

Addressing *Hearing for Better Health*

Dr. Angelica O'Boyle, CCC-A, F-AAA



Addressing Hearing for Better Health

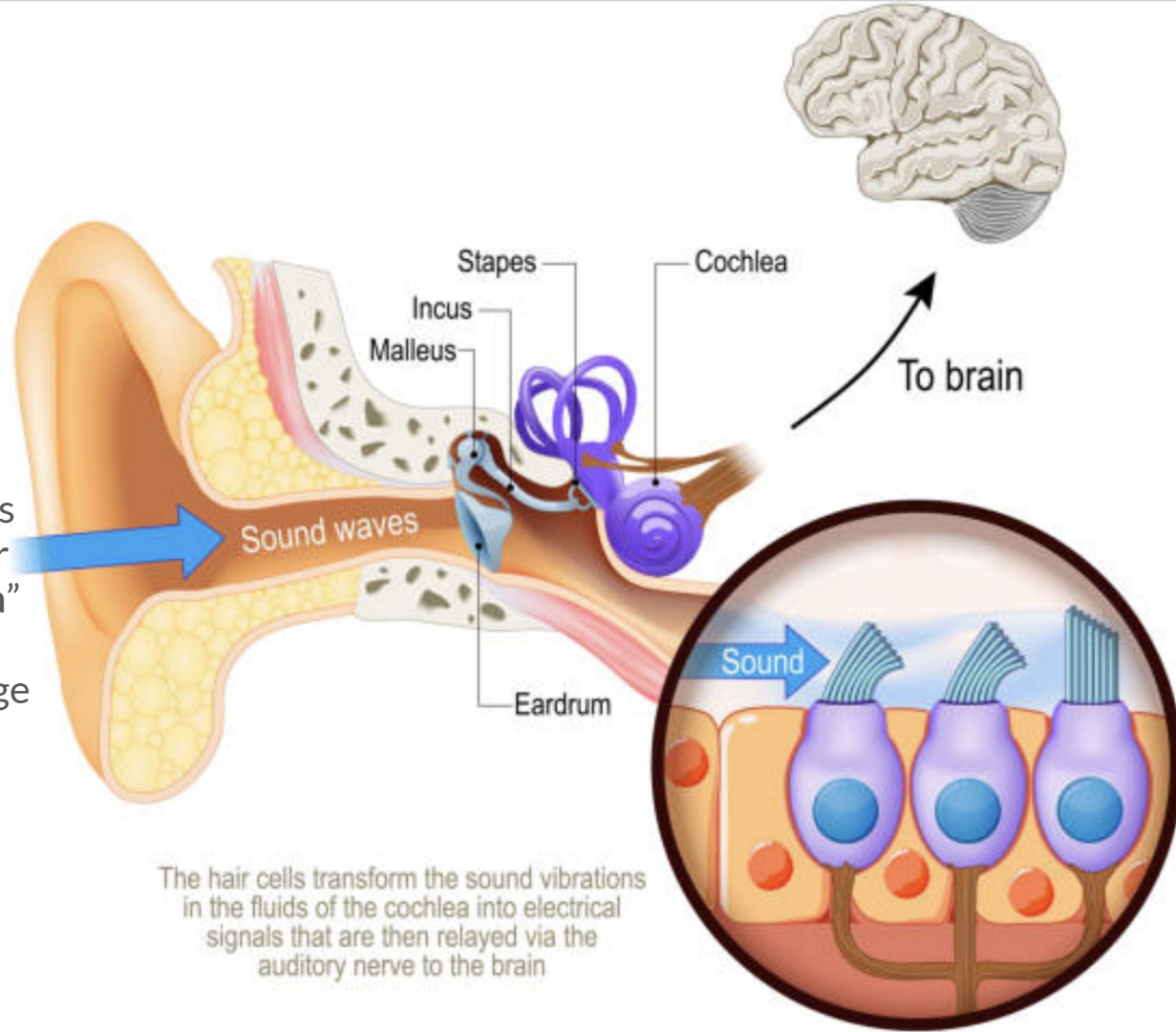
Objectives:

- How to Prevent (*further*) HEARING Loss
- Links between HEARING LOSS and *Other Health concerns*
 - Physical Health & Safety
 - Cognitive Health
 - Emotional Health
- Benefits of Managing HEARING Health

Hearing

How We Hear

- “Outer ear”, or **Pinna**, collects sounds
- The eardrum and bones of the “**Middle Ear**” sends vibrations into the “Inner Ear” organ, the “**Cochlea**”
- The “**Hair cells**” in the Cochlea send the message to the nerve
- The message is sent through the **Nervous System** to the Brain
- The **Brain** interprets the message



Hearing Loss

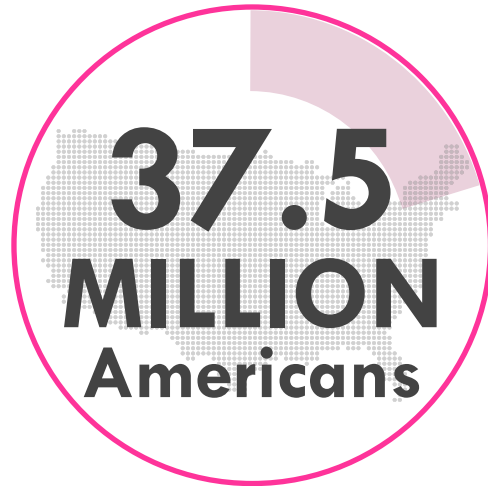
How Common is Hearing Loss?

- Hearing loss affects approximately **37.5 million Americans**
 - a. **1 in 6** People over age 18, have Hearing Loss in *at least one ear*

Hearing loss is a major public health issue.



It is the **third most common physical condition** after arthritis and heart disease.



Hearing Loss

Hearing Loss by Age Group in America - **Impacting Communication**

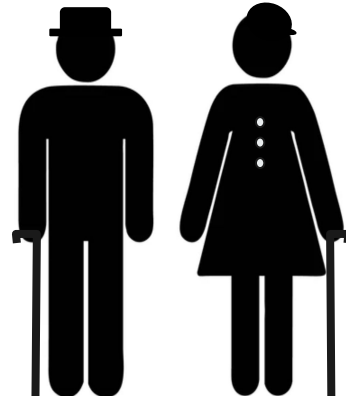
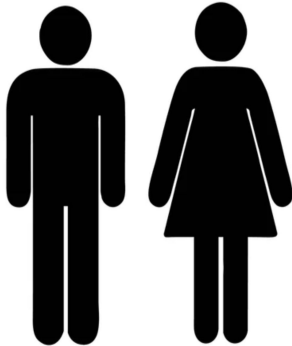
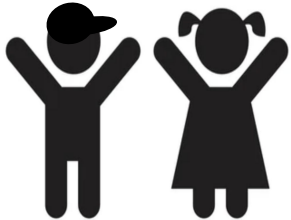
1-3 per
1,000

1 in 14

1 in 6

1 in 3

1 in 2



Birth - 18

18 - 40

41 - 59

60 - 74

75 & Older

AGE

Hearing Loss

Prevalence of Hearing Loss:

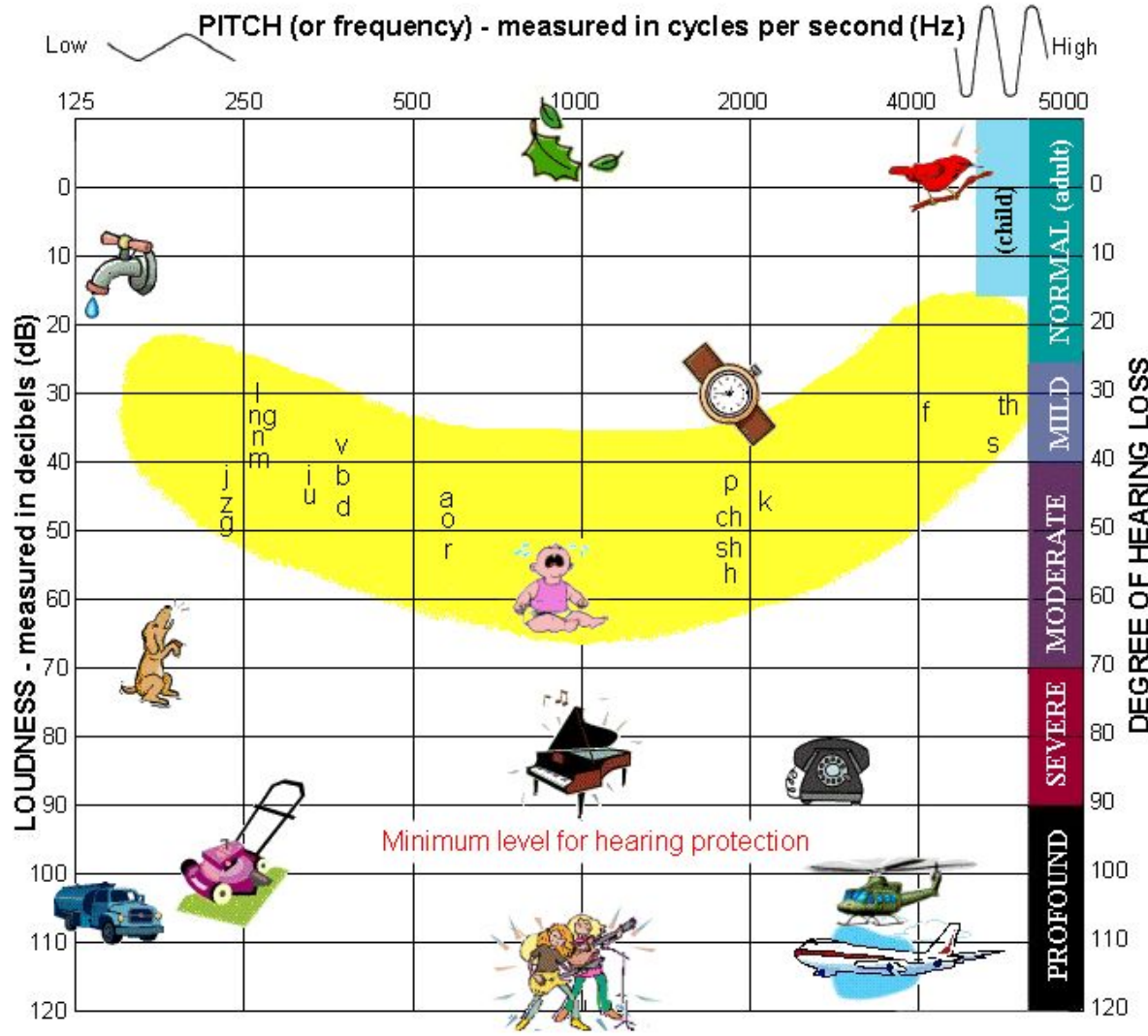
- Have you had your hearing tested?



Hearing Loss

Hearing Test

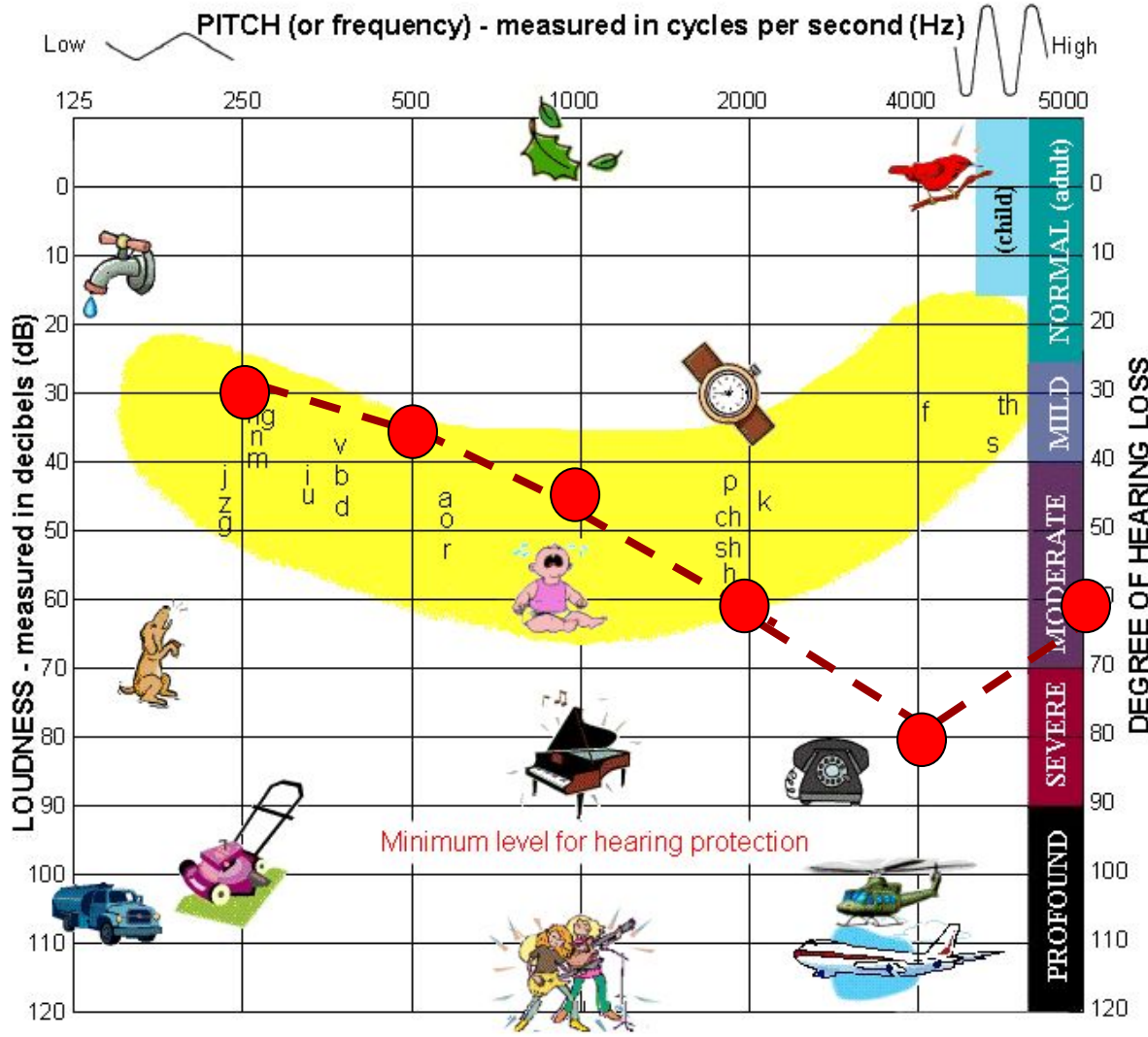
- Beep Testing
 - Creates a “Graph” of Hearing Sensitivity
- Word Testing
 - How well does the Brain understand the information
 - WORDS



Hearing Loss

Hearing Test

- AUDIOGRAM chart
 - Red = Right
 - Blue = Left
- *Hearing Loss Ranges*
 - Mild - Profound
 - "Mild to Severe Hearing Loss"
 - Mild Loss - Low Pitch tones
 - Severe Loss - High Pitch tones



Hearing Loss Prevention

Prevention of Hearing Loss

- Our ears NEVER stop Hearing... *unless..... they are damaged!!*

Daily Habits

Healthy habits for Ears & Brain!

- Physical Exercise
- Eat Nutritious foods
 - Foods with Vitamin D, B, C, E, Potassium, and Magnesium
 - Foods with Antioxidants
- Socialize
- Listening to Music

Things to Avoid

Avoid Damage

- Loud Sounds
 - Hearing Protection (*Good Fit*)
 - Turn Down the Volume
 - Move Away
- Placing objects into the Ear
 - Cotton swabs, keys, bobby pins, fingers, candles
- Smoking

Care Early

Prevent Further Decline

- Sudden changes = URGENT
- Annual Hearing Tests
- Let **DOCTORS** remove wax
- Treat Hearing Loss
 - Can lead to other problems
- Treat Medical Issues
 - Diabetes, Blood Pressure
- “Ototoxic” Medications

Hearing Loss Prevention

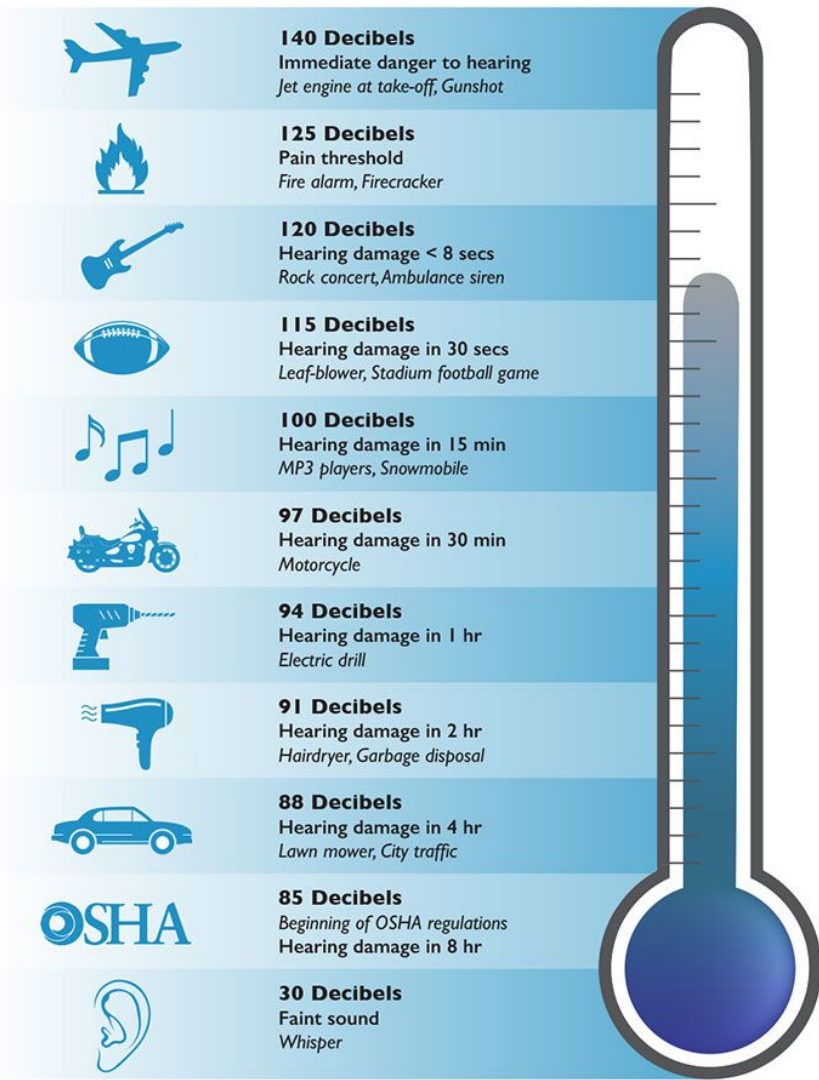
Prevention of Hearing Loss

- Our ears NEVER stop Hearing...

Things to Avoid

Avoid Damage

- Loud Sounds
 - Hearing Protection (*Good Fit*)
 - Turn Down the Volume
 - Move Away
- Placing objects into the Ear
 - Cotton swabs, keys, bobby pins, fingers, candles
- Smoking



Hearing Loss Links

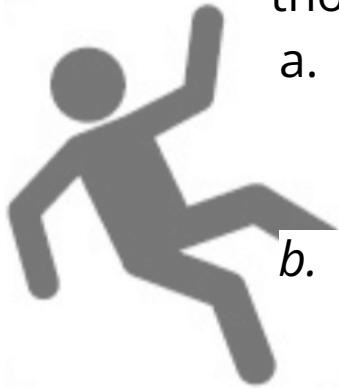
Untreated Hearing Loss Increases Risks of other issues

- Falls
 - a. More likely to experience Falls, and injuries due to falls
- Hearing Processing Decline
 - a. Trouble understanding words, even with hearing aids
- Cognitive Decline
 - a. Increased risks, earlier signs of changes, and decline faster
- Mental/Emotional Health
 - a. More likely to feel Social Isolation, depression, anxiety
- Increased Healthcare Costs
 - a. Untreated hearing loss leads to higher healthcare costs

Hearing Loss & Falls

Risk of Falls:

- People with hearing loss are *more likely to experience falls* compared to those with normal hearing
 - a. *Hearing helps the brain “map” an environment*
 - i. Awareness of Dangers, Direction of sounds
 - ii. Sounds change as they bounce off objects and walls
 - b. *Keeping the EARS healthy -*
 - i. Inner ear **“Cochlea” = Organ of Hearing & Balance**
 - ii. Sense movement so muscles can react quickly and safely to change
 - 1. Recovering from a trip or slip, standing on a moving train



Hearing Loss & Falls

Risk of Falls:

- People with hearing loss are *more likely to experience falls*
 - a. *Fall risk increases with severity of hearing loss*
 - i. *The more loss an individual has, the higher the risk of fall*
 1. Risk increases **1.4X** with each +10dB (deciBel) of hearing loss



Hearing Loss & Falls

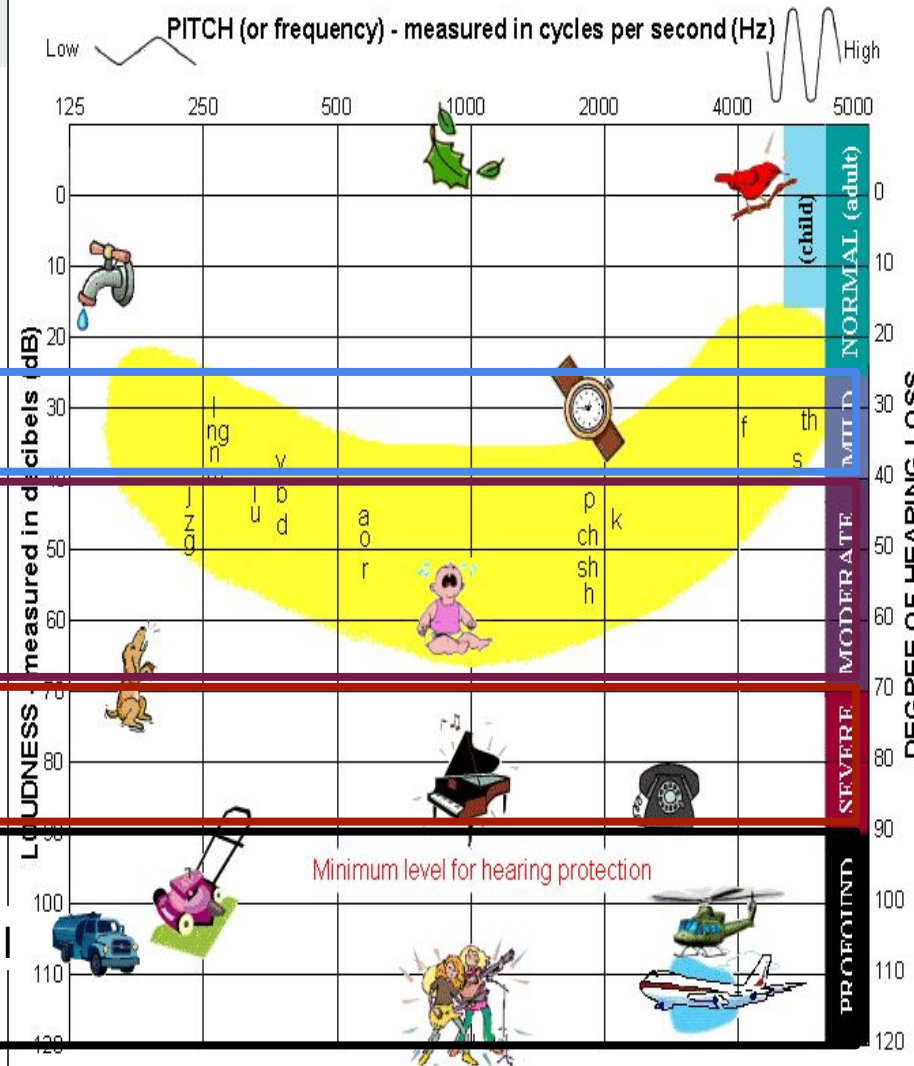
Degree of Loss → Increased Fall Risk

Mild Loss → 30% more likely to fall

Moderate Loss → 50% more likely to fall

Severe Loss → 75% more likely to fall

Profound Loss → 100% more likely to fall



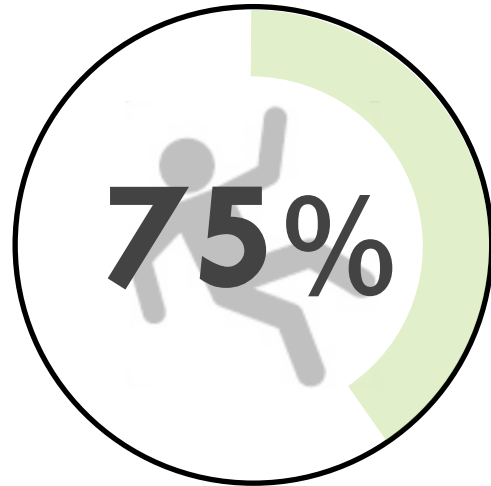
Hearing Loss & Falls

People with hearing loss are *more likely to experience falls.*
For those age 65 and older....

1 in 4



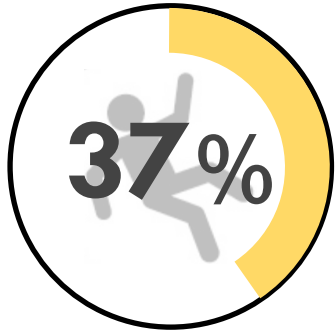
Older Adults Fall
(~29 million)
1 Person Every Second



Falls occur in the
Home

Hearing Loss & Falls

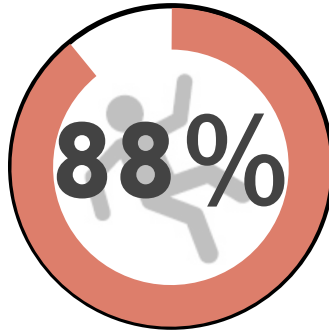
People with hearing loss are *more likely to experience falls.*
For those age 65 and older, Falls are responsible for ...



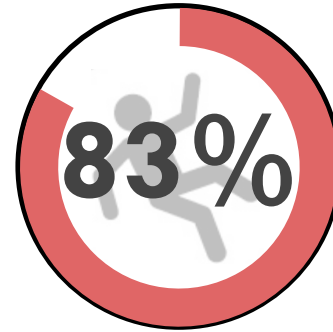
Some Injury
reduced activity for
1 day or more
or some healthcare
needed



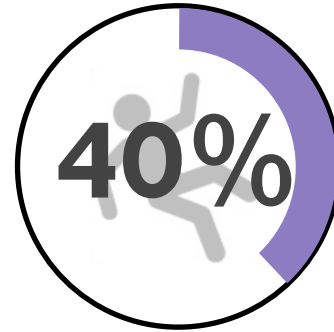
Serious Injury
Fractures,
Head Injury



ER Visits
3 Million
Annually
Every 11 seconds



Hospitalizations
1 Million Annually



**Nursing Home
Admissions**
1 Million Annually

Hearing Loss & Falls

People with hearing loss are *more likely to experience falls.*
For those age 65 and older....

#1 cause of
Injuries

fatal and non-fatal

FALLS

#1 cause of
Fractures

FALLS

#1 cause of
**Traumatic
Brain Injury**

FALLS

#1 cause of
injury - related
Death

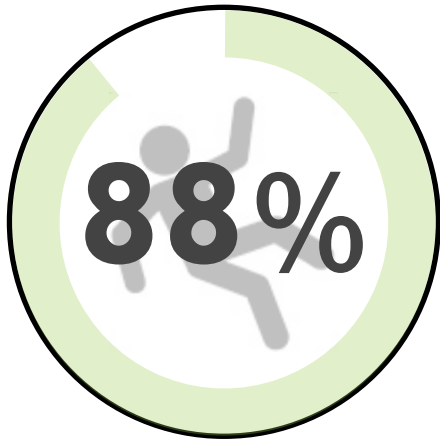
FALLS

*~ 74 People Every Day
1 Person Every 20 minutes!*

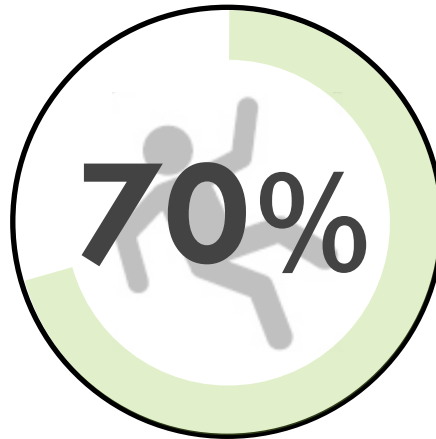
Hearing Loss & Falls

People with hearing loss are *more likely to experience falls.*
For those age 65 and older....

Annually, FALLS are responsible for **318,000 Hip Fracture Hospitalizations**



Hip Fractures are
due to Falls



Hip Fractures patients
are **Women**

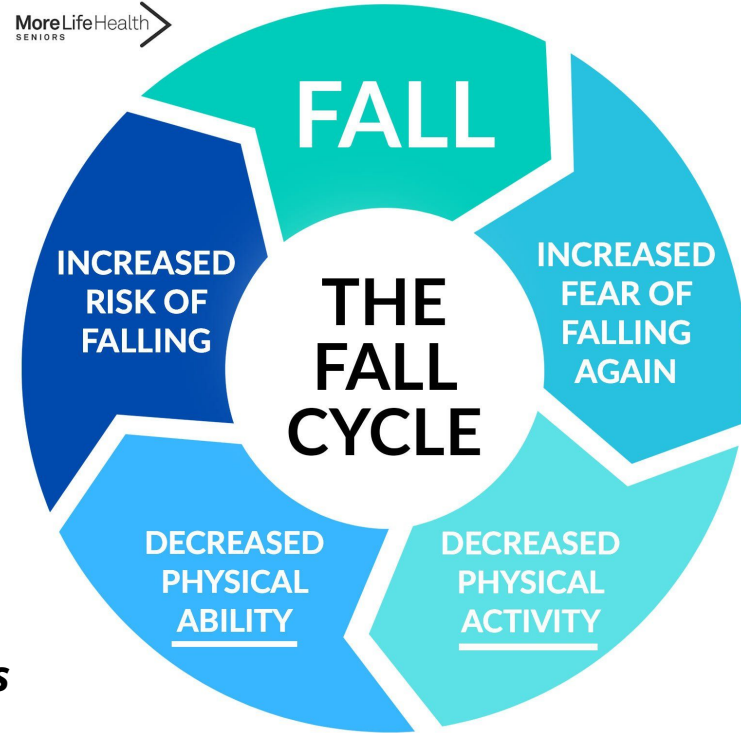


Patients **Die within 1 year**
of a hip fracture injury

Hearing Loss & Falls

FEAR of Falling is Real!

- 90.5% of older adults reported a fear of falling in at least one activity
 - Fear may cause a person to limit activity
 - Less physical activity causes weakness
 - Fall Risk is now increased
- Falling Once....
 - **2X** *The Chance of Falling Again Doubles*
 - **2/3** *Two Thirds Will Fall Again within 6 Months*
 - Falling can be a traumatic experience
 - Counselling can help
 - Be Proactive



Hearing Loss & Fall Prevention

Fall Prevention Strategies

Safe Body

- Physical Exercise
 - Balance Exercises
- Stay Hydrated
- Treat Problems
 - Cardiovascular
 - Hearing
 - Vision
 - Keep Bones Strong
- Check Medications for issues causing balance problems

Safe Home

- Improve Lighting
- Safe Walking
 - Remove Clutter from floor
 - Secure Cables and Carpet edges to avoid trips
 - Non-slip carpets and mats
- Install assistive devices
 - Ramps / Handles / Railings
 - Non-slip options for bathtub, slippery surfaces, and stairs

Safe Activity

- Wear safe footwear
- Be mindful of where you step
 - Avoid moving *too fast*
 - *Stand Slowly*
 - *One stair at a time, don't rush*
- Avoid Alcohol
- Use a Cane or Walker
- Make items accessible to avoid reaching and climbing

Hearing Loss & The Brain



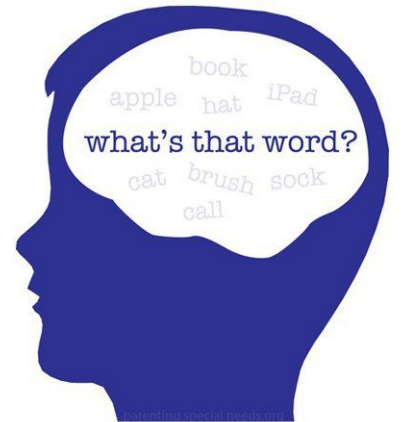
Brain Changes

- Older adults with hearing loss are more likely to experience cognitive decline *compared to individuals with normal hearing*
- The Brain relies on consistent input from our sensory system
 - Hearing is like *Food for the Brain*
 - Even a Mild Hearing Loss under-stimulates the brain
 - Sensory Deprivation - or - "**AUDITORY DEPRIVATION**"
 - Use it or Lose it
 - **Hearing Loss causes irreversible changes** if untreated
 - The brain rewires due to the lack of proper stimulation
 - The pathway can atrophy, like a muscle

Hearing Loss & The Brain

Brain Changes

- Older adults with hearing loss are more likely to experience cognitive decline *compared to individuals with normal hearing*
- Hearing Loss causes irreversible changes if untreated for too long
 - If the brain rewires itself, some changes may be permanent
 - **Trouble Processing Sounds**
 - UNDERSTANDING SPEECH
 - Can you pass me the cap?
 - “_an you _a_ me _he _ap?”
 - UNDERSTANDING IN NOISE
 - Pick out ONE voice from a “*sea of voices*”



Hearing Loss & The Brain



Brain Changes & Cognitive Decline

- Older adults with loss are more likely to experience cognitive decline
- Untreated Hearing loss places stress or “cognitive load” on the brain
 - Hearing loss forces the brain to devote too much energy to understanding sounds, *to the detriment of other brain functions*
 - *Less energy to spend on thinking and remembering*
 - Over time this strain contributes to the development of **Dementia** and/or impaired brain function
- Cognitive Decline risk increases with severity of hearing loss
 - The more loss an individual has, the higher the risk of cognitive changes

Hearing Loss & The Brain

Cognitive Decline:

- Older adults with hearing loss are more likely to experience cognitive decline *compared to individuals with normal hearing*

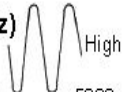
Adults with hearing loss develop a significant *Impairment* in *Cognitive Ability* **3.2 Years Sooner**

Those who don't seek help for hearing loss experience *Mental Decline* **40% Faster**

Those with hearing loss experience a **30% - 40% Greater Decline in *Thinking Abilities***

Hearing Loss & The Brain

PITCH (or frequency) - measured in cycles per second (Hz)



Degree of Loss → Increased Risk 

Adults with
mild loss

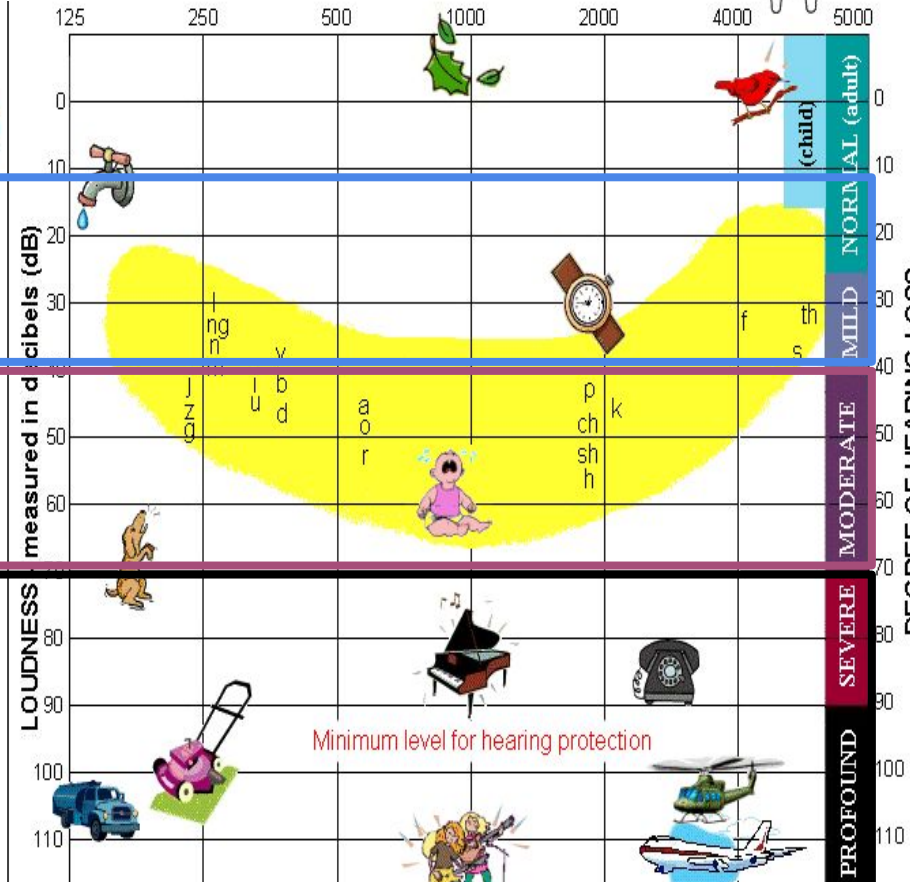
2x more likely
to develop dementia

Adults with
moderate loss

3x more likely
to develop dementia

Adults with
severe loss

5x more likely
to develop dementia



Addressing Hearing for Better Health

Cognitive Decline

- Older adults with hearing loss are more likely to experience cognitive decline

#2 modifiable risk factor to
reduce the risk of Dementia

Hearing Loss

8 Habits that Improve Cognitive Function

- Mindfulness meditation
- Brain-training games
- Get enough sleep
- Reduce chronic stress
- Physical activity
- Openness to experience
- Curiosity and creativity
- Social connections

BONUS

*Treat/Manage other medical
issues*

Cardiovascular

Vision

Mobility

Hearing Loss & Mental Health

Mental/Emotional Health:

- Individuals over the age of 60 with *untreated hearing loss* are nearly **10% more likely to experience Social Isolation and Loneliness**
 - *Nearly 2/3 of adults with hearing loss report experiencing social isolation*
 - Social isolation is closely *tied to depression (2X) and anxiety*
 - Social isolation can *impact health*
 - *Heart disease by 29% & Stroke by 32%*
- Decreased ability to hear makes communication difficult, contributing to strain, stress, and fatigue
- *Isolation risk increases with severity of hearing loss*
 - *The more loss an individual has, the higher the risk*
 - Risk increases **52% with each +10dB (decibel) increase in hearing loss**

Social isolation has the same mortality and risk factors as smoking a pack of cigarettes a day.

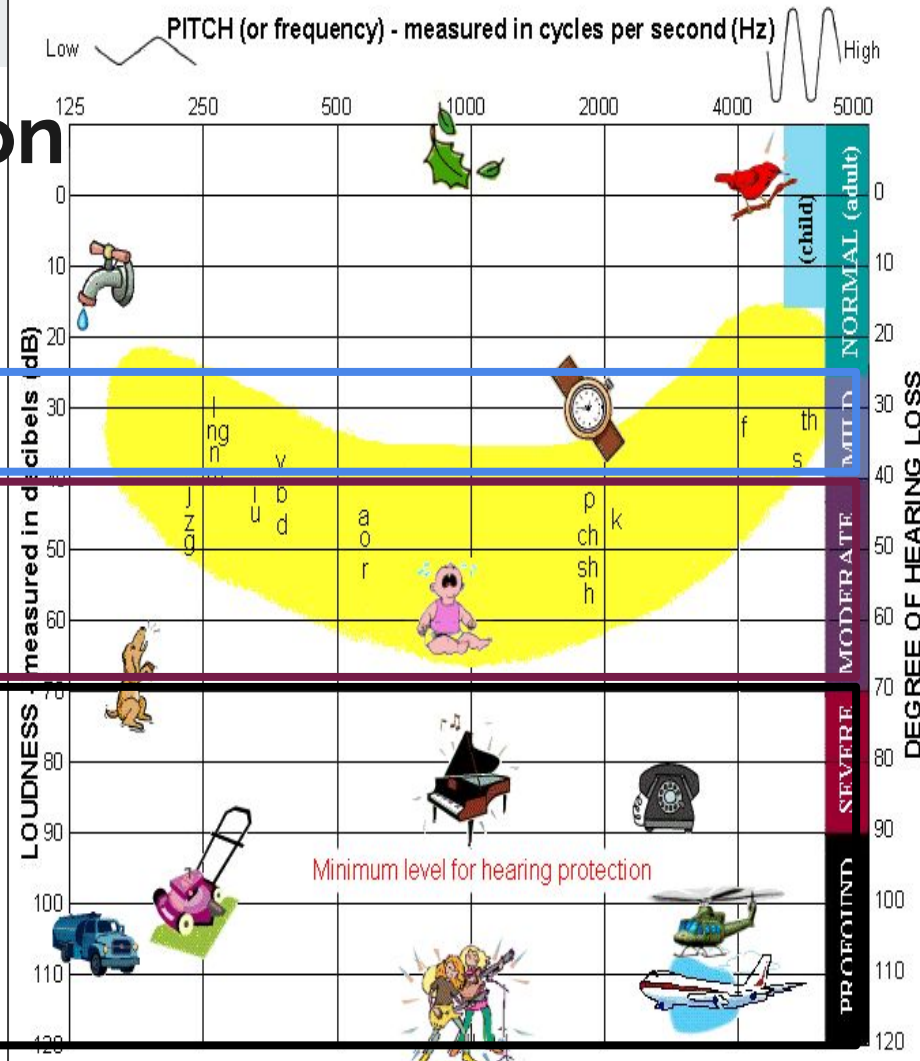
Hearing Loss & Isolation

Degree of Loss → Increased Isolation

Mild Loss → ~ 172% more likely

Moderate Loss → ~ 312% more likely

Severe Loss → ~ 364% more likely



Hearing Loss Costs

Increased Healthcare Costs:

- *Individuals with **untreated hearing loss incur 46% higher healthcare costs** over a 10-year period, on average, compared to those without hearing loss*
 - a. *Approximately \$23,000*
- This includes expenses related to preventable injuries
 - a. Falls
 - i. 67.7 billion is spent annually
 - b. Cognitive Decline
 - i. Nursing Facilities
 - c. Social Isolation
 - i. Increased Depression, Heart Disease, and Stroke

Address Hearing for Better Health

STOP THE HEARING LOSS!!!!

How?

Treat the Hearing Loss!
& prevent it



Hearing Loss Treatment Options

Compare Providers of Hearing Care

Otolaryngologist Ear - Nose - Throat Specialist

- * Doctor of Medicine specializing in treatments of hearing loss, due to medical disorders
 - Infections
 - Tumors
- * Not specialists in hearing
- * Not specialists in hearing Instruments
- * Not Licensed to fit hearing aids

Hearing Instrument Specialists

- * Credentials? Varies widely!
 - Weekend course?
 - Years of experience?
- * Does not have a Doctorate
- * Hearing Aid Retail Locations
- * Not Licensed to treat all hearing issues, they fit Hearing Instruments for Hearing Loss
 - Tinnitus, Auditory Processing, and more

Audiologist Dispensing Audiologist

- * Doctor of Audiology who diagnose and treat hearing and balance issues
- * Licensed to treat all hearing disorders
- * Licensed to fit hearing aids
- * *May specialize in specific disorders*

Hearing Loss Treatment Options

Compare Providers of Hearing Care

Otolaryngologist

Ear - Nose - Throat

**DO THEY USE
BEST PRACTICES?**

****Regardless of the
Provider's Credentials****

Gold Standard
Clinical Tests & Tools

Hearing Aid Verification

Hearing Instrument
Specialists

Audiologist
Dispensing Audiologist

* Do they have the necessary credentials? Varies widely!
 * Do they provide a weekend course?
 * Do they have sufficient experience?
 * Do they have a Doctorate
 * Do they have Hearing Aid Retail Locations

* Doctor of Audiology who
 diagnose and treat hearing and
 balance issues

* Not specialized
 * Not specialized in hearing issues, they fit Hearing
 Instruments for Hearing Loss
 * Not Licensed to fit hearing
 aids
 - Tinnitus, Auditory
 Processing, and more

* Licensed to treat all hearing
 disorders
 * Licensed to fit hearing aids
 * *May specialize in specific
 disorders*

Hearing Loss Treatment Options

Compare Devices - NOTE - a Hearing Aid is only a tool

<p><u>AMPLIFIER</u> <u>Assistive Device</u></p>	<p><u>Over the Counter</u> <u>"Hearing Aid"</u></p>	<p><u>RETAIL</u> <u>"Hearing Aid"</u></p>	<p><u>PRESCRIPTION</u> <u>Hearing Aid</u></p>	<p><u>PRESCRIPTION</u> <u>Cochlear Implant</u></p>
<p><u>Device</u> * Do not have prescription capability</p> <ul style="list-style-type: none"> - Overall volume control - May have "tone" control <p><u>Provider</u> - Self Fit Specialists cannot adjust devices - Can review use & cleaning</p>	<p><u>Device</u> * Do not have prescription capability</p> <ul style="list-style-type: none"> - Have pre-set options - Overall volume control - May have "tone" control - Minimal noise reduction <p><u>Provider</u> - Self Fit - Specialists cannot adjust devices - Can review use & cleaning</p>	<p><u>Device</u> * Some prescription capability</p> <ul style="list-style-type: none"> - Stripped down features compared to prescription devices <p><u>Provider</u> - Provider Credentials? - Some devices may be adjusted or locked - Miracle Ear, Online Devices - Can review use & cleaning</p>	<p><u>Device</u> * Full prescription capability</p> <ul style="list-style-type: none"> - Full Feature access <p><u>Provider</u> - Verification tests? - Devices are adjustable - Can review use & cleaning</p>	<p><u>Device</u> <i>When a hearing aid no longer helps</i> * Full prescription capability</p> <ul style="list-style-type: none"> - Full Feature access <p><u>Provider</u> - Provider Credentials? - Devices are adjustable - Can review use & cleaning</p>

Hearing Loss Treatment Options

Patients using professional audiology services report 90% satisfaction,

Compare Devices - NOTE - a Hearing Aid is only a tool: compared to 50% with OTC aids.

<u>AMPLIFIER</u> <u>Assistive Device</u>	<u>Over the Counter</u> <u>"Hearing Aid"</u>	<u>RETAIL</u> <u>"Hearing Aid"</u>	<u>PRESCRIPTION</u> <u>Hearing Aid</u>	<u>PRESCRIPTION</u> <u>Cochlear Implant</u>
<p><u>Device</u></p> <ul style="list-style-type: none"> * Do not have prescription capability - Overall volume control - May have "tone" control <p><u>Provider</u></p> <ul style="list-style-type: none"> - Self Fit Specialists cannot adjust devices - Can review use & cleaning 	<p><u>Device</u></p> <ul style="list-style-type: none"> * Do not have prescription capability - Have pre-set options - Overall volume control - May have "tone" control - Minimal noise reduction <p><u>Provider</u></p> <ul style="list-style-type: none"> - Self Fit - Specialists cannot adjust devices - Can review use & cleaning 	<p><u>Device</u></p> <ul style="list-style-type: none"> * Some prescription capability - Stripped down features compared to prescription devices <p><u>Provider</u></p> <ul style="list-style-type: none"> - Provider Credentials? - Some devices may be adjusted or locked - Miracle Ear, Online Devices - Can review use & cleaning 	<p><u>Device</u></p> <ul style="list-style-type: none"> * Full prescription capability - Full Feature access <p><u>Provider</u></p> <ul style="list-style-type: none"> - Verification tests? - Devices are adjustable - Can review use & cleaning 	<p><u>Device</u></p> <p><i>When a hearing aid no longer helps</i></p> <ul style="list-style-type: none"> * Full prescription capability - Full Feature access <p><u>Provider</u></p> <ul style="list-style-type: none"> - Provider Credentials? - Devices are adjustable - Can review use & cleaning

Address Hearing for Better Health

Treat the Hearing Loss!

Adults who wore hearing aids for experienced a **“significantly lower risk”** of being diagnosed with

Dementia, Alzheimer’s disease, Anxiety, Depression, and Falls causing injuries.

Therefore, the use of hearing aids was associated with the “delay or prevention” of these “common and important age-related conditions.”

Hearing aids are effective in enabling people to participate fully in everyday activities.



Addressing Hearing for Better Health



For people with hearing loss, **using a hearing aid** is associated with a **reduced risk of falls.**



For people with hearing loss, **using a hearing aid** is associated with a **reduced risk of depression.**

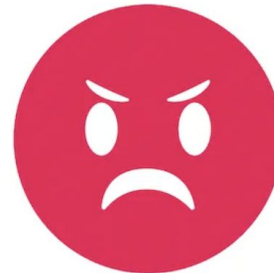
Treatment was shown to Improve:



Sense of control

- Less Falls =**
- Less Injuries
 - Less ER visits, Hospitalizations, & Medical Costs
 - Longer Lives
 - Healthier Lives

Non-hearing aid user



Irritation 27%
Worry 23%

Hearing aid user



Irritation 7%
Worry 8%

VS

Addressing Hearing for Better Health

Studies indicate that maintaining strong social connections and keeping mentally active while aging might lower the risk of cognitive decline and Alzheimer's disease.



More than half of caregivers* believe hearing aids can help to improve relationships with their loved ones



said having hearing aids makes them feel **more confident in social situations.**

Addressing Hearing for Better Health

Hearing aid use reduces the risk of dementia by **up to 18%**

PREVENTING OR MANAGING HEARING LOSS LEADS TO...



Fewer changes in the brain linked to dementia



Less damage to blood vessels




Fewer signs of damage to brain tissue

For people with hearing loss, using a hearing aid is associated with a **reduced risk** of dementia.



Addressing Hearing for Better Health

By getting help with hearing loss sooner, it keeps the brain active, engaged, and processing sound—reducing further decline.

88% 

of hearing aid owners feel their current hearing aid is meeting or **exceeding expectations.**

Experts suggest that we should be working harder to **respond to hearing loss earlier.**



 **8/10**
hearing aid wearers confirm wearing hearing aids has **positively impacted their quality of life.**

What is Stopping You from Saying Yes?

- Schedule a hearing test with a licensed audiologist
- Stay proactive to maintain your hearing and overall health
- Encourage friends and family to prioritize hearing care

Addressing Hearing for Better Health

Benefits of Managing HEARING Health NOW:

- **INDEPENDENCE, SAFETY, HEALTH, & QUALITY OF LIFE**



82%

helping them
hear better



75%

helping them to be
more independent



76%

enabling them to be more
engaged in conversations

Addressing Hearing for Better Health

Summary

- Prevent (*further*) HEARING Loss
- Links between HEARING LOSS and *Other Health concerns*
 - Falls
 - Cognitive Health
 - Emotional Health
 - General Health
- Benefits of Managing HEARING Health

INDEPENDENCE & INCREASED QUALITY OF LIFE

Thank You for Listening! & Thank You

Keiro®



Addressing Hearing for Better Health

Angelica O'Boyle, AuD, CCC-A, F-AAA

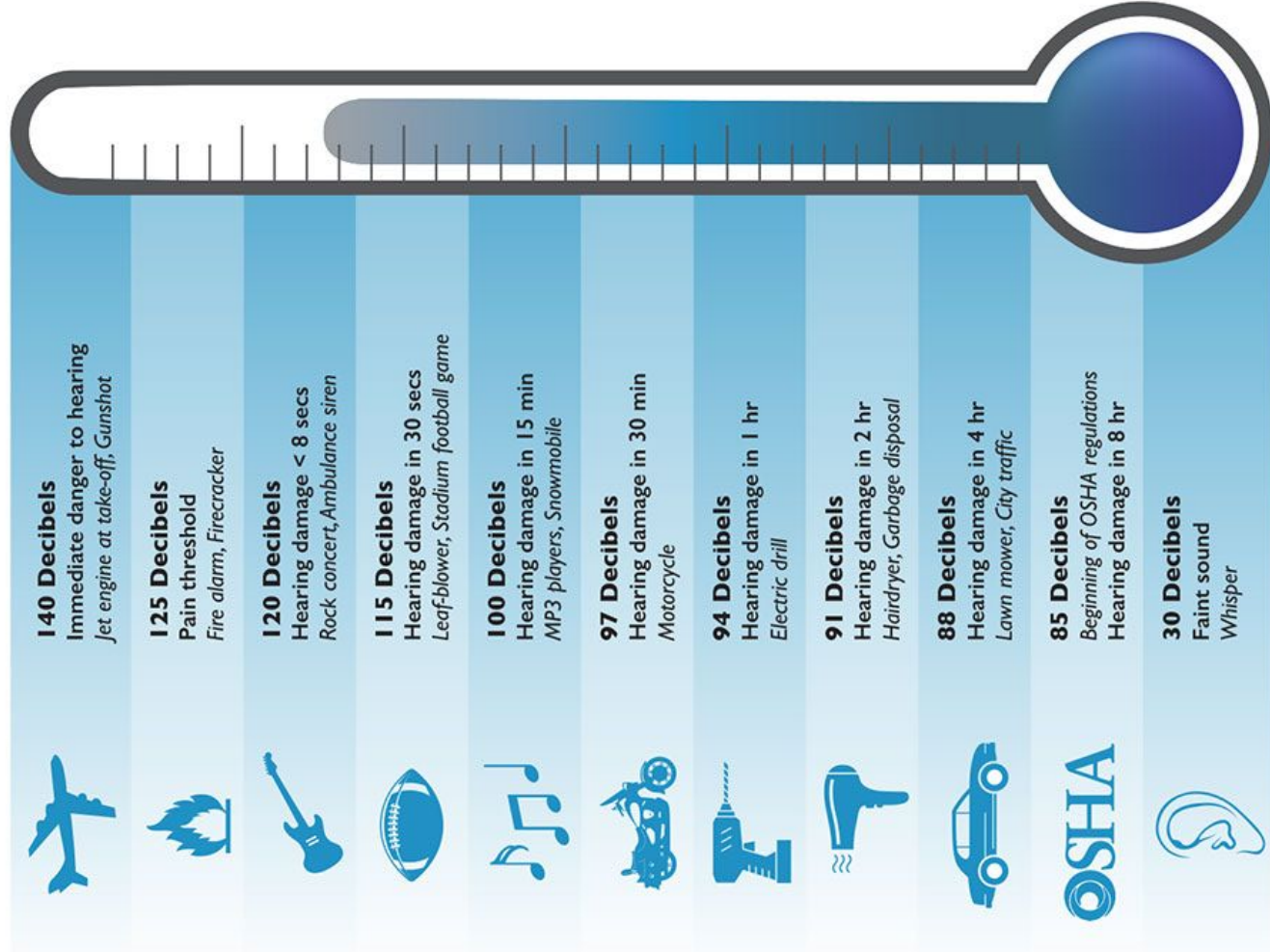


818-727-7020

**18433 Roscoe Blvd, Suite 204
Northridge, CA 91325**

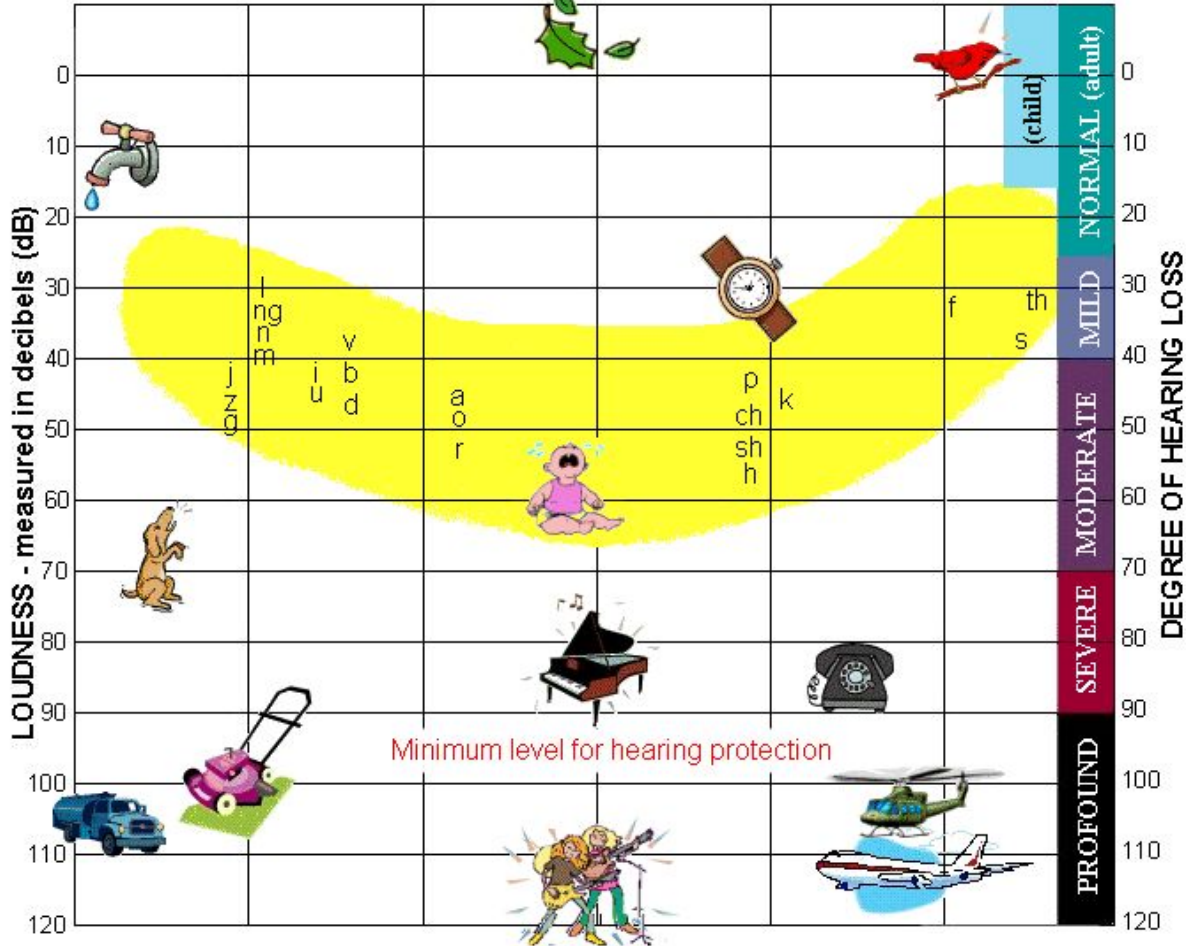
**Info@HearingNorthridge.com
www.HearingNorthridge.com**

NOISE THERMOMETER



Decibel (dB) + Time = Potential for hearing loss | Reduce exposure time in half with each additional 3 dB(A)

PITCH (or frequency) - measured in cycles per second (Hz)



Untreated hearing
loss can increase the
**risk of falls by 30%,
depression by 40%
and dementia by 50%.**

Source: JAMA Otolaryngology – Head and Neck Surgery