Why Assistive Technology?

- The individual is a completely visual communicator
- The individual’s HA/CI battery is dead
- The individual’s HA or CI is being repaired
- The individual gets limited benefit from their amplification and wants to access information in a different way
- The person talking is far away and the listener cannot hear
- It’s noisy
- ...

Hearing aids

- Behind-the-ear (BTE)
- BTE Open fit
- BTE Receiver in the canal (RIC)

Cochlear implants

- Microphone location

Please don’t forget the T-coil!

- Special setting on HA or CI – may need to be programmed by audiologist
- Allows for access to many types of Hearing Assistive Technology
- Looped public spaces
- Neckloops
- Telecommunication

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Orientation

- Vertical
  - Looped rooms
  - Neckloops

- Horizontal
  - Telephone
  - Induction earhooks/HATIS

Advanced Bionics

- Naida Q70 (vertical)
- Harmony (slanted)

- Neptune with T-Comm (vertical)
- External T-coil (adjustable)

Cochlear Corporation

- Freedom (vertical)
- Nucleus 5 (horizontal)
- Nucleus 6 (horizontal)

- Room Loop Booster

Med-El

- Opus 2 (vertical)
- Rondo (vertical)

Alerting Options

+ Very loud alarm
+ Flashing/strobe light
+ Vibration
+ Most effective

Alarm clocks

+ Stationary
+ Portable
Visual alerting systems

- Fire/smoke
- Carbon monoxide
- Weather radio
- Baby monitor
- Door knocker

Being alert at home

Access your local resources

- Contact your local fire department
- They can send someone to your home to do an inspection with recommendations
- They have a list of recommended electricians/services
  - Private electrician
  - Alarm company (e.g., ADT)
- Do you have a plan???

Lodging

- When you make your reservation...
  - Hearing accessible rooms
  - Visual alerts in main room and bathroom
  - Doorbell on outside of door

- Hotel Kit
  - Make sure it works

What to do in case of emergency

- Patient Emergency Identification Card
- Contact your manufacturer or look in the materials you received at initial stimulation
- Keep next to (or in front of) your Driver’s License or State ID
- ID jewelry or portable medical record storage
- Google “medical alert jewelry”

Lodging

- When you arrive...
  - Tell the front desk, in case of emergency
  - Give them permission to enter your room?
  - Ask for a second key
  - Don’t use the additional safety lock

Lodging

- When you arrive...
  - Tell the front desk, in case of emergency
  - Give them permission to enter your room?
  - Ask for a second key
  - Don’t use the additional safety lock
What to do in case of emergency

- Create your own Emergency Medical Identification card at http://medids.com/free-id.php

Information to include

- "Deaf", "deaf" or "hard of hearing"
- Use "cochlear implant(s)" or "hearing aid(s)"
- Specific to CI recipients:
  - NO MRI
  - NO MONOPOLAR CAUTERY
  - Name and phone number to CI surgeon/clinic

Did you know...

<table>
<thead>
<tr>
<th>Formerly known as...</th>
<th>Now known as...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assistive Listening Device (ALD)</td>
<td>Hearing Assistive Technology (HAT)</td>
</tr>
<tr>
<td>Soundfield systems</td>
<td>Classroom Audio Distribution Systems (CADS)</td>
</tr>
<tr>
<td>FM systems</td>
<td>Remote Microphone Hearing Assistance Technology</td>
</tr>
</tbody>
</table>

Transmitters

- Microphone styles

Receivers

- Hearing Aid
- Cochlear Implant

CADS

- Toteable
- Classroom
Why use an FM system?

Hearing Aid Only  Hearing Aid + FM

Infrared Devices

Receivers
IR system
Light Transmitter

Induction Loop Systems

Set up for room loop
Chair loop
Personal loop

Accessories for HA and CI

Bluetooth (transmitter)  Streamers

This is now!

Cell phones

- The FCC require all cell phone makers and service providers to make phones hearing aid compatible (HAC) for people using hearing aids and cochlear implants.

- Devices that are HAC compliant have:
  + Less static
  + Less interference
  + Better telecoil connections

- HAC compliant device packages are marked with "M" or "T" ratings
**What are “M” and “T” ratings?**

<table>
<thead>
<tr>
<th>“M” rating</th>
<th>“T” rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>+ “M” rating refers to the microphone mode.</td>
<td>+ “T” rating refers to the telecoil mode.</td>
</tr>
<tr>
<td>+ Wireless devices rated M3 or M4 are likely to generate less interference.</td>
<td>+ Wireless devices rated T3 or T4 are likely to be more usable with a hearing device’s telecoil (“T Switch” or “Telephone Switch”).</td>
</tr>
<tr>
<td>+ M4 is the better/higher of the two ratings.</td>
<td>+ T4 is the better/higher of the two ratings.</td>
</tr>
</tbody>
</table>

Look for M4/T4 to have the best chance of being interference free whether used with your hearing aids or cochlear implants in microphone or telecoil mode.

**Finding the HAC rating**

+ [www.accesswireless.org](http://www.accesswireless.org)
+ [www.phonescoop.com/phones/finder.php](http://www.phonescoop.com/phones/finder.php)
+ Check the packaging/description card in the store
+ Search online if you know the make and model of the phone

**Amplified telephones**

+ Used in place of standard phones
+ Models have a variety of features including tone adjustment, volume boost, loud ringer, visual signalers, memory buttons, capacity for multiple lines, and power adapters.

**Transcribed voicemail**

+ Several services out there that will:
  + Listen to your voicemail using voice-recognition software or live captioners
  + Transcribe your voicemail
  + E-mail it to your computer or PDA
  + Check with your carrier to see which services are available
+ Prices range from around $0.35/message to unlimited messages for $40/month
  + [www.google.com/googlevoice](http://www.google.com/googlevoice) (FREE!)
  + Request an invitation

**Captioning for phones**

+ Read the display on the desktop phone itself, a computer screen, a tablet or mobile phone (will need to use speakerphone) as well as listen to the other person’s voice
+ Used by people who voice for themselves

**Text Relay Service**

+ A service that enables people who use a TTY, Internet connected computer, or text messaging to communicate with any conventional telephone through a relay operator.
Accessories for phone/media players

- Neckloop
  - Bluetooth
  - Wired
- Induction earhooks
  - Bluetooth
  - Wired
  - Monaural/binaural

Video Relay Service (VRS)

- A relay service that uses the Internet and video equipment to allow deaf persons to make phone calls using American Sign Language (ASL) or English-based sign (with or without speechreading cues)

Ways to access VRS

- Desktop
- Portable
- Download program to personal computer
- Mobile

Video Remote Interpreting (VRI)

- Uses video-conferencing equipment to provide sign language interpreting services
- Both the deaf and hearing person are in the same room
- The interpreter is at a call center in another city
- Especially useful for rural areas where there may be a lack of qualified interpreters

Voice Carry Over

- VCO is a feature from the relay service that allows a person with hearing loss to use their own voice on the telephone, while receiving the other party’s communication
- Works with text relay as well as video relay
Communication Access Realtime Translation (CART)

+ Instant translation of the spoken word into English text using a
  stenotype machine, notebook computer and realtime software
+ Text appears on a computer monitor or other display
+ Primarily used by people who are late-deafened, oral deaf, hard of
  hearing or have cochlear implants
+ Culturally deaf individuals may use in certain situations
+ Sometimes referred to as “realtime captioning”
+ Can be done live or via remote location

C-print / TypeWell

+ C-Print, TypeWell and similar speech-to-text accommodations seek to
  provide a meaning-for-meaning transcript of spoken communication –
  it does not attempt to provide a verbatim transcription
+ Systems were designed to meet the needs of deaf and hard of hearing
  students in educational settings
+ Advantage:
  + the text produced is more accessible for those with less developed reading
    skills, and the transcript is not as cumbersome when used for study
    purposes
+ Disadvantage:
  + If used to augment hearing, the difference in exact words used may be
    confusing

Open Captioning

+ Words are available for everyone to see
+ Includes dialogue as well as environmental sounds
+ Often has limited showing times and limited selection
+ Preferred by most deaf/hard of hearing people

CaptiView

+ Need to get special device at the movie theater ticket
  counter
+ Words are displayed on a personal LED display

Sony’s Entertainment Access Glasses

+ Need to get special device at the movie theater ticket
  counter
+ Words are displayed towards the bottom of the glasses

www.captionfish.com

+ Search engine for finding captioned movies in your area
+ When in doubt, contact the movie theater anyway!
+ Clickable links to theater information, movie description and
  CAPTIONED movie trailers
+ Join email list or follow on social media sites for updates

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Personal Captioning in Theaters

- Use a special device or tablet/SmartPhone to access captions

What should I look for?

- Multiple voice choices
- If you can record your voice, even better!
- Natural > synthesized
- Turn on/off text
- Auditory training/reading
- Good volume control
- External speaker
- Media players with built-in CC
- Be sure to update your Apps!
- Record keeping

App-lications

- Accessibility
- Advocacy
- Audiology
- Counseling tools
- Hearing Text
- Listening Therapy
- Discrimination
- Multi-step directions
- Listening in noise
- Learning a variety of environmental sounds
- Auditory memory
- Music

- Media Player
- Captioned
- Personal Amplifier
- Sign Language
- Sound Level Meter
- Speech
- Telecommunication
- Text-based
- ASL
- Resources (e.g., favorite developers, blogs and websites)

Expected future for the Deaf (CSD)

http://www.youtube.com/watch?v=CW8W-tDG-A

Google Glass (speech-to-ASL)

http://www.google.com/glass/start/

The German speaker speaks in German. The Google Glass of the deaf user hears German, translates it into English and then shows it as captions in the Google Glass for the deaf person. The deaf person responds with sign language which the blind guy can’t see but his Google Glass does, translates the American sign language into English and then translates the English into German and then speaks German using the bone conduction audio system of the Google Glass that the blind person is wearing. Now we can do all of that except for the sign language interpretation which is actually pretty hard. But it’s not completely out of the question, with image processing and the like advancing as time goes on.

Google Glass (speech-to-text)

http://news.cnet.com/8301-1023_3-57600765-93/what-google-glass-aspires-to-be/

Google Glass (speech-to-text)
EnableTalk gloves
http://www.gizmag.com/enabletalk-sign-language-gloves/23268/

ASL translated by gloves → sent via Bluetooth to mobile phone → mobile phone uses speech to translate what was signed

Assistive Technology Project
www.jalc.edu/gurc/assistive_technology_project

Listening and Spoken Language Knowledge Center

National Association of the Deaf (NAD)
http://nad.org/issues/technology
Information about applicable laws, news and recent developments
Resources to other websites

Hearing Loss Association of America (HLAA)
http://www.hearingloss.org/content/technology
Great resource that includes tutorials, explanations and videos

My social bookmarking site
www.delicious.com/hlpuears
Scores of links related to hearing loss – including AT and vendors
Searchable via tags