Louth: Antimicrobial Guidelines - Louth Hospitals: Antimicrobial Guidelines: Gent, Vanc, Amik (Adults)

Gentamicin and Vancomycin Calculator

Do NOT use in ICU/ HDU to calculate Dosing for Vancomycin Continuous Infusion

Adult Amikacin Guideline

Amikacin is a reserve aminoglycoside in LH and should only be prescribed on the advice of a Consultant Microbiologist or ID Consultant (except when administered as a single IM dose as part of TRUS biopsy prophylaxis regimen).

- Dose based on weight and renal function
- Use actual weight unless BMI $\geq$ 30kg/m ^{2}
- If BMI $\geq$ 30, use Obese Dosing Weight (ODW) to calculate creatinine clearance (CrCl) and amikacin dose
- Maximum IV amikacin dose 1,500mg daily

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CrCl	Amikacin Dose
> 50mL/min	15mg/kg once daily IV
30 – 50 mL/min	10mg/kg once daily IV
10 – 30 mL/min	5mg/kg once daily IV
< 10 mL/min	3mg/kg STAT IV

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- **Check renal function regularly**
- Check first trough level 18 – 24 hours after first dose
- Target trough level < 5mg/L
- Amikacin levels are processed externally – contact Laboratory Referrals directly for result (#2560)
- Repeat trough level twice weekly if creatinine normal or more often if creatinine abnormal or deteriorating.

Adult Gentamicin Guideline

Gentamicin Calculator

KDIGO AKI Definition

Assessing Renal Function

LH Adult Gentamicin Dosing Guideline, V.5, 2024

1. Select patient appropriately

- Note - For endocarditis, gentamicin 3mg/kg once daily recommended instead of 5mg/kg once daily
- Before starting therapy, consider renal function, hydration status, concomitant nephrotoxic medicines and contra-indications (e.g. myasthenia gravis)
- **Review need for gentamicin daily - avoid duration in excess of 5 days.** Prolonged duration is associated with increased risk of nephrotoxicity and ototoxicity.

2. Use Gentamicin Calculator on LH Antimicrobial Guidelines App to calculate dose based on renal function and weight

- **N.B. CrCl is NOT accurate in AKI, consider full clinical picture, see dose recommendations for AKI as well as CKD below**
- If BMI ≥ 30kg/m², use obese dosing weight (ODW) to calculate dose - gentamicin calculator will do this automatically
- If pregnant, use booking weight to calculate dose (ODW if BMI ≥ 30kg/m²)
- Prescribe **ACTUAL DOSE** (not mg/kg) – **maximum dose 480mg daily**

Normal Renal Function or CKD	AKI (KDIGO)	Once Daily Dose (Max dose 480mg)
CrCl ≥ 50mL/min	AKI Stage 1	**5mg/kg once daily** N.B. Wait for trough level result before re-dosing if renal impairment.
CrCl < 50 mL/min	AKI Stage 2 or 3	**3mg/kg STAT** N.B. Wait for trough level result before re-dosing if renal impairment.
Dialysis	Dialysis	Contact clinical microbiologist or pharmacist for dosing advice.

3. Check urea and creatinine daily/alternate days as indicated

- Ensure patient well hydrated.
- If urea and creatinine deteriorate from baseline, review patient and consider holding gentamicin until trough level checked and urea and creatinine repeated.

4. Check trough level 16 – 24 hours after first dose

- Gentamicin levels are processed in Biochemistry from 8am to 8pm Mon – Fri and 9am to 5pm Sat – Sun.
- Consultant request only outside of these hours.

5. Check trough level result before next dose given

Trough	Action
< 1mg/L	Give dose as prescribed
≥ 1 mg/L	Verify that level checked at correct time. If true trough level result, hold dose and repeat level next day. Do not redose until level < 1mg/L.
Not available	• If renal function normal, give dose as prescribed. • If renal function abnormal or unstable, usually hold dose until level result available, however if patient acutely septic, contact senior doctor for advice. • If dose given before level back, review level result when available.

6. Repeat trough level when clinically indicated

Normal stable renal function	Every 3 days: Review duration of gentamicin as soon as possible.
Abnormal or unstable renal function	Daily: Review duration of gentamicin as soon as possible.

Approved by LH Drugs and Therapeutics Committee

Adult Vancomycin Guideline

Vancomycin Calculator

Do NOT use in ICU/ HDU to calculate Dosing for Vancomycin Continuous Infusion

KDIGO AKI Definition

Assessing Renal Function

LH Adult Vancomycin Dosing Guideline V.6, 2024

1. Select patient appropriately

- Vancomycin is associated with renal and ototoxicity. There is an increased risk of nephrotoxicity when co-prescribed with other nephrotoxic medications. Monitoring of serum levels is a necessity.
- If administered too quickly, vancomycin can induce a large histamine release which manifests as 'Red-Man Syndrome'. Give at a rate not greater than 10mg/min.

2. Use Vancomycin Calculator on LH Antimicrobial Guidelines App to calculate dose based on renal function and weight

- **N.B. CrCl is NOT accurate in AKI, consider full clinical picture, see dose recommendations for AKI as well as CKD below**
- Use actual weight to calculate dose for all patients even if BMI ≥ 30kg/m^2 - vancomycin calculator will do this automatically
- Prescribe **ACTUAL DOSE** (not mg/kg) - round dose to the nearest 50mg

LOADING DOSE: 25mg/kg STAT, maximum loading dose 3g (If pregnant, max 2g)

- Loading dose is recommended for all patients including those with renal impairment
- Give loading dose when prescribed, adjust times of subsequent maintenance doses as outlined below

MAINTENANCE DOSE: SEE TABLE BELOW (maximum maintenance dose 2g)

Normal Renal Function or CKD	AKI (KDIGO)	Initial Maintenance Dose Regimen
CrCl ≥ 50mL/min	AKI Stage 1	**15mg/kg BD**, starting approx. 12 hours after loading dose [*Adjust dose times to 10am and 10pm*]
CrCl 20–50 mL/min	AKI Stage 2	**15mg/kg once daily**, starting approx. 24 hours after loading dose [*Adjust dose time to 10am*]
CrCl < 20 mL/min	AKI Stage 3	**Check trough level daily and wait for result.** Re-dose with 15mg/kg when trough < 20mg/L and adjust further doses based on trough results. [*Adjust dose time to 10am*]
Dialysis	Dialysis	Contact clinical microbiologist or pharmacist for dosing advice.

3. Check urea and creatinine daily / alternate days as indicated

4. Check first trough level as outlined below (within 1 hour before dose given)

- BD/TDS dosing: Pre 4th / 5th dose (whichever is the morning dose)
- Once daily dosing: Pre 3rd dose
- CrCl < 20 mL/min: Daily trough level check

Note - Vancomycin levels are processed in Biochemistry Lab from 8am to 8pm Mon – Fri and 9am to 5pm Sat – Sun. Consultant request only outside of these hours.

5. PROCEED with due dose of vancomycin WITHOUT waiting for trough level result unless new or worsening AKI or CrCl < 20 mL/min

- When the trough level result is available, the next dose can be adjusted or held if needed.

6. Check trough level result when available: Target 15 – 20 mg/L for all patients

Trough Level	Suggested Dose and Frequency Alteration
<10 mg/L	Increase frequency from BD to TDS or from once daily to BD as applicable (keep same dose each time).
10-15 mg/L	Calculate total daily dose and divide into more frequent doses, e.g. switch 1.5g BD to 1g TDS (preferred) **OR** increase each dose by 250mg.
15-20 mg/L	Maintain current dosing regimen.
20-25 mg/L	**DO NOT HOLD ANY DOSES.** Give lower dose at same frequency, i.e. reduce each dose by 250mg. Repeat trough level as per box number 4 above.
>25 mg/L	**HOLD vancomycin dose(s).** Usually HOLD until level repeated next morning and result obtained. When level < 20mg/L, restart with lower dose at same frequency, i.e. reduce each dose by 500mg. **N.B.** If patient has required a high dose to reach therapeutic level (e.g. ≥ 4g/day), they are likely to clear vancomycin quickly and it may be appropriate to hold a single dose only. Contact pharmacist for advice if needed.

7. Repeat trough level when clinically indicated

- After dose adjustments, repeat trough level as per box number 4 above
- If renal function normal and stable and trough level in range, repeat trough level twice weekly
- If renal function abnormal or unstable, repeat trough level more frequently (for example, daily or on alternate days)

Approved by LH Drugs and Therapeutics Committee

References

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