Gentamicin

NOTE - AVOID MEDICATION ERRORS by taking special care when calculating doses and recording administration times in neonates

FORM

Vial containing 20mg in 2ml

Vial containing 80mg in 2ml – to be used if 20mg/2ml concentration is unavailable due to shortage (requires dilution – see below)

INDICATION

First line treatment of early onset sepsis (with benzylpenicillin).

First line treatment of late onset sepsis (with vancomycin) unless sensitivities say otherwise.

Treatment of other infections when indicated by sensitivity tests.

DOSE RANGE

CORRECTED GESTATIONAL AGE	DOSE	FREQUENCY	ROUTE
< 32 weeks	5 mg/kg	48 hourly	IV
≥ 32 weeks	5 mg/kg	24 hourly	IV

NB: DOSE AND/OR FREQUENCY MAY NEED TO BE ADJUSTED ACCORDING TO BLOOD LEVEL RESULTS - SEE ATTACHED GUIDELINES BELOW FOR DETAILS.

RECONSTITUTION

Already in solution (both concentrations)

DILUTION

Check concentration available and follow directions below

For **20mg/2ml** strength - Not required

For 80mg/2ml – further dilution is required;

Dilute to 10mg/ml with sodium chloride 0.9% as below

Gentamicin 80mg/2ml	1ml
Sodium Chloride 0.9%	Up to 4ml total

Gives a 10mg in 1ml solution. Use required volume

METHOD OF ADMINISTRATION

Administer as a slow intravenous bolus injection over 3-5 minutes.

COMPATIBILITY

Solution compatibility	sodium chloride 0.45%, sodium chloride 0.9%, glucose 5%, glucose 10%
Solution incompatibility	No information
IV Line compatibility	Caffeine Citrate, Fentanyl, Fluconazole, Insulin, Meropenem, Metronidazole, Midazolam, Milrinone, Morphine, Naloxone, Vancomycin, Vecuronium, TPN
IV Line incompatibility	Aciclovir, Cephalosporin antibiotics, Furosemide, Heparin, Penicillin antibiotics, Sodium Bicarbonate.

THIS LIST IS NOT EXHAUSTIVE PLEASE CONTACT PHARMACY FOR FURTHER INFORMATION ON COMPATIBILITY WITH ANY MEDICINES NOT INCLUDED

PH 3.0 - 5.5

LICENSED STATUS Licensed for use in all ages.

APPLICABLE POLICIES West of Scotland Neonatal Guidelines

Consult local policy if applicable

MONITORING OF GENTAMICIN CONCENTRATIONS

Monitor serum gentamicin concentrations and renal function to improve efficacy and reduce the risk of toxicity. Adjust the dose and /or dosage interval based on the measured concentrations.

Sample Handling

- Send a clotted blood sample to Biochemistry Department stating the **exact time** the sample was taken and whether it is a trough or a peak sample.
- Store any blood samples in the fridge while waiting to send to the laboratory.

Timing of Blood Samples

A. Neonatal unit

1. Take a trough sample immediately before the **second** dose
2. Take a peak sample one hour after the **second** dose

Normal renal function:

- Give the second dose without waiting for the trough result.

Renal impairment i.e. Creatinine >80*umol/L */ poor urine output AND / OR < 25 weeks gestation:

- WAIT FOR THE TROUGH RESULT BEFORE GIVING THE SECOND DOSE.

B. Post-natal wards

1. Take a trough sample immediately before the **third** dose
2. Take a peak sample one hour after the **third** dose

NB. Levels should only be taken where there is a clear plan to continue antibiotics at 48 hours from taking blood cultures (see Group B Strep guideline for more details).

Target Concentrations

- **Trough (end of dosage interval) < 2 mg/L**
- **Peak (1 hour post dose) > 8 -12 mg/L**

(Caution with borderline levels at the second dose as further accumulation may occur)

INTERPRETATION OF CONCENTRATION MEASUREMENTS

1. Check that peak samples were taken 1 hour after the dose and trough samples at the end of the dose interval (24 or 48 hours after the dose)
2. If sample times were incorrect, reanalyze at the correct time or seek advice. If there is **any** concern about the patient's renal function, withhold and reanalyze.

High Trough ≥ 2 mg/L	Extend dosing interval i.e. 24 hourly to 48 hourly, 48 hourly to 72 hourly. Ensure trough is <2mg/L before re-dosing.
Low Peak <8 mg/L	**6- 8 mg/L** Increase dose by 20% **<6 mg/L** Increase dose by 30% (a previous trough level of >1.5mg/L may require an extended dosing interval following such a dose increase, consider a trough and hold before next dose)
High Peak >12 mg/L	Decrease dose by 20%

- An increase in dose will lead to a proportional increase in the trough concentration. If the trough is ≥ 2 mg/L, increase the time interval between doses
- Re-check peak and trough levels at the second dose following any change in dose or interval unless therapy is due to stop.
- Recheck a trough before the next dose if renal function declines

NB. Seek advice from a pharmacist if you are unsure how to interpret results.

SUBSEQUENT MONITORING FOLLOWING SATISFACTORY LEVELS

If a patient has

- **Stable renal function and a good response to antibiotic treatment**
  Re-check a trough level every **2 - 4 doses in premature infants, 5 - 7 doses in term infants.**

- **Impaired renal function *(creatinine >80*umol/L */ poor urine output) AND* / OR <25 weeks gestation**
  Check a **trough level before each dose** and **wait** for the result before giving the next dose.

- **Changing renal function** during treatment
  I.e. any increase / decrease in creatinine, urea or urine output
  Re-check peak and trough on day of change in renal function and modify dosage regimen if necessary

- **Signs of ongoing / worsening sepsis**
  (e.g. rise in CRP), contact microbiology for advice.

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Administer reconstituted solutions immediately.
All vials, ampoules and infusion bags are for single use only unless otherwise stated.

Dose may vary depending on indication, age, renal function, hepatic function, and concomitant medications. This monograph should be used in conjunction with the terms of reference document prepared by the West of Scotland Pharmacist Network. Information is correct at the time of publication and as per local practice agreement. For further advice please contact your clinical pharmacist or pharmacy department