

## Ototoxicity: Identify Medications Toxic to the Ear

Hearing loss is the third most common health problem in the U.S. It's also on the rise with nearly 36 million Americans suffering from hearing loss. While age, illness, noise exposure and genetics are the common causes, ototoxic agents can also be the source of hearing loss and they are often overlooked.

Ototoxicity is the property of being toxic to the ear, specifically the **cochlea** or **auditory nerve** and sometimes the **vestibular system**. Exposure to certain chemical agents may also contribute to tinnitus. The following medications have been cited as being ototoxic:

- Aminoglycoside antibiotics (such as Gentamicin)
- Loop diuretics (such as Furosemide)
- Platinum-based chemotherapy agents such as Cisplatin
- Non steroid anti-inflammatory (NSAIDS)
- Aspirin and other salicylates
- Erectile dysfunction medications (such as Viagra, Levitra and Cialis)

Exposure to these agents can result in sensorineural hearing loss, dysequilibrium or both. The effects of ototoxicity can range from temporary to irreversible damage. Generally, ototoxic chemicals can interact with mechanical stresses on the hair cells of the cochlea in different ways. For organic solvents such as toluene, styrene or xylene, the combined exposure with noise increases the risk of hearing loss in a synergistic manner.

Heavy metals, asphyxiants and endocrine disruptors may interact as well. Specific toxicity limits for combined exposures are not well established. However, given the potential for enhanced risk of hearing loss, the noise exposures should be kept below 85 decibels, and the chemical exposures should be below the recommended exposure limits given by agencies such as OSHA, NIOSH or ACGIH.

### Recommended Actions for Physicians To Address Hearing Loss:

- Regularly screen for hearing loss at age 65 and older.
- Identify patient medications for possible ototoxicity.
- Screen patients with conditions that increase the risk of hearing loss, e.g., diabetes and smoking.
- Refer patients with hearing loss or tinnitus for a formal audiological evaluation.

The above was compiled from a number of scientific journals and articles. For further information, please contact us.

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