his needs. Even a child with a temporary loss may not know that he is missing things that are important to his educational success.

The ages within the red box are during EI age and development.

EXPRESSIVE LANGUAGE MILESTONES

- | | |
|-------------|---------------------------------|
| ❖ 1 year | ❖ Imitates sounds of others |
| ❖ 21 months | ❖ Refers to self by name |
| ❖ 2 years | ❖ Says 50-200 words and |
| ❖ 2 years | ❖ Uses plurals |
| ❖ 3 years | ❖ Speech is 75-80% intelligible |
| ❖ 4 years | ❖ Says 6-8 word sentences |

while in EI

What about expressive language? We can usually understand more than we can express. Children who have normal speech and language are conversing very well as a 4 year old.

The ages within the red box are during EI age and development.

IMPACT OF HEARING LOSS

Degree of Loss

- ❖ Normal/Mild
- ❖ Mild/Moderate
- ❖ Moderate

Language Delay

- ❖ 1 year
- ❖ 2.0 years
- ❖ 2.9 years



Language delay is shown in years according to the hearing loss. Remember, a child can be considered to have normal hearing even tho they have a mild loss. If this is the case, they can experience a delay of up to one year.

IMPACT OF HEARING LOSS

Degree of Loss

- ❖ Moderate/Severe
- ❖ Severe
- ❖ Profound

Language Delay

- ❖ 3.5+ years



Language delay is shown in years according to the hearing loss. As you can see, a child with a moderate/severe loss can have more than 3.5 years delay in language.

LISTEN TO MOM AND DAD

If they are saying
the child isn't
responding to
their voice, you
should act on it.
We will talk
about syndromes
to watch.



Remember what we said before?

At age 6, child with normal hearing has **3 thousand words**

Unless there is intervention, at age 6, the average child who is deaf or hard of hearing will have **50-60 words**

By age of 5 or 6, children with normal hearing have acquired all of the linguistic structures they will need for a lifetime.

By the age of 5 or 6, the window for optimum language learning is closing.

This window of optimum learning of language is more important than we can express. After that window closes, the process of catching up is nearly impossible.

Early identification is the key to success. Studies show that if a child is identified as having a hearing loss before the age of 6 months, and if good intervention begins at that time, there will be no delay in the acquisition of language. However, with each month that passes, and with the delay of intervention, the gap widens in the achievement of developmental milestones.

RED FLAG BEHAVIORS



- ❖ Inattentive
- ❖ Asks for repetition
- ❖ Speech, language problems
- ❖ Allergies, colds, ear infections
- ❖ Omits endings **“sh”**, **“s”**, **“th”**, **“f”**
- ❖ Very visual
- ❖ Inconsistent hearing

This and the following red flag slides are great resources to note, any of these or any combination of these should not be ignored for children in EI. It is helpful to understand this if you realize that over 30% of children with hearing loss also have another disability, so keep your eyes and ears open to what families are say and what children are doing.

MORE RED FLAG BEHAVIORS



- ❖ Ear pain, tugs ear
- ❖ Answers unrelated to questions
- ❖ Poor balance
- ❖ Loud noises are painful
- ❖ Short attention span
- ❖ Distractible
- ❖ Immaturity

NOT DONE YET . . .



- ❖ Strains to listen, favors one ear
- ❖ Uses inappropriate speaking behavior
- ❖ Watches speakers face more than normal
- ❖ Fails to follow directions
- ❖ Loses place when reading

HELEN KELLER SAID:



“Loss of vision means losing contact with things, but loss of hearing means losing contact with people.”

This quote by Helen Keller kind of sums it up.

REMEMBER....

- ❖ A little hearing loss **is** a big thing.
- ❖ Barriers **are not** mobility based.
- ❖ There **is** something you can do about it.
- ❖ Barriers are related to communication, the keystone of the entire educational process.

WHO ARE THESE CHILDREN? WHAT CAN WE DO?



The combined effect of a hearing loss and an accompanying disability presents a unique and complex problem for professionals and parents.

Multiple disabilities create a pattern of problems, different from the problems usually associated with any disability alone.

The fact that there are many differences among children with multiple disabilities adds to the difficulties of providing appropriate programs.

However, there ARE things that can be done



SYNDROMES

*There are over **400** multiple anomaly syndromes in which hearing loss is listed as a significant feature.*

SYNDROMIC HEARING LOSS

- Waardenburg Syndrome
- Usher Syndrome
- Pendred Syndrome
- Stickler Syndrome
- CMV – Congenital Cytomegalovirus
- CHARGE Syndrome
- Branchio-Oto-Renal (BOR) Syndrome
- Treacher-Collins Syndrome
- Neurofibromatosis Type II (NFII)
- Alport Syndrome



WAARDENBURG SYNDROME

- syndromic hearing loss
- May be unilateral bilateral
- Sensorineural
- Features may show pigmentary changes including premature graying hair, white forelock, two different-colored eyes, and partial albinism
- Facial features may include fused eyebrows, widely-spaced eyes, high nasal bridge, and under-developed nose tip



PENDRED SYNDROME



- In most cases hearing loss is sensorineural and may be progressive
- Enlarged vestibular aqueduct is always seen
- Other inner ear malformations (Mondini malformation) may be present
- Balance dysfunction is present in most cases
- May be an associated enlarged thyroid gland (goiter)

STICKLER SYNDROME

- Hearing loss may be conductive, sensorineural, or mixed and may be progressive
- Facial features may include: small jaw with cleft palate, under-developed midface
- The eyes and some forms of Stickler may have severe and progressive near-sightedness, cataracts & retinal detachment
- Other findings may include bone/joint disorders, early adult-onset arthritis, and middle ear bone malformations



CHARGE SYNDROME



- Hearing loss may be mixed, conductive or sensorineural
- CHARGE is mnemonic for **C**olobomas (missing portion of the eye), **H**eart defects, **A**tresia (narrowing) of the choanae (the opening of the skull to the nose), **R**etardation of growth and development, **G**enital abnormalities and **E**ar changes
- 4 unique findings aiding in diagnosis are coloboma, choanael atresia, cranial nerve problems and unusually-shaped ears
- Hearing loss may be conductive, sensorineural or mixed and range from mild to profound

TREACHER-COLLINS SYNDROME

- deformities of the ears, eyes, cheekbones, and chincranial nerve problems and unusually-shaped ears
- may vary from mild to severe
- Hearing loss may be conductive, sensorineural or mixed and range from mild to profound
- Complications may include breathing problems, problems seeing, cleft palate and hearing loss
- More than half the time it occurs as a result of a new mutation rather than being inherited from a person's parents



BOR (BRANCHIO-OTO-RENAL) SYNDROME



- Hearing loss is conductive, sensorineural or mixed
- Face may have cysts, often in front of the ears
- Neck may have a cyst or sinus
- Ears commonly have structural changes in the outer, middle, or inner ear, and may show enlarged vestibular aqueducts
- Renal problems may be non-existent, mild or even life threatening

PARENTS ARE KEY!!!

- Parents can:
 - Maintain consistency in the child's life.
 - Help the child maintain self-discipline.
 - Help with continued therapy between sessions.
 - Provide good nutrition and a good night's sleep.
 - Give positive reinforcement and encouragement.
 - Provide love and acceptance.



We can't do it alone. We can't underestimate the power of a parent to support and encourage the child. Without their support, the battle is almost insurmountable. If education is not important to the parents, chances are, it won't be important to the child, either, and no matter how hard you work, you may not be able to accomplish what you could with the parent's support.

EXCELLENT INFORMATION
IS AVAILABLE FROM
PARENT CENTER HUB

<http://www.parentcenterhub.org/>



YOUR DSC CONTACT

Andrea Marwah

331-702-8944

Andrea.Marwah@Illinois.gov

FREE TRAINING AND SERVICES!!

Contact:

- ☎ Outreach Staff (217) 479-4393
- ☎ Toll Free (877) 339-2686
- ☎ Fax (217) 479-4328
- ☎ website www.illinoisdeaf.org

Your Trainer: Andrea Marwah
Andrea.marwah@illinois.gov
331-702-8944

