**Station #10 Deaf and Hard of Hearing**

Hearing loss is the single most prevalent chronic disability in the United States. There are two descriptions of hearing loss: deaf (no hearing) and hard of hearing (defective hearing with or without a hearing aid). Hearing loss can be hereditary, congenital or the result of disease or accident.

Common causes of hearing loss are:

* Aging Process
* Mother with rubella during pregnancy
* Prematurity
* Incompatible Rh factors
* Measles
* Chronic/recurrent ear infections
* Childhood meningitis
* Extreme noise
* Continuous exposure to loud noise
* Ototoxic drugs to alleviate illnesses
* Old Age

**Types of Hearing Loss**

* Conductive hearing loss: Sounds do not pass through the outer ear to the inner ear. A hearing aid will help.
* Sensorineural loss: There is damage to the nerves related to hearing. A hearing aid or cochlear implant will help.

**Severity of Hearing Loss**

* Mild: Difficulty hearing whispers, soft sounds, distant sounds, or speech.
* Moderate: Difficulty understanding conversation unless it is within 3-5 feet.
* Moderately severe: Conversation must be loud to be understood.
* Severe: Not able to hear any loud sounds occurring beyond 1-2 feet.
* Profound: Unable to hear any sound.

**Communication**

Communication is the greatest challenge to people who are deaf or hard-of-hearing. Being deaf does not affect one's physical ability to talk. The vocal cords are completely normal, but it is very difficult to learn to pronounce sounds and words that one has never heard. People who lose their hearing after learning to speak have a reservoir of remembered sounds. They often have normal speech, though they may have problems with volume. People who are born deaf, or lose their hearing very young, may not have perfect pronunciation. Some prefer to communicate through sign language and writing.

**Manual Methods**

* Sign language: A method of communication using fingers, hands, body position, movement and facial expression.
* Signed English: A sign language that substitutes gestures for words in English sentences.
* ASL (American Sign Language): A distinct language with its own grammar, sentence structure and idioms.

Oral-Aural: Using residual or remaining hearing with speech-reading (lip-reading).

Total communication: Combines manual and oral-aural methods.

**Hearing Aids**

Hearing aids are devices used to amplify sounds. There are 3 parts to a hearing aid. The microphone detects the sounds and converts them into electrical signals. The amplifier makes the sounds louder. Finally, the electrical signals are converted back into sounds. The hearing aid does not make speech sound completely normal.

**Cochlear Implants**

A Cochlear Implant is a surgically implanted electronic device that provides a sense of sound to a person who is profoundly deaf or severely hard of hearing. Unlike hearing aids, the implant does not amplify sound, but stimulates any functioning auditory nerves inside the cochlea with electrical impulses. External components of the implant include a microphone, speech processor and transmitter.

**Frequency Modulation (FM) Units**

Individual and Sound Field FM systems are used to enhance the speech-to-noise ratio (S/N ratio). Both systems use a remote microphone placed within 6” of the desired sound source (usually a parent, teacher, or peer). The signal is sent from the microphone to the receiver via radio waves. The child may wear a FM receiver or the classroom may be connected to 3-4 high fidelity/high frequency loudspeakers. These devices reduce the negative effects of distance and noise to improve the S/N ratio.

**Other Equipment**

* Text Messaging: Technology now allows short keyed or typed messages to be sent and received on mobile phones by addressing the message to the recipient’s phone number. The recipient then reads the message and may key into their phone a return response. Since this back and forth dialogue is performed silently, it is a great communication tool for people who are deaf or hard of hearing.
* Email and the Internet: The popular use of Email and the wide availability of high speed Internet access offers people who are deaf or hard of hearing phenomenal communication and information access.
* TTY or TDD (teletypewriter): An attachment to telephones that allows a person to type and transmit a message to similar devices.
* Signaling devices that use flashing lights or vibrations are necessary on doorbells, fire alarms, telephones, etc.

**Activities for the Deaf and Hard of Hearing Station**

**Station #10**

1. Listen to the cassette tape on various degrees of hearing loss (4 minutes). Use a multiple headphone tape player that will allow several students to listen at the same time. The multiple headphone tape player may be obtained from your Media Center.

2. Students can handle the internal and external hearing aids. Refer to the information sheet on how hearing aids work. Do not let the students put the hearing aids in their ears.

3. Use the sign language sheets to sign a few phrases. Look at the examples of how ASL translates into English. Notice that ASL is not a direct translation to English.

4. There are a variety of signed English books to view. Please mention that signed English is not the same as American Sign Language. Point out to young students that a person who is deaf cannot hear the words. Therefore, the person who is deaf must watch the signing while they look at the corresponding pictures and the written text.

5. Try the "knock sensor" that monitors knocks on the door. A light flashes

when someone is knocking on the door. Please turn the knock sensor off at the end of the workshop.

**Activities for the Deaf and Hard of Hearing Station (cont.)**

6. This station will have one of two different vibrating devices. The vibrating alarm clock awakens someone who is hard of hearing or deaf by producing a vibration under his or her pillow or at the foot of his or her bed. To operate the clock, the alarm must be continuously reset during the workshop. When the button is pushed in, the vibrator is off. When the button is out and the alarm is set to alert or “ring”, then the vibrator will begin to shake. Remember to turn the alarm off after the students feel the vibrations. The alternative device is a vibrating timer. A vibrating timer alerts or “rings” by vibrating when time is up. Students will feel the vibration after the timer is reset to alert or “ring” each time. You can keep resetting the timer to ring in only 5-10 seconds so that everyone has a chance to feel the vibrations.

7. Handle the TTY device with the telephone. Read to the students how the device works. Mention that the Internet is an incredible new outlet for many people who are deaf. People who are deaf can use on-line computer systems to communicate, shop, work, research information, etc. Fax machines are also helpful.

8. Press the button to feel the pager vibrate. Pagers are used to signal people who cannot hear phones, doorbells, stoves or alarms. This display has only one frequency. There are home systems available with up to six frequencies so that a person who is deaf or hard of hearing can be alerted by six different vibration patterns. Each household item has different frequency signaling a different vibration pattern.

9. The text messaging cell phone is a world phone with tri-band capability. Many have real web browsing, a camera, instant messaging and organizers. People who cannot speak or hear may use this device anywhere the network has service just like a regular cellular phone. The students may type in a short message but realize this unit does not have an activated service plan.

**Optional**

* There is a display board for the Deaf and Hard of Hearing station that offers more information. Encourage the students to look at the display board if time allows.
* If your school has a Sound Field Hearing System in the classroom, discuss how it helps students hear. This may not be available in your school.