Monographs for Commonly Administered Intravenous Medications
in Home and Community Care

Vancomycin

Drug Class[1]	Antibiotic – glycopeptide	
Spectrum[1]	**Refer to product monograph for complete spectrum** Gram positive pathogens (e.g., *S. aureus*, *Enterococcus*, *S. viridans*, methicillin-resistant staph aureus (MRSA)	
Cross Sensitivities / Allergies[1]	No cross sensitivities to other medications; often used in penicillin-allergic patients	
Indications[1,2]	• Endocarditis • Skin and skin-structure infection • Osteomyelitis • Pneumonia	• Septicemia • Methicillin Resistant *Staphylococcus aureus* (MRSA) infections • Other conditions based on culture and sensitivity results •
Outpatient Considerations[1,2]	• Must be able to access laboratory monitoring at least twice a week (either at outpatient laboratory or by arranging in-home lab) for the duration of treatment. • Availability of a central line is preferred (especially if duration will be more than one week). • If using a peripheral line, site must be monitored during the infusion (either by the nurse, client or designated individual) ○ Dose must not infuse overnight via ambulatory pump *Frequently in the home and community setting, the entire daily dose of vancomycin is placed in a single bag or cassette with pre-programmed boluses administered for dosing every 8-12 hours. In this situation, the vein is kept open using a continuous infusion of vancomycin at a low rate between doses. This means the patient is exposed to low concentrations of vancomycin in between ordered doses.* ***The risk of toxicity or treatment failure from this administration method has not been evaluated.***	
Prescribing Considerations and Dosage in Adults[1-3]	**At time of ordering please provide the following to the infusion pharmacist:** • **Height, weight** • **Most recent serum creatinine with date obtained** • **Indication (type of infection being treated)** Typical dosing regimen is 1000 mg (1 gram) every 12 hours. Maximum initial dose is 2000 mg IV every 8 hours, with adjustments made based on trough levels. May also be dosed based on weight: 15-20 mg/kg/dose every 8 to 12 hours, with dose rounded to nearest 250 mg. ***Dose and administration interval require adjustment for renal impairment*** Dosage interval is defined by the patient's creatinine clearance and trough levels.	

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Administration[1,2]

A **central line** is preferred for administration of vancomycin, especially if concentration of mixed solution is 5-10 mg/mL (usually in fluid restricted patients) or if being administered for more than one week.

A **peripheral line** can be used safely if the site can be monitored for pain, redness and swelling during the infusion. Using diluted concentrations (max 5 mg/mL) reduces infusion-related reactions and the severity of harm if extravasation occurs. Nurses must have access to an extravasation kit and a standard protocol must be in place to manage extravasation.

For a central line:

- Dispensed in an ambulatory cassette/multi-dose bag intended for an infusion pump, programmed to deliver total daily dose via preprogrammed boluses over 24 hours.
- Prior to connecting the patient to therapy, double check the pump programming versus the order. Recheck after each order change.

For a peripheral line:

- Dispense and administer a single dose using a pole pump with each nursing visit. The medication cannot be infused overnight or to keep vein open if the site is not being monitored, due to the risk of extravasation.

Recommended Dilution and Administration Times Based on Dose[2,3]

Infusion-related reactions include red-man syndrome, hypotension, nausea, chills, pruritus, rash, and dyspnea.

Dose	1000 mg or less	1001-1500 mg	1501-2000 mg	2001-2500 mg
Administration Time	60 minutes	90 minutes	120 minutes	150 minutes
Dilution Volume	100 mL – 250 mL	250 mL – 500 mL	500 mL	500 mL

- Rotate sites of infusion (where possible) to minimize thrombophlebitis.
- Contact pharmacy infusion provider for specific questions pertaining to administration.

Stability / Compatibilities[1-3]

Compatible with:

- 0.9% Sodium Chloride (NS)
- Dextrose 5% in Water (D5W)
- Ringer's Lactate (RL)

Follow the stability as specified by the infusion provider (as it is based on the dilution and temperature). Ensure appropriate storage conditions as specified are being met.

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Monitoring Parameters[1,4-6]	**Laboratory:** • Serum creatinine weekly or twice weekly if at risk for nephrotoxicity. Nephrotoxicity is more prevalent when used for longer duration and in those with impaired kidney function. Patients with a history of hypertension, obesity, using certain medications (see Potential Drug Interactions section below) or with vancomycin trough levels higher than 15 mg/L are at increased risk of nephrotoxicity from vancomycin. • Complete blood count weekly • Vancomycin trough level should be checked prior to the 5th dose. Drawing a trough level once weekly thereafter is recommended for stable patients. Trough should be drawn 15-30 minutes prior to next dose. • Frequency of vancomycin trough monitoring should be influenced by the client's health status, concurrent use of other ototoxic or nephrotoxic agents, decreased renal clearance or disease, existing hearing loss, and any abnormal trends or results of previous vancomycin levels. • If vancomycin levels are being drawn from a single lumen central venous access device (CVAD), and the same lumen is used to deliver the vancomycin, this should be clearly indicated on the requisition. For CVADs with multiple lumens, a separate lumen should be used for blood sampling. Trace amounts of the drug remaining in the lumen or cap could dramatically alter the	**Clinical by Nurse:** • Observe for phlebitis, extravasation and/ or skin necrosis at infusion site with every nursing visit. • Observe for red-man syndrome and other reactions related to infusion rate such as hypotension, nausea, chills, pruritus, rash, dyspnea. Usually associated with faster or more concentrated infusions. Document and report to prescriber. Interventions to minimize the reaction include slowing infusion rate, using a more dilute solution or (for red-man syndrome) pre-medicating with an antihistamine such as diphenhydramine • Observe for clinical signs suggestive of declining kidney function (congestive heart failure, edema, nocturia) • Confirm with patient that laboratory follow-up is being done • Report to the prescriber any changes in hearing, new onset vertigo, tinnitus or fullness in ears. • Observe and report any skin rashes or petechiae immediately (potentially due to thrombocytopenia – a rare adverse reaction). • Review home medications and compare against the potential drug interactions listed below. Report to prescriber if patient is using an interacting drug and obtain further orders. Alternatively, contact the patient's community pharmacist to request a comprehensive drug interaction screening.

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	bloodwork results. **Desired vancomycin trough levels: 10 - 20 mg/L in most cases.[2,5] However, trough levels >15 mg/L is associated with an increased risk for nephrotoxicity.[6]**	
Potential Drug interactions[1,7]	**Furosemide, ethacrynic acid** - can increase the risk of nephrotoxicity **Gentamicin, tobramycin, amikacin** – combination increases risk of nephrotoxicity and ototoxicity. **Tacrolimus** - combination increases risk of nephrotoxicity **Tenofovir**[8] (found in combination products used to treat HIV) – combination increases risk of nephrotoxity **Non-steroidal anti-inflammatory agents** - combination increases risk of nephrotoxicity **Cisplatin** - combination increases risk of nephrotoxicity	
Patient Education	*Advise patient to report to their doctor or nurse if they have:* • Pain, redness or swelling at the site of the infusion • A hot feeling in the face, itchiness, developing rash or dizziness while the medicine is being infused • New onset leg swelling or shortness of breath, change in urine colour or reduced volume • Changes to hearing (e.g., tinnitus, feelings of fullness in ear(s), new onset vertigo, change in hearing volume) • Rash or new red spots on skin or any signs of bleeding	
Other	For information on pregnancy and nursing please contact the Motherisk Helpline or found at http://www.motherisk.org/women/contactUs.jsp	

References:

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Disclaimer: This monograph is intended to be used as a reference to support healthcare professionals in the home and community setting. It supplements, but does not replace: clinical judgement, the information provided by the product manufacturers, and the need to consult with the prescriber.

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