# Aminoglycoside Dosing and Monitoring Recommendations in Patients on Pediatric Service Lines

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Useful links:
- [Pharmacokinetics Webpage](#)
- [Pharmacokinetic Review (Adult)](#)
- [Pharmacokinetic Review (Pediatric)](#)
### Table: Gentle-tobramycin Dosing Recommendations

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<th>Patient Population/Unit/Service</th>
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| **NICU**                         | 0-4 weeks and less than 1200 g: 2.5 mg/kg/dose IV q24h  
Less than 7 days and 1200-2000 g: 2.5 mg/kg/dose IV q18h  
Less than 7 days and more than 2000 g: 2.5 mg/kg/dose IV q12h  
7 days or older and 1200-2000 g: 2.5 mg/kg/dose IV q12h  
7 days or older and more than 2000 g: 2.5 mg/kg/dose IV q8h  
ECMO or cooling: 2.5 mg/kg/dose IV q18h  
Peritoneal dialysis: 2.5 mg/kg/dose IV q24h | • Serum concentrations generally not necessary for 36-48 hour sepsis evaluations, unless at risk for renal insufficiency  
• Peak and trough concentrations around 3rd dose  
• ECMO or cooling: trough prior to 2nd dose  
• For PD: check trough prior to 2nd dose |
| **PICU**                         | Treatment, normal renal function: 3.5 mg/kg IV q12h  
Synergy (for endocarditis): 1 mg/kg/dose IV q12h  
ECMO: 2.5 mg/kg/dose IV q12h  
Acute renal insufficiency (CrCl less than 30): 2.5 mg/kg IV q12h  
CRRT: 3.5 mg/kg IV q12h  
HD: 2.5 mg/kg IV x1 post dialysis | • Treatment, synergy: peak and trough concentrations around the 3rd dose  
• ECMO, acute renal insufficiency, CRRT: check trough prior to 2nd dose  
• HD: check trough 2 hours after next dialysis session |
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| CHC (PCTU and 11W)               | Normal renal function, renal dysfunction, ECMO:  
2.5 mg/kg/dose IV q12h  
Peritoneal dialysis:  
2.5 mg/kg/dose IV q24h  
Synergy (for endocarditis):  
1 mg/kg/dose IV q12h | • Check trough prior to 2nd dose for open chest prophylaxis, ECMO, or in patients with poor renal function (i.e., increased SCr and/or decreased UOP)  
• Check trough prior to 3rd dose for rule-out sepsis evaluation, synergy, and NEC  
• For PD: check trough prior to 2nd dose |
| Cystic Fibrosis Patients          | Traditional daily dosing for children less than 5 years OR who have failed to achieve once daily goals in the past:  
3.3 mg/kg/dose IV q8h  
High dose, extended interval (“once daily”) for children 5 years and older:  
10 mg/kg/dose IV q24h | • Traditional daily dosing: peak and trough concentrations around the 3rd or 4th dose  
• High dose, extended interval: 3-hour peak and 10-hour random concentrations after 2nd dose  
• Check doses from recent previous admissions; initiate most recent therapeutic dose; discuss with pharmacy if previous dose not available |
| PH/PBM                           | <18 years:  
7.5 mg/kg/dose IV q24h  
≥18 years:  
5 mg/kg/dose IV q24h | • Used for empiric double coverage for gram negatives  
• If concern for renal dysfunction: check trough prior to 2nd repeat dosing  
• If continuing past 48 hours: 3-hour peak and 10-hour random concentrations after 2nd dose  
• Check doses from recent previous admissions; initiate most recent therapeutic dose; discuss with pharmacy if previous dose not available |
| General dosing for children, EXCEPT in the following situations:  
• Cystic fibrosis  
• PH/BMT  
• NICU patients  
• PICU patients  
• CHC patients | Normal Renal Function:  
Traditional dosing:  
2.5 mg/kg/dose IV q8h  
Synergy (for endocarditis):  
1 mg/kg/dose IV q8h | • Traditional dosing: peak and trough concentrations around the 3rd or 4th dose  
• Synergy: trough concentrations prior to the 3rd or 4th dose  
• For PD: check trough prior to 2nd dose  
• For HD: check trough 2 hours after next dialysis session |
|                                   | Renal Dysfunction:  
Acute renal insufficiency (CrCl less than 30):  
2.5 mg/kg IV q12h  
Peritoneal dialysis:  
2.5 mg/kg/dose IV q24h  
Hemodialysis:  
2.5 mg/kg/dose IV x1 post dialysis | •  
|
## Amikacin

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<th>Patient Population/ Unit/Service</th>
<th>Dosing Recommendations</th>
<th>Timing of Initial Serum Concentrations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cystic Fibrosis Patients</td>
<td>Traditional dosing for children less than 5 years OR who have failed to achieve once daily goals in the past: 10 mg/kg/dose IV q8h&lt;br&gt;High dose, extended interval (“once daily”) for children 5 years or older: 25 mg/kg/dose IV q24h</td>
<td>• Traditional daily dosing: peak and trough concentrations around the 3rd or 4th dose&lt;br&gt;• <strong>High dose, extended interval</strong>: 3-hour peak and 10-hour random concentrations after 2nd dose&lt;br&gt;• Check doses from recent previous admissions; initiate most recent therapeutic dose; discuss with pharmacy if previous dose not available</td>
</tr>
<tr>
<td>PH/PBM</td>
<td>&lt;18 years: 20 mg/kg/dose IV q24h&lt;br&gt;≥18 years: 15 mg/kg/dose IV q24h</td>
<td>• Used for empiric double coverage for gram negatives in patients who have been on broad spectrum antibiotics ≥10 days&lt;br&gt;• If concern for renal dysfunction: check trough prior to 2nd repeat dosing&lt;br&gt;• If continuing past 48 hours: 3-hour peak and 10-hour random concentrations after 2nd dose&lt;br&gt;• Check doses from recent previous admissions; initiate most recent therapeutic dose; discuss with pharmacy if previous dose not available</td>
</tr>
<tr>
<td>General dosing for children with normal renal function, <strong>EXCEPT</strong> in the following situations:</td>
<td>Traditional dosing: 7.5 mg/kg/dose IV q8h</td>
<td>• Traditional daily dosing: peak and trough concentrations around the 3rd or 4th dose</td>
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</tbody>
</table>
### Gentamicin/Tobramycin Goals

<table>
<thead>
<tr>
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<th>Traditional Dosing</th>
<th>Extended-Interval Dosing</th>
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<tbody>
<tr>
<td></td>
<td>Goal peak</td>
<td>Goal Trough</td>
</tr>
<tr>
<td>Gram positive synergy</td>
<td>3-5 (1 mg/kg)</td>
<td>&lt;1</td>
</tr>
<tr>
<td>NICU</td>
<td>5-8</td>
<td>&lt;2</td>
</tr>
<tr>
<td>Non-CF gram-negative infections</td>
<td>6-10</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Cystic fibrosis</td>
<td>10-12</td>
<td>&lt;1.5</td>
</tr>
</tbody>
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<tbody>
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<td></td>
<td>Goal peak</td>
<td>Goal Trough</td>
</tr>
<tr>
<td>Non-CF gram-negative infections</td>
<td>25-35</td>
<td>&lt;6</td>
</tr>
<tr>
<td>Cystic fibrosis</td>
<td>25-40 (q8h)</td>
<td>&lt;6</td>
</tr>
</tbody>
</table>

### Baseline Monitoring
- Serum Creatinine
- Urine Output

### Ongoing Lab Monitoring
- Serum creatinine
  - ICU: every 1-3 days
  - Floor: every 3-5 days
- Urine output - daily

### Ongoing Drug Levels
- **Aminoglycoside peaks**
  - Not needed for most 36-48 hour rule outs unless cultures turn positive
  - ICU: after 3rd-4th dose if GNR + culture
  - Floor: after 3rd-4th dose if GNR + culture
  - High dose, extended interval: 3-hour peak and 10 hour random concentrations after 2nd dose
- **Aminoglycoside troughs**
  - Not needed for most 36-48 hour rule outs, unless at risk for or presence of renal insufficiency or cultures turn positive
  - ICU: dosing per level for changing renal function or every 2-3 days
  - Floor: every 5-7 days
  - Hem/Onc: twice weekly
- **Aminoglycoside high dose extended interval**
  - 18 hour levels; every 5-7 days after therapeutic levels achieved