Gentamicin Dosing in Bacterial Endocarditis and Multiple Daily Dosing

It should be noted that the information relates only to its use in the conditions stated – information on once daily dosing is contained in the antibiotic guidelines.

Traditional Or Multiple Dosing for Gentamicin

For patients who are excluded from the once-daily dosing protocol, parenteral gentamicin can be given as an intravenous bolus as a multiple-dosing regime.

**Adults**
- 3-4mg/kg body weight total daily dose (in divided doses).
- Typical doses are 80mg 8-hourly for patients over 60kg and 60mg 8-hourly for patients <60kg.
- In cases of impaired renal function, a reduction in dosage is necessary. See table below:

<table>
<thead>
<tr>
<th>Serum creatinine (micromol/L)</th>
<th>Creatinine clearance (GFR) ml/min</th>
<th>Dose and frequency of administration</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;40</td>
<td>&gt;70</td>
<td>80mg 8-hourly*</td>
</tr>
<tr>
<td>40-100</td>
<td>30-70</td>
<td>80mg 12-hourly*</td>
</tr>
<tr>
<td>100-200</td>
<td>10-30</td>
<td>80mg daily*</td>
</tr>
<tr>
<td>&gt;200</td>
<td>5-10</td>
<td>80mg every 48 hours*</td>
</tr>
<tr>
<td>Twice-weekly intermittent haemodialysis</td>
<td>&lt;5</td>
<td>80mg after dialysis*</td>
</tr>
</tbody>
</table>

*60mg if body weight <60kg

Method for calculating Creatinine Clearance:

\[
\text{Creatinine clearance (ml/min)} = \frac{F \times (140-\text{age}) \times \text{Body weight (IBW if obese)(Kg)}}{\text{Serum creatinine (micromol/L)}}
\]

F = 1.23 for males and 1.03 for females

**Endocarditis**

Aminoglycosides may be used in the treatment of endocarditis (take advice from microbiology). Where used, traditional dosing is employed. In general, lower doses may be used for longer periods than for other conditions.

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Prepared by Departments of Microbiology and Pharmacy................................................................. August 2010
Approved by Medicines Management Committee............................................................................ 9th September 2010
Review Date........................................................................................................................................... September 2012
Administration

- Each dose can be administered as an undiluted intravenous injection over 3 minutes. Gentamicin can also be administered by intramuscular injection.

Monitoring Levels

- In patients with normal renal function, measure serum levels after the 3rd, 4th, or 5th dose.
- Patients with renal impairment may require earlier and more frequent measuring.
- Blood samples for levels should not be taken from the site of intravenous administration.
- Both “pre-dose” and “post-dose” samples are required.
- Pre-dose levels should be taken immediately before the dose is administered
  - This should be 8 or 12 hours after the previous dose for TDS and BD regimens respectively.
  - This timing is crucial.
  - The dose must not be significantly delayed just for the blood sample, otherwise the assay result becomes meaningless.
- Administer the dose of gentamicin.
- Take a “post-dose” level exactly 1 hour after the dose.
  - Again the timing is crucial.
- Send the pre-dose and post-dose samples as a pair to the laboratory.
- Document the following information:
  - Date and time sample taken
  - Type of sample (i.e., pre-dose, post-dose or random sample).
  - Date and time of last dose of antibiotic.

Levels

- For most infections:
  - Pre-dose levels <2mg/L*
  - Post-dose levels 5-10mg/L*
- For some infections such as *P. aeruginosa* higher post-dose levels may be required – consult microbiology or pharmacy for further advice.

- For Bacterial Endocarditis
  - Aim for:
    - Pre-dose level of <1mg/L
    - Post-dose of 3-5mg/L.

Further Monitoring of Levels:

- Every 3 days but re-assay sooner if changing renal function or other risk factors.
- Where possible treatment length should not exceed 7 days.
- Contact pharmacy or microbiology for specific advice.

For patients with Bacterial Endocarditis:

- Every 4 days but re-assay sooner if changing renal function or other risk factors.