

# Deafness, Hearing Loss, and First Responders

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# Why Are Deafness and Hearing Loss Important Considerations for first responders?

The National Institutes of Health estimates that 8.2 % of the general population live with hearing loss

Out of an estimated 2010 US population of 308,000,000, that means almost 26 million people have a hearing loss

But wait! Hearing loss rises dramatically with age. At 65, 1 out of 3 people experience hearing loss; by age 80, 1 out of every 2 people experience significant hearing losses.

The “real” number of individuals with hearing loss is therefore likely much higher than the above figure.

Hearing Loss cannot be seen

Hearing Loss isolates people

Hearing Loss is stigmatized

Hearing Loss diminishes reception of incidental information

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Hearing loss puts people at a competitive disadvantage in ANY environment where information is shared audibly

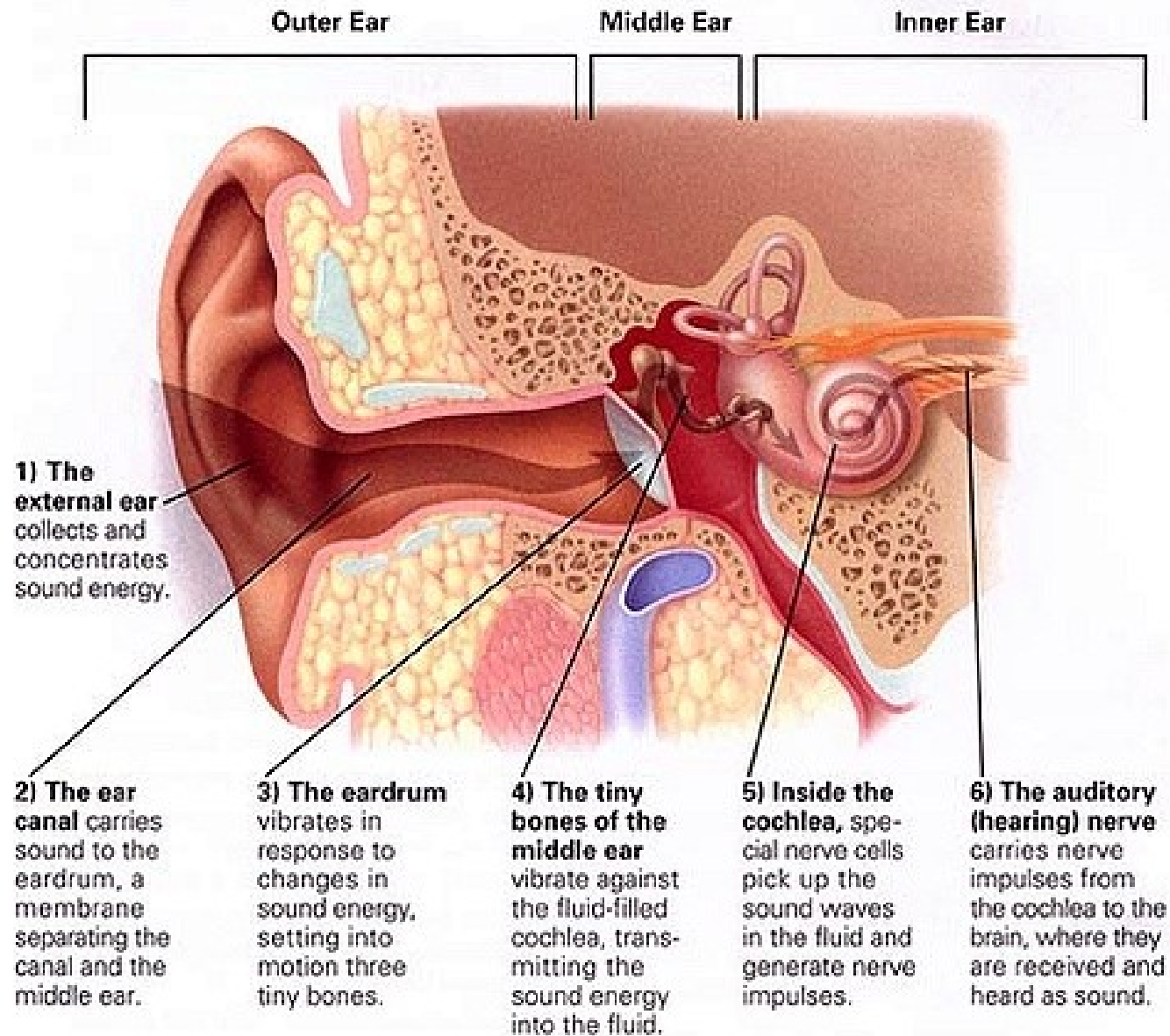
# What did you say ??

Hearing and understanding are two different things. Hearing is related to **volume**, understanding is related to **comprehension**.

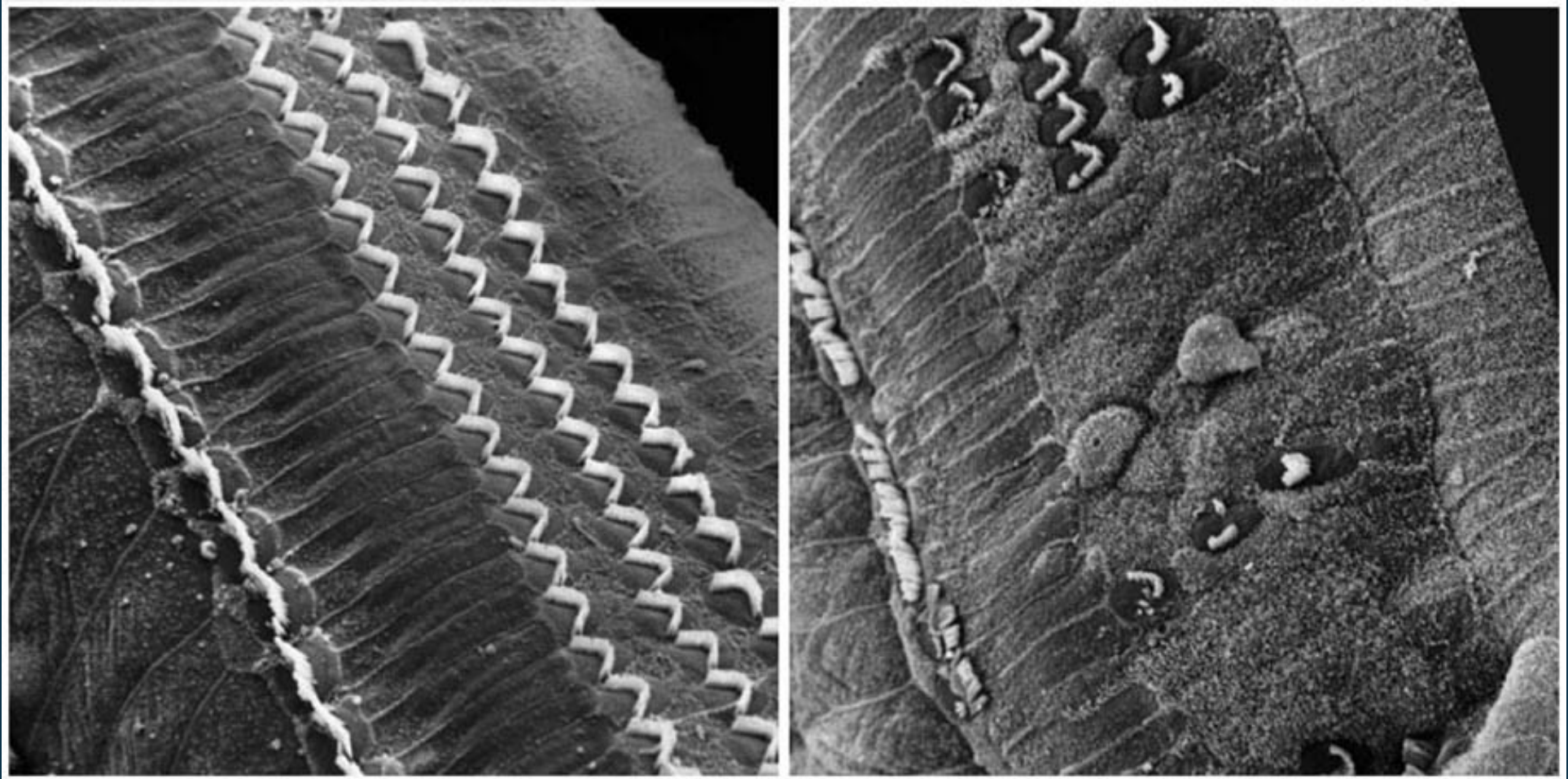
By far the most common type of hearing loss is sensorineural hearing loss, which results from damage to the complex sound processing mechanism inside the inner ear.

Amplification may help to HEAR, but not necessarily be helpful to UNDERSTANDING. In many settings, talking louder won't help; neither will a hearing aid.

# How We Hear



# Hair Cells in the Inner Ear or Cochlea



Undamaged Hair Cells

Damaged Hair Cells

In human beings, hair cell regeneration is not possible

# What are the causes of hearing loss?

- **Genetics:** inherited and spontaneous mutations
- **Medications:** Some chemotherapy drugs, diuretics, antibiotics, aspirin, blood pressure medications
- **Trauma** to the ear or brain
- Long term moderate **noise exposure** or brief exposure to severely loud noises:
  - MP3 Players, iPods, especially with earbuds
  - Rock concerts, car racing, jet engines
- **Sudden Sensorineural Hearing Loss**
- **Etiology unknown**
- **"Wear and Tear"** associated with aging

# What about hearing aids/cochlear implants?

Hearing aids and cochlear implants **cannot** restore normal hearing.

Hearing aids simply amplify sounds. Some manufacturers claim that digital models can reduce background noise and eliminate feedback at high volumes, which may be helpful in some situations.

Cochlear implants can help if the damage to the cochlea is too extensive for hearing aids to be effective. A CI bypasses the damaged section of the cochlea and provides direct stimulation of the auditory nerve by means of an external processor feeding signals to implanted electrode arrays. However - not everyone is a candidate for a CI, nor do they always work,

# What is the Difference between a Deaf person and a hard of hearing person?

- There are many different categories of **self-identification**:
  - Deaf individuals who have been deaf since birth, and communicate in American Sign Language (ASL). Often will refer to themselves as "**culturally Deaf**".
  - People who were born deaf but use speechreading and speech, supported by hearing aids and cochlear implants. Often call themselves "**oral deaf**".
  - **Hard of hearing** people have lost some of their hearing and will rely heavily on hearing aids and speechreading for communication.
  - **Late Deafened** people, who have lost all or so much of their hearing that hearing aids and listening systems are useless. May use cochlear implants and CART.

# What is cultural Deafness ?

- A Deaf child, born to Deaf parents who communicate in sign language, will adopt this sign language as his or her first language, as a hearing child would adopt English.
- American Sign Language is a purely visual language; it does not exist in written form.
- ASL has nothing in common with spoken or written English; it is a language in its own right. **Therefore, complex written English information may not be understood accurately by an ASL-user.**
- Culturally Deaf people exhibit culture-specific behaviors
  - They touch others, even hearing people, to get attention; they may hug to say hello or goodbye
  - They may bang on a table, stomp on a floor, wave a hand in your face to get your attention

# Understanding cultural Deafness, cont....

- An ASL interpreter will **always** be the best possible resource for you to use when communicating with a culturally Deaf person.
- However, interpreters are always in short supply, and may be unavailable during the initial phase of an emergency.
- Brief and simple written, printed, texted information is usually not an issue. But for complex information, an ASL interpreter is a necessity
- You can usually get a fair amount of information from a Deaf person even without an interpreter simply by gesturing back and forth. Deaf individuals are very adept at understanding visual/gestural communication.

# How do I obtain an ASL interpreter?

Contact your state's Interpreter Service Referral Agencies. If you don't know who they are contact your state's Commission for the Deaf and Hard of hearing.

At a minimum, you should request that any interpreters referred meet the national RID ( Registry of Interpreters for the Deaf ) certification level.

In most situations, advance notification of the need for an ASL interpreter is beneficial. This is not always possible in emergency situations. A [lawsuit](#) filed in 2002 in Connecticut resulted in hospitals agreeing to provide ASL interpreters.

# What is CART? Is there a **horse** involved?

- **C**ommunication **A**ccess **R**ealtime **T**ranslation is a service that provides a “live”, verbatim, transcript of what is being said in any given environment to someone who is deaf to the extent that they cannot benefit from any amplification, and do not know sign language.
- It is particularly beneficial for people who have been hearing most of their lives and then suddenly lose their hearing completely. They will still communicate using their voices but not be able to understand what others are saying to them.
- CART can be provided on site or remotely using a conference telephone , laptop, and internet connection



A CART Provider hears everything that is being said and types phonetic output into a stenotype machine. This is connected to a laptop with specialized software which decodes the output into plain English text. The best providers can manage speeds of up to 300 WPM !!!!



Chris and the supervisor's name is Gayle.  
One of the other dynamics just sort of in  
the case maybe explicit or implicit is is  
that because this unit is being managed  
this way there is a whole dynamic in the  
entire offers of you know,

# Communication is hard in emergencies !

Some common disaster/emergency settings:

- Visual and auditory distractions - strobe lights, floodlights, high activity levels, sirens, fans, machinery, people shouting and screaming
- Insufficient or strongly directional lighting - either not enough , too much, or coming from the wrong direction
- Distance from sound source/speaker - hearing and speechreading become difficult if not impossible
- Masks and respirators - it is impossible to lipread through masks; they also muffle sound and make hearing the responders' speech more difficult than it already is.
- Too many people - impossible to "learn" speech patterns

- No ASL interpreters available during critical first moments, possibly for extended duration depending on nature of emergency, implementation of travel bans.
- No assistive listening devices available for people whose hearing aids have been destroyed or who do not have hearing aids. Note: any wet or chemical decontamination will destroy hearing aids and CI processors
- No easy way to visually identify Deaf or hard of hearing people by sight; this is complicated by the fact that people who are injured or in shock may not be able to communicate their hearing loss or may be “misdiagnosed”
- First responders not often trained in communication strategies with people who are Deaf or hard of hearing

# How can we *prepare*?

- **Prevention and pre-planning.** If you can reach out to organizations serving Deaf and hard of hearing people in your community, and institute "What you need to know in emergencies" presentations utilizing ASL interpreters and listening devices, that will be an outstanding first step.
- **Inclusion.** If you don't include Deaf or hard of hearing individuals in your local emergency planning committee, it is almost guaranteed that you will overlook a barrier that a deaf or hard of hearing person would instantly be able to point out to you.
- **BUT:** Don't just grab random Deaf/hard of hearing folks off the street. You need to involve people who don't just see their own issues but are aware of and understand "global" issues

- **Make public information accessible.** Post text transcripts of spoken information. Provide captioning for any videos posted online. Hire an ASL interpreter to interpret emergency information, videotape them, and post this online too.
- **Share information.** Most people in a community have no idea where their local shelters are; some emergency managers are not comfortable giving this information out until an emergency hits to ensure people go to the right shelters. The problem with that is that by then, it will be too late to make this information accessible for deaf or hard of hearing people.
- **Implement reverse 9-1-1.** Send out sign-up forms with voter registration, census and other "global" mailings. At least you will have SOME idea of who lives where.

- **Reach out to the target audience.** So you've decided to hold a fully accessible public emergency planning meeting? GREAT! How and where do you publicize it?
  - Senior Centers, Visiting Nurse Associations
  - Doctors' offices, audiology departments, hearing instrument professionals' offices
  - Pharmacies and Supermarkets
  - Local cable channels - remember to caption and provide ASL interpreters!
  - Mainstream media
  - Agencies and Organizations serving Deaf and hard of hearing people
- **Follow up!** The meeting is over, it went very well, you have contact information from many Deaf and hard of hearing people. Keep them in the loop and stay in touch!

- **Dare to dream big!** One of the most effective ways to prepare for an emergency is to establish an effective, proven, communication channel.
- Many communities already have contracts with emergency notification providers who can instantly send out 1000's of text messages to registered e-mail addresses, pagers, and cell phones.
- Unfortunately, few Deaf or hard of hearing people are aware of this, and many of them will not have access to paging devices or cell phones.
- Some states and programs have found ways to distribute **free** one-way text pagers or National Weather Service radios with Same Area Message Encoding and compatibility with alerting/notification systems used by Deaf individuals.  
***Why not you too?!***

# Deaf and hard of hearing people are **everywhere!**

- Don't just view deaf and hard of hearing people as victims-in-the-making. We are valuable contributors to society if given the opportunity for equal participation.
- Have you ever thought of providing Deaf and hard of hearing people with a way of sending you a TEXT message to make you aware of an emergency that otherwise might go unreported because the first person on scene might be unable to use a cell phone?

- **Emergencies are relative.** We often think of emergencies as being big, regional, national events. To someone who is in a single family house fire, that is a bona fide emergency of the utmost severity.
- Did you know that fire and carbon monoxide detectors for Deaf people can cost \$ 200 for *one* detector and *one* receiver, and over \$ 100 for additional units?
- Work with your local fire department or your State Fire Marshall's office to see if you can implement a fire alarm grant for Deaf and hard of hearing people in your community, many of whom will be seniors as well.

# How can we *respond*?

- **Be accessible.** Keep in mind that radio and television are of limited effectiveness, and utilize communication strategies which you know will be effective given the target audience. Emails and text messages are always better than audible announcements!
- **Be succinct.** Remember the possibility of language barriers, not just for ASL users but other bilingual minorities. Don't do "government speak". There is always time for that once you have people in a shelter with an ASL interpreter there.
- **Be focused.** If you've established an emergency contact methodology, use it for NOTHING but emergencies. Too many "emergency" channels have become meaningless with near-constant "chatter" and are not paid attention to or are unsubscribed from.

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- **Know your "audience"**. You've already learned about communication barriers, and we'll talk about technology soon. Be aware that almost all alerting and signalling devices used by Deaf and hard of hearing people run on electricity and will NOT function or only for a very limited time in case there is an extended power outage.
  - In Katrina and Rita, many house-to-house searchers simply assumed that no one was home when the door was not answered. In the absence of electricity to flash the doorbell lights, a Deaf person who cannot hear will not respond to someone pounding at the door.
  - Do not separate family members from one another based on disability. This has actually been done and it is **completely** counter-productive.
  - Be aware some Deaf people use **Hearing Ear Dogs**. These are not pets and must be allowed to accompany them.

# Shelter Considerations

Some basic necessities that can greatly improve communication with deaf and hard of hearing people:

- Whiteboards and non-toxic markers, for visual communication of information
- Flashlights, preferably LED, not high intensity
- Scripts and short ASL video clips of standard operating procedures
- Several inexpensive one-to-one listening systems with headphones and neckloops
- A supply of the most commonly used hearing aid batteries. People may come in the shelter with hearing aids, but during an emergency, it might be impossible for them to go home and retrieve a supply of them prior to seeking shelter.

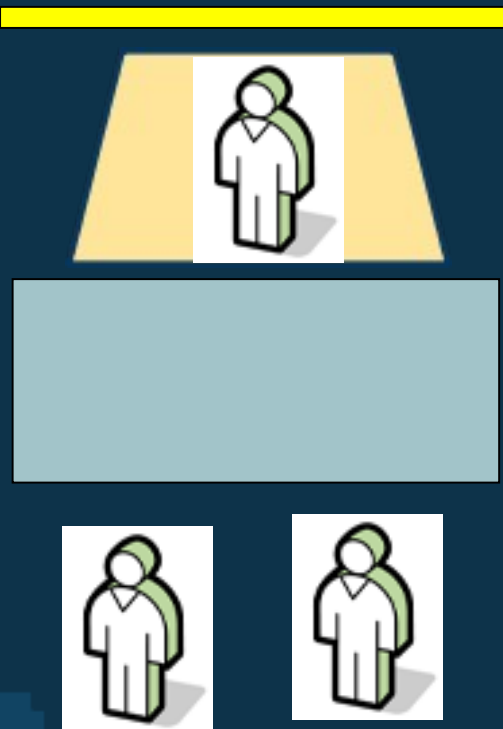
- If your shelters are high schools, libraries and government buildings, the odds are high that you will already have high speed internet access.
- Did you know that interpreters can interpret from thousands of miles away simply by using a [webcam](#) on both ends, with a high speed internet connection? Or that CART can be provided remotely as well, with the only requirements being a phone line, a telephone, an internet connection and a laptop or PC?
- These services are called [Video Remote Interpreting](#) and [Remote CART](#), respectively, and can be a life-saver in situations when a "live" provider is not available or cannot travel to your site due to the nature of the emergency

# How to Communicate in an Emergency

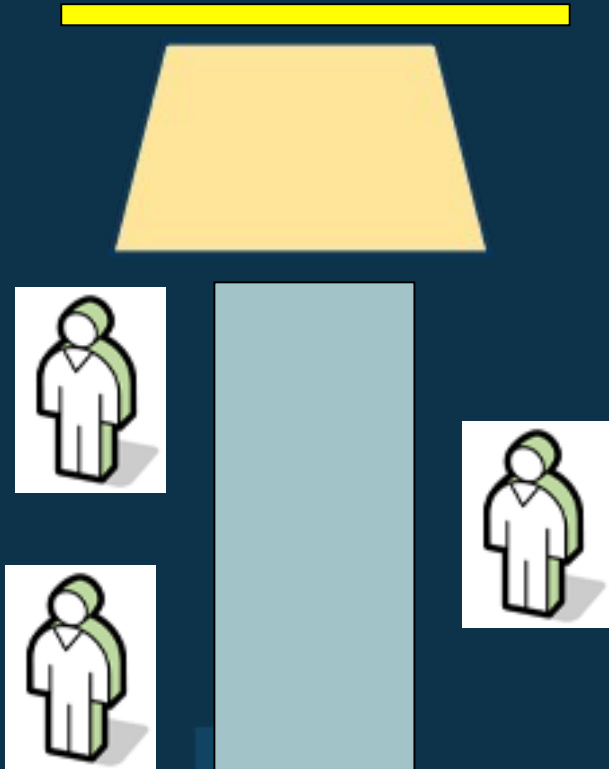
- Get the person's attention before starting to communicate
  - touch, wave, light, tactile
- Maintain eye contact, use gestures and mime
- Keep your face and mouth unobstructed
- Light must be sufficient and on your face
- When taking medical information, look up from paper while asking questions to allow lipreading
- If the individual can read English comfortably, DO let them read the questions you would otherwise be asking
- Speak clearly and at a moderate pace; do not overcompensate or shout
- Repeat or rephrase using different words
- Avoid technical expressions

# Environmental Considerations

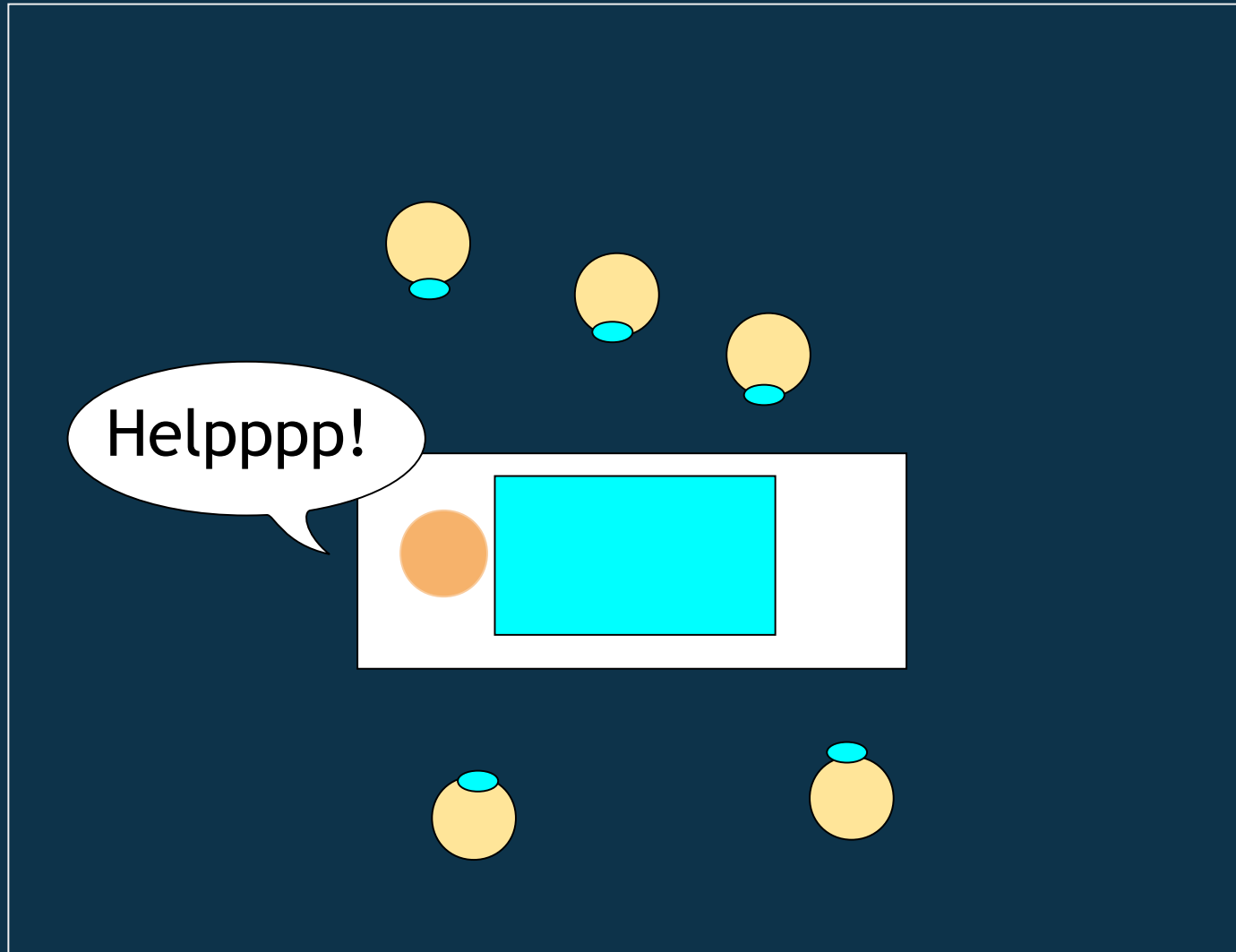
Window or Light Source



BAD LIGHT

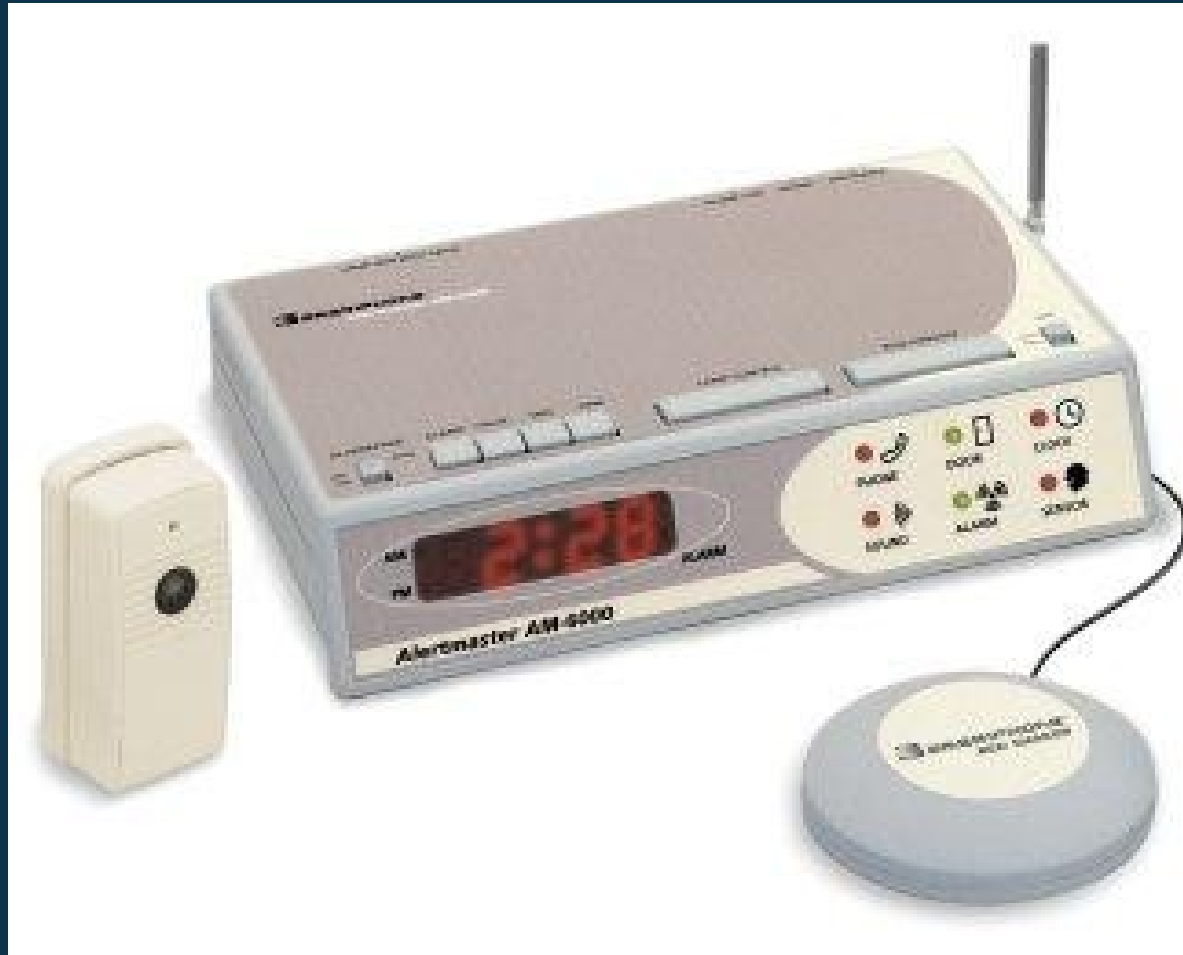


GOOD LIGHT



**Alien Abduction? No - masked men congregate around helpless speech-reading-dependent patient!**

# Brief overview of technology



**All-in-one wireless alerting system with bed shaker**

# Telecommunication Devices



# telecommunication relay service

Every state in the US has its own TRS

Most popular services offered:

TTY to Voice and Voice to TTY

Voice Carry Over

Hearing Carry Over

Speech to Speech

Text to Text

Please visit the [Federal Communications Commission](#) for an in-depth explanation of all currently available TRS services!

# video relay services



Visit the [FCC](#) to find out more about VRS!

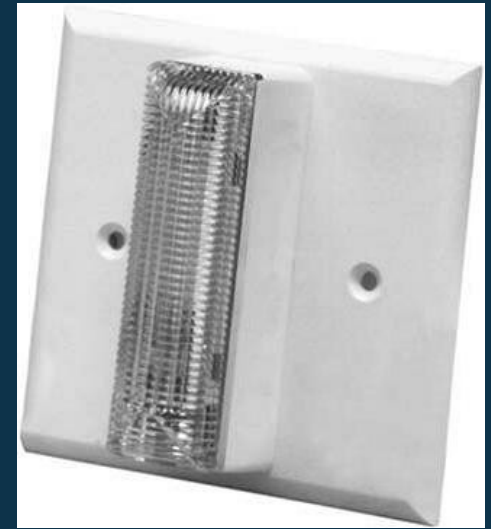
# Wireless Communications



# Accessible NWS Weather Radio



# Fire and Carbon Monoxide



# Sample technology vendors and manufacturers...many more out there!

[Clarity](#)

[Harris Communications](#)

[Hartling Communications](#)

[HARC Mercantile](#)

[Hearing Resources](#)

[HiTec](#)

[Phonic ear](#)

[Potomac Technology](#)

[Silent Call](#)

[Sonic Alert](#)

[Telex](#)

[Ultratec](#)

# Thanks For Inviting Me !!

Questions, comments, feedback are very welcome. Please email me at:

[jgodell82@yahoo.com](mailto:jgodell82@yahoo.com)

Have a great evening!

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