

SCOPE: Western Australia

| Inclusion Criteria | Exclusion Criteria |
|---|---|
| <ul style="list-style-type: none"> • Short- term empirical therapy (ie for pyelonephritis) pending the outcome of investigations to instigate alternative treatment • Over 13 years, suitable for adult dosing and not under the care of a Paediatrician. • Client’s medical condition has been assessed as stable, has a clear diagnosis and prognosis and is at a low risk of rapid deterioration. | <ul style="list-style-type: none"> • Clients with previous vestibular or auditory toxicity related to aminoglycoside therapy. • Serious hypersensitivity reaction to an aminoglycoside. • Pregnancy. • Request for treatment > 48 hours. • Myasthenia Gravis. |

ASSESSMENT

Collect medical history including pre-existing auditory problems, pre-existing vestibular problems (ie dizziness, vertigo or tinnitus), neuromuscular disorders (myasthenia gravis, Parkinsonism), decompensated liver disease, severe cholestasis (serum bilirubin >90 micromol/L), chronic renal failure or deteriorating renal function.

Note increased risk for clients >70 years and those with recent history of aminoglycoside therapy. Also clients with concurrent use or past use of nephrotoxic medications.

PATHOLOGY

- Serum creatinine levels to be confirmed and creatinine clearance calculated using Cockcroft–Gault Equation prior to commencement of aminoglycoside therapy.
- Liver function tests.

TREATMENT REGIME

- Access pathology results from referral source, if inaccessible ensure request for pathology and blood collected as soon as possible and results reported to medical governance doctor.
- Collaborate with medical governance doctor regarding abnormal results.
- Complete nursing assessment, including weight and calculation of ideal body weight and Creatinine Clearance (as per Cockcroft-Gault formula below)
- Initiate intravenous access and commence intravenous therapy as prescribed.
- Educate client regarding medication, side effects.
- Access further investigations as requested by medical governance doctor.

- Liaise with medical governance doctor regarding ongoing management or referral to Infectious Diseases Physician (IDP) if clinically indicated prior to 48hours post commencement of treatment.
- Follow care pathway.

DOSING

Gentamicin should be administered as once daily dosing (exceptions: endocarditis, ascites, and major burns).

Initial Dose - Once Daily Dosing

Calculate Ideal Body Weight

Males: $IBW (kg) = [Height (cm) - 152] \times 0.9 + 50$

Females: $IBW (kg) = [Height (cm) - 152] \times 0.9 + 45.5$

Calculate Creatinine Clearance from serum creatinine:

Adult males: $CrCl (mL/min) = \frac{(140 - age) \times weight (kg)}{0.814 \times serum\ creatinine (micromol/L)}$

Adult females: Multiply the above formula by 0.85

Step One – Initial Dose

| | |
|---------------|--------------------------|
| 13 – 60 years | 5mg/kg/day (up to 480mg) |
| >60 years | 4mg/kg/day (up to 400mg) |

Step Two – Subsequent Dosing

| Creatinine Clearance (mL/min) | Dosing Interval and maximum number of doses |
|-------------------------------|---|
| >60 | 24 hours (at 0,24 and 48 hours) |
| 40-60 | 36 hours (at 0 and 36 hours) |
| <40 | Give initial dose once then seek advice from IDP or microbiologist |

No further doses should be administered beyond 48 hours unless there is a clear indication and/or there is no alternative from a safer antibiotic class. Treatment beyond 48 hours must be discussed with an Infectious Diseases Physician (exception if client under the care of a Respiratory Physician).

MONITORING

Routine monitoring of aminoglycoside plasma levels is **not required** if the clinical plan is to cease therapy within 48 hours.

Monitoring of plasma aminoglycoside levels is recommended if clients are to receive prolonged therapy (ie > 48 hours, see indications above). In this situation dosing should be based on 24-hour area under the curve (AUC) based computerised method. Please consult a Clinical Pharmacist if aminoglycoside monitoring is required.

Nomograms for plasma aminoglycoside concentration monitoring that appeared in older versions of the “Antibiotic Therapeutic Guidelines” are no longer recommended. Likewise trough concentrations are not recommended for monitoring as they underestimate exposure to aminoglycosides and potential for toxicity.

MEDICAL GOVERNANCE

- The client has access to medical governance support for 24 hours per day, 7 days per week.
- Primary medical governance can be by referring medical specialists, credentialed referring GPs or by Silver Chain medical staff. Care delivery is planned and provided in consultation with the client, medical officer/specialist holding medical governance and nursing staff. Where the primary medical governor is unavailable the Silver Chain medical officer can provide the medical governance. In the instance when a client’s condition deteriorates the Silver Chain medical officer or nursing staff will confer with an emergency department medical officer.
- When governance is retained by a Silver Chain medical officer the client will have a medical review within 24 hours of admission and the medical officer will determine when the scheduled follow up and discharge will occur. A summary of the episode of care is sent to the referrer or the client’s GP at discharge.

FOLLOW UP

Refer back to client’s GP.

REFERENCES

Principles of Aminoglycoside Use; Appendix 2.2 [revised 2014 Oct]. In: eTG complete [Internet]. Melbourne: Therapeutic Guidelines Limited; 2015 Mar.