

Administration of vancomycin by continuous infusion

Proposed target concentration: 27.5 mg/L (see ref.1)

1. Loading dose

The formula is

$$\text{Dose (in mg)} = \text{Target concentration (in mg/L)} \times \text{Volume of distribution (in L/kg)}$$

Practical application

- 20 mg/kg (based on an estimated distribution volume [Vd] of 0.7 L/kg), which should be all right for most patients.
- readjust the dose based on equation #1 if you change the target or if you suspect that Vd is different from 0.7L/kg

2. Infusion

The formula is

$$\text{Rate of infusion (in mg/min)} = \text{Target concentration (in mg/L)} \times 0.65 \times \text{Creatinine Clearance (in L/min)}$$

Practical application

- prepare a 10 g/L vancomycin solution in 5 % glucose (typically 20g in 2L)
- infuse at 11 mL/h (corresponding to 11 mg/h) over 24h for patients with creatinine clearance of 0.1L/min
- recalculate the dose if changing the target or if the patient has a lower or higher creatinine clearance

3. Dosage correction based on monitoring

Use the Table shown hereunder (you need to adapt the Table if choosing another target)

Dose adaptations for deviations of the targeted serum level

Target level: 25-30 mg/L

Actual concentration (measured)	Dose adaptation
0-5 mg/L	<ul style="list-style-type: none">• Add a loading dose (20 mg/kg)• Increase of the rate of infusion (+ 8 mL/h) ^a
6-10 mg/L	<ul style="list-style-type: none">• Add a loading dose (15 mg/kg)• Increase of the rate of infusion (+ 6 mL/h) ^a
11-15 mg/L	<ul style="list-style-type: none">• Add a loading dose (10 mg/kg)• Increase of the rate of infusion (+ 4 mL/h) ^a
16-25 mg/L	<ul style="list-style-type: none">• Increase of the rate of infusion (+ 2 mL/h) ^a
26-30 mg/L	<ul style="list-style-type: none">• No change
31-35 mg/L	<ul style="list-style-type: none">• Decrease of the rate of infusion (- 2 mL/h) ^a
> 35 mg/L	<ul style="list-style-type: none">• STOP infusion for 6 h• Decrease of the rate of infusion (- 4 mL/h) ^a• Control serum level the next day

^a standard infusion solution at 10 mg/mL

Reference:

[1] 1: Ampe E, Delaere B, Hecq JD, Tulkens PM, Glupczynski Y. Implementation of a protocol for administration of vancomycin by continuous infusion: pharmacokinetic, pharmacodynamic and toxicological aspects. *Int J Antimicrob Agents*. 2013 May;41(5):439-46. doi: 10.1016/j.ijantimicag.2013.01.009. Epub 2013 Mar 22. PubMed PMID: 23523733.