

Location (unit)	Patient's Name	
Indication	Date of birth	Gender M / F
	Hospital No.	
Review date	NHS number	
PLEASE affix a patient's sticker if available		

Loading dose(s)

Date	Time to be given	Weight (please circle)	Dose (please circle)	Prescriber		Administration			Pharm
				Signature	Surname	Date given	Time given	Given by	
		<65kg	1g						
		≥65kg	1.5g						
		<65kg	1g						
		≥65kg	1.5g						
		<65kg	1g						
		≥65kg	1.5g						
		<65kg	1g						
		≥65kg	1.5g						

Continuous infusion

TARGET LEVEL = 20-25mg/L (See protocol for dose adjustments) *If level falls below 10mg/l repeat loading dose*			Bag change (CVC = 1g in 120ml NS/D5W, peripheral = 1g in 270ml NS/D5W)							
Date:	Level:	Infusion rate:	1	2	3	4	5	6	7	8
	Dose:	C or P:								
	Drs sig:	Nurses sig:								
Day of Rx	Level:	Infusion rate:								
	Dose:	C or P:								
	Drs sig:	Nurses sig:								
Day of Rx	Level:	Infusion rate:								
	Dose:	C or P:								
	Drs sig:	Nurses sig:								
Day of Rx	Level:	Infusion rate:								
	Dose:	C or P:								
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Day of Rx	Level:	Infusion rate:								
	Dose:	C or P:								
	Drs sig:	Nurses sig:								
Day of Rx	Level:	Infusion rate:								
	Dose:	C or P:								
	Drs sig:	Nurses sig:								

Note on abbreviations:

C /CVC = central line administration
P = peripheral line administration
NS = Normal saline 0.9%
D5W = Dextrose 5%

5. Administration (maximum rate 10mg/min.)
@St George's there are 4 volumat entries for vancomycin – ensure correct option is chosen when administering.

Loading Dose: MAKE UP STANDARD BAGS as follows	
Central Line	<ul style="list-style-type: none">Add 1g to a 100ml bag of 5% dextrose or 0.9% sodium chloride and administer over 100 minutesIf a 1.5g loading dose is required, add to a 250ml bag of 5% dextrose or 0.9% sodium chloride and administer over 150 minutes (@ StGH USE “VANCOMYCIN PERIPH” entry on the SMART pumps)
Peripheral line	<ul style="list-style-type: none">Add 1g or 1.5g to a 250ml bag of 5% dextrose or 0.9% sodium chloride and administer over 100 minutes (for 1g) or 150 minutes (for 1.5g)

Continuous infusion: MAKE UP STANDARD BAGS as follows	
Central Line	<ul style="list-style-type: none">1g in 120ml (8.3mg/ml). Reconstitute 1g with 20ml of water for injections and add to 100ml bag of 5% dextrose or 0.9% sodium chloride
Peripheral line	<ul style="list-style-type: none">1g in 270ml (3.7mg/ml). Reconstitute 1g with 20ml of water for injections and add to 250ml bag of 5% dextrose or 0.9% sodium chloride

- NEVER DEVIATE from the standard dilutions specified above
- If the daily dose is changed, CHANGE the infusion rate ONLY
- The infusion rate should be set according to the rates given below

Vancomycin total daily dose	CVC = 1000mg in 120ml = 8.3mg/ml	Peripheral = 1000mg in 270ml = 3.7mg/ml	Equivalent Intermittent Dose
	Use pump option: Vancomycin 24hr CVC	Use pump option: Vancomycin 24hr	
250mg	1.3 ml/hr	2.8 ml/hr	250mg every 24 hours
500mg	2.5 ml/hr	5.6 ml/hr	500mg every 24 hours
1g	5 ml/hr	11.3 ml/hr	1g every 24 hours
1.5g	7.5 ml/hr	16.9 ml/hr	750mg 12 hourly
2g	10 ml/hr	22.5 ml/hr	1g 12 hourly
2.5g	12.5 ml/hr	28.1 ml/hr	1.25g 12 hourly
3g	15 ml/hr	33.8 ml/hr	1.5g 12 hourly
3.5g	17.5 ml/hr	39.4 ml/hr	1.75g 12 hourly
4g	20 ml/hr	45.0 ml/hr	2g 12 hourly
4.5g	22.5 ml/hr	50.6 ml/hr	2.25g 12 hourly
5g	25 ml/hr	56.3 ml/hr	1.5g 8 hourly
5.5g	27.5 ml/hr	61.9 ml/hr	1.75g 8 hourly
6g	30 ml/hr	67.5 ml/hr	2g 8 hourly

- 6. Step down of the patient from ICU to a general ward**
- Continuous infusions of vancomycin are **NOT USED** on the general wards.
 - To convert the continuous infusion to intermittent dosing, follow the table above to prescribe the equivalent intermittent dose. **At Epsom & St Helier**, if the patient is receiving ≥4g per 24hours **YOU MUST** contact Microbiology/Pharmacy for advice on intermittent dosing.
 - If the serum level in the preceding 24 hours was <20 or >25mg/L, please discuss dosing with your pharmacist.
 - When converting to bd intermittent dosing regimen, prescribe the dose at acceptable time frames i.e. ranging between 06:00-10:00 and 18:00-22:00 for patient acceptability.
 - Ensure there is a suitable interval from stopping infusion.
 - Continue the infusion whilst patient is on ICU and stop only when the patient is being stepped down to the ward.
 - Ensure vancomycin target trough levels are confirmed (10-15mg/L OR 15-20mg/L) with microbiology. Document this on the ward chart and in the ICU step down plan prior to ward transfer.
 - Repeat levels should be taken before the 3rd or 4th intermittent dose on the ward (see local guidelines)

Guidelines for the Use of Vancomycin by Continuous Infusion in Critical Care Areas

NOTE: Prescribing in patients requiring renal replacement therapy
Patients who are receiving intermittent haemodialysis should not receive vancomycin as a continuous 24 hour infusion. However, patients receiving continuous renal replacement therapy (either haemo or peritoneal) MAY benefit from a continuous infusion but this should be judged on a case by case basis.

1. Loading dose: Give an initial dose of vancomycin based on patients actual weight

Weight	Loading dose of Vancomycin
< 65kg	1g
≥ 65kg	1.5g

2. Continuous Infusion: Start the continuous infusion after the loading dose. The dose chosen will depend on the calculated, creatinine clearance (cCrCl). The formula (below) only gives an estimation of GFR and is unreliable in patients who are obese, have acute kidney injury or are anuric.

	cCrCl (ml/min)	Starting daily vancomycin dose
Normal renal function	> 50	2g
Mild renal impairment	21-50	1.5g
Moderate renal impairment	10-20	1g
Severe renal impairment	< 10	500mg
Continuous renal replacement therapy	-	1g

cCrCl=
$$\frac{(140 - \text{age}) \times \text{weight (kg)} \times 1.23 \text{ (male)} \text{ OR } 1.04 \text{ (female)}}{\text{Serum Cr}}$$

3. Daily review and dose titration

- Add a request for vancomycin levels to routine daily blood tests taken at ~06:00 each morning; **UNLESS** treatment with vancomycin was started within 4 hours of the usual 06:00 level. If it was, **WAIT** until the following morning to request a level.
- As soon as the level is reported the infusion should be reviewed by the medical staff / ward round and any dose **ADJUSTMENTS** prescribed.

Vancomycin level (mg/L)	Dosage change required	Infusion rate adjustment
≤ 10	<ul style="list-style-type: none">Check if the patient received a loading dose. If not, GIVE a loading dose and then recommence the infusion as per the renal function guide above.If the patient did receive a loading dose, REPEAT the loading dose AND increase the 24 hour dose by 1g.	
10.1-15.0	Increase the 24 hour dose by 1g	Increase the infusion rate (ml/hour) by 2 levels (see infusion protocol)
15.1-20.0	Increase 24 hour dose by 500mg	Increase the infusion rate (ml/hour) to next level (see infusion protocol)
20.1–25.0	Target Range Achieved	No change
25.1-30.0	Decrease 24 hour dose by 500mg*	Reduce the infusion rate (ml/hour) to next level (see infusion protocol)
> 30	Stop infusion for 6 hours AND Decrease 24 hour dose by 1g**	Restart at a reduced infusion rate (ml/hour) decrease dose by 2 levels

*If patient is receiving ≤500mg/24 hours the dose should be decreased to 250mg/24 hours
**If the patient is receiving ≤1g/24hours the dose should be decreased to 250mg/24 hours

4. Prescription Charts

- A vancomycin prescription chart should be completed by medical staff to include the following:
 - Loading and continuous infusion dose
 - Daily vancomycin levels, infusion rate and route of administration (central or peripheral).
- “Vancomycin – see supplementary chart” must also be written on the main drug chart to prompt nursing staff