

# Vancomycin

## Antibiotic Class:

Glycopeptide

## Antimicrobial Spectrum:

*Staphylococcus aureus* (vancomycin susceptible), Coagulase negative Staphylococci, *Streptococcus pneumoniae*, *Streptococcus spp.*, *Enterococcus spp.* (Vancomycin-susceptible), *C. jeikeium*, *Clostridium spp.*, *L. monocytogenes*, *Actinomyces*

## Mechanism of Action:

Vancomycin inhibits transpeptidation by binding to D-alanyl-D-alanine residues of the bacterial cell wall.

## Pharmacodynamics

Vancomycin commonly thought of as a time-dependant killer ( $T > MIC$ ), however additional data suggests may also follow AUC:MIC

## Pharmacokinetics:

C<sub>max</sub>: 18-26mg/L (after 15mg/kg dose)

Half-life: 3-11 hours

Volume of distribution: 0.3L/kg

## Adverse Reactions:

Infusion related: Red man's syndrome, pruritus, (histamine release)

Kidneys: Nephrotoxicity

Hematologic: Neutropenia

Other: Drug fever

## Dosage:

IV: 1g, 2g, 5g, 10g, 500mg

PO: 125mg, 250mg capsules

## Dosing in adults:

Endocarditis: 30mg/kg/day divided q12h x 4-6 weeks; add gentamicin initial 3-5 days for synergy against Staphylococcus and 4-6 weeks for synergy against Enterococcus

Pseudomembranous enterocolitis: 500mg-2g PO divided daily q6-8h x 7-10 days

Bacterial infection by susceptible strains: 2 grams/day divided IV q6-12h

## Dosing in pediatrics:

Bacterial infection by susceptible strains: 10-15 mg/kg IV every 6-8h

Meningitis: 60 mg/kg/day divided IV q6h

**Disease state based dosing:**

Renal failure: CrCl > 50mL/min: Standard dosing

CrCl 10-50mL/min: dose q24-48h

CrCl < 10 mL/min: dose q48-96h

Hepatic failure: No dosing changes recommended at this time.

**Dosing during Continuous Renal Replacement Therapy**

CVVH (Continuous venovenous hemofiltration): 1g IV q48h

CVVHD (Continuous venovenous hemodialysis): 1g IV q24h

CVVHDF (Continuous venovenous hemodiafiltration) 1g IV q24h

Note: CVVH is mainly for fluid removal alone. Many institutions will employ more CVVHD or CVVHDF which combine dialysis with fluid removal.

Note: Recommended loading dose is 15-20mg/kg

**Contraindications/Warnings/Precautions:**

Precautions: Renal impairment

**Drug Interactions:**

Warfarin: Increased risk of bleeding

**Pregnancy Risk Factor:**

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**Monitoring parameters:**

Therapeutic: Culture and sensitivities, serum levels, signs and symptoms of infection, white blood cell count

Toxic: Serum trough concentrations typically between 5-15mg/L (Higher for severe infections i.e. MRSA pneumonia – 15-20mg/L) Urinalysis, BUN, SCr, skin rash, Neutropenia

**Brand names/Manufacturer:**

Vancomycin (Various generic manufacturers worldwide)

Biovancomin - Biosintetica, Brazil

Copovan - Biologici Italia

Diatracin - Dista, Spain

Edicin – Lek, Hungary Thailand, and Czech Republic

Estavam - Precimex, Mexico

Farmaciclin Uno, Italy

Ifavac Andromaco, Mexico

Levovanox Levofarma, Italy

Lyphocin APP, Hong Kong

Maxivanil Max Farma, Italy

Orivan, Orion, Finland

Vagran - Dolder, Venezuela

Vamistol Demo, Greece

Vanaurus Pisa, Mexico

Vancam Abbott, Mexico

Vanclomin Teuto, Brazil  
Vancoabbott Abbott, Brazil  
Vancobehr Behrens, Venez.  
Vancocid Biochimico, Brazil