C&VUHB RENAL UNIT Vancomycin for Haemodialysis patients – guidance on dosing, monitoring and administration Updated December 2019

Loading (Week 1 of treatment)

Dose 1
HD day or non-HD day
Prescribe first 3 doses

→ **Vancomycin 1g** (patient <70kg)
Vancomycin 1.5g (patient 70-100kg)
Vancomycin 2g (patient >100kg)

Dose 2
With next HD session

Plan to give vancomycin with every subsequent haemodialysis session

→ **Vancomycin 750mg** (patient <70kg)
Vancomycin 1g (patient 70-100kg)
Vancomycin 1.5g (patients >100kg)

Check vancomycin level prior to next HD session
Do not wait for levels before giving vancomycin Dose 3

Dose 3
With next HD session

→ **Vancomycin 750mg** (patient <70kg)
Vancomycin 1g (patient 70-100kg)
Vancomycin 1.5g (patients >100kg)

Maintenance (Week 2 of treatment onwards)

Dose 4, 5 and 6
With next HD sessions

Review- treatment to continue?
If so, prescribe next 3 doses

→ Prescribe Dose 4, 5 and 6 according to vancomycin levels (mg/L) taken prior to Dose 3
Aim to maintain vancomycin levels of 15-20mg/L

- **< 5** — Seek advice before prescribing further doses
- **5 to 9** — **Vanc 1.5g (1g if <70kg)**
- **10 to 14** — **Vanc 1g**
- **15 to 20** — **Vanc 750mg**
- **21 to 25** — **Vanc 500mg**
- **> 25** — **Hold dose 4** Seek advice for subsequent antibiotic plan

Dose 7, 8 and 9
With next HD sessions

Review- treatment to continue?
If so, prescribe next 3 doses

Check vancomycin level prior to Dose 6 (take level before starting the HD session)
Do not wait for levels before giving vancomycin Dose 6

→ Prescribe Dose 7, 8 and 9 according to vancomycin levels (mg/L) taken prior to Dose 6, with reference to current dose
Aim to maintain vancomycin levels of 15-20mg/L

Continue to prescribe vancomycin according to this guidance
Check vancomycin levels prior to every 3rd HD session (generally once weekly)

Ongoing dosing plan

Level	Next Dose
<5mg/L	Seek advice
5-14mg/L	Increase dose
15-20mg/L	**Continue on same dose**
21-25mg/L	Decrease dose
>25mg/L	Seek advice

e.g. If patient on 1g dose for doses 4,5&6 and level is 17.1 prior to dose 6, continue on 1g for doses 7,8 & 9

This guidance is designed to aid prescribing of vancomycin in regular haemodialysis patients and dosing should only be determined by a doctor or renal pharmacist

For further advice related to vancomycin for HD patients please contact UHW Renal Pharmacy Team on ext. 46324, 41222 or bleep 5707

Vancomycin doses should be given at the end of HD in sodium chloride 0.9%. The volume and duration of the infusion given according to dose as follows…

Dose	Volume	Duration
500-750mg	100ml	Last hr of HD
1g	250ml (100ml if restricted)	Last 1.5 hrs of HD
1.5g	250ml	Last 2 hrs of HD
2g	250ml	Over 3 hours (start in last 2 hrs)

Vancomycin must be prescribed by a doctor or prescribing pharmacist on the drug chart**. Prescribe Dose 1, 2 and 3 as a loading dose to start then when levels available, prescribe Dose 4, 5 and 6.** Continue to prescribe three doses at a time, directed by levels taken prior to every third HD session and current dose. State intended duration of treatment (eg 7 to 14 days for uncomplicated line sepsis) and review culture and sensitivity results when available if started empirically. Review response to vancomycin every week.

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Vancomycin Troubleshooting

This guidance supports **prescribing of vancomycin for ESRD inpatients/outpatients on regular Haemodialysis (HD**) **only**. Do not use for Acute Kidney Injury patients requiring acute HD or patients having ultrafiltration (UF) only or for other patients with renal impairment or renal transplant patients– seek advice about vancomycin in these patients from a renal pharmacist (bleep 5707)

If patient's HD line is removed and plan is to remain **"line free"** for a period of time, this complicates vancomycin dosing. **Check random vancomycin level** 4 to 5 days after last HD session/ vancomycin level and **wait for result**. If <15mg/L then prescribe vancomycin 1g. If 15-20mg/L, prescribe 750mg and if >15mg/L then hold vancomycin and check level 1 or 2 days later. Alternatively, stop vancomycin in "line free" patients and discuss alternative antibiotics with microbiology.

Aim of guidance is to ensure patient **maintains serum vancomycin level of 15-20mg/L**. Vancomycin predominantly excreted in the urine so accumulates in renal patients. But haemodialysis process process removes significant proportion of a vancomycin dose so appropriate prescribing with each HD session maintains drug levels in the therapeutic range.

Communication about treatment essential when renal inpatients on vancomycin have dialysis at UHW outpatient HD unit, acute bed on B5 or when HD unit outpatients on vancomycin are admitted to the renal ward. Risks of doses being omitted or unnecessary additional doses being given are high without good communication between wards and HD units.

Vancomycin must be given with every haemodialysis session unless advised otherwise by renal pharmacist or nephrologist. If there are changes to the patient's usual HD regimen such that extra HD sessions are required or HD day is changed then the vancomycin prescribing must mirror these changes. **HD without vancomycin presents risk of drug levels becoming sub-therapeutic.**

If vancomycin omitted inappropriately on HD day then dose must be prescribed and given as soon as possible as IV infusion **– do not wait for next HD session to give dose.**

Vancomycin levels direct prescribing of subsequent three doses not the current dose. **Do not wait for levels before giving vancomycin dose.**

If vancomycin levels not available to direct prescribing, do not omit dose. Prescribe 500mg or 750mg and ensure vancomycin levels are taken prior to next HD session.

If vancomycin **levels <5mg/L** prior to Dose 3 and previous doses given as per guidance, vancomycin unlikely to be an effective treatment for patient possibly due to residual renal function clearing vancomycin between HD sessions – discuss alternative antibiotics with microbiology.

If vancomycin **levels consistently >25mg/L** despite following guidance, risks of vancomycin toxicity likely to outweigh benefits – discuss alternative antibiotics with microbiology.