NHS Borders

Guidance on Synergistic Gentamicin for Endocarditis in Adults

(Ref. NHS Greater Glasgow and Clyde Guidelines 2016 approved by Scottish Antimicrobial Prescribing Group October 2016.

All patients with suspected or proven endocarditis should be discussed with microbiology. Synergistic gentamicin is recommended in initial treatment of native valve endocarditis due to enterococcal and streptococcal species and in prosthetic valve endocarditis of all aetiology including staphylococci. Therapy should be discussed with an infection specialist and consider resistance, clinical response, toxicity and need for outpatient therapy.

Dosage Guidelines

These guidelines aim to produce a 1 hour post dose peak of 3-5 mg/L and a trough of <1mg/L. Doses should be administered by IV bolus injection over 3-5 minutes.

Gentamicin Synergistic Dosing Guidelines	**Patient Weight**				
Actual body weight/Creatinine CL	**<45kg**	**45-65kg**	**66-85kg**	**86-110kg**	**>110kg**
<25ml/min	40mg	60mg	80mg	100mg	120mg
	Take a sample after 24 hours. Do not give a further dose until the concentration is <1mg/L				
25-44ml/min	40mg 24 hourly	60mg 24 hourly	80mg 24 hourly	100mg 24 hourly	120mg 24 hourly
>44ml/min	40mg 12 hourly	60mg 12 hourly	80mg 12 hourly	100mg 12 hourly	120mg 12 hourly

Prescribing

Prescribe on drug kardex; do **not** use the gentamicin prescribing, administration and monitoring form to prescribe synergistic gentamicin.

Monitoring

1. Take a blood sample for gentamicin analysis one hour after the first gentamicin bolus injection has been administered ("peak" sample).
2. Take a second blood sample for gentamicin analysis at the end of the first dosage interval (trough concentration) then give the next dose. Do not delay giving the second gentamicin dose while waiting for trough concentration.

    - If the gentamicin peak concentration is within the range of 3-5mg/L and the gentamicin trough is <1mg/L, continue the present dosage regimen.
    - Record the exact time of ALL gentamicin samples on the sample request form.

3. Seek advice from Pharmacy if you are unsure how to interpret the result or if the concentrations are not within the ranges above.
4. Monitor the patient's creatinine daily. If renal function is stable, check the gentamicin trough concentration every 2-3 days. If renal function deteriorates, check the trough daily. Discuss dose regimen with pharmacy.
5. If the gentamicin trough concentration is >1mg/L and a further dose has been administered, reanalyse the trough after the next dose. Do not give a further dose until the gentamicin concentration is <1mg/L.

6. If the gentamicin peak concentration is not within the target range of 3-5mg/L, or the trough concentration is >1mg/L,discuss dose regimen with pharmacy.

Gentamicin Duration

Seek Microbiology advice.

Toxicity

Gentamicin can cause renal and ocotoxicity. The risk of gentamicin toxicity increases with duration of therapy. If gentamicin continues for >7 days, suggest referring to audiology for assessment. The addition of gentamicin in staphylococcal native value infective endocarditis (IE) is no longer recommended because it increases renal toxicity. If more than 2 weeks of therapy is required please refer the patient to audiology for hearing tests.

Renal Toxicity

- Monitor creatinine daily. Seek advice if renal function is unstable (e.g. a change in creatinine of >15-20%)
- Signs of renal toxicity include an increase in creatinine or decrease in urine output/oliguria.
- Consider an alternative agent if creatinine is rising or the patient becomes oliguric.

Ototoxicity

- Ototoxicity secondary to gentamicin is independent of drug concentration. It is suggested by any of the following: new tinnitus, dizziness, poor balance, hearing loss or oscilliating vision.
- Toxicity is associated with prolonged aminoglycoside use (usually >10 days but may be >72 hours) and is secondary to drug accumulation within the inner ear.
- Stop treatment if ototoxicity is suspected and refer to a microbiology/infection specialist for advice on future therapy.