

Neomycin Sulfate

Neomycin sulfate is an aminoglycoside antibiotic that targets aerobic gram-negative bacilli. Aminoglycosides are not absorbed by the gastrointestinal (GI) tract and do not enter the cerebrospinal fluid. The medication is indicated for patients with topical infection and as prophylaxis for patients scheduled for intestinal surgery. Side effects include ototoxicity, nephrotoxicity, rash, and blood dyscrasias. Patients prescribed neomycin sulfate should be monitored for symptoms of GI superinfection.



PLAY PICMONIC

Mechanism

Aminoglycoside Antibiotic

[Amigo-glider and ABX-guy](#)

Neomycin sulfate is an aminoglycoside antibiotic that disrupts protein synthesis and causes rapid bacterial death. Since bactericidal activity is concentration-dependent, the infection clears more rapidly in higher concentrations of bacteria.

Indications

Topical Infection

[Topical Infectious-bacteria](#)

Neomycin sulfate is indicated for topical infections and may be applied to the eyes, ears, and skin. Instead of parenteral administration, neomycin sulfate is reserved for topical applications. Because neomycin is more ototoxic and nephrotoxic than other aminoglycosides, it is not administered parenterally.

Intestinal Surgery Prophylaxis

[Intestine Surgeon Purple-axes](#)

Neomycin sulfate is indicated for intestinal surgery prophylaxis. The drug kills bacteria in the intestinal tract while keeping ammonia levels low to prevent the development of hepatic encephalopathy. The medication is administered orally to prevent bacterial infection related to surgical procedures of the intestines.

Side Effects

Ototoxicity

[Ear with Toxic-green-glow](#)

Since aminoglycosides may concentrate within the cells of the ear, ototoxicity is a serious side effect of neomycin sulfate. Hearing impairment is caused by damage to sensory hair cells in the cochlea. High-pitched tinnitus, or ringing in the ears, is the first sign indicating cochlear damage. Damage to sensory hair cells of the vestibular apparatus leads to disruption of balance and manifests as headache, nausea, and dizziness. Since ototoxicity is primarily irreversible, administration of neomycin sulfate should be stopped if the patient begins experiencing symptoms such as tinnitus or persistent headache.

Nephrotoxicity

[Kidney with Toxic-green-glow](#)

Since aminoglycosides may injure cells of the proximal renal tubules, nephrotoxicity is a serious side effect of neomycin sulfate. Symptoms are aminoglycoside-induced nephrotoxicity include proteinuria, casts in the urine, diluted urine, and elevated creatinine and blood urea nitrogen (BUN) levels. The risk of renal damage is especially high in elderly patients, patients with pre-existing kidney disease, and patients receiving concurrent administration of nephrotoxic agents.

Rash

[Rash](#)

Patients prescribed neomycin sulfate may develop hypersensitivity reactions. Symptoms include an urticarial rash and pruritus. Patients experiencing symptoms of hypersensitivity reactions should stop taking the medication and consult their healthcare provider.

Blood Dyscrasias

[Blood-cell Disc-razor](#)

Although rare, patients taking neomycin sulfate may develop blood dyscrasias. Examples include neutropenia, agranulocytosis, and aplastic anemia.

Considerations

GI Superinfection

[GI Super-bacteria](#)

Oral neomycin sulfate may lead to GI superinfection and intestinal malabsorption. Superinfections are the result of opportunistic pathogens that infect the body during treatment for another primary infection. GI superinfection is caused by neomycin sulfate's ineffectiveness in treating the indicated infection. The medication alters the normal gut microflora and results in a strong infection.