



PATIENT HEALTH



HEARING LOSS AND TRAUMATIC BRAIN INJURY

- In this Take 5 you will learn:
- The definitions, causes and prevalence of traumatic brain injuries (TBI)
 - The common otological consequences of TBI
 - Treatment considerations for hearing healthcare providers

Traumatic brain injuries are injuries to the head that disrupt or damage the brain. They are rated using the Glasgow Coma Scale (GCS) and are categorized under three ranges: mild, moderate or severe. Leading causes of TBI, in order, are falls, blunt trauma, motor vehicle or pedestrian-related accidents, and assaults.

TBIs Are on the Rise

The Centers for Disease Control and Prevention (CDC) estimates that TBIs account for 2.2 million emergency department visits, 280,000 hospital visits, and 50,000 deaths every year (CDC, n.d.). Most TBIs are mild — also known as concussions — and it's presumed that increased attention on sports-related concussions may affect the numbers. Between 2001-2009, the CDC reported a 62 percent increase in TBI-related emergency room visits among people 19 or younger (CDC, 2011).

Military operations this century — Operation Enduring Freedom (OEF) and Operation Iraqi Freedom (OIF) — have also heightened the public's awareness of TBIs, and have increased rates of TBI among active duty U.S. military personnel. Of particular concern for hearing healthcare providers is the rise in blast-related TBIs, which produce significantly greater rates of hearing loss and tinnitus compared with non-blast-related TBIs (Fausti, Wilmington, Gallun, Myers, & Henry, 2009).

The Health-Related Effects of TBIs

Needless to say, the health-related effects of TBIs are as varied as the injuries themselves, ranging from mild to severe. TBI patients can potentially suffer:

- **Cognitive effects:** such as deficits in attention, memory, decision making or communication
- **Motor effects:** including impaired coordination, balance issues and even paralysis
- **Behavioral effects:** ranging from mood swings, aggression and impulsivity, to delusions, hallucinations and social inappropriateness
- **Sensory effects:** specifically changes in vision and hearing



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TBI's Effects on Hearing

Only a patient's physician can diagnose TBI. Therefore, you'll be brought in as part of an interdisciplinary treatment team, managing and caring for any changes in hearing. Those, too, can be wide ranging and can include otalgia, tinnitus, aural fullness, dizziness, loudness sensitivity, distorted hearing and hearing impairment (Chiasson, 2015).

The violent nature of most TBIs can easily induce hearing loss, typically from damage or injury to the tympanic membrane, middle ear or hair cells in the cochlea. But, as the hearing professional, you should also be aware of potential vestibular effects, which could cause vertigo and tinnitus or central auditory system problems, such as an inability to localize sounds.

Treatment Considerations

A holistic approach to treatment is especially critical with TBI patients. Each treatment protocol will be influenced not only by the patient's sensory symptoms, but also by the severity of non-sensory effects. As a hearing healthcare provider, it's important to work collaboratively with each patient's entire treatment team, whether it be physician, mental health, speech-language pathology or physical therapy. Be prepared to modify or integrate new protocols and approach each case aware that rehabilitation may be slower than normal.

REFERENCES

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