



# United States Navy Occupational Audiology

## Tri-Service Hearing Technician Certification Course

### Student Manual





For any DOEHS-HC input or DOEHS related issues or questions contact your regional audiologist or senior audio technician, if they cannot help contact Theodore Mason or Thomas Dewitt at 757-953-0772 or 0776

v4.2.0.0

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(#) Identifies how many audiograms are available for partial/full counseling

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## 1-1 Hearing Conservation Course Administrative Review

- Students are required to attend, participate in all classes
- Do not get on the internet via the training laptops
- Do not use your phone during class time
- Be on time for all classes, return on time after breaks/lunch
- Breaks are given between some classes and after practicums are completed
- Booklet is yours to write in/take notes, ensure you have it everyday
- Do not get ahead of the instructors during any of the practicums
- If you are having issues during the practicums, immediately raise your hand
  
- Failures will be immediately removed from further testing/training
- Primary purpose of this course is to become an Occupational Hearing Conservationist (Hearing Technician) with a DOEHRS-HC Certification
  
- Course Criteria - DoD Certification good for 5 years
  - USN requires annual reviews
  - Written service test passing is  $\geq 80\%$  (Day 4 – last class)
  - Practical Exam – Pass/Fail (timed) no more than 3 critical mistakes (Day 5)
  - Counseling – Pass/Fail no more than 2 critical mistakes (Day 5)
- CAOHC Exam [Optional – Subject to availability] Civilian Certification – 5 years
  - Conducted after all students have completed the Service course (Day 5 – afternoon)
  - Written test (on line) passing is  $\geq 70\%$
  - Reduced cost funded by student

## 1-2 Hearing Conservation Overview

### Learning Objectives

- 1.2.1 Describe the effects of exposure to hazardous noise
- 1.2.2 Describe the purposes of the Hearing Conservation Program (HCP)
- 1.2.3 Describe the elements of the Hearing Conservation Program (HCP)
- 1.2.4 Identify the team members of the Hearing Conservation Program (HCP)
- 1.2.5 Identify the four “P”s of a noise-induced hearing loss
- 1.2.6 Identify and explain the role of the Occupational Hearing Conservationist (OHC) also known as hearing technician
- 1.2.7 Understand a change in hearing - Significant/Standard Threshold Shift (STS), Early Warning Shift (EWS)
- 1.2.8 Understand what normal hearing is

### Impact of Hearing Loss

- Noise-Induced Hearing Loss (NIHL)
- #1 occupational health hazard in the military

Good hearing equates to: Less safety mishaps, injuries and deaths; more lethal/effective service members; increased mission readiness. Noise in the military: Largest occupational health hazard; Noise-induced hearing injuries/illness; Sources of noise on/off duty; Noise in the civilian workforce

Noise-Induced Hearing Loss is the #1 occupational health hazard in the military (Veterans Administration Benefits Report 2010 through 2016). Sudden HL due to “sudden” explosions. Gradual progressive HL due to continuous exposure to noise over time

NIHL negatively affects combat and mission readiness; Fitness for Duty; retention for job specialty (job qualifications); quality of life

Loss of communication ability, difficulty understanding conversations. Combination effects of noise and aging; hearing aids may help, but don’t cure; ringing in the ears/tinnitus

### Noise in the Military

- Exposure to hazardous noise, without hearing protection (unprotected) can cause:
  - Temporary and/or permanent hearing loss; temporary and/or permanent tinnitus
- Noise-induced ailment (hearing loss/tinnitus)
  - Occur gradually over time from repeated exposures
- Noise-induced injury (hearing loss/tinnitus)
  - Occur from one significant exposure/event

### Noise Sources

- Occupational (DoD)
  - Machinery, weapons, vehicles, tools, equipment
- Occupational (Civilian)
  - Industrial machinery, constructive equipment, explosives, farming equipment, musical instruments, railroads; Manufacturing - 14% of the workforce but has 80% of the incidence of the noise-induced hearing loss

- Non-occupational
  - Lawn care, power tools/equipment, firearms, music, motorcycle, air pods/ear buds

Sources of noise can be related to military/DoD work, as well as recreational off-duty exposures. **Other common sources of occupational noise outside of DoD including agriculture, mining and railroad industries, as well as manufacturing.**

### **Auditory Effects of Noise Exposure**

- Loss of hearing sensitivity
- Tinnitus or “ringing”
- Missing parts of conversation
- Slower/Inaccurate localization
- Increased errors, safety mishaps

Auditory Effects of Hazardous Noise Exposure: Loss or impairment of hearing sensitivity/communication ability/localization; tinnitus; increased errors/safety mishaps; auditory situational awareness. Hearing loss affects our ability to understand speech; affects our social communication and possibly a person’s comfort in social situations. Tinnitus or “ringing” is generally associated with hearing loss and will likely be constant and permanent. Hearing loss causes a person to miss parts of a conversation – this can lead to multiple requests for the speaker to repeat, or responding inappropriately because the person guessed incorrectly. Hearing loss will affect how quickly and accurately you are able to localize where sounds originate. Hearing loss increases the chance of errors and safety mishaps

### **Non-Auditory Effects of Noise Exposure**

- Health risks - exposure to hazardous noise may:
  - Raise blood pressure; raise heart rate; increase stress hormone levels; disrupt healthy sleep patterns; possible reassignment to different MOS/AFSC/NEC/SDOC (job); embarrassment, frustration, withdrawal

### **The Four P’s of a Noise-Induced Hearing Loss (NIHL)**

- Painless; Progressive; Permanent; Preventable

### **Brief History of Hearing Conservation**

- 1970 - Congress enacts the Occupational Safety and Health Act
- Established Occupational Safety and Health Administration (**OSHA - regulatory agency**)
  - Regulates most US industry; Not science-based
- Established the National Institute for Occupational Safety and Health (**NIOSH - best practices, education and research**)
  - Government agency, part of HHS Centers for Disease Control and Prevention (CDC); Responsible for conducting research and making recommendations for the prevention of work-related illnesses and injuries (best practices); Produces and distributes free documents, products, and services related to hearing conservation; Evidence/Science-based

## Purpose of the Hearing Conservation Program (HCP)

- Prevent occupationally related NIHL
- Maintain combat readiness
- Maintain fitness for duty
- Retain job or work specialty
- Reduce cost of hearing loss
- Promote healthy hearing & quality of life

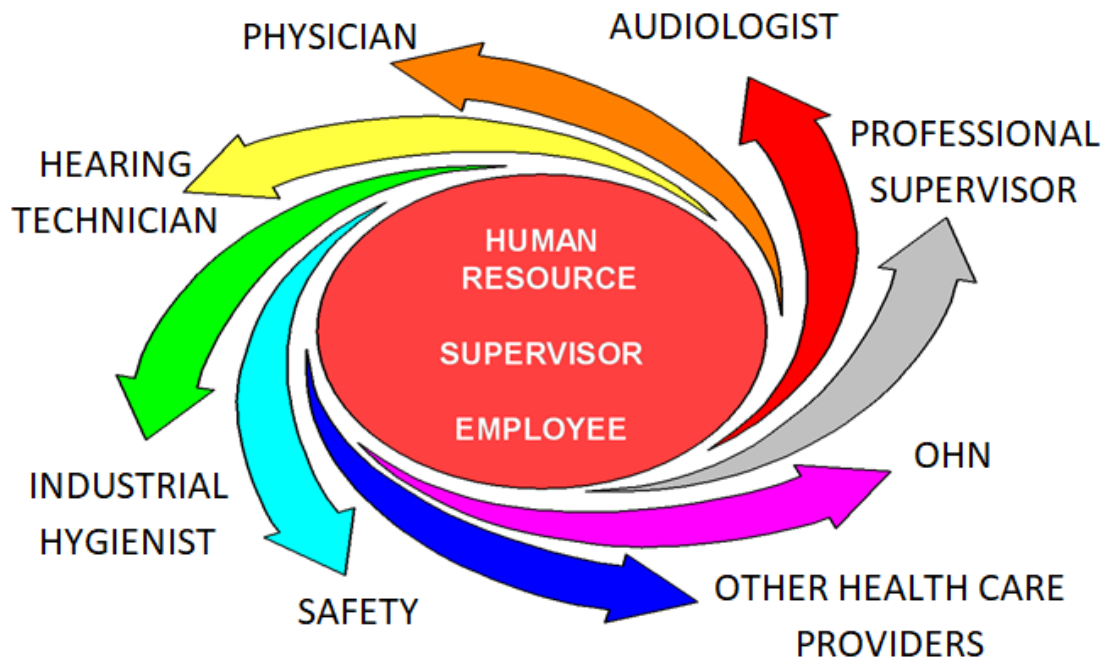
## HCP Major Elements (Overview)

- Noise Hazard Assessment
- Noise Controls
- Audiometric Monitoring
- Hearing Protection Devices (HPDs)
- Hearing Conservation Education
- Recordkeeping
- Program Evaluation

## HCP Team Members

OHC Team involves personnel at all levels of command; all team members are essential. To carry out OSHA/DOD/Service-level instructions for the HCP. To maintain Readiness. To ensure Quality of Life

Team members may include: Noise Professionals: Industrial Hygienist, Bio-environmental Engineers; Audiologist; Occupational Health Nurse; Occupational Medicine Physician/Flight Medicine Physician; Public Health; Safety Officer; Occupational Hearing Conservationist; Other personnel (Commanders, Workers, Supervisors, etc.)





## Occupational Hearing Conservationist (Hearing Technician)

- Critical role in achieving goals/purpose of the HCP
  - Maintain current DoD Hearing Technician Certification
  - Equipment preparation/maintenance
  - DOEHRs-HC Data Entry (verifying and modifying patient demographic data in conjunction with audio test selection)
  - Recordkeeping
  - Tests all personnel
  - Stock and Fit Hearing Protective Device (HPD)
  - Educate (counseling on test results)/Motivates patients to take care of their hearing
    - Is there a change in hearing?
    - Is hearing in the range of normal?
    - Does the patient need to return for follow-up testing or referred elsewhere?
  - Answer patient questions
  - Process referrals to the correct echelon of care

## Definitions

- Normal Hearing
  - Audiometric threshold results that range from (negative) -10 to 25 dB
- Threshold of hearing
  - The lowest level of sound a person can hear in a series of ascending, pure tone presentation trials at least 50% of the time
- Early Warning Shift (EWS)
  - A difference of  $\geq 15$  dB (positive) at 1000 Hz, 2000 Hz, 3000 Hz or 4000 Hz, relative to the reference audiogram, in either ear, without an STS; If an STS is present in the same ear, the STS takes precedence
- Significant/Standard Threshold Shift (STS)
  - An average change of plus or minus 10 dB at 2000, 3000, and 4000 Hz, relative to the reference audiogram, in either ear, without age corrections (DoDI 6055.12)
- Temporary Threshold Shift (TTS)
  - An STS that resolves on follow-up test after auditory rest ( $\geq 14$  hours)
- Permanent Threshold Shift (PTS)
  - An STS that doesn't resolve on follow-up testing after auditory rest ( $\geq 14$  hours); Validated by an audiologist or physician (Professional Supervisor)

Note: All STS/EWS require patient signature on the DD Form 2216

2. DOD COMPONENT F		A - ARMY N - NAVY		F - AIR FORCE M - MARINE CORPS		C - COAST GUARD 1 - OTHER		3. SERVICE COMPONENT G		R - REGULAR V - RESERVE		G - NATIONAL GUARD 1 - OTHER															
4. SOCIAL SECURITY NUMBER 990990018				5. NAME (Last, First, Middle Initial) SCHUTT, JOSHUAC				6. DATE OF BIRTH 20 Dec 1996		7. SEX M		M - MALE F - FEMALE															
8. PAY GRADE UNIFORMED SERVICES E05		9. PAY GRADE CIVILIAN		10. SERVICE DUTY OCCUPATION CODE 2A3		11. MAILING ADDRESS OF ASSIGNMENT 0008-BAPP-133A 113 MXS COM VIS INFOR SUP CE ANDREWS MD 20762																					
12. LOCATION - PLACE OF WORK ANDREWS AFB						13. MAJOR COMMAND ANG		14. DUTY TELEPHONE (Include area code) (240) 555-5555																			
15. AUDIOMETRY		2		3. PURPOSE			1 - 90 DAY		2 - ANNUAL		3 - TERMINATION		4 - OTHER														
AUDIOMETRIC DATA RE ANSI S3.6		LEFT												RIGHT													
b. CURRENT AUDIOGRAM DATE: 02 Dec 2021		5		5		5		10		15		5		0		0		5		5		15		5			
c. REFERENCE AUDIOGRAM DATE: L: 03 Nov 2014 R: 03 Nov 2014		5		-5		5		0		10		-5		0		0		-5		-5		0		-10			
d. SIGNIFICANT THRESHOLD SHIFT (STS) L: 1 R: 2+		e. THRESHOLD SHIFT		10		0		10		5				0		10		10		15							
f. REMARKS (Include Exposure Date) Steady Noise Exp(TWAdBA): Not Entered, Impulse Noise Exp(dBP): Not Entered, HPD Prev Fit, Health Ed Prov, *****TRAINING AUDIOGRAM*****, Pos STS(R), I am aware of a change in my hearing and the need to return for a follow-up(R), Signature _____ (R), H-1.												g. TYPE OF PERSONAL HEARING PROTECTION USED 3		1 - SINGLE FLANGE (VSI/R)		2 - TRIPLE FLANGE		3 - HAND FORMED EARPLUG		4 - EAR CANAL CAPS		5 - NOISE MUFFS		6 - OTHER		7 - NONE	

- [SSN = 990990018] Confirm demographic fields 2 thru 14
- Is there a change in hearing? \_\_\_\_\_
- Are thresholds within the range of normal? \_\_\_\_\_
- Where does the patient need to go? \_\_\_\_\_

**Role of CAOHC**

- Provide consistent training for Occupational Hearing Conservationist (OHC), Course Directors (CD), and Professional Supervisors (PS)
- Promote the establishment of best practices in HCP
- Provide certification of OHCs and PS (Professional Supervisor - audiologist or physician)

**Summary**

- Hazardous noise
  - Impact of hearing loss; Noise in the military; Auditory and non-auditory effects of noise; Noise-induced hearing loss characteristics
- Hearing Conservation Program
  - Purpose/Elements/Team members
- 4 P's of a noise-induced hearing loss
- Change in hearing - Significant/Standard Threshold Shift (STS)
- Early Warning Shift (EWS)
- Normal Hearing Thresholds

## DOEHRS-HC User Creation Practicum

### Learning Objectives

- 1.3.1 Understand Software used to enter DoD Hearing Conservation Audiograms
- 1.3.2 Create a DOEHRs-HC user identity
- 1.3.3 Understand the different user privileges/restrictions
- 1.3.4 Select correct user privilege
- 1.3.5 Understand vital examiner fields
- 1.3.6 Enter examiner information correctly
- 1.3.7 Understand how to unlock accounts
- 1.3.8 Understand how to clear passwords

### Defense Occupational Environmental Health Readiness System – Hearing Conservation (DOEHRS-HC)

- DOEHRs-HC is the Military Services system of record for conducting monitoring audiometry
- DOEHRs-HC consists of:
  - Desktop database software; Microprocessor Audiometer hardware and software (Benson Medical Instruments CCA-200); Web-based data repository
- All monitoring audiometry for the Military Services personnel will be recorded in DOEHRs-HC

### DOEHRS-HC Application Access

- DOEHRs-HC is integrated with the audiometer testing software application
- DOEHRs-HC ICON
  - Acknowledge DOD notice and consent banner; Resolve any audiometer error messages prior to continuing
- An HCPM user needs to log in to add additional users into the database
- Resolve any CCA-200 error messages
- Only authorized certified technicians can perform audio testing and are required to test under their user identity; Completed DOEHRs-HC certification course

Initializing audiometer hardware window, several pop-up prompts and/or error messages may appear when the application opens, read/become familiar with them and resolve them prior to continuing. Most common error message, hardware connections, power is off or interface cable is disconnected. Ensure to always turn off power prior to connecting/disconnecting audiometer from the computer or each other. Add user identity into each DOEHRs-HC work station where audio testing/DOEHRs data entry will be performed

- There are 3 HCPM users in the local DOEHRs-HC
  - SMITHA; SMITHAF; SMITHN**
- Log in using User ID \_\_\_\_\_
- Do not enter a password
- Press OK
- New/Verify password = **Qwerty1234567890\_**

Log in using a specific user ID, do not type in a password; enter/verify **Qwerty1234567890\_** in change password window

## DOEHRS-HC HCPM User Login

- An HCPM user has to be logged into the DOEHRs-HC work station in order to add yourself as a DOEHRs-HC user
- User identity needs to be created on each DOEHRs-HC work station
- Always log in under your own user identity
- Verify 3 users in current work station

Sub-fields affect multiple records and have to be filled out correctly, if the examiners information is filed out incorrectly it will affect all records that the user creates. Go to File>Users, all training databases should have 3 HCPM users in it, more or less than 3 then the incorrect "initial student database" is present, replace it with the correct database.

Note: additional functions under users: lock/unlock account, clear password, delete user - just makes user inactive, once created, examiner information will never be fully deleted

## Create DOEHRs-HC User/Examiner Complete Sub-Fields

- User name = last name
- Select HCPM privilege
- Enter correct examiner data
  - ID# = SSN linked with certification number; DoD Comp filters testing facility selections

This is a sub-field, any mistakes will be multiplied by the number of audiograms done by this user. Bottom line: make sure these fields are filled out correctly. To add user, ensure New User is selected; type in last name as the user name, select HCPM as the privilege.

Note: Throughout DOEHRs-HC previously selected drop down windows limit future drop down window selections; always use the tab to advance to the next field, do not skip fields

Enter examiner data, office symbol = work location; select 68546A as the test site.

Review for future use, testing facility is as follows: USA examiners uses zip code of the audio booth; USAF uses examiners PAS code as testing facility; USN/USMC uses UIC of the test booth location. Use 1989 as the course number, followed by 2-3 digits depending on service providing audio course with the sponsoring service letter at the end of the certification number: A = Army; F = Air Force; N = Navy

## Save DOEHRs-HC User/Examiner

- Ensure data is correct prior to saving user/examiner
- Once saved ensure 4 examiners are present in the user drop down window

## Examiner Privileges

- Fields unavailable under examiners privileges

Examiner role is restrictive, following areas are inaccessible: users, exclude password, 2217 delete, audiogram edit, audit train report. Most important: users with examiner privileges can't add, edit, unlock, clear user's password or edit any audiogram

## Change Login/User

- Enter User ID
- PW = **Qwerty1234567890\_**
- Do not attempt Login more than one time

Have the students log in, use password **Qwerty1234567890\_** one time only. (Demonstrate login failure)  
Password is case sensitive, ensure caps lock is not engaged

## Access DOEHR5-HC Application

- **3 DOEHR5-HC access attempts with an invalid password will lock your account**
- **Passwords expire every 60 days**
- **Cleared passwords never expire**

All students should try this only once, show the Invalid user name/password prompt. You can only try to access DOEHR5-HC and the DR but on the third invalid try, the application will lock user's accounts; for DOEHR5-HC another HCPM user can unlock/clear the password of the user or the user can contact the DHA help desk for a temporary password. Password expires every 60 days; previous 10 passwords cannot be used. Clear password if you will not be using the DOEHR5-HC system for an extended period of time

- **Enter User ID/no password press OK**
- **PW = Qwerty1234567890\_**
- **Functions>Run Test/CCA-200**
- **Resolve any audiometer error messages prior to continuing**

Always log in under your own user identity, use above password; remind again password is case sensitive. Use menu to bring up the Run Test and CCA-200 windows.

## Unlock Account/Clear Password

- Any HCPM on the local database can unlock and clear passwords

## Summary

- DOEHR5-HC application/software description
- DOEHR5-HC user creation
- Examiner versus HCPM privileges
- Vital examiner fields
- Examiner data entry
- Unlock user accounts
- Clear user passwords

## Properties of Sound

### Learning Objectives

- 1.4.1 Understand the definitions of sound, noise, frequency, intensity
- 1.4.2 Explain the physical properties of sound
- 1.4.3 Explain the requirements for a sound, sound transmissions
- 1.4.4 Explain the characteristics of sound
- 1.4.5 Understand the 3 foot rule
- 1.4.6 Understand the Inverse Square Law
- 1.4.7 Understand doubling of sound sources

### Definitions

- Sound
  - Any pressure change in air, water or other medium; physical definition - pressure change or vibration that is propagated in a medium; human definition - perception resulting from stimulation of the auditory mechanism.
- Noise
  - Unwanted sound that is irritating or interferes with an activity.

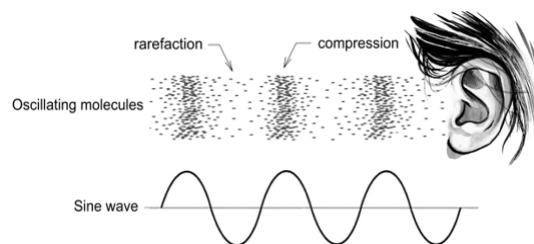
### Requirements for Sound

- Sender (Source)
- Vibrating body
- Medium
- Receiver

Requirements for sound propagation: Sender – the source of vibration or energy; vibrating body;  
Medium – what carries the vibration (the sound wave pathway); Receiver – the auditory mechanism

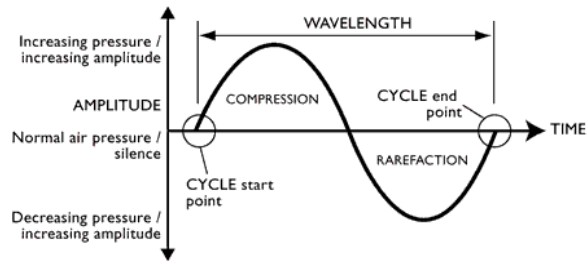
### Transmission of Sound

- Vibration: alternating pressure changes in air molecules
  - Compression; Rarefaction
- Sound wave = compression + rarefaction
  - One complete cycle is one set of compression and rarefaction



Vibration: a sound source (sender) causes alternating pressure changes in the air molecules (medium).  
Compression: molecules are forced together causing areas of high (positive) pressure; the medium becomes compressed. Rarefaction: molecules separate from each other causing areas of low (negative) pressure; the medium becomes more spread out. Sound wave: a series of pressure changes in compression and rarefaction cycles that transfer energy.

- Sine Waves - simplest sounds
  - Pure Tone (simplest form of sound)



Sine Wave – Graphic representation of the simplest sound wave, which is a single frequency, or a pure tone, of constant intensity. Complex Sounds - A complex sound wave consists of many frequencies of varying intensities; most of the sounds in our environment are complex sounds.

Horizontal Axis – represents time in seconds; Vertical Axis – Represents molecule vibrations;  
 Compression – Upward movement indicating a rise in pressure; Rarefaction - downward movement indicating a drop in pressure; Cycle – 1 complete compression + 1 complete rarefaction

- Complex Sounds

### Transmission of Sound

- Gas
  - Air = 1,100 feet/second
- Liquid
  - Water = 4,500 feet/second
- Solid
  - Steel = 15,000 feet/second

Speed of sound waves; the velocity (speed) at which a sound wave travels depends on the medium; the denser the medium the faster the sound waves travel.

### Characteristics of Sound

- The 2 parameters of sound that make noise hazardous are **Intensity and Time**

Physical	Psychological/Perceptual	Measurement
Frequency	Pitch	Hertz (Hz)
<b>Intensity</b>	Loudness	Decibels (dB)
<b>Time</b>	Duration	Milliseconds, seconds, minutes, etc.

### Frequency (Pitch)

- Measured in Hertz (Hz)
  - The number of cycles per second; The more cycles per second, the higher the frequency
- Audio Testing Frequencies
  - 500 Hz, 1000 Hz, 2000 Hz, 3000 Hz, 4000 HZ, 6000 Hz; 8000 Hz (optional)

Frequency - the number of cycles per second, expressed in Hertz (Hz) as the unit of measurement. Pitch is the psychological perception of frequency. The more cycles per second, the higher in pitch the sound.

- Total range of human hearing at birth
  - 20 Hz - 20,000 Hz
- Speech range
  - 250 Hz - 4000 Hz; Consonants - higher frequency; Vowels - lower frequency
- Noise damage
  - 3000 Hz - 6000 Hz
- Most sensitive area of sound detection in humans
  - 1000 Hz - 4000 Hz

Human hearing is less sensitive in the low frequencies. DOEHS-HC testing range: 500 Hz, 1000 Hz, 2000 Hz, 3000 Hz, 4000 Hz, 6000 Hz; 8000 Hz is optional, but recommended

**Intensity (Loudness)**

- The amplitude of a sound wave
- Measured in decibels (dB)
- Decibels are used instead of pressure units to keep the numbers in a manageable range
- Decibels are logarithmic, not arithmetic

Intensity: the loudness of a sound results from the amount of pressure or energy exerted on materials or surfaces they encounter; unit of measurement is decibels (dB). Description of everyday sounds in decibels, noise levels are approximate and should only be used as a guide.

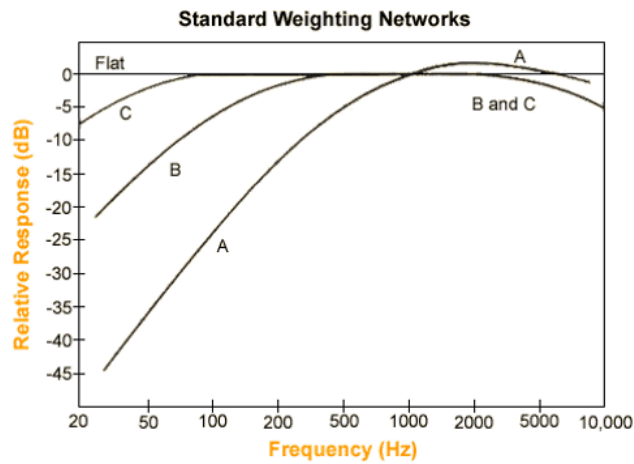
Decibels are a logarithmic representation of the intensity of a sound. Dynamic range of intensity in human: 0.00002 Pascal (threshold of normal hearing) – 20 Pascal (threshold of pain)

Approximate sound levels and intensities within human hearing range			
Source of sound	Intensity level (dB)	Intensity ( $W m^{-2}$ )	Perception
jet plane at 30 m	140	100	extreme pain
threshold of pain	125	3	pain
pneumatic drill	110	$10^{-1}$	very loud
siren at 30 m	100	$10^{-2}$	
loud car horn	90	$10^{-3}$	loud
door slamming	80	$10^{-4}$	
busy street traffic	70	$10^{-5}$	noisy
normal conversation	60	$10^{-6}$	moderate
quiet radio	40	$10^{-8}$	quiet
quiet room	20	$10^{-10}$	very quiet
rustle of leaves	10	$10^{-11}$	
threshold of hearing	0	$10^{-12}$	



## Types of Decibels

- dB SPL – Sound Pressure Level
- Weighting scales



- dB A - continuous noise; mimics the response of the human ear in sensitivity and potential damage from noise hazards
- dB C - continuous or impulse noise (includes low frequency energy); Used to determine HPD Noise Reduction Rating (NRR)
- dB P - continuous, impulse, or impact noise; Sound duration less than 1 second

dB SPL – Sound Pressure Level. The amount of sound energy in the atmosphere around us. DB SPL is also considered dB F (flat), without weighting. Common weighting-scales used in hearing conservation: dB A – Used by IH professional when measuring shop noise; attempts to mimic the response of the human ear in sensitivity and potential damage from noise hazards; dB A weighting closely correlates with risk of noise-induced hearing loss. dB C – Used by IH professional when measuring shop noise with sufficient low frequency energy and used to measure the noise reduction rating (NRR) of hearing protectors, depending on the measurements used. dB P – Used by IH professional when measuring impact/impulse noise.

How to know if you are in potentially loud hazardous noise? Three Foot Rule: If you need to raise your voice or shout to be understood from three feet away from someone, you are probably in a hazardous noise environment. Rule of thumb to use with workers/patients to judge the noise hazard in their environment.

### Duration

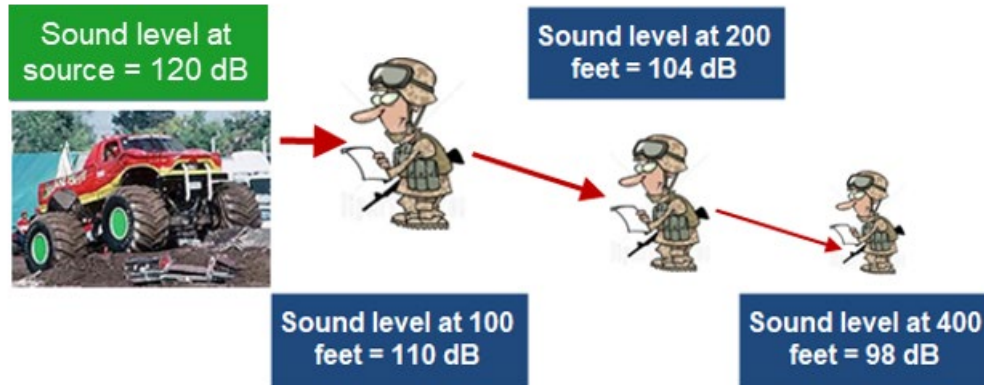
- The length of time that sound is present
- Types
  - Continuous (Intermittent; Varying); Impulse; Impact

Duration length of time that sound is present. Continuous or steady-state noise – lasts more than 2 seconds. Intermittent noise – large differences in sound levels occurring with periodic interruptions of relative quiet between noise episodes. Varying – when the noise level varies but there are no significant quiet periods. Impulse noise – very short bursts of noise lasting less than one second in duration (e.g., gunshot); Impact noise – slightly longer than impulse (e.g., metal stamping)

## Inverse Square Law

- Attenuation by distance
- Double distance = intensity decrease by 6 dB

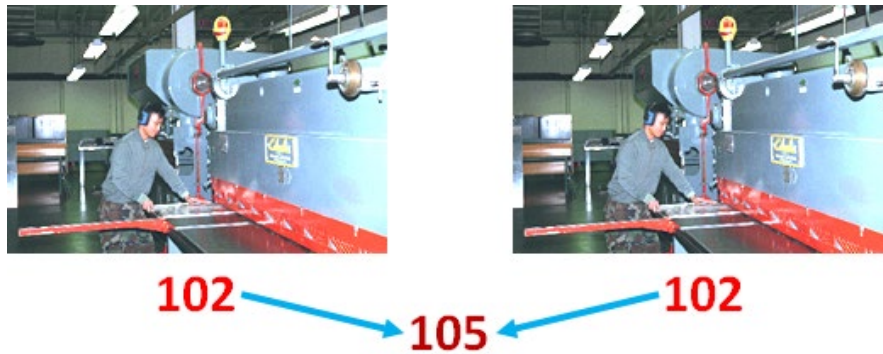
Dynamics of Sound Transfer: Double the distance from a noise source, decrease the amount of intensity by 6 dB



## Combining Sound Sources

- Double the noise source = increase noise level by 3 dB

Dynamics of Sound Transfer: Combining sound sources that are the same: For each doubling of the noise source, the intensity will increase by 3 dB



## Summary

- Definitions of sound, noise, frequency, intensity
- Physical properties of sound
- Requirements for a sound, sound transmissions
- Characteristics of sound
  - Frequency/Pitch (Hz); Intensity/Loudness (dB)
- 3 foot rule
- Inverse Square Law
- Doubling of sound sources

## Noise Measurement and Control

### Learning Objectives

- 1.5.1 Explain the purpose and processes for noise assessment
- 1.5.2 Explain the role of noise controls
- 1.5.3 Explain how hearing protection attenuation is estimated
- 1.5.4 Identify personnel who are required to be in the hearing conservation program
- 1.5.5 Understand the differences between the weighting scales
- 1.5.6 Understand terminology specific to noise measurement and control

### Noise Assessment

- Noise surveys
  - Quantify exposure and determine health risks
- Noise control studies
  - Characterize the noise hazard for implementing controls
- Who measures noise
  - Industrial Hygienist (IH), acoustical engineer or other qualified professional
- When is noise measured
  - Annually; New or changed equipment or processes, hearing trends

### Area Noise Surveys

- Determine the noise level of particular piece of equipment or area
- Sound-level meters (SLM)
  - Used for a particular area or equipment; Type 1 (precision), Type II (general); Octave-band analysis (Type 1 SLM); Mostly done with Type II general purpose meters (accuracy within 2 dB)
- Sound booth background noise certification (required annually)

**Area noise surveys:** mapping of hazardous-noise areas for posting notices, to determine the appropriate hearing protection for that equipment, and/or to determine personnel at risk or not at risk in an environment (who needs to be on a hearing conservation program). Can also be completed in order to observe the work process of the worker.

**Sound level meters (SLM):** an instrument used to measure ambient sound in an environment; Type I SLM (precision) vs Type II SLM (general) devices; Octave band analysis (Type I SLM); provides more specific information on the noise energy by frequency through the measurement of the octave band levels, and can determine risk to human hearing more accurately; can be used in order to accurately recommend hearing protection devices (especially in the low frequencies)

**Audiometric sound booth certification:** Completed for assessment of background noise levels inside of audiometric sound booths using octave band analysis. DoD 6055.12 provides specific background noise limits to ensure ambient noise does not interfere with hearing test results. Required annually

## Noise Hazard Assessment

- Identify potentially hazardous noise sources
- Determine individuals employed in hazardous noise areas
- Identify personnel who should be enrolled in hearing conservation program to Safety (see service-specific guidelines)
- Label noise hazardous areas and equipment with appropriate labels

Identification of noise hazardous work environments and equipment; Determine individuals and/or work space areas exposed to hazardous noise using measurements obtained with dosimeters or sound level meters; Noise levels  $\geq 85$  dBA SPL steady-state/continuous noise (8 hour TWA measurement) and/or 140 dBP SPL impulse/impact noise; All Army/USMC service members are enrolled in the HCP regardless of noise exposure; Primarily responsibility of Industrial Hygienist

## Noise Study - Dosimetry

- Captures individual exposures over a work shift (TWA)
- Measures the average dBA level

The goal of Dosimetry is to capture the individual's noise exposure over a work shift; measures the noise dose from all the exposures over a work shift. Dosimeters are smaller SLM worn near ear-level, often clipped to the shoulder; some dosimeters can be in-ear models. Dosimeters measure, store and analyze noise data, using in dBA and/or dBC or dB SPL scales; they also can measure in different exchanges rates. Some dosimeters provide a time history that can be downloaded and analyzed. Conduct dosimetry over several days with several employees for a good sample of the work environment

## Weighting Scales

- Changes a measurement to lessen the contributions of low frequencies
- The "A" scale mimics how the human ear hears sound
- The "C" scale is used to recommend the hearing protector device to use in the noise hazard area

dB A – Used by IH professional when measuring shop continuous noise; attempts to mimic the response of the human ear in sensitivity and potential damage from noise hazards; dB A weighting closely correlates with risk of noise-induced hearing loss; dB C – Used by IH professional when measuring shop continuous noise with sufficient low frequency energy and used to measure the noise reduction rating (NRR) of hearing protectors, depending on the measurements used

## Averaging Decibel Levels

- Average is Time Weighted (TWA), not arithmetic
  - Depends on the time/intensity relationship (exchange rate); Cumulative exposure over day and lifetime
- Exchange rate for time/intensity tradeoff depends:
  - 3 dB per doubling of level (DoD, ACGIH, NIOSH and most other countries) – Recommended Practice; 5 dB per doubling of level (OSHA)
- Permissible Exposure Limit (PEL) (also called criterion level)
  - 85 dBA TWA over 8-hours (DoD, ACGIH, NIOSH); 90 dBA TWA over 8-hours (OSHA, MSHA)

**Time Weighted Average:** The amount of time a worker is exposed to hazardous noise over the work day

**Dose:** Percent of allowable noise exposure by the end of a shift. DOD standard is 85 dB A for an 8 hour day is acceptable without hearing protection for 100% dose or PEL.

**Exchange Rate:** 3 dB – The relationship between exposure time and noise intensity. Every increase in intensity by 3 dB will cut the safe exposure time in half. Always start with 85 dBA for 8 hour period. (ex. 88 dB A for 4 hours). OSHA, MSHA uses a 5dB exchange rate.

**Other Noise Exposure Characterizations**

- Action Level
  - 85 dBA TWA over 8-hours in most agencies; Point at which a hearing conservation program is required - Monitoring audiometry; Hearing protection availability (required use in DoD); Annual hearing health education
- Dose
  - Is a percentage of PEL, i.e., 100% dose = PEL; Based on a 8 hour per 24 hour exposure time; Behaves arithmetically, unlike decibels - 93 dBA + 93 dBA = 96 dBA; 50% dose + 50% dose = 100% dose

The 85 dBA action level triggers only some aspects of the hearing program;  $TWA = 85 + 10 \log(\text{dose}/100)$  (DoD)

**NIOSH and OSHA Standards**

NIOSH Standard		OSHA Standard	
Sound level (dBA)	Duration (Hours: Minutes: Seconds)	Sound level (dBA)	Duration (Hours: Minutes: Seconds)
82	16:00:00	85	16:00:00
85	8:00:00	90	8:00:00
88	4:00:00	95	4:00:00
91	2:00:00	100	2:00:00
94	1:00:00	105	1:00:00
97	0:30:00	110	0:30:00
100	0:15:00	115	0:15:00
103	0:07:30	120	0:07:30
106	0:03:45	125	0:03:45
109	0:01:53	130	0:01:53
112	0:00:56	135	0:00:56
115	0:00:28	140	0:00:28
118	0:00:14	145	0:00:14
121	0:00:07	150	0:00:07
124	0:00:03	155	0:00:03
127	0:00:01	160	0:00:01

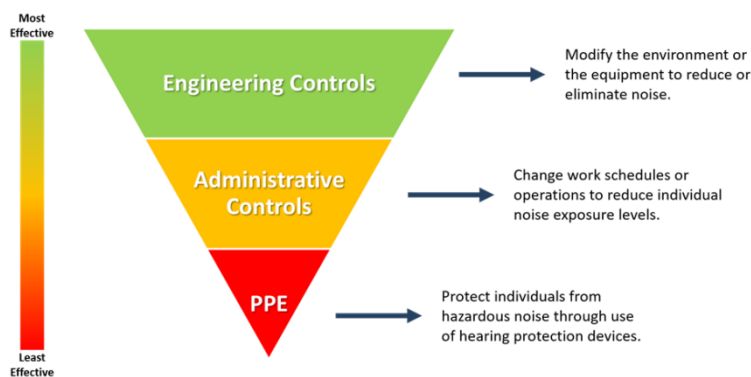
National Institute for Occupational Safety and Health 1998; Occupational Safety and Health Administration 2009. According to each governing body, a person can safely be exposed to each decibel level for its corresponding time without risk of NIHL. For example, according to the OSHA standard, a person can withstand an environment with sound levels at 95dBA for four hours. After four hours they are at risk for NIHL. NIOSH maintains that a person is safe in a 95dBA environment for less than one hour.

## Noise Controls

- Engineering controls - primary means to reduce or control noise: dampen, enclose and/or isolate noise
  - Dampen, enclose and/or isolate noise; Erecting barriers between noise source/workers; Providing lower output tools/machinery; Use HPDs only after engineering controls prove unfeasible or cost prohibitive; Exceptions: high performance ships, aircraft, tactical vehicles or weaponry

Reduce or eliminate noise level at source; baffles/sound absorbing material; preventive maintenance; purchase new, quieter; isolation; consultation by Industrial Hygienist or Audiologist

### Hierarchy of Noise Controls



Controlling exposure to noise is the most important method of protecting workers. A hierarchy of controls is used as a means of determining how to implement feasible and effective control solutions.

**Engineering controls:** reduce the noise at the source

**Administrative controls:** worker rotation or isolation to reduce burden of exposure

**Personal protective equipment (PPE):** worker use of hearing protection. The effectiveness of the noise control methods decrease across the hierarchy, with Engineering Controls as the most effective to PPE as the least effective. PPE is the least effective, as it relies on daily worker behavior to protect from the hazard.

### Engineering Controls – Source/Path

The most effective way to control noise, if substitution and elimination of the noise source are not feasible is engineering controls. Examples: replace/isolate machine, reduce the speed of a machine, reduce compressed air pressure, apply damping material, and replace worn bearings or other vibrating parts

Path: can be direct, indirect or reflected, with different control methods for each type. Reduce noise via carefully designed enclosures around the machine, or treatments to impede the transmission of noise. Examples: sound-absorbing materials – barriers or curtains on walls or ceilings; to reduce sound wave reflections

## Engineering Controls - Receiver

Reducing noise in the receiver's immediate environment, such as a booth or control room around the worker

## Administrative Controls

- Personnel rotation
- Shift work

Rotating of worker out of noisy areas to prevent exceeding the PEL, restricting access to hazardous noise areas

## Personal Protective Equipment (PPE)

- Hearing protection devices (earpro)
- Last choice, least effective to control noise

Personal protective equipment (hearing protection) is last option because of the variability in attenuation received by the user and the likelihood of consistent use is not predictable

## Terminology

- Damage risk criteria
  - Risk of acquiring a hearing loss as a result of a specified noise exposure provides a method for determining the acceptable limits of noise exposure, or the maximum safe or allowable noise levels for various frequencies
- Permissible exposure limit (PEL) or criterion level
  - Agency defined allowable exposure limit (100% dose); DoD  $\geq 85$  dBA TWA for 8-hours, or  $\geq 140$  dBP impulse noise; OSHA  $\geq 90$  dBA for 8-hours or 140 dBP impulse noise (The louder the exposure = the shorter the time you can be exposed)
- Time-weighted average
  - Average sound level or exposure for an 8-hour workday and 40-hour work week
- Action level/criterion level
  - Trigger point at which personnel are enrolled in the HCP and certain elements must be administered, i.e. education, monitoring audiometry, hearing protection availability; DoD  $\geq 85$  dBA TWA for 8 hours, or  $\geq 140$  dBP impulse noise; OSHA  $\geq 85$  dBA
- Weighting Scales
  - Filter setting on a sound level meter that electronically screens the sound as measured in the ambient environment; common scales are dBA and dBC
- Dose
  - Percentage of PEL
- Dosimetry
  - Use of dosimeters for assessing noise exposure
- Exchange Rate (time/intensity tradeoff)
  - Time-weighting factor used in average varying levels of noise in an exposure
- Noise survey
  - Mapping of noise levels to determine need for more detailed assessment

- Noise Study
  - Established exposures and identifies problem noise sources
- Octave band analysis
  - Breakdown of a sound into frequency bands

### **Summary**

- Noise assessment
  - Purpose/Process/Goals
  - Equipment
  - Types of surveys
  - Personnel placed in the HCP
- Weighting scales
- Noise control
  - Hierarchy of controls
- HPD's
  - Attenuation/Last resort
- Terminology



## Anatomy and Physiology of the Ear

### Learning Objectives

- 1.6.1 Describe and identify the basic anatomical divisions, structures and functions of the ear  
Outer ear, Middle ear, Inner ear, Central auditory system
- 1.6.2 Describe their role in sound transmission

### Main Components of the Hearing Mechanism

- Outer ear
- Middle ear
- Inner ear
- Central auditory system



### Structure of the Outer Ear - Pinna (Auricle)

- Made of cartilage
- Collects sound (acoustic energy)
- Helps in sound localization
- Most efficient in directing high frequency sounds to the eardrum

Collects/directs sounds, localizes sound

### Outer Ear - External Auditory Canal

- Approximately 1 inch in length
- S-shaped
- Lined with cerumen glands
- Outer 1/3 surrounded by cartilage; inner 2/3 surrounded by bone
- Amplifies sound approximately 5-6 dB

Funnels sound to the eardrum; Cerumen is normal/assists in cleanliness of the ear canal (anti-fungal/anti-bacterial), protects from infection, foreign invaders (insects/bugs), produced by glands in the cartilaginous portion of the ear canal, color/consistency vary - light yellow/brown (ethnicity/age), color becomes darker and dryer the longer it is in the ear, Natural removal/migration of wax with skin toward exterior of canal. OHC concern: Excessive cerumen - prevents sound from reaching eardrum effecting hearing test and interferes with correct fitting and use of earplugs

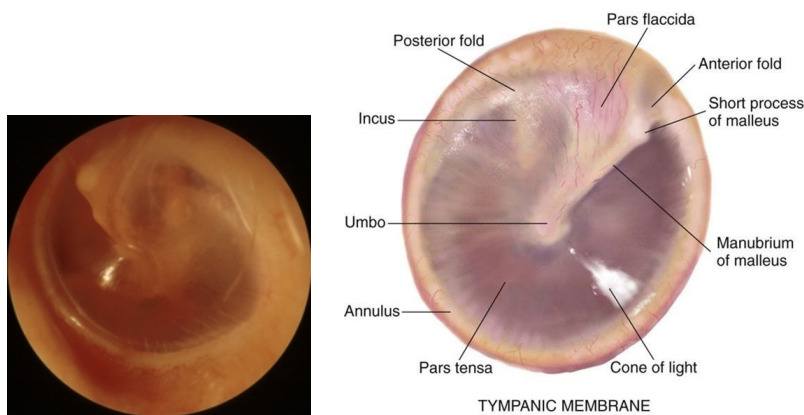
## Middle Ear

- Air-filled space in the skull
- Lined with mucous membrane
- Mechanically amplifies sound

Also known as the tympanic cavity

### Middle Ear – Normal Tympanic Membrane

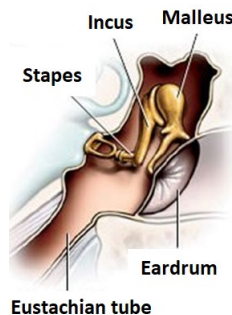
- Thin membrane forming boundary between outer and middle ear
- Vibrates in response to sound
- Changes acoustical energy to amplified mechanical energy



First middle ear structure - ear drum or tympanic membrane (TM); contains three different layers; ruptured eardrum can result in hearing loss; generally perforations can naturally heal without treatment, however, sometimes intervention is required through surgical repair to heal; OHC concern: If it doesn't look normal, refer

### Structures of the Middle Ear - Auditory Ossicles

- Ossicles are smallest bones in the body
  - Malleus; Incus; Stapes - Footplate of stapes enters oval window of the cochlea (Act as a lever system)
- Eustachian Tube
  - Ventilates the middle ear space; not part of the hearing process



Transfers sound from the eardrum to the cochlea; middle ear system problems can cause up to 40-60 dB of conductive hearing loss; mechanically amplifies sound; optimal performance is in air-filled cavity which is refreshed by the Eustachian tube (Ossicles Chain)

### The Ossicular Chain - Why is the middle ear needed?

- Transfers sound from the eardrum across the middle ear to the cochlea
- Without the middle ear system, there would be a loss of 40-60 dB of hearing sensitivity due to conductive loss

### Structures of the Middle Ear - Eustachian Tube

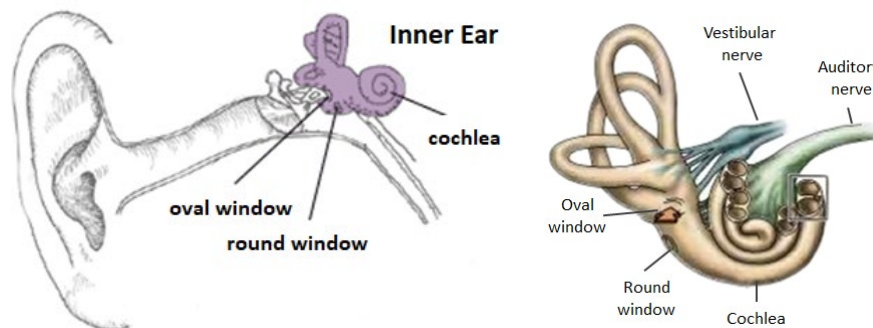
- Connect middle ear to nasopharynx
- Equalizes air pressure in middle ear cavity
- Lined with mucous membrane

Equalizes air pressure; middle ear is an enclosed air-filled space, when the atmospheric pressure changes, the Eustachian tube opens to equalize the pressure; if not, the ear drum could burst; membranous tube that connects back of the nose and upper throat (nasopharynx) to middle ear space; muscles relax when we swallow or yawn; Eustachian tube functions when you fly in an airplane or driving up a mountain; when you yawn, drink (swallow) or chew gum or perform Valsalva, you are opening the Eustachian tube to equalize the pressure

Optional: Infant head smaller, E-tube shorter, more horizontal than adult; easier for nasal secretions, fluids in mouth travel to middle ear; ear infection is a “childhood disease”, number one reason for pediatrician sick visits; Don’t put baby to bed with bottle, fluid may enter middle ear when baby swallows

### Inner Ear

- Located within temporal bone
- Fluid-Filled
- Hearing and balance functions



Fluid-filled structure located inside the temporal bone, contains the organs for hearing and balance; responsible for hydraulic/electric energy

### Structures of the Inner Ear – Cochlea

- Snail-shaped organ with a series of fluid-filled tunnels

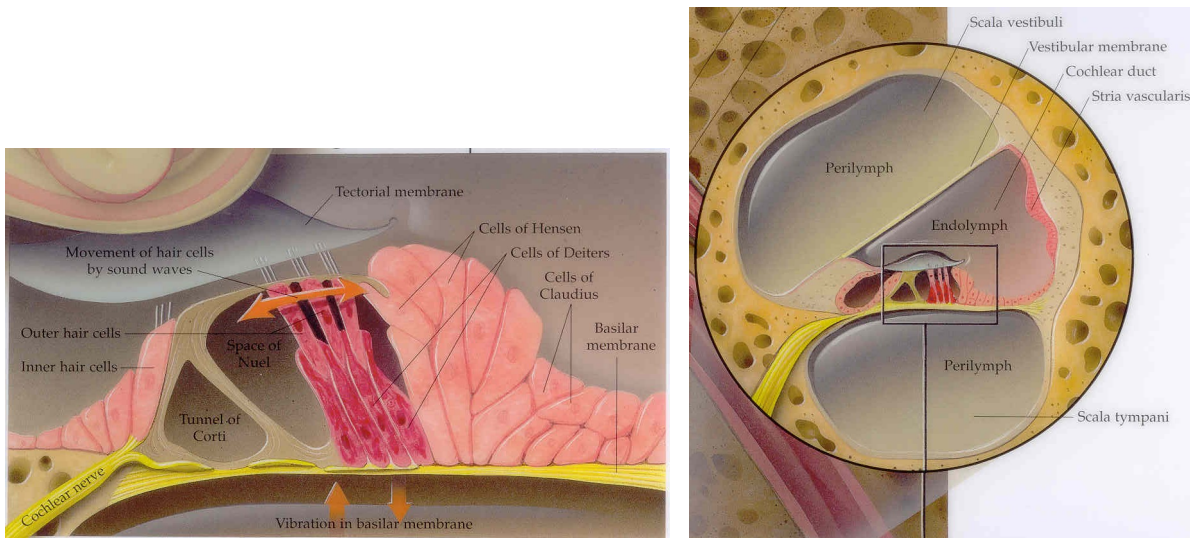
- Converts mechanical energy to electrical energy

Cochlea – snail-looking structure; responsible for hearing, contains sensory cells that respond to sound energy (now fluid or hydraulic energy); has membranous tunnels filled with different fluids - endolymph and perilymph

- Oval Window - located at the footplate of the stapes; when the footplate vibrates, the cochlear fluid is set into motion; separates the middle and inner ear
- Round Window - functions as the pressure relief port for the fluid set into motion initially by the movement of the stapes at the oval window

### Organ of Corti

- The end organ of hearing; contains stereocilia and hair cells



**Organ of Corti** - three rows of outer hair cells and one row of inner hair cells, organized tonotopically; the shearing effect of the tectorial membrane along the hair cells from the hydraulic action of a traveling wave along the basilar membrane causes a deflection of the stereocilia; a chemical reaction within the hair cells then activates a nerve impulse that is sent up the nerve to the brain

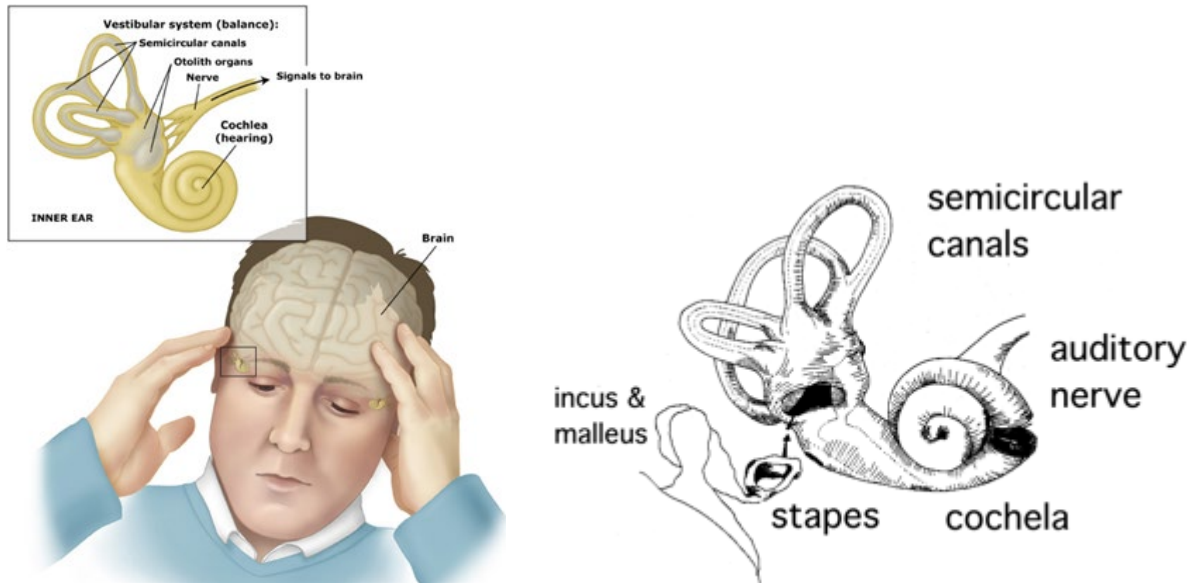
### Hair Cells

- Frequency-specific
- High pitch sounds = base of cochlea
- Low pitch sounds = apex of cochlea
- When the basilar membrane moves, a shearing action between the tectorial membrane and the organ of Corti causes hair cells to bend

Cochlea is tonotopically organized with each hair cell assigned to a particular frequency, example: piano keys

## Vestibular System

- Consists of three semi-circular canals & Otolith system
- Shares fluid with cochlea
- Controls balance and sense of orientation in space



Non-hearing part of the inner ear; three semicircular canals, responding to dynamic equilibrium, and angular acceleration; Angle of the canals, one in each spatial plane; Examples: examples of the semicircular canals at work are a Ferris wheel, turning a sharp corner in a car, and gravity accelerating carnival rides like Tea Cups or Tilt-a Whirl. Otolith organs are located in the bulb or big bump part of the inner ear labyrinth; senses linear movements or accelerations of the head; Examples: direct right, left, up or down movement of head; accelerating in a car, standing up or sitting down, bungee jumping. Vestibular system has a small connecting duct with cochlea so some sharing of fluid system; problem with balance can result in hearing loss; problem in cochlea can affect balance. The vestibular system communicates with the cerebellum 1 million times per second while at rest

## Central Auditory System

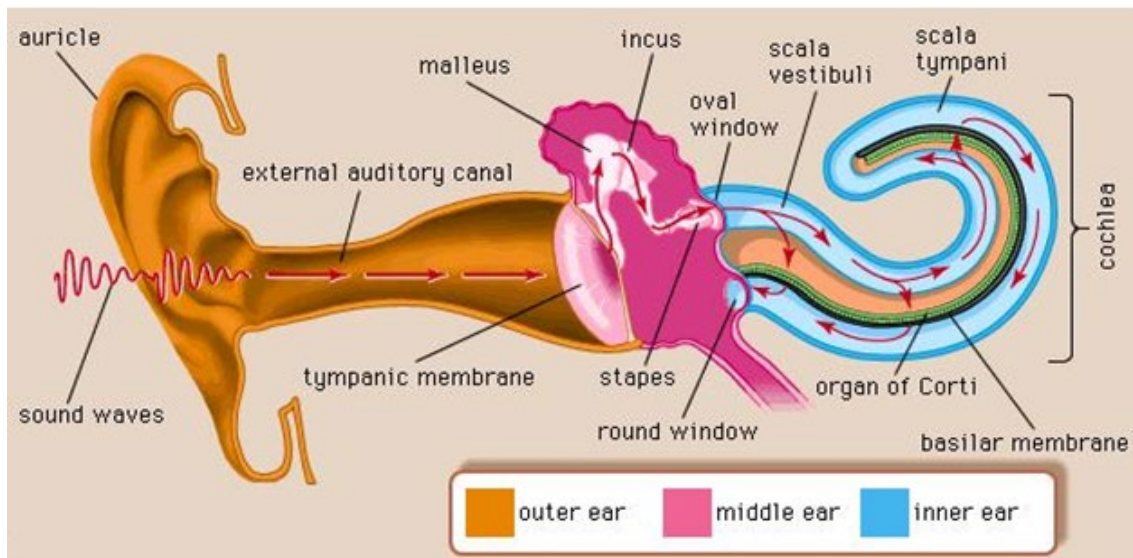
- 8<sup>th</sup> Cranial Nerve or “Auditory Vestibular Nerve” carries signals from inner ear to brain
- Auditory Cortex - temporal lobe of brain
  - Sound is perceived and analyzed
- Cerebellum - balance and equilibrium
- Depth of the central auditory system
- Many things can impede hearing at the outer, middle, and inner ear, this is also true for the central auditory system

Last major division is the Central Auditory System; involves all auditory nerves that leave inner ear and travel through brainstem to auditory centers in brain or cortex; hearing impulses travel to the temporal lobe of the brain (auditory cortex) where sound is perceived and analyzed. TBI – Difficulty understanding speech

## How Sound Travels Through the Auditory System

- **Pinna** - channels sound into the ear canal
- **Ear Canal** - carries sound to eardrum (tympanic membrane)
- **TM** - vibrates from acoustic energy
- **Ossicles** - mechanically amplify sound to the cochlea
- **Cochlea/Organ of Corti** - converts acoustic energy into electro-chemical signals
- **Auditory Nerve** - transmits e-chemical signals to brain

Visual path sound wave takes through the different sections of the auditory system



## Summary

- Divisions, structures and functions of the ear
  - Outer ear; Middle ear; Inner ear; Central auditory system
- Sound/Energy transmission

## Ear Disorders and Hearing Loss

### Learning Objectives

- 1.7.1 Define the four types of hearing loss
- 1.7.2 Describe medical symptoms and communication impairments that are characteristic of each type of hearing loss
- 1.7.3 List common causes of and basic treatment of each type of hearing loss
- 1.7.4 Explain how continuous and impact noise exposure affect ear structures and functions
- 1.7.5 Become knowledgeable on counseling, patient education and processing referrals

### OHC Technician Responsibilities

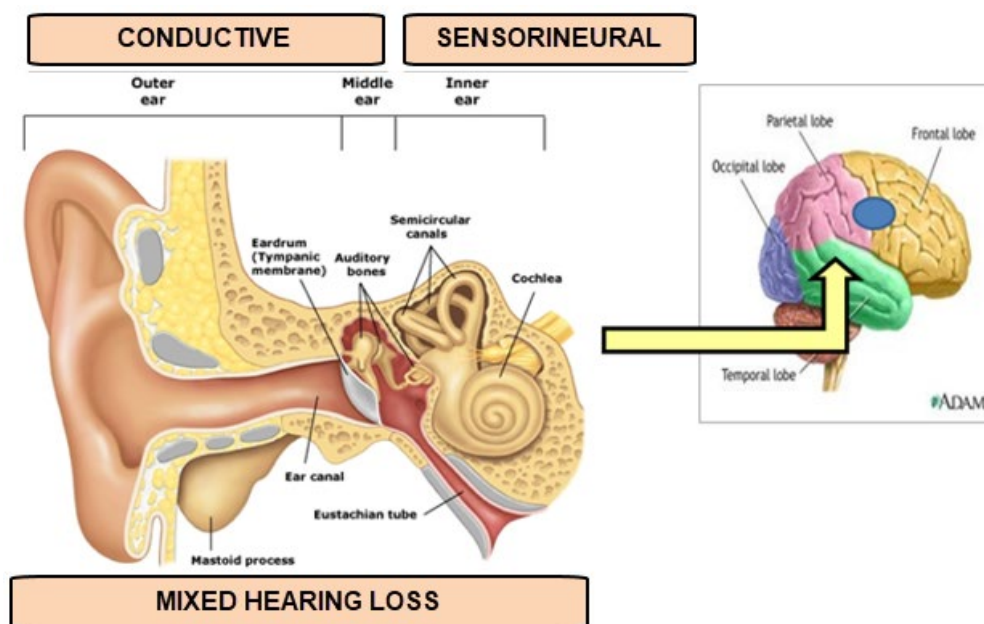
- Acceptable - General knowledge of hearing loss/ear disorders; Recognize normal/abnormal; Process referrals to physician or audiologist/Professional Supervisor
- Unacceptable - Diagnosis type of hearing loss or ear disease; Recommend treatments

The “Speech Banana” is a very useful tool for describing where the sounds and phonemes used in everyday human speech occur on an audiogram. It indicates the audible frequency that the sound is typically heard and perceived at. When mapped out on a graph, these phonemes and their frequencies illustrate a banana-like shape.

### 4 Types of Hearing Loss

- Conductive hearing loss - outer and middle ear
- Sensorineural hearing loss - inner ear/ auditory nerve
- Mixed hearing loss - outer/middle ear and inner ear involved
- Pseudohypacusis (Nonorganic/Functional) hearing loss - no biologic/organic cause can be found

Hearing loss is named according to type of dysfunction

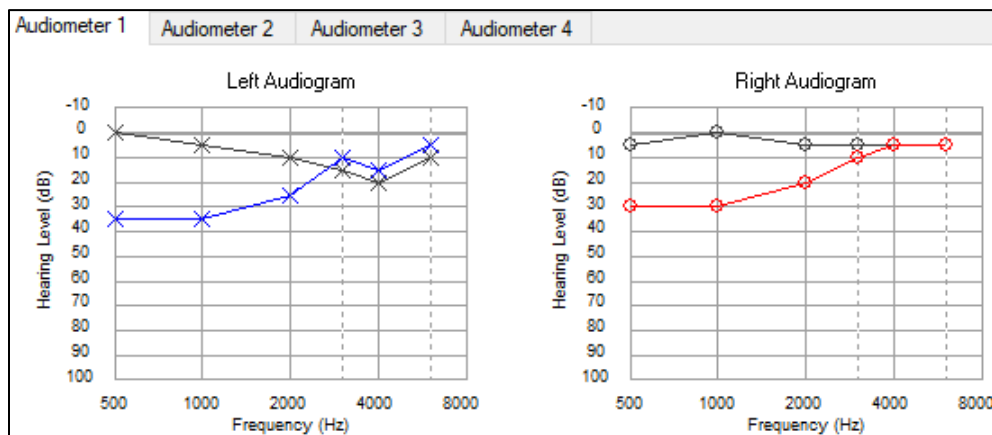


3 hearing losses displayed; **Conductive hearing loss:** outer ear, middle ear, both divisions; **Sensorineural hearing loss:** inner ear/auditory nerve; **Mixed hearing loss:** two or more divisions of the ear at the same time; common situation/permanent sensorineural hearing loss from noise exposure, suddenly noticed with onset of a conductive, middle ear problem

### Conductive Hearing Loss Symptoms

- Indicates a problem in the outer and middle ear (earwax impaction, congestion, cold, ear infection, etc.)
- May have abnormal otoscopic and/or tympanometry results
- Patient may speak softly or feel as if talking in a barrel
- Ability to understand speech is good with increased volume
- May experience low-pitched ringing
- Audiogram generally shows a **rising configuration** with greater loss in the low frequency range and better hearing in the high frequencies
- Usually treatable with medical or surgical intervention

SSN is 990990009, bring up in edit audiogram screen within DOEHS



Bring up audiogram in DOEHS-HC (Edit Audiogram); a 2215 will identify a low frequency hearing loss/referral, a 2216 will not. If conductive issues are suspected, do not create a reference audiogram, retrieve as a NHC test and process referral, have patient return when conductive issues are resolved.

### Normal Ear Canal and Tympanic Membrane



Know what a normal eardrum looks like so you can recognize something abnormal. Color differences among these examples may be influenced by photo settings. Gain experience viewing normal ear canals



& eardrums. Wide range of normal: Some cerumen is normal in ear canal, eardrum needs to be visible. Normal eardrum characteristics: Pearly/ translucent appearance, reflects light from otoscope, Cone of Light is triangular bright reflection (center to lower side edge), might see shadows of Ossicles, and color differences among races and health condition/history.

### **Outer Ear Diseases/Disorders - Conductive hearing loss**

Possible causes: over production of cerumen natural progression out of ear canal impeded by: excessive hair, narrow canal, sharp bend in canal, daily use of Q-tips, earplugs, ear molds; Specific symptoms: plugged up feeling, sounds slightly softer/muffled, low frequency tinnitus; Amount of hearing loss: mild – 40 dB HL or less, must be fully occluded for hearing loss to occur.

Referral: medical officer or trained corpsman for removal, over the counter methods may soften up hard plugs for removal but should be medically removed

### **External Otitis or Infection**

Conductive hearing loss: Bacterial or viral infection; may involve pinna, mastoid area, ear canal; commonly called swimmer's ear; Possible causes: abrasion or cut in skin in ear canal (scrubbing with objects) or on pinna; swimming – bathing; bacterial/viral organism in water; water doesn't clear the canal; Specific symptoms: pain – sometimes extreme; redness, swelling (ear canal can swell completely shut); fever or at least heat around ear; "gunk" in ear canal – pus, dead cells, tissue debris and fluid, cerumen.

Referral: immediate medical treatment; may involve oral and topical medications

### **Exostoses – bony growths or protrusions**

Conductive hearing loss: bony growths protrude up under the skin into the ear canal; no serious concern unless the growths begin to close off the ear canal; caution when fitting earplugs or making custom mold impressions; Possible causes: seen in people who are in cold water a lot, i.e. divers, swimmers, surfers; Referral: medical referral for documentation; impacted cerumen may be chronic problem; typically no treatment

### **Foreign Objects**

Conductive hearing loss; the small diameter and curved shape of the ear canal protects the eardrum from foreign objects and invaders.

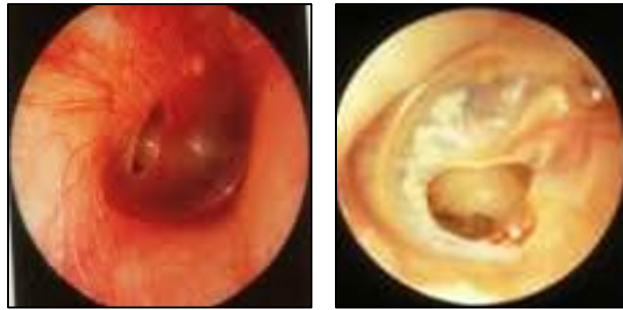
Referral: yes, if full blockage or damage to eardrum; Medical professional should extract the foreign object

### **Congenital Atresia and Stenotic Canal**

Conductive hearing loss; Atresia means no opening.

Referral: Depending on radiology test results, surgery may be able to create an opening; Bone conduction hearing aids can provide "normal" hearing to the individual if there is no inner ear involvement

## **Tympanic Membrane Perforation**



Conductive hearing loss: hole in eardrum from external or internal forces; surgical perforation for Pressure Equalization (PE) tubes.

Referral: medical officer; small holes heal naturally; large perforations need surgical repair; however any hole of any size can lead to further disease (cholesteatoma); swim plug protection needed while swimming or bathing to keep water out of middle ear space

### **Otosclerosis**

Conductive hearing loss - Stiffening of the stapes at the oval window due to ossification or abnormal bone growth around the footplate of the stapes. More common in females by a 2:1 ratio and often accelerates during pregnancy, usually occurs between 30-40 years of age

Surgery is performed by an otologist (ENT) who will replace the stapes with a prosthetic one, often restoring some/most of the person's hearing loss.

### **Eustachian Tube Dysfunction**

Conductive hearing loss: Normally opens when we swallow to replenish air in middle ear; maintains equal air pressure on each side of eardrum; Eustachian tube muscles do not open due to inflammation or spasm; vacuum in middle ear space. Can quickly progress to otitis media - middle ear fluid and infection.

Referral - depends on patient history.

### **Middle Ear Effusion Serous Otitis Media**

Conductive hearing loss: fluid has been pulled out of middle ear tissues due to Eustachian tube dysfunction - vacuum environment; fluid is NOT infected – clear.

Referral: medical officer; decongestants, myringotomy (lancing TM to drain fluid).

### **Otitis Media**

Conductive hearing loss: middle ear space becomes inflamed; bacteria or viruses proliferate; most common conductive ear disease, particularly in children.

Referral: medical officer; medications - antibiotics, decongestants, pain/fever relief; surgery - myringotomy (lancing eardrum) to drain fluid or control potential perforation

## Cholesteatoma

Conductive hearing loss: “marshmallow” like sac of skin cells and debris that can grow in the middle ear space.

Referral: refer to medical officer; surgery must remove all of the cholesteatoma cells in order to cure and/or prevent its recurrence

## Conductive Hearing Loss Treatment

- Conductive hearing loss - outer and middle ear
  - Time; Medication; Surgery
- If conductive hearing loss cannot be cured or repaired
  - Hearing aids

Most conductive hearing losses are temporary; most conductive hearing disorders respond to medical treatment. Key problem for conductive hearing disorders is a loudness problem; sound is being blocked; good understanding if sound is intense enough to reach inner ear.

15. AUDIOMETRY	2	1 - 90 DAY						2 - ANNUAL		3 - TERMINATION		4 - OTHER	
		LEFT						RIGHT					
AUDIOMETRIC DATA RE: ANB 83.6		500	1000	2000	3000	4000	5000	500	1000	2000	3000	4000	5000
b. CURRENT AUDIOGRAM DATE: 20 Dec 2021		35	35	25	10	15	5	30	30	20	10	5	5
c. REFERENCE AUDIOGRAM DATE: L: 07 Dec 2020 R: 07 Dec 2020		0	5	10	15	20	10	5	0	5	5	5	5
3. SIGNIFICANT THRESHOLD SHIFT (BTS) L: 1 R: 1		4. THRESHOLD SHIFT ----->		30	15	-5	-5		30	15	5	0	
f. REMARKS (Include Exposure Date) Steady Noise Exp(TWAdBA): Not Entered, Impulse Noise Exp(dBP): Not Entered, Early warning for a decrease in hearing _____, HPD Fit Today, Health Ed Prov, *****TRAINING AUDIOGRAM***** H-2.								g. TYPE OF PERSONAL HEARING PROTECTION USED 3					
								1 - SINGLE FLANGE (V&R)		4 - EAR CANAL CAPS			
								2 - TRIPLE FLANGE		5 - NOISE MUFFS			
								3 - HAND FORMED EARPLUG		6 - OTHER			
										7 - NONE			

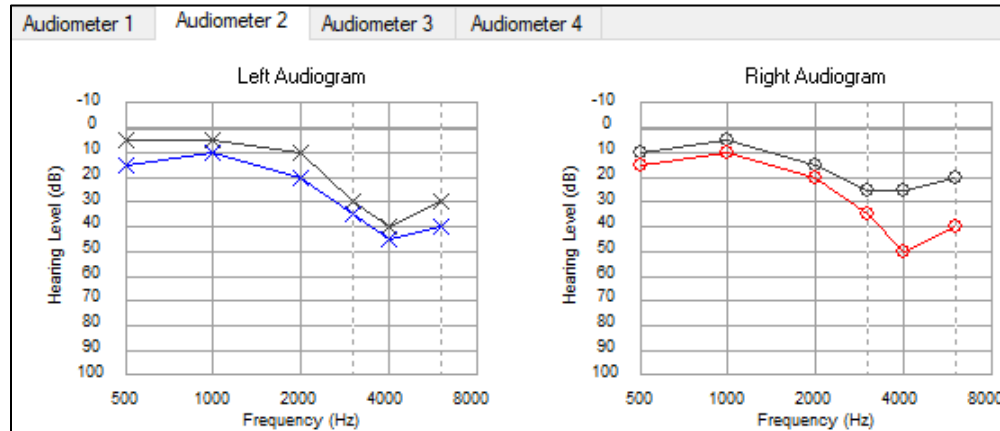
- [SSN = 990990009] Confirm demographic fields 2 thru 14
- Is there a change in hearing? \_\_\_\_\_
- Are thresholds within the range of normal? \_\_\_\_\_
- Where does the patient need to go? \_\_\_\_\_

## Sensorineural Hearing Loss

- Occurs in the inner ear/auditory nerve (8<sup>th</sup> Cranial Nerve)
- Difficulty understanding speech, worse in background noise
- Loud speaking voice
- Tinnitus
- Balance difficulties
- Normal otoscopic exam/tympanogram
- Typically high frequency hearing loss
- Organ of Corti and Hair Cells
  - Damaged; Destroyed

Basic problem of a sensorineural hearing loss is that the Organ of Corti and hair cells are damaged, destroyed or undergoing pressure, therefore, they cannot respond normally to components of speech (frequency, intensity, and timing). The result is complete sound information can't be detected and it cannot be transmitted accurately, if at all, resulting in distorted speech and misunderstanding/possibly negative feelings and consequences

SSN is 990990006, bring up in edit audiogram screen within DOEHS



Bring up audiogram in DOEHS-HC (Edit Audiogram); a 2215 may identify a high frequency hearing loss/referral, depending on the thresholds, a 2216 will possibly give referral for an STS/Fitness for Duty depending on the thresholds.

- As a result
  - certain sounds can't be detected and/or transmitted; creating distorted speech sounds – usually consonant sounds

#### Sensorineural Hearing Loss Causes of Inner Ear Damage

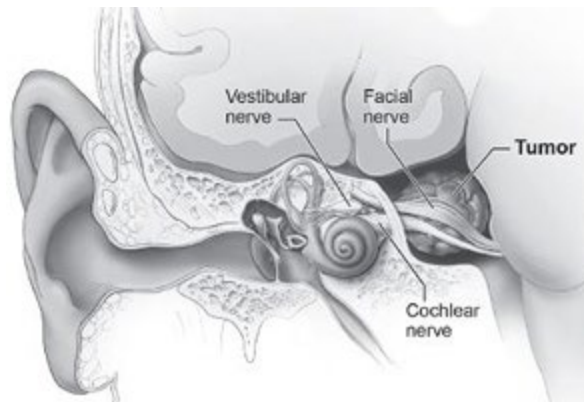
- Ototoxins - drugs or chemicals
  - Destroys delicate sensory hair cells and other structures inside cochlea; Toxicity determined by amount/dosage, exposure time, and synergistic effects with noise or other toxins; affects both ears equally
- Drugs
  - Antibiotics with “mycin” suffix (streptomycin, gentamycin, erythromycin, neomycin); Diuretics combined with aminoglycosides (-mycin) – lasix (furosemide), bumex (bumetanide); Quinine derivatives; Chemotherapy – cisplatin
- Chemicals - more damage in combination with noise exposure
- Heavy Metals – lead, mercury
- Solvents - toluene , ethyl Ac, ethanol, styrene; accidental poisoning or intentional inhalation

Difficult to show pictures of sensorineural disorders because structures hidden and microscopic in size; amount of hearing loss can vary from minimal to profound deafness; majority of sensorineural hearing losses are permanent. Both active military and civilian personnel are often exposed to toxic chemicals in their work and combat situations; safety precautions should be strictly followed.

- Head trauma
- Aging (presbycusis)
- Autoimmune disease (ex. Multiple Sclerosis)
- Diseases - bacterial/viral
- Congenital or genetic
- Sudden hearing loss - medical emergency (sudden onset/within 12-24 hours; needs immediate medical attention - Emergency, often results in total deafness – some recovery especially with immediate drug treatment, usually unknown cause, but can be caused by high doses of drugs)
- Acoustic Neuroma/Vestibular Schwannoma: benign, slow-growing tumor on 8<sup>th</sup> cranial nerve. Most important symptom to recognize during testing is asymmetrical hearing loss.
- Hazardous noise exposure - most relevant area for the OHC professional

### Acoustic Neuroma/Vestibular Schwannoma

- Benign slow-growing tumor on 8<sup>th</sup> Cranial Nerve
- Treated surgically if necessary or ENT chooses to “wait and watch”
- Symptoms may include:
  - Asymmetrical SNHL; Tinnitus on affected side; Dizziness; Facial weakness/numbness

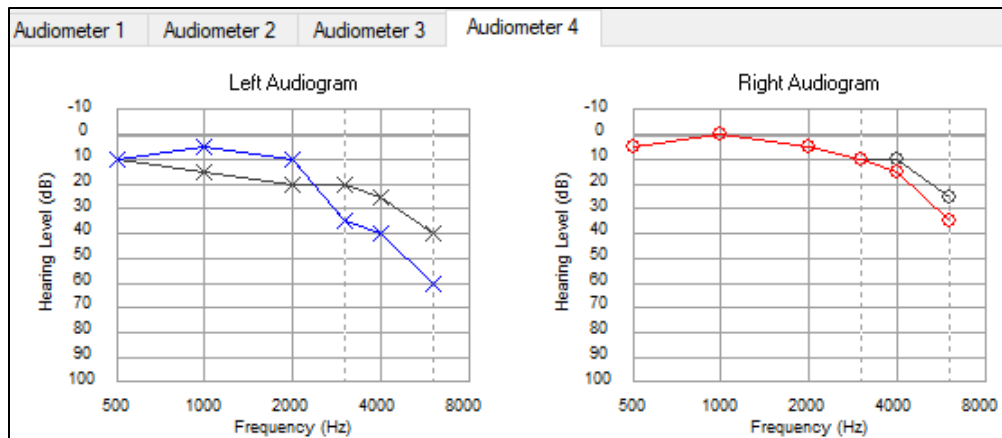


### Sensorineural Hearing Loss Symptom for OHC Technicians

- Asymmetrical hearing loss
  - DOEHRS-HC will trigger an asymmetry if two consecutive frequencies between ears have a difference of 25dB or more; refer to audiologist
- Hearing loss does not have to be asymmetrical but it is an important symptom for referral

Acoustic Neuroma/Vestibular Schwannoma are benign tumors on the auditory nerve that typically grow very slowly. Surgeons will typically take the “wait and watch” approach with annual imaging. Surgery techniques conserve as much hearing as possible, early diagnosis is critical to conserve hearing.

Hearing loss does not have to be asymmetrical but it is an important symptom for referral.



15. AUDIOMETRY	2	3. PURPOSE												
		1-90 DAY						2-ANNUAL						3-TERMINATION
AUDIOMETRIC DATA RE: ANSI S3.6		LEFT						RIGHT						
		500	1000	2000	3000	4000	6000	500	1000	2000	3000	4000	6000	
b. CURRENT AUDIOGRAM DATE: 21 Dec 2021		10	5	10	35	40	60	5	0	5	10	15	35	
c. REFERENCE AUDIOGRAM DATE: L: 04 Dec 2020 R: 04 Dec 2020		10	15	20	20	25	40	5	0	5	10	10	25	
d. SIGNIFICANT THRESHOLD SHIFT (STS) L: 1 R: 1		e. THRESHOLD SHIFT												
		----->		-10	-10	15	15		0	0	0	5		
f. REMARKS (Include Exposure Data)													g. TYPE OF PERSONAL HEARING PROTECTION USED	
Steady Noise Exp(TWAdBA): Not Entered, Impulse Noise Exp(dBP): Not Entered, Early warning for a decrease in hearing _____ (L), Asymmetric Loss, HPD Prev Fit, HPD Present, Health Ed Prov, *****TRAINING AUDIOGRAM***** H-2.													3	
													1 - SINGLE FLANGE (V/S/R) 2 - TRIPLE FLANGE 3 - HAND FORMED EARPLUG 4 - EAR CANAL CAPS 5 - NOISE MUFFS 6 - OTHER 7 - NONE	

- [SSN = 990990011] Confirm demographic fields 2 thru 14
- Is there a change in hearing? \_\_\_\_\_
- Are thresholds within the range of normal? \_\_\_\_\_
- Where does the patient need to go? \_\_\_\_\_

### Noise-Induced Hearing Loss

- Permanent and irreversible
- Body does not regenerate these damaged/destroyed sensory cells and nerve fibers

Noise-Induced Hearing Loss or NIHL is our greatest concern; purpose of HCP is to prevent NIHL as much as possible; NIHL is acoustic trauma or injury - hearing loss is an injury to the body.

**Single exposure** to impact noise at or more than 140 dBp; explosion, weapon fire, IED; sound pressure wave severely damage/destroy Organ of Corti and sensory hair cells - looks like “hurricane” went through the ear.

**Long-term exposure** to hazardous noise levels - prolonged (years) of noise  $\geq$  85 dBA; most typical NIHL - gradual damage and destruction from chronic ongoing exposure to hazardous levels of noise; work environments and recreational/at home activities; amount of loss and length of noise exposure varies from person to person; some more susceptible to NIHL; typical hearing loss is high frequency, particularly between 3000 Hz and 6000 Hz – “noise notch”.

**Variables of Noise-Induced Hearing Loss**

- Intensity level of hazardous noise
- Type of noise - impact, impulse, steady-state, frequency characteristics
- Time of specific exposure
- Long-term time of overall exposure
- Appropriate use of hearing protection devices
- Individual personal factors/characteristics

Sensorineural hearing losses are permanent and irreversible; key problem is understanding sounds and speech.

**Sensorineural Hearing Loss Treatment**

- Medication/Surgery – limited
  - critical timing factor to “reverse” sensory damage- Sudden SNHL; surgery for acoustic neuroma/vestibular schwannoma
- Hearing aids
  - can improve understanding of speech significantly; are “aids”, not cures and not hearing replacement
- Adaptive skills
  - relearn listening and attention skills
- As a reminder the four P’s of Hearing Loss - Painless, Progressive, Permanent, Preventable

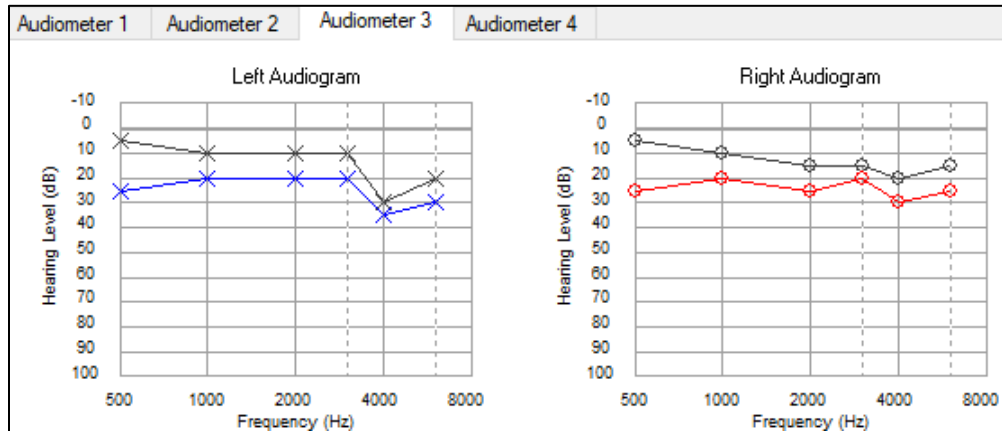
Medication and surgery very limited to certain conditions; hearing aids have advanced technologically; adaptive skills must be learned - using hearing aids to best advantage in variety of listening environments.

15. AUDIOMETRY	2	3. PURPOSE													
		1 - 90 DAY						2 - ANNUAL						3 - TERMINATION	
AUDIOMETRIC DATA RE: ANSI S3.6		LEFT						RIGHT							
		500	1000	2000	3000	4000	6000	500	1000	2000	3000	4000	6000		
b. CURRENT AUDIOGRAM DATE: 20 Dec 2021		15	10	20	35	45	40	15	10	20	35	50	40		
c. REFERENCE AUDIOGRAM DATE: L: 07 Dec 2020 R: 07 Dec 2020		5	5	10	30	40	30	10	5	15	25	25	20		
d. SIGNIFICANT THRESHOLD L: 1 R: 2+		e. THRESHOLD SHIFT													
L: 1 R: 2+		1 - NO 2 - YES		5	10	5	5	5	5	10	25				
f. REMARKS (Include Exposure Data)		Steady Noise Exp(TWAdBA): Not Entered, Impulse Noise Exp(dBP): Not Entered, HPD Prev Fit, HPD Present, Health Ed Prov, Tinnitus, *****TRAINING AUDIOGRAM*****, Pos STS(R), I am aware of a change in my hearing and the need to return for a follow-up(R). Signature (R).										g. TYPE OF PERSONAL HEARING PROTECTION USED			
												3	1 - SINGLE FLANGE (1/51R) 2 - TRIPLE FLANGE 3 - HAND FORMED EARPLUG	4 - EAR CANAL CAPS 5 - NOISE MUFFS 6 - OTHER 7 - NONE	

- [SSN = 990990006] Confirm demographic fields 2 thru 14
- Is there a change in hearing? \_\_\_\_\_
- Are thresholds within the range of normal? \_\_\_\_\_
- Where does the patient need to go? \_\_\_\_\_

## Mixed Hearing Loss

- Combination of conductive and sensorineural hearing loss
- Any combination of symptoms, hearing test results, types of disease/disorders, treatments previously discussed
- Frequently - permanent sensorineural HL with outer/middle ear disorder or impacted cerumen, temporary conductive HL
- Conductive portion of a mixed hearing loss is typically temporary and treatable
- Always resolve conductive issues prior to bringing the patient back for follow-up testing



15. AUDIOMETRY	2	3. PURPOSE															
		1 - 90 DAY						2 - ANNUAL						3 - TERMINATION		4 - OTHER	
AUDIOMETRIC DATA RE: ANSI S3.5		LEFT												RIGHT			
		500	1000	2000	3000	4000	6000	500	1000	2000	3000	4000	6000				
b. CURRENT AUDIOGRAM DATE: 21 Dec 2021		25	20	20	20	35	30	25	20	25	20	30	25				
c. REFERENCE AUDIOGRAM DATE L: 21 Sep 2020 R: 21 Sep 2020		5	10	10	10	30	20	5	10	15	15	20	15				
d. SIGNIFICANT THRESHOLD SHIFT (STS) L: 1 R: 1		e. THRESHOLD SHIFT															
		1 - NO															
		2 - YES		10	10	10	5		10	10	5	10					
f. REMARKS (Include Exposure Data) Steady Noise Exp(TWAdBA): Not Entered, Impulse Noise Exp(dBP): Not Entered, HPD Prev Fit, Health Ed Prov, HPD Fit Today, HPD Present, *****TRAINING AUDIOGRAM*****, H-1.								g. TYPE OF PERSONAL HEARING PROTECTION USED 3									
								1 - SINGLE FLANGE (V51R)				4 - EAR CANAL CAPS					
								2 - TRIPLE FLANGE				5 - NOISE MUFFS					
								3 - HAND FORMED EARPLUG				6 - OTHER					
												7 - NONE					

- [SSN = 990990060] Confirm demographic fields 2 thru 14
- Is there a change in hearing? \_\_\_\_\_
- Are thresholds within the range of normal? \_\_\_\_\_
- Where does the patient need to go? \_\_\_\_\_

## Nonorganic Hearing Loss, Malingering

- History - enlistment, deployment, disciplinary actions, work avoidance, retirement, attention, monetary compensation/disability
- Inconsistent behavior
- Testing behavior
- Audiometric test results inconsistent with previous tests, behavior, function of the ear

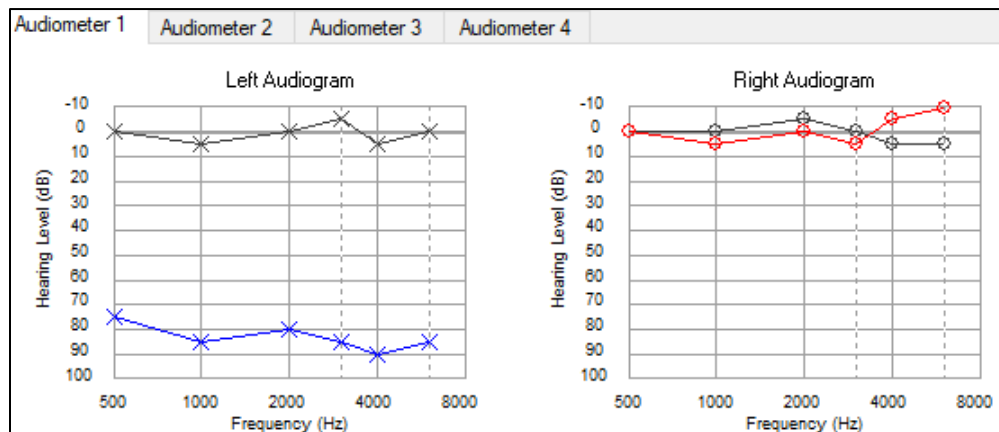


**Patient history/audiogram test purpose:** enlistment issues - recruit wants to go home; deployment/discipline - excuse/avoidance; avoid work assignments; approaching retirement; needs attention (particularly in children); monetary compensation

**Inconsistent behavior:** understands speech but suddenly remembers that s/he can't hear or makes unreasonable guesses; responds to soft speech and "automatic statements" (Sit at station 2) or when speaker is facing away speaks in excessively loud voice - may be inconsistent in keeping up volume; exaggerated gestures - cups hand behind ear, leans forward and intensely stares at speaker; observed in conversation with another person in normal manner; details of hearing loss story are vague, inconsistent, doesn't make sense re: physical laws

**Testing behavior:** asks lots of detailed questions about how to take test and/or exactly how to respond to tones; presses earphone to ear; multiple responses to tone presentation or frequency; threshold pattern is inconsistent across frequencies - wide "zigzag" pattern; hearing test results inconsistent with hearing behaviors; thresholds are greater/worse than person's earlier response to sound or conversation; average speech is between 50-60 dB HL; previous tests - big change in thresholds without supporting medical or exposure history; how ear functions: responds with one ear normal and one ear severe/profound loss; tone will crossover to good ear through skull after 40-50 dB difference

SSN is 990990013, bring up in edit audiogram screen within DOEHRS



### Nonorganic Hearing Loss, Psychological Trauma, Conversion Disorder

- History – traumatic event (TBI)
- No organic cause of hearing loss
- Not attempting to avoid work or obtain monetary compensation
- Inconsistent audiometric test results
- Belief there is an organic hearing loss
- Rare condition

Patient presents with neurological symptoms, such as numbness, blindness, paralysis, seizures or hearing loss; however, there is no physical evidence of a neurological cause for the symptom; patient "converts" their trauma or anxieties into physical symptoms; considered a psychiatric disorder. Patient has history of a traumatic event - IED, war trauma, rape, assault, etc. Patient's behavior and report indicate they are not trying to avoid work or obtain monetary compensation. Hearing test results are inconsistent or follow a strange pattern; results may be consistent within the test but inconsistent with

patient's communication behavior, Patient has a flat affect (lack of physical animation and energy) and/or an emotionless face; Patient truly believes he or she cannot hear normally

**Nonorganic Hearing Loss, OHC Technician Responsibility**

- Follow established protocols
  - Obtain best air conduction pure tone responses from the patient; Reinstruct patient; Retest another day using another booth station; Never accuse, label, or argue with person taking the test
- Observe irregular behaviors
- Refer to audiologist
  - Special testing/techniques; Counseling

If malingering suspected, do not re-establish reference; Audiologist referral: audiologist's responsibility to determine reliable and valid hearing thresholds; special test techniques and test procedures available to validate if person is exaggerating hearing loss; can usually obtain person's true hearing thresholds or very close; responsible to counsel patient and report outcome

15. AUDIOMETRY	4	a. PURPOSE																	
		1-90 DAY						2-ANNUAL				3-TERMINATION		4-OTHER					
AUDIOMETRIC DATA RE: ANSI S3.6		LEFT												RIGHT					
		500	1000	2000	3000	4000	6000	500	1000	2000	3000	4000	6000	500	1000	2000	3000	4000	6000
b. CURRENT AUDIOGRAM DATE: 10 Dec 2021		75	85	80	85	90	85	0	5	0	5	-5	-10	0	0	-5	0	5	5
c. REFERENCE AUDIOGRAM DATE L: 23 Nov 2020 R: 23 Nov 2020		0	5	0	-5	5	0	0	0	-5	0	5	5						
d. SIGNIFICANT THRESHOLD SHIFT (STS) L: 2+ R: 1		e. THRESHOLD SHIFT		----->		80		80	90	85			5	5	5	-10			
f. REMARKS (Include Exposure Date) Pre-deployment, Steady Noise Exp(TWAdBA): Not Entered, Impulse Noise Exp(dBP): Not Entered, Pos STS(L), I am aware of a change in my hearing and the need to return for a follow-up(L), Signature (L), Asymmetric Loss, Masking Req, Tinnitus, *****TRAINING AUDIOGRAM***** H-2.		g. TYPE OF PERSONAL HEARING PROTECTION USED 3												1 - SINGLE FLANGE (1/51R) 2 - TRIPLE FLANGE 3 - HAND FORMED EARPLUG 4 - EAR CANAL CAPS 5 - NOISE MUFFS 6 - OTHER 7 - NONE					

- [SSN = 990990013] Confirm demographic fields 2 thru 14
- Is there a change in hearing? \_\_\_\_\_
- Are thresholds within the range of normal? \_\_\_\_\_
- Where does the patient need to go? \_\_\_\_\_

**Summary**

- Four types of hearing loss
- Medical symptoms and communication impairments that are characteristic of each type of hearing loss
- Common causes of and basic treatment of each type of hearing loss
- Ear structures and functions affected by continuous and impact noise exposure
- Counseling, patient education and processing referrals

## Audiometer and Test Environment

### Learning Objectives

- 1.8.1 Identify the primary types of audiometers used in hearing conservation program
- 1.8.2 Describe the testing environment conditions for completing audiometric tests
- 1.8.3 Perform daily checks/tests required prior to testing
- 1.8.4 Add bio-acoustic simulator (BAS) listener/audiometer into DOEHS-HC
- 1.8.5 Establish daily calibration baselines
- 1.8.6 Identify and troubleshoot audiometric equipment

### Types of Audiometers

- **Microprocessor**
  - Test is computer controlled or automated; System may have a manual override feature allow user to switch between automated and manual mode; Manual audiometry competence is required even if a microprocessor audiometer is used
- **Manual**
  - Tester is in control; Not automated; Can be used for hard-to-test patients

Microprocessor: stimuli presentation are created/presented by patient previous responses; manual: stimuli presentation are created/presented by examiners discretion

### Audiometer Specifications

- Must meet ANSI S3.6 – current edition
  - Specifies range of output for each audiometric test frequency
- Earphones and cushions must also comply
- Earphones are not interchangeable between audiometers
  - Calibrated/repairs as a unit (audiometer/headset); never separate earphones from their audiometer to test patients

### Audiometer, Acoustical Calibration Check

- OSHA requires annually or if equipment fails daily biological calibration
- Audiometer output is not adjusted
- Performed by trained personnel with appropriate sound level equipment
- Audiometer and headphones are calibrated together as a unit
- DoD completes exhaustive calibration annually vs. acoustic calibration check

### Audiometer, Exhaustive Calibration

- Electro-acoustic calibration
  - DOD has an annual requirement; OSHA requirement is every 2 years
- Audiometer calibrated to ANSI S3.6 current edition
- Audiometer calibrated to specific earphones
- Audiometer and earphones must have the same serial number
- Never test patients with mismatched audiometer headphones
- Performed by trained personnel with appropriate equipment

Navy Marine Corps Public Health Center (NMCPHC) does all DOD CCA-200m audiometer calibrations at no charge

### **Audiometer Daily Calibration and Functional Check**

- Calibration and functional check required daily prior to any daily audiometric testing occurring
- Audiometer and headphones are calibrated together as a unit
- If audiometer does not pass daily calibration or functional check, the audiometer cannot be used and must be turned in for repair

### **Microprocessor Audiometer, Advantages/Disadvantages**

- Advantages
  - Built-in calibration and functional check procedures; Can perform multiple hearing tests at the same time; Reduces human error
- Disadvantages
  - More expensive than manual audiometers; Difficult for some employees

### **Manual Audiometer, Advantages/Disadvantages**

- Advantages
  - Greater examiner control; Allows retest of one or more frequencies; Accommodates subjects with tinnitus; Least expensive; One-on-one testing; Best method for hard-to-test employees
- Disadvantages
  - Can only test one at a time; Examiner fatigue/error

### **When Manual Audiometry is Appropriate**

- Use to retest questionable thresholds or when threshold determination is unsuccessful in automatic mode
- Subject has difficulty understanding instructions
- Motor skill challenges (hand switch)
- Distraction, lack of focus, sleepiness
- Fear, nervousness
- Tinnitus

### **Audiometer Test Environment**

- Must meet standards outlined in DoDI 6055.12
- If standards are not met, valid audiometric test results are not achieved

**Ambient Noise Level Limits**

- Audiometric test environment must not exceed MPANL
- For surveillance/monitoring audiometry, ambient noise level limits are specified for five octave bands
- Audio Booths are not sound proof, they are sound dampening

Maximum Permissible Ambient Noise Levels (Octave Band SPL, in dB)							
Frequency	125	250	500	1000	2000	4000	8000
OSHA Table D-2			40	40	47	57	62
DoDI 6055.12			27	29	34	39	41
ANSI S3.1-1999*	49	35	21	26	34	37	37

Sound level survey must be done annually, booth must meet standards; any booth movement (stationary or mobile – MOHCAV) requires another survey be accomplished prior to testing; ships require 2 surveys, one pier side, one underway, both of which may have restrictions with testing

**Controlling Ambient Noise**

- Excessive ambient noise may increase hearing thresholds, especially at 500 Hz
  - Calibrations fail at 500 Hz because lower frequencies are more difficult to attenuate
- Change testing schedule
- An audiometric booth is not a regulatory requirement, but it will help meet the ambient noise limit requirements
- Testing in a quiet room is acceptable if the ambient noise level requirements are met

Rooms used in place of audiometric booths must meet a sound survey at all frequency threshold levels in order to conduct accurate HCP audio testing.

**Booth Ambient Noise Causes and Resolutions**

- Door seal deterioration/replace seals
- Jack panel leaks/add insulation behind panel
- Excessive ventilation noise/replace fan
- External noise around booth/relocate booth

Noticeable by patient elevated thresholds at 500 Hz; booth relocation will require another sound survey/booth certification

**Audiometric Test Booths, Single wall versus Double Wall**

- Booth placement and background noise in the testing area will determine the need for a single or double wall booth
- A single wall booth is usually acceptable in a quiet, low traffic location

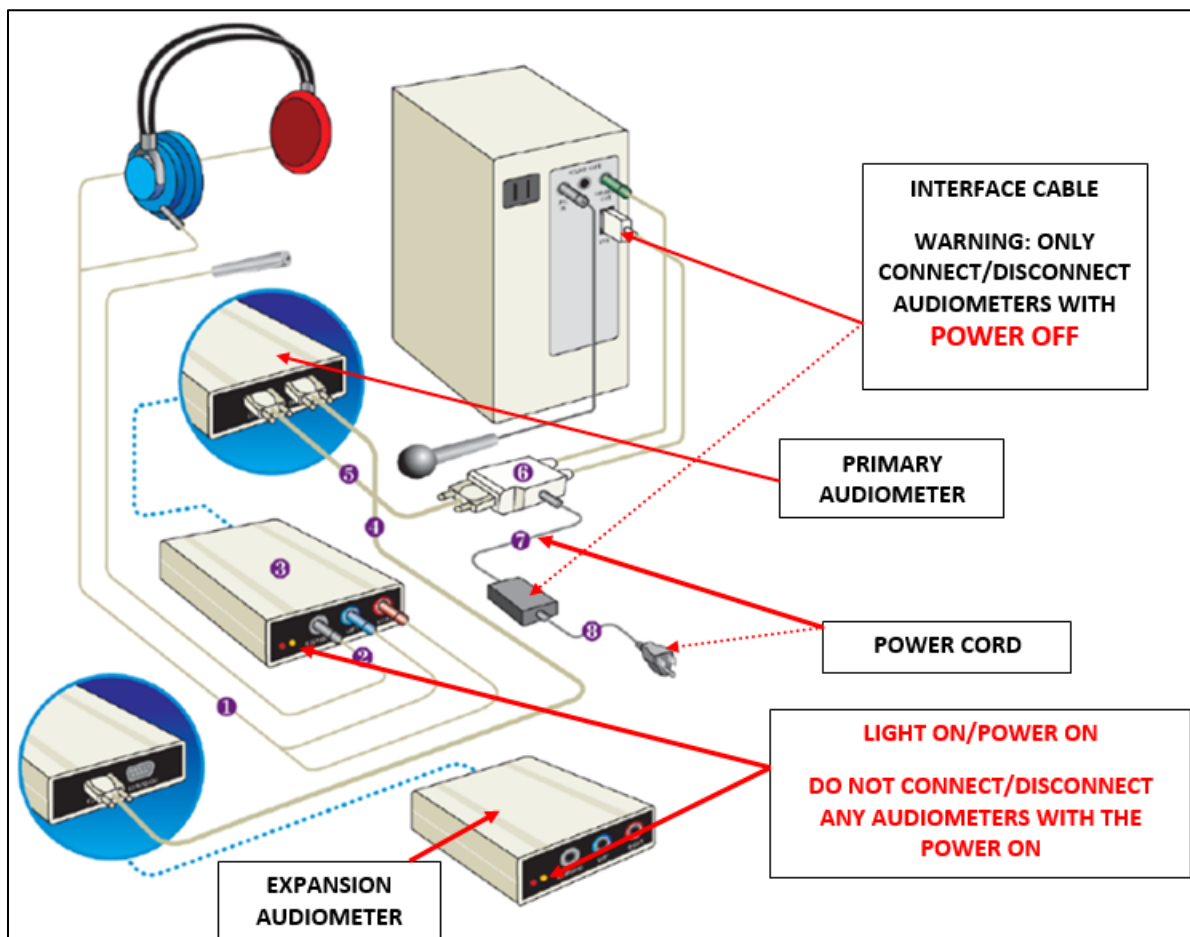
- A double wall booth will likely be required for a location where other background noise is vibrant (excessive/continuous ambient noise)
- A double wall booth is a booth within a booth

Determine background noise levels; structural considerations - floor handle the weight of the booth, electrical outlets, heating/cooling, do not mount directly on the deck of a ship; is the room large enough for the booth, vents, examiner station and door opening; any noise related items happening near the building where testing is going on – runways, motor pool, etc.

### Defense Occupational Environmental Health Readiness System – Hearing Conservation (DOEHRs-HC)

Never connect or disconnect audiometers from the computer or another audiometer without ensuring the audiometer power is turned off

Confirm the headset serial number and audiometer serial number match; review the serial number for the BAS when establishing calibration baselines. Never separate audiometer headset from the audiometer it was calibrated to.



DOEHRS-HC consists of sub-fields (examiner information, UIC/WICs, audiometers, listeners) that are associated with multiple records and are required to be filled out correctly; current fields are individually associated with a patient record(s); Correct user/examiner required to be logged into software

### **Audiometer Checks**

- Resolve audiometer error messages (common one is power disruption)
- Visual Check
  - Ensure equipment is clean; ensure headset wiring and response switch are untangled; ensure equipment is properly connected

Done daily, required prior to any audio testing, resolve any error messages prior to continuing.

Set software up to do a functional check; go to each audiometer to start the functional check, placing the headphones on and pressing hand switch inside booth to listen to the frequency/intensity sweep/functional check. Do not start the functional check from the computer screen.

Resolve any problems with the functional listening check prior to starting the daily biological calibration test, if it cannot pass, do not calibrate, audiometer cannot be used. Address equipment issues immediately with the hearing program manager or professional supervisor.

### **Audiometer Functional Listening Check**

- Technician conducting the Functional Listening Check is required to have normal hearing
- Listening Check
  - Frequency sweep – left ear; Intensity sweep – right ear; Steady 60 dB tone [Static/Breaks (check both ears); Cross-talk (check both ears)]
- Ensure you go inside the booth, place the headphones on and start the functional test by pressing the response switch
- Auto switches to a steady 60 dB tone in left ear
  - Check for static; Check for breaks and cross-talk
- Press the response switch once to change the steady tone to the right ear
  - Check for static; Check for breaks and cross-talk
- Repeat if needed
- Have all students perform the function check, identify any problems

### **Daily Biological Calibration Check**

- Use the BAS-200 (artificial ear) to establish a primary and secondary baseline (different listener) after annual electro-acoustic calibration
- Secondary baseline is used if the primarily listener becomes inoperative
- The baseline is recorded on DD Form 2217
- Ensure BAS-200 is activated and properly connected to audiometer
- Daily calibration thresholds are compared to the calibration baseline on the DD Form 2217

Calibration required daily, prior to any audio testing

### Daily Biological Calibration Check, Hardware Set-up

- Ensure headset are properly placed on the BAS
  - Headband parallel to the face of the BAS-200; Headband yolk completely compressed
- Remove response switch from BAS-200 to activate the BAS for the calibration test
- Completely close the audio booth door prior to starting any tests

### Daily Biological Calibration Check, Software Setup

- Booth numbers are italic (calibration not done)
- Audiometer > Daily Calibration > Set
- Set daily calibration test for all audiometers
- Press all enabled audiometers
- Daily calibration test will be set for all audiometers

### Establishing Calibration Baselines

- Run calibrations (first time)
- Write down or do a screen shot of the calibration results (CCA-200 window)

500Hz 1000Hz 2000Hz 3000Hz 4000Hz 6000Hz

500Hz 1000Hz 2000Hz 3000Hz 4000Hz 6000Hz

- Change the testing parameters
  - Remove/Replace the headset on the BAS; Unplug and re-insert left and right headset plugs in BAS; Unplug and re-insert patch cord from BAS and audiometer
- Do not retrieve results in the listener window
- Cancel and re-run calibration test
- Compare subsequent results with those received from the original calibration
  - Look for consistency in threshold results; Results plus or minus 5 dB for 500 Hz thru 4000 Hz; Results plus or minus 10 dB for 6000 Hz
- If the thresholds are the same or mimicking above passing criteria of the initial calibration results, retrieve results as baseline
- Conduct again if not “successful” until consistent results are achieved

### Adding a Calibration Listener

- Calibrations may not be completed in sequential order, check the station number prior to entering the BAS serial number
- Enter listener as BAS-200 and add BAS serial number

### Adding a Calibration Audiometer

- Application will auto fill audiometer information from the Benson Medical window and sub-fields previously filled out
  - Audiometer serial number, make and model; Electro-acoustic calibration date; Facility/Location; Audiometer type; **Ensure you tab through the fields prior to saving**



Failure to tab through fields will leave facility/location blank on the DD Form 2217 and with the saved audiometer.

- Manual/Microprocessor selection

### Daily Calibration Listeners

- Once listeners and audiometers are added a calibration baseline is created on DD Form 2217
- Select the correct listener from the drop down window for daily comparison with the baseline
- Alternate baselines should be established when the primary listener is created (used if primary listener becomes inoperative)

The functional check and daily calibration must be completed successfully and retrieved into the DOEHRs-HC software daily in order to perform any hearing tests

### Successful Equipment Tips

- Resolve any problems with the functional listening check prior to starting the daily calibration test
- Follow the same calibration procedures every time the procedure is completed
- Use alternate listener if the primary listener becomes inoperative
- Address equipment issues immediately with the hearing program manager or professional supervisor

### Failed Calibration/DD Form 2217

- Find out where and why the audiometer failed calibrations
  - Main failures, ambient noise, headphone placement

### BAS-200 Common Problems

- Headphone placement
  - Place headband on BAS parallel to wall; Completely tighten headband yolk; Loosen headband to remove from BAS
- Review DD Form 2217 for unsuccessful daily calibrations
- Invalid baseline established
- If function check/daily calibration is not completed and/or is not successful, audiometer cannot be used for testing

### Invalid Calibration Baseline Established/DD Form 2217

#### DD Form 2217

- Stored in DOEHRs-HC
- Print or export/save DD Form 2217 monthly
- Maintain copy of each DD Form 2217 for 5 years

## Summary

- Audiometer types
  - Microprocessor/Manual audiometers
  - Advantages/Disadvantages
- Audio booth/certification
- Equipment set up/connections
- Function Check
- Establishing calibration baselines
  - Adding BAS listener/audiometer
  - Unsuccessful checks
- Audiometer calibrations annual/daily
- Common BAS and audiometer issues
  - Troubleshooting
- DD Form 2217

## Unit Identification Code Practicum

### Learning Objectives

- 2.1.1 Understand the service format for UIC/WICs
- 2.1.2 Understand how to use the UIC Locator
- 2.1.3 Find Unit Identification Codes (UICs)
- 2.1.4 Add, edit and delete UICs from DOEHRs-HC
- 2.1.5 Test personnel under the correct service UIC/WIC

### Service Unit Identification Code (UIC) Format

- Army starts with a “W” followed by five alpha and/or numeric characters (Wxxxxx)
  - All Army (USA) are tested under their service UIC
- Coast Guard consists of 7 alpha and/or numeric characters (##xx#x#)
  - All Coast Guard (USCG) are tested under their service UIC
- Marine Corps consists of 8 alpha and/or numeric characters (##xx#x#x)
  - Marine Corps (USMC) can be tested under USMC or USN UICs
  - USMC may be in the same unit with USN but have a USMC UIC
- Navy consist of five alpha and/or numeric characters (xx#xx)
  - Navy (USN) can be tested under USN or USMC UICs
  - USN may be in the same unit with USMC but have a USN UIC

### Service Workplace Identification Code (WIC) Format

- Air Force has four numbers – four letters – 3 numbers followed by a letter (####-XXXX-###X).
- This is a WIC
  - It is issued to USAF personnel on USAF bases in the HCP by a USAF Bio-Environmental Engineers (BEE)
  - If you are testing at a USAF base, test USAF under the WIC issued by the Bio-Environmental Engineer of that base
- USAF patients stationed at USMC/USN bases, the test site will use: 1234-NAVY-123N and type their unit in the demographic data section on the run test window in the location field

### Query UIC Locator

- Enter a small amount of information in the query/filter
  - Use filter to pull up the answer; Re-query when you see how the data/records retrieved are recorded
- Data queried needs to be typed exactly as it is in the database (space, dash or slash)
  - If the query has too much information or is not typed exactly the way it is in the database the answer pool will not find data; Under text filter change equals (default) to contains
- Use single or multiple filters, Service, City, State or partial Unit name

## UIC LOCATOR PRACTICUM

Find the DOD Component, UIC, City, State, Zip Code and Major Command for the following units. You may have to adjust the wording/spelling to get the correct data. These UICs will be used in following exercises. If there is APO or FPO followed by 2 letters then the APO or FPO will be the city and the following 2 letters will be the state followed by the zip code.

**1st Mar Raider Bn, CA**

**MACOM = SOCOM**

Service: USN

UIC: \_\_\_\_\_ City: Camp Pendleton

State: CA

Zip Code: \_\_\_\_\_

**CGC Alert**

**MACOM = D13**

Service: USCG

UIC: \_\_\_\_\_ City: \_\_\_\_\_

State: \_\_\_\_\_

Zip Code: \_\_\_\_\_

**USS San Antonio LPD-17**

**MACOM = SURFLANT**

Service: USMC

UIC: \_\_\_\_\_ City: \_\_\_\_\_

State: \_\_\_\_\_

Zip Code: \_\_\_\_\_

### **UICs are important**

- Patients require their UIC to be entered and/or selected for their audiogram
- Most HCP reports are created via the patient UIC
- Contact your HCPM for any UIC questions you may have
- Enter UIC in the location you are entering patient data otherwise you will need to refresh the screen
- USN, USMC and USCG add the Major Command when entering the UIC

Note: USA/USAF do not require MACOM with UIC entry

## Unit Identification Code

- Established “core” UICs
  - Core UICs are UICs that belong to the that are frequently tested at the DOEHRS-HC word station/testing site
- Unit Safety personnel work in conjunction with the HCPM to identify personnel and units exposed to hazardous noise
- A DR Inquiry may bring down associated sub-table UICs for non-Air Force military personnel if the UIC is not in the local database
  - This will not bring add the MACOM with the UIC
- Always export records to the DR prior to deleting any UICs from the local database (incomplete records)

## Summary

- Service format of UIC/WICs
- UIC Locator
- Unit Identification Codes
- Add, edit and delete UICs from DOEHRS-HC
- Test personnel under the correct service UIC/WIC

## Demographic Data Practicum

### Learning Objectives

- 2.2.1 Enter demographic data correctly
- 2.2.2 Understand that previous drop down selections limit future drop down choices
- 2.2.3 Practice entering demographic data
- 2.2.4 Right click to assist with drop down window choices
- 2.2.5 Patients not tested within DOEHRS-HC

### Demographic Data Form

Form to be filled out by patients prior to coming to the booth for testing; ensure patient Demographic Data Form is filled out with enough information to verify/input patient in DOEHRS-HC; annotate station number within booth to ensure patient data matches the patient you are testing; SSN is the primary key and is required to be correct

### DOEHRS-HC Run Test Window/Input Demographic Data Window

For training purposes we are going to enter Demographic Data only without testing patients. The Input Demographic Data window mimics the same fields in the Run Test Demographic Data section. Unlike the Run Test screen, data can be either edited and/or saved in the Input Demographic Data screen without test retrieval. This is just to get you used to entering patient data that can be saved without testing patients.

### DOEHRS-HC, Demographic Data Entry

- Have the patient fill out a demographic form
- This form assists inputting patient data correctly
- Ensure the form has enough information so that patient data entry can be completed in DOEHRS-HC
- If more information is required, question the patient prior to placing them in the booth
- Write the station number on the patients demographic sheet on multi-stationed booths
- Enter Patient SSN (normally done in the run test window)
- Use tab to move forward to next field
- Enter date for DOB M/D/YY, tab
- Use hot keys
- Location - only free text area available for local use; Specific Work Location
- Ensure to enter a valid current phone number for the patient

Patient SSN is required to activate the DR inquire and/or demographic data portion of the run test window; go to Functions>Demographic Input

Enter your own data in the demographic input window, adding your UIC in the same window by right clicking in the UIC field. Save data.

Enter and save demographic data for Nathan Pastella

IDN (SSN and DODIDN): <b>990990039</b>		
Last Name: <b>Pastella</b>	First Name: <b>Nathan</b>	MI:
Gender: <input checked="" type="radio"/> Male <input type="radio"/> Female	Date of Birth (mm/dd/yr): <b>10/30/2002</b>	
Component (select one): DOD USC <input checked="" type="radio"/> USAF USMC USN Other (explain):		
Service Component (select one): Contractor Federal Employee Foreign National <input checked="" type="radio"/> Regular Reserve NG		
Rank/Grade: <b>E-3</b>	AFSC/MOS/NOBC/Rate & NEC/SDOC: <b>68T</b>	Unit: <b>Vet Branch</b>
UIC/WIC/WPID:	Branch/Career Field/Activity:	Major Command: <b>MEDCOM</b>
Work Location or Code: <b>Bldg 149 Yokosuka</b>	Phone Number (include area code): <b>315-555-5555</b>	

Go to Edit>Demographic Data window to review and/or correct data.

DOEHRS-HC Edit Demographic Data

- Edit>Demographic Data
- Check self
- 990990039

Patient Data Entry

- Enter patient demographic data in the Run Test screen when a patient is present for testing
- This data in conjunction with the threshold levels retrieved from the CCA-200 window will save as an audiogram (record)
- Enter demographic data correctly and completely
- Incomplete data entry may restrict test data from being retrieved from the CCA-200 window

General Information

- Patient SSN is a primary key, it has to be entered correctly
- Never use "Other" as a DoD comp without an audiologist prior approval
- Dependents, non-DoD employees and children age 16 or younger will not be entered into DOEHR-HC

Summary

- Enter demographic data
- Previous drop down selections limit future drop down choices
- Right click drop down window assistance
- Patients that will not be tested within DOEHR-HC

## Audiometric Techniques and Considerations

### Learning Objectives

- 2.3.1 Complete a comprehensive aural history
- 2.3.2 Understand the benefit of an otoscopic examination and when to do one
- 2.3.3 Explain the considerations for patient testing and preparation for testing
- 2.3.4 Explain the standard process of air conduction threshold testing, for automatic and manual methods
- 2.3.5 Understand factors affecting test validity

### Who May Perform Audiometry

- OSHA
  - Licensed audiologist, otolaryngologist or physician; OHCs certified by CAOHC or who have “demonstrated competence”; Technician who demonstrates competence operating a microprocessor (does not need to be certified)
- NIOSH and DoD do not recommend “demonstrated competence” option
- DoD requires Military hearing technician certification training or CAOHC certification
  - This applies to contract and sub-contract technicians; USN does not recognize on-line course or CAOHC without further DOEHRS-HC training
- Individual states may also require certification

### Audiometric Procedures

- Equipment Pre-checks
  - Daily functional listening check; Daily calibration
- Obtain aural (hearing) history
  - Demographic data form
- Perform otoscopic examination
- Place subject in audiometric booth
- Provide clear, understandable instructions
- Place earphones on subject - Red on right/Blue on left
- Complete test IAW ANSI
- Accurately enter patient demographic data while patients are testing
- Select correct test type
- Retrieve/record audiometric results
- Review audiogram for potential problems
- Counsel employee, educate, and arrange follow-up tests if needed
- Refer as needed

### Prepare for Testing

- Ensure ambient noise levels in the test environment are below standards outlined in applicable regulations
- Log into the audiometric software application (DOEHRS-HC)
  - Ensure equipment works properly; Annual electro-acoustical calibration is valid; Daily functional check is successful; Daily biological calibration test is successful



- Clean equipment IAW clinic infection control policies

### **Infection Control**

- Follow local infection control guidelines
- Include hand hygiene and equipment cleaning
- Include plan for cleaning blood and/or other body fluids
- Disposable earphone covers recommended
- Non-alcohol based disinfection wipes - preferred method
- Hand Switch/Earphone cleaning
  - Do not use alcohol or harsh chemicals; Keep moisture away from earphone diaphragm; Ensure earphones are dry before patient use

### **Aural History**

- Current auditory complaints
- Changes in health, medications
- Occupational and non-occupational noise exposure
- Hearing protection use
- Tinnitus
- GINA – Genetic Information Nondiscrimination Act
  - Do not ask family history questions

### **Otoscopic Examination Lighted Ear Inspection**

Always do an otoscopic examination if conductive issues are suspected; if you are going to insert hearing protection into the ear canal; as soon as an STS is identified.

**Volume Control** - Adjust instructions volume prior to patient testing

### **Patient Processing/Instructions**

- Collect demographic forms, annotate station and ensure patient is in the correct station
- Verbal instructions:
  - Remove any foreign items in their mouth (gum, etc.); Remove eye glasses, hearing aids, large earrings, etc.; Turn off all electronic devices; Move hair away from ears; Response switch in hand; Test instructions will begin when the door shuts; Place headphones on properly, red/right, blue/left

Instructions can be modified to listener's primary language within the CCA-200 software.

### **CCA-200 Application Start Test Recorded Instructions**

This is a hearing check. You will be listening for some tones. When you hear a tone, press the button once and quickly release the button. No matter how faint the tone, press the button when you hear a tone and quickly release the button. Upon completion of your hearing check, please remain seated and quiet until the operator releases you.

Close audio booth door, start test booth; if auto voice instructions are not played, verbal instructions similar to above will need to be review with patients. **Have students listen to instructions, adjust volume if needed to an appropriate level for patients with/without normal hearing.**

### **Audiometer Test Configuration**

- Pulsed stimuli is selected/used
  - Helpful for patients with tinnitus
- CCA-200 always begins with the left ear; changing to begin on the right ear is available (prior to test start)
  - Test better ear first; Testing better ear first allows patient to learn what to expect; May be longer periods of silence during testing of poorer ear
- Start/Error voice instructions are presented

### **Hearing Threshold Level (HTL) Automated or Manual Testing**

- Hearing threshold at a frequency is defined as the lowest level at which a response occurs in at least half (50%) of the ascending stimuli
- HTL is a statistical measure...not an absolute number
- Variations of +/- 5 dB are not statistically significant
- A hearing level to which the subject responds to 100% of the time would likely be at least 5 dB above the HTL

### **Manual Testing Modes**

- Pulsed method presents 1-2 second tones
- To determine a threshold present a 30 dB tone for the ear and frequency; if no response is recorded, increase stimulus level initially by 20dB then 10 dB until a response is obtained
  - After the initial response is validated, follow the threshold bracketing procedure: Response - stimuli presentation decrease by 10 dB; No response - stimuli presentation increased by 5 dB; A threshold is determined when the patient responds twice in an ascending mode at the same intensity
- CCA-200 semi-automatic manual mode will do the bracketing method automatically

Initial Response Confirmation may be selected: stimulus to which the subject first responds in an ascending trial of a threshold determination is repeated. If the subject responds to the repeated stimulus, the test continues normally; otherwise, the stimulus intensity increases by 5 dB until the subject responds again. That response is again validated.

### **Audiometric Test Sequence Automated/Manual**

- Initial stimuli presented at 30 dB, (per frequency)
- Repeat 1000 Hz (initial ear)
  - Retest within +/- 5 dB, records the lower threshold; If repeat varies by 10 dB or more, receives error message (RN) "retest not valid" reinstructs and continues testing (semi-automatic manual mode)
- Continue with additional frequencies

Ear:	Freq:	Familiarization initial ear					Ear:	Freq:
Left	1000	30	-10	15	10.	Right	2000	
Left	500	VSL	-10	5	11.	Right	3000	
Left	1000	VSL	-10	5	12.	Right	4000	
Left	2000	VSL	-10	5	13.	Right	6000	
Left	3000	VSL	-10					
Left	4000	VSL	-10	5				
Left	6000	VSL	-10	5	18.			
Right	500	30	-10	5	17.			
Right	1000	VSL	-10	5	18.			

If conducting a complete “manually tested” audiogram, conduct test sequence for manual testing in the same frequency order as identified above, confirmation test only needs to be done at the 1000 Hz on the initial ear, retest needs to be within 5 dB of initial threshold received.

### Manual Testing

- Consider manually testing if:
  - Patient is having problems testing (error codes); Results differ greatly from the last test (STS, EWS); Questionable results
- Evaluation legend

	Right	Left
<u>Air Conduction</u>		
Unmasked	○	×
Masked	△	□

- When using the CCA-200 semi-automatic manual testing mode, do not adjust the decibel level once a patient responds, application will keep track of the responses/stimuli presented and lock in thresholds once the patient responds twice in an accenting manner.

### Switching to Manual Mode in CCA-200

Defaults to left ear, 1000 Hz, 30 dB; select ear/frequency; set NT if thresholds are already present; present stimulus; increase by 20 dB then by 10 dB until patient responds, do not adjust dials once the patient responds when using the semi-automatic manual testing mode. Bracketing method will initiate in the semi-automatic manual testing mode, application will keep track of the patient responses, once the patient responds twice in an ascending manner, threshold will lock; “m” identifier will be present only in the CCA-200 portion of the application.

Select ear/frequency; set NT if thresholds are present. Present stimulus at 30 dB; increase by 20 dB then by 10 dB until patient responds, do not adjust dials once the patient responds. Bracketing method will initiate, application will keep track of the patient responses, once the patient responds twice in an ascending manner, lock threshold.

Have student place headphones on the BAS and manually test the right ear 4000 Hz; Select ear/frequency; set NT if thresholds are present

Present stimulus at 30 dB; increase by 20 dB then by 10 dB until patient responds, if using the semi-automatic manual testing mode do not adjust dials once the patient responds

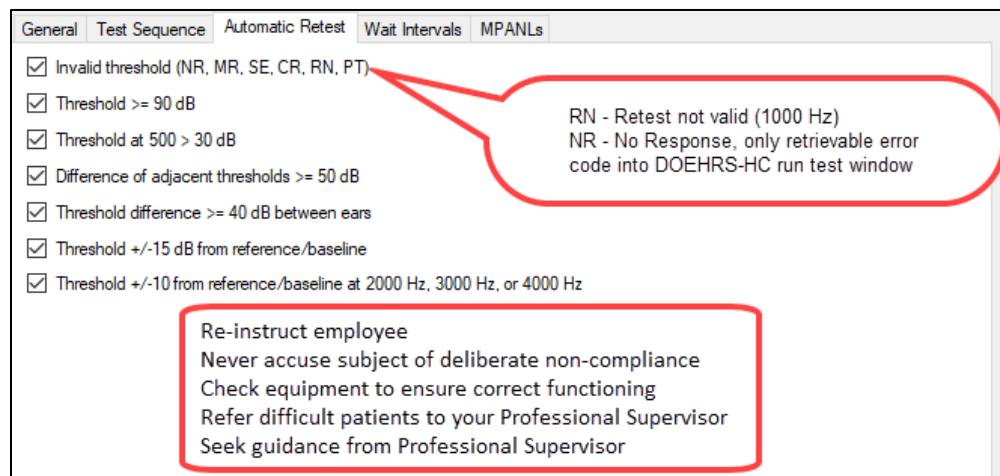
Bracketing method will initiate, application will keep track of the patient responses, once the patient responds twice in an ascending manner, and threshold will lock

“m” identifier will be present ONLY in the CCA-200 portion of the application

- Select ear, frequency, set NT, present initial stimuli at 30 dB (default)
- Do not give visual cues, press present stimulus; Initial increase by 20 dB then 10 dB increments until patient responds; Once patient responds, use the bracketing method (do not adjust dials after initial response if using the semi-automatic manual testing mode); Vary time interval between stimulus presentation to avoid a rhythmic tone presentation; Lock thresholds when patient responds twice in an ascending manner (automatically done if using the semi-automatic manual testing mode)

Do not adjust the frequency or decibel levels once a patient responds if using the semi-automatic manual testing mode, application will keep track of the responses/stimuli presented and lock in thresholds once the patient responds twice in an ascending manner.

### CCA-200 Automatic Threshold Retest



### Manual Testing (Common Issues)

- Facial or visual cues
- Rhythmic pattern of presenting stimuli
- Earphones placement
- Poor (sloppy, rushed, non-standard) instruction
- Forgetting 1000 Hz retest (whole ear test)
- Recording data incorrectly in DOEHRS-HC (wrong ear or thresholds)

### **Factors Affecting Test Validity**

- Poor test environment
- Cross-over hearing (Masking)
- Uncooperative patients
- Fatigue, sleepiness
- Tinnitus
- Manual coordination problems
- Wax impaction, collapsing ear canals
- Lack of understanding the audiometric instructions
- Anxiety and claustrophobia

### **Summary**

- Aural history
- Patient test considerations
- Testing preparation
- Automated process for pure tone air conduction testing
- Manual testing methods
- Factors affecting test validity
- When to do an otoscopic examination
- Normal/Abnormal tympanic membrane

## Hearing Protection Devices

### Learning Objectives

- 2.4.1 Explain the relevance and importance of HPD fittings
- 2.4.2 Distinguish the types of hearing protective devices according to their characteristics, advantages and disadvantages
- 2.4.3 Outline the steps for fitting a patient with hearing protective devices
- 2.4.4 Explain the significance of the NRR in determining the effectiveness of hearing protectors

### Hearing Protection Selection Criteria

- Tactical requirements
- Degree of noise attenuation required to prevent any change of hearing thresholds
- The work environment
- Advantages and disadvantages
- The best hearing protection device is one that will be used and worn correctly by the noise exposed individual

### Hearing Protective Devices, Single Protection

- Required in the following noise conditions, regardless of duration
  - Steady-State Noise:  $\geq 85$  dBA TWA; Impulse noise:  $\geq 140$  dB
- OSHA HPD use is required at an 85 dBA TWA if the employee has not received a baseline audiogram or if an STS has been identified
- Provided by the Services
  - USA/USAF provided by medical; USN/USMC provided by the line unit

### Hearing Protective Devices, Double Protection - Service Specific

- USA
  - Steady-state noise  $> 103$  to  $108$  dBA (TWA); Impulse noise  $> 165$  dB
- USN/USMC/USCG
  - Steady-state noise  $\geq 104$  dBA (TWA); Impulse noise  $\geq 160$  dB
- USAF - when noise exposure is still hazardous with single HPD attenuation or on the flight line
- In all cases while wearing double HPDs and hazardous noise exposure is still exceeded; administrative time limit controls may be implemented

Administrative controls = time limits on noise hazard exposure; OSHA does not have double hearing protection requirements

### Noise Reduction Rating (NRR)

- HPD are labeled with their noise reduction rating referred to as the NRR
- The NRR is an attenuation value
  - Determined under laboratory conditions; Not accurate in a field environment; affected by fit, insertion technique, noise level in the work environment
- OSHA/NIOSH have developed formulas to de-rate the NRR as a better estimate of real world protection

Actual attenuation in a field environment is about half the NRR. Those who are fit appropriately and use the devices correctly will likely achieve attenuation values close to the published NRR

### Estimating HPD Attenuation

- Noise Reduction Rating (NRR) measured in dBC
- Spectral adjustment (subtract 7dB for use with dBA)
- De-rating (OSHA recommendation)
  - Service-specific de-rating; Other organization recommendations
- Personal Attenuation Rating (PAR)

**Noise Reduction Rating (NRR)** is required by the Environmental Protection Agency; because the NRR is measured in dBC, and dosimetry is typically measured in dBA, some spectral adjustments due to weighting scales differences is necessary (NRR-7dB subtraction)

**Estimating HPD attenuation:** De-rating - The adjustment of the NRR to estimate actual field attenuation as opposed to attenuation measured in a laboratory; De-rating is an OSHA recommendation, but not a requirement; De-rating is only necessary on the required EPA-labeled NRR using the ANSI S3.19 (1974) standard; not necessary if using the most current ANSI S12.6 or S12.42

**Air Force de-rating:** per AFI 48-127: 50% earplugs, 25% earmuffs

**Army de-rating:** is not specified for the Army

**Navy de-rating:** Subtract 7 dB from HPD NRR; follows USMC de-rating if an STS is present

**Marines de-rating:** Subtract 7 dB from HPD NRR and divide by 2

**NIOSH de-rating:** 70% for pre-molded earplugs, 50% for formable earplugs and 25% for earmuffs (de-rating percentages reflect ease of fit)

**OSHA de-rating:** recommends de-rating the NRR by 50% when hearing protection is used in lieu of engineering and administrative controls

**Personal Attenuation Rating:** A measurement of the actual attenuation received by a user for a given fit. The most accurate method of determining appropriateness of a hearing protector (no de-rating necessary) Results reflect a specific fit

### Fit Testing of HPDs

#### OSHA HPD attenuation de-rating

8 hour TWA noise exposure:	93 dBA
NRR of Hearing Protection:	29 dB
Subtract 7 dB from NRR:	$29 \text{ dB} - 7 \text{ dB} = 22 \text{ dB}$
Divide by 2:	$22/2 = 11 \text{ dB}$
Subtract 11 from the TWA:	$93 \text{ dBA} - 11 \text{ dB} = 82 \text{ dB}$

Decide if 82 dB (known as the “Protected Exposure”) is below the PEL for noise

## Noise Reduction Rating (NRR) - Double Hearing Protection

- Double hearing protection (example: earplug and earmuff or helmet) does not double the NRR
  - An earplug with a NRR of 25 dB worn with an earmuff protector that has a NRR of 25 dB does not give you 50 dB of noise reduction
  - Double protection provides only an additional 5 dB attenuation

## Hearing Protection Device Types

- Earplugs
  - Preformed (fit by medical - per ear); Hand-formed
- Noise muffs
- Ear canal caps
- Helmets
  - Service specific
- Other
  - Tactical Communication and Protective Systems (TCAPS)

Helmets are service specific in DOEHS as a selection IAW patient DOD component; Carry HPDs in an earplug case, case may be used to assist in inserting HPD into ear; Primary HPD selection will limit double hearing protection drop down choices.

## Hearing Protection Device (HPD) Users

- Protection required in hazardous noise
- Speech becomes recognizable with time and practice
- Machine noise and its operational characteristics become recognizable
- HPDs may work loose (depending on type) and must be reinserted periodically for maximum effectiveness
- Reduce work day exposure below 85 dBA/140 dBp using hearing protection or combination of hearing protection and administrative controls
- Protected hearing is better than permanent hearing loss

## Earplug Fit

- Fully insert HPD correctly
- Occlusion effect - user's voice should sound "deeper" to themselves
- Voice should sound muffled
- Fit each ear individually
- Air-tight seal achieved
- Resistance when you tug or try to remove the hearing protection device

## Otosopic Examination Lighted Ear Inspection

- Ensure ear canals are free of any obvious problems
  - Can the TM be viewed; Are there any obstructions/abnormalities; What size HPD may be appropriate
- Necessary step in fitting hearing protection



- If something unusual or abnormal is discovered, seek further evaluation by a medical professional

### **Triple Flange Earplug**

- 3 color coded sizes
  - Small (green); Medium (orange); Large (blue)
- Use the earplug case to insert the triple flange earplug

### **Visualize a Good HPD Fit**

#### **Quad-Flange Earplug**

- Size may vary, depending on manufacturer

#### **Level Dependent Earplugs**

- Specialized filter contained within the earplug
- Used differently depending on type of noise
- Closed filter - maximum protection for both continuous noise (vehicles/machinery) and impulse noise (weapons fire)
- Open Filter - little or no protection for continuous noise but will protect from impulse noise; level of protection will increase with the level of the impulse noise

Open setting, level dependent earplugs will allow you to hear soft sounds, like speech, better but will not provide protection from continuous noise

#### **Level Dependent Earplugs Combat Arms/Battle Plugs**

- Sized
- Fit by medical professional; Comes attached, same size as a set
- Toggle switch selector
  - Closed cap provides maximum protection from hazardous noise; Open cap for increased situational awareness during weapons fire (Provides greater ability to hear speech and environmental sounds while providing protection from impulse noise)

Combat arms: small=green, regular=tan, large=brown

#### **Level Dependent Earplugs Sonic Defenders/Surefire**

- Specific to ear – right/left
  - Right ear = red vent; Left ear = clear vent
- Cap open for weapons fire
- Cap closed for continuous noise
- Fit by medical professional

#### **Preformed Earplugs; Care, Maintenance and Replacement**

- Clean after each use with warm, soapy water
- Rinse and dry thoroughly
- Level-dependent earplugs
  - Do not get the filter wet; Remove the filter before cleaning the earplug with soap and water

- Do not insert with soiled hands
- Check plugs for correct size and any signs of deterioration
- If unserviceable, must be refit with another pair

#### **Preformed Earplugs Advantages/Disadvantages**

- Advantages: Effective protection with proper insertion depth; Durable, washable, reusable; Easily carried; Less expensive than ear muffs; Comfortable
- Disadvantages: Medical fitting required; Frequent insertion may cause irritation; May work loose with jaw movement; Improper fit reduces effectiveness

#### **Hand-Formed Earplugs**

- Size, manufacture dependent
- Plug will return to its original shape after being removed
- Insert hand-formed earplugs with clean hands
  - Clean hands = free of debris or chemicals; any dirt, abrasive substances or chemicals can irritate the ear canal

#### **Hand-Formed Earplug Fitting Technique**

- Ensure a crease-free roll (thumb/index finger)
- Insert 2/3 of plug into canal
- Hold plug in place with finger until fully expanded

#### **Hand-Formed Earplugs: Care, Maintenance and Replacement**

- Hand-formed earplugs are made from memory foam (polyurethane, etc.)
- Washing hand-formed earplugs will destroy the acoustic properties and render the earplug less effective
  - Unless HPD is specifically designed to be washed/specific time for usage
- May be designed to be one-time use – if so, dispose of earplug after a single use
- Do not alter in any way (cut in half, trim tips for comfort, etc.)

#### **Hand-Formed Earplugs Advantages/Disadvantages**

- Advantages: Effective protection when properly inserted; Comfortable; Universal fit; Least expensive; Hand-Formed
- Disadvantages: Requires practice to get a smooth cylinder shape with no creases or folds; Easily soiled; Cannot be used around corrosives or dangerous chemicals; One-time use

#### **Noise Muffs**

- Universal fit
- Fitting techniques:
  - Ear-cups must totally seal and enclose each ear; Adjust headband for firm, comfortable fit; Headband placement options vary
- Can be incorporated into hard hat or helmet with high performance ear muffs
- Verify seal with or without glasses or goggles

## **Hard Hat with Noise Muffs**

- Verify seal

## **Noise Muffs Care, Maintenance and Replacement**

- Wipe ear-cup seals with moist cloth
- Check seals frequently; replace if damaged
- Replace cushion inserts (inside ear-cups) when foam deteriorates
- Check for cracks or holes in ear-cups
- Ensure adequate headband tension; replace if necessary
- Modifications are prohibited

## **Noise Muffs Advantages/Disadvantages**

- Advantages: Universal fit; Good attenuation; Can be worn with earplugs; Medical fit not required; Easily cleaned; Add communications equipment and/or Active Noise Reduction (ANR) features
- Disadvantages: Expensive; Bulky and heavy; Uncomfortable in heat and humidity; Hair, glasses, earring decrease effectiveness; Not easily carried

## **Ear Canal Caps**

- Use only for short-term or intermittent exposures
- Provide adequate hearing protection when hazardous noise levels are 95 dBA or less
- Tips or end caps are placed at the opening of the ear canal and pushed into the ear canal until a snug seal is obtained
- Can be worn over the head, under the chin or behind the neck

## **Ear Canal Caps Advantages/Disadvantages**

- Advantages: Universal fit; Quickly inserted; Lightweight; Easily carried around the neck
- Disadvantages: More expensive than earplugs; Uncomfortable after extended use; Limited attenuation; Poor headband tension greatly reduces effective protection

## **Combat Vehicle Crewman (CVC) Helmet**

- CVC Helmets normally stay with the vehicle
- Contains a helmet liner
  - Vehicle Intercommunication System (VIS); Uses active noise reduction
- Care and Maintenance
  - Check ear-cup seals semi-annually; Replace when cracked or broken
- Eye protection may interfere with seal

All helmets are issued by the unit

## **Aviator Helmet**

- Aviator helmets normally stay with the person it is issued to
- Aircrew retains night vision goggle (NVG) capability

- Dismounted aircrew can communicate with aircraft
  - Hearing enhancement while dismounted
- Protection from high-level impulse noise
- Improved situational awareness
- Improved face-to-face communication
- Usually worn with the Communication Earplug (CEP)

### **Tactical Communication and Protection System (TCAPS)**

- Integrates hearing protection, communication equipment and amplification of environmental sounds
- Advantages: Allows for amplification of soft sounds such as speech while providing hearing protection for loud sounds such as weapon fire; HPD that can be used easily in tactical environments; Availability in different types to suit unit/operator needs
- Disadvantage: Decreased localization and distance determination

In addition to protection from hazardous noise, it also amplifies low level sounds, like a hearing aid, to increase the wearer's situational awareness for low level sounds; ANR is activated at 85 dBA, max output is 90 dBA, it is safe to wear for up to 8 hours in 115 dBA (equivalent to the sound of a jet taking off) and it is safe for impulse noises up to 165 dB peak sound pressure level; a digital compression circuit like those used in a hearing aid ensures that hazardous noise is not attenuated any more than necessary

### **Musician Earplugs Custom Molded or Preformed**

- Custom Molded
  - Molded to individual ear; Various filters available; Ear mold impression/special order required
- Preformed
  - Available in standard and large sizes; Medical fit required; NRR ~20 dB

Designed for musicians and sound engineers, incorporate filters which yield relatively flat attenuation across frequencies; sound is not distorted in the same way conventional hearing protectors do; must be medically fit, custom molded earplugs and ear mold impressions with deep canal portion are needed; amount of attenuation depends on what instrument the musician plays and location in the band normally between 15-25 dB

### **Summary**

- Selecting hearing protection
  - Single protection; Double protection
- Noise reduction rating – HPD attenuation
- HPD Types
- HPD fit
- Otoscopic examination
- HPDs care and maintenance
- HPDs advantages and disadvantages

## Audiometric Testing and Follow-up

### Learning Objectives

- 2.5.1 Understand audiogram basics
  - Test types and format
  - Degrees of hearing
  - Common audiometric configurations
  - Significant/Standard Threshold Shift (STS)
  - Temporary Threshold Shift (TTS)
  - Permanent Threshold Shift (PTS)
- 2.5.2 Identify problem audiograms requiring review by the Professional Supervisor
- 2.5.3 Baseline re-establishment

### Pure Tone Air Conduction Threshold Testing

#### Definitions

- Threshold of hearing
  - The lowest level of sound a person can hear in a series of ascending, pure tone presentation trials at least 50% of the time
- Audiometric Zero (0 dB HL)
  - The sound pressure level at which the threshold of audibility occurs for average normal listeners
- Audiogram
  - A record of an individual's hearing sensitivity; For occupational testing, a record of the pure-tone air-conduction hearing threshold levels
- Normal Hearing
  - Audiometric threshold results that range from -10 to 25 dB
- Significant/Standard Threshold Shift (STS)
  - An average change of plus or minus 10 dB at 2000 Hz, 3000 Hz, and 4000 Hz, relative to the reference audiogram, in either ear, without age corrections (DoDI 6055.12)
- Temporary Threshold Shift (TTS)
  - An STS that resolves on follow-up test after auditory rest ( $\geq 14$  hours)
- Permanent Threshold Shift (PTS)
  - An STS that doesn't resolve on follow-up testing after auditory rest ( $\geq 14$  hours); Validated by an audiologist, otolaryngologist or physician (Professional Supervisor)
- Early Warning Shift (EWS)
  - A difference of plus 15 dB at 1000 Hz, 2000 Hz, 3000 Hz or 4000 Hz, relative to the reference audiogram, in either ear, without an STS; If an STS is present in the same ear, the STS takes precedence

#### Audiometry Testing

- Comply with Federal, DoD and Service specific regulations
- Monitor the effectiveness of the local hearing program
- Identify significant threshold shift(s) in hearing level
- Process medical referrals for proper diagnoses

- Establish individual's fitness for duty (Completed by Professional Supervisor)

### Audiometric Monitoring

- Purpose: conduct routine hearing tests to identify changes in hearing related to noise exposure
- Creation of initial baseline hearing thresholds
  - DD Form 2215 required for all military and all those DoD civilians exposed to hazardous noise (HCP Stressors)
- Determine disposition, referral needs and fitness for duty
- Baseline re-establishment
- Termination - removal from the HCP

Reference audiogram - required of all military, and civilian personnel in the HCP; obtained during first 30 days of employment.

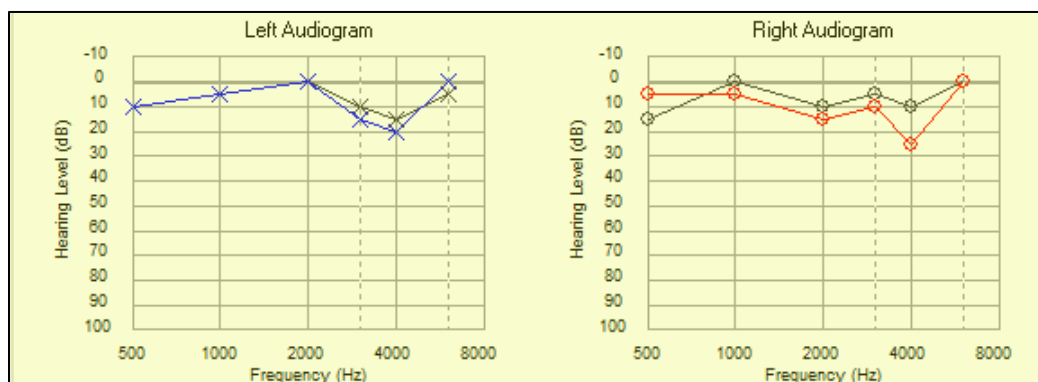
DD 2216 – Annual, Required of all military and civilian personnel routinely exposed to noise, and all Army/USMC military; enrollment in HCP. DD 2216 current test compared to reference audiogram to determine if a change (STS) has occurred.

### Audiometric Testing

- Service members are at a much greater risk for noise-induced hearing loss compared to the general population
- Noise-induced hearing loss is a bloodless/painless injury
- Hearing tests are a reliable way to identify a noise-induced injury
- Early identification is the goal
  - Enables access to preventive/rehabilitative services
- Limits permanent impact on career/job performance

### Types of Audiogram Recordings, Graphic (highlighted portion)

- Graphic representation of hearing thresholds; Frequency and Intensity
- Symbols to represent right ear, left ear, bone conduction and masked thresholds (legend)
  - Frequently used in a clinical/diagnostic setting
- Thresholds are measured and recorded in 5 dB increments



**Types of Audiogram Recordings, Serial/Numeric (highlighted current test portion)**

- Used on DD 2215, DD 2216 and Non-Hearing Conservation tests (Forms in additional packet)
- Bring up the annual test in the local database, 990990033, press print to review 2216

2. DOD COMPONENT F		A - ARMY N - NAVY		F - AIR FORCE M - MARINE CORPS		C - COAST GUARD 1 - OTHER		3. SERVICE COMPONENT R		R - REGULAR V - RESERVE		G - NATIONAL GUARD 1 - OTHER	
4. SOCIAL SECURITY NUMBER 990990033				5. NAME (Last, First, Middle Initial) GARIBAY, KEITH E				6. DATE OF BIRTH 05 May 2001		7. SEX M		M - MALE F - FEMALE	
8. PAY GRADE UNIFORMED SERVICES E04		9. PAY GRADE CIVILIAN		10. SERVICE DUTY OCCUPATION CODE 2T3		11. MAILING ADDRESS OF ASSIGNMENT 0664-CEVM-054G 554 RHS ANDERSEN AFB GU 96542							
12. LOCATION - PLACE OF WORK GUAM/NWFIELD						13. MAJOR COMMAND PACAF		14. DUTY TELEPHONE (Include area code) (671) 555-5555					
15. AUDIOMETRY		a. PURPOSE		1 - 90 DAY			2 - ANNUAL			3 - TERMINATION		4 - OTHER	
AUDIOMETRIC DATA RE ANSI S3.5		LEFT						RIGHT					
		500	1000	2000	3000	4000	6000	500	1000	2000	3000	4000	6000
b. CURRENT AUDIOGRAM DATE 02 Dec 2021		10	5	0	15	20	0	5	5	15	10	25	0
c. REFERENCE AUDIOGRAM DATE L: 28 Dec 2018 R: 28 Dec 2018		10	5	0	10	15	5	15	0	10	5	10	0
d. SIGNIFICANT THRESHOLD L: 1 R: 1		e. THRESHOLD SHIFT		0	0	5	5		5	5	5	15	
f. REMARKS (Include Exposure Date) Steady Noise Exp(TWAdBA): 104, Impulse Noise Exp(dBP): Not Entered, Health Ed Prov, *****TRAINING AUDIOGRAM*****, Early warning for a decrease in hearing _____(R), H-1.								g. TYPE OF PERSONAL HEARING PROTECTION USED 3					
								1 - SINGLE FLANGE (1/8"R)		4 - EAR CANAL CAPS			
								2 - TRIPLE FLANGE		5 - NOISE MUFFS			
								3 - HAND FORMED EARPLUG		6 - OTHER			
										7 - NONE			

- [SSN = 990990033] Confirm demographic fields 2 thru 14
- Is there a change in hearing? \_\_\_\_\_
- Are thresholds within the range of normal? \_\_\_\_\_
- Where does the patient need to go? \_\_\_\_\_
- Additional Comments \_\_\_\_\_

**Required DOEHRs-HC Audiogram Fields/Sub-Fields**

- Examiner information - previously entered/saved by technician
  - Comes from user logged into DOEHRs-HC; Name, certification number, SDOC, office symbol
- Date/Time of test
  - Auto entered from date/time on computer
- Audiometer - previously entered/saved by technician
  - Auto created from calibration baseline/saved audiometer; Model, Make Serial Number, Calibration date; Type - microprocessor (Technician/automated) or manual (Audiologist)

**Audiogram DOEHRs-HC Sub Fields**

- Examiner key fields (logged in user)
- Audiometer (saved/created with calibrations)

**Audiogram Test Selection**

- Very important that the technician select the correct test type
  - Correct test type selection will ensure valid patient counseling/education/training
- Test type changes once records has been exported to the DR cannot be locally accomplished

## DD Form 2215, Reference (Baseline) Audiogram

- Required for all military and hazardous noise exposed civilians
- Patient must be 14 hours hazardous noise-free; Should be obtained prior to noise exposure, but at least within 30 days of employment; No Ear, Nose and Throat (ENT) problems the day of the test
- OSHA allows 6 months and up to 1 year, if using a mobile testing service
- Reference required (comparison) for all periodic exams (DD Form 2216 tests)
- Referral may be generated depending on the threshold results and reference reason

OSHA requires use of hearing protection at 85 dBA TWA until a baseline is obtained; once baseline is obtained, exposure level for required HPD use increases to 90 dBA TWA. If a referral is generated by test selection you may not want to create the 2215, examples: Low frequency hearing loss (conductive issues) or asymmetry, masking requirement is present (possible invalid thresholds)

## Reference Test Selections Reasons

- Prior to initial duties in noise hazardous areas
  - No previous DOEHRS-HC electronic reference
  - Type 1 (< 30 days hazardous noise exposure)
- Following exposure in noise duties
  - No previous DOEHRS-HC electronic reference
  - Type 2 ( $\geq$  30 days hazardous noise exposure)
- Change in service component (break or change in service)
  - Has a previous DOEHRS-HC electronic reference present
  - Currently in the Hearing Conservation Program
  - Type 4 (over rides previous references – future 2216 test will compare to this reference)
- Type 0 (non-2215) is manually entered in the run test window if DOEHRS-HC DR is down or at a non-internet connected testing site

Above are the only selections a technician may make in the DOEHRS-HC Run Test window

- Very important that the technician selects the correct reason when a 2215 test type is conducted
- All future 2216 tests will compare to the earliest electronic reference audiogram within DOEHRS-HC
  - Only type 3 or 4 reference audiograms can over-ride this application policy
- Reason type 1 or 2 tests are completed as the initial reference for all military personnel or civilians in the HCP
  - No previous DOEHRS-HC reference present
- Re-established after follow-up program
  - Never selected from the Run Test window
  - STS identified on preceding test series
  - Follow-up 2 completed
  - Type 3 (over rides previous references - ear specific)
  - Reviewed and authorized by the Professional Supervisor (previous audiogram)
  - Evaluated by an audiologist and manually entered into DOEHRS-HC



- ❑ All type 3 reference audiograms require an electronic remark that includes who authorized re-establishment for previous test selection or who manually entered the re-establishment

Technician is required to make a decision on the test type and/or reason; Has to be knowledgeable on selection to negate future testing data errors; Data may be transferred to medical readiness applications

If the wrong reference test reason is selected, future 2216 tests may not be compared to the correct 2215.

#### **DD Form 2216, Monitoring Audiogram Types - Requires a reference audiogram for comparison**

- Annual
- Pre and Post-Deployment
- Termination
- 90 Day
- Other
- Follow-up 1 and 2 (STS on previous test/Ear specific)

Follow-up 1 or 2 are the only 2216 tests that can be single ear; requires STS on previous test within follow-up timeline

#### **DD Form 2216 Selection**

- Technician has to be knowledgeable on test selection to negate future testing data errors
- Identifies STS/EWS and referral criteria
- STS/EWS require patient signature on the 2216
- Selection of a 2216 test type requires a reference audiogram
- If a reference audiogram is not in the local database, a type 0 reference is required to be entered in the run test window
- Type 0 reference is only transcribed from a DD Form 2215; Date and thresholds are entered for a current test (2216) comparison; Never transcribe from a physical, Non-Hearing Conservation test (NHC) or Military Entrance Processing Station (MEPS) audiogram
- If connected to the internet and DOEHRs-HC DR is accessible, ensure patient SSN is correct
- Hazardous Noise Exposed selection will prohibit some test selections

## Reference Audiogram Type 0

2216 selection will activate reference window for entry if a reference is not present in the local database

Enter SSN, select Annual, press enter and input date of reference only use tab to scroll through fields, review data, press save if correct

- If students have a DD Form 2215, enter their own SSN, select test type of annual and enter their own reference audiograms

Ensure when entering type 0 reference data, **do not use the calendar function**, it will enter a time stamp from the local computer; Use the tab to go from one date field to the other or the date may change between ears; Verify all information prior to saving type 0 reference

### DD Form 2216 - Follow-up Testing

- Follow-up testing can only occur if a +/- STS occurred on the initial 2216 test, if a + STS occurred on the Follow-up 1 test and the Follow-up testing window has not expired
- Only the most recent test results remarks will be reflected on the DD Form 2216
- Negative STSs do not have a hazardous noise-free requirement
- Positive STSs have a 14 hour hazardous noise-free requirement
- If a positive and a negative STS exists, check headphone placement/auditory history

### DD Form 2216 - Negative STS Follow-up Testing

- Thresholds are better than the reference
  - Normally occurs early in the audiometric history
- Review the audiometric summary
  - Was the baseline recent or re-established by an audiologist? Is there a masking requirement?
- If the reference is possibly invalid immediately re-test the ear that had the negative STS
  - If the negative STS is confirmed on follow-up 1, software will re-establish the baseline (ear specific)
- Clear Run Test station after initial 2216 test, input SSN and Follow-up 1 test will be auto-selected

Student can look at data in their own database, viewing 990990001, annual/follow-up 1/reference in the edit audiogram window to observe/review

### Negative STS on Initial 2216 Test and Confirmed on Follow-up Testing, Auto Re-established Baseline

- If the negative STS is confirmed on the Follow-up 1 retrieval into the Run Test window will auto re-established the baseline
- Very important to review patient history prior to conducting any follow-up testing for a negative STS

f. REMARKS (Include Exposure Date)		g. TYPE OF PERSONAL HEARING PROTECTION USED														
Steady Noise Exp(TWAdBA): 93, Impulse Noise Exp(dBP): < 120, H-1, Neg STS, HPD Fit Today, HPD Prev Fit, Health Ed Prov. , *****TRAINING AUDIOGRAM*****		3			1 - SINGLE FLANGE (V51R) 2 - TRIPLE FLANGE 3 - HAND FORMED EARPLUG			4 - EAR CANAL CAPS 5 - NOISE MUFFS 6 - OTHER 7 - NONE								
16. FOLLOW-UP NO. 1	14	a. MINIMUM 14 HOURS NOISE FREE SINCE CURRENT AUDIOGRAM														
b. AUDIOMETRIC DATA RE: ANSIS 83.6		LEFT						RIGHT								
c. CURRENT AUDIOGRAM DATE 02 Dec 2021		500	1000	2000	3000	4000	6000	500	1000	2000	3000	4000	6000			
d. REFERENCE AUDIOGRAM DATE L: 10 Dec 2020 R: 10 Dec 2020		0	10	5	15	20	10	0	5	-5	0	15	0			
e. SIGNIFICANT THRESHOLD SHIFT (STS)		f. THRESHOLD SHIFT														
L: 2- 1 - NO 2 - YES		----->		-10	-5	-10	-20							?	?	?

Transcribed Annual Test Results

- [SSN = 990990001] Confirm demographic fields 2 thru 14
- Is there a change in hearing? \_\_\_\_\_
- Are thresholds within the range of normal? \_\_\_\_\_
- Where does the patient need to go? \_\_\_\_\_
- Additional Comments \_\_\_\_\_

### DD Form 2216 - Negative STS Follow-up Testing - Follow up 1 Resolved

Student can look at data in their own database, viewing the 990990017 annual/follow-up 1 in the edit audiogram window to observe/review

f. REMARKS (Include Exposure Date)		g. TYPE OF PERSONAL HEARING PROTECTION USED														
Steady Noise Exp(TWAdBA): Not Entered, Impulse Noise Exp(dBP): Not Entered, H-1, HPD Fit Today, Health Ed Prov. , *****TRAINING AUDIOGRAM*****		2			1 - SINGLE FLANGE (V51R) 2 - TRIPLE FLANGE 3 - HAND FORMED EARPLUG			4 - EAR CANAL CAPS 5 - NOISE MUFFS 6 - OTHER 7 - NONE								
16. FOLLOW-UP NO. 1	14	a. MINIMUM 14 HOURS NOISE FREE SINCE CURRENT AUDIOGRAM														
b. AUDIOMETRIC DATA RE: ANSIS 83.6		LEFT						RIGHT								
c. CURRENT AUDIOGRAM DATE 02 Dec 2021		500	1000	2000	3000	4000	6000	500	1000	2000	3000	4000	6000			
d. REFERENCE AUDIOGRAM DATE L: 10 Dec 2020 R: 10 Dec 2020		15	5	10	20	15	25	10	5	20	20	10	15			
e. SIGNIFICANT THRESHOLD SHIFT (STS)		f. THRESHOLD SHIFT														
L: 1 1 - NO 2 - YES		----->		0	0	-10	-5							?	?	?

Transcribed Annual Test Results

- [SSN = 990990017] Confirm demographic fields 2 thru 14
- Is there a change in hearing? \_\_\_\_\_
- Are thresholds within the range of normal? \_\_\_\_\_
- Where does the patient need to go? \_\_\_\_\_
- Additional Comments \_\_\_\_\_

**DD Form 2216 - Positive STS Follow-up Testing**

- Thresholds are worse than the reference
- Requires 14 hazardous noise-free hours
- Cannot be done the same day as the initial 2216 test
- Follow-up 1 and Follow-up 2 should be accomplished on the same day (ear specific)
  - If conductive issues (ENT) are suspected, refer to a medical provider prior to conducting further testing

**DD Form 2216 - Positive STS Follow up Testing Scheduling**

- Time frames for Follow-up Testing from the initial audiogram on the 2216
  - 30 days – all civilians and USAF Regular; 60 days – USAF Reserves and National Guard; 90 – All USA, USN, USMC military
- Do not mention time frame for return to patients
- Question them on the earliest they can return hazardous noise-free

**DD Form 2216 – Positive STS Follow-up Testing, Resolved (TTS)**

- If the STS resolves on the Follow-up 1 (TTS after auditory rest) Follow-up 2 cannot be accomplished
  - Counsel/Educate; Refit HPDs (patient may not be wearing them properly or they are the wrong size); Return in a year
- If the STS is still present on the Follow-up 1, complete a Follow-up 2 test
- If the STS resolved on Follow-up 2- Follow instructions as above

**DD Form 2216 - Follow-up Testing, Positive STS – Follow-up 1 Resolved Early Warning Shift (EWS)**

Student can look at data in their own database, viewing the 990990018 DD Form 2216 annual and follow-up in the edit audiogram window to observe/review; if an STS and a EWS are both present the STS takes precedence

1. REMARKS (Include Exposure Data) Steady Noise Exp(TWAdBA): Not Entered, Impulse Noise Exp(dBP): Not Entered, H-1, Early warning for a decrease in hearing _____, HPD Prev Fit, Health Ed Prov. , *****TRAINING AUDIOGRAM*****							2. TYPE OF PERSONAL HEARING PROTECTION USED 3 <table border="0" style="display: inline-table; vertical-align: top;"> <tr> <td>1 - SINGLE FLANGE (VS1R)</td> <td>4 - EAR CANAL CAPS</td> </tr> <tr> <td>2 - TRIPLE FLANGE</td> <td>5 - NOISE MUFFS</td> </tr> <tr> <td>3 - HAND FORMED EARPLUG</td> <td>6 - OTHER</td> </tr> <tr> <td></td> <td>7 - NONE</td> </tr> </table>							1 - SINGLE FLANGE (VS1R)	4 - EAR CANAL CAPS	2 - TRIPLE FLANGE	5 - NOISE MUFFS	3 - HAND FORMED EARPLUG	6 - OTHER		7 - NONE
1 - SINGLE FLANGE (VS1R)	4 - EAR CANAL CAPS																				
2 - TRIPLE FLANGE	5 - NOISE MUFFS																				
3 - HAND FORMED EARPLUG	6 - OTHER																				
	7 - NONE																				
16. FOLLOW-UP NO. 1 <span style="margin-left: 100px;">12</span> <span style="margin-left: 100px;">14</span> <span style="margin-left: 100px;">16</span> <span style="margin-left: 100px;">18</span> <span style="margin-left: 100px;">20</span> <span style="margin-left: 100px;">22</span> <span style="margin-left: 100px;">24</span> <span style="margin-left: 100px;">26</span> <span style="margin-left: 100px;">28</span> <span style="margin-left: 100px;">30</span> <span style="margin-left: 100px;">32</span> <span style="margin-left: 100px;">34</span> <span style="margin-left: 100px;">36</span>																					
AUDIOMETRIC CAP, RE: ANSI S3.5							(See Item 15.B)														
b. CURRENT AUDIOGRAM DATE: 03 Dec 2021							RIGHT														
c. REFERENCE AUDIOGRAM DATE L: 03 Nov 2014 R: 03 Nov 2014							LEFT														
d. SIGNIFICANT THRESHOLD R: 1 SHIFT (STS) 1 - NO 2 - YES							e. THRESHOLD SHIFT														
500    1000    2000    3000    4000    6000							500    1000    2000    3000    4000    6000														
5    5    5    10    15    5							0    0    10    0    5    5														
5    -5    5    0    10    -5							0    0    -5    -5    0    -10														
?    ?    ?							0    15    5    5														

- [SSN = 990990018] Confirm demographic fields 2 thru 14
- Is there a change in hearing? \_\_\_\_\_
- Are thresholds within the range of normal? \_\_\_\_\_
- Where does the patient need to go? \_\_\_\_\_
- Additional Comments \_\_\_\_\_

**DD Form 2216 - Follow-up Testing, Positive STS - Follow up 1 Confirmed/ Follow up 2 Resolved**

Student can look at data in their own database, viewing the 990990015 DD Form 2216 annual and follow-up in the edit audiogram window to observe/review

1. REMARKS (Include Exposure Date) Steady Noise Exp(TWAdBA): Not Entered, Impulse Noise Exp(dBP): Not Entered, H-1, HPD Prev Fit, Health Ed Prov. , *****TRAINING AUDIOGRAM*****							2. TYPE OF PERSONAL HEARING PROTECTION USED 3 1 - SINGLE FLANGE (VSI/R) 4 - EAR CANAL CAPS 2 - TRIPLE FLANGE 5 - NOISE MUFFS 3 - HAND FORMED EARPLUG 7 - NONE							
<b>Transcribed Annual Test Results</b>														
(See Item 15 B)														
17. FOLLOW-UP NO. 2		LEFT						RIGHT						
AUDIOMETRIC DATA RE: ANSIB3.6		500	1000	2000	3000	4000	6000	500	1000	2000	3000	4000	6000	
8. CURRENT AUDIOGRAM DATE: 03 Dec 2021		5	5	5	10	15	5	0	0	5	0	5	5	
9. REFERENCE AUDIOGRAM DATE L: 01 Nov 2016 R: 01 Nov 2016		5	-5	5	0	10	-5	0	0	-5	-5	0	-10	
10. SIGNIFICANT THRESHOLD SHIFT (STS) R: 1 SHIFT (STS) 1 - NO 2 - YES				?	?	?			0	10	5	5		
11. THRESHOLD SHIFT														

- [SSN = 990990015] Confirm demographic fields 2 thru 14
- Is there a change in hearing? \_\_\_\_\_
- Are thresholds within the range of normal? \_\_\_\_\_
- Where does the patient need to go? \_\_\_\_\_
- Additional Comments \_\_\_\_\_

**DD Form 2216 - Follow-up Testing, Positive STS - Follow up 1 and 2 Confirmed**

Student can look at data in their own database, viewing the 990990016 DD Form 2216 annual and follow-up tests in the edit audiogram window to observe/review

- If the STS is still present on the Follow-up 2 (PTS after reviewed and validated by Professional Supervisor in conjunction with re-establishing the baseline)
- Application will ask if re-establishment using previous test results is requested
- Always select "No"
- Refer to the proper echelon of care (PS - Professional Supervisor) for evaluation and/or administrative processing
- Only re-establish baselines
  - With review/approval of the PS, follow-up test and/or audiological evaluation results may be used to create a DD Form 2215 (type 3) re-established reference
  - Add an electronic remark on the DD Form 2215 with who (PS) authorized the baseline re-establishment or who manually entered the data

<b>f. REMARKS</b> (Include Exposure Date) Steady Noise Exp(TWA dBA): Not Entered, Impulse Noise Exp(dBP): < 120, H-2, Other HPD: Other, Permanent STS, I am aware of a change in my hearing, Signature _____ HPD Prev Fit, Health Ed Prov. . *****TRAINING AUDIOGRAM*****							<b>g. TYPE OF PERSONAL HEARING PROTECTION USED</b> 6 1 - SINGLE FLANGE (V&R) 4 - EAR CANAL CAPS 2 - TRIPLE FLANGE 5 - NOISE MUFFS 3 - HAND FORMED EARPLUG 6 - OTHER 7 - NONE						
<b>Transcribed Annual Test Results</b>													
17. FOLLOW-UP NO.2		14		3. MINIMUM 14 HOURS NOISE FREE SINCE CURRENT AUDIOGRAM									
AUDIOMETRIC DATA		LEFT					RIGHT						
RE: ANSI 92.5		500	1000	2000	3000	4000	6000	500	1000	2000	3000	4000	6000
b. CURRENT AUDIOGRAM DATE: 03 Dec 2021		0	5	15	15	35	45	0	0	15	0	5	50
c. REFERENCE AUDIOGRAM DATE: L: 08 Feb 2003 R: 08 Feb 2003		0M	0M	10M	5M	20M	35M	0M	0M	10M	5M	0M	10M
d. SIGNIFICANT THRESHOLD SHIFT (STS)		e. THRESHOLD SHIFT											
L: 2+		1 - NO 2 - YES		5		5		10		15		?	

- [SSN = 990990016] Confirm demographic fields 2 thru 14
- Is there a change in hearing? \_\_\_\_\_
- Are thresholds within the range of normal? \_\_\_\_\_
- Where does the patient need to go? \_\_\_\_\_
- Additional Comments \_\_\_\_\_

**Non-Hearing Conservation Test**

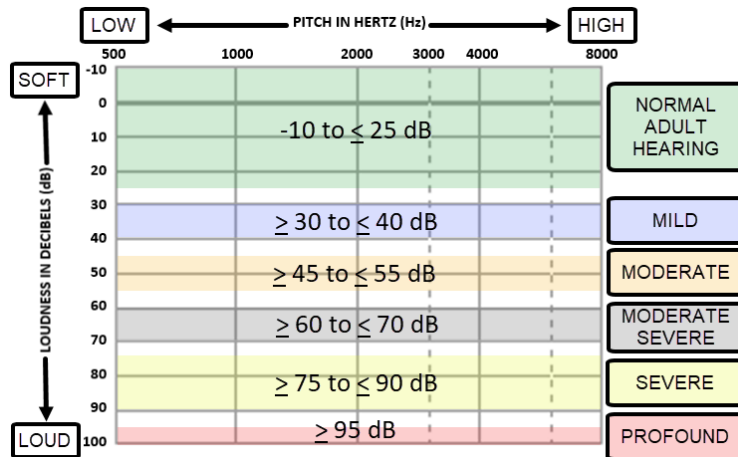
- Performed on individuals who are not enrolled in the Hearing Program
  - Physical, Pre-commissioning, Separation History and Physical Examination (SHPE), Non-DoD employees, Etc.
- Performed on individuals requesting a hearing test before their periodic evaluation who are concerned about changes in hearing due to possible illness, medical condition, etc.
  - Consult with Professional Supervisor to determine how these encounters should be handled
- SHPE added as an electronic remark for military personnel who are leaving the service and may not have a DD Form 2215
  - Normally all Service Members have a DD Form 2215
  - Ensure Patient SSN is correct
  - If there is not a reference audiogram you cannot do a 2216 (Termination)
  - Select no to Hazardous Noise Exposed; Select NHC Test; Add electronic remark

Student can look at data in their own database, viewing the 990990005 NHC in the edit audiogram window to observe/review, SHPE, Separation History and Physical Examination

AUDIOGRAM DATE	LEFT						RIGHT					
	500	1000	2000	3000	4000	6000	500	1000	2000	3000	4000	6000
28 Dec 2021	0	-5	0	-5	0	0	5	0	5	-5	-10	-10

- [SSN = 990990005] Confirm demographic fields 2 thru 14
- Review audiogram
- Are thresholds within the range of normal? \_\_\_\_\_
- Where does the patient need to go? \_\_\_\_\_
- Additional Comments \_\_\_\_\_

## Degree of Hearing Loss

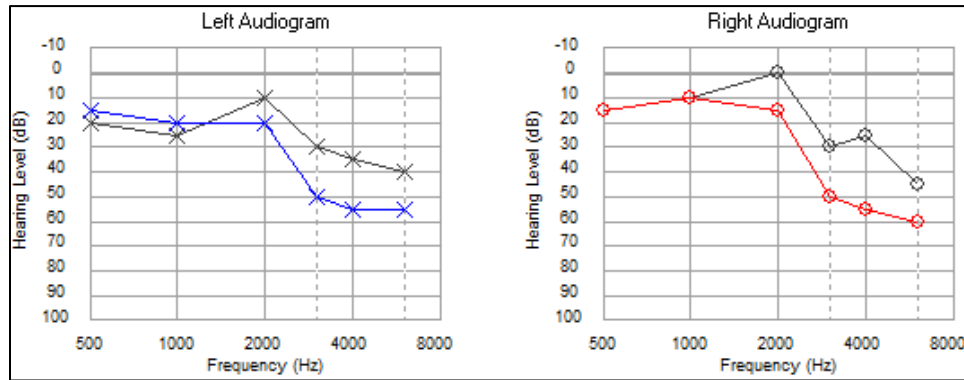


## Post-Audiometric Testing Review

- Technician is required to counsel patient on results
  - Early warning shift (EWS); Change in hearing, Significant/Standard Threshold Shift (STS) return for follow-up testing
- Process automated referrals
- Create referrals for conductive or other issues: Physician, Audiologist

**Audiometric Configuration; Sloping High Frequency Hearing Loss [SSN = 990990042 - Annual]**

Most common audiometric configuration; Associated with aging (Presbycusis), ototoxicity, diseases (meningitis, measles), and can be congenital



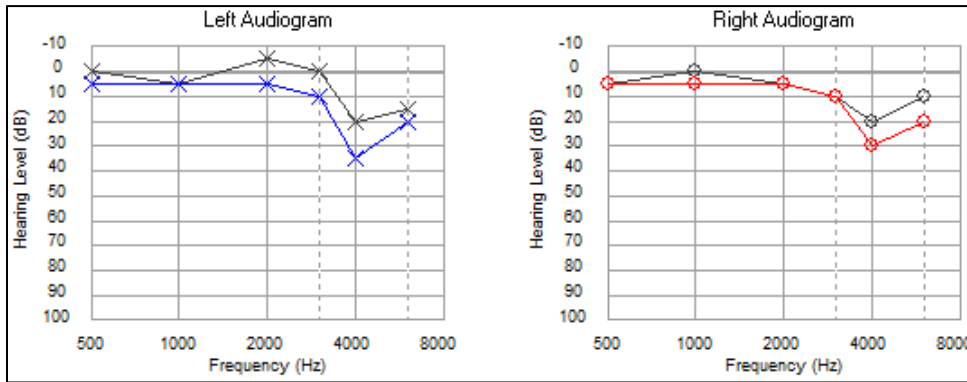
15. AUDIOMETRY	2	a. PURPOSE		1 - 90 DAY						2 - ANNUAL		3 - TERMINATION		4 - OTHER	
		LEFT												RIGHT	
AUDIOMETRIC CAP RE: ANSI S3.6		500	1000	2000	3000	4000	6000	500	1000	2000	3000	4000	6000		
b. CURRENT AUDIOGRAM DATE: 03 Jan 2022		15	20	20	50	55	55	15	10	15	50	55	60		
c. REFERENCE AUDIOGRAM DATE: L: 22 Sep 2008 R: 22 Sep 2008		20	25	10	30	35	40	15	10	0	30	25	45		
3. SIGNIFICANT THRESHOLD SHIFT (STS) L: 2+ R: 2+		4. THRESHOLD SHIFT		-5	10	20	20			0	15	20	30		
f. REMARKS (Include Exposure Date) Steady Noise Exp(TWAdBA): Not Entered, Impulse Noise Exp(dBP): Not Entered, Other HPD: Quad-Flange, Pos STS, I am aware of a change in my hearing and the need to return for a follow-up. Signature _____ OSHA Reportable Loss Left and Right Ear(s), HPD Prev Fit, HPD Present, Health Ed Prov, *****TRAINING AUDIOGRAM*****, >=H-3.								g. TYPE OF PERSONAL HEARING PROTECTION USED 6 1 - SINGLE FLANGE (1/51R) 4 - EAR CANAL CAPS 2 - TRIPLE FLANGE 5 - NOISE MUFFS 3 - HAND FORMED EARPLUG 6 - OTHER 7 - NONE							

- **[SSN = 990990042]** Confirm demographic fields 2 thru 14
- Is there a change in hearing? \_\_\_\_\_
- Are thresholds within the range of normal? \_\_\_\_\_
- Where does the patient need to go? \_\_\_\_\_
- Additional Comments \_\_\_\_\_



**Audiometric Configuration; High Frequency Hearing Loss, Notched [SSN = 990990007]**

Noise Notch often first observed at 4000 Hz, but could begin at 3000 Hz or 6000 Hz; Hearing loss spreads to adjacent frequencies as noise exposure continues

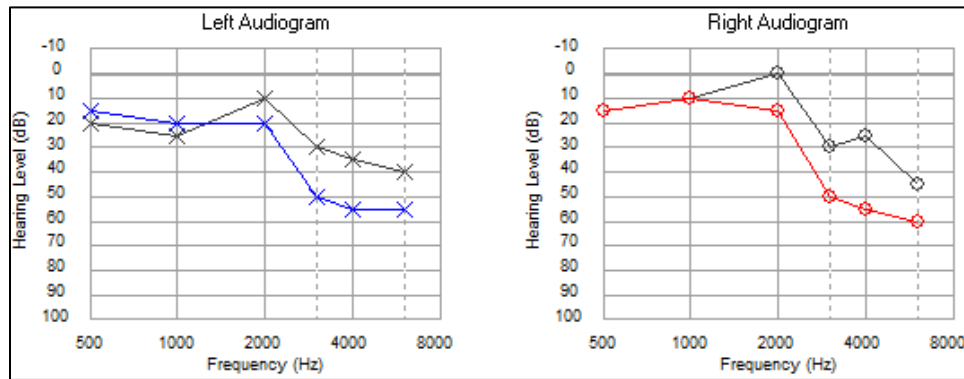


15. AUDIOMETRY		a. PURPOSE		1 - 90 DAY			2 - ANNUAL			3 - TERMINATION			4 - OTHER		
AUDIOMETRIC CONF. RE: ANSI S3.5		LEFT						RIGHT							
b. CURRENT AUDIOGRAM DATE: 21 Dec 2021		500	1000	2000	3000	4000	6000	500	1000	2000	3000	4000	6000		
c. REFERENCE AUDIOGRAM DATE: L: 07 Dec 2020 R: 07 Dec 2020		0	5	-5	0	20	15	5	0	5	10	20	10		
d. SIGNIFICANT THRESHOLD SHIFT (STS) L: 2+ R: 1		e. THRESHOLD SHIFT		0	10	10	15		5	0	0	10			
f. REMARKS (Include Exposure Date) Steady Noise Exp(TWA dBA): Not Entered, Impulse Noise Exp(dBP): Not Entered, Other HPD: Quad-Flange, Pos STS(L), I am aware of a change in my hearing and the need to return for a follow-up(L), Signature _____(L), Health Ed Prov, *****TRAINING AUDIOGRAM*****								g. TYPE OF PERSONAL HEARING PROTECTION USED 6							
								1 - SINGLE FLANGE (1/51R)      4 - EAR CANAL CAPS 2 - TRIPLE FLANGE            5 - NOISE MUFFS 3 - HAND FORMED EARPLUG    6 - OTHER 7 - NONE							

- [SSN = 990990007] Confirm demographic fields 2 thru 14
- Is there a change in hearing? \_\_\_\_\_
- Are thresholds within the range of normal? \_\_\_\_\_
- Where does the patient need to go? \_\_\_\_\_
- Additional Comments \_\_\_\_\_

**Audiometric Considerations; Fitness for Duty (USN/USMC use 270 rule)  
(Service Specific - USN/USMC) [SSN = 990990042 – Follow-up 2]**

- Hearing loss in both ears in which the sum of thresholds at 3000 Hz, 4000 Hz, and 6000 Hz  $\geq$  270 dB
- Has their DD 2215 re-established 3 times
- Should not be assigned to duties involving exposure to hazardous noise until evaluated and waived by an audiologist, otologist, or occupational medicine physician
- May have comment: No longer fit to work in noise UNLESS cleared by an Occ Med Provider or Audiologist

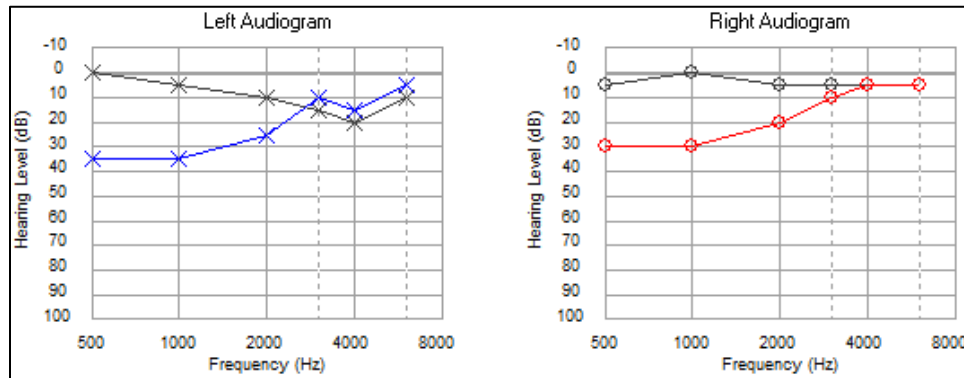


<b>f. REMARKS</b> (Include Exposure Data) Steady Noise Exp(TWAdBA): Not Entered, Impulse Noise Exp(dBP): Not Entered, Other HPD: Quad-Flange, Permanent STS, I am aware of a change in my hearing, Signature _____, OSHA Reportable Loss Left and Right Ear(s), HPD Fit Today, HPD Prev Fit, Health Ed Prov, *****TRAINING AUDIOGRAM*****, >=H-3.							<b>g. TYPE OF PERSONAL HEARING PROTECTION USED</b> 6 <table border="1" style="display: inline-table; vertical-align: top;"> <tr> <td>1 - SINGLE FLANGE (V51R)</td> <td>4 - EAR CANAL CAPS</td> </tr> <tr> <td>2 - TRIPLE FLANGE</td> <td>5 - NOISE MUFFS</td> </tr> <tr> <td>3 - HAND FORMED EARPLUG</td> <td>6 - OTHER</td> </tr> <tr> <td></td> <td>7 - NONE</td> </tr> </table>							1 - SINGLE FLANGE (V51R)	4 - EAR CANAL CAPS	2 - TRIPLE FLANGE	5 - NOISE MUFFS	3 - HAND FORMED EARPLUG	6 - OTHER		7 - NONE
1 - SINGLE FLANGE (V51R)	4 - EAR CANAL CAPS																				
2 - TRIPLE FLANGE	5 - NOISE MUFFS																				
3 - HAND FORMED EARPLUG	6 - OTHER																				
	7 - NONE																				
17. FOLLOW-UP NO.2	14	a. MINIMUM 14 HOURS NOISE FREE SINCE CURRENT AUDIOGRAM (See Item 15 B)																			
AUDIOMETRIC DATA RE: ANSI S3.6	LEFT						RIGHT														
	500	1000	2000	3000	4000	6000	500	1000	2000	3000	4000	6000									
b. CURRENT AUDIOGRAM DATE: 04 Jan 2022	15	15	25	55	60	60	10	15	20	50	55	60									
c. REFERENCE AUDIOGRAM DATE: L: 22 Sep 2008 R: 22 Sep 2008	20	25	10	30	35	40	15	10	0	30	25	45									
d. SIGNIFICANT THRESHOLD L: 2+ R: 2+ SHIFT (BTS) 1 - NO 2 - YES	e. THRESHOLD SHIFT																				
	----->		-10	15	25	25		5	20	20	30										

- [SSN = 990990042] Confirm demographic fields 2 thru 14
- Is there a change in hearing? \_\_\_\_\_
- Are thresholds within the range of normal? \_\_\_\_\_
- Where does the patient need to go? \_\_\_\_\_
- Additional Comments \_\_\_\_\_

**Rising Audiometric Configuration; Low Frequency Hearing Loss [SSN = 990990009]**

Can be caused by ear disease or middle ear dysfunction (Conductive issues - Otoscopic Exam); Technician should never establish or re-establish baseline until conductive issues are resolved

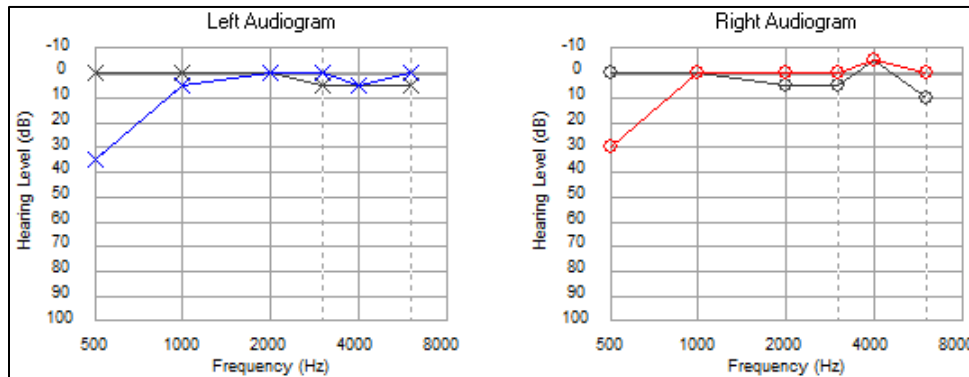


15. AUDIOMETRY	2	a. PURPOSE							b. TERMINATION					
		1 - 90 DAY							2 - ANNUAL					
AUDIOMETRIC DATA RE: ANSI S3.6		LEFT							RIGHT					
3. CURRENT AUDIOGRAM DATE: 20 Dec 2021		500	1000	2000	3000	4000	6000	500	1000	2000	3000	4000	6000	
c. REFERENCE AUDIOGRAM DATE: L: 07 Dec 2020 R: 07 Dec 2020		0	5	10	15	20	10	5	0	5	5	5	5	
3. SIGNIFICANT THRESHOLD SHIFT (STS) L: 1 R: 1		e. THRESHOLD SHIFT		30	15	-5	-5		30	15	5	0		
f. REMARKS (Include Exposure Date) Steady Noise Exp(TWA dBA): Not Entered, Impulse Noise Exp(dBP): Not Entered, Early warning for a decrease in hearing _____, HPD Fit Today, Health Ed Prov, *****TRAINING AUDIOGRAM***** H-2.								g. TYPE OF PERSONAL HEARING PROTECTION USED 3						
								1 - SINGLE FLANGE (1/51R) 2 - TRIPLE FLANGE 3 - HAND FORMED EARPLUG 4 - EAR CANAL CAPS 5 - NOISE MUFFS 6 - OTHER 7 - NONE						

- [SSN = 990990009] Confirm demographic fields 2 thru 14
- Is there a change in hearing? \_\_\_\_\_
- Are thresholds within the range of normal? \_\_\_\_\_
- Where does the patient need to go? \_\_\_\_\_
- Additional Comments \_\_\_\_\_

**Rising Audiometric Configuration; Low Frequency Hearing Loss, Ambient Noise [SSN = 990990008]**

Can occur as a result of background noise; 500 Hz threshold will often be elevated in these instances.



15. AUDIOMETRY		2		a. PURPOSE							1 - 90 DAY		2 - ANNUAL		3 - TERMINATION		4 - OTHER	
AUDIOMETRIC O/A RE: ANSI S3.6		LEFT							RIGHT									
b. CURRENT AUDIOGRAM DATE: 21 Dec 2021		500	1000	2000	3000	4000	6000	500	1000	2000	3000	4000	6000					
c. REFERENCE AUDIOGRAM DATE: L: 02 Dec 2020 R: 02 Dec 2020		0	0	0	5	5	5	0	0	5	5	-5	10					
d. SIGNIFICANT THRESHOLD SHIFT (STS) L: 1 R: 1		e. THRESHOLD SHIFT		5	0	-5	0		0	-5	-5	0						
f. REMARKS (Include Exposure Date) Steady Noise Exp(TWAdBA): Not Entered, Impulse Noise Exp(dBP): Not Entered, HPD Prev Fit, HPD Present, Health Ed Prov, Tinnitus, *****TRAINING AUDIOGRAM*****; H-2.														g. TYPE OF PERSONAL HEARING PROTECTION USED 3				
														1 - SINGLE FLANGE (V51R)	4 - EAR CANAL CAPS			
														2 - TRIPLE FLANGE	5 - NOISE MUFFS			
														3 - HAND FORMED EARPLUG	6 - OTHER			
															7 - NONE			

- [SSN = 990990008] Confirm demographic fields 2 thru 14
- Is there a change in hearing? \_\_\_\_\_
- Are thresholds within the range of normal? \_\_\_\_\_
- Where does the patient need to go? \_\_\_\_\_
- Additional Comments \_\_\_\_\_

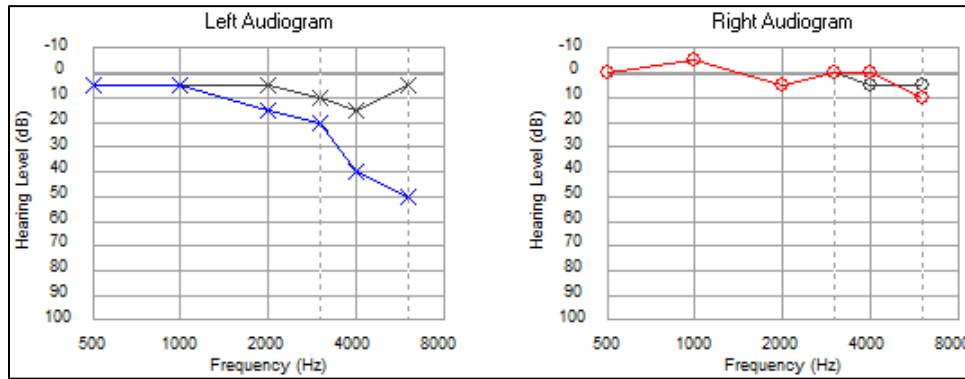
### **Audiogram Considerations, Problem Audiograms - Masking**

- Required if the difference between ears is  $\geq 40$  dB at one or multiple frequencies
- Performed during diagnostic (audiologist) hearing evaluation when cross-over is suspected
- Masking noise (static) presented in the non-test ear while thresholds are being recorded for test ear to prevent cross-over
- Prevents the non-test ear from detecting the sound presented to the test ear
- DOEHRS-HC will generate a referral if masking is required
- Follow PS guidance on automated referrals for masking

### **Audiogram Considerations, Problem Audiograms - Cross Over**

- Can occur when a  $\geq 40$  dB difference in thresholds exists between ears at one or more frequency(s)
- Sound energy from the test ear stimulates the non-test ear causing non-test ear to respond to the stimulus
- DOEHRS-HC performs an automatic re-check when threshold difference is  $\geq 40$  dB between ears at a given frequency
- If difference confirmed, DOEHRS-HC will generate a Masking referral

**Audiometric Configurations, Unilateral High Frequency Hearing Loss [SSN = 990990010]**



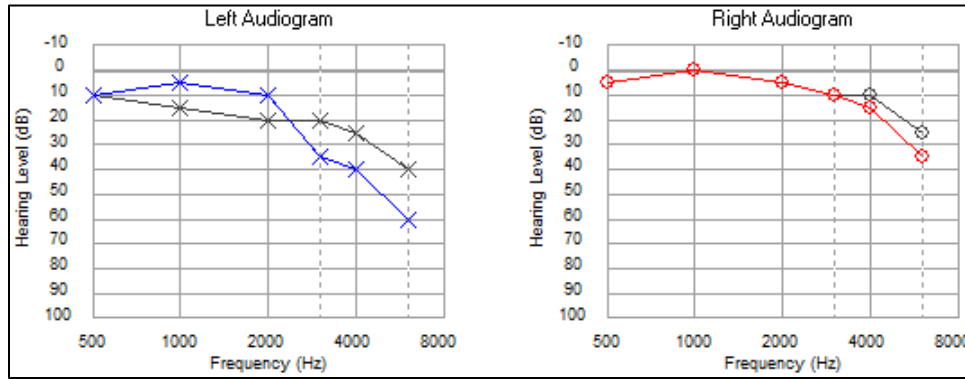
15. AUDIOMETRY	2	a. PURPOSE															
		1 - 90 DAY						2 - ANNUAL						3 - TERMINATION		4 - OTHER	
AUDIOMETRIC CONF. RE: ANSI S3.5		LEFT												RIGHT			
b. CURRENT AUDIOGRAM DATE: 21 Dec 2021		500	1000	2000	3000	4000	6000	500	1000	2000	3000	4000	6000				
c. REFERENCE AUDIOGRAM DATE: L: 04 Dec 2020 R: 04 Dec 2020		5	5	5	10	15	5	0	-5	5	0	5	5				
d. SIGNIFICANT THRESHOLD SHIFT (STS)		e. THRESHOLD SHIFT															
L: 2+	R: 1	1 - NO		2 - YES													
T. REMARKS (Include Exposure Date)		Steady Noise Exp(TWA dBA): Not Entered, Impulse Noise Exp(dBP): Not Entered, Pos STS(L), I am aware of a change in my hearing and the need to return for a follow-up(L), Signature (L), Asymmetric Loss, Masking Req, HPD Prev Fit, HPD Present, Health Ed Prov, *****TRAINING AUDIOGRAM*****, H-2.												2. TYPE OF PERSONAL HEARING PROTECTION USED			
														3			
														1 - SINGLE FLANGE (V51R) 2 - TRIPLE FLANGE 3 - HAND FORMED EARPLUG 4 - EAR CANAL CAPS 5 - NOISE MUFFS 6 - OTHER 7 - NONE			

- [SSN = 990990010] Confirm demographic fields 2 thru 14
- Is there a change in hearing? \_\_\_\_\_
- Are thresholds within the range of normal? \_\_\_\_\_
- Where does the patient need to go? \_\_\_\_\_
- Additional Comments \_\_\_\_\_

Hearing loss in one ear; other ear is normal; May be associated with noise exposure, sudden SNHL, or acoustic neuroma/vestibular schwannoma; Always considered a problem audiogram; audiogram should always be reviewed by Professional Supervisor; Technician should never establish or re-establish baseline with a masking requirement without approval of an audiologist.

**Audiometric Configurations, Asymmetrical Hearing Loss [SSN = 990990011]**

DOEHRS-HC will trigger an Asymmetric Hearing Loss referral if two consecutive frequencies between ears have a difference of 25dB or more; Thresholds in one ear are better than thresholds in the opposite ear; May be associated with noise exposure, sudden SNHL, or acoustic neuroma/ vestibular schwannoma; Always considered a problem audiogram; Audiogram should always be reviewed by the Professional Supervisor



15. AUDIOMETRY	2	a. PURPOSE													
		1 - 90 DAY						2 - ANNUAL						3 - TERMINATION	
AUDIOMETRIC DATA RE: ANSI S3.6		LEFT						RIGHT							
		500	1000	2000	3000	4000	6000	500	1000	2000	3000	4000	6000		
b. CURRENT AUDIOGRAM DATE: 21 Dec 2021		10	5	10	35	40	60	5	0	5	10	15	35		
c. REFERENCE AUDIOGRAM DATE: L: 04 Dec 2020 R: 04 Dec 2020		10	15	20	20	25	40	5	0	5	10	10	25		
d. SIGNIFICANT THRESHOLD L: 1 R: 1		e. THRESHOLD SHIFT													
		1 - NO 2 - YES		-10	-10	15	15	0	0	0	5				
f. REMARKS (Include Exposure Data) Steady Noise Exp(TWAdBA): Not Entered, Impulse Noise Exp(dBP): Not Entered, Early warning for a decrease in hearing _____ (L), Asymmetric Loss, HPD Prev Fit, HPD Present, Health Ed Prov, *****TRAINING AUDIOGRAM*****, H-2.							g. TYPE OF PERSONAL HEARING PROTECTION USED 3							1 - SINGLE FLANGE (V/S/R) 2 - TRIPLE FLANGE 3 - HAND FORMED EARPLUG 4 - EAR CANAL CAPS 5 - NOISE MUFFS 6 - OTHER 7 - NONE	

- [SSN = 990990011] Confirm demographic fields 2 thru 14
- Is there a change in hearing? \_\_\_\_\_
- Are thresholds within the range of normal? \_\_\_\_\_
- Where does the patient need to go? \_\_\_\_\_
- Additional Comments \_\_\_\_\_

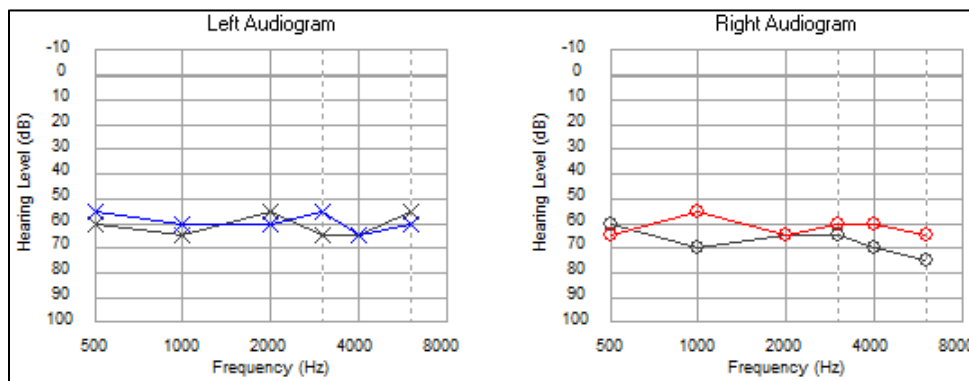
## Audiogram Considerations, Functional and/or Non-Organic Hearing Loss [SSN = 990990019]

- Lack of crossover (large difference between ears)
- Flat audiogram
- Inconsistent responses
- Behavior
- Known motivation
- 50 dB or above

Crossover occurs around 40-45 dB; lack of cross over patient may have a much higher variance between ears

## Audiometric Configurations, Flat Hearing Loss

Thresholds are approximately the same across the test frequencies – Mixed hearing loss; Common audiometric configuration of non-organic hearing loss and/or malingering; Have it reviewed by PS



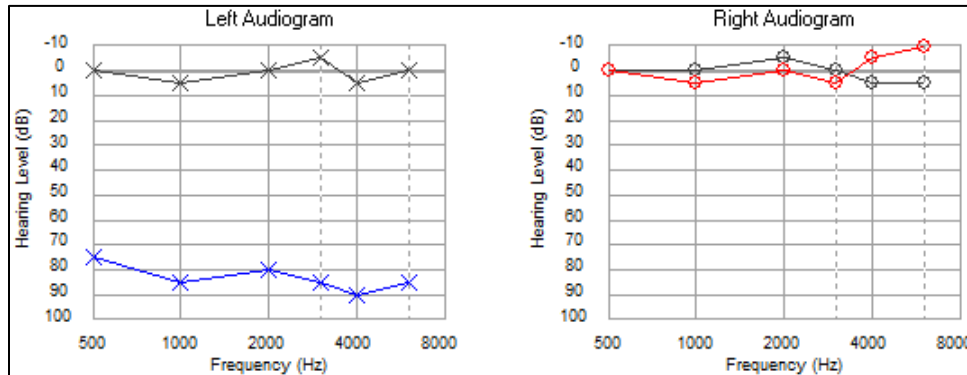
15. AUDIOMETRY	3	a. PURPOSE		1 - 90 DAY						2 - ANNUAL						3 - TERMINATION						4 - OTHER					
		LEFT												RIGHT													
RE: ANSI S3.5		500	1000	2000	3000	4000	6000	500	1000	2000	3000	4000	6000	500	1000	2000	3000	4000	6000	500	1000	2000	3000	4000	6000		
b. CURRENT AUDIOGRAM DATE: 02 Dec 2021		55	60	60	55	65	60	65	55	65	60	60	65	65	55	65	60	60	65	65	55	65	60	60	65		
c. REFERENCE AUDIOGRAM DATE L: 14 Dec 2017 R: 14 Dec 2017		5	5	0	10	10	10	5	0	-5	15	0	15	5	0	-5	15	0	15	5	0	-5	15	0	15		
d. SIGNIFICANT THRESHOLD SHIFT (STS) L: 2+ R: 2+		1 - NO 2 - YES		e. THRESHOLD SHIFT																							
f. REMARKS (Include Exposure Data)		Steady Noise Exp(TWAdBA): Not Entered, Impulse Noise Exp(dBP): Not Entered, Other HPD: Quad-Flange, Pos STS, I am aware of a change in my hearing and the need to return for a follow-up, Signature _____, Health Ed Prov, *****TRAINING AUDIOGRAM*****												g. TYPE OF PERSONAL HEARING PROTECTION USED													
h. H-3														6													
														1 - SINGLE FLANGE (VS1R) 4 - EAR CANAL CAPS 2 - TRIPLE FLANGE 5 - NOISE MUFFS 3 - HAND FORMED EARPLUG 6 - OTHER 7 - NONE													

- [SSN = 990990019] Confirm demographic fields 2 thru 14
- Is there a change in hearing? \_\_\_\_\_
- Are thresholds within the range of normal? \_\_\_\_\_
- Where does the patient need to go? \_\_\_\_\_
- Additional Comments \_\_\_\_\_
- What should occur after Follow-up 2? \_\_\_\_\_



**Audiometric Configurations, Asymmetric Flat Hearing Loss [SSN = 990990013]**

Thresholds are approximately the same across the test frequencies – one ear (lack of crossover);  
 Common audiometric configuration of non-organic hearing loss/malingering; Have it reviewed by PS;  
 Technician should never establish or re-establish baseline at their level

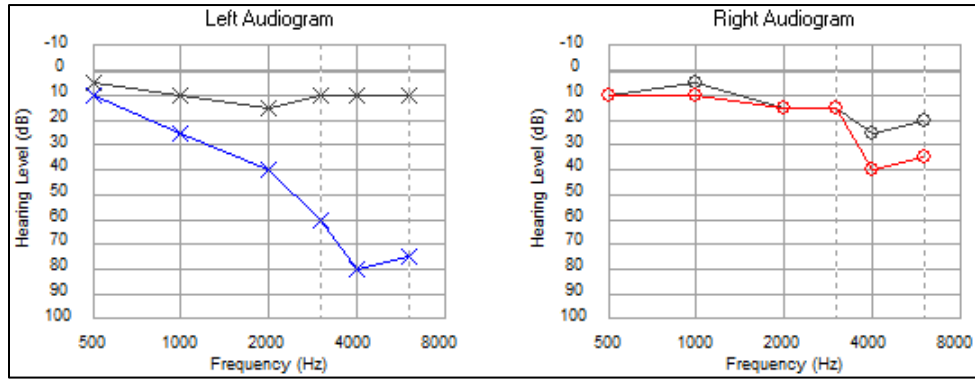


15. AUDIOMETRY	4	a. PURPOSE													
		1 - 90 DAY						2 - ANNUAL						3 - TERMINATION	
AUDIOMETRIC DATA RE: ANSI S3.6		LEFT						RIGHT							
b. CURRENT AUDIOGRAM DATE: 10 Dec 2021		500	1000	2000	3000	4000	6000	500	1000	2000	3000	4000	6000		
		75	85	80	85	90	85	0	5	0	5	-5	-10		
c. REFERENCE AUDIOGRAM DATE: L: 23 Nov 2020 R: 23 Nov 2020		0	5	0	-5	5	0	0	0	-5	0	5	5		
d. SIGNIFICANT THRESHOLD SHIFT (STS) L: 2+ R: 1		e. THRESHOLD SHIFT		80	80	90	85			5	5	5	-10		
f. REMARKS (Include Exposure Date)		Pre-deployment, Steady Noise Exp(TWAdBA): Not Entered, Impulse Noise Exp(dBP): Not Entered, Pos STS(L), I am aware of a change in my hearing and the need to return for a follow-up(L), Signature (L), Asymmetric Loss, Masking Req, Tinnitus, *****TRAINING										g. TYPE OF PERSONAL HEARING PROTECTION USED			
AUDIOGRAM*****; H-2.								3		1 - SINGLE FLANGE (V51R) 2 - TRIPLE FLANGE 3 - HAND FORMED EARPLUG		4 - EAR CANAL CAPS 5 - NOISE MUFFS 6 - OTHER 7 - NONE			

- [SSN = 990990013] Confirm demographic fields 2 thru 14
- Is there a change in hearing? \_\_\_\_\_
- Are thresholds within the range of normal? \_\_\_\_\_
- Where does the patient need to go? \_\_\_\_\_
- Additional Comments \_\_\_\_\_
- What should occur after Follow-up 2? \_\_\_\_\_

**Sudden Hearing Loss, Always a Medical Emergency [SSN = 990990026]**

- Get patient evaluated the same day
- If sensorineural, time to treatment is critical



15. AUDIOMETRY		a. PURPOSE		1 - 90 DAY			2 - ANNUAL			3 - TERMINATION			4 - OTHER		
AUDIOMETRIC DATA RE: ANS 83.6		LEFT						RIGHT							
b. CURRENT AUDIOGRAM DATE: 21 Dec 2021		500	1000	2000	3000	4000	6000	500	1000	2000	3000	4000	6000		
c. REFERENCE AUDIOGRAM DATE: L: 04 Dec 2020 R: 04 Dec 2020		5	10	15	10	10	10	10	5	15	15	25	20		
d. SIGNIFICANT THRESHOLD SHIFT (STS) L: 2+ R: 1		e. THRESHOLD SHIFT		15	25	50	70	5	0	0	15				
f. REMARKS (Include Exposure Data) Steady Noise Exp(TWA dBA): Not Entered, Impulse Noise Exp(dBP): Not Entered, Pos STS(L), I am aware of a change in my hearing and the need to return for a follow-up(L), Signature _____ (L), Asymmetric Loss, Masking Req, HPD Prev Fit, HPD Present, Health Ed Prov, *****TRAINING AUDIOGRAM*****, Early warning for a decrease in hearing _____ (R), >=H-3.												g. TYPE OF PERSONAL HEARING PROTECTION USED 3			
												1 - SINGLE FLANGE (V51R)	4 - EAR CANAL CAPS		
												2 - TRIPLE FLANGE	5 - NOISE MUFFS		
												3 - HAND FORMED EARPLUG	6 - OTHER		
												7 - NONE			

- [SSN = 990990026] Confirm demographic fields 2 thru 14
- Is there a change in hearing? \_\_\_\_\_
- Are thresholds within the range of normal? \_\_\_\_\_
- Where does the patient need to go? \_\_\_\_\_
- Additional Comments \_\_\_\_\_

**Audiogram Referrals**

- DOEHS-HC referral flags - some are listed below
  - Positive STS - conduct Follow-up testing; Asymmetrical hearing loss; Low and/or high frequency hearing loss; Masking; Tinnitus; Fitness and Risk Evaluation
- Review the audiometric history to determine what happened and what needs to occur
- DOEHS-HC may not create a referral but further examinations/care may need to occur
  - Fitness for Duty; Profile change; Conductive issues on a 2216
- Conductive issues suspected - do an otoscopic examination and/or refer for evaluation/care
  - If Follow-up testing is required, delay until conductive issues are resolved

## Profile Change

- Pertains to military personnel only
- Profile change does not auto generate a referral
  - Service Specific
- Review the audiometric history
  - Determine if patient was previously evaluated; Refer to an audiologist if needed

## Physical Profile Serial System, PULHES

- P = Physical capacity/stamina
- U = Upper body
- L = Lower body
- H = Hearing and ears
  - Focused on hearing and any diseases of the ear
- E = Eyes
- S = Stability/Psychiatric

## PULHES Numerical Grade System

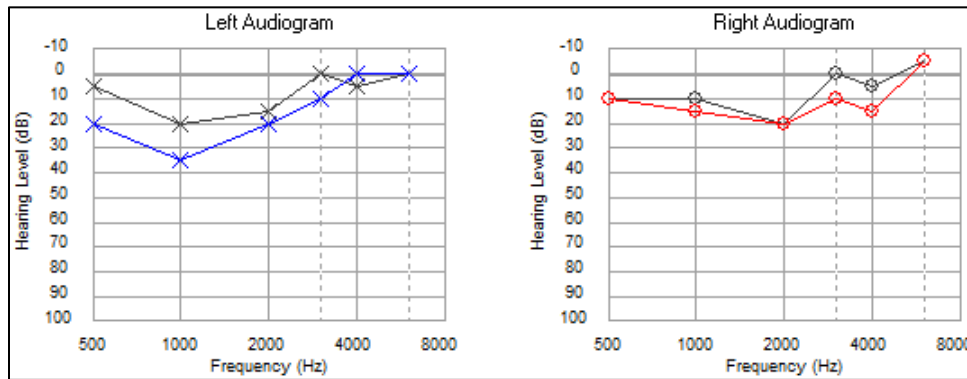
- 1 = a high level of medical fitness; fully qualified
- 2 = possesses some medical condition or physical defect that may require some activity limitations
- 3 = one or more medical conditions or physical defects that may require significant limitations; may still be able to stay in the military with limited duties
- 4 = one or more medical conditions or physical defects of such severity that the performance of military duty must be drastically limited; disqualifier for continued military service

## PULHES “H”

- DOEHRS-HC test is not a diagnostic hearing test, a profile should not be created from this test alone
- DOEHRS-HC tests indicate projected profiles
- If a DOEHRS-HC test projects a profile of  $\geq H2$ , a referral for a diagnostic hearing evaluation is necessary (check audiometric history)
- Hearing profiles will be documented IAW Service specific guidelines

**Audiometric Considerations; Profile Change (Service Specific - USA/USAF) [SSN = 990990023]**

- Any Profile changes are required to be evaluated/verified by PS



15. AUDIOMETRY	2	a. PURPOSE	1 - 90 DAY	2 - ANNUAL	3 - TERMINATION	4 - OTHER	LEFT					RIGHT				
AUDIOMETRIC CAP RE: ANSI S3.5				500	1000	2000	3000	4000	6000	500	1000	2000	3000	4000	6000	
b. CURRENT AUDIOGRAM DATE: 21 Dec 2021				20	35	20	10	0	0	10	15	20	10	15	-5	
c. REFERENCE AUDIOGRAM DATE: L: 12 Apr 2013 R: 12 Apr 2013				5	20	15	0	5	0	10	10	20	0	5	-5	
d. SIGNIFICANT THRESHOLD SHIFT (STS) L: 1 R: 1		e. THRESHOLD SHIFT		15	5	10	-5			5	0	10	10			
f. REMARKS (Include Exposure Date) Steady Noise Exp(TWA dBA): Not Entered, Impulse Noise Exp(dBP): Not Entered, Early warning for a decrease in hearing _____(L), Health Ed Prov, Tinnitus, *****TRAINING AUDIOGRAM***** H-2.										g. TYPE OF PERSONAL HEARING PROTECTION USED 7						
										1 - SINGLE FLANGE (1/1R) 2 - TRIPLE FLANGE 3 - HAND FORMED EARPLUG 4 - EAR CANAL CAPS 5 - NOISE MUFFS 6 - OTHER 7 - NONE						

- [SSN = 990990023] Confirm demographic fields 2 thru 14

- Is there a change in hearing? \_\_\_\_\_
- Are thresholds within the range of normal? \_\_\_\_\_
- Where does the patient need to go? \_\_\_\_\_
- Additional Comments \_\_\_\_\_

**Summary**

- Graphic/Serial audiogram
- Patient demographic
- Audiograms types
  - DD Form 2215, DD Form 2216 including Follow-up testing, Non-Hearing Conservation test
- Audiometric configurations
- Problem Audiograms
- Baseline re-establishment

## Counseling Strategies

### Learning Objectives

- 3.1.1 Describe the importance of counseling
- 3.1.2 Counsel a patient on their audiogram using common terms
- 3.1.3 Describe the required follow-up steps for an initial STS identification and/or referrals
- 3.1.4 Outline techniques that will allow for group explanation of test results that will not violate HIPAA requirements
- 3.1.5 Demonstration

### Health Insurance Portability and Accountability Act (HIPAA)

- Impacts all patient care
- Protects individual's rights to privacy and confidentiality
- Assures the security of electronic transfer of personal information
- Applies in hearing conservation
  - Employers, i.e. DoD, who paid for the exam and are conducting the exam to be compliant with Federal regulations may have access to the record without consent of the employee; Information reported must be limited to information that is required by the agency; Successful completion of HIPAA electronic training prior to any audio testing

Ensure discussions regarding individual PHI are not overheard; do not conduct discussions in open areas: elevators, cafeterias, etc.; Protect computer screen from outsider's view, logout when departing work station

### HIPAA Review

- Develop group counseling strategies that conform to HIPAA
  - Counseling sessions in a multi-test station clinic; High volume clinics necessitate explanation of test results in groups; Group counseling sessions create a potential for HIPAA violations
- Consults/Referrals
- STS notifications to patient's chain of command

HIPAA creates ramifications for multiple clinic actions

### Counseling

- Counseling and education is one of the most effective ways to get noise exposed personnel into becoming more involved in their role as a member of the HCP team
- Give patient their audiogram
  - Is there a change in hearing? Yes/No Positive/Negative; Are thresholds within the range of normal? Where does the patient need to go?
- Discuss the dangers of hazardous noise and that noise-induced hearing loss is preventable
- Review the importance of periodic audiograms and/or schedule follow-up testing/evaluation

A noise exposed person that understands their injury is one that will work to diminish further progression

### **Training/Education/Motivation**

- Elements and rationale of the HCP
- Effects of noise on hearing (occupational and non-occupational)
- Purpose, styles and proper use of various HPDs - Otoscopic exam and fit HPDs
- Command and employee responsibilities for HC
- Impact hearing loss may have on career, safety and mission
- Purpose of hearing tests and procedures - Review/Explain Audiogram
- Service-specific requirements

### **Counseling Agenda Overview**

- Brief HIPAA review
- Efficient & effective group counseling strategy
- Audiogram explanation for patients
- Counseling difficult patients
- Referrals to an audiologist/provider and baseline re-sets
- Group counseling demonstration
- Practical exercise

### **Patient Demographics**

- Review blocks (fields) 2-14
- Personal information correct?
- Unit information?
- Any changes to the audiogram need to occur in the edit audiogram window not the run test window

### **Audiogram**

Provide normal parameters of hearing; explanation of an STS and other data that may be included in remarks section; Remarks on the 2216 are specific to the latest test on the 2216; **Student can look at data in their own database, viewing the 990990020 DD Form 2216 annual test dated December 2021 in the print window to observe/review**

- Simplify terms for patients - avoid jargon
  - Use pitch in place of frequency (Women/Children voice - high frequency; Men voice - low frequency); Use loudness in place of intensity
- Describe test results, rather than thresholds
  - Explain frequencies (i.e., pitches) in terms of piano keys; Compare thresholds (i.e., test results) the lower the number, the better you can hear

Review major components: left/right ear, frequency, intensity; Use common language as patients do not have context for the audiogram; Compare common knowledge to help the patient understand the number values

- Acceptable hearing level thresholds
- Normal hearing thresholds (-10 to 25 dB)
- Test/Retest variability 5-10 dB
- Comparison to reference/baseline
  - Is there an STS/change in hearing? Positive or Negative; Is there an early warning shift (EWS)?
- Follow-up testing/evaluation is required to determine if the STS/change in hearing is permanent

### **Group Counseling Strategy**

- Have visual aids to help explain results
- Review and prepare audiograms
- Print and review test results prior to assembling patients for counseling
- Identify individuals with problem audiograms that will require follow-up or referral
  - You will need to meet individually with them; Be careful not to “call them out” in front of peers or other patients
- Provide verbal guidance that results are confidential, patients must view only their results

Be effective and efficient; group patients so all can see/hear the examiner; Ask those that have questions to remain, review audiogram/question individually; let those that do not have issues go, letting them know they need to return in a year for their next audiogram.

- Audiograms should be highlighted in advance for those requiring additional individualized counseling.
- Distribute tests
  - Caution patients to respect others’ privacy; Protect medical information; Provide verbal guidance that results are confidential, patients must view only their results
- Verify demographic information (visual aid)
  - Ask patients to review blocks 2-14 for accuracy
- Mark top of any audiograms that requires data to be edited or fixed

## Group Counseling Strategy, Serial Audiogram Orientation

- Frequencies tested for left/right ears
- Current test result fields

15. AUDIOMETRY AUDIOMETRIC DATA RE: ANSI S3.5	1 - 90 DAY				2 - ANNUAL			3 - TERMINATION			4 - OTHER		
	LEFT						RIGHT						
	500	1000	2000	3000	4000	6000	500	1000	2000	3000	4000	6000	
16. CURRENT AUDIOGRAM DATE													
17. REFERENCE AUDIOGRAM DATE L: R:													
18. SIGNIFICANT THRESHOLD SHIFT (STS) L: R:													
19. THRESHOLD SHIFT L: R:													
20. REMARKS (Include Exposure Data)							21. TYPE OF PERSONAL HEARING PROTECTION USED						
							1 - SINGLE FLANGE (VS1R) 4 - EAR CANAL CAPS 2 - TRIPLE FLANGE 5 - NOISE MUFFS 3 - HAND FORMED EARPLUG 6 - OTHER 7 - NONE						

Yellow = current audiogram

Blue = reference audiogram

Dark Green = differences between current and reference audiogram (STS)

Light Green = differences between current and reference audiogram (EWS)

Purple = remarks

- Intensity explanation
  - Lower numbers = better hearing; Normal hearing parameters
- Baseline results explanation
- Normal test-retest differences
  - Definition of a significant threshold shift; Is there a change in hearing (STS); Is there an early warning shift (EWS)
- Retain:
  - Those who have questions; Those requiring further evaluation (highlighted forms)
- Individually review abnormal results with patient
  - Maintain privacy; Provide instructions for follow-up procedures; Obtain patient signature for test results (as applicable)
- Provide referral information (as applicable)

Ask those that have questions to remain, review audiogram/question individually; let those that do not have issues go, letting them know they need to return in a year for their next audiogram. Audiograms should be highlighted in advance for those requiring additional individualized counseling.

### Retest and/or Referrals

#### Problem Audiograms (DD 2215/2216 or NHC)

- Follow Professional Supervisor guidance on referrals to audiologist or physician for further evaluation
- Instruct patient to be 14 hours hazardous noise-free prior to any Follow-up or diagnostic testing
- Ensure patient understands where to report to: audiologist, hearing technician and/or medical physician



- DD 2216 positive STS
  - Follow Professional Supervisor guidance on retesting and referrals for additional evaluation; Potential conductive issues, i.e. cerumen impaction, should be addressed and resolved prior to retest; Complete follow-up testing as soon as possible; All positive STS follow-up tests require the patient to be at least 14 hours hazardous noise-free
- DD 2216 negative STS
  - Review audiometric history; immediately retest if needed

Positive STS follow-up time frames: all civilians and USAF regular = 30 days; USAF reserve/NG = 60 days; USA, USN, USMC, USCG military 90 days. This is a brief overview of what the technician needs to tell the patient about follow-up requirements: Ensure patient understands where to report for f/u test or evaluation - audiologist, hearing technician or medical physician. Negative STS normally occur the first audiogram after an invalid reference audiogram was established, do not retest if previous reference was established by an audiologist and/or pay attention to headphone placement, positive STS on one ear, negative STS on the other.

### **Group Counseling Demonstration**

- Group counseling 8 patients
  - 6 patients do not have an STS or audiometric changes; 1 patient has a negative STS; 1 patient has a positive STS
- Conduct an efficient and effective group counseling session
  - All patients have a basic understanding of test results; HIPAA is maintained; Patients with STS receive correct follow-up testing and/or additional guidance

Have all patients review demographic data, blocks 2 through 14; Then review block 15, the lower the numbers the better the hearing: Yellow = current audiogram; Blue = reference audiogram; Dark Green = differences between current and reference audiogram (STS); Light Green = differences between current and reference audiogram (EWS); Purple = remarks; Remarks on the 2216 are specific to the latest test on the 2216; Release all those with no issues, state their need to return in 1 year and continue to wear HPDs when exposed to hazardous noise; Technicians need to pay attention to conductive, sensorineural, mixed hearing loss and patients that are not being cooperative.

Note: any changes required need to occur in the edit audiogram window

## Group Counseling Demonstration Role Play

**[SSN = 990990001]** Negative STS - Airman initial annual test after reference was established; results meant to provide an example of a patient who requires individual counseling for follow-up requirements of a negative STS; good policy to review audiometric history

15. AUDIOMETRY AUDIOMETRIC DATA RE: ANSI S3.6	2	3. PURPOSE						4. OTHER									
		1 - 90 DAY						2 - ANNUAL									
		LEFT						RIGHT									
		500	1000	2000	3000	4000	6000	500	1000	2000	3000	4000	6000				
b. CURRENT AUDIOGRAM DATE: 02 Dec 2021		0	5	-5	5	0	15	-5	0	-5	0	15	0				
c. REFERENCE AUDIOGRAM DATE L: 10 Dec 2020 R: 10 Dec 2020		0	10	5	15	20	10	0	5	-5	0	15	0				
d. SIGNIFICANT THRESHOLD SHIFT (STS) L: 2- R: 1		e. THRESHOLD SHIFT															
		1 - NO 2 - YES		----->													
f. REMARKS (Include Exposure Data)		Steady Noise Exp(TWA dBA): 93. Impulse Noise Exp(dBP): < 120, Neg STS(L), HPD Fit Today, Health Ed Prov, *****TRAINING AUDIOGRAM*****, H-1.						g. TYPE OF PERSONAL HEARING PROTECTION USED									
								3 1 - SINGLE FLANGE (V51R) 2 - TRIPLE FLANGE 3 - HAND FORMED EARPLUG 4 - EAR CANAL CAPS 5 - NOISE MUFFS 6 - OTHER 7 - NONE									

- **[SSN = 990990001]** Confirm demographic fields 2 thru 14
- Is there a change in hearing? \_\_\_\_\_
- Are thresholds within the range of normal? \_\_\_\_\_
- Where does the patient need to go? \_\_\_\_\_
- Additional Comments \_\_\_\_\_

Date/Time	Type	Ref. Established	L5	L1	L2	L3	L4	L6	L8	R5	R1	R2	R3	R4	R6	R8
12/2/2021 1:13 PM	Reference	Re-Established After Follow-...	10	0	0	5	0	15	NT							
12/2/2021 1:12 PM	Follow-Up 1		10	0	0	5	0	15	NT							
12/2/2021 1:07 PM	Annual		0	5	-5	5	0	15	NT	-5	0	-5	0	15	0	NT
12/10/2020 10:04 AM	Reference	Prior to Initial Duty in Hazard...	0	10	5	15	20	10	NT	0	5	-5	0	15	0	NT

15. REASON FOR CONDUCTING AUDIOGRAM		16. AUDIOMETRIC DATA						17. DATE OF AUDIOGRAM					
L: 3 R: 1	1 - REFERENCE ESTABLISHED PRIOR TO INITIAL DUTY IN HAZARDOUS NOISE AREAS	2 - REFERENCE ESTABLISHED FOLLOWING EXPOSURE IN NOISE DUTIES						3 - REFERENCE RE-ESTABLISHED AFTER FOLLOW-UP PROGRAM					
		LEFT						RIGHT					
		500	1000	2000	3000	4000	6000	500	1000	2000	3000	4000	6000
17. DATE OF AUDIOGRAM L: 02 Dec 2021 R: 10 Dec 2020		10	0	0	5	0	15	0	5	-5	0	15	0
25. REMARKS (Include Exposure Data)		Steady Noise Exp(TWA dBA): 93(L), Impulse Noise Exp(dBP): < 120(L), HPD Fit Today(L), HPD Prev Fit(L), Health Ed Prov(L), *****TRAINING AUDIOGRAM*****, Steady Noise Exp(TWA dBA): Not Entered(R), Impulse Noise Exp(dBP): Not Entered(R), H-1.											

- **[SSN = 990990001]** Confirm demographic fields 2 thru 14
- Are thresholds within the range of normal? \_\_\_\_\_
- Where does the patient need to go? \_\_\_\_\_
- Additional Comments \_\_\_\_\_

What happens with the retest? Their threshold levels at that time? Student can look at data in their own database, viewing the 990990001 DD Form 2216 initial, follow-up test and re-established baseline in the print window to observe/review

[SSN = 990990021] Positive STS Patient history - enjoys going to the range to fire weapons, left-handed shooter; results meant to provide an example of a patient who requires individual counseling for follow-up requirements of a positive STS; ensure patient signs 2216

15. AUDIOMETRY	2	a. PURPOSE															
		1 - 90 DAY						2 - ANNUAL			3 - TERMINATION			4 - OTHER			
AUDIOMETRIC DATA RE: ANSI S3.6		LEFT						RIGHT									
		500	1000	2000	3000	4000	6000	500	1000	2000	3000	4000	6000				
b. CURRENT AUDIOGRAM DATE: 21 Dec 2021		5	10	5	20	25	30	10	10	10	20	30	10				
c. REFERENCE AUDIOGRAM DATE L: 18 Dec 2017 R: 18 Dec 2017		15	20	10	15	15	20	10	15	0	15	10	5				
d. SIGNIFICANT THRESHOLD SHIFT (STS) L: 1 R: 2+		e. THRESHOLD SHIFT															
		1 - NO		----->													
		2 - YES		-10	-5	5	10		-5	10	5	20					
f. REMARKS (Include Exposure Data) Steady Noise Exp(TWAdBA): Not Entered, Impulse Noise Exp(dBP): Not Entered, HPD Fit Today, HPD Prev Fit, Health Ed Prov, Tinnitus, *****TRAINING AUDIOGRAM*****, Pos STS(R), I am aware of a change in my hearing and the need to return for a follow-up(R), Signature (R), H-1.								g. TYPE OF PERSONAL HEARING PROTECTION USED									
								3									
								1 - SINGLE FLANGE (VS1R)		4 - EAR CANAL CAPS		5 - NOISE MUFFS		6 - OTHER			
								2 - TRIPLE FLANGE		7 - NONE		3 - HAND FORMED EARPLUG					

- [SSN = 990990021] Confirm demographic fields 2 thru 14
- Is there a change in hearing? \_\_\_\_\_
- Are thresholds within the range of normal? \_\_\_\_\_
- Where does the patient need to go? \_\_\_\_\_
- Additional Comments \_\_\_\_\_

### Group Counseling Overview

- Have patients review personal data for errors
- Release those with no issues
  - Return for testing in 1 year; Fit, counsel, continue wearing HPDs in hazardous noise
- Retain those requiring further testing/evaluation or have questions
  - Individually review abnormal results with patient; Retest those requiring further technician audio testing; Maintain privacy; provide instructions for follow-up procedures/obtain patient signature (as applicable)

## Role Play

15. AUDIOMETRY	2	3. PURPOSE						1 - 90 DAY				2 - ANNUAL		3 - TERMINATION		4 - OTHER			
		LEFT												RIGHT					
AUDIOMETRIC OVR RE: ANSI S3.6		500	1000	2000	3000	4000	6000	500	1000	2000	3000	4000	6000	500	1000	2000	3000	4000	6000
b. CURRENT AUDIOGRAM DATE: 21 Dec 2021		5	15	25	30	45	35	0	0	15	20	35	20	0	0	15	20	35	20
c. REFERENCE AUDIOGRAM DATE: L: 17 Jul 2013 R: 17 Jul 2013		0	15	10	20	35	20	0	0	5	10	25	15	0	0	5	10	25	15
d. SIGNIFICANT THRESHOLD SHIFT (STS) L: 2+ R: 2+		e. THRESHOLD SHIFT																	
f. REMARKS (Include Exposure Data)		Steady Noise Exp(TWAdBA): Not Entered, Impulse Noise Exp(dBP): Not Entered, Pos STS, I am aware of a change in my hearing and the need to return for a follow-up, Signature _____, HPD Prev Fit, Health Ed Prov, *****TRAINING AUDI.												g. TYPE OF PERSONAL HEARING PROTECTION USED					
														5					
														1 - SINGLE FLANGE (1/51R) 2 - TRIPLE FLANGE 3 - HAND FORMED EARPLUG 4 - EAR CANAL CAPS 5 - NOISE MUFFS 6 - OTHER 7 - NONE					

■ [SSN = 990990020] Confirm demographic fields 2 thru 14

■ Is there a change in hearing? \_\_\_\_\_

■ Are thresholds within the range of normal? \_\_\_\_\_

■ Where does the patient need to go? \_\_\_\_\_

■ Additional Comments \_\_\_\_\_

15. AUDIOMETRY	2	3. PURPOSE						1 - 90 DAY				2 - ANNUAL		3 - TERMINATION		4 - OTHER			
		LEFT												RIGHT					
AUDIOMETRIC OVR RE: ANSI S3.6		500	1000	2000	3000	4000	6000	500	1000	2000	3000	4000	6000	500	1000	2000	3000	4000	6000
b. CURRENT AUDIOGRAM DATE: 21 Dec 2021		5	0	5	0	0	-5	15	0	0	5	35	35	15	0	0	5	35	35
c. REFERENCE AUDIOGRAM DATE: L: 16 Mar 2017 R: 16 Mar 2017		15	10	5	10	10	20	10	0	5	10	25	30	10	0	5	10	25	30
d. SIGNIFICANT THRESHOLD SHIFT (STS) L: 1 R: 1		e. THRESHOLD SHIFT																	
f. REMARKS (Include Exposure Data)		Steady Noise Exp(TWAdBA): Not Entered, Impulse Noise Exp(dBP): Not Entered, Asymmetric Loss, Masking Req, HPD Fit Today, HPD Prev Fit, HPD Present, Health Ed Prov, *****TRAINING AUDIOGRAM*****.												g. TYPE OF PERSONAL HEARING PROTECTION USED					
														5					
														1 - SINGLE FLANGE (1/51R) 2 - TRIPLE FLANGE 3 - HAND FORMED EARPLUG 4 - EAR CANAL CAPS 5 - NOISE MUFFS 6 - OTHER 7 - NONE					

■ [SSN = 990990022] Confirm demographic fields 2 thru 14

■ Is there a change in hearing? \_\_\_\_\_

■ Are thresholds within the range of normal? \_\_\_\_\_

■ Where does the patient need to go? \_\_\_\_\_

■ Additional Comments \_\_\_\_\_

15. AUDIOMETRY	2	a. PURPOSE													
		1 - 90 DAY						2 - ANNUAL						3 - TERMINATION	
AUDIOMETRIC CHR RE: ANSI S3.6		LEFT						RIGHT							
		500	1000	2000	3000	4000	6000	500	1000	2000	3000	4000	6000		
b. CURRENT AUDIOGRAM DATE: 21 Dec 2021		20	35	20	10	0	0	10	15	20	10	15	-5		
c. REFERENCE AUDIOGRAM DATE L: 12 Apr 2013 R: 12 Apr 2013		5	20	15	0	5	0	10	10	20	0	5	-5		
d. SIGNIFICANT THRESHOLD SHIFT (STS) L: 1 R: 1		e. THRESHOLD SHIFT		----->											
		1 - NO	2 - YES	15	5	10	-5		5	0	10	10			
f. REMARKS (Include Exposure Date) Steady Noise Exp(TWAdBA): Not Entered, Impulse Noise Exp(dBP): Not Entered, Early warning for a decrease in hearing _____(L), Health Ed Prov, Tinnitus, *****TRAINING AUDIOGRAM***** H-2.								g. TYPE OF PERSONAL HEARING PROTECTION USED							
								7	1 - SINGLE FLANGE (N/STR)	4 - EAR CANAL CAPS					
									2 - TRIPLE FLANGE	5 - NOISE MUFFS					
									3 - HAND FORMED EARPLUG	6 - OTHER					
										7 - NONE					

- [SSN = 990990023] Confirm demographic fields 2 thru 14
- Is there a change in hearing? \_\_\_\_\_
- Are thresholds within the range of normal? \_\_\_\_\_
- Where does the patient need to go? \_\_\_\_\_
- Additional Comments \_\_\_\_\_

### Counseling Tips

- If validity of test results is in question and re-instructing patient is not successful, refer patient to Professional Supervisor
- Ensure patient privacy
- Fit and counsel patients on the use of hearing protection whether or not hearing has changed
- Counseling session equals patient education
- Do not diagnose hearing loss
  - Pure tone air conduction is not a diagnostic hearing evaluation; Test cannot identify the type of hearing loss or the possible presence of a medical pathology
- Results of the diagnostic hearing evaluation will determine type of hearing loss and whether a referral to a medical doctor is necessary

### Summary

- Counseling
- Audiogram forms/fields
- Counsel a patient on their audiogram
- Describe the required follow-up steps for a STS and/or referrals
- Group explanation of test results
- Demonstration and role-play

## Recordkeeping

### Learning Objectives

- 3.2.1 Describe characteristics of good records
- 3.2.2 List types of hearing conservation records used in the hearing conservation program
- 3.2.3 Understand record regulatory requirements and how long to retain them
- 3.2.4 Understand how the hearing conservation program is evaluated

### Characteristics of Good Records

- Accurate
- Thorough
- Organized
- Legible
- Consistent with OSHA and DoD policies

Hearing-related DOD forms are considered medical-legal documents; Invalid data entry may result in the unjust awarding of compensation claims

### HIPAA

- Protect hearing conservation records IAW with HIPAA requirements and local procedures
- Many hearing conservation records contain personal identifiable information (PII) and protected health information (PHI)
  - DOEHRS-HC and DOEHRS-HC DR; DD 2215, DD 2216 and NHC audiograms; Patient demographic sheets

Health information is frequently used by multiple agents in a single episode - includes hearing loss

### Types of Hearing Conservation Records

- Audiometric records
- Technician certification/competency
- Rosters of noise exposed personnel
- Medical records
- OSHA recordable hearing loss
- Services accident reporting systems
- Training and education
- Program evaluation

### Noise Survey Data

- DD Form 2214 - completed by IH or BEE (Bio-Environmental Engineer)
- Sound level surveys are electronically maintained in DOEHRS-IH
- Noise survey data is kept for the duration of an individual's employment, plus 30 years
  - OSHA requirement 2 years
- Audio testing booth surveys
  - Records maintained locally - 5 years

- Other Service-specific requirements may vary

Ensure booth surveys are retained by HCP for 5 years; Shipboard audio booths require 2 sound surveys, underway and pier side; Mobile vehicle audio test booths require a sound survey at each site location when moved prior to any patient testing

### Calibration Data

- Electroacoustic calibrations - required annually
- Exhaustive calibration
  - OSHA - required every 2 years; DoD/NIOSH - required annually; Records maintained locally - 5 years
- Daily biologic calibration check- DD Form 2217
  - Records maintained locally - 5 years; Export as a PDF at the beginning of each month for the preceding month
- Document periods of non-use and failure actions

DOD exhaustive calibrations are maintained electronically for the life of the audiometer; Records may be maintained either as paper or electronic files; Daily calibrations are maintained for all audiometers: manual and microprocessors

### Audiograms

- Maintained in the medical record
- Upload/Attach in patient electronic health record (EHR) IAW local policies
  - DD Form 2215; DD Form 2216; Non-hearing conservation test; Diagnostic Evaluations
- DOEHR records can be exported as a PDF

### DD Form 2215 - Reference

- DD Form 2215 - Require 14 hours hazardous noise-free; No ENT problems; Identifies any referral criteria; Types (\*overrides preceding references); Type 1 - Prior to initial duty in hazardous noise areas; Type 2 - Following exposure in noise duties; Type 3 - \*Re-established after follow-up program (Test reason never selected from the Run Test window); Type 4 - \*Change in service component

Prior to initial duty - identifies pre-existing hearing loss. Following exposure in noise duties - lost medical records, no reference in the DR. Re-established after follow-up program - listener had an STS confirmed with follow-up testing. Change in service component - listener change in DOD service or service component or break in service or from the HCP. ENT (Ear, Nose, Throat) – No pain, pressure or fullness, sinus problems, ear infections... (Conductive issues)

### DD Form 2216

- Require a reference audiogram for comparison
- Identifies STS/referral criteria
- Selected yes to exposed to hazardous noise and/or in the HCP (\*STS needs to be present on preceding test to complete, +STS requires 14 hours hazardous noise-free)
  - Annual, 90 Day, Other, Pre/Post-Deployment, Termination, \*Follow-Up 1 (2<sup>nd</sup> test on the 2216), \*Follow-Up 2 (3<sup>rd</sup> Test on the 2216)

- Selected no to exposed to hazardous noise and/or not in the HCP
  - Pre/Post-Deployment, Termination

Referral criteria; Initial audiogram on 2216 test does not have a hazardous noise-free requirement.

Follow-up testing: Positive STS requires 14 hour hazardous noise-free; Negative STS retest immediately; Positive STS/Early Warning Indicators require patient signature. 2<sup>nd</sup> and 3<sup>rd</sup> test are only done on the DD Form 2216 if there is a positive or negative shift on the preceding test within the series; only positive STS Follow-up testing requires 14 hazardous noise-free hours

### **Non-Hearing Conservation**

- Military personnel not in the HCP
- DoD employees not in the HCP
- Pre-employment physicals
- Non-DoD employees or not associated with DoD

### **Technician Competency**

- Technicians must attend a CAOHC approved training or military equivalent training every 5 years
  - Training inputted into technicians electronic training record; Records maintained locally - 5 years
- DoD technicians receive a DoD-specific certification number in order to create a DOEHRs-HC and DOEHRs-HC DR user account
- Only appropriately certified technicians can perform OHC duties
- Services may require evaluations of OHC technicians skills/knowledge to maintain certification

USN requires annual OHC evaluations to maintain audio certification; certification posted at test location

### **SF 600 Chronological Record of Medical Care (Site Specific)**

- Capture hearing conservation encounter in full
- Customized SOAP note
- Documentation in electronic health record IAW DoD Military Health System Coding Guidance

### **OSHA Recordable Hearing Loss**

- Permanent STS (PTS) shall be recorded as an illness/injury if the hearing thresholds meet these criteria:
  - An STS occurs (an average 10 dB or greater threshold decrease at 2000 Hz, 3000 Hz, 4000 Hz) in either ear from the applicable reference
  - Hearing thresholds for the current hearing test average 25 dB or greater at 2000 Hz, 3000 Hz, 4000 Hz from audiometric zero for the shifted ear
  - Determined work-related by the Professional Supervisor (audiologist, physician or otolaryngologist)



<b>1. REMARKS (include Exposure Data)</b> Steady Noise Exp(TWA,dBA): Not Entered, Impulse Noise Exp(dBP): Not Entered, H-2, Permanent STS, I am aware of a change in my hearing, Signature _____, OSHA Reportable Loss Right Ear(s), Asymmetric Loss, Health Ed Prov. , *****TRAINING AUDIOGRAM*****							<b>2. TYPE OF PERSONAL HEARING PROTECTION USED</b> 3 1 - SINGLE FLANGE (VE1R)      4 - EAR CANAL CAPS 2 - TRIPLE FLANGE          5 - NOISE MUFFS 3 - HAND FORMED EARPLUG     6 - OTHER 7 - NONE <i>(See Item 15 B)</i>																																
<b>17. FOLLOW-UP NO.2</b> 14 <b>Transcribed Annual Test Results</b> <i>(See Item 15 B)</i>																																							
<b>AUDIOMETRIC DATA</b> RE: ANSI S3.6							<b>RIGHT</b>																																
<b>3. CURRENT AUDIOGRAM</b> DATE: 10 Nov 2020																																							
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<b>2. REFERENCE AUDIOGRAM</b> DATE: L: 18 Dec 2017 R: 18 Dec 2017																																							
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<b>3. SIGNIFICANT THRESHOLD</b> R: 2+      SHIFT (STS)      1 - NO      2 - YES							<b>e. THRESHOLD SHIFT</b>																																
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									-5	15	5	35																											

- **[SSN = 990990021]** Confirm demographic fields 2 thru 14
- Is there a change in hearing? \_\_\_\_\_
- Are thresholds within the range of normal? \_\_\_\_\_
- Where does the patient need to go? \_\_\_\_\_
- Does the patient meet the 3 conditions for OSHA reportable (Remarks)? \_\_\_\_\_
- Additional Comments \_\_\_\_\_

IAW DODI 6055.07, DODI 6055.12 and Service-level instructions; Title 29 CFR Part 1904.10; No age corrections allowed per DoDI 6055.12; Age correction allowed by OSHA; Normally the professional supervisors responsibility

**Service Level Reporting of OSHA Illness or Injury (Site Specific)**

- Air Force Safety Automated System (AFSAS)
- Navy/USMC – Risk Management Information (RMI)
- Army - report it
- OSHA recordkeeping forms
  - OSHA Form 300 - log of work related injuries and illnesses; OSHA Form 300A - summary of work related injuries and illnesses (required annually); OSHA Form 301 - injury and illness incident report (individual report)

**Management of OSHA Recordable Loss**

- Notify worker within 21 days, supervisor within 10 additional days
  - Both permanent STS and OSHA recordable cases
- Completed at first occurrence and every subsequent occurrence
- Service specific forms and process may vary for completing within the OSHA required timeline

Patient signature required for STS notification on the DD Form 2216

**Rosters of Noise-Exposed Personnel**

- Noise-exposed personnel must be identified by name
- Rosters will be maintained by IH, the professional supervisor, and workplace supervisor
- Will be updated at a minimum every 6 months
- Maintained in DOEHS-IH and/or other Service-level databases
  - Air Force: Aeromedical Services Information Management System (ASIMS); Army: MEDPROs; USN/USMC: MRRS, ESAMs

## Hearing Protection

- DOEHRS HC (captured in the electronic record)
  - DD Form 2215; DD Form 2216
- SF 600

## Training and Education

- DOEHRS-HC (captured electronically with audiogram questions)
  - DD Form 2215; DD Form 2216; Reports/Lists
- SF 600
- AF Form 55, Record of Training or equivalent

## Additional Forms Software Applications

- Fitness for Duty, Fitness and Risk Evaluations
- Medical Readiness
  - USA – MEDPROS; USAF – ASIMS; USN/USMC - ESAMS/MRRS
- Air Force HCP Forms
  - 1753 (Hearing Conservation Examination); 1754 (Job Capability and Safety Analysis); HCDC (Hearing Conservation Diagnostic Center) Referral and Disposition Form

AF 1753: completed by the PS for new workers and on confirmed STS cases; AF 1754: completed by the PS and OHC team for Fitness and Risk Evaluations; AF HCDC: completed by public health and sent to audiologist for disposition of in-person patient care or case review

## Program Evaluation

- Specific to location/unit
- Statistics determine hearing conservation program effectiveness
  - High compliance - everyone in the hearing conservation program is tested annually; Low rate of significant or standard threshold shifts (STS)

## Recordkeeping

- Booth certification
- Audiometer electro-acoustic calibration certificate
- Technician certification
- DD Form 2217
- DD Form 2215
- DD Form 2216
- Non-hearing conservation test

## Summary

- Characteristics of good records
- Types of hearing conservation records
  - Noise exposure measurements; Audiometric records; Technician competency; Medical records; OSHA records; Rosters; Hearing protection
- Program Evaluation
  - Training and education; DoD and Service-specific requirements

## Regulations

### **Learning Objectives**

3.3.1 Recognize the importance and application of hearing conservation program regulatory requirements

- Federal – OSHA/NIOSH
- State
- Department of Defense
- Service Specific
- Local level - including SOPs

### **Standards, Regulations, and Law**

- Standard - usually a codified set of rules or guidelines developed by a consensus group like ANSI, ISO, or other government agencies
- Regulation - a rule order prescribed by an authority (the government, for example)
  - usually a rule or set of rules that is somewhat more formal than a standard
- Law - Prescribed by authorities and are enacted by elected representatives, i.e., congress

### **Purpose of Regulations**

- Regulations are key to obtaining resources
  - Personnel; Equipment; Supplies

### **History of Hearing Conservation Regulations**

- 1970 - Congress enacts the Occupational Safety and Health Act
  - Established Occupational Safety and Health Administration (OSHA - regulatory agency);
  - Established the National Institute for Occupational Safety and Health (NIOSH - best practices, education and research)

In 1970, Congress enacted the Occupational Safety and Health Act. The act created OSHA in the Department of Labor as well as the National Institute for Occupational Safety and Health (NIOSH) in the U.S. Department of Health, Education, and Welfare; currently located at the Department of Health and Human Services. NIOSH currently resides within the Department of Health and Human Services. When it comes to federal regulations, OSHA is generally cited as the basis for all, but federal agencies such as the Mine Safety and Health Administration, the U.S. Department of Defense, and the Federal Railroad Administration also have governing mandates.

- 1980 - Executive Order 12196
  - Requires each Executive Agency furnish to employees places/conditions of employment that are free from recognized hazards that are causing or likely to cause death/serious physical harm, establish and operate a formal occupational safety and health program; designate an agency official to manage that program; comply with OSHA standards except where an alternative agency standard may be approved by the Secretary of Labor; Applies to all executive agencies except military personnel and unique military equipment

Executive Order 12196 signed in 1980 which required all executive agencies to comply with OSHA standards

- 1981 - Title 29 CFR 1910.95 occupational noise exposure and hearing conservation amendment becomes law
  - Requires Hearing Conservation Programs to be initiated at 85 dBA TWA (50% dose/action level); Prescribes a permissible exposure limit (PEL) of 90 dBA TWA; Prescribes a 5 dB exchange rate; Outlines elements of a hearing conservation program; Enforcement started in 1983

### **Agencies that Regulate Occupational Noise Exposure**

- Occupational Safety and Health Administration (OSHA)
  - Regulates most US industry; Not science based
- Noise exposure standard (29 CFR 1910.95) does not apply to workers in the mining, construction, transportation, or entertainment sectors
  - Mine Safety and Health Administration (MSHA); Federal Railroad Administration (FRA); Department of Defense (DoD)

Mining, construction, transportation, or entertainment sectors have their own Safety and Occupational Health programs/noise exposure standards; Mining is separate from other industries

### **National Institute for Occupational Safety and Health (NIOSH)**

- Created by the OSHA Act of 1970
- Government agency, part of HHS Centers for Disease Control and Prevention (CDC)
- Responsible for conducting research and making recommendations for the prevention of work-related illnesses and injuries (best practices)
- Produces and distributes free documents, products, and services related to hearing conservation
- Evidence/Science based
- Website resource

### **Federal Regulations**

- The Code of Federal Regulations (CFR) is an annual codification of the general and permanent rules published in the Federal Register by the executive departments and agencies of the Federal Government
- Provide minimum standards
- May not reflect best practice, but an agreed upon standard across multiple agencies and special interest groups

### **State, Local, Service Specific Regulations**

- Must at least meet the requirements of applicable federal standards
- May be more conservative/restrictive than federal standards
- Technicians must follow the most stringent standards

### **Department of Defense Regulations**

- DODI 6055.12 - Applies to all military and military unique equipment
- Provides minimal requirements for all DoD organizations

- Allows Services to develop Service specific regulations

### Service Specific Regulations

- USA
  - DA PAM 40-501 - Army Hearing Program
  - DA Pam 40-502 – Medical Readiness Procedures (contains profiling standards)
- USAF
  - AFI 48-127 - Occupational Noise and Hearing Conservation Program
- USMC
  - MCO 6260.3 Series - Marine Corps Hearing Conservation Program
  - MCO 5100.29 Series – Safety and Occupational Health Programs
- USN
  - OPNAVINST 5100.19 Series - Hearing Conservation (Afloat)
  - OPNAV M-5100.23 Series - Hearing Conservation (Shore)

### Regulation/Best Practice

Issue	29 CFR 1910.95 OSHA	DoDI 6055.12	NIOSH
Action Level	85 dBA TWA	85 dBA TWA	Recommended exposure Limit (REL) = 85 dBA TWA
Permissible Exposure Limit	90 dBA TWA	85 dBA TWA	Recommended exposure Limit (REL) = 85 dBA TWA
Exchange Rate	5 dB	3 dB	3 dB
Noise Control	Reduce to <90 dB(A)	Reduce to <85 dB(A)	Reduce to <85 dBA
Hearing Protective Devices (HPD)	Optional for ≥ 85 dB(A) required for ≥ 90 dB(A)	Required for ≥ 85 dB(A) and ≥ 140 dB(P). Must protect to 85 dB(A).	Required for ≥ 85 dB(A). Must protect to 85 dB(A). Dual protection recommended ≥ 100 dB(A) TWA
Audiometry Baseline	Required within 6 months (12 months if using mobile test service)	Complete as soon as possible after entering active duty, but prior to noise exposure.	Complete within 30 days of exposure
Damage Risk	21 - 29%	10 - 15%	10 - 15%

Display are some of the differences between OSHA, DOD, and what NIOSH recommends; although not all inclusive, some key differences are shown; Very important if taking the CAOHC exam

### **Action Level/Permissible Exposure Limit**

- Action Level - NIOSH deems 85 dB(A) TWA to be the recommended exposure limit and does not recommend any permissible exposure above this level
- Permissible Exposure Limit - DoD does not refer to 85 dB(A) as the recommended exposure limit, but treats it as both the action level and permissible exposure limit

AL and PEL are very important for CAOHC exam

### **Exchange Rate/Noise Controls**

- Exchange rate - OSHA is 5 dB, NIOSH and DoD is 3 dB
- Noise controls under OSHA must reduce sound levels to below 90 dBA; NIOSH and DoD both require noise controls to reduce exposure to below 85 dB(A)

5 dB exchange rate is made up, not created from scientific testing; Exchange rate very important for CAOHC exam

### **Hearing Protection Devices (HPDs)**

- HPDs under OSHA must be available to employees who have exposures  $\geq 85$  dB(A), use is not required until  $\geq 90$  dB(A) unless pending a reference or had a positive STS
- NIOSH and DoD require the use of HPDs for exposures  $\geq 85$  dB(A)
- DoD requires HPDs when peak sound pressure levels  $\geq 140$  dB(P)
- Engineering/Administrative controls
- NIOSH recommends double hearing protection when exposures  $\geq 100$  dB(A)
- DoDI does not address double hearing protection and OSHA simply states that double hearing protection should be used in high noise environments
- Army, Navy, Air Force, and Marine Service Specific regulations do address more specific hearing protection requirements

### **Audiometry Baseline**

- OSHA is required to be obtained within 6 months of exposure
  - Unless a mobile testing service is used, then the baseline needs to be obtained within one year of exposure
- OSHA HPD use is required at an 85 dB(A) TWA if the employee has not received a baseline audiogram
- NIOSH recommends completing the baseline within 30 days of exposure
- DoD requires the baseline to be obtained as soon as possible after entering active duty
  - Prior to any noise exposure; At the service members first duty assignment (accession points)
- DoD civilians require an audiometric baseline prior to exposure to hazardous noise

## **Damage Risk**

- Level of acceptable risk or the proportion of the exposed population that could be allowed to become materially impaired
- Regulatory requirements are not 100% protective and that an estimated percent of the workforce will be materially impaired by following the applied regulation
- Note above % is very high, should be less than 5% if compliant

## **Regulations in Support of the Hearing Conservation Program**

- Occupational Health - record keeping/reporting
- Safety - personal protective devices/exposure/site specific
- Environmental Health and/or Preventive Medicine - site specific environmental issues
- Industrial Hygiene - noise measurement

Multiple regulations may impact the hearing conservation program

## **OHC Responsibility**

- Understand the regulations that apply to you, your patients and the hearing conservation program
- Always adhere to the most stringent standard
- Work closely with professionals
- Know where to access all applicable regulations
- Military OHCs should have a general working knowledge of all Service Specific hearing conservation program regulations including local HCP SOPs

## **Web Resources**

- Occupational Safety and Health Administration (OSHA)
- National Institute for Occupational Safety and Health (NIOSH)
- Council for Accreditation in Occupational Hearing Conservation (CAOHC)
- Hearing Center of Excellence (HCE)
- Army Public Health Center (APHC)
- Navy Marine Corps Public Health Center (NMCPHC)

## **Summary**

- Federal Regulations
  - OSHA; NIOSH
- State Regulations
- Department of Defense Regulations
- Service Specific
  - Regulations; Instructions/Technical manuals; Local level policies/SOPs



## Hearing Program Team Roles

### Learning Objectives

- 3.4.1 Identify and explain the roles of the key members of the Occupational Hearing Conservation (OHC) team

### Team Members

- Noise professionals
  - Industrial Hygienist (IH); Bio-Environmental Engineers (BEE)
- Audiologist (Professional Supervisor)
- Occupational medicine physician
- Flight medicine physician
- Occupational health nurse
- Occupational hearing conservationist also known as hearing technician
- Leadership/Commanders
- Safety officer
- Workplace supervisor
- Employee
- Other personnel
  - Public Health; Professional Supervisor

Team members may include the following, depending on the installation and the Service; work together to address different aspects of the HCP, in their individual roles and scope of practice

### Industrial Hygienist

- Conduct noise surveys
  - Determine what type of work is performed by whom; Take sound level measurements of area & equipment; Take personal dosimetry when SLM measurements  $\geq$  85 dBA
- Analyze all noise data
- Maintain information in DOEHRs-IH by Similar Exposure Groups (SEG)
- Provide report to supervisor, Installation Safety Manager & Occupational Health
  - Sample results; Recommendations to the workplace supervisor regarding engineering and/or administrative controls; Noise hazard maps; Recommendations on hearing protection
- Provide by-name roster of noise-exposed personnel to Hearing Program Manager and/or Public Health
  - Provide copy to Installation Safety Manager and workplace supervisor

### Audiologist

- Serve as the Professional Supervisor
- Ensure hearing protection is fitted to all noise-exposed personnel
- Ensure annual hearing health education is provided
- Ensure monitoring audiometry (including follow-ups) are performed
- Conduct diagnostic and fitness for duty evaluations
- Ensure personnel performing audiograms are certified and maintain related skills

- Report quality assurance and program effectiveness measures through command channels
- Report STS and OSHA recordable hearing loss data
- Conduct worksite/shop visits to ensure hearing readiness compliance

#### **Occupational/Flight Medicine Physician**

- Determine if workers possess the minimum physical abilities required to perform essential duties
- Conduct evaluations to detect signs and symptoms of noise-induced hearing loss at an early stage
- Initiate fitness and risk evaluations and make medical recommendations
- Determine if hearing shift is related to an ear, nose, throat condition
- Determine appropriate additional referral criteria

#### **Occupational Health Nurse**

- Client history/perform audiometric monitoring
- Collaborate with industrial hygiene and safety
- Enroll identified employees into the HCP
- Provide health education - individual/group
- Service/Site-specific
  - Maintain log of OSHA recordable hearing loss; Develop and maintain OH SOP for the hearing conservation program; Conduct worksite/shop visits to ensure compliance

#### **Occupational Hearing Conservationist (OHC)**

- Maintain current DoD hearing technician certification
- Document/Coding in the electronic health record (EHR)
- Recordkeeping
- Equipment preparation
- Equipment maintenance
- Stocking and fitting of hearing protective devices

OHC is the backbone of the HCP - you test 100% of the patient pool, educate/motivate; Recordkeeping - shop rosters, OSHA recordable, fitness & risk, STS/PTS, electroacoustic and daily calibrations, booth certifications; Equipment preparation - daily functional, biologic checks; Equipment maintenance - annual calibration, test booth maintenance

- Schedule hearing services (initial/follow-up testing)
- Patient history
- Conduct audiometry
  - DOEHRS data entry; Audiogram test selection
- Explanation of test results, counseling, educating, motivating patients
- Process referrals
- Provide individual and group hearing health education

Schedule hearing services - initial, follow-up testing, appointments; Patient histories - new/updates; Conduct audiometry - DD Form 2215/2216 and NHC (audiogram for personnel not in the HCP or pre-hires)

### **Commanders/Leadership**

- Ensure a comprehensive HCP is in place and resourced
- Ensure workplaces and workplace supervisors comply with all HCP, DoD, and/or OSHA requirements
- Ensure HCP personnel meet training requirements
- Participate in the review of workplace hazards

### **Safety Officer**

- Ensure areas are posted with noise hazardous signs and equipment is posted with decals
- Conducts spot inspections for HPDs availability and utilization
- Chairs installation safety meetings
  - Accompanies HCP personnel on shop visits, contributes to fitness & risk evaluations
- Maintain appropriate records
  - OSHA recordable hearing losses; Maintain rosters

### **Workplace Supervisor**

- Ensure personnel comply with all Service-level HCP, DoD, and/or OSHA requirements
- Use recommendations for noise controls as the primary means of eliminating exposure
- Mark hazardous noise areas and equipment
  - Maintain a supply of HPDs; Ensure personnel carry HPDs and wear them properly in hazardous noise areas
- Update and maintain current rosters of personnel exposed to hazardous noise or in the HCP
- Notify IH/BEE/PH personnel if workplace equipment, practices or procedures involving change to potentially hazardous noise
- Ensure workers complete audiograms
- Conduct/Document initial and annual workplace specific HC training
- Notify each employee exposed at or above 8-hour TWA of 85 dBA

Service-Specific Acronyms: IH = Industrial Hygiene; BEE = Bio-Environmental Engineer; PH = Public Health

### **Employee/Patient**

- Comply with all hazardous noise control measures
- Maintain hearing protection devices (HPDs)
- Always carry HPDs when working
- Wear HPDs appropriately upon entering hazardous noise areas
- Bring HPDs to the audiometric testing appointment
- Attend all required audiometric evaluations
- Report to supervisor any new or changes in operating procedures that affect workplace noise

Hazardous noise control both at work and/or off-duty (non-occupational); Personnel due to environment hazards or ototoxic drugs may be in the HCP and not exposed to hazardous noise

### **Professional Supervisor**

- Defined as an audiologist or an appropriately trained physician
- Establishment and supervision of an audiometric monitoring program
- Management of an audiometric database
  - Review of problem audiograms; Determination of work-relatedness for hearing shifts and/or OSHA recordable hearing loss
- Follow up of work-related auditory disorders
- Perform program evaluation to monitor effectiveness

### **Summary**

- Noise professionals
- Audiologist
- Occupational and flight medicine physician
- Occupational health nurse, occupational hearing conservationist
- Leadership/commanders, safety officer, workplace supervisor, employee
- Other personnel

## Audiometric Testing Practicum 1

### Learning Objectives

- 3.5.1 Perform a successful functional check and a successful calibration, troubleshoot appropriately
- 3.5.2 Input patient data correctly while testing patient
- 3.5.3 Select correct test type/reason
- 3.5.4 Transfer/Retrieve audiograms
- 3.5.5 Counsel/Educate patients properly
- 3.5.6 Know when to perform otoscopic examination and fit HPD
- 3.5.7 Retest or process referrals correctly

### Pretest Processes

- Perform a successful functional check
- Perform a successful calibration
- When done, bring up the DD Form 2217 for the week

### Manual Testing

Set NT (not tested) for the correct ear/frequencies that need to be manually tested; once the patient responds do not adjust decibels level, vary stimuli presentations, once the patient responds twice in an ascending mode thresholds will lock in, press OK, “m” identifier will be present in the CCA-200 window.

### Patient #1, Testing Self

- Using the BAS to simulate a patient
  - Pre-instructions to patient - Start test
- Inputting your data as a patient (Run Test Window) everyone increase pay grade by 1
  - All personnel are in the Hearing Conservation Program; Select the correct test type/reason based on your own audiograms
- Transfer data from the run test window to the CCA-200
  - Do not retrieve data
- Manually test 4000 Hz and 6000 Hz for the right ear (will not retrieve into Run Test screen).

### Headphones on the BAS, response switch removed to activate the BAS

- Ensure “m” identifier is in the CCA-200 window for 4000 Hz and 6000 Hz, right ear
- Retrieve audiogram from the CAA-200 window to the Run Test window
  - Pay attention to any pop-up windows that occur
- Print audiogram (Patient signature if an STS and/or an EWS is present)
- Counsel, educate appropriately
  - Otosopic exam/fit HPDs as needed
- Return for follow-up testing or refer appropriately

Note the manual tested thresholds in the CCA-200 software does not transfer over to the Run Test window. Test selections should have been either a 2215 or a 2216



**Patient #2, Testing Jamal Deloach**

- Using the BAS to simulate a patient
  - Pre-instructions to patient - Start test
- Input Jamal Deloach as a patient (Run Test Window)
  - Ensure all demographic data is correct; Select the correct test type/reason based on audiometric history, demographic data form
- Transfer data from the run test window to the CCA-200; Do not retrieve data
- Manually test 3000 Hz and 4000 Hz for the left ear

Headphones on the BAS, response switch removed to activate the BAS

Last Name: <i>Deloach</i>		First Name: <i>Jamal</i>		MI: <i>W</i>
Gender: <input checked="" type="radio"/> Male	<input type="radio"/> Female	Date of Birth (mm/dd/yr): <i>11/26/92</i>		
Component (select one): DOD USC <input checked="" type="radio"/> USAF USMC USN Other (explain):				
Service Component (select one): Contractor Federal Employee Foreign National <input checked="" type="radio"/> Regular Reserve NG				
Rank/Grade: <i>E-7</i>	AFSC/MOS/NOBC/Rate & NEC/SDOC: <i>11H</i>		Unit: <i>1st Bn 393 Regt</i>	
UIC/WIC/WPID:		Branch/Career Field/Activity:		Major Command: <i>FORSCOM</i>
Work Location or Code: <i>BLDG 132A</i>		Phone Number (include area code): <i>254-555-5555</i>		
Are you routinely exposed to hazardous noise or in the hearing conservation program? Y N				
Purpose of visit (circle one): Annual Termination Pre-employment Follow-up <input checked="" type="radio"/> Retirement/Separation Non-hearing Conservation Pre-deployment Reference/Baseline Other (explain): Post-deployment Accession/Commissioning				
Do you have any Ear, Nose or Throat problems today that affect your hearing? Y <input checked="" type="radio"/> N				
How many hours have you been away from noise prior to this test? <i>6</i>				
What specific type of Hearing Protection Devices (earpro) do you wear? <i>Foamies</i>				
Do you wear double hearing protection? Y <input checked="" type="radio"/> N If so, what additional Hearing Protection Devices (HPDs) do you wear?				
Do you wear glasses or goggles while wearing HPDs? Always Seldom <input checked="" type="radio"/> N/A				
During the past month, how much have you been bothered by noises in your head or ears, such as ringing, buzzing, crickets, humming, tone(s), etc? (circle one) <input checked="" type="radio"/> Not bothered at all Bothered a little Bothered a lot				
Were you fit with HPDs today? Y N		Were you previously fitted with HPDs? <input checked="" type="radio"/> Y N		
Do you currently have your HPDs with you? <input checked="" type="radio"/> Y N				

- Retrieve audiogram from the CAA-200 window to the Run Test window
  - Pay attention to any pop-up windows that occur
- Print audiogram (Patient signature if an STS and/or an EWS is present)
- Counsel, educate appropriately
  - Otoscopic exam/fit HPDs as needed
- Return for follow-up testing or refer appropriately
- SSN not on the demographic sheet
- UIC not present in local database
- Added UIC from the Run Test window

Review Blocks 2-14 demographic data; STS on both ears; Normal hearing is -10 – 25 dB, the lower the numbers the better, you have a change in hearing, need to return for follow-up testing, 14 hours hazardous noise-free, when can they return...

AUDIOMETRIC DATA RE: ANSI S3.5		LEFT						RIGHT							
		500	1000	2000	3000	4000	6000	500	1000	2000	3000	4000	6000		
b. CURRENT AUDIOGRAM DATE: 06 Dec 2021		65	65	65	65	70	65	65	65	65	65	70	65		
c. REFERENCE AUDIOGRAM DATE L: 06 Feb 2017 R: 06 Dec 2021		5	0	5	20	30	35	10M	25M	55M	60M	75M	65M		
d. SIGNIFICANT THRESHOLD SHIFT (STS) L: 2+ R: 1		e. THRESHOLD SHIFT													
1 - NO 2 - YES		65		60	45	40		40	10	5	-5				
f. REMARKS (Include Exposure Data) Steady Noise Exp(TWAdBA): Not Entered, Impulse Noise Exp(dBP): Not Entered, Pos STS(L), I am aware of a change in my hearing and the need to return for a follow-up(L), Signature _____ (L), HPD Fit Today, Health Ed Prov, *****TRAINING AUDIOGRAM***** Early warning for a decrease in hearing (R). >=H-3.							g. TYPE OF PERSONAL HEARING PROTECTION USED								
							3								
							1 - SINGLE FLANGE (VS1R) 4 - EAR CANAL CAPS 2 - TRIPLE FLANGE 5 - NOISE MUFFS 3 - HAND FORMED EARPLUG 6 - OTHER 7 - NONE								

- [SSN = \_\_\_\_\_] Confirm demographic fields 2 thru 14
- Is there a change in hearing? \_\_\_\_\_
- Are thresholds within the range of normal? \_\_\_\_\_
- Where does the patient need to go? \_\_\_\_\_
- Additional Comments \_\_\_\_\_



**Patient #3, Testing Krista Larsen**

- Using the BAS to simulate a patient
  - Pre-instructions to patient - Start test
- Input Krista Larsen as a patient (Run Test Window)
  - Ensure all demographic data is correct; Select the correct test type/reason based on audiometric history, demographic data form
- Transfer data from the run test window to the CCA-200; Do not retrieve data
- Manually test 4000 Hz for the right ear

Headphones on the BAS, response switch removed to activate the BAS

IDN (SSN and DODIDN): <b>990990005</b>	
Last Name: <b>Larsen</b>	First Name: <b>Krista</b> MI:
Gender: Male <input type="checkbox"/> Female <input checked="" type="checkbox"/>	Date of Birth (mm/dd/yr): <b>7/10/1983</b>
Component (select one): DOD USCG USA <b>USAF</b> USMC USN Other (explain):	
Service Component (select one): Contractor Federal Employee Foreign National <b>Regular</b> Reserve NG	
Rank/Grade: <b>E6</b> AFSC/MOS/NOBC/Rate & NEC/SDOC: <b>1N4</b> Unit: <b>AF LC Mgt</b>	
UIC/WIC/WPID:	Branch/Career Field/Activity: Major Command: <b>AFDW</b>
Work Location or Code: <b>Bldg 72</b>	Phone Number (include area code): <b>240-555-5555</b>
Are you routinely exposed to hazardous noise or in the hearing conservation program? <input checked="" type="radio"/> Y <input type="radio"/> N	
Purpose of visit (circle one): Annual Termination Pre-employment Follow-up Retirement/Separation Non-hearing Conservation Pre-deployment Reference/Baseline Other (explain): Post-deployment Accession/Commissioning	
Do you have any Ear, Nose or Throat problems today that affect your hearing? Y <input checked="" type="radio"/> N	
How many hours have you been away from noise prior to this test? <b>2 days</b>	
What specific type of Hearing Protection Devices (earpro) do you wear? <b>Hand Formed</b>	
Do you wear double hearing protection? Y <input checked="" type="radio"/> N If so, what additional Hearing Protection Devices (HPD)s do you wear?	
Do you wear glasses or goggles while wearing HPDs? <b>Always</b> Seldom N/A	
During the past month, how much have you been bothered by noises in your head or ears, such as ringing, buzzing, crickets, humming, tone(s), etc? (circle one) <b>Not bothered at all</b> Bothered a little Bothered a lot	
Were you fit with HPDs today? Y <input type="radio"/> N	Were you previously fitted with HPDs? Y <input checked="" type="radio"/> N
Do you currently have your HPDs with you? Y <input checked="" type="radio"/> N	
Was hearing health education provided today? Y <input type="radio"/> N	

- Retrieve audiogram from the CAA-200 window to the Run Test window
  - Pay attention to any pop-up windows that occur
- Print audiogram (Patient signature if an STS and/or an EWS is present)
- Counsel, educate appropriately
  - Otoscopic exam/fit HPDs as needed
- Return for follow-up testing or refer appropriately
- UIC not present in local database
- Added UIC from the Run Test window

Review Blocks 2-14 demographic data; STS on both ears; Normal hearing is -10 – 25 dB, the lower the numbers the better, you have a change in hearing, need to return for follow-up testing, 14 hours hazardous noise-free, when can they return...

16. AUDIOMETRIC DATA RE: ANSI S3.6	LEFT						RIGHT					
	500	1000	2000	3000	4000	6000	500	1000	2000	3000	4000	6000
17. DATE OF AUDIOGRAM L: 06 Dec 2021 R: 06 Dec 2021	65	65	65	65	70	65	65	65	65	70	70	
25. REMARKS (Include Exposure Data) Steady Noise Exp(TWA dBA): Not Entered, Impulse Noise Exp(dBP): Not Entered, High Freq Loss, Low Freq Hearing Loss, HPD Fit Today, Health Ed Prov, *****TRAINING AUDIOGRAM***** , >=H-3.												

- [SSN = 990990005] Confirm demographic fields 2 thru 14
- Review audiogram
- Are thresholds within the range of normal? \_\_\_\_\_
- Where does the patient need to go? \_\_\_\_\_
- Additional Comments \_\_\_\_\_

**Summary**

- Successful pre-checks/tests
- Patient demographic input
- Audiograms types/reasons
- Transfer/Retrieve audiograms
- Counsel/Educate patients properly
- Know when to perform otoscopic examination and fit HPD
- Retest or process referrals correctly

## DOEHRS-HC Additional Functions 1

### Learning Objectives

- 3.6.1 Understand how to apply for a DOEHRs-HC DR user account and to keep it active
- 3.6.2 Understand when and how to perform a lookup table update
- 3.6.3 Understand how to compact and repair the DOEHRs-HC database
- 3.6.4 Understand where and how to back-up the DOEHRs-HC database
- 3.6.5 Understand how to do a DOEHRs-HC DR export and review the status of those uploads
- 3.6.6 Understand how to do a manual DR inquire or inquire multiple SSNs or individually via the application
- 3.6.7 Understand when and why to pull the Daily Report Log, Follow-up Testing List and Required Re-established Baseline list

### DOEHRS-HC User Account Request

[https://doehrswww.csd.disa.mil/doehrsdr/pub/AccountRequest\\_input.action](https://doehrswww.csd.disa.mil/doehrsdr/pub/AccountRequest_input.action)

- Ensure your CAC is in the work station; request the correct type of account (Hearing Conservation) and specific branch of service (USA, USAF, USN)
- Request a DR user account at least 1 week prior to performing any audio testing
- Address = Booth location physical address
- Your .mil email address
- DOEHRs-HC certification number
- ISSO (IT) .mil email address
- Professional Supervisors or Senior Audio Technician .mil email address
- Select the first justification in the drop down window
- If additional access is required contact NMCPHC
- Press submit only once
- Once submitted a window will appear that states the DOEHRs DR received your account request and it will be processed by your Functional Representatives. You will receive an email to the email address associated with your application with your DR user name and a URL to go to link your CAC with your DR user account
- Direct access to your DR user account is required at least once every 60 days to authorize your continued access (Failure will prohibit access to the DR via the DOEHRs-HC application)

Once submitted a window will appear that states the DOEHRs DR received your account request and it will be processed by your Functional Representatives. You will receive an email with your DR user name and a temporary password, immediately access your DR user account to lock your CAC with your DR user account.

Account Information			
* Indicates a required field.			
For help with this form, please contact the <a href="#">DHA Global Service Center</a>			
FUNCTIONAL GROUP * Hearing Conservation	SERVICE BRANCH * Air Force Army Marine Corps Navy		
To see available installations, please select a Service Branch.			
User Identification			
FIRST NAME * <input type="text"/>	MI <input type="text"/>	LAST NAME * <input type="text"/>	SUFFIX <input type="text"/>
SOCIAL SECURITY NUMBER (NO DASHES) * <input type="text"/>			
SSN is cryptographically hashed and not saved.			
Personnel Information			
WORK ADDRESS * Line 1 <input type="text"/>			
Line 2 <input type="text"/>			
CITY * <input type="text"/>	STATE OR APO * <input type="text"/>		
ZIP CODE * <input type="text"/>	IP ADDRESS 214.22.69.76		
COUNTRY * <input type="text"/>	WORK EMAIL ADDRESS * <input type="text"/>		
	CONFIRM WORK EMAIL ADDRESS * <input type="text"/>		
COMMERCIAL PHONE NUMBER * <input type="text"/>	EXTENSION <input type="text"/>		
COMMERCIAL FAX NUMBER <input type="text"/>	DSN (OCONUS: USE 10-DIGIT DSN) <input type="text"/>		
ORGANIZATION * (Ex. 1578th IPR)	OFFICE SYMBOL/DEPARTMENT * (Ex. /SGM/SGMIR)		
JOB TITLE/FUNCTION * <input type="text"/>	SECURITY CLEARANCE * <input type="text"/>		
DOEHS-HC TRAINING CERTIFICATION NUMBER * If None, indicate None	HC VERSION * <input type="text"/>		
ISSO FULL NAME * <input type="text"/>	ISSO EMAIL ADDRESS * <input type="text"/>		
ISSO PHONE * <input type="text"/>	EXT <input type="text"/>		
SUPERVISOR FULL NAME * <input type="text"/>	SUPERVISOR EMAIL ADDRESS * <input type="text"/>		
SUPERVISOR PHONE * <input type="text"/>	EXT <input type="text"/>		
Access Information			
JUSTIFICATION FOR ACCESS * Applicant's responsibilities include forwarding data to and downloading data from the DOEHS DR			
Applicant's responsibilities include forwarding data to and downloading data from the DOEHS DR <input type="text"/>			
WHAT TYPE OF ACCESS DO YOU NEED? <input type="text"/>	If you require DR access beyond sending and receiving DOEHS-HC data, please select the appropriate access.		
<input type="button" value="Submit"/> <input type="button" value="Reset"/>			

**Thank You!**

The DOEHS DR received your account request. Your application will be processed by your Functional Representative(s). After your application has been reviewed, you will receive an email with your login information and instructions on how to access the DOEHS Data Repository.

### **DOEHRS HC Lookup Table Update**

- Every drop down window or additional pop-up window (examples: DoD/SVR Comp, Rank/Grade, SDOC, MACOM, etc.) has tables associated with it
- These tables are updated at the Data Repository (DR) and are available the first workday of the every month (Eastern Standard Time)
- They can be processed either via an internet connected DOEHRS-HC work station or downloaded from the Data Repository from an internet connected computer and transferred to a disc for a local update

### **Compact/Repair or Back-up Database**

- Compact and Repair or Back-up Database once completed performs a back-up of the database that is placed in the Back-up folder on the C Drive
  - Contains: Users, examiners, audiometers, calibration listeners, DD Form 2217, DD Form 2215, DD Form 2216, NHC tests and Referrals
  - Current only to the time it was created
- Time for the compact and repair or Back-up depends on the size of the local database, the smaller it is, the faster it repairs and compresses
  - Back-up database should occur daily
  - Compact and Repair should be accomplished once a week
- Always copy and/or move the back-up to a shared drive or external device to prevent data loss in case of a computer crash

### **DOEHRS-HC DR Export**

- A DR export includes all newly created records and any previous records that were edited/saved
  - Creates an .MDB file, .TXT file and a .ZIP file (ZIP file is uploaded)
  - The application will securely connect with the data repository while it compacts and creates a zip file to export to the DR
  - If at any time this secure connections is disrupted, even for a millisecond the records may not be transmitted
  - Always verify the file made it to the data repository and was successfully processed
- Non-internet connected DOEHRS-HC work stations will need to do a DR export to a local file and manually load that file to the DR
  - Next DOEHRS-HC Log-in, the application will ask if the upload was successful

### **DOEHRS-HC DR Export Upload History**

- Verify export file was received
- Ensure it was successfully processed
- Manually re-export if the file was not received or unsuccessful
- Bring to HCPM attentions any export issues

### **DOEHRS-HC DR Inquire, Manual, Individual or Multiple SSNs**

- Manual DR inquire for those sites that are not connected to the internet
  - Log into the DR, request records
  - Download file
  - Import file into local database
- DOEHRS-HC application can inquire up to 10 SSNs at a time
- Enter SSN in the run test window (individual)
- DR Inquire function can inquire multiple SSNs
  - Press Add New
  - Once all SSNs are entered, press Submit
- Query will return records for those SSNs

### **DOEHRS-HC Daily Report Log**

- Pull daily, balance against electronic workload

### **DOEHRS-HC Patients Requiring Follow-up Testing List**

- Patients who don't return are removed from this list after 30 days; Technician should pull this list weekly, do a DR inquire on the patients SSNs on the list, re-pull the list, and those that tested at another site will come off, call patients to remind them to return for follow-up testing and to be 14 hours hazardous noise-free.

### **DOEHRS-HC Patients Requiring re-established Baselines**

- Contains only Positive STS on Follow-up 2 tests; Technician should pull this list weekly, do a DR inquire on the patients' SSNs on the list, re-pull the list, those whose baseline was re-established will come off, check/call audiologist schedule/audiologist to either administratively re-establish the baseline or requiring calling patients to make an evaluation appointment.

### **Summary**

- Procedures to applying and keeping active a DOEHRS-HC DR user account
- Perform a lookup table update
- Compact and repair the DOEHRS-HC database
- Back-up the DOEHRS-HC database
- Conduct DOEHRS-HC DR exports and review their status
- Manual DR inquire
- Application inquire for multiple SSNs or individually
- Daily Report Log
- Follow-up Testing and Requiring Re-established Baseline lists

## Audiogram Entry Practicum

### Learning Objectives

- 4.1.1 Manually enter audiograms from an audiological evaluation
- 4.1.2 Understand how the sub-table/fields data entry affects patient audiograms
- 4.1.3 Add examiner information correctly
- 4.1.4 Add audiometer correctly
- 4.1.5 Correctly enter audiograms test site, date/time and thresholds

### Audiogram Entry, Background Information

- Entering data from scratch may require inputting sub-fields, right click from current window
  - Patient UIC, Examiner identity with test site installation, Audiometer
- Enter date and time audiogram was completed
  - If more than 1 audiogram is being entered from the same evaluation, enter audiogram series correctly, enter time of sequential tests in 1 minute increments (example: 0800/0801)
- Selection of audiogram test type and/or reason
- Thresholds correctly entered
- Frequencies entered on a 2215/2216 or a NHC are?
- Thresholds on this evaluation go from [redacted] Hz to [redacted] Hz
- Patient has an asymmetrical hearing loss/masking required
- Instructions from the audiologist:
- Left ear STS, enter 2216 both ears, re-establish baseline left ear
- Test selection - 2216
- Demographic sheet, Referral, Evaluation provided (following pages)
- There is at least 1 or more pieces of information you will have to get from the facilitators
- All manually entered audiograms require an electronic remark
  - Audiogram entered by (name); Always add remarks by pressing the add remarks button, do not enter directly into the remarks box
- Data integrity is very important

### Complete Practicum – Simulates Practical Exam

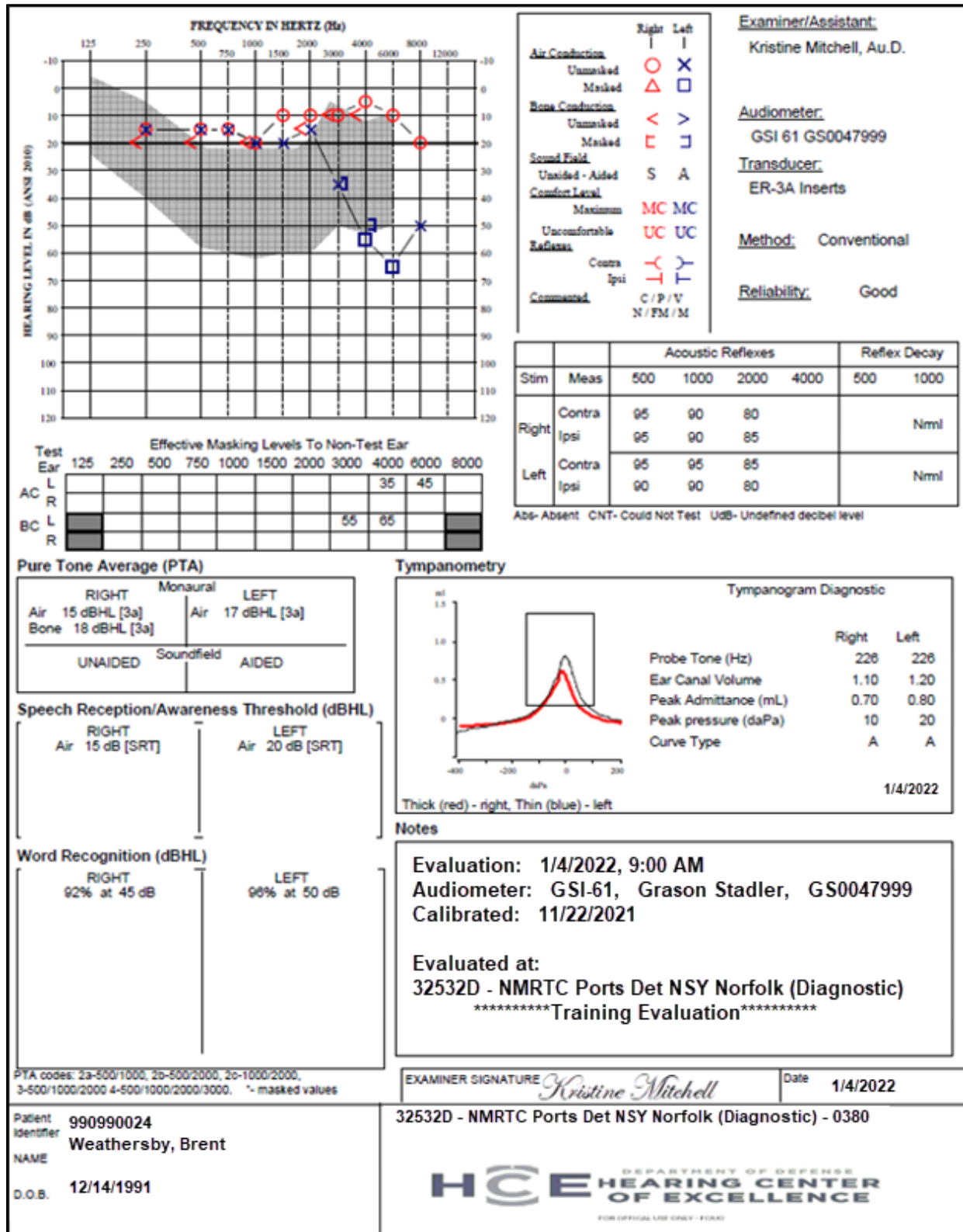
- A disadvantage of DOEHRs-HC manual data entry is human error
- Write down the thresholds that need to be entered on the audiogram
- Raise your hands to request the missing information
- Raise your hands once the 2216 has been saved
  - Go to the edit audiogram window to review with facilitator
- Continue entry of the 2215 (easier if edit audiogram window is open to the 2216 test)
- Raise your hands once the 2215 has been saved
  - Go to the edit audiogram window to review with facilitator

HEALTH RECORD	CHRONOLOGICAL RECORD OF MEDICAL CARE		
DATE	SYMPTOMS, DIAGNOSIS, TREATMENT TREATING ORGANIZATION		(Sign each entry)
1/4/2022	<p style="text-align: center;"><b>HEARING CONSERVATION DISPOSITION</b></p> <p>Name : WEATHERSBY, BRENT K                                  SSN : 990990024</p> <p>Referral Date : 1/4/2022    Test Date : 12/21/2021</p> <p>Rank/Grade : E06    Service Duty Occupation Code : U20A</p> <p>Work Address :    Phone : (325) 555-5555</p> <p style="text-align: center;">JACKSONVILLE      FL   32228</p>		
	<p><b>Reason for Referral :</b></p> <p>( ) Positive STS    ( <input checked="" type="checkbox"/> ) Masking Required</p> <p>( <input checked="" type="checkbox"/> ) Asymmetrical Hearing Loss    ( ) Medical Referral</p> <p>( ) Invalid Test    ( ) Fitness and Risk Evaluation</p> <p>( ) DD 2215 - Low-Frequency Loss    ( ) HPD Difficulty</p> <p>( ) DD 2215 - High-Frequency Loss    ( ) Other:</p>		
	<p><b>Results (Assigned by Audiologist, ENT or Physician) :</b></p> <p>( <input checked="" type="checkbox"/> ) Tinnitus:    <b>Provisional Diagnosis:</b></p> <p>( ) Pending Further Evaluation    ( <input checked="" type="checkbox"/> ) Noise - Induced Sensorineural Hearing Loss</p> <p>( <input checked="" type="checkbox"/> ) Other:    ( ) Conductive Hearing Loss - Chronic</p> <p>See Below in Remarks    ( ) Conductive Hearing Loss - Resolved</p> <p>    ( ) Mixed Hearing Loss</p> <p>    ( ) Sensorineural Hearing Loss</p> <p>    ( ) Retrocochlear Hearing Loss</p>		
	<p><b>Recommendations (Assigned by Audiologist, ENT or Physician) :</b></p> <p>( <input checked="" type="checkbox"/> ) Return to Duty, No Restrictions    <b>F &amp; R Results:</b></p> <p>( ) Return to Duty, Restrictions as Indicated    ( ) Retain</p> <p>( ) Remove From Hazardous Noise - Permanent    ( ) Accommodate</p> <p>( ) Remove from Hazardous Noise - Temporary    ( ) Remove</p> <p>( <input checked="" type="checkbox"/> ) Re-establish Reference Audiogram</p> <p>( ) Re-fit and Counsel re: HPD</p> <p>( ) Further Follow-up Recommended</p> <p>( ) Perform Fitness and Risk (F&amp;R) Assessment</p> <p>( ) Other:</p>		
	<p><b>Remarks :</b></p> <p>Left Ear STS, enter 2216; then re-establish baseline Left Ear 1 minute later; refit HPDs, provided education</p> <p>Examiner information: Kristine Mitchell, Feral Employee, GS12, Speech Pathology &amp; Audiology, 0665</p> <p>DOEHS-HC Certification number is 209092N</p> <p style="text-align: center;">***** Training Evaluation*****</p>		
	<p><b>Return To :</b></p>		
PATIENT'S IDENTIFICATION	(Use this space for Mechanical Imprint)	RECORDS MAINTAINED AT:	
PATIENT'S NAME (Last, First, Middle Initial)		SEX	
WEATHERSBY, BRENT K		M	
RELATIONSHIP TO SPONSOR	STATUS	RANK/GRADE	
SAME	REGULAR	E06	
SPONSOR'S NAME		ORGANIZATION	
WEATHERSBY, BRENT K		23173	
DEPART./SERVICE	SSN/IDENTIFICATION NO.	DATE OF BIRTH	
NAVY	990990024	12/14/1991	
CHRONOLOGICAL RECORD OF MEDICAL CARE			STANDARD FORM 600E



500Hz 1000Hz 2000Hz 3000Hz 4000Hz 6000Hz

500Hz 1000Hz 2000Hz 3000Hz 4000Hz 6000Hz



DOEHRS-HC Demographic Data Form				Booth # _____
IDN (SSN and DODIDN): <b>990990024</b>				
Last Name: <b>Weathersby</b>		First Name: <b>Brent</b>		MI: <b>K</b>
Gender: <input checked="" type="radio"/> Male <input type="radio"/> Female		Date of Birth (mm/dd/yr): <b>12/14/91</b>		
Component (select one): DOD USCG USA USAF USMC <input checked="" type="radio"/> USI Other (explain):				
Service Component (select one): Contractor Federal Employee Foreign National <input checked="" type="radio"/> Regular Reserve NG				
Rank/Grade: <b>E6 PAXMAN Diesel Engine Operator</b>			Unit: <b>Gerald R Ford</b>	
UIC/WIC/WPID: <b>CVN 78</b>		Branch/Career Field/Activity:		Major Command: <b>AirLant</b>
Work Location or Code: <b>Engineering</b>			Phone Number (include area code): <b>325-555-5555</b>	
Are you routinely exposed to hazardous noise or in the hearing conservation program? <input checked="" type="radio"/> Y <input type="radio"/> N				
Purpose of visit (circle one): Annual      Follow-up      Pre-deployment      Post-deployment Termination      Retirement/Separation      Reference/Base line      Accession/Commissioning Pre-employment      Non-hearing Conservation      Other (explain):				
Do you have any Ear, Nose or Throat problems today that affect your hearing?      Y <input checked="" type="radio"/> N				
How many hours have you been away from noise prior to this test? <b>16</b>				
What specific type of Hearing Protection Devices (earpro) do you wear? <b>Quad Flange</b>				
Do you wear double hearing protection? <input checked="" type="radio"/> Y <input type="radio"/> N				
If so, what additional Hearing Protection Devices (HPD)s do you wear? <b>Hard Hat w/earmuffs</b>				
Do you wear glasses or goggles while wearing HPDs? <input checked="" type="radio"/> Always <input type="radio"/> Seldom <input type="radio"/> N/A				
During the past month, how much have you been bothered by noises in your head or ears, such as ringing, buzzing, crickets, humming, tone(s), etc? (circle one) Not bothered at all <input checked="" type="radio"/> bothered a little      Bothered a lot				
Were you fit with HPDs today?      Y <input type="radio"/> N		Were you previously fitted with HPDs? <input checked="" type="radio"/> Y <input type="radio"/> N		
Do you currently have your HPDs with you?      Y <input checked="" type="radio"/> N				
Was hearing health education provided today?      Y <input type="radio"/> N				

### Summary

- Manually enter audiograms from an audiological evaluation
- Sub-table/fields data entry and how it affects patient audiograms
- Examiner entry
- Audiometer entry
- Audiogram test site, date/time and thresholds entry

## Re-establish Baseline from a Previous Audiogram Practicum

### Learning Objectives

- 4.2.1 Manually re-establish a baseline from a previous audiogram
- 4.2.2 Enter an electronic remark to cover the authority for the re-established baseline

### Audiometry Summary

- Do a DR inquire on the patient to bring back any records from the DR that are not in your local database
  - Done automatically if you are on a DOEHRs-HC work station that is connected to the internet
- Review the audiograms covered by the referral
  - Re-establish only the ear(s) that have an STS present
- Review audiologist instructions
- Re-establish baseline
  - Technician was/is the examiner on the audiogram; Electronic remark to cover the authority for the re-established baseline

### Complete Practicum

- Same prompts appear in the run test window after a Follow-up 2 test if an STS is present
- Never re-establish a baseline on a positive STS without audiologist approval
- Briefly review patient history in local database (print 2216 if needed)
- Referral provided (following pages) review – follow directive
- Do not edit a test to change the test type
- Functions>Input Audiogram>DD 2215>...
- Input patient SSN
- Read prompts that appear
- Follow referral instructions (test selection)
- Input electronic remark

### Summary

- Manually re-establish a baseline from a previous audiogram
- Enter an electronic remark to cover the authority for the re-established baseline
- Never re-establish a baseline on a positive STS without audiologist approval

HEALTH RECORD	CHRONOLOGICAL RECORD OF MEDICAL CARE		
DATE	SYMPTOMS, DIAGNOSIS, TREATMENT TREATING ORGANIZATION		(Sign each entry)
1/4/2022	<b>HEARING CONSERVATION DISPOSITION</b>		
	Name :	SEEMAN, INDIANA	SSN : 990990036
	Referral Date :	1/4/2022	Test Date : 12/22/2021
	Rank/Grade :	E08	Service Duty Occupation Code : C02A
	Work Address :	FPO AE 09564	Phone : (757) 555-5555
	<b>Reason for Referral :</b>		
	<input checked="" type="checkbox"/> Positive STS	<input type="checkbox"/> Masking Required	
	<input type="checkbox"/> Asymmetrical Hearing Loss	<input type="checkbox"/> Medical Referral	
	<input type="checkbox"/> Invalid Test	<input type="checkbox"/> Fitness and Risk Evaluation	
	<input type="checkbox"/> DD 2215 - Low-Frequency Loss	<input type="checkbox"/> HPD Difficulty	
	<input type="checkbox"/> DD 2215 - High-Frequency Loss	<input type="checkbox"/> Other:	
	<b>Results (Assigned by Audiologist, ENT or Physician) :</b>		
	<input type="checkbox"/> Tinnitus:	<b>Provisional Diagnosis:</b>	
	<input type="checkbox"/> Pending Further Evaluation	<input type="checkbox"/> Noise - Induced Sensorineural Hearing Loss	
	<input type="checkbox"/> Other:	<input type="checkbox"/> Conductive Hearing Loss - Chronic	
		<input type="checkbox"/> Conductive Hearing Loss - Resolved	
		<input type="checkbox"/> Mixed Hearing Loss	
		<input type="checkbox"/> Sensorineural Hearing Loss	
		<input type="checkbox"/> Retrocochlear Hearing Loss	
	<b>Recommendations (Assigned by Audiologist, ENT or Physician) :</b>		
	<input checked="" type="checkbox"/> Return to Duty, No Restrictions	<b>F &amp; R Results:</b>	
	<input type="checkbox"/> Return to Duty, Restrictions as Indicated	<input type="checkbox"/> Retain	
	<input type="checkbox"/> Remove From Hazardous Noise - Permanent	<input type="checkbox"/> Accomodate	
	<input type="checkbox"/> Remove from Hazardous Noise - Temporary	<input type="checkbox"/> Remove	
	<input checked="" type="checkbox"/> Re-establish Reference Audiogram		
	<input type="checkbox"/> Re-fit and Counsel re: HPD		
	<input type="checkbox"/> Further Follow-up Recommended		
	<input type="checkbox"/> Perform Fitness and Risk (F&R) Assessment		
	<input type="checkbox"/> Other:		
	<b>Remarks :</b>		
	Re-establish baseline use Follow-up 1, DR Kristine Mitchell		
	<b>Return To :</b>		
<b>PATIENT'S IDENTIFICATION</b> (Use this space for Mechanical Imprints)		<b>RECORDS MAINTAINED AT :</b>	
PATIENT'S NAME (Last, First, Middle Initial)		SEX	
SEEMAN, INDIANA		M	
RELATIONSHIP TO SPONSOR	STATUS	RANK/GRADE	
SAME	REGULAR	E08	
SPONSOR'S NAME		ORGANIZATION	
SEEMAN, INDIANA		21658	
DEPART./SERVICE	SSN/IDENTIFICATION NO.	DATE OF BIRTH	
NAVY	990990036	9/14/1986	
<b>CHRONOLOGICAL RECORD OF MEDICAL CARE</b>		<b>STANDARD FORM 600E</b>	

## Audiometric Testing Practicum 2

### Learning Objectives

- 4.3.1 Perform a successful functional check and a successful calibration, troubleshoot appropriately
- 4.3.2 Input patient data correctly while testing patient
- 4.3.3 Select correct test type/reason
- 4.3.4 Transfer/Retrieve audiograms
- 4.3.5 Counsel/Educate patients properly
- 4.3.6 Perform otoscopic examination/fit HPDs appropriately
- 4.3.7 Retest or process referrals correctly

### Pretest Processes

- Perform a successful functional check
- Perform a successful calibration
- When done, bring up the DD Form 2217 for the week

### Patient #4, Testing Blake Owens

- Demographic Data Form is on the next page
- Using the BAS to simulate a patient
  - Start test
- Input 990990027, Blake Owens (Run Test Window)
- Ensure all demographic data is correct
  - Select the correct test type/reason based on audiometric history, demographic data form
- Transfer/Retrieve data between the Run Test/CCA-200 windows
  - Pay attention to any pop-up windows that occur
- Print, counsel, have patient return for follow-up testing or refer appropriately

Headphones on the BAS, response switch removed to activate the BAS

DOEHRS-HC Demographic Data Form		Booth # _____
IDN (SSN and DODIDN): <b>990990027</b>		
Last Name: <b>Owens</b>	First Name: <b>Blake</b>	MI: <b>M</b>
Gender: <input checked="" type="radio"/> Male <input type="radio"/> Female	Date of Birth (mm/dd/yr): <b>May 8 1993</b>	
Component (select one): DOD    USCG    USA    USAF <input checked="" type="radio"/> USMC    USN    Other (explain):		
Service Component (select one): Contractor    Federal Employee    Foreign National    Regular    Reserve    NG		
Rank/Grade: <b>O3</b>	AFSC/MOS/NOBC/Rate & NEC/SDOC: <b>0302</b>	Unit: <b>USS San Antonio</b>
UIC/WIC/WPID:	Branch/Career Field/Activity:	Major Command: <b>Surflant</b>
Work Location or Code: <b>Security</b>	Phone Number (include area code): <b>910-555-5555</b>	
Are you routinely exposed to hazardous noise or in the hearing conservation program?    Y <input checked="" type="radio"/> N		
Purpose of visit (circle one): Annual    Follow-up <input checked="" type="radio"/> Pre-deployment    Post-deployment Termination    Retirement/Separation    Reference/Baseline    Accession/Commissioning Pre-employment    Non-hearing Conservation    Other (explain):		
Do you have any Ear, Nose or Throat problems today that affect your hearing?    Y <input checked="" type="radio"/> N		
How many hours have you been away from noise prior to this test? <b>2</b>		
What specific type of Hearing Protection Devices (earpro) do you wear? <b>Combat Arms</b>		
Do you wear double hearing protection?    Y <input checked="" type="radio"/> N If so, what additional Hearing Protection Devices (HPDs) do you wear?		
Do you wear glasses or goggles while wearing HPDs?    Always    Seldom <input checked="" type="radio"/> N/A		
During the past month, how much have you been bothered by noises in your head or ears, such as ringing, buzzing, crickets, humming, tone(s), etc? (circle one) Not bothered at all <input checked="" type="radio"/> Bothered a little    Bothered a lot		
Were you fit with HPDs today?    Y    N    Were you previously fitted with HPDs? <b>Don't remember</b>		
Do you currently have your HPDs with you? <input checked="" type="radio"/> Y    N		
Was hearing health education provided today?    Y    N		

AUDIOMETRIC CFR RE: ANSI S3.5		LEFT						RIGHT					
b. CURRENT AUDIOGRAM DATE: 13 Dec 2021		500	1000	2000	3000	4000	6000	500	1000	2000	3000	4000	6000
		65	65	65	65	65	65	65	65	65	65	70	65
c. REFERENCE AUDIOGRAM DATE L: 17 Dec 2018 R: 17 Dec 2018		40M	45M	60M	65M	65M	60M	40M	35M	45M	50M	50M	45M
d. SIGNIFICANT THRESHOLD SHIFT (STS) L: 1 R: 2+		e. THRESHOLD SHIFT											
1 - NO 2 - YES		----->		20	5	0	0		30	20	15	20	
f. REMARKS (Include Exposure Date) Pre-deployment, Steady Noise Exp(TWAdBA): Not Entered, Impulse Noise Exp(dBP): Not Entered, Other HPD: Combat Arms Earplug, Early warning for a decrease in hearing _____(L), HPD Fit Today, HPD Present, Health Ed Prov, Tinnitus, *****TRAINING AUDIOGRAM***** Pos STS(R), I am aware of a change in my hearing and the need to return for a follow-up(R), Signature (R), >=H-3.								g. TYPE OF PERSONAL HEARING PROTECTION USED					
								6	1 - SINGLE FLANGE (1/51R) 2 - TRIPLE FLANGE 3 - HAND FORMED EARPLUG	4 - EAR CANAL CAPS 5 - NOISE MUFFS 6 - OTHER 7 - NONE			

- [SSN = 990990027] Confirm demographic fields 2 thru 14
- Is there a change in hearing? \_\_\_\_\_
- Are thresholds within the range of normal? \_\_\_\_\_
- Where does the patient need to go? \_\_\_\_\_
- Additional Comments \_\_\_\_\_

### Patient #5, Testing Jamal Deloach

- Demographic Data Form is on the next page
- Using the BAS to simulate a patient
  - Pre-instructions to patient - Start test
- Input 990990028, Jamal Deloach (Run Test Window)
  - Ensure all demographic data is correct
  - Select the correct test type/reason based on previous audiograms, demographic data form
- Transfer/Retrieve data from the run test window to the CCA-200
  - Pay attention to any pop-up windows that occur
- Print, counsel, have patient return for follow-up testing or refer appropriately
- Only the ear that had an STS requires testing

DOEHRS-HC Demographic Data Form		Booth # _____
IDN (SSN and DODIDN): <b>990990028</b>		
Last Name: <b>Deloach</b>	First Name: <b>Jamal</b>	MI: <b>W</b>
Gender: Male Female	Date of Birth (mm/dd/yr):	
Component (select one): DOD USCG <b>USA</b> USAF USMC USN Other (explain):		
Service Component (select one): Contractor Federal Employee Foreign National <b>Regular</b> Reserve NG		
Rank/Grade: <b>E7</b>	AFSC/MOS/NOBC/Rate & NEC/SDOC: <b>11H</b>	Unit: <b>1st Bn 393 Regt</b>
UIC/WIC/WPID:	Branch/Career Field/Activity:	Major Command: <b>Forscom</b>
Work Location or Code: <b>BLDG 132A</b>	Phone Number (include area code): <b>254-555-5555</b>	
Are you routinely exposed to hazardous noise or in the hearing conservation program? Y N		
Purpose of visit (circle one): Annual Termination Pre-employment Follow-up <b>Retirement/Separation</b> Non-hearing Conservation Pre-deployment Reference/Baseline Other (explain): Post-deployment Accession/Commissioning		
Do you have any Ear, Nose or Throat problems today that affect your hearing? Y <b>N</b>		
How many hours have you been away from noise prior to this test? <b>1 day</b>		
What specific type of Hearing Protection Devices (earpro) do you wear? <b>Hand Formed</b>		
Do you wear double hearing protection? Y <b>N</b> If so, what additional Hearing Protection Devices (HPD)s do you wear?		
Do you wear glasses or goggles while wearing HPDs? Always Seldom <b>N/A</b>		
During the past month, how much have you been bothered by noises in your head or ears, such as ringing, buzzing, crickets, humming, tone(s), etc? (circle one) <b>Not bothered at all</b> Bothered a little Bothered a lot		
Were you fit with HPDs today? Y N Were you previously fitted with HPDs? <b>Y</b> N		
Do you currently have your HPDs with you? <b>Y</b> N		
Was hearing health education provided today? Y N		



<b>f. REMARKS</b> (Include Exposure Data) Steady Noise Exp(TWAdBA): Not Entered, Impulse Noise Exp(dBP): Not Entered, >=H-3, Permanent STS, I am aware of a change in my hearing, Signature _____, OSHA Reportable Loss Left Ear(s), Health Ed Prov.							<b>g. TYPE OF PERSONAL HEARING PROTECTION USED</b> 3 1 - SINGLE FLANGE (V51R) 4 - EAR CANAL CAPS 2 - TRIPLE FLANGE 5 - NOISE MUFFS 3 - HAND FORMED EARPLUG 6 - OTHER 7 - NONE							
<b>16. FOLLOW-UP NO. 1</b>		<b>24</b>		<b>a. MINIMUM 14 HOURS NOISE FREE SINCE CURRENT AUDIOGRAM</b> (See Item 15.B)										
AUDIOMETRIC DATA RE: ANSI S3.6		<b>LEFT</b>							<b>RIGHT</b>					
		500	1000	2000	3000	4000	6000	500	1000	2000	3000	4000	6000	
<b>b. CURRENT AUDIOGRAM</b> DATE 13 Dec 2021		60	65	60	65	65	60							
<b>c. REFERENCE AUDIOGRAM</b> DATE L: 06 Feb 2017 R: 06 Dec 2021		5	0	5	20	30	35	10M	25M	55M	60M	75M	65M	
<b>d. SIGNIFICANT THRESHOLD SHIFT (STS)</b> L: 2+ 1 - NO 2 - YES		<b>e. THRESHOLD SHIFT</b>		65	55	45	35							
<b>f. EXAMINER NAME</b> (Last First, Middle Initial) SMITH, ANDREW				<b>g. TRAINING CERTIFICATE NO.</b> 219090A			<b>h. SERVICE DUTY</b> OCCUPATION CODE 68W		<b>i. OFFICE SYMBOL</b> AUDIO					
<b>j. AUDIOMETER TYPE</b> 3 1 - MANUAL 2 - SELF-RECORDING 3 - MICROPROCESSOR		<b>k. MODEL</b> CCA-200m			<b>l. MANUFACTURER</b> Benson Co.			<b>m. SERIAL NUMBER</b>		<b>n. LAST ELECTROACOUSTIC CALIBRATION DATE</b>				
<b>17. FOLLOW-UP NO. 2</b>		<b>24</b>		<b>a. MINIMUM 14 HOURS NOISE FREE SINCE CURRENT AUDIOGRAM</b>										
AUDIOMETRIC DATA RE: ANSI S3.6		<b>LEFT</b>							<b>RIGHT</b>					
		500	1000	2000	3000	4000	6000	500	1000	2000	3000	4000	6000	
<b>b. CURRENT AUDIOGRAM</b> DATE 13 Dec 2021		60	65	60	65	65	60	65	65	65	65	70	65	
<b>c. REFERENCE AUDIOGRAM</b> DATE L: 06 Feb 2017 R: 06 Dec 2021		5	0	5	20	30	35	10M	25M	55M	60M	75M	65M	
<b>d. SIGNIFICANT THRESHOLD SHIFT (STS)</b> L: 2+ 1 - NO 2 - YES		<b>e. THRESHOLD SHIFT</b>		65	55	45	35			?	?	?		

**Transcribed Annual Test Results**

- [SSN = 990990028] Confirm demographic fields 2 thru 14
- Is there a change in hearing? \_\_\_\_\_
- Are thresholds within the range of normal? \_\_\_\_\_
- Where does the patient need to go? \_\_\_\_\_
- Additional Comments \_\_\_\_\_

**Testing Processing Flow**  
You will be doing initially only what is on this page

Prior to conducting any DOEHRs-HC testing apply for a DR user account

**Log into DOEHRs-HC application**

**Conduct a function check and daily calibration**

- Resolve any issues

**Receive patients for testing**

- Review medical record and/or demographic data form
- Question the patient if you need additional information
- Perform an otoscopic examination if needed

**Write booth number on demographic form, place patient in booth (correct location)**

**Give patients pre-test instructions**

- Remove any foreign items in their mouth (gum, etc.)
- Remove eye glasses, hearing aids, large earrings, etc.
- Turn off all electronic devices
- Move hair away from ears
- Response switch in hand
- Test instructions will begin when the door shuts
- Place headphones on properly, red/right, blue/left

**Ensure patient have the headphones on properly and the response switch in hand**

**Close booth door**

**Start patients test**

**Input patient SSN, DR Inquire**

- Verify and update demographic data
- Select test type
- Monitor testing occurring in the CCA-200 window

**Transfer patient data from the Run Test window to the CCA-200 window**

- Manually test patient if needed

**Review patient thresholds in the CCA-200 window and prepare counseling thoughts**

**This will be done individually per work station where the student who did the testing will act as the examiner; retrieve, counsel, and refer appropriately the patient on the test results retrieved. Speak loud enough for all student to hear.**

**Retrieve data from the CCA-200 window into the Run Test window, paying attention any reading any pop-up messages that appear**

**Answer applicable pop-up window questions**

**Print test(s) and counsel/educate patient(s)**

- **Have patients review demographic data in blocks 2-14 for accuracy**

**Where in the test series does this test fall? (Initial 2216, follow-up 1 or follow-up 2)**

**Is there a change in hearing? Yes/No**

**What changes occurred? Positive/Negative**

**Is hearing loss present? Yes/No normal hearing (-10 dB to 25 dB)**

- **Discuss noise is dangerous (on and off duty) and NIHL is preventable**
- **Review the importance of periodic audiograms**
- **Review the 4 P's (Permanent, Painless, Progressive, Preventable)**
- **Effects of noise on hearing**
- **Perform an otoscopic examination if conductive issues are suspected from the audiogram thresholds (low frequencies) or fitting for HPDs**
- **Fit and counsel patients on the use of hearing protection devices**
- **Individually review abnormal results with patient**
- **Provide instructions for follow-up procedures; schedule follow-up testing/evaluation**
- **Obtain patient signature (as applicable)**

**Provide follow-up testing**

- **Conductive issues resolved prior to returning for follow-up testing**
- **Hazardous noise-free requirement met**
- **Returned within follow up timeframe or start testing series over**

**Process referrals appropriately**

- **Conductive issues to primary care giver/physician**
- **Sensorineural issues to audiologist**
- **Mixed issues - get conductive issues resolved prior to sending to the audiologist**

**If there are any questions or doubts about what to do, always ask your HCPM and/or class instructors, they will continue to assist you through the audiometric portion of your job.**

### **Patient #6, Testing Each Other (Filled Demographic Data Form on page 49)**

- Insert hand switch into BAS
- Ensure wiring is untangled
- Class broken down into groups of two
- Receive audiograms and demographic form (all students are in the HCP)
  - Review forms (all students review the form of the person you are going to test - ask any questions prior to classroom testing); Give pre-testing instructions to each other prior to classroom testing; Ensure the patient cannot see the DOEHS-HC work station while testing; Patient has headphones on, response switch in hand
- Start automated test
- Input demographic data into the run test window
- Select test type
- Transfer data from the run test window to the CCA-200
  - Manually test the patients right ear, 3000 Hz, 4000 Hz and 6000 Hz
- Retrieve audiogram from the CAA-200 window to the Run Test window (pay attention to any pop-up windows that occur)
- Print audiogram
- Counsel, educate appropriately, otoscopic exam, fit or refit HPDs
- Return for further testing or refer appropriately

### **Switch roles when complete**

#### **Counseling/explanation of audiogram should include:**

- Elements and rationale of the HCP
- Effects of noise on hearing (occupational and non-occupational)
- Purpose, styles and proper use of various HPDs - Otoscopic exam and fit HPDs
- Command and employee responsibilities for HC
- Impact hearing loss may have on career, safety and mission
- Purpose of hearing tests and procedures - Review/Explain Audiogram
- Service-specific requirements

#### **Summary**

- Successful pre-checks/tests
- Patient demographic input
- Audiograms types/reasons
- Transfer/Retrieve audiograms
- Counsel/Educate patients properly
- Perform otoscopic examination/fit HPDs appropriately
- Retest or process referrals correctly

Additional demographic sheet if there are an odd number of students; a facilitator can fill in as a patient.

DOEHRS-HC Demographic Data Form				Booth # _____
IDN (SSN and DODIDN): <b>990990009</b>				
Last Name: <b>Smith</b>		First Name: <b>Reggie</b>		MI: <b>P</b>
Gender: Male Female		Date of Birth (mm/dd/yr): <b>11/11/2000</b>		
Component (select one): DOD USCG USA USAF <b>JSMC</b> USN Other (explain):				
Service Component (select one): Contractor Federal Employee Foreign National <b>Regular</b> Reserve NG				
Rank/Grade: <b>E4</b>		AFSC/MOS/NOBC/Rate & NEC/SDOC: <b>0814</b>		Unit: <b>RSU East</b>
UIC/WIC/WPID:		Branch/Career Field/Activity:		Major Command: <b>MFR</b>
Work Location or Code: <b>CP Lejeune Bldg 313</b>		Phone Number (include area code): <b>910-555-5555</b>		
Are you routinely exposed to hazardous noise or in the hearing conservation program? Y N				
Purpose of visit (circle one): Annual Termination Pre-employment Follow-up Retirement/Separation Non-hearing Conservation Pre-deployment Reference/Baseline Other (explain): Post-deployment Accession/Commissioning				
Do you have any Ear, Nose or Throat problems today that affect your hearing? Y <b>N</b>				
How many hours have you been away from noise prior to this test? <b>6</b>				
What specific type of Hearing Protection Devices (earpro) do you wear? <b>Foamies</b>				
Do you wear double hearing protection? Y <b>N</b> If so, what additional Hearing Protection Devices (HPDs) do you wear?				
Do you wear glasses or goggles while wearing HPDs? <b>Always</b> Seldom N/A				
During the past month, how much have you been bothered by noises in your head or ears, such as ringing, buzzing, crickets, humming, tone(s), etc? (circle one) <b>Not bothered at all</b> Bothered a little Bothered a lot				
Were you fit with HPDs today? Y N		Were you previously fitted with HPDs? <b>Y</b> N		
Do you currently have your HPDs with you? <b>Y</b> N				
Was hearing health education provided today? Y N				

## DOEHRS-HC Additional Functions 2

### Learning Objectives

- 4.4.1 Compact and repair the DOEHRs-HC database
- 4.4.2 Understand how to import data locally
- 4.4.3 Perform a local import of data

### **Compact/Repair Database**

### **Import from Local Database**

Simulates a DR inquire, time for the secure connect, once secure, transfer of data occurs in seconds. This is also good for test sites that are not connected to the internet (ships, etc.) to retrieve data that was done at other test sites

### Summary

- Compact and repair DOEHRs-HC database
- Import data locally

## Health Education and Training

### Learning Objectives

- 4.5.1 Become familiar with various training techniques for noise-exposed personnel
- 4.5.2 Describe critical considerations and regulatory requirements for crafting an effective health education message
  - Rate of recurrence
- 4.5.3 List specific mandated and optional topics that should be briefed:
  - Effects of noise (occupational/non-occupational); HPDs; Audiometric monitoring

### Introduction

- Noise-induced hearing loss (NIHL) and tinnitus are most common injuries in the military
  - Both are largely under-recognized
- Understand the threat = mitigate the threat
- Effective education provides the knowledge and tools to prevent the “invisible” injury

### Testimonial

- Education protects the individual and unit health
- Preserves communication capabilities for job performance
- Impacts mission accomplishment
- Promotes safety

### Mandated Training Topics

- The effects of noise on hearing (on/off duty) and military operations
- Hearing protection devices (HPDs)
- Purpose, advantages, disadvantages and attenuation characteristics of various types; Instructions for proper fit, care and use; Wear when exposed to hazardous noise both on/off duty
- Audiometric testing
  - Purpose, explanation of test procedures; Interpretation of results
- Impact hearing loss may have on career

### Mandated Initial and Annual Training Topics

- Elements and rationale of the HCP
- Effects of noise on hearing
- Purpose, styles and proper use of various HPDs
- Command and employee responsibilities for HC
- Impact hearing loss may have on career, safety and mission
- Off-duty hearing health practices (non-occupational noise)
- Purpose of hearing tests and procedures
- Service-specific requirements

## Recommended Briefing Topics

- Overview of HCP services available
- Importance of hearing for mission accomplishment
- Anatomy, physiology and mechanism of hearing loss
- Impact of hearing loss on communication during training, operational exercises, combat missions and work
- Hearing loss prevention tactics and alternative HPD strategies
- Noise surveillance and abatement strategies
- Noise exposure - signs and symptoms
  - Ringing or buzzing ears (tinnitus); Ear pain; Difficulty understanding conversational speech; Need radio or television louder; Complaining people mumble, muffled hearing
- Four P's of noise-induced hearing loss
  - Permanent, Painless, Progressive, Preventable

## Service Specific Training Requirements

- Air Force - annual requirement for
  - All noise exposed personnel – Further documented on the worker's AF Form 55, Record of Training or equivalent; All workplace supervisors (trained by Public Health)
- Army - required annually by all Active Duty and Operational (TOE) USAR and USANG personnel
  - Training required regardless of MOS; Mandated topics match 29 CFR 1910.95 Navy - annual refresher training for all HCP enrolled personnel, military and civilian
- Navy - annual refresher training for all HCP enrolled personnel, military and civilian
- Marines - annual refresher training

## Instructors

- Personnel well-versed in all components of the hearing conservation program (HCP)
- Audiologists/Hearing Conservation Program Managers (HCPMs)
- Preventive medicine professionals
- Occupational health
- Safety officers
- DoD certified hearing technicians/Occupational Hearing Conservationists (OHCs)

## Tailor Training Material to Audience/Noise Environment

- One brief does not suffice for all, vary brief with unit composition
- Update and/or alter briefs year-to-year
- Research unit before preparing brief
  - Review unit hearing loss trends and occupations
- Provide noise levels for equipment commonly used by unit
- Include interesting facts
  - Exposure levels are dependent on speed of tactical vehicle; Location in aircraft will vary noise intensity levels, consider pilot, crew, passengers



## Training Participants

- Service members and DoD civilians - noise exposed
- Army/Marine Military are all noise-exposed
- Navy & Air Force
  - Defined as at risk for hazardous noise exposure  $\geq 85$  dBA TWA or  $\geq 140$  dBP; Deploying personnel may be deemed at risk, test requirements will appear on reporting instructions; Civilians - documented by industrial hygiene that exposure levels  $\geq 85$  dBA TWA for at least 1 day annual or a one-time exposure  $\geq 140$  dBP annually

## Emphasis of the Brief

- Effects of noise on hearing - on and off duty
- Hearing protection
  - Purpose and use; Advantages, disadvantages, attenuation and characteristics; Selection, fitting, use and care; Interaction with others forms of PPE (eyewear)
- Audiometric testing - purpose and interpretation of results

Hearing loss and how it may lead to disqualification from current duties if hearing is critical to job performance; mandatory requirement of assigned protective equipment, administrative actions that may follow for failure to wear; Additional notes for Air Force personnel: Document all training on the worker's AF Form 55, Record of Training, or equivalent

## Training Techniques and Tips

- Keep training
  - Simple; Short; Meaningful - tailored to audience
- Motivate - give attendees a specific reason to listen
- Formal Training Time limits
  - Recommend maximum of 15-30 minutes; Review key items first

Keys to successful hearing loss prevention training; Training attendees remember 70% of what is heard the first 20 minutes of training

## Briefing Formats

- Informal - counseling current audiograms and/or earplug fittings
- Formal - Small group (10 or less)
  - Best scenario - small groups, short time; Annual group hearing tests using training supplements; Command groups
- Formal - Large group (11 or more)
  - Annual briefing conducted for group of personnel; Tracked on large-scale metric for mandatory training

## **Training Documentation**

- All Services - DOEHRs-HC Reports/Lists
- USA
  - Sign-in rosters maintained by unit; DTMS - Defense Training Management System entry
- USN/USMC
  - Sign-in rosters maintained by units and medical record
- USAF
  - AF Form 55, Record of Training, filed with workplace supervisor; SF 600 and/or documented in the electronic health record

## **Summary**

- Training techniques/tips
- Training content
  - Rate of recurrence
- List specific mandated/optional topics that should be briefed:
  - Effects of noise (occupational/non-occupational); HPDs; Audiometric monitoring

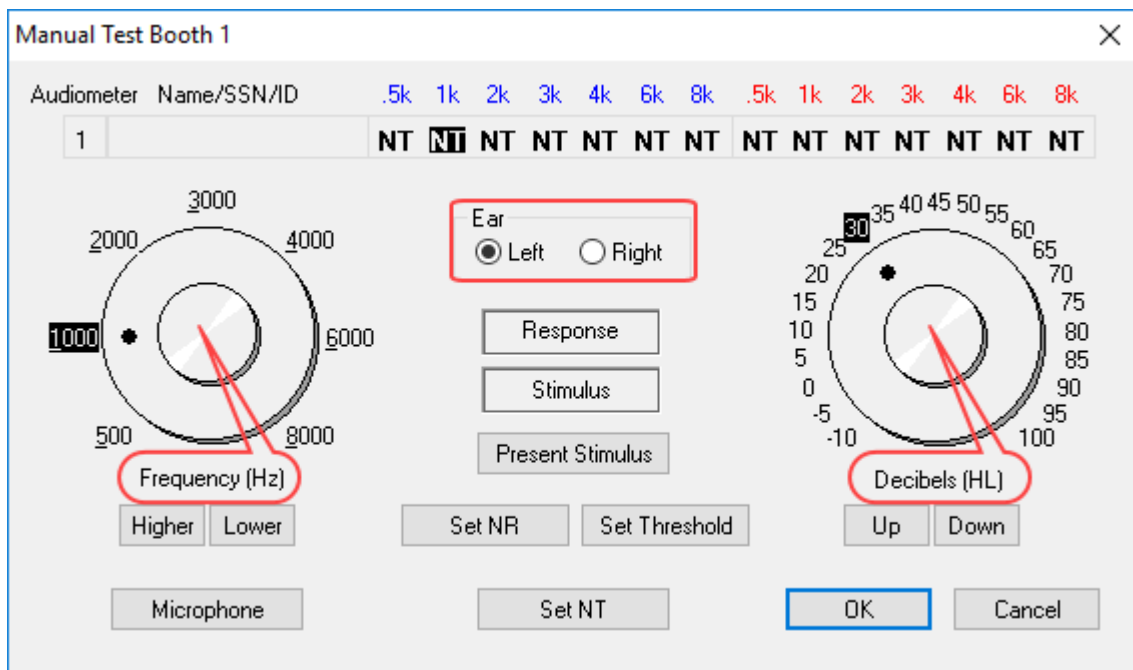
### CCA-200 Error Code Descriptions

Error	Common Name	Description
NR	No Response	The subject did not respond to two stimulus presentations at the maximum intensity
MR	Multiple Response	The subject responded more than once to a single stimulus presentation
SE	Subject Error	A threshold was not determined within twenty stimulus presentations
CR	Continuous Response	The response switch was not released since the start of the previous stimulus presentation
RN	Retest Not Valid	The threshold of a programmed retest varies by more than 5 dB
PT	Presentation Timeout	More than sixty seconds have elapsed from the start of a threshold determination without a threshold being established

## Manual Testing

In the Benson Medical Instrument – CCA-200 screen there are several ways to bring up the Manual Test Booth window:

- 1) Right click anywhere along the booth thresholds of the patient you want to manually test, select manual, manual screen will appear
- 2) Press F9, select station (multi station booths), manual screen will appear
- 3) Select menu item Audiometer, select manual, select station (multi station booths), manual screen will appear
- 4) Click on the manual icon (looks like a cassette tape), select station (multi station booths), manual screen will appear



Benson Software will default to Left Ear, 1000 Hz and 30 db.

Common issues with manual testing:

- Facial or visual cues
- Rhythmic pattern of presenting stimuli
- Earphones placement
- Poor (sloppy, rushed, non-standard) instruction
- Forgetting 1000 Hz retest

Invalid data entered into DOEHRs-HC, if manually entering from scratch; wrong ear or thresholds.

### **Full Manual Mode**

Select ear, frequency that you want to test. Set “NT” (not tested) if thresholds are present. Present a 30 dB pulsed tone (3 tones), if no response is recorded, initially increase stimuli by 20dB and then by 10 dB until a response is obtained.

After the response is confirmed, follow the bracketing procedure; vary stimulus interval to counter patient guessing.

Response - decrease stimuli presentation by 10 dB

No response - increase stimuli presentation by 5 dB

A threshold is determined when the patient responds twice in an ascending mode (responds 50% of the time) - lock threshold level

If doing a complete both ear full manual test mode, frequency presentation should be left ear or better ear: 1000 Hz, 500 Hz, 1000 Hz (confirmation test needs to be within 5 dB of initial threshold received), 2000 Hz, 3000 Hz, 4000 Hz, 6000 Hz; then the opposite ear: 1000 Hz, 500 Hz, 2000 Hz, 3000 Hz, 4000 Hz, 6000 Hz

Ensure to press OK to bring threshold to CCA-200 window. “m” identifier will be in the cca-200 window only, once retrieved into the run test window the “m” identifier is not present.

### **Semi-Automated Manual Mode**

Select ear, frequency that you want to test. Set “NT” (not tested) if thresholds are present. Present a 30 dB pulsed tone (3 tones), if no response is recorded, initially increase stimuli by 20dB and then by 10 dB until a response is obtained; vary stimulus interval to counter patient guessing.

Application semi-automatic manual mode will do the bracketing method automatically; dB level will increase by 5dB (no patient response) decrease by 10dB (patient responds) and will lock in thresholds once a patient responds twice in an ascending mode.

If doing a complete both ear semi-automated manual test mode, frequency presentation should be left ear or better ear: 1000 Hz, 500 Hz, 1000 Hz (confirmation test needs to be within 5 dB of initial threshold received), 2000 Hz, 3000 Hz, 4000 Hz, 6000 Hz; then the opposite ear: 1000 Hz, 500 Hz, 2000 Hz, 3000 Hz, 4000 Hz, 6000 Hz

Ensure to press OK to bring threshold to CCA-200 window. “m” identifier will be in the cca-200 window only, once retrieved into the run test window the “m” identifier is not present.

Fill out the below form with your personal information, all personnel are in the hearing conservation program; enter the HPDs you would wear if you are exposed to hazardous noise.

<b>DOEHRS-HC Demographic Data Form</b>						Booth # _____
<b>IDN (SSN and DODIDN):</b>						
<b>Last Name:</b>		<b>First Name:</b>			<b>MI:</b>	
<b>Gender:</b>	Male	Female	<b>Date of Birth (mm/dd/yr):</b>			
<b>Component (select one):</b>	DOD	USCG	USA	USAF	USMC	USN Other (explain):
<b>Service Component (select one):</b>	Contractor	Federal Employee	Foreign National	Regular	Reserve	NG
<b>Rank/Grade:</b>	<b>AFSC/MOS/NOBC/Rate &amp; NEC/SDOC:</b>			<b>Unit:</b>		
<b>UIC/WIC/WPID:</b>	<b>Branch/Career Field/Activity:</b>			<b>Major Command:</b>		
<b>Work Location or Code:</b>			<b>Phone Number (include area code):</b>			
<b>Are you routinely exposed to hazardous noise or in the hearing conservation program?</b>						Y    N
<b>Purpose of visit (circle one):</b>	Annual Termination Pre-employment	Follow-up Retirement/Separation Non-hearing Conservation	Pre-deployment Reference/Baseline Other (explain):	Post-deployment Accession/Commissioning		
<b>Do you have any Ear, Nose or Throat problems today that affect your hearing?</b>						Y    N
<b>How many hours have you been away from noise prior to this test?</b>						
<b>What specific type of Hearing Protection Devices (earpro) do you wear?</b>						
<b>Do you wear double hearing protection?</b>						Y    N
<b>If so, what additional Hearing Protection Devices (HPD)s do you wear?</b>						
<b>Do you wear glasses or goggles while wearing HPDs?</b>			Always	Seldom	N/A	
<b>During the past month, how much have you been bothered by noises in your head or ears, such as ringing, buzzing, crickets, humming, tone(s), etc? (circle one)</b>						
		Not bothered at all	Bothered a little	Bothered a lot		
<b>Were you fit with HPDs today?</b>		Y    N	<b>Were you previously fitted with HPDs?</b>		Y    N	
<b>Do you currently have your HPDs with you?</b>		Y    N				
<b>Was hearing health education provided today?</b>		Y    N				
<b>Privacy Act of 1974</b> <b>AUTHORITY:</b> 5 U.S.C., Section 301; 10 U.S.C., Section 1071-1085; 50 U.S.C., Supplement IV, Appendix 454, as amended. <b>PRINCIPLE PURPOSE:</b> SSN will be used for identification purposes to ensure proper documentation of medical records. <b>ROUTINE USE:</b> Information may be disclosed to Veterans Administration to adjudicate veterans claims and provide medical care to service members; National Research Council, National Academy of Sciences, National Institute of Health and similar institutions for authorized health research in the interest of the Federal Government and the public; local and state government and agencies for compliance with local laws regulations governing control of communicable diseases, preventive medicine and safety, child abuse, and other public health and welfare programs. <b>DISCLOSURE:</b> Disclosure of the SSN is voluntary; however, failure to provide the requested information may result in inaccurate documentation						
						<b>For Official Use Only</b>