

# Ototoxic Medications

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The following lists of medications have been known to cause hearing loss or tinnitus in some people or exacerbate an existing hearing problem. Usually this problem will only be caused by exceeding the recommended dosage. Be sure to consult with your medical professional if you are unsure of your drug's ototoxicity or if you experience any changes in your hearing. Although there are times when the drugs can cause permanent damage, some hearing problems are reversible when the drug is discontinued.



## Drugs That Can Cause Hearing Loss

### Salicylates

- aspirin and aspirin-containing products
- salicylates and methylsalicylates (liniments)

(Toxic effects appear to be dose related and are almost always reversible once medications are discontinued.)

### Chemotherapeutic Agents

- bleomycine (Blenoxane)
- bromocriptine (Parlodel)
- carboplatinum (Carboplatin)
- cisplatin (Platinol)
- methotrexate (Rheumatrex)
- nitrogen mustard (Mustargen)
- vinblastin (Velban)
- vincristine (Oncovin)

(The ototoxic effects can be minimized by carefully monitoring blood levels.)

### Antibiotics

- aminoglycosides
  - amikacin (Amikin)
  - gentamycin (Garamycin)
  - kanamycin (Kantrex)
  - neomycin (Found in many over-the-counter antibiotic ointments)
  - netilmicin (Netromycin)
  - streptomycin
  - tobramycin (Nebcin)

(Of particular interest is that topical ear drop medications containing gentamycin or neomycin do not appear to be ototoxic in humans unless the tympanic membrane (ear drum) is perforated. When a solution of an aminoglycoside antibiotic is used on the skin together with an aminoglycoside antibiotic used intravenously, there is a risk of an increase of the ototoxic effect, especially if the solution is used on a wound that is open or raw, or if the patient has underlying kidney damage. Neomycin is the drug that is most toxic to the structure involved in hearing, the cochlea, so it is recommended for topical use only. But even topical therapy has resulted in hearing loss when large areas were treated which allowed for large amounts of the drug to be absorbed into the body. Hearing loss caused by this class of antibiotics is usually permanent.)

- erythromycin
  - (EES) - (E-mycin)
  - (Ilosone) - (Eryc)
  - (Pediazole) - (Biaxin)
  - (Zithromax)

(Usually ototoxic when given in intravenous doses of 2-4 grams per 24 hours, especially if there is underlying kidney failure.)

- vancomycin (Vancocin)

(Similar to aminoglycosides in that it may be ototoxic when used intravenously in life-threatening infections. The fact that aminoglycosides and vancomycin are often used together intravenously when treating life-threatening infections further exaggerates the problem.)

- minocycline (Minocin) (Similar to erythromycin)
- polymixin B & amphotericin B (Antifungal preparations)
- capreomycin (Capestat) (Anti-tuberculosis medication)

## Non-Steroidal Anti-Inflammatory Drugs (NSAIDs)

Most NSAIDs have the potential for causing hearing loss and/or tinnitus. Because new drugs are being frequently approved for use, it is important that you check with your doctor or pharmacist to determine if the drug you were prescribed can cause a problem.)

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

*(Toxic effects are dose related and are almost always reversible once medications are discontinued.)*

## Mucosal Protectant

- misoprostol (*Cytotec*)

## Diuretics

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

*(These are usually ototoxic when given intravenously for acute kidney failure, acute hypertensive crisis, or acute pulmonary edema/congestive heart failure. Rare cases of ototoxicity have been found when these medications are taken orally in high doses by people with chronic kidney disease.)*

## Quinine

- chloroquine phosphate (*Aralen*)
- quinacrine hydrochloride (*Atabrine*)
- quinine sulfate (*Quinam*)

*(The ototoxic effects are very similar to those of aspirin.)*

## Narcotic Analgesics

- hydrocodone (*Lorcet, Vicodin*)

## Drugs that Can Cause Tinnitus

### Antibiotics

- aminoglycosides (*see previous section*)
- amphotericin B
- chloramphenicol (*Chloromycetin*)
- minocycline (*Monocin*)
- polymyxine B
- sulfonamides (*Septra, Bactrim*)
- vancomycin (*Vancocin*)

### Cardiac Medications

- celiprolol
- flecainide (*Tambocar*)
- lidocaine
- metoprolol (*Lopressor*)
- procainamide (*Pronestyl*)
- propranolol (*Inderal*)
- quinidine (*Quinaglute, Quiniedex*)

### Glucocorticosteroids

- prednisone (*Deltasone*)
- prednisolone (*Prelone*)
- ACTH (*adrenocorticotrophic hormone*) (*Acthar*)

### Vapors, Solvents

- cyclohexane
- dichloromethane
- hexane (*gasoline*)
- lindane (*Kwell*)
- methyl-chloride
- methyl-n-butyl-ketone
- perchlor-ethylene
- Styrene
- tetrachlor-ethane
- toluol
- trichloroethylene



### Anesthetics

- bupivacain
- tetracain
- lidocaine (*Novacaine*)

### Antimalarials

- chloroquine (*Aralen*)
- hydroxychloroquine (*Plaquinil*)

## Non-Steroidal Anti-inflammatory Drugs

**(NSAIDs)** (Please see notation for NSAIDs under "hearing loss.")

- aspirin
- acetaminophen
- benorilate
- benoxaprofen
- carprofen
- diclofenac (*Voltaren*)
- diflunisal (*Dolobid*)
- fenoprofen (*Nalfon*)
- feprazon
- ibuprofen (*Motrin, Advil, Nuprin*)
- indomethacin (*Indocin*)
- isoxicam
- ketoprofen (*Orudis*)
- methyl salicylates (*BenGay*)
- naproxen (*Naprosyn, Anaprox, Aleve*)
- D-Penicilliamin
- phenylbutazone (*Butazolidine*)
- piroxicam (*Feldene*)
- proglumetacin
- proquazon
- rofecoxib (*Vioxx*)
- salicylates
- sulindac (*Clinoril*)
- tolmetin (*Tolectin*)
- zomepirac

## Miscellaneous Toxic Substances

- alcohol
- arsenum
- caffeine
- lead
- marijuana
- nicotine
- mercury
- aurofin (*gold, Ridaura*)

(Ironically, several of these drugs found to cause tinnitus, are also used to treat tinnitus; for example: amitriptyline, benzodiazepine class, carbamazepine, furosemide, lidocaine, prednisone.)

## Diuretics

- acetazolamide (*Diamox*)
- bumetanide (*Bumex*)
- bendrofluazide
- chlorothalidone (*Hygroton, Tenoretic*)
- diapamide
- ethacrynic acid (*Edecrin*)
- furosemide (*Lasix*)
- hydrochlorothiazide (*Hydrodiuril*)
- methylchlorothiazide (*Enduron*)

## Psychopharmacologic Agents

- amitriptyline (*Elavil*)
- benzodiazepine class
  - alprazolam (*Xanax*)
  - clorazepate (*Tranxene*)
  - chlordiazepoxide (*Librium*)
  - diazepam (*Valium*)
  - flurazepam (*Dalmane*)
  - lorazepam (*Ativan*)
  - midazolam (*Versed*)
  - oxazepam (*Serax*)
  - prozepam (*Centrax*)
  - quazepam (*Doral*)
  - temazepam (*Restoril*)
  - triazolam (*Halcion*)
- bupropion (*Wellbutrin*)
- carbamazepine (*Tegretol*)
- diclofenac
- doxepin (*Sinequin*)
- desipramine (*Norpramin*)
- fluoxetine (*Prozac*)
- imipramine (*Tofranil*)
- lithium
- melitracen
- molindon (*Moban*)
- paroxetine
- phenelzin (*Nardil*)
- protriptylin (*Vivactil*)
- trazodon (*Desyrel*)
- zimeldin



## Anti-neoplastics

- bleomycin (*Blenoxane*)
- cis-platinum (*Platinol*)
- carboplatinum (*Paraplatin*)
- methotrexate (*Rheumatrex*)
- nitrogen mustard (*Mustagen*)
- vinblastin (*Velban*)

## Others

thalidomide (*Thalomid*)

Adapted from the pamphlet:

**Ototoxic Medications: Drugs that can cause hearing loss and tinnitus**  
Article by Orin S. Kaufman, D.O.

League for the Hard of Hearing  
50 Broadway, New York, NY 10004  
[www.lhh.org](http://www.lhh.org)

For a more complete list of medications we recommend:  
**Ototoxic Drugs Exposed by Neil G. Bauman, Ph.D.**  
<http://www.HearingLossHelp.com>