THE ASSESSMENT OF HEARING AND BALANCE FOR THE CMV DRIVER

Presented by;
Dr. David Klayman, DC, CME

THE PRIMARY GOALS

• Name the conditions and disorders of the ear, with their associated symptoms, that may affect the ability to safely perform the duties of a CMV driver.
• Name the two acceptable methods of assessing the hearing of the CMV driver.
• Identify the passing parameters of both hearing tests
• Describe how to correctly administer the forced whisper test

THE PRIMARY GOALS

• Discuss how to correctly decipher audiometric test results to determine average hearing loss.
• Identify how to correctly document the hearing test results
• Clarify how to correctly complete the hearing section of the medical examiner’s certificate.
• Note the 3 disqualifying otic diseases.
Hearing and Safety Overview

The CMV Driver must be able to clearly identify the following:
• Horns – cars and trucks
• Train Signals
• Sirens
• Alarms
• Unusual or altered engine sounds
• Unusual or changing sounds from the vehicle carriage

CMV Driver Hearing and Communication Ability

This is vital toward safety as the CMV Driver must be able to clearly communicate with
• Dispatchers
• Loading dock personnel
• Passengers
• Co-workers travelling on board
• Law enforcement

The Occupational Hazard of Driving

• The CMV driver is at a higher risk for hearing loss due to long term exposure to loud vehicle sounds.
• Over time, repeated exposure to loud noise can cause hearing loss. Occupational hearing loss is caused by long term exposure to loud vibration or sound.
Balance and The CMV Driver
The job of a CMV Driver Requires Proper Balance for the performance of the following.
• Vehicle Inspection
• Securing Loads
• Getting into and out of an elevated vehicle

Hearing and The Driver’s Health History
The CME upon reviewing the driver’s health history form should question, discuss and document any “Yes” answers to the following.
• Ear disorders?
• Loss of hearing?
• Loss of balance?

Hearing and The Driver’s Health History
While reviewing the “Yes” answers pertaining to hearing and balance from the driver’s health history form, the CME should investigate the following.
• Symptoms related to or caused by ear disorders or disease.
• The use of and any side effects from taking otic preparations or medications.
Symptoms Most Often Related to Diseases of the Ear

- Hearing Loss
- Vertigo
- Tinnitus
- Otorrhea: flowing or discharge from the ear
- Otalgia
- Itching

The Physical Examination of the Ear

- External examination: auricle aka Pinna – for observable structural abnormalities and the external auditory canal – for observable structural abnormalities and any discharge
- Auditory acuity testing
- Otoscopic examination

The Physical Examination of the Ear

External Exam

- OBSERVATION of
  - a: The Auricle aka Pinna – for structural abnormalities and
  - b: The external auditory canal – for observable structural abnormalities and any discharge.
- PALPATE the pinna, tragus
The Otoscopic Examination

- The otoscopic exam is performed by gently pulling the auricle upward and backward. Hold the otoscope like a pen/pencil and use the little finger area as a fulcrum. This prevents injury should the patient turn suddenly.

- Observe The External Auditory Canal
  - Occlusion of any type

- Tympanic Membrane
  - Healthy: Pearly Gray in Color
  - Diseased: Dull, red or yellow
  - Drum
    - Injected?
    - Bulging?
    - Retracted?
    - Perforation?
Otoscopic Exam
Observing a bulging tympanic membrane.

Otoscopic Exam
Observing a Perforated Tympanic Membrane

Performing Auditory Acuity Testing
Auditory acuity refers to the ability to perceive sounds of low intensity and the ability to clearly detect differences between two sounds.
• Forced Whisper Test – Method 1
• Audiometric Test - Method 2
• Either test may initially be administered
• Testing of both ears is required
• IF method 1 reveals no abnormality, THEN, method 2 is not required.
Performing Auditory Acuity Testing

* Examiner should deeply inhale, then fully exhale, then before inhaling again, whisper at a distance of at least 5 feet from the patient, both sides.
* IF the whisper is perceived in either ear at 5 feet or more, than they pass. If not, they should be referred for an audiometric test.
* IF on audiometric testing, they have an average hearing loss, in at least one ear, less than or equal to 40 decibels (dB), they pass.
* A hearing aide may be worn during either test, and noted on the examination form.

Performing Auditory Acuity Testing

* Starting with the Forced Whisper Test
* Complete the forced whisper test for both ears, whether or not the initial test result meets the hearing requirements.
  * Patient only has to pass in one ear to be certified.

Performing Auditory Acuity Testing

Audiometric Testing

* The only frequencies required for this hearing test are 500 Hz, 1000 Hz, and 2000 Hz.
* Results are for an audiometer that is calibrated to ANSI Z24.5-1951 standard
Performing Auditory Acuity Testing

• *When an audiometer that is calibrated to a different standard is used, the test results must be converted to ANSI standard.
• Converting ISO to ANSI. Subtract from the ISO test results: 14dB for 500 Hz, 10dB for 1,000 Hz, and 8.5 dB for 2,000 Hz.

Performing Auditory Acuity Testing

Choose a testing area that is free from additional outside noise.
1) Record the hearing test results for each ear at 500 Hz, 1000 Hz, 2000 Hz (ANSI).
2) Take an average of the readings for each ear by adding the test results and dividing by 3.
3) *To pass, one ear must show an average hearing loss that is less than or equal to 40 dB.

Performing Auditory Acuity Testing

HEARING AIDS:
• *A patient may use a hearing aid during audiometric testing.
• An audiologist or hearing aid center should perform the test using appropriate audiometric equipment.
HEARING AIDS

• Hearing aids may be worn during hearing testing.
• IF a driver uses a hearing aid to qualify, THEN, the hearing aid must be worn while driving.
• The CME should remind the driver to carry a spare power source for the hearing aid while driving.

Additional Testing & Referrals

IF the CME detects or notes any of the following, they should refer the driver to an ENT specialist, otolaryngologist or audiologist.

• Trauma to the ear
• Otic disease
• When the CME findings are inconclusive and the CME can not state with confidence that the driver is fit for duty.

Otic Diseases

VERTIGO: A patient feels like they are spinning, experiencing dizziness, or a feeling of being in motion when one is stationary. Associated symptoms may include nausea, vomiting, unsteadiness, anxiety and perspiration.
Otic Diseases

PERIPHERAL VERTIGO: The problem is due to the part of the inner ear that controls balance. These areas are called the vestibular labyrinth or semicircular canals.

CENTRAL VERTIGO: This type is due to a problem in the brain, usually in the brainstem or the back part of the brain (cerebellum).

---

Otic Diseases

Vertigo
* When unstable/uncontrolled a diagnosis of vertigo is disqualifying
* In order to be certified, a driver must be symptom free for at least 2 months with a diagnosis of:
  - Benign positional vertigo
  - Acute and chronic peripheral vestibulopathy

---

Otic Diseases

MENIERE’S DISEASE: This is a disorder of the inner ear (the vestibular labyrinth or semicircular canals) that can affect hearing and balance.
* Symptoms: Episodes of rotational vertigo that lasts from a few minutes to hours. Patient may have progressive hearing loss that varies in severity, tinnitus, or a fullness or pressure in one or both ears.
* Causes: Idiopathic.
**Otic Diseases**

**MENIERE’S DISEASE**
- The Conference on Neurological Disorders and Commercial Drivers report recommends disqualification when there is a diagnosis of Meniere’s disease.
- *CME can not certify a driver with Meniere’s disease.*

**LABYRINTHINE FISTULA:** This is characterized by an abnormal opening in the bony capsule of the inner ear. This produces leakage of the perilymph from the semicircular canals into the inner ear.
- Symptoms: dizziness, imbalance, hearing loss, vertigo.
- Cause: Trauma or Congenital

**LABYRINTHINE FISTULA**
- The Conference on Neurological Disorders and Commercial Drivers report recommends disqualification when there is a diagnosis of labyrinthine fistula.
- *CME CAN NOT certify the driver.*
Otic Diseases

NONFUNCTIONING/DYSFUNCTIONAL LABYRINTH: This includes any abnormality that is related to either the function of the labyrinth or labyrinthine sensors.

- Symptoms: vertigo, disequilibrium, motion intolerance, nausea, memory and concentration difficulty, perceptual disorganization in complex surroundings.

---

Otic Diseases

NONFUNCTIONING/DYSFUNCTIONAL LABYRINTH

- The Conference on Neurological Disorders and Commercial Drivers report recommends disqualification when there is a diagnosis of nonfunctioning labyrinth.
- Do NOT certify.

---

Otic Diseases

*CME can NOT certify a driver with a history of:
- MENIERE’S DISEASE
- LABYRINTHINE FISTULA
- NONFUNCTIONING/DYSFUNCTIONAL LABYRINTH
Documentation of The Hearing Evaluation

Minimum Standards for Certification include:

• Driver passes the forced whisper test, where they perceive a forced whispered voice, in at least one ear, at a minimum of five feet.

• Driver has an average hearing loss, in at least one ear, of less than or equal to 40 decibels (dB).

• Hearing aids may be used during either test and if so, this must be documented on the ME form.

Resources

• [Federal Register Volume 78, Number 22 (Friday, February 1, 2013)](Pages 7479-7484) From the Federal Register Online via the Government Printing Office [www.gpo.gov]


• Medical Examination Report and Advisory Criteria.

• FMCSA Content Sources

• 49 CFR 391.41(b)(5) Physical qualifications for drivers.