neomycin  (nee-oh-mye-sin)

Classification
Therapeutic: anti-infectives
Pharmacologic: aminoglycosides

Pregnancy Category D, C (topical only)

Indications
Preparation of the GI tract for surgery. Treatment of diarrhea caused by *Escherichia coli*. To decrease the number of ammonia-producing bacteria in the gut as part of the management of hepatic encephalopathy.

Action
Inhibits protein synthesis in bacteria at level of 30S ribosome. Therapeutic Effects: Bactericidal action.


Pharmacokinetics
Absorption: Minimal systemic absorption, but may accumulate in patients with renal failure.
Distribution: Widely distributed throughout extracellular fluid; crosses the placenta; small amounts enter breast milk. Poor penetration into CSF.
Metabolism and Excretion: Excretion is 90% renal.
Half-life: 2–4 hr (increased in renal impairment).

TIME/ACTION PROFILE (blood levels)

<table>
<thead>
<tr>
<th>ROUTE</th>
<th>ONSET</th>
<th>PEAK</th>
<th>DURATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>PO</td>
<td>rapid</td>
<td>1–4 hr</td>
<td>N/A</td>
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Contraindications/Precautions
Contraindicated in: Hypersensitivity to neomycin or other aminoglycosides; Intestinal obstruction.
Use Cautiously in: Renal impairment (lower doses are recommended); Hearing impairment; Neurovascular diseases such as myasthenia gravis; Geri: Geriatric patients; Neuromuscular diseases such as myasthenia gravis; OB, Lactation: Safety not established; Pedi: Safety not established.

Interactions
Drug-Drug: May enhance possible respiratory paralysis after inhalation anesthetics or neuromuscular blockers. May increase incidence of ototoxicity with loop diuretics. May increase incidence of nephrotoxicity with other nephrotoxic drugs. May potentiate effects of warfarin. May enhance absorption of digoxin and methotrexate.

Adverse Reactions/Side Effects
GI: diarrhea, nausea, vomiting. 
Misc: hypersensitivity reactions.

NURSING IMPLICATIONS
Assessment
● Assess patient for infection (vital signs, wound appearance, sputum, urine, stool, WBC) at beginning of and throughout therapy.
● Hepatic Encephalopathy: Monitor neurologic status. Prior to administering oral medication, assess patient’s ability to swallow.

Potential Nursing Diagnoses
Risk for infection (Indications)
Deficient knowledge, related to medication regimen (Patient/Family Teaching)

Implementation
● Keep patient well hydrated (1500–2000 mL/day) during therapy.
● Preoperative Bowel Prep: Neomycin is usually used in conjunction with erythromycin, a low-residue diet, and a cathartic or enema.
● PO: May be administered without regard to meals.

Adverse Reactions/Side Effects
GI: diarrhea, nausea, vomiting. 
Misc: hypersensitivity reactions.
Patient/Family Teaching

- Advise patient of the importance of drinking plenty of fluids.
- INJ: Instruct patient to take as directed for full course of therapy. Missed doses should be taken as soon as possible if not almost time for next dose; do not double doses.
- Caution patient that medication may cause nausea, vomiting, or diarrhea.

Evaluation/Desired Outcomes

- Resolution of signs and symptoms of infection. If no response is seen within 3–5 days, new cultures should be taken.
- Prevention of infection in intestinal surgery.
- Improved neurologic status in hepatic encephalopathy.

Why was this drug prescribed for your patient?