Gentamicin is an aminoglycoside antibiotic. It has bactericidal activity against many Gram negative organisms and some Gram positive organisms. It must be administered intravenously as it is poorly absorbed from the gut. The theory behind once daily dosing of gentamicin is:

- Effective peak levels are obtained in all patients achieving a more effective bacterial kill.
- Aminoglycosides have a post antibiotic effect i.e. bacterial growth is suppressed for a prolonged period after a short exposure to the antimicrobial.
- The wash out period allowed by infrequent dosing reduces renal toxicity.
- It is more convenient to administer and monitor.

Gentamicin therapy is monitored using a simple nomogram which relates observed concentration to the time post dose within a given concentration range. The dose is calculated as explained below and repeated at 24 hour intervals or longer.

**Step 1: Assess Patient Suitability**

Does the patient have any of the following exclusions:
- Endocarditis
- Pregnancy
- Children <1 month old
- Ascites >20% body weight
- Major Burns >20% body surface area
- Cystic Fibrosis
- Renal transplant
- Acute kidney injury on dialysis or serum Cr >350 micromol/litre
- End stage renal failure on dialysis with residual kidney function

### NO

Give first dose then refer to ID or Microbiology to authorise continuing gentamicin therapy or advise on alternative.

### YES

Seek advice.

**Step 2: Calculate Dose**

Is the patient overweight?

### NO

All other patients:
- Dose = 7mg x actual body weight (maximum: 600mg)

### YES

Calculate the patient’s ideal body weight (IBW) from the equation below:
- IBW = (males: 50kg, females: 45.5kg) + 0.9kg for every cm > 150 cm

If patient’s actual body weight (ABW) is >20% over their IBW then calculate dosing weight (DW) and dose from equations below:
- DW = IBW + 0.4 x (ABW – IBW)
- Dose = 7mg x DW (maximum: 600mg)

**Step 3: Monitor Renal Function, Gentamicin Levels and Determine Dosing Interval**

Take blood sample 6-14 hours after start of IV infusion

- Note time of dose and sample on request form

From result determine point on nomogram and dosage interval

If blood sample not taken, lost or taken at wrong time:
- Take blood sample at 20-24 hours and wait for level
- ONLY give dose if <1mg/L
- If >1mg/L withhold dose and recheck in 12-24 hours

ADVICE:
- Infectious Diseases: bleep 5075
- Microbiology: bleep 4039 (5315 for PRI)
- Clinical Pharmacist: bleep number on ward
- Antibiotic Pharmacist: bleep 4732