Critical Care Guidelines
FOR CRITICAL CARE USE ONLY

VANCOMYCIN BY CONTINUOUS INFUSION

Loading Dose: All patients must receive a weight related loading dose. This can be given peripherally or via a central venous catheter. The loading dose is based on **actual body weight**. If a patient has been transferred to critical care having recently had vancomycin in the previous 24 hours, a loading dose may not be required. Check recent level.

Table 1

Weight	Dose	Infusion volume of glucose 5%	Infusion time
<40kg	750mg	250ml	1.5 hours
40-59kg	1000mg	250ml	2 hours
60-90kg	1500mg	500ml	3 hours
>90kg	2000mg	500ml	4 hours

Can also be prepared in sodium chloride 0.9% if glucose 5 % not suitable.

Maintenance Infusion: Obtain weight to use for creatinine clearance from tables below.
Is the patient's actual body weight less than the maximum body weight?
Yes: Use the actual body weight to calculate creatinine clearance.
No: Use the maximum body weight from the chart below to calculate creatinine clearance.

Table 2

Height feet	Height cm	Male Max BW kg	Female Max BW kg
4'8"	142	49	43
4'9"	145	52	47
4'10"	147	54	49
4'11"	150	58	52
5'0"	152	60	55
5'1"	155	62	58
5'2"	158	66	60
5'3"	160	68	62
5'4"	163	71	66
5'5"	165	74	68
5'6"	168	77	71
5'7"	170	79	74

Height feet	Height cm	Male Max BW kg	Female Max BW kg
5'8"	173	82	77
5'9"	175	85	79
5'10"	178	88	82
5'11"	180	90	85
6'0"	183	94	88
6'1"	185	96	90
6'2"	188	98	94
6'3"	191	101	
6'4"	193	104	
6'5"	195	107	
6'6"	198	109	
6'7"	201	113	

The continuous infusion must be given via a dedicated line, centrally or peripherally, immediately after the loading dose. The total daily dose will depend on patient's renal function, and should be split into two twelve-hour infusions, in glucose 5%. **Start the continuous infusion immediately after the loading dose is complete**.

Table 3

Creatinine Clearance (mls/min) Use Cockcroft and Gault equation (eGFR not applicable)	**Daily maintenance dose**	**Cockcroft and Gault equation:**
< 20 or CVVHD	500mg	CrCl (mls/min) = $\frac{(140\text{-age}) \times \text{wt(kg)}}{\text{serum creatinine (micromol/l)}} \times 1.23$(male) or 1.04(female)
20-29	500mg	
30-39	750mg	If creatinine is < 60micromol/l use 60 micromol/l
40-54	1000mg	
55-74	1500mg	
75-89	2000mg	
90-110	2500mg	
>110	3000mg	

Preparation of infusion
Reconstitute 500mg vials with 10mls water for injections and 1000mg vials with 20ml water for injections, to give a final concentration of 50mg/ml. Remove the volume of glucose 5% from the infusion bag, equivalent to the volume of vancomycin to be added. Chemically stable for 24 hours (also stable in 0.9% sodium chloride).

Table 4

Daily Maintenance Dose	Dose in each infusion bag to be administered over 12 hours. X	Volume of infusion bag for 12 hour infusion. Y	Volume of reconstituted vancomycin (50mg/ml) to add to 12 hour infusion bag.	12 hour Infusion rate mls/hr. Z
250mg	125mg	50ml	2.5ml	4.1mls/hour
500mg	250mg	50ml	5.0ml	4.1mls/hour
750mg	375mg	100ml	7.5ml	8.3 mls/hour
1000mg	500mg	100ml	10ml	8.3 mls/hour
1250mg	625mg	250ml	12.5ml	20.8mls/hour
1500mg	750mg	250ml	15ml	20.8mls/hour
1750mg	875mg	250ml	17.5ml	20.8mls/hour
2000mg	1000mg	250ml	20ml	20.8mls/hour
2500mg	1250mg	250ml	25ml	20.8mls/hour
3000mg	1500mg	500ml	30ml	41.6mls/hour
3500mg	1750mg	500ml	35ml	41.6mls/hour

Prescribe as: **X** mg over 12 hours in **Y** mls glucose 5% at **Z** mls/hour (≡ 2**X** mg in 24 hours)

Dose Adjustment

- Check vancomycin level at 6am **daily**. Adjust dose according to the table below.
- If started between midnight and 6am, wait for the following morning's level before adjusting dose. However, if urine output deteriorates over the course of the day, consider checking level sooner.
- Complete the bag which is running before replacing with a new bag (unless infusion is stopped or level>25mg/l).

If the patient is seriously ill (severe or deep-seated infections), the target range is 20-25mg/l. If the measured concentration is < 20mg/l, consider increasing the dose.

Table 5

Vancomycin serum concentration	Suggested Dose Adjustment
<15mg/l	Increase daily dose by 500mg.
15-25mg/l	If the patient is responding, maintain the present dosage regimen. **If the patient is seriously ill, consider increasing the dose to achieve a steady state concentration of 20-25mg/l.**
25-30mg/l	Decrease daily dose by 500mg - If the patient is only receiving 500mg daily, then reduce the daily dose by 250mg.
>30mg/l	Stop infusion for at least 6 hours, then recheck level. Restart with a reduced dose when the serum level is < 25mg/l. Please review patient parameters when considering dose. Seek senior medical or Pharmacy advice.

Discharge from Critical Care
Stop the continuous infusion. Prescribe intermittent dosing to commence after a suitable time interval i.e. 6-12 hours.
If total daily dose (TDD) by continuous infusion has been ≤1gram, then the intermittent dose should be the TDD given 24 hourly. A trough level should then be taken before the 2nd maintenance dose.
If total daily dose >1gram: give in 2 divided doses at 12 hourly intervals, i.e. TDD = 1500mg, give 750mg 12 hourly. Thereafter, serum levels may be checked after a further 24 hours of intermittent dosing. A trough level should be taken before the 3rd maintenance dose.

References

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Title: Vancomycin by Continuous Infusion	
ID: CCVCI010511v2	**Authors:** C Hannah, M Angus, Dr E Wilson
Category: 1	**Document Version;** 5
Status Draft/Final: Final	**Review Date:** December 2022
Authoriser; Lothian Critical Care QIT Editorial Board.	**Date Authorisation:** December 2020
Date added to intranet	
Key Words; Vancomycin, Continuous Infusion, Critical Care	