

OTOTOXICITY RISK AWARENESS

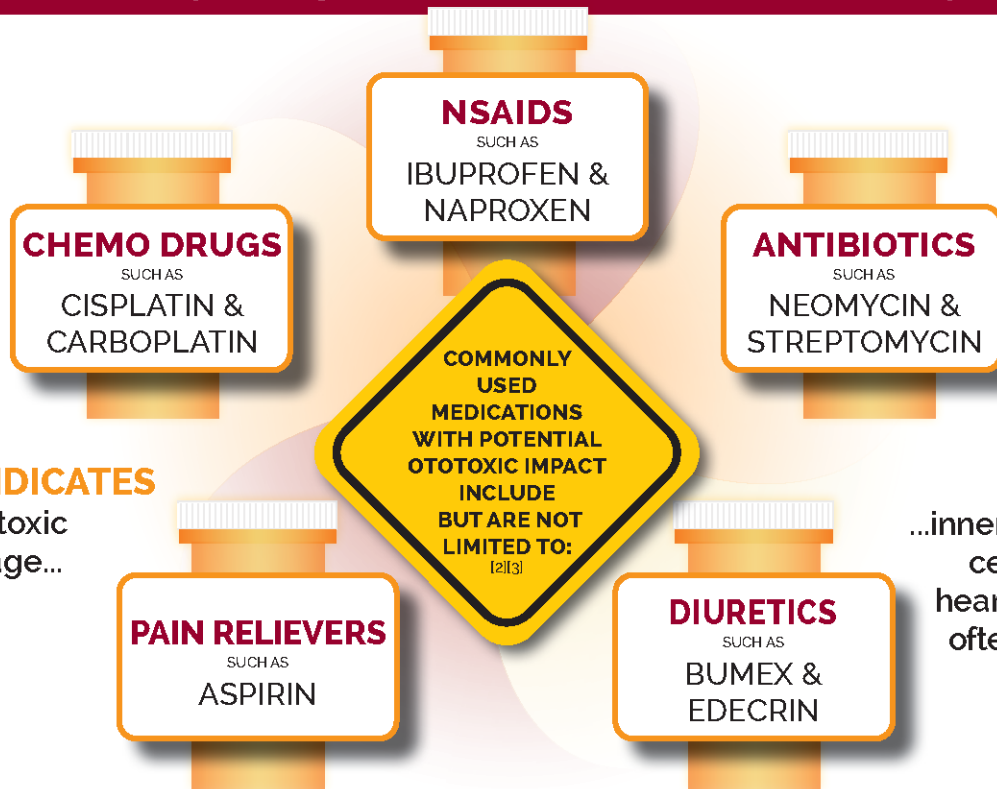


HEARING HEALTH DECISIONS

IN THE U.S., OVER 100 CLASSES OF DRUGS COMMONLY USED TO TREAT PAIN AND INFECTIONS, AS WELL AS CANCER, HEART OR KIDNEY DISEASE, CAN **DAMAGE THE INNER EAR.**^[1]

DID YOU KNOW?

The manner in which certain drugs can cause ringing in the ears (Tinnitus),^[2] followed by hearing loss or dizziness, is known as "ototoxicity."



RESEARCH INDICATES

Exposure to ototoxic drugs can damage...

...inner ear sensory hair cells necessary for hearing and balance, often on a permanent basis.^{[3] [4]}

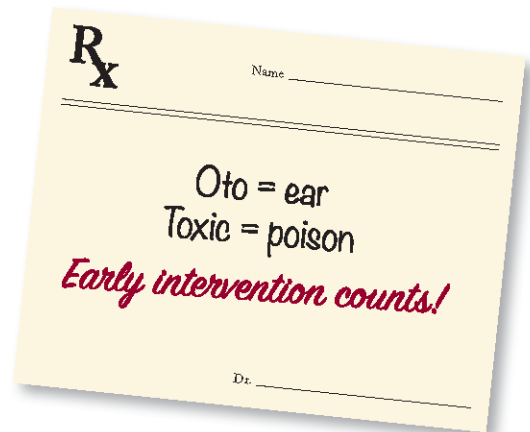
TALK TO YOUR CARING DOCTORS:

Who will help educate you about the hearing health-related side effects of treatment-related medications.

OUR EXPERT ADVICE CAN HELP!

GET EXPERT HEARING TESTING:

Including baseline and regular screenings which will enable early detection of ototoxic impact as well as timely response if and when hearing loss occurs.



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[1] American Academy of Audiology Position Statement and Clinical Practice Guidelines Ototoxicity Monitoring. audiology.org 2009 [2] Ototoxic Medications, Drugs that can cause hearing loss and tinnitus. League for the Hard of Hearing 2000 [3] Schacht, et al: Cisplatin and Aminoglycoside Antibiotics: Hearing Loss and Its Prevention, *The Anatomical Record* (Hoboken). 2012 [4] Rybak and Ramkumar, Ototoxicity. *Kidney International*. 2007

Ototoxicity Awareness and Education

Helpful References

The two most widely used adverse event scales for hearing are the **National Cancer Institute (NCI) Common Terminology Criteria for Adverse Events (CTCAE) Ototoxicity Grades** and **Brock's Hearing Loss Grades**.

The **NCI CTCAE Ototoxicity Grades** for children (with adult guidelines in parentheses) are shown below:

GRADE 1 Threshold shift or loss of 15-25 dB relative to baseline, averaged at two or more contiguous frequencies in at least one ear (same for adults)

GRADE 2 Threshold shift or loss of >25-90 dB, averaged at two contiguous test frequencies in at least one ear (same for adults)

Note: For children without baseline evaluation, baseline thresholds are assumed to be >5 dB HL.

GRADE 3 Hearing loss sufficient to indicate therapeutic intervention, including hearing aids (e.g., >20 dB bilateral HL in the speech frequencies; >30 dB unilateral HL; and requiring additional speech-language-related services) (Adults: >25-90 dB, averaged at three contiguous test frequencies in at least one ear)

GRADE 4 Indication for cochlear implant and requiring additional speech-language-related services (Adults: profound bilateral hearing loss >90 dB HL).

DRUGS THAT CAN CAUSE HEARING LOSS:

(League for the Hard of Hearing, 2000)

Diuretics

- bendroflumethazide (Corzide)
- bumetadine (Bumex)
- chlor-thalidone (Tenoretic)
- ethacrynic acid (Edecrin)
- furosemide (Lasix)

Antibiotics

- aminoglycosides
 - amikacin (Amakin) – gentamycin (Garamycin)
 - kanamycin (Kantrex) – neomycin
 - netilmicin (Netromycin) – streptomycin
 - tobramycin (Nebcin)
- erythromycin
 - (EES) – (E-mycin) – (Ilosone)
 - (Eryc) – (Pediazole) – (Biaxin)
 - (Zithromax)
- vancomycin (Vancocin)
- minocycline (Minocin)
- polymixin B & amphotericin B (Antifungal preparations)
- capreomycin (Capestat) (Anti-tuberculosis medication)

Mucosal Protectant

- misoprostol (Cytotec)

Narcotic Analgesics

- hydrocodone (Lorcet, Vicodin)

Salicylates

- aspirin and aspirin-containing products
- salicylates and methyl-salicylates (linaments)

Non-Steroidal Anti-Inflammatory Drugs (NSAIDs)

- diclofenac (Voltaren)
- etocolac (Lodine)
- fenpropfen (Nalfon)
- ibuprofen (Motrin, Advil, Nuprin, etc.)
- indomethacin (Indocin)
- naproxen (Naprosyn, Anaprox, Aleve)
- piroxicam (Feldene)
- sulindac (Clinoril)

Chemotherapeutic Agents

- bleomycine (Blenoxane)
- bromocriptine (Parlodel)
- carboplatinum (Carboplatin)
- cisplatin (Platinol)
- methotrexate (Rheumatrex)
- nitrogen mustard (Mustargen)
- vinblastin (Velban)
- vincristine (Oncovin)
- chloroquine phosphate (Aralen)
- quinacrine hydrochloride (Atabrine)
- quinine sulfate (Quinam)