HEARING COMMUNICATION TECHNOLOGY

Improving Environments for Better Listening and Communication

HEARING COMMUNICATION TECHNOLOGY

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HEARING COMMUNICATION TECHNOLOGY

Qualifications:

Master's in Science degree in counseling in marriage and family therapy, rehabilitation, gerontology and a specialization in deafness and hard-of-hearing. She is a Certified Rehabilitation Counselor and a RESNA Certified Assistive Technology Professional

She has been working in the field of hearing loss and deafness for over 10 years

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Services:

- Assistive Technology Assessment
- Assistive Technology Training
- Communication Adjustment Counseling
- Workplace Assistive Technology Assessment
- Home Needs Assessment
- Technical Support
- Assistive Technology Sales

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- Assistive Technology Assessment
  - Review current audiogram
  - Look at existing assistive technology (assistive listening devices, alerts, phones)
  - Discuss current communication barriers
  - Client's reception to use of technology or ability to manage technology
  - Review employment plan
  - Client's current level of adjustment to hearing loss

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- Assistive Technology Assessment
  - Research current assistive technology available on the market
  - Communicate with client's audiologist and DOR counselor
  - Look at any other disabilities that may impact hearing loss
  - Assessment report for DOR with technology recommendations

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- Assistive Technology Training
  - Work with client on basic technology use
  - How to use technology in different locations
  - How to discuss technology with people
  - How to test technology for best listening results

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- Communication Adjustment Strategies
  - Work on self-advocacy skills
  - How to educate employers, and others with whom the client communicates on communication needs and ALD's
  - Psychological impact of hearing loss and living with communication barriers
  - Support client's shifting identity

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- Workplace Assistive Technology Assessment
  - Meet with client and employer
  - Discuss essential functions of the job
  - Review potential communication barriers
  - Look at current physical set up and technology
  - Assess acoustic implications for speech
  - Educate employer on communication needs of someone with hearing loss

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- Home Alert Assessment:
  - Assess need for sound alert, smoke detector or any other safety access need
  - Look at phone signaler and telephone or telecommunication access
  - Assess doorbell for access
  - Check if alarm clock is accessible
  - Recommend technology to improve access
  - Be sure home technology supports vocational capacity

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- Technical Support:
  - On-going support of assistive technology
  - Home alert installations and trainings
  - Coordinating with manufacturers and distributors relating to technology

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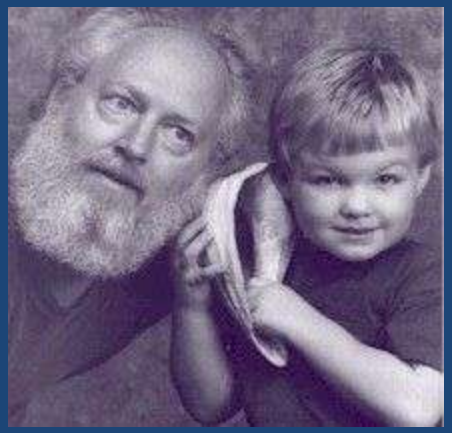
- Technology Sales:
  - Estimates on technology pricing provided in assessment reports
  - Assistive listening technology
  - Home alert systems
  - Office and workplace alert systems
  - Personal, small group, and educational amplification systems

Hearing Loss Statistics

- About *2 to 4 of every 1,000* people in the United States are "functionally deaf," though more than half became deaf relatively late in life; fewer than *1 out of every 1,000* people in the United States became deaf before 18 years of age.

-National Health Interview Survey-Galluadet Research Inst.



Hearing Loss Statistics

- If people with a severe hearing impairment are included with those who are deaf, then the number is 4 to 10 times higher. That is, anywhere from *9 to 22 out of every 1,000* people have a severe hearing impairment or are deaf. Again, at least half of these people reported their hearing loss after 64 years of age.

-National Health Interview Survey-Galluadet Research Inst.

Hearing Loss Statistics

- If everyone who has any kind of "trouble" with their hearing is included then anywhere from *37 to 140 out of every 1,000* people in the United States have some kind of hearing loss, with a large share being at least 65 years old

-National Health Interview Survey-Galluadet Research Inst.

Experience of Hearing Loss

Assistive Technology

- Assistive technology (AT) is any item, piece of equipment, or product system, whether acquired commercially off the shelf, modified, or customized, that is used to increase, maintain, or improve the functional capabilities of individuals with disabilities. (29 U.S.C. Sec 2202(2).

-www.resna.org., Rehabilitation Engineering Society of North America


TURN UP THE VOLUME, I CAN'T HEAR IT
IT'S ALREADY TOO LOUD

Hearing in Noise

How do Assistive Listening Devices Help?

- Focus on sounds of speech of specific person
- Blocking out most background noise
- Relieving some of the exhaustion of having to struggle to perceive speech in difficult environments
- Help with speech perception in meetings, the classroom, small groups, and cars and more
- Improves listening to multimedia and computers
- Work with hearing aids and improve on hearing aid function
- Benefit people with mild to severe hearing loss

Challenging Listening Environments

Vocation and Hard-of-Hearing

- Challenges to Understanding Speech:
  - Background Noise
  - Distractions
  - Stress
  - Fatigue
  - Second language
  - Poor lighting

Who's Who in Hearing Health

Ear Doctor (Otologist, Otolaryngologist)

- Medical doctor who diagnoses and treats ear conditions
- May use medications, remove wax or do surgery

Audiologist

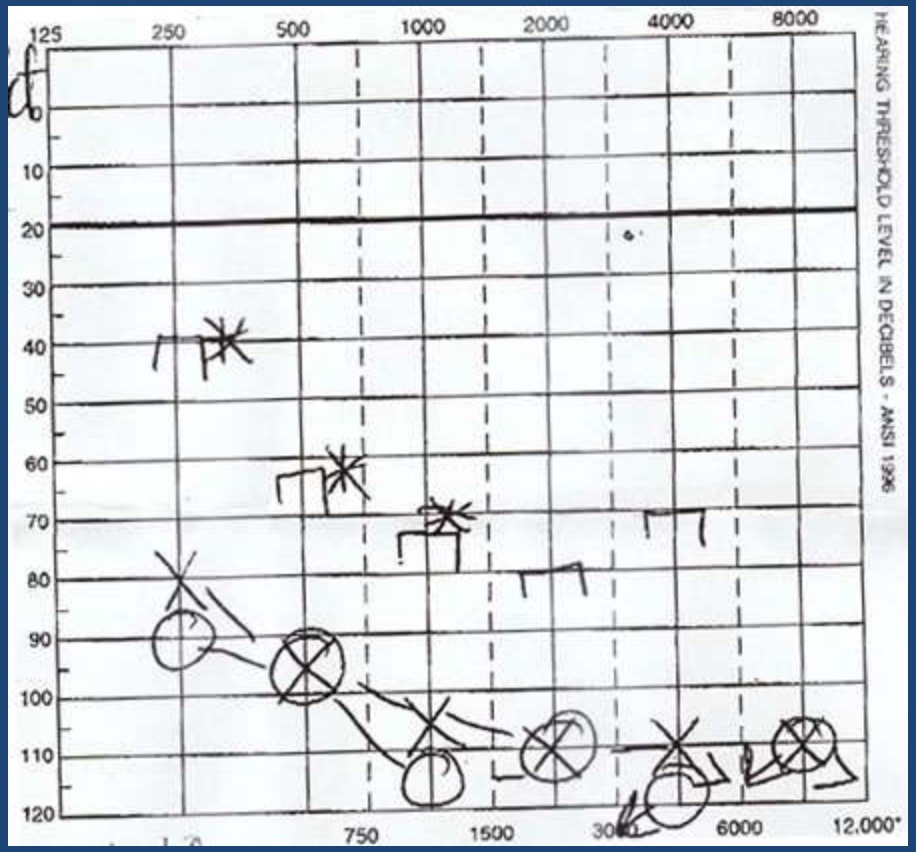
- Master's or Doctoral degree in audiology
- Professional trained to assess hearing, fit hearing aids and guide rehabilitation

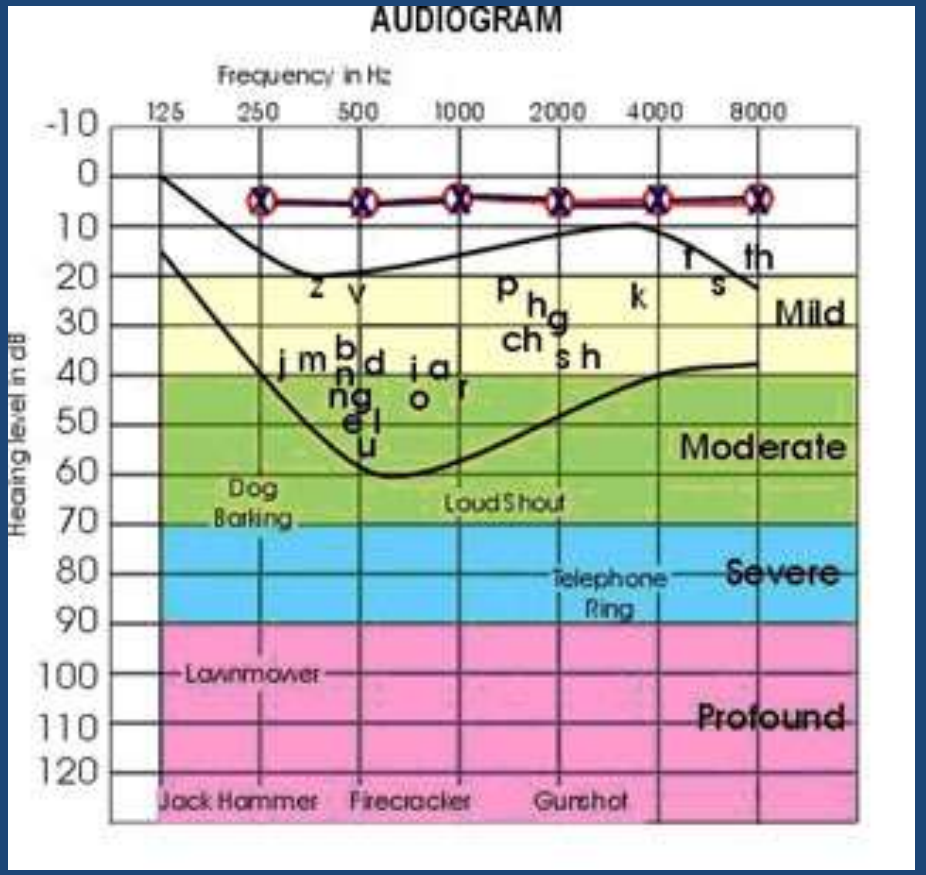
Hearing Aid Dispenser

- Licensed by the state to assess hearing for purpose of selling hearing aids

Who Needs Hearing Aids?

Audiogram


125
250
500
1000
2000
4000
8000
10
20
30
40
50
60
70
80
90
100
110
120
750
1500
6000
12,000
HEARING THRESHOLD LEVEL IN DECIBELS - ANSI 1996


AUDIOGRAM
Frequency in Hz
125
250
500
1000
2000
4000
8000
-10
0
10
20
30
40
50
60
70
80
90
100
110
120
Hearing level in dB
z
v
j
m
b
n
d
ng
l
e
u
i
a
o
r
p
h
g
ch
k
sh
f
s
th
Mild
Moderate
Severe
Profound
Dog Barking
Loud Shout
Telephone Ring
Lawnmower
Jack Hammer
Firecracker
Gunshot

Types of Hearing Loss

- Sensorineural - Occurs when there is damage to the inner ear (cochlea) or to the nerve pathways from the inner ear (retrocochlear) to the brain. Sensorineural hearing loss cannot be medically or surgically corrected.

- Conductive - Occurs when sound is not conducted efficiently through the outer ear canal to the eardrum and the tiny bones, or ossicles, of the middle ear. Conductive hearing loss usually involves a reduction in sound level, or the ability to hear faint sounds. This type of hearing loss can often be medically or surgically corrected

- Mixed - Sometimes a conductive hearing loss occurs in combination with a sensorineural hearing loss.

ALD's Not Like Your Old Hearing Devices


WIDEX
IDEX


smart control

Hearing Aids

- Hearing aids are an ASSISTANCE, not a cure for hearing loss
- If chosen and programmed well, hearing aids can usually help (depending on degree and type of loss)
- Good programming of hearing aids requires several visits to the audiologist
- Adjusting to hearing aids takes time
- Hearing aids work best in optimal listening situations
- There are many different styles and technologies to choose from

Hearing Aids on the Market

- Costs range from $1500 - $3000 per aid
- Most hearing aid users need two aids
- Medicare does NOT cover hearing aids
- A few health plans and HMO’s have a hearing aid benefit
- Medi-Cal may cover hearing aids. (for those whose hearing qualifies them) They have recently changed there regulations.

Hearing Aid Styles

- Completely in the Canal (CIC)
- In The Canal (ITC)
- In The Ear (ITE) – both full and half shells
- Behind The Ear (BTE)
- Open Fit
- TransEar for single sided deafness

How to Acquire Hearing Aids

- Go to a licensed audiologist (AuD) for a fully hearing evaluation including real ear testing
- Get prescription from an ear nose and throat doctor (ENT)

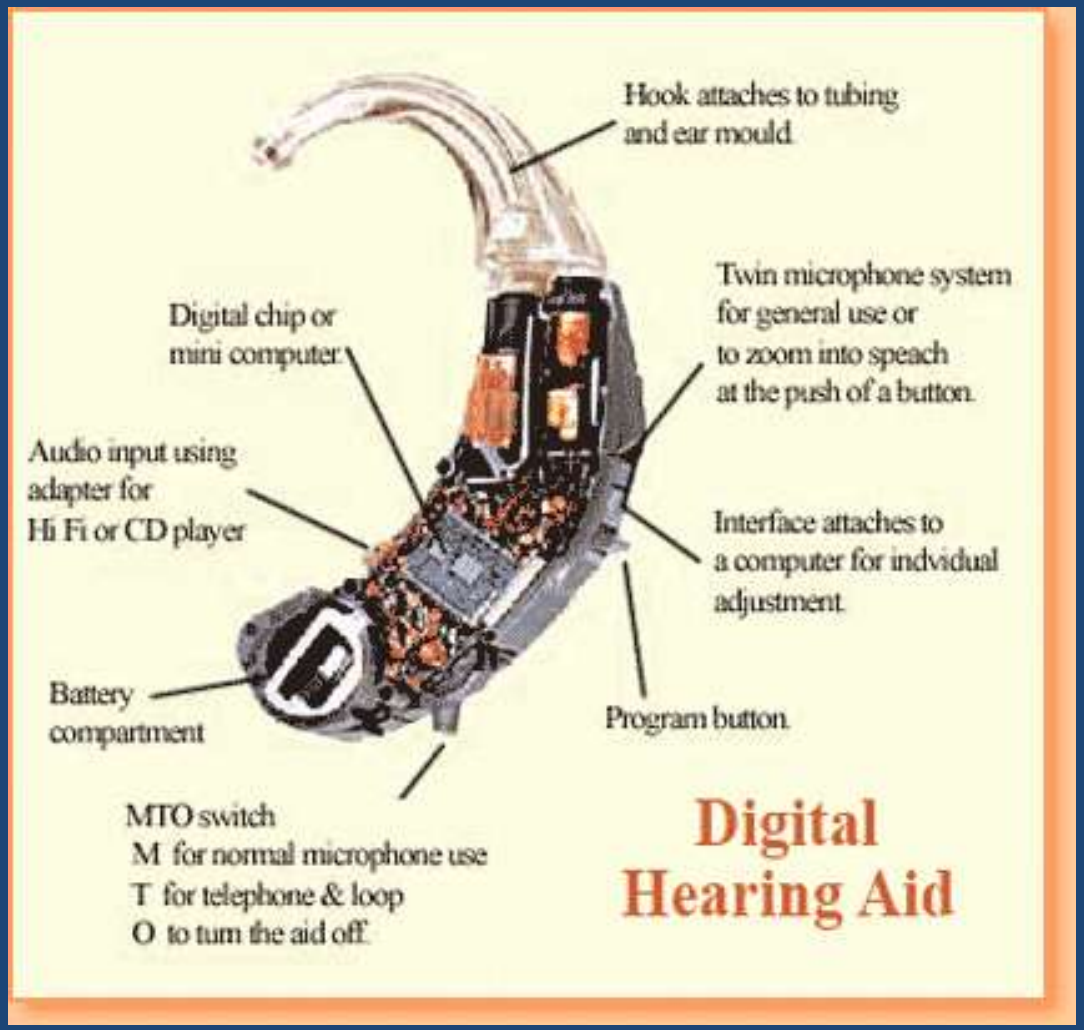
Who Pays for Hearing Aids?

- Veterans Administration-for vets whose benefits qualify them and for hearing lost in the line of duty
- MediCaid-check your local laws and service providers. HLAA (Hearing Loss Association of America) offers lists of providers in all states
- Some insurance programs, government for employees, unions
- State Vocational Rehabilitation

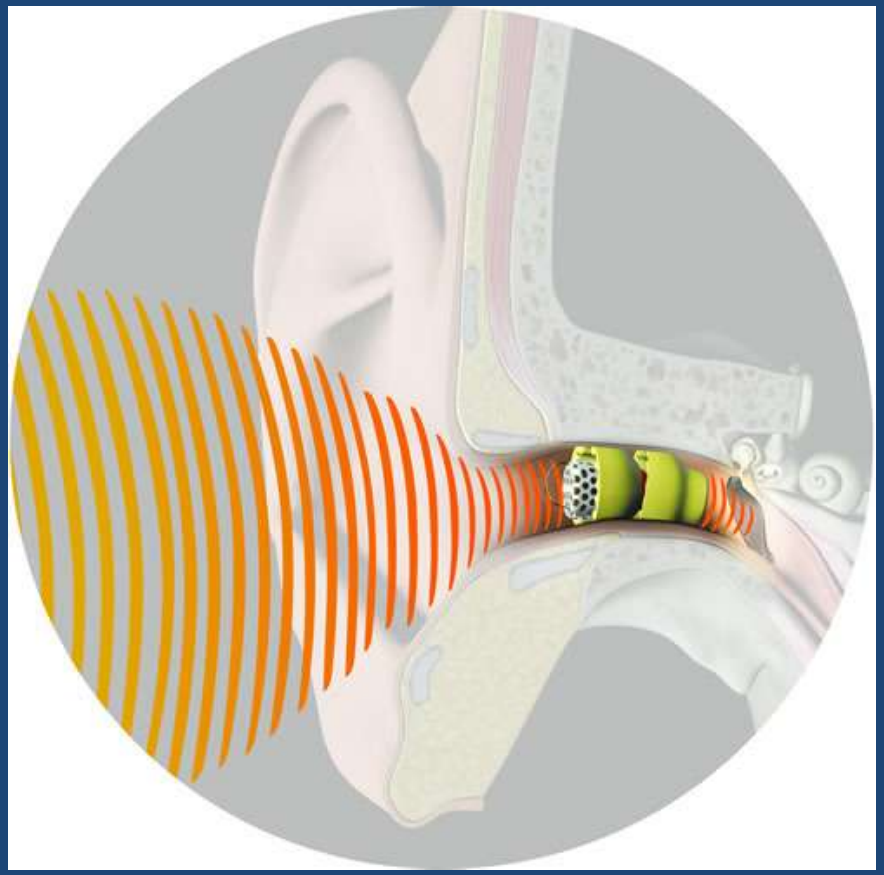
Who Pays for Hearing Aids

- Lions Affordable Hearing Aid Program-Lions Club International Foundation-2 specific styles of Rexton BTEs at low cost
- Hear Now from Starkey Foundation-for extremely low income
- SERTOMA-Service to mankind-refurbished hearing aids
- Use Flexible Spending Accounts
- Tax write off (IRS Publication 502)

Hearing Aids



Extended Wear Hearing Aid



Lyric

- Lasts for up to 120 days and is programmable by Ear Nose and Throat doctor. Benefit of having microphone and receiver placed next to tympanic membrane

Tactile Hearing Device

• Tactaid products are small, battery-powered instruments that can help a deaf person understand sounds by allowing the user to feel the unique pattern of vibrations present in every sound.

•They can be used alone or in conjunction with hearing aids or auditory trainers.

•Tactaid products receive sound via a built-in microphone, process the information electronically and send a signal containing important features of that sound to the vibrators, which vibrate against the user's skin.

•The user gains sound information by feeling the rhythm, duration, intensity, and pattern of the vibrations.

FM interface

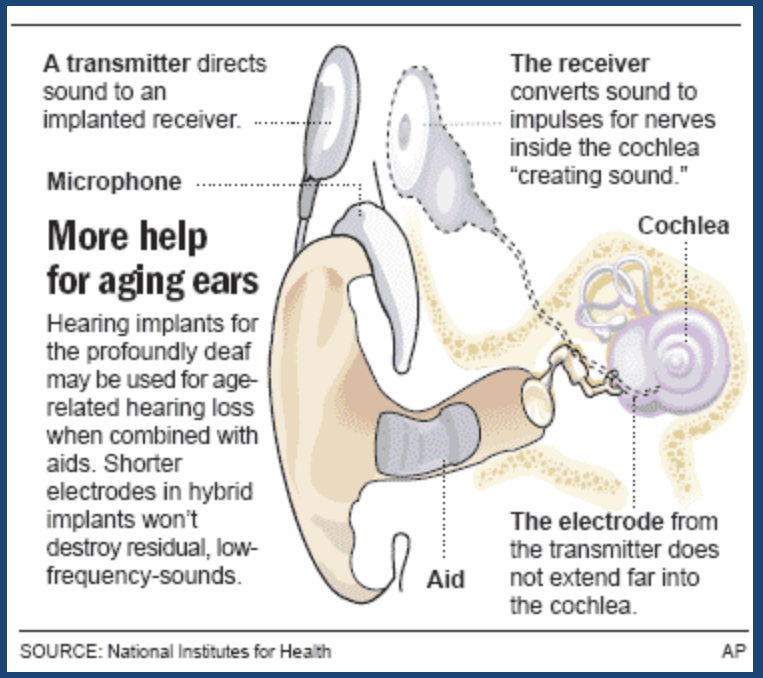
Direct FM interface to BTE hearing Aids and CI speech processors

Comfort Audio
Digital FM system

FM for ITE Instruments

iSense Micro-FM receiver for normal to near to normal hearing

Implants



Hybrid Implant

In trials

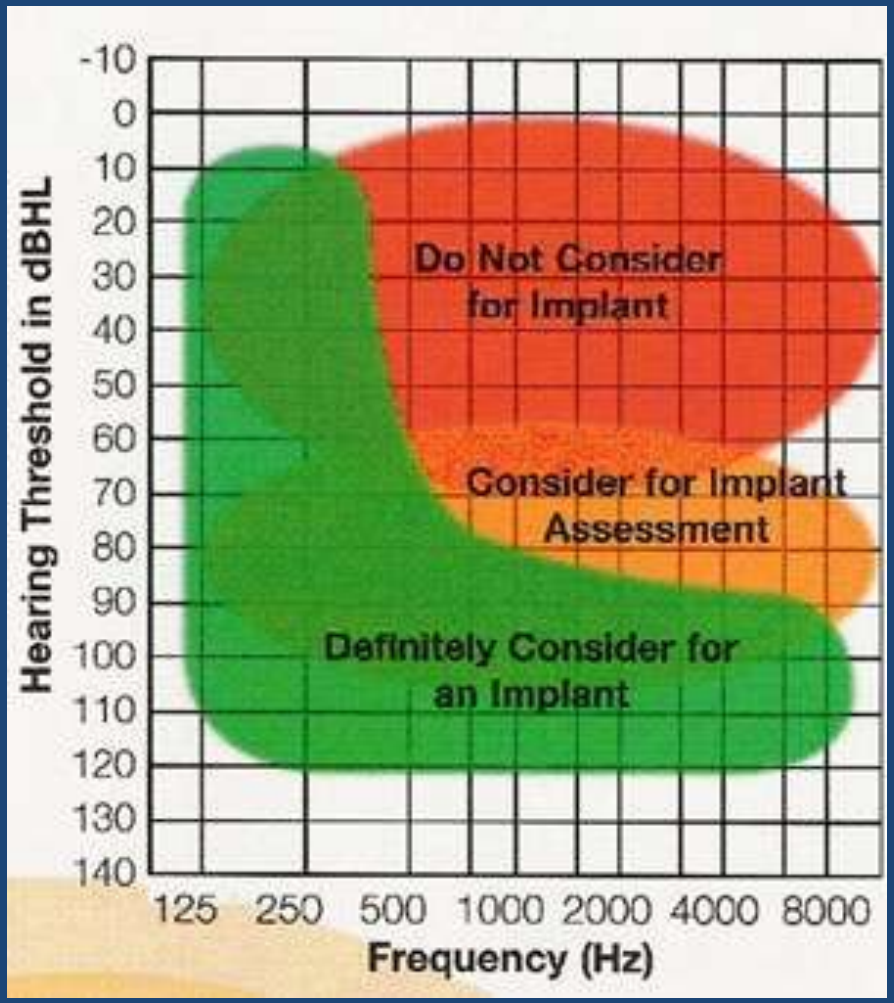
- The implant is specifically designed with a thin electrode to occupy less space in the inner ear. It is implanted by special surgical techniques to preserve natural hearing.
- Combined with Cochlear Implant technology

Cochlear Implants

For 12 months-older adults with severe to profound sensorineural or combined hearing loss who no longer benefit from hearing aids

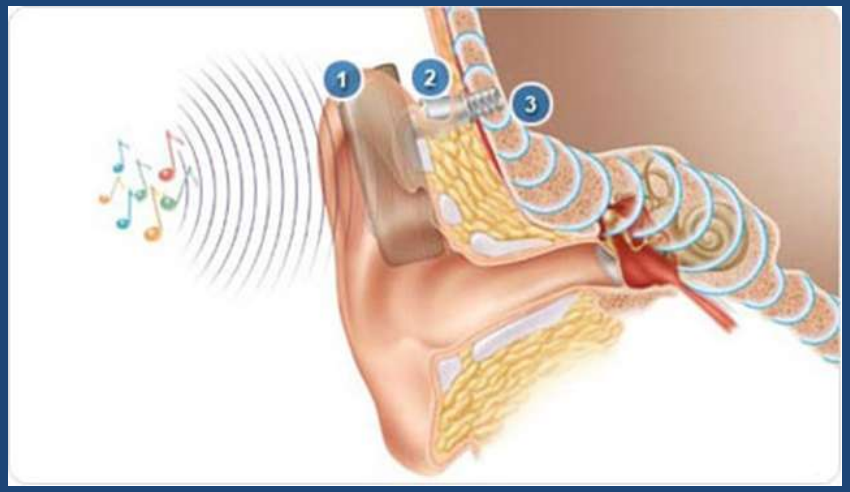
Implanted into cochlea
Uses speech processor
Many manufacturers, designs

Cochlear Implants



Cochlear Implants

Image of Cochlear Implant
electrodes with point to auditory nerve



Middle Ear Implant
BAHA-manufactured by Cochlear

BAHA Implant

A small titanium implant is placed in the bone behind the ear where it fuses with the living bone. This process is called osseointegration. The implant transfers the sound vibrations via the skull bone to the functioning cochlea.

The system allows sound to be conducted through the bone rather than via the middle ear – a process known as direct bone conduction

Esteem Implantable Hearing Aid

FDA approved March 2010

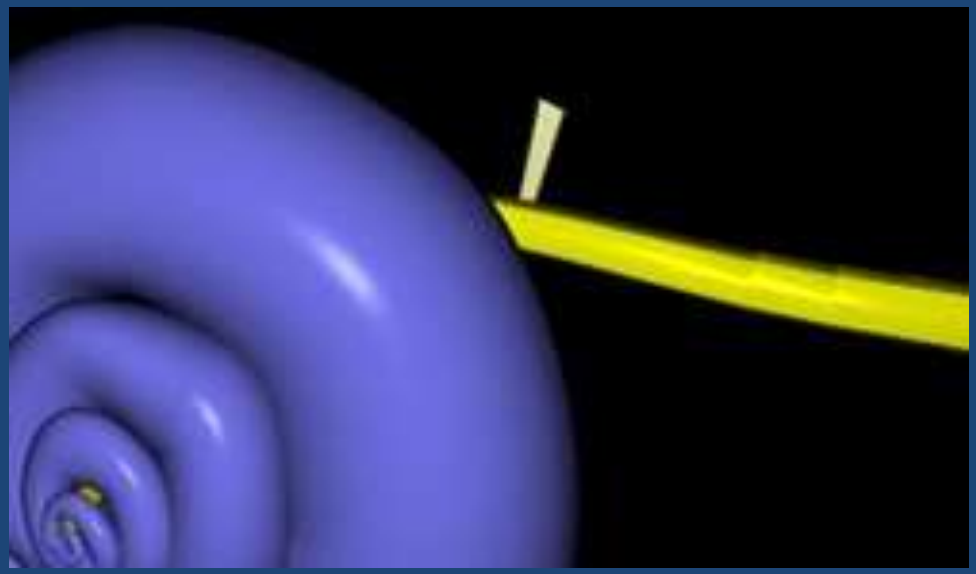
- Uses the natural ear drum to detect sounds and sends a clear message to the brain, via the auditory nerve, by stimulating the cochlea with its prosthetic stimulator

Auditory Brainstem Implant

- The device is used most commonly in people with neurofibromatosis type II
- This disease causes tumors to form on the balance and hearing nerves, which usually results in deafness.
- **Nucleus® 24 ABI**
- **Nucleus® 24 Double Array** designed for people with ossification or bone growth in their cochlea

Intra-neural Implant

This is still
At least 5 years
Off for implanting
In the human ear



New intra-neural implant is inserted into the auditory nerve near the cochlea

The implant is made on a thin sliver of silicon, about a hundredth of a millimeter thick.
It's very difficult to see with the naked eye. Next to this device a human hair looks enormous. …
The technology for making these devices is very much like the technology used for making computer chips.

Face-to-Face Communication

UbiDuo

The UbiDuo™ is a portable, wireless, battery-powered, stand-alone communication device that facilitates simultaneous face to face communication by means of two displays and two keyboards.

Alerting Systems

- Full residence system
- Can include phone/ doorbell/clock
- Connects to house-hold lamps
- Can be used in workplace when alerts are needed

Amplified Telephones

- California Telephone Access Program (CTAP)
- Hearing aid compatible
- Large selection for specific needs
- Available for purchase from specific technology retailers

Bone Conduction Phone

- Bone Conduction phone
- Press receiver to Mastoid bone behind ear Sound vibrates through bone to hear
- Conductive hearing loss

Neckloops

- Telephone and Assistive Listening Access for Hearing Aid Wearers
  - Hearing aids must have telecoil to receive signal from neckloop
  - The telecoil receives the electromagnetic field and converts it back into an audio signal to be processed the same as the signal from the microphone in the instrument.

Clearsounds Gmarc T-Loop for cell phones or phones with jack

MyLink + from Phonak

Gmarc I-Loop Amplified neckloop for MP3 players and other media

HATIS Phone Devices

HATIS phone systems
For use with BTE hearing aids with T-coils
Can be used by people with severe to profound hearing loss depending on Speech perception, gain in t-coil

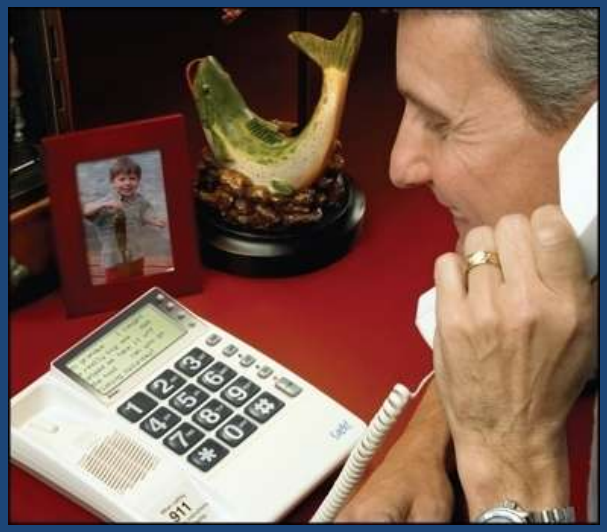
TTY/TDD

- Typewriter Telephone for Deaf, speech impaired, or other communicative disorders
- Direct connection to other TTYs
- Voice callers use relay service

Voice Carry-Over Telephones

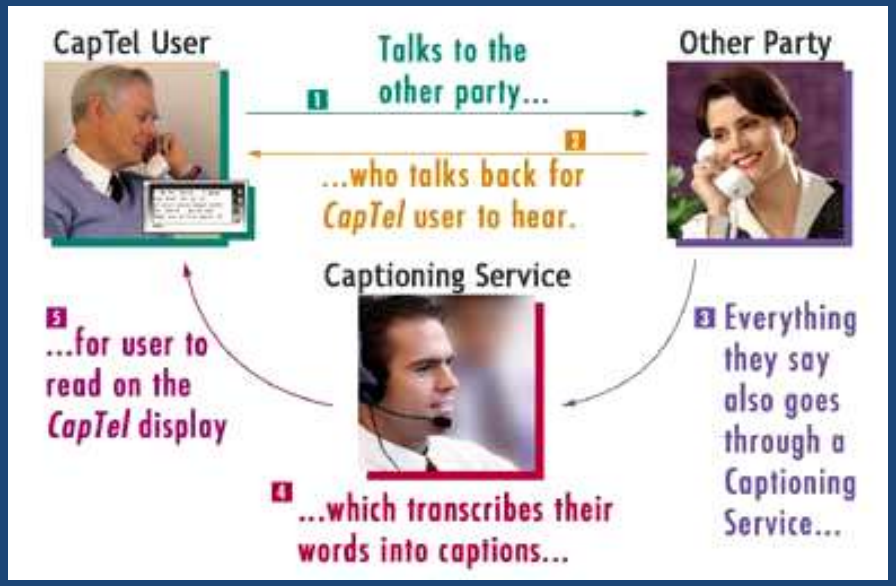
- Available through CTAP
- Callers use relay service (711)
- When no longer able to hear on phone
- Speak into phone See what other person is saying in text on display

CapTel Phone



800 i

Federal phone program
Available through CTAP in
Limited capacity



Video Relay Service

Service for the deaf and hard-of-hearing community that enables anyone to conduct video relay calls with family, friends, or business associates through a certified ASL interpreter via a high-speed Internet connection and a video relay solution

Purple Communications

- VRS
- I711.com-Text Relay-built-in phone book, one-click dialing, video and text content tailored to the interests of the deaf community
- IP-Relay.com
- P3-VRS/VP/IP All in one

Video Phones

- VPAD

Two-way High Quality Video Conferencing,

Smooth Full-Motion Video,

30 Frames Per Second,

Intuitive Interface,

Contacts List, Call History,

Browser support for WiFi

Video Phones

- OJO Through SNAP!VRS

Amplified Stethoscopes

The Cardionics Electronic Stethoscope for people who are hard-of-hearing is designed to be worn on the belt or lab coat. Includes headphones for use without removing hearing aids. The E-Scope II does not work with all hearing aids, but it is quite satisfactory for most.

Travel System

- FAA approved
- Used on airplanes
- Direct communication with flight attendants
- Connects to plane’s sound system

Text Pagers and Cell Phones

Wireless Captions

- Using a venue's existing WiFi network, patrons receive captioned text of the event on their personal Windows Mobile Smartphone/PDA, iPod Touch, or iPhone.

intelligent Access

Wireless Captions

- Wireless Caption will revolutionize the communications experience of people with hearing loss. Wireless Caption Service will be available on a standard cell phone. (no data service is required) Ease of use, portability, and low cost are all the critical features that the Wireless Caption Service will provide.

Television Listening Devices

- FM or Infrared
- Wireless and wired
- Keeps TV volume down for others
- Creates clearer understanding of sound from the television
- Can be used in theaters

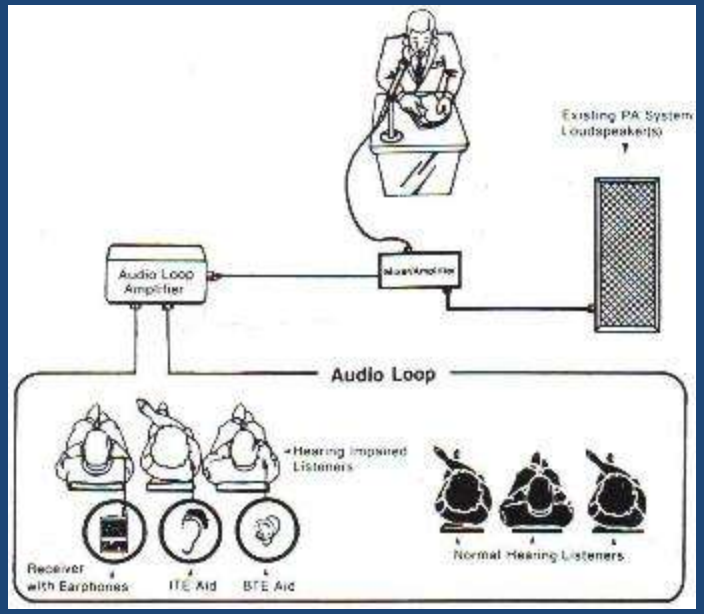
Amplification

Soundfield Systems

- PA System with receivers (pictured)
- Portable or wired
- Individual receivers for hard-of-hearing
- Allows speech sounds to be heard over large area
- Compatible with conference microphone

Induction Loop Systems

Microloop II-Portable/small area



Satellite III-Large Area

The resulting magnetic energy field is detected and amplified by the "telecoil" or telephone switch circuitry common to many hearing aids, cochlear implants and induction loop receivers.

Accessibility

- Environments with high ceilings and many hard surfaces making hearing speech difficult

- Try adding cloth wall hangings made by participants
- Low glare finishes for floors or carpet

Accessibility

- Small round tables are good for accessing speech.
- Felt tips for chair legs can alleviate Unnecessary noise from chairs

Accessibility

- Utilize a P.A. system and add individual FM receivers

Accessibility

- Carpeting, low ceilings, and soft bright light make this room ideal for understanding speech, if communication is accessible through technology and clear communication standards

Thank You!

www.hearingcommunicationtechnology.com