



September 14, 2010

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# Strategies and Solutions for Individuals with Hearing Loss & Deaf/ Blind

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## Get CEUs or CRCs

- **CEUs** - Visit the AAC Institute [www.aac institute.org](http://www.aac institute.org)
- **CRCs** – To receive your verification form, send an e-mail with your name, organization, city, state and e-mail address to [Liz@gatfl.org](mailto:Liz@gatfl.org)

# Facts

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- Hearing Loss – A communication disorder with tremendous impact on our lives
- Communication is critical to relationships

# Facts cont'd

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- 31.5 Million Americans have a Hearing Loss

Of that number:

94.8% are Hard of Hearing

3.8% are Late Deafened

1.4% are Prelingually/Culturally Deaf

# More Facts

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- Individuals with Hearing Loss represent the single largest disability group in the U.S.
- Hearing loss is the third largest medical condition in older adults behind arthritis and hypertension - 3 in 10 people over age 60 have hearing loss
- Hearing loss represents the third largest disability experienced by wounded Soldiers returning from Iraq & Afghanistan
- People with Hearing Loss wait an average of 7 years before seeking assistance
- Hearing loss affects 12,000 children born in the U.S. each year, making it the most common birth defect (3 in 1,000 infants are born with severe to profound hearing loss)

# Interesting!

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- 5.2 Million children between the ages of 6-19 have permanent noise induced hearing loss
- 75% of high school seniors have a measurable hearing loss
- One out of fourteen “Gen-exers” (ages 29-40) have a hearing loss
- One out of six ‘baby boomers’ (age 41-59) have a hearing loss

# Untreated Hearing Loss

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- More than 24 million Americans have a hearing loss but do not use hearing aids
- The estimated cost in lost earnings due to untreated hearing loss is \$122 billion, with the cost to the government in unrealized federal taxes at \$18 billion!

## Studies have linked untreated hearing loss to:

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- irritability, negativism and anger
- fatigue, tension, stress and depression
- avoidance or withdrawal from social situations
- social rejection and loneliness
- reduced alertness and increased risk to personal safety
- impaired memory and ability to learn new tasks
- reduced job performance and earning power
- diminished psychological and overall health

([www.betterhearing.org](http://www.betterhearing.org))

# Unemployed or Underemployed WHY?

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- Employers reluctant to hire
- Little or no opportunity for advancement
- Hearing loss self-denial (causes employee to be perceived as 'not alert')
- Quality of life issues effect performance on the job
- Fatigue caused by constantly trying to understand can cause poor performance on the job

# Hearing Loss is Invisible

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Its effects are  
certainly not

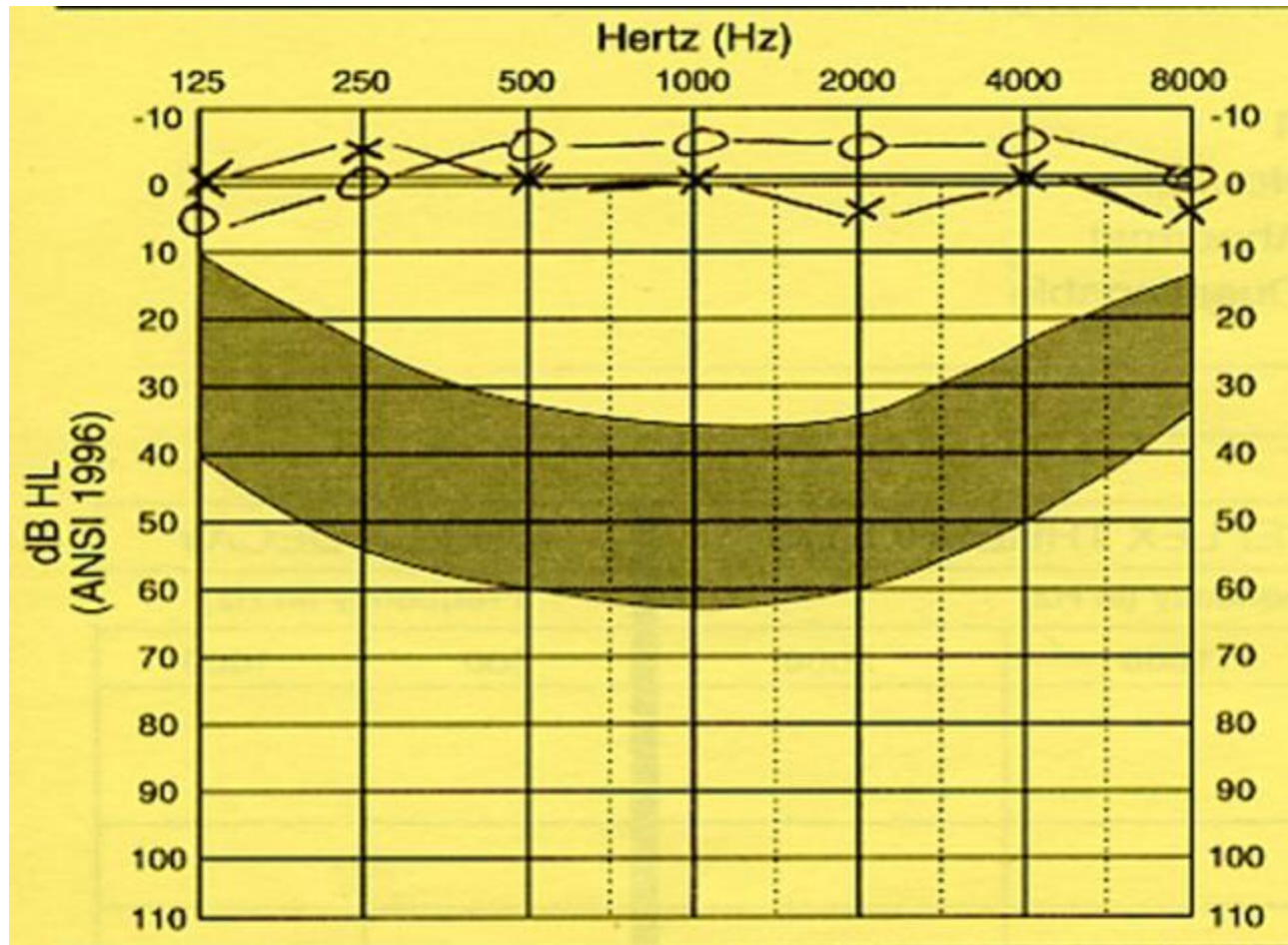
# Causes of Deafness

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Unknown	48.60%
Prenatal Maternal Rubella	5.90%
Heredity	12.50%
Post-Natal Meningitis	8.7%
Middle Ear Infections	3.50%
Premature Birth Complications	4.60%
Pregnancy Complications	3.00%
Trauma at Birth	2.30%
RH Incompatibility	0.75%
Fever	3.00%
Infection	2.70%
Trauma After Birth	0.70%
Measles	0.40%
Mumps	0.10%
Other	3.25%
<b>TOTAL</b>	<b>100%</b>

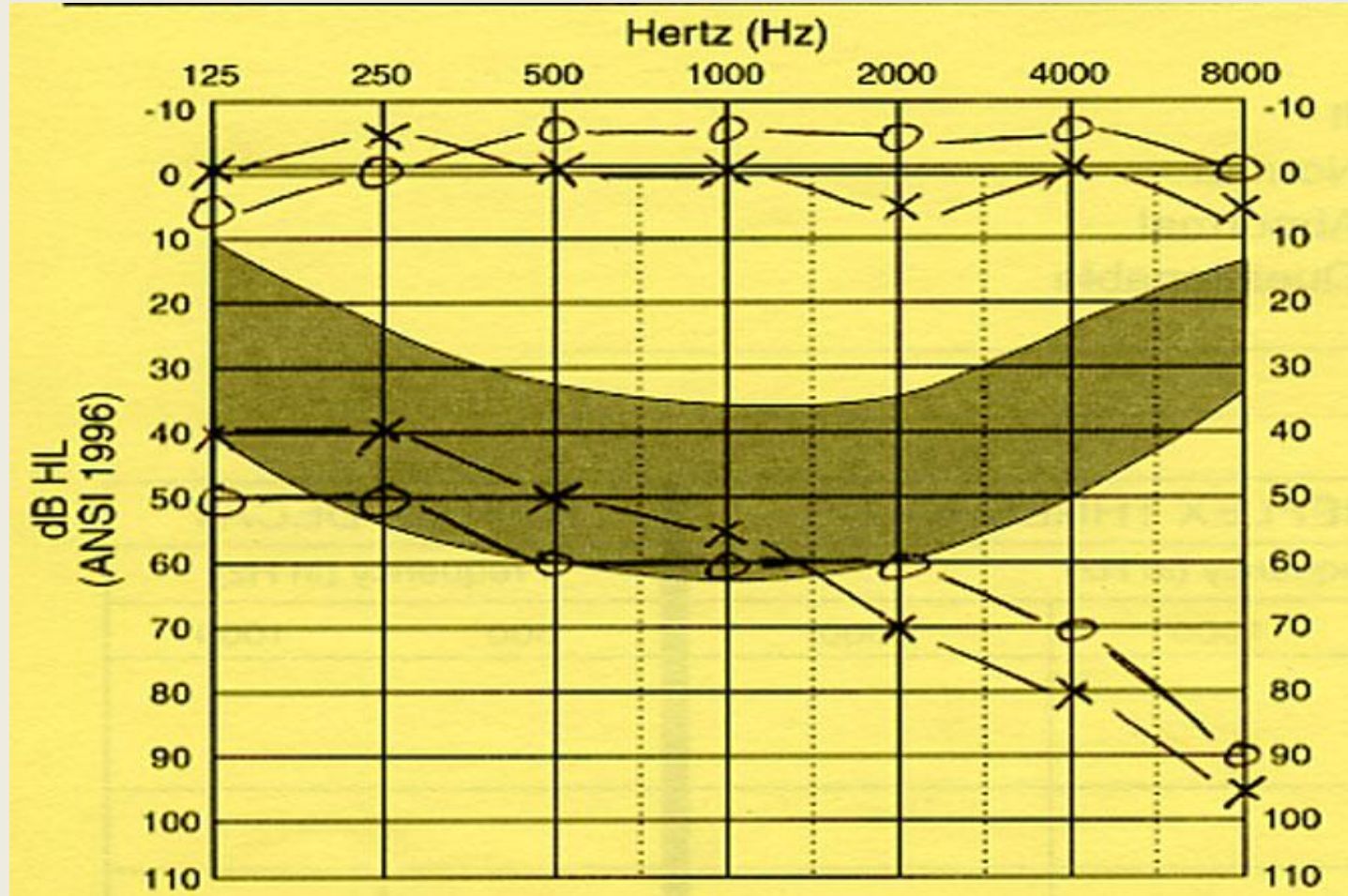
# Normal Hearing

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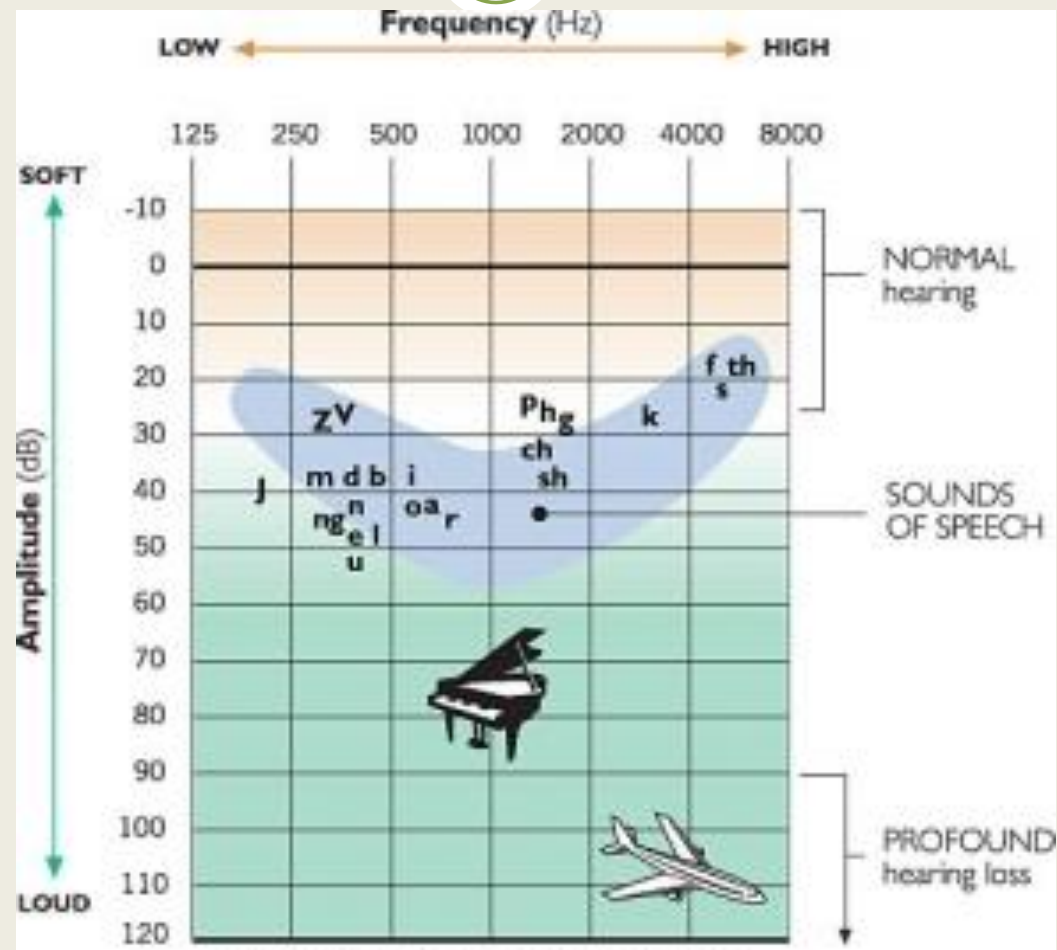
# Normal v. Loss

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# The Audiogram

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Adapted from J.L. Northern and M.P. Downs from HEARING IN CHILDREN, (Williams & Wilkins, 1984)

# Frequency and Intensity

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- **Frequency**

Frequency or pitch is measured in Hertz (Hz). Frequencies range from low-pitch to high-pitch and read from left to right on the audiogram. Each vertical line represents a different frequency. The ones used most often during testing are 250, 500, 1000, 2000, 4000 and 8000 Hz.

- **Intensity**

The intensity is measured in decibels (dB). The intensity relates to how loud or soft a sound is. Each horizontal line represents a different intensity level. The softest sounds are at the top of the chart and the loudest sounds at the bottom. Each mark on an individual's hearing test would represent the softest sounds they could hear. The softest intensity tested is typically 0 dB and the loudest is 120 dB.

# Adjusting Attitudes

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- Deaf World vs. Hearing World
- Employed Deaf persons; What can Deaf people do?
- Can all Deaf people lipread/speechread?

# Culture

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“Ninety percent of Deaf people are born into a culture that is foreign to them. They are born into a hearing culture, and they don’t hear.”

Laura O’Callahan Gallaudent

University

# Deaf Culture

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- Deaf
- deaf
- Hearing Impaired
- Oral vs. Manual
- Whatever works!

# Speech Reading Facts

**Don't assume deaf people can speech read.**



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- 24% to 40% of what we say in English is hidden inside our mouths.
- Another 20% of what we say, looks like something else on our lips.
- Residual hearing may enhance a deaf person's speech reading ability.
- Not all people are speech readable.

# READ MY LIPS!

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Critics and proponents alike claim that 30%-50% understanding of language by lip reading is about the maximum achievable.

<http://www.answers.com/topic/lip-reading>

# Basic Communication Principles

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- Communication with a deaf person is primarily a matter of sensitivity, common sense and courtesy.
- Ask yourself: “What can I do to make it easier for the two of us to communicate?”
- Deaf people use many ways to communicate; each person has a preference that is determined by the situation.

# When speaking to a deaf person, remember to:

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- Speak naturally and with expression.
- Talk without moving your head from side to side or nodding excessively.
- Resist putting your hands on or near your mouth as you speak.
- Face the speech reader.
- Communicate in quiet places if possible.
- Give the speech reader an idea about your 'topic' before you proceed.

# More Tips

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- Communicate in environments that are not visually distracting.
- Maintain eye contact with the deaf person.
- Remove gum or other objects from your mouth when trying to communicate.
- First repeat, then try to rephrase the statement when the deaf person does not understand you.

# Unique Considerations

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- Communication Access – Not a “One Size Fits All” Approach
  - American Sign Language (ASL)
  - English Based Signing Systems (SEE)
  - Tactile Communication
  - Print on Palm
  - Close Vision Interpreting/Transliterating
  - Sign Supported Speech
  - Contact Language Varieties (PSE)
  - Speech to Text Services, CART, C-Print, TypeWell
  - Speechreading
  - Residual hearing/speaking
  - Cued Speech
  - Oral Transliterating

# Accommodations and Cost

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- Interpreters – Local and Remote
- CART – Local and Remote
- Phone devices
  - Captel
  - WebCaptel
  - Video Phones
  - Amplified phone and other gadgets
- Other technology options
- GaCHI – Telecommunication Equipment Distribution Program

# The issues – Employment

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- Communication Barriers
- Attitudinal Barriers
- Cultural Differences
- Accommodation Costs
- English Access

# Accommodations on the worksite

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- Write notes
- Email and Instant Messaging
- Interpreters
- Signing Job Coaches
- Videophones & Web Cams (Video Relay Service/Video Remote Interpreting)
- FM Systems

# Jobs

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- Doctors
- Lawyers
- Nurses
- Veterinarian
- Engineer
- Chemist
- Manager IBM
- Clinical Psychologist
- Counselors
- Accountant
- ASL Instructor
- Computer Programmer

- Truck Driver
- Teacher/Professor
- Lobbyist
- IT Specialist
- Mail Room Clerk
- Administrator
- Business Owner
- Landscaper
- Carpenter
- Upholsterer
- Bookbinder
- Video Phone  
Installer/Technician

# Resources

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- “Model State Plan for VR Services for Rehabilitation of Individuals who are Deaf, Deaf-Blind, Hard of Hearing or Late Deafened” (April 2008)  
<http://www.lulu.com/content/2289052>
- “On the Job with Hearing Loss” (Morris 2007  
[www.beyondhearingaids.com](http://www.beyondhearingaids.com) )

# Internet Resources

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- <http://pepnet.org>
- <http://sunsite.utk.edu/cod/otd/otd02/>
- <http://www.zak.co.il/deaf-info/old/jobs.html>
- [www.netac.rit.edu](http://www.netac.rit.edu)
- <http://wally.rit.edu/internet/subject/deafness.html>
- <http://prc.csun.edu/Content/Downloads.asp>
- [www.gachi.org](http://www.gachi.org)

# AN OVERVIEW OF THE NEWER ASSISTIVE LISTENING AND ALERTING TECHNOLOGIES AVAILABLE FOR WORK

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Becky Morris – BeyondHearingAids.com 9/14/10



Adapted from ALD Online Technical Training Program 2010

# Agenda

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- FM Systems
  - Traditional, Digital and Integrated systems
- Alerting Systems
  - Alertmaster, Silent Call
- Work Telephone Options
  - Wired headsets, Bluetooth options, Streamer options

# Traditional FM Systems

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- In General - For Mild – Moderate Loss
  - Listen Technologies Systems
  - Williams Sound Hearing Helper



# Traditional FM Systems

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- In General - For Severe to Profound Loss
  - Comtek AT216



# Traditional FM/Digital System

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- Comfort Audio Contego

Operates on 904-906 MHz range.



# Traditional FM/Digital System

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## Bellman Domino



Operates on 2.4 GHz

## Conversor



# Wireless FM Systems – Phonak Components

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**Smartlink+ ,  
Zoomlink+, or  
EasyLink+ Transmitter**



**Inspiro**



**MyLink Neckloop  
Receiver**



**MLXi  
Receiver**



# Wireless FM Systems – Phonak Dynamic FM System

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**Inspiro  
Transmitter**



**DynaMic  
Transmitter**



**MLXi  
Receiver**

## **Dynamic FM**

Dynamic Speech Extractor algorithm in the transmitter monitors ambient noise and can adjust the FM signal to a higher gain to compensate for the noise. It sends this adjusted signal to the receiver.

Dynamic FM is the newest processing platform of any FM system.

# Induction Loop Systems

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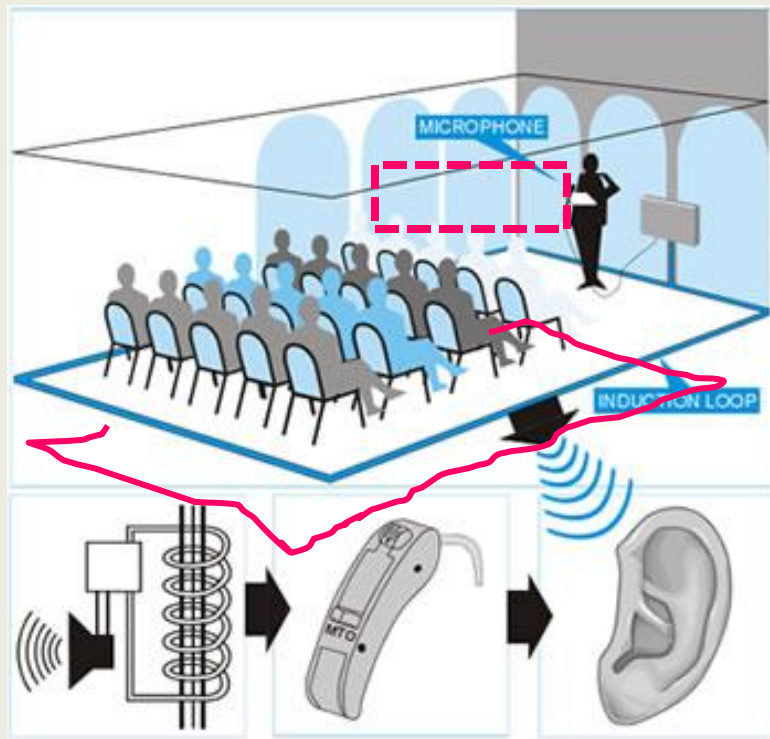


Photo courtesy of [www.asecinc.com](http://www.asecinc.com)

A loop system uses a special amplifier that picks up sound from a microphone. It circulates the sound signal through a loop of wire that is placed around the listening area.

The sound signal that is sent through the loop of wire creates a magnetic energy field.

Anyone sitting within the 'looped' area can use the telecoil on their hearing aids or cochlear implant or an induction receiver with headphones.

# Induction Loop Systems Benefits

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- An induction loop has the same benefits of an FM system in that distance from the speaker is reduced, background noise is reduced and the sound signal is amplified and clear.
- An additional benefit is that anyone with telecoils in their hearing aids or cochlear implants needs no additional equipment. Also, the transmission range falls within the loop of wire reducing signal bleeding to other areas.
- The induction loop has the same limitation as the FM system in that microphone placement is crucial to the clarity of the sound signal.

# Induction Loop Systems

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## Microloop II and Microloop II FM



Ovalaudiowindow.com

# Other Loop Technologies

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**HC-CLIPLOOP Clipboard**



**HC-LOOPHEAR Portable Loop**

**Univox Chairpad Loop**



# Integrated Systems w/clock

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## Silent Call



## Bellman & Symfon Visit



## Sonic Alert



## Alertmaster

**Simplicity does not have a clock**

# Integrated Signaling Systems

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## Old Alertmaster



# Integrated Signaling Systems

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Alertmaster –

- Lamp
- Lighted icon panel
- Vibration
  
- Base unit and remote receiver.

# Integrated Systems

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Silent Call – uses strobe light, lighted icon panel or vibration

318 Frequency

100 ft range



# Integrated Systems

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Silent Call – uses strobe light, lighted icon panel or vibration

418 Frequency

2000 ft range

Can monitor up to 3 smoke  
detectors at home



# Integrated Systems

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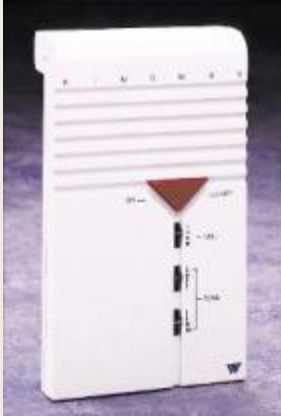
## Watch Receiver for The Signature Series

The original Good Vibrations belt worn receiver



# Audible Alerting Products

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Ringmax Phone signaler



Carlson Adjustable Doorbell Chime  
Trine and NuTone are two other popular units



**Serene Innovations  
Cell phone signaler**

# Building Fire Alarm System

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**Silent Call Signature Series  
Fire Alarm transmitter that  
connects to existing  
building alarm.**



**Watch Receiver or Strobe Receiver**

# Inline phone amplifiers

Work

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## Connects to Multi-line Phones



**AMER-  
HA40**



**HC-UA45 Serene  
Innovations**

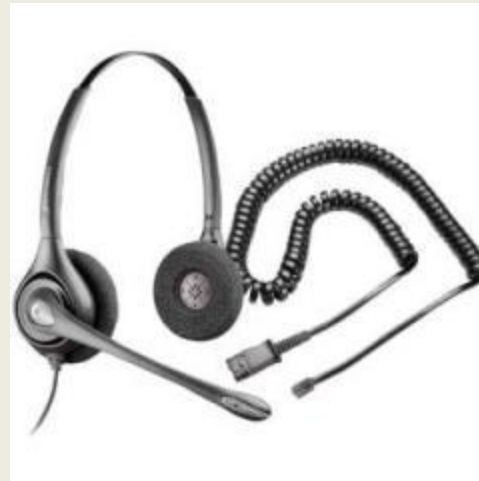
# Headsets

Work

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**Vista HC-  
M22  
Amplifier**



**Plantronics  
H101N**



**UA45 and UA50  
Serene  
Innovations**

# Headsets for Tcoil Users

Work

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**HC-  
CLA7V2**



**Vista HC-  
M22  
Amplifier**



**HAT-  
DD100**

# Bluetooth Options For the Phone

Work

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## Plantronics Voyager Bluetooth base for Desk Phones

- **NOTE on Bluetooth Home Phones:**
- Most cordless phones with Bluetooth connect to CELL PHONES.
- You need to find one that connects to **BLUETOOTH HEADSETS.**



# Bluetooth Options For the PC

Work

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**Bluetooth Adapter  
(or dongle) connects  
to USB port**

**Recent laptops have built-in Bluetooth  
and no additional adapter is needed.**

**Sends  
signal to  
Digital  
Streaming  
Devices or  
Bluetooth  
Neckloop.**



**HC-CLA7BT**

# Digital Streaming Devices

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A streamer is also called a gateway device. It is a neckloop with a built-in Bluetooth receiver that can pick up signals from Bluetooth cell phones and audio devices.

It operates similar to how a neckloop works except the sound signal goes directly to the hearing aid, not through the telecoil.

The device then digitally streams the signal inductively into the hearing aids. Can use a cable to an FM system receiver for FM use.

A streamer is similar in function to a Bluetooth neckloop. I consider it an ALD (but they don't call it that). Only available through audiologist.

# Digital Streaming Devices for Cell Phones and Audio

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- Distance limitations:
- Bluetooth signal range is 30 ft. so the streamer must remain within 30 ft. of the audio source (blue arrow).
- The digital streaming device must be worn like a neckloop (within the body area network) to transmit to the hearing aid. (green dotted line).

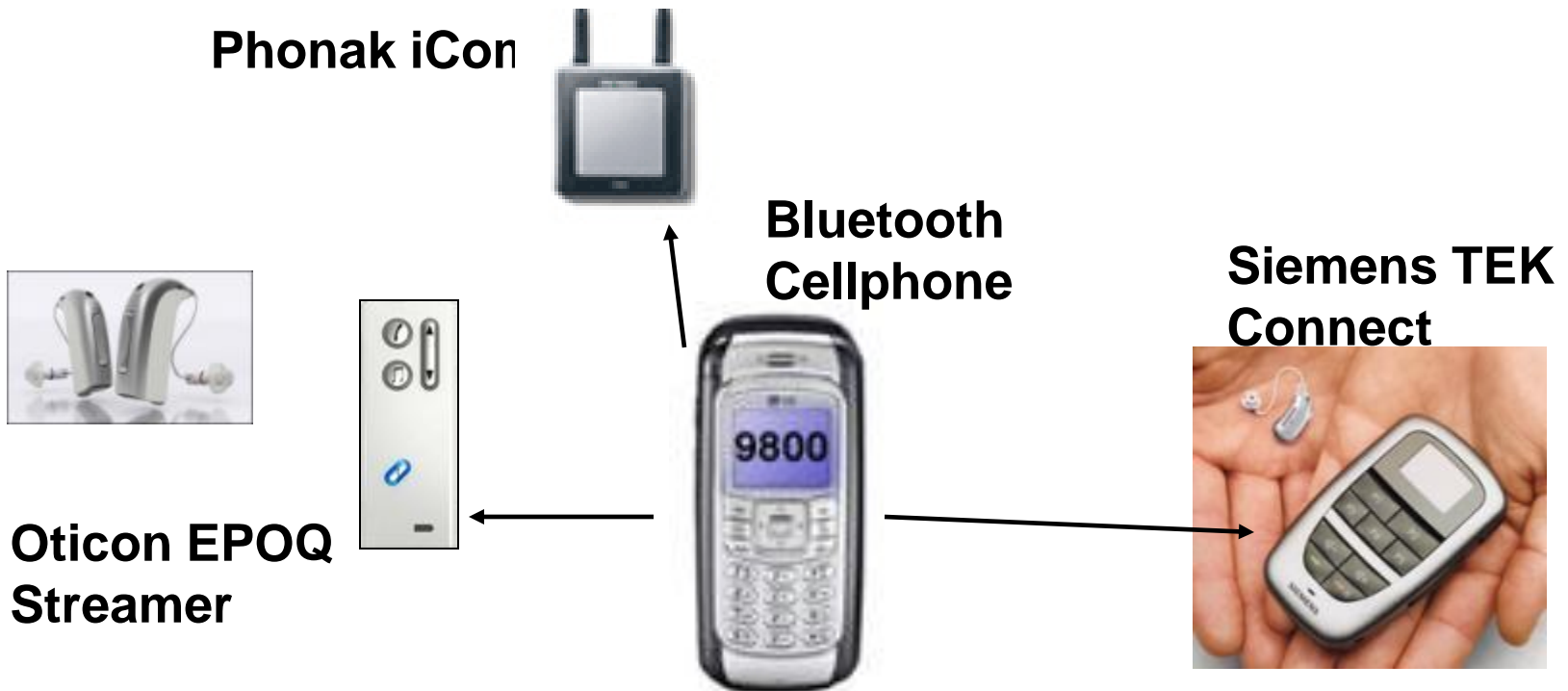
Photo

<http://support.oticon.com/com/Pro/OurProducts/Connectline/Support/StreamerSupport/index>

# Digital Streaming Devices

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Cell Phone sends Bluetooth signal to Digital Streaming Device



# Streaming Device Accessories for Home Phones and TV

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**ConnectLine from Oticon – available through audiologist**

# Additional ALD Resources

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ALD Newsletter, Product videos, and more:

[www.BeyondHearingAids.com](http://www.BeyondHearingAids.com)

In-depth Technical Training Program

and ALD Tip Of the Week:

[www.aldtraining.com](http://www.aldtraining.com)

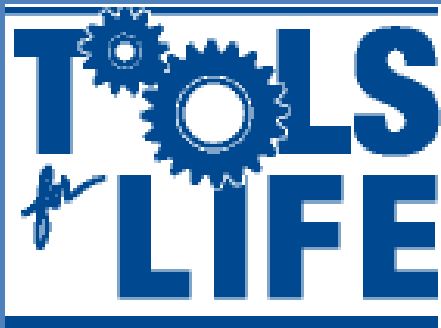
# Time to Evaluate *Our* Performance, Please

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**Please complete a brief evaluation of today's Tools for Life Webinar at:**

<http://www.surveymonkey.com/s/L6FBG2N>

# Thank you!!



Georgia's Assistive  
Technology Act Program

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