## OTHER NAMES
GARAMYCIN Injectable

## CLASSIFICATION
Aminoglycoside

### *ELDER ALERT
See Cautions

## INDICATIONS FOR IV USE
**HEALTH CANADA APPROVED**
- Treatment of serious infections caused by susceptible organisms: bacteraemia, respiratory tract infections, urinary tract infections, infected surgical and traumatic wounds, bone and soft tissue infections including peritonitis and burns complicated by sepsis.
- Treatment of serious staphylococcal infections when other conventional antibiotics are contraindicated and when bacterial susceptibility testing or clinical judgement support its use.

## SPECTRUM OF ACTIVITY
- Gram negative: aerobic bacilli usually including Pseudomonas aeruginosa.
- Gram positive: Methicillin-sensitive Staph. aureus and when used in synergistic combinations against Enterococcus faecalis and Enterococcus faecium.

## CONTRAINDICATIONS
- Hypersensitivity to gentamicin or any aminoglycoside. Cross sensitivity established.
- Hypersensitivity to sulfites; GARAMYCIN contains sulfites.

## CAUTIONS
- Elderly: half life prolonged. Longer intervals between doses may be more important than reduced doses. Monitor renal function and drug levels carefully.
- Risk of aminoglycoside-related toxicity appears to increase after 7-10 days.
- Renal impairment - see dosing and monitoring guidelines.
- Hearing impairment - risk is increased with renal impairment.
- Neuromuscular disease or hypocalcemia - possible increased neuromuscular blockade.

## DRUG INTERACTIONS
- Loop diuretics (e.g. ethacrynic acid, furosemide) - additive ototoxicity
- Nephrotoxic drugs (e.g. amphotericin B, cyclosporine and NSAIDS) - increased risk of nephrotoxicity.
- Neuromuscular blocking agents and general anaesthetics - possible prolonged action and/or respiratory paralysis.
- Extended spectrum penicillins (e.g. ticarcillin, piperacillin) may chemically inactivate the gentamicin and reduce serum levels. Usually only clinically significant in pt with severe renal impairment.

## PREGNANCY/BREAST FEEDING
Contact pharmacy for most recent information.

## ADMINISTRATION

<table>
<thead>
<tr>
<th>MODE</th>
<th>DIRECT INTO IV TUBING</th>
<th>INTERMITTENT INFUSION</th>
<th>CONTINUOUS INFUSION</th>
</tr>
</thead>
<tbody>
<tr>
<td>WHO MAY GIVE</td>
<td>All registered nurses</td>
<td>All registered nurses</td>
<td></td>
</tr>
<tr>
<td>ADULT</td>
<td>Doses up to 1.5 mg/kg undiluted, over 2-3 minutes.</td>
<td>Dilute in 25-100 mL minibag; infuse over 30 minutes.</td>
<td></td>
</tr>
<tr>
<td>PAEDIATRIC</td>
<td>No information</td>
<td>See Syringe pump infusion table.</td>
<td></td>
</tr>
<tr>
<td>NEONATE</td>
<td>No information</td>
<td>Use paediatric strength 10 mg/mL; infuse over 30 minutes.</td>
<td></td>
</tr>
</tbody>
</table>

## REQUIREMENTS
None

## MONITORING REQUIRED
- None

## RECOMMENDED
- Renal function - serum creatinine prior to start of therapy, and at least twice weekly during therapy.
- Serum gentamicin levels as indicated (see therapeutic drug monitoring)
- Vestibular and auditory function as indicated.

## RECONSTITUTION
None required. Available as 2 mL vials - 10 and 40 mg/mL. Also available in a variety of doses as pre-mixed minibags.

## COMPATIBILITY/STABILITY
- Compatible with dextrose, NS, Ringer's and dextrose-saline combination solutions.
- Stable in above solutions for at least 24 hours at room temperature.
- For drug-drug compatibility, contact Drug Information.

ADVERSE EFFECTS

RENAL
- Nephrotoxicity - dose-related: more frequent during prolonged therapy. Usually reversible

NEUROLOGIC
- Ototoxicity: Eighth cranial nerve damage (auditory and vestibular) associated with excessive doses in renal failure. May be irreversible
- Neuromuscular blockade (rare): Calcium or neostigmine may help to reverse.

DOSE Based on ideal body weight, age and renal function

ADULT
Once daily dosing: 5-7 mg/kg q24 hours. Doses should be rounded to the nearest 20 mg.

Exceptions to once daily dosing:
- Those who have a tendency to eliminate gentamicin rapidly. This includes burn and cystic fibrosis patients.
- Endocarditis, febrile neutropenia, pregnancy and renal failure, defined as a creatinine clearance less than 60 mL/min - until more experience is obtained.

Conventional dosing: 3-5 mg/kg/day, divided q8 hours or longer depending on renal function – see below.

ELDERLY
- Dosage adjustment may be required based on renal function.

PEDIATRIC
- 6 - 7.5 mg/kg/day divided q8 hours
- Cystic fibrosis: 7.5 – 10.5 mg/kg/day divided q8 hours. Tobramycin is typically used in VIHA (South Island)

NEONATE
- Postnatal age | Weight | Dose
  0 - 7 days
  - Less than 1,000 g | 4 mg/kg/dose, q 48 hours
  - 1001 - 1500 g | 4 mg/kg/dose, q 36 hours
  - greater than 1500 g | 4 mg/kg/dose, q 24 hours
  Over 7 days
  - Less than 1,000 g | 4 mg/kg/dose, q 36 hours
  - 1001 - 1500 g | 4 mg/kg/dose, q 24 hours
  - greater than 1500 g | 4 mg/kg/dose, q 18 hours

RENAL IMPAIRMENT ADJUSTMENTS
Once daily dosing:
- For creatinine clearance 60 mL/min or less, use conventional dosing.

Conventional dosing:
- Creatinine Clearance (GFR) (mL/min) | Interval
  - greater than 75 | q8 hours
  - 48-75 | q12 hours
  - 42-48 | q16-18 hours
  - less than 42 | Contact pharmacy for assistance

HEPATIC IMPAIRMENT ADJUSTMENTS:
- None required.

HEMO/PERITONEAL DIALYSIS
- Haemodialysis: Give ½ the normal dose after dialysis.
- CAPD: 3-4 mg/L/day

THERAPEUTIC DRUG MONITORING
Once daily dosing:
- Trough level should be drawn 30 minutes prior to the next dose on the following patients in whom serum creatinine and volume of distribution estimations may not be as reliable:
  - any patient with significantly diminished muscle mass (e.g., multiple sclerosis, amputees)
  - large patients (requiring greater than 500 mg gentamicin per dose)
- Recommended trough level is less than 1 mg/L.

Conventional dosing:
- Recommended trough level is less than 2 mg/L. Trough level should be drawn 30 minutes prior to the next dose.
- Recommended peak level is 5-10 mg/L, dependent on infection and patient factors. Peak level should be drawn 30 minutes after the end of infusion.

MISCELLANEOUS
- Can be given IM.
- SC use: no information available at this time.
gentamicin - REFERENCES


7. VIHA (South Island) SCN committee recommendations. May 2004.


9. Aminoglycoside empiric dosing guidelines (nomogram), Vancouver Hospital and Health Science Centre, Vancouver, B.C.

10. Aminoglycoside initial dosing and monitoring guidelines (Nomogram), St. Paul's Hospital, Vancouver, B.C.
