

Gentamicin Dosing, Administration & Monitoring Guidelines for Adults for Empirical Therapy

Indications

Gentamicin use is limited to the following indication (unless use is in accordance with an approved protocol or approval is obtained from Infectious Diseases):

- Empirical therapy for 48 hours or less for suspected or proven gram-negative sepsis

For most patients gentamicin can be changed to a beta-lactam or another less toxic agent once initial microbiology results become available. The Infectious Diseases team is available to advise on alternative antimicrobials.

Dosing Weight

- Use **actual body weight** for patients who are not obese
- Use **adjusted body weight** for obese patients (i.e. actual body weight > 120% of ideal body weight – see overleaf for ideal body weight table)

$$\text{Adjusted Body Weight} = \text{Ideal Body Weight} + [0.4 \times (\text{Actual Body Weight} - \text{Ideal Body Weight})]$$

For morbidly obese patients, seek Infectious Diseases advice.

Empirical aminoglycoside dosage for the treatment of infection in adults

Creatinine clearance (CrCl)	Dose*	Dosing frequency	Maximum number of empirical doses
More than 60mL/min	4 to 5mg/kg	24-hourly	3 doses (at 0, 24 and 48 hours)
40 to 60 mL/min	4 to 5mg/kg	36-hourly	2 doses (at 0 and 36 hours)
Less than 40 mL/min	Consult Infectious Diseases for dosing advice or for selection of an alternative agent		

*Round dose to the nearest multiple of 20mg

Critically ill adults with severe sepsis or septic shock

A gentamicin dose of 7mg/kg is appropriate in critically ill patients with severe sepsis or septic shock. A lower dose should be used in patients with renal impairment (e.g. CrCl 40 to 60mL/min: 5mg/kg; CrCl less than 40mL/min: consult Infectious Diseases for advice).

Dose Administration

Gentamicin should be diluted in 100mL of compatible fluid (e.g. 0.9% sodium chloride) and infused over 30 minutes. Where indicated (in theatre prior to induction or as the first dose in the treatment of patients with proven or suspected sepsis), the dose may be administered in 20mL of 0.9% sodium chloride as a bolus over 5 minutes.

Therapeutic Drug Monitoring (TDM)

For most patients, gentamicin should be ceased within 48 hours of initiation. If the patient has normal renal function, monitoring is not required in this timeframe.

When Infectious Diseases has approved ongoing gentamicin therapy, advice will be provided on appropriate TDM including timing and frequency of plasma sampling.

Additional Advice & Support

The Infectious Diseases team is available to provide advice on dosing and monitoring of gentamicin therapy for specific patients as requested.

Dr David Looke
Chair, PAH Antimicrobial Sub-Committee
Metro South Health Antimicrobial Stewardship Team

Prof Peter Pillans
Chair, PAH Drug and Therapeutics Committee

Ideal Body Weight Table

Male = 50kg + 0.9kg/each cm over 152cm (2.3kg/each inch over 5ft)

Female = 45.5kg + 0.9kg/each cm over 152cm (2.3kg/each inch over 5ft)

Height (cm)	Male (kg)	Female (kg)
152	50	45.5
155	52.7	48.2
157	54.5	50
160	57.2	52.7
163	59.9	55.4
165	62.6	58.1
168	64.4	59.9
170	66.2	61.7
173	68.9	64.4
175	70.7	66.2
178	73.4	68.9
180	75.2	70.7
183	77.9	73.4
185	79.7	75.2
188	82.4	77.9
190	84.2	79.7
193	86.9	82.4

References

1. Antibiotic Expert Groups. Therapeutic guidelines: antibiotic. Version 15. Melbourne: Therapeutic Guidelines Limited; 2014.
2. Australian injectable drugs handbook, 6th ed, The Society of Hospital Pharmacists 2015
3. Bearden D, Rodvold K. Dosage adjustments for antibacterials in obese patients. Clin Pharmacokinet 2000;38(5):415-26.