

## Trust Guideline for the use of Parenteral Vancomycin in Adults

### A clinical guideline recommended:

<b>For use in:</b>	All clinical areas where Vancomycin is prescribed (excluding critical care complex and theatres)
<b>By:</b>	All medical, nursing, pharmacy, microbiology and phlebotomy staff
<b>For:</b>	All adult patients receiving Vancomycin
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This guideline has been approved by the Trust's Clinical Guidelines Assessment Panel as an aid to the diagnosis and management of relevant patients and clinical circumstances. Not every patient or situation fits neatly into a standard guideline scenario and the guideline must be interpreted and applied in practice in the light of prevailing clinical circumstances, the diagnostic and treatment options available and the professional judgement, knowledge and expertise of relevant clinicians. It is advised that the rationale for any departure from relevant guidance should be documented in the patient's case notes.

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## Version and Document Control:

Version Number	Date of Update	Change Description	Author
V9	March 2021	Teicoplanin made into a separate guideline.	Caroline Hallam
V10	April 2022	Adjusted body weight information added	Caroline Hallam

## This is a Controlled Document

Printed copies of this document may not be up to date. Please check the hospital intranet for the latest version and destroy all previous versions.

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**Step 1: Prescribe Vancomycin Loading Dose as a STAT**

(For patients with a CrCL<20mL/min, haemodialysis or peritoneal dialysis pts see page 5, no loading dose required in renal pts)

- Prescribe a STAT dose on EPMA based on patient's ACTUAL body weight.
- The next dose will be given 12/24 hours later so choose an appropriate time on EPMA

VANCOMYCIN LOADING DOSE	
Actual body weight	Dose
< 40 kg	750 mg in 250 mL 0.9% sodium chloride over 1.5 hours
40 - 59 kg	1000 mg in 250 mL 0.9% sodium chloride over 2 hours
60 - 90 kg	1500 mg in 500 mL 0.9% sodium chloride over 3 hours
>90 kg	2000 mg in 500 mL 0.9% sodium chloride over 4 hours

**Step 2: Prescribe Vancomycin Maintenance Dose as a regular dose**

(to start at the correct time AFTER the loading dose)

- Prescribe a maintenance dose to start at the correct time AFTER the loading dose (12 or 24 hours), based on Creatinine Clearance (calculated using equation below).
- Change the date of the vancomycin level on EPMA so it is taken at the correct time.

VANCOMYCIN MAINTENANCE DOSE - INTERMITTENT INFUSIONS		
CrCL (mL/min)	Dose amount	Dosage interval
< 20	See page 5	
20 - 29	500 mg over 1 h	24 hours
30 - 39	750 mg over 1.5 h	24 hours
40 - 54	500 mg over 1 h	12 hours
55 - 74	750 mg over 1.5 h	12 hours
75 - 89	1000 mg over 2 h	12 hours
90 - 110	1250 mg over 2.5 h	12 hours
> 110	1500 mg over 3 h	12 hours

**Calculating the patients Creatinine Clearance**

Calculate the patient’s creatinine clearance (CrCl) using the Cockcroft-Gault equation. Click [here for the Cockcroft and Gault Calculator](#) or use the calculation below:

$$\text{CrCl (mL/min)} = \frac{F (140\text{-age}) \times \text{weight (kg)}}{\text{Serum creatinine (micromols/L)}} \quad (F=1.04 \text{ females, } 1.23 \text{ for males})$$

- Use actual body weight (ABW) or ideal body weight (IBW), whichever is lower  
**Ideal body weight (kg):**  
**Men = 50 + (2.3 x no. of inches over 5 ft.) Women = 45.5 + (2.3 x no. of inches over 5 ft.)**
- In obese patients (>20% above their IBW) adjusted body weight should be used to calculate CrCl  
**Adjusted BW = IBW + 0.4(ABW – IBW)**
- In patients with low creatinine (<60micromol/L), use 60micromol/L. Do not use eGFR

**Step 3: Taking Levels and Ongoing Monitoring**

(see page 4 for pts with CrCL <20mL/min or peritoneal dialysis patients)

**Take a pre-dose blood sample (clotted blood) for serum vancomycin trough level (within 1 hour of next vancomycin dose being due)**

- Before 4<sup>th</sup> dose if on BD dosing
- Before 3<sup>rd</sup> dose if on OD dosing
- Before 2<sup>nd</sup> dose if on 48-hourly dosing

Record the time that the last dose was given and the time that the blood sample was taken on the request form, and record the sample time on the sample tube.

ADJUSTMENT OF INTERMITTENT INFUSION DOSAGE REGIMEN	
Vancomycin level	Suggested dose change
< 10mg/L	Increase dose by 50% and consider reducing the dosage interval or seek advice
10-15mg/L	If the patient is responding, maintain the present dosing regimen If the patient is seriously ill, consider increasing the dose amount or reducing the dosage interval to achieve a trough level of 15-20mg/L
15-20mg/L	Within target range for treatment of severe infections (bacteraemia, infective endocarditis, osteomyelitis, meningitis, pneumonia and severe skin and soft tissue infections e.g. necrotising fasciitis). Maintain present dosage regimen. If treating less severe infections, a pre-dose level of 15-20mg/L is acceptable

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> 20mg/L	Stop until < 20mg/L then seek advice. Dose reduction or increase in dosing interval necessary
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- Take the first pre-dose (trough) level as advised in the table above.
- Record the exact time of all vancomycin samples on the request form.
- If the renal function is stable, give the next dose before the trough result is available. If the renal function is deteriorating, withhold until the result is available and follow advice in table Please discuss with microbiology/pharmacy if further advice is needed.
- Interpret levels as above. If the trough is within the normal range and renal function remains stable repeat trough level every 2-3 days. If the renal function is unstable, daily levels are required.
- Monitor creatinine daily.

### If the measured concentration is unexpectedly HIGH or LOW, consider the following:

- Were the dose and sample times recorded accurately?
- Was the correct dose administered?
- Was the sample taken from the line used to administer the drug?
- Was the sample taken during drug administration?
- Has renal function declined or improved?
- Does the patient have oedema or ascites?

### Toxicity

- Monitor creatinine daily. Seek advice if renal function is unstable (change in creatinine level).
- Signs of renal toxicity include increase in creatinine or decrease in urine output/oliguria.
- Consider an alternative agent if creatinine is rising or the patient becomes oliguric.
- Vancomycin may increase the risk of aminoglycoside induced ototoxicity – use caution if co-prescribing.

## 4. Renal patients (CrCl < 20mL/min or dialysis (peritoneal and haemo-) patients)

### 1. Maintenance Dose in Renal Patients

The maintenance dose to be administered as follows:

1g Vancomycin in 200mL 0.9% sodium chloride over 100 minutes. Vancomycin may be dialysed out so should be given in the last 100 minutes of dialysis.

### 2. Sampling

A blood sample for a Vancomycin serum concentration should be taken after 24 hours for non-dialysis/peritoneal dialysis patients and at the start of each subsequent haemodialysis sessions for haemodialysis patients.

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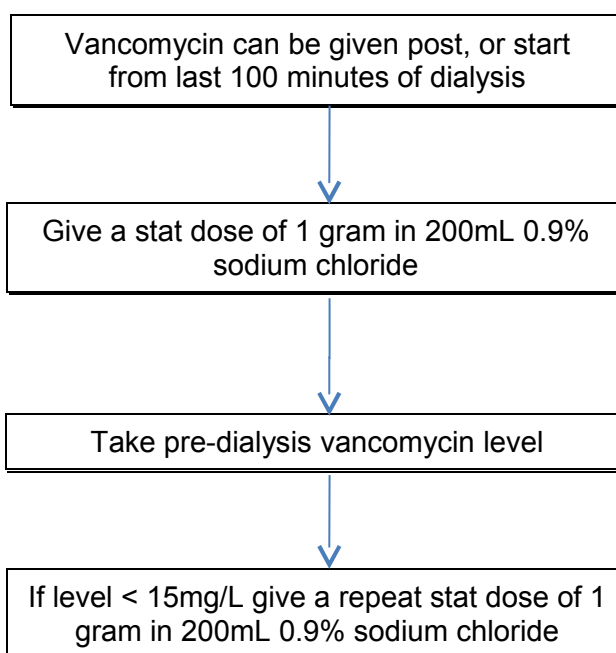
## Notes:

- Samples taken from dialysis patients should be labelled as urgent before sending to the lab.

**Table 4: Interpretation of Vancomycin levels in Renal Patients**

Vancomycin level	Action
<15mg/L	Give a further dose of Vancomycin. Recheck levels in 24 hours for non-dialysis/PD patients Recheck levels just before the start of the next dialysis session for haemodialysis patients
15-25mg/L	Do not give a further dose. Recheck levels in 24 hours for non-dialysis/PD patients and at each dialysis session for HD patients
>25mg/L	Do not give a further dose. Recheck levels in 48 hours for non-dialysis/PD patients and at each dialysis session for HD patients

## INTRAVENOUS (IV) VANCOMYCIN FOR HAEMODIALYSIS PATIENTS



## References / source documents

James Paget Hospital Guideline Management of Intermittent Prescribing, Administration and Monitoring. February 2019

Scottish Antimicrobial Prescribing Group (NHS Scotland) IV Vancomycin use in Adults (Intermittent (Pulsed) infusion. Scottish Medicines Consortium; 2019