Updated: 13 May 2025

VANCOMYCIN PROTOCOL

HOSPITAL SULTANAH AMINAH
JOHOR BAHRU

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Application of this protocol:

1. This protocol offers general advice based on published evidence and expert opinion. Users should evaluate individual patient details and determine its applicability to each clinical scenario.
2. Referral to team ID is highly recommended for all MRSA cases or if you are in doubt (i.e. persistent MRSA bacteremia).
3. This protocol is applicable for intermittent Intravenous administration of Vancomycin in ADULT patient.

Step 1 : Loading Dose (LD)

Table 1: LD for normal renal function or renal impairment but NOT on hemodialysis (HD)

Actual Body Weight (kg)	**Renal Function (CrCl in ml/min)**		**Remarks**
	CrCl < 30, NOT on HD	**CrCl ≥ 30**	
	20mg/kg IV STAT	**20-25mg/kg IV STAT**	
< 50	1000 mg	1000 mg	1. Administer the LD as soon as possible. 2. LD must be given to **ALL** patients regardless of renal function. 3. Max dose: **2g/dose** or **3g/dose in obese** patients.
50 - 59	1250 mg	1250 mg	
60 - 69	1500 mg	1500 mg	
70 - 79	1500 mg	1750 mg	
80 - 89	1750 mg	2000 mg	
90 - 99	2000 mg	2000 mg	
≥ 100	2000 mg	2000 mg	

Step 1 : Loading Dose (LD)

Table 2: LD for ESRF patients on hemodialysis (HD)				
Actual Body Weight (kg)	**Vancomycin initiated before dialysis starts**		**Vancomycin planned to be given during dialysis**	**Remarks**
	20mg/kg IV STAT **If HD occurs on the same day as LD, administer a TOP-UP dose post HD**	**TOP-UP dose (5mg/kg)** **To be given 1 hour before HD ends**	**25mg/kg IV STAT** **To be given 1 hour before HD ends**	
< 50	1000 mg	250 mg	1250 mg	1. Max dose: **2g/dose** or **3g/dose in obese** patients.
50 - 59	1000 mg	300 mg	1500 mg	
60 - 69	1250 mg	350 mg	1750 mg	
70 - 79	1250 mg	400 mg	1750 mg	
80 - 89	1500 mg	450 mg	2000 mg	
90 - 99	1500 mg	500 mg	2000 mg	
≥ 100	2000 mg	500 mg	2000 mg	

Step 2 : Maintenance Dose (MD)

Table 3: Vancomycin MD based on body weight and renal function					
Actual Body Weight (kg)	**Renal Function (CrCl in ml/min)**				
	CrCl < 15 or HD	**CrCl 15-29**	**CrCl 30-49**	**CrCl 50-59**	**CrCl ≥ 60**
	-	**10-15 mg/kg Q24H**	**15-20 mg/kg Q24H**	**15-20 mg/kg Q12H**	**15-20 mg/kg Q8-12H**
40 - 49	MD is based on Vancomycin TDM after LD given.	500 mg OD	500 - 750 mg OD	500 mg BD	500 mg BD
50 - 59		500 mg OD	750 mg OD	750 mg BD	750 mg BD
60 - 74		750 mg OD	1000 mg OD	750 mg BD	1000 mg BD
75 - 89		750 mg OD	1000 mg OD	1000 mg BD	750 mg TDS
≥ 90		1000 mg OD	1250 mg OD	1250 mg BD	1000 mg TDS *

It is advisable to adjust the subsequent MD based on TDM level.

The maximum maintenance dose of vancomycin is 4 g/day (for non-obese patients) or 4.5 g/day (for obese patients).

In the meantime, continue to serve Vancomycin unless the patient develops severe AKI or poor urine output.

* Kindly consider using conservative dosing for patients at risk for acute kidney injury (eg: elderly, concurrent nephrotoxic medications, etc.)

Step 3 : Administration (Intravenous)

- Dilute Inj. Vancomycin in NS or D5%.
- For dilution, if a patient is on:

1. **Central line**: max concentration of dilution is 10mg/ml
2. **Peripheral line**: max concentration of dilution is 5mg/ml

- Minimum duration of infusion:

Dose	Duration of Infusion
500 mg	1 hour
750 mg	1.5 hour
1000 mg	2 hours
1250 mg	2.5 hours
1500 mg	2.5 hours
1750 mg	3 hours
2000 mg	3.5 hours

- **Maximum** infusion rate is **10mg/min**.
- Fast infusion rate may cause a rapid infusion-related reaction, also known as RED MAN SYNDROME.

What is RED MAN SYNDROME / Vancomycin infusion-related reaction?

- It is an adverse reaction due to fast infusion of Inj. Vancomycin.
- It is **not an allergic reaction** and does **not contraindicate** the use of Inj Vancomycin.
- Symptoms of Red Man Syndrome:

1. Flushing and redness especially on face, neck and upper torso
2. Itching (pruritus) and rash
3. Hypotension
4. Shortness of breath
5. Angioedema

- Management:

1. Slow the infusion rate to less than 10mg/min.
2. Administer antihistamines before or during infusion.
3. Stop infusion temporarily if symptoms are severe, then restart at a slower rate.

Step 4 : Therapeutic Drug Monitoring (TDM) of Vancomycin

TDM is indicated for all patients expected to receive vancomycin for longer than 48 hours. At least biweekly monitoring in clinically stable patients.

Table 4: Timing to take TDM sample

* Red color wording indicates the time to take the **first sample**

Vancomycin dosing regimen	Dose & time to take TDM	Remarks
LD (ESRF not on HD)	LD, after 24 hours	Take a random sample after 24 hours of LD.
LD (ESRF, regular HD)	LD, pre-HD	Take a random sample in the morning pre-HD
LD + EOD dosing	LD, 1st MD, 2nd MD	Pre: 30 mins before 2nd MD Post: 1 hour after completion of 2nd MD
LD + OD dosing	LD, 1st MD, 2nd MD, 3rd MD	Pre: 30 mins before 3rd MD Post: 1 hour after completion of 3rd MD
LD + BD dosing	LD, 1st MD, 2nd MD, 3rd MD	Pre: 30 mins before 3rd MD Post: 1 hour after completion of 3rd MD
LD + TDS dosing	LD, 1st MD, 2nd MD, 3rd MD, 4th MD	Pre: 30 mins before 4th MD Post: 1 hour after completion of 4th MD
If the sampling time falls after 5pm, it is advisable to take the TDM sample the next morning. ***For any enquiries about TDM, may contact:*** ***TDM pharmacy - ext-2066 weekday (8am - 5pm) , weekend/PH (9am - 2pm)*** ***ED pharmacy - ext (outside of working hours)***		

References

1. Malaysia National Antibiotic Guidelines 2024
2. HSAJB dilution protocol
3. Clinical Pharmacokinetics Pharmacy Handbook, Second Edition, 2019
4. Sanford Guide Antimicrobial Therapy
5. Celovan. Vancomycin 500mg Powder for Solution for Injection/Infusion Product Leaflet. Revised 5/2023.