VANCOMYCIN
Intermittent Intravenous Vancomycin in children aged over 1 month

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Introduction

The BNF for children (BNFc) recommended an increase in the therapeutic range for intermittent intravenous (IV) vancomycin in 2007. However, this recommendation was not associated with a corresponding change in the empirical dosing for this drug. Many studies prior to the change in therapeutic range found the BNFc dosing inadequate for children.

This guideline provides empirical dosing advice in children aged over 1 month, based on research undertaken to develop a pharmacokinetic model of vancomycin in children.

This guideline also provides updated guidance on dosing in children with renal impairment.

Empirical Dosing

Table 1 gives empirical starting doses for IV vancomycin in children with normal or mildly impaired renal function (i.e. all children with eGFR $\geq$60mL/min/1.73m^2 calculated using the modified Schwartz method).

Table 1

Age of child	Starting dose of Vancomycin IV
1 month – 6 months	10mg/kg 6-hourly
6 months – 1 year	15mg/kg 6-hourly
1 year – 12 years	17.5mg/kg 6-hourly
12 years +	15mg/kg 6-hourly

Therapeutic Drug Monitoring and Dose Adjustments

The target range for Vancomycin is **10 – 20mg/L** initially.

Once an organism has been identified, discuss with a Microbiology consultant who may advise a revised target range, if necessary for the specific organism cultured.

In patients with normal or mildly impaired renal function:

- Take a **trough** level immediately before the **fourth** dose.
- Give the fourth dose, do not wait for the level result
- Check the level before giving the **fifth** dose.
- If the level is not in range, follow the dosage adjustment advice in *Table 2*, and re-check a **trough** level immediately before the **fourth** dose **after the dose change**.

Table 2

Serum Vancomycin Level (mg/L)	Dose adjustment advice
<5	Confirm all doses given as prescribed If no missed doses, increase dose by 50% Re-check the level before the **4th** dose after the change
5-10	Confirm all doses given as prescribed If no missed doses, increase dose by 30% Re-check the level before the **4th** dose after the change
10-20	In therapeutic range. Repeat level in 3 days
20-25	Confirm sample taken appropriately If so, reduce the dose by 30% or consider reducing dosing frequency to 8-hourly Re-check the level before the **4th** dose after the change
>25	Confirm sample taken appropriately If so, withhold next dose, take repeat level 8 hours later and discuss with a Pharmacist.

Blood samples for Vancomycin trough levels are sent in a **Gold cap (clotted blood) tube.**

Dosing in renal impairment

In children with moderate or severe renal impairment, the dose recommendations are:

eGFR 30 – 59mL/min/1.73m^2	
Calculate dose for age as described in *Table 1* **but adjust frequency**: **8-hourly** if acute/transient impairment **12-hourly** if pre-existing renal impairment	Monitoring Trough level before the **second** dose. Do not delay giving the second dose. Check result before giving the **third** dose.
eGFR 10 – 29mL/min/1.73m^2	
Calculate dose for age as described in *Table 1* **but adjust frequency**: **24-hourly**	Monitoring Trough level before the **second** dose. Do not delay giving the second dose. Check result before giving the **third** dose.
Severe renal impairment: eGFR <10mL/min/1.73m^2	
Starting dose Calculate dose for age as described in *Table 1* Subsequent dose Discuss subsequent doses and levels with a Pharmacist.	Monitoring Check level every **12 hours** until in range (10-20mg/L), then give subsequent dose and check level at 12 hours.

Administration

Follow MEDUSA **injectable medicines guide** (Paediatric section) for current guidance on administration of Vancomycin intermittent infusions. Follow link, or access via Pharmacy intranet pages.

Side Effects & Drug interactions

Access **BNF for Children** for current information relating to side effects and interactions for vancomycin. Follow the link, or access via Pharmacy intranet pages.

References

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