Aural Blast Injury: A Physician's Guide to Acoustic Trauma

The goal of this CPG is to provide medical providers the tools necessary to identify, assess, and treat acoustic trauma. Early referral and reporting allows medical staff to evaluate, diagnose, and treat injuries in a timely manner, within therapeutic windows to mitigate injury progression. *Note: A Service Member with hearing loss is less effective during missions and can negatively impact mission performance.*

Acoustic Symptoms

- Hearing loss
- Tinnitus (ringing in the ear)
- Aural fullness
- Sensitivity to loud noise
- Difficulty localizing sounds
- Difficulty hearing in background noise
- Vertigo / dizziness

Physical Symptoms

- Tympanic Membrane Perforation
- Middle Ear Injury
- Temporal Bone Fracture
- Facial Nerve Injury
- Otorrhea
- Otalgia

Suspected hearing loss, awaiting treatment, or during treatment protocol:

- Individuals should be restricted from hazardous noise environments for the duration of treatment.
- Restrict from operations requiring good hearing, if possible, for the duration of treatment.

Evaluation & Treatment

TM perforation or drainage:

- If debris is present, DO NOT irrigate the ear as it may provoke pain and vertigo, move debris medially, and promote infection.
- Removal of debris should only be done by trained medical personnel to avoid further injury.
- DO NOT use any topical drops containing aminoglycosides (i.e., the neomycin in Cortisporin) since these are ototoxic.
- Treat with a fluoroquinolone and steroid containing topical antibiotic (e.g., 4 drops of ciprofloxacin/ dexamethasone or ofloxacin 3 times a day for 7 days).
- Observe strict dry ear precautions until the TM perforation has healed or is repaired.

Positive Dix-Hallpike or other vertigo:

- Epley or canalith repositioning maneuver if Dix-Hallpike is positive for benign paroxysmal positional vertigo.
- If vertigo or dizziness does not resolve, refer to ENT.

Acute acoustic trauma:

Service Members with a shift in hearing > than 25 dBHL at 3 consecutive frequencies, relative to DOEHRS-HC baseline results, if available, or the contralateral ear thresholds, are candidates for high dose oral and/or transtympanic steroid injections when not otherwise contraindicated.

- An oral steroid regimen of prednisone (60 mg daily for 10 days followed by a 2-week taper) and Transtympanic dexamethasone (24 mg/ml, up to 3 injections over 10- to 14- day intervals).
- Repeat audiometric evaluations to follow response to treatment.
- Additional injections should be guided by response to steroid, based on audiometric results.

Patients should be referred to ENT for evaluation and further testing. If ENT is not available, patients should be evacuated to a higher level of care.

METRICS

- ✓ Patients of interest have a documented tympanic membrane exam.
- ✓ Patients with subjective hearing loss or tinnitus persisting >72h have a hearing test or audiogram.
- ✓ Patients with absolute indications for ENT referral have a documented ENT examination.

This information is pulled from the evidence-based Joint Trauma System (JTS) Aural Blast Injury Clinical Practice Guideline (CPG). JTS CPGs can be found at the JTS CPG website or the JTS Deployed Medicine site.