

Guidelines for Once Daily Aminoglycoside Therapy in Children with Normal Renal Function

Definitions:

Children with Normal Renal Function:

- By history, no risk for renal impairment
- Normal creatinine for age

Exclusion criteria:

- Allergy or sensitivity to aminoglycosides
- Significant renal dysfunction GFR < 90 ml/min/1.73m²
- History of hearing loss/vestibular toxicity
- Gram positive infections where aminoglycoside is being given with another antibiotic for synergy
- Rapid clearance of drug (eg. burn > 20% BSA)
- Endocarditis Surgical prophylaxis
- Pregnancy

Recommended Initial Gentamicin/Tobramycin Dose:

1) Neonates:

Age	mg/kg/dose IV	Interval
PNA 0-7 days (use GA)		
GA <30 wks	5	Once**
GA 30 to 34 wks	4	Q36H
GA ≥35 wks	4	Q24H
PNA ≥ 8 days (use PCA)		
PCA <30 wks	5	Once**
PCA ≥30 wks	4	Q24H

GA=gestational age; PCA=postconceptional age (GA+PNA); PNA=postnatal age

** Consult pharmacist for further doses and timing of levels if:

- <30 wks GA (if <7 days PNA) or <30 wks PCA (if ≥8 Days PNA)
- Acute HIE/Asphyxia
- Treatment with concurrent indomethacin or ibuprofen
- Renal impairment

2) Children:

- PCA>44 Wks
 - 7mg/kg/dose every 24 hours based on actual body weight
If obese use dosing weight as determined by pharmacist
- Administer over 30 minutes

Monitoring:

- Baseline creatinine
- For neonates (PCA ≤44 wks)
 - Gentamicin or tobramycin levels indicated if:
 - Therapy anticipated for >36-48 hours. If therapy will not be continued for >36-48 hours, no levels are required
 - For neonates that meet the following criteria, consult pharmacist for further doses and timing of levels:
 - <30 wks GA (if <7 days PNA) for levels at 48 hours
 - <30 wks PMA (if ≥8 Days PNA) for levels at 36 hours
 - Acute HIE/asphyxia
 - Treatment with concurrent indomethacin or ibuprofen
 - Renal impairment
 - Gentamicin or tobramycin peak and trough levels around 2nd dose
 - Trough: within 30 min prior to next dose
 - Peak: 30 min after completion of a 30 min infusion

- Therapeutic Range:
 - Trough: <2 mg/L
 - Peak: 6-12 mg/L
- For children (PCA>44 wks)
 - If therapy is anticipated for > 72 hours:
 - Gentamicin or tobramycin trough level prior to 3rd dose (18-24 hours after 2nd dose)
 - Administer 3rd dose
 - Before giving 4th dose:
 - If level ≤ 1 mg/L – Administer next dose
 - If level > 1 mg/L– Do not administer next dose until consult pharmacist
 - For therapy beyond 7 days:
 - Creatinine twice weekly
 - Trough aminoglycoside level (18-24 hours after last dose) once weekly once level <1 mg/L and patient status is stable

Note:

- Ensure optimal hydration
- Concurrent use of nephrotoxic drugs may require more frequent and individualized monitoring of aminoglycoside levels or may require traditional dosing. Consultation with pharmacist is recommended
 - Nonsteroidal anti-inflammatory drugs including COX-1 and COX-2 inhibitors may potentiate nephrotoxicity when used with aminoglycosides

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