GENTAMICIN GUIDELINE FOR USE IN ADULTS (HARTFORD Guidance)

- Aminoglycoside antibiotic – bactericidal against many gram-negative and some gram-positive organisms. NO anabolic activity. See MicroGuidance.
- Gentamicin is monitored using the Hartford nomogram which relates observed concentration to the time post dose within a given concentration range.
- Follow separate guidance when using gentamicin for Surgical Prophylaxis or in Endocarditis, Pregnancy, Cystic Fibrosis, Renal Unit inpatients or patients on dialysis
- The dose is calculated as detailed below and repeated at 24 hour intervals or longer.

**STEP 1: ASSESS PATIENT SUITABILITY**

<table>
<thead>
<tr>
<th>Does the patient have any of the following exclusion criteria?</th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Children &lt; 16 years old</td>
<td>Ascites &gt; 20% body weight</td>
<td>Major burns &gt; 20% body surface</td>
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- Gentamicin is contraindicated in the presence of significant hearing loss or renal impairment.
- Patients with blood levels > 4 mg/L are at risk for irreversible hearing loss.
- Gentamicin is also contraindicated in patients with a known allergy to aminoglycoside antibiotics.

**STEP 2: CALCULATE DOSE – seek advice on calculation for patients at extremes of age/height/weight or if ampuette**

**PREFERRED METHOD:** Use online calculator (available on NHST antibiotic website or Antimicrobial Companion App) when creatinine is known. In patients with low creatinine (<80 micromol/L) use 60 micromol/L. See NHST antibiotic website for gentamicin chart and calculator guidance for prescribers and nursing staff.

**ALTERNATIVE METHOD:** If creatinine is NOT known OR online calculator not available, calculate dose based on equations below:

- Determine ideal body weight of patient using national online table.
- Is actual weight >20% above their ideal body weight (IBW)?
  - If NO → eGFR ≥20ml/min: Dose = Actual Body Weight x 7mg (Maximum 600mg – Round to nearest 40mg)
    - ID/Micro approved in eGFR <20ml/min: Dose = Actual Body Weight x 2.5mg (Maximum dose: 180mg- Round to nearest 10mg)
  - If YES → calculate dosing weight (DW) and dose from equations below:
    - DW = IBW + 0.4 (ABW – IBW)
    - eGFR ≥20ml/min: Dose = 7mg x DW (Maximum 600mg – Round to nearest 40mg)
    - ID/Micro approved in eGFR <20ml/min: Dose = DW x 2.5mg (Maximum dose: 180mg- Round to nearest 10mg)
- Document dose calculation on the gentamicin prescription chart and tick which source of first dose was used.
- Prescribe initial dose on the gentamicin chart specifying the date and time the dose should be given.
- Stick the gentamicin chart to the ‘as required’ page on the TPAR so the red band is visible when TPAR closed.
- Prescribe gentamicin ‘as per chart’ on the regular section of the TPAR.

**STEP 3: MONITOR RENAL FUNCTION, GENTAMICIN LEVELS AND DETERMINE DOISING INTERVAL**

Administer in 100ml sodium chloride 0.9% or dextrose 5% over 60 minutes.

- eGFR <20ml/min
  - Ensure start time of infusion and dose is documented on gentamicin chart and ICE request. Take blood sample prior to printing off label at 24 hours from the BEGINNING of the IV infusion.
  - Do NOT use nomogram if eGFR <20ml/min. If therapy is to continue give a further dose once gentamicin level is <1mg/L.
  - Record ALL sample dates/times accurately overleaf and prescribe subsequent doses.
  - Evaluate on the nomogram. If the level falls in the area designated 24, 36, or 48 hourly the dosing interval should be every 24, 36, or 48 hours respectively. If the point is on the line, choose the longer interval. Record ALL sample dates/times accurately overleaf and prescribe subsequent doses.

- eGFR ≥20ml/min
  - Ensure start time of infusion and dose is documented on gentamicin chart and ICE request. Take blood sample prior to printing off label 6-14 hours from the BEGINNING of the IV infusion.
  - If a 6-14 hour blood sample is not taken or if blood level falls above the maximum dosing line on the nomogram: take blood sample minimum 24 hours post dose and wait for level. Only give dose if >1mg/L. If ≥2mg/L withhold dose and recheck in 12-24 hrs.
  - If patient receiving ID/Micro approved prolonged therapy (i.e. >72 hours) seek advice on monitoring from clinical pharmacist or antimicrobial pharmacist - Bleep 4732. If >7 days consider referral to audiology.

**NB:** If level is below 2, assume 24 hry dosing.

- Showing a concentration of 5mg/L measured 8 hours after dose administered – therefore further dosing would be 24 hourly.
- Showing a concentration of 5mg/L measured 12 hours after dose administered – therefore further dosing would be 48 hourly.
- Stop gentamicin therapy and re-check level.

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