

**INTRAVENOUS VANCOMYCIN PRESCRIPTION CHART FOR  
HAEMODIALYSIS PATIENTS**

<b>Weight</b>	<b>Cons</b>	<b>Name</b>	<b>Hosp No</b>
<b>Patient on haemodialysis</b>		<b>Address</b>	<b>Date of birth</b>
<b>Indication for vancomycin:</b>			
<b>Target level 15 – 20mg/l</b>			
Length of treatment		1/52 <input type="checkbox"/> , 2/52 <input type="checkbox"/> , 3/52 <input type="checkbox"/> , 4/52 <input type="checkbox"/> , Other:	
Doctor initiating therapy and bleep details			
Record the date microbiology specimen sent		Date:                      Blood <input type="checkbox"/> , deep tissue <input type="checkbox"/> , swab <input type="checkbox"/>	
Record date of microbiology result			
Microbiology result		Staph Aureus <input type="checkbox"/> , other: If other, consider if change to therapy needed.	

**1. Vancomycin use in haemodialysis patients**

Intravenous vancomycin is poorly metabolised and 80-90% is excreted unchanged in the urine. As a result, in patients with end-stage renal disease, the half-life of vancomycin is dramatically increased (from 6 to 120-216 hours). In standard haemodialysis, vancomycin is not significantly removed. Therefore, vancomycin is administered towards the end of haemodialysis for the patient's convenience. However, using high flux haemodialysis and having dialysis 4-5 times per week can significantly reduce vancomycin levels. Therefore, careful individualised consideration needs to be taken when dosing and administering vancomycin here

**2. Initiating the vancomycin prescription and electronic prescribing**

When initiating vancomycin therapy, **complete this prescription and prescribe the therapy on the patient's electronic prescription chart.** When prescribing vancomycin electronically, this will automatically state the drug is to be dosed as on the paper prescription copy, but add to the additional instructions that it will be prescribed and administered on the dialysis unit. Complete the patient details box above.

**3. Initial loading dose of vancomycin**

**Give an initial loading dose of 20mg/kg (maximum 2g),** wherever possible at dialysis session one (see table below). A senior clinician should prescribe this. Record the dose on the vancomycin prescription. The vancomycin chart must be kept on the dialysis unit, even if the first dose needs to be initiated before a dialysis session on a non-renal ward.

Patient weight (kg) <b>(Target weight)</b>	Dose to prescribe (mg)	Volume of reconstituted vancomycin to be put in 250ml sodium chloride 0.9% (ml)	Rate of Infusion (ml/hour)
30-34	600	12	250
35-39	700	14	215
40-44	800	16	187
45-49	900	18	166
50-54	1000	20	150
55-59	1100	22	136
60-64	1200	24	125
65-69	1300	26	115
70-74	1400	28	107
75-79	1500	30	100
80-84	1600	32	93
85-89	1700	34	88
90-94	1800	36	83
95-99	1900	38	78
100 and above	2000	40	75

This is administered in 250ml sodium chloride 0.9%, **infused at a maximum rate of 10mg/minute.** Nurses on the Dialysis Unit are trained to prepare and give doses. In addition, vancomycin is stocked on the unit.

**THIS CHART SHOULD BE CROSS REFERENCED ON THE ELECTRONIC PRESCRIPTION**

**For advice contact the Renal Registrar Bleep 8121/Renal On Call Mobile 07879 115509/ Renal Pharmacist 07500 976569**

**Review due: March 2025**

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### 4. Maintenance dosing of vancomycin

Further doses of vancomycin will be prescribed on the dialysis unit and reviewed weekly on a Thursday, where possible, by the haemodialysis consultant or SpR and renal Pharmacist. Before this meeting, changes to therapy by initiating team should be communicated to the renal team.

### 5. Taking vancomycin levels and adjusting the maintenance dose

Pre-dialysis vancomycin levels should be taken and marked as urgent so they are available for dosing vancomycin during the dialysis session. It is unnecessary to take vancomycin levels before the second dialysis session as it will not be given at this session. However, pre-dialysis levels should be taken before the third dialysis session and every session whilst vancomycin therapy continues.

The vancomycin level should be recorded on the prescription chart and dosed as in the table below:

Vancomycin level	Vancomycin Dose	Administration Time
≥20mg/L	Omit vancomycin	N/A
17.1 - 19.9mg/L	500mg in 100ml	50mins
12.1 - 17.0mg/L	750mg in 100ml	75mins
5.1 - 12.0mg/L	1g in 100ml	100mins
<5.0mg/L	20mg/kg	See table in Section 3.

**If a level is not available in time to give vancomycin during dialysis, give 500mg, unless the patient has had a dose the day before, e.g. if on dialysis 4-5 times a week.**

**Vancomycin should reach the target range after 3-5 doses. If this has not been the case, move up a dose banding if the patient is at 1g and still not within range, contact the renal pharmacist/registrar/consultant.**

### 6. Administering vancomycin in haemodialysis patients

Vancomycin should be given as late as possible into the dialysis treatment to avoid removal.

### 7. Risks of vancomycin use

Underdosing vancomycin is potentially dangerous as it can lead to treatment failure and resistance to antibiotic therapy. Overdosing is associated with high trough levels, which can cause nephrotoxicity and ototoxicity. Ototoxicity is rare and associated with prolonged treatment. 'Red man' syndrome, characterised by erythema of the head and upper torso, pruritus and urticaria, is associated with the rate of vancomycin administration. Vancomycin can cause irreversible ototoxicity and vestibular toxicity. Patients should be warned of these potential side effects and asked to report any symptoms. The auditory and vestibular functions should be monitored. Ask the patient weekly if they have any 'ringing in their ears or problems with their balance at each dialysis session and document it on this chart.

Discuss with patient changes in hearing, balance and tinnitus (ototoxicity) with prolonged therapy.

**Document discussions have occurred if therapy continues for 4/52**

### 8. Other issues

Remember that vancomycin can be removed significantly for patients on high flux dialysis.

If MSSA or MRSA bacteraemia without an obvious cause, review buttonhole technique and consider rope ladder method for dialysis.

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Length of treatment			

Sheet Number One
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Allergies
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Date	Dialysis session	Pre dose level	Dose	Time due	Authorised by (Doctors signature)	Administered /checked by	Date/time actually given	CRP (weekly)	Balance & hearing check (weekly)
	ONE	N/A							
	TWO	No level	No dose						

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Continuation Sheet Number
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Allergies
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Date	Dialysis session	Pre dose level	Dose	Time due	Authorised by (Doctors signature)	Administered /checked by	Date/time actually given	CRP (weekly)	Balance & hearing check (weekly)

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**Documentation Controls**

<b>Development of Guideline:</b>	<b>Sadaf Fatima, Renal and Acute Medicine Pharmacist</b>
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