

Common Aminoglycosides and Platinum-Based Ototoxic Drugs: Cochlear/Vestibular Side Effects and Incidence

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ABSTRACT

This is a reference chart that identifies 16 aminoglycoside antibiotics and platinum based drugs that could be cochleotoxic, vestibulotoxic or both. Using the most currently available data from published research from the National Library of Medicine's PubMed data base, incidence figures and risk factors are included in the chart along with the potential of permanence of reversibility of the impairment.

KEYWORDS: Cochleotoxic, vestibulotoxic, aminoglycoside antibiotics

Aminoglycosides and chemotherapy agents are two classes of drugs that are known to have hearing and vestibular side effects. The table below is offered as a quick resource to these classes of drugs, common uses, toxicity, and any information related to possible reversibility of the toxic effect.

NOTE: SEVERAL RESOURCES FOR DRUG INFORMATION INCLUDE

1. www.drugs.com
2. www.rxlist.com
3. Drug manufacturer's Web site

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Reference Chart Incidence^a of Aminoglycoside and Platin Hearing Loss and Vestibular Side Effects

Name	Uses	C. to XIC	Risk (%)	V. toxic	Risk (%)	Reversible? _____
Amikacin	Gram-negative infections, especially meningitis, respiratory infections, cystic fibrosis, and burns	Yes	71% ¹	No		Possibly
Carboplatin	Chemotherapeutic alkylating agent used for ovarian, testicular, and lung cancers, medulloblastoma	Yes ^b	8–10% ^{2,4,5}	No		No ³
Cisplatin	Tx of gyn., genitourinary tract, lung, testicular, central nervous system, and head/neck cancers	Yes ^b	Up to 100% ⁶	Yes (temp) ⁷	D/N/A	No ³
Erythromycin	Gram-positive and negative infections, diphtheria, tetanus, pertussis, also used for acute otitis media, sinusitis pharyngitis, tracheobronchitis, bronchitis, and bacterial laryngitis	Yes	~38% ⁸	Yes ⁹	D/N/A	Yes (hearing only)
Ethacrynic acid	Congestive heart failure, renal failure, cirrhosis, hypertension	Yes	<1% ¹⁰	No ¹¹		Yes (adults) No (neonates)
Furosemide	Congestive heart failure, renal failure, cirrhosis, hypertension	Yes	Varies ¹²	Possibly ¹³ Rare ¹⁴		Yes (adults) No (neonates)
Gentamicin	Gram-negative infections, particularly meningitis, acute/chronic mastoiditis, necrotizing abscess, malignant otitis externa, chronic suppurative otitis media	Yes ^b No ¹⁶	0–58% ¹⁵	Yes ¹⁵		D/N/A
Kanamycin	Gram-negative infections, including tuberculosis, hepatic coma, and for prophylaxis	Yes	Up to 41% ¹⁶	No	D/N/A	Possibly
Neomycin	Otic and ototopical agent for chronic suppurative otitis media, acute diffuse otitis externa and	No (short term) ¹⁷ Yes (long term) ¹⁷	D/N/A D/N/A	Yes	<1% ¹⁸	No (long term) ¹⁷

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Name	Uses	C. to XIC	Risk (%)	V. toxic	Risk (%)	Reversible? _____
Netilmicin	use with hepatic coma and as prophylaxis Gram-negative infections, particularly those that are gentamicin resistant	Yes ^c	D/N/A	Yes ¹⁹	D/N/A	No
Quinine	Historically to treat malaria, with popular use for leg cramps, also an antipyretic	Yes ^{20,21}	~90% ²¹	Yes ²⁰	D/N/A ²⁰	Possibly
Salicylates	Anti-inflammatory, antipyretic, analgesic used to treat patients with arthritis, rheumatic fever, and disorders of connective tissues, and widely used for cardiac patients with transient ischemic attacks, stroke, unstable angina, or myocardial infarction	Yes ^b	Dose dependent	No	D/N/A	Yes w/in 48–72 h after d/c
Streptomycin	Gram-negative infections, tuberculosis, tularemia plague, brucellosis	Yes ^{22,23}	33–59% ²⁴ up to 100% ^b	Yes ^{22,23}	D/N/A ^b	Cochlear— Yes Vestibular— Yes
Tobramycin	Gram-negative infections, particularly meningitis, lower respiratory, and urinary infections	Yes ²⁵	11.5% ²⁵	Yes	D/N/A	Yes ²⁵
Vancomycin	Methicillin-resistant (staph resistant) gram-negative infections, commonly used for acute mastoiditis and sinusitis, orbital cellulitis, and parotitis	Yes ²⁶	12% ²⁶	No	D/N/A	Possibly
Viomycin	Gram-negative infections; tuberculosis	Yes ²⁷	D/N/A ^{27,28}	Yes ²⁷ No ²⁸	D/N/A	D/N/A

Abbreviation: D/N/A, data not available.

^aIncidence figures are the highest percentages as reported in the most current articles in the PubMed database and other sources (see references).

^bMultiple sources.

^cIncludes late onset.

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