VANCOMYCIN

Glycopeptide antibiotic that inhibits bacterial cell wall synthesis.

ANTIMICROBIAL SPECTRUM

- **Most Gram-positive bacteria**, including *Staphylococcus aureus*, coagulase-negative staphylococci, streptococci, enterococci.
- *Clostridioides difficile.*

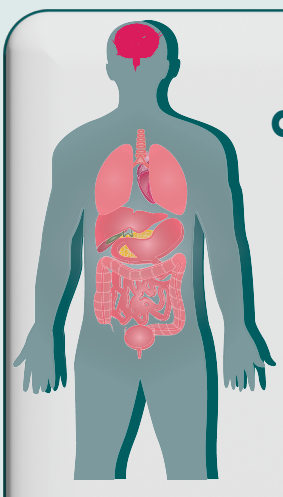
ROUTE

PO for *Clostridioides difficile* infection
IV for invasive Gram-positives

EXCRETION

- Excreted by the kidney (75% via urine).
- Altered clearance in critically ill patients, the elderly and patients with renal impairment including patients on dialysis.

MAIN INDICATIONS

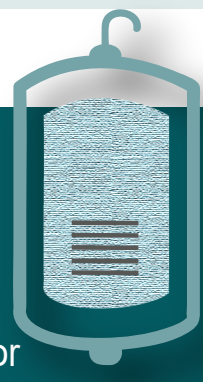


- **Invasive Gram-positive cocci infections:** methicillin-resistant *S. aureus* infection e.g., bacteremia, endocarditis, osteomyelitis, prosthetic joint infection, pneumonia, complicated skin and skin structure infection, central nervous system infection or any infection causing critical illness.

  Ampicillin-resistant, vancomycin-susceptible infection by *Enterococcus* species.

  Invasive infection with penicillin-resistant *Streptococcus pneumoniae*.
- Alternative to Beta-lactam antibiotics for treatment of Gram-positive infections in patients with Type I hypersensitivity reactions.
- *C. difficile* infection (oral, rectal administration).

ADULT DOSE



- **Oral:** 125 to 500 mg 4 times daily (only for *C. difficile* infection).
- **IV:** loading dose 20 to 35 mg/kg based on actual body weight, not to exceed 4,500 mg/day unless justified by serum concentration monitoring.
  - **Intermittent dosing:** Initial maintenance dose 15 to 20 mg/kg every 8 to 12 hours for most patients (based on actual body weight, rounded to the nearest 250 mg increment), dosing interval is determined by renal function.
  - Continuous dosing may be preferable for pathogens with MIC > 1 mg/L and for severe infections.

SIDE EFFECTS

- ! Red man syndrome
- ! Infusion-related reactions
- ! Nephrotoxicity
- ! Ototoxicity

CAUTIONS

- ! Do not infusate faster than 1,000 mg/hour.
- ! Do not use vancomycin with piperacillin-tazobactam or flucloxacillin as the risk of acute kidney injury is higher than other antibiotics.
- ! Do not use for MRSA with MIC determined by broth microdilution (MIC_{BMD}) ≥2 mg/L.

MONITORING

- Monitoring is not necessary in patients with stable kidney function with non-severe infection who receive vancomycin for <3 days.
- Regular monitoring of serum creatinine and vancomycin level is required if the duration of therapy is more than 3 days, in obese, hemodynamically unstable patients, patients with fluctuating kidney function or in case of concomitant nephrotoxic drugs.
- Subsequent dose and interval adjustments are based on area under the 24-hour time-concentration curve (AUC)-guided monitoring for severe infection and stable kidney function (requires clinical pharmacist's involvement and the use of AUC calculator).
- Target vancomycin AUC/MIC of 400 to 600 mg x hour/L.
- Trough-guided serum concentration monitoring for patients with unstable kidney function, patients requiring renal replacement therapy.
- Trough serum concentrations of 15-20 mg/L predicts efficacy in severe infection while 10-15 mg/L may be sufficient for non-severe infections.

PREGNANCY

FDA Category **C**

It should be given only if the potential benefits outweigh the potential risk to the foetus.

www.ISAC.world

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References can be found at www.APUA.org

Idea and concept by Mushira Enani on behalf of APUA / ISAC

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