

# Methicillin

## Antibiotic Class:

Penicillin (penicillinase-resistant penicillin)

## Antimicrobial Spectrum:

*Staphylococcus spp.*, *Streptococcal spp.*

## Mechanism of Action:

Exerts bactericidal activity via inhibition of bacterial cell wall synthesis by binding one or more of the penicillin binding proteins (PBPs). Exerts bacterial autolytic effect by inhibition of certain PBPs related to the activation of a bacterial autolytic process.

## Pharmacodynamics:

Penicillins produce time-dependent killing

## Pharmacokinetics:

Distribution: total protein binding 28 to 49%; Metabolism: liver (20 to 40%); Excretion: renal (62 to 80%); Volume of distribution: 22 L/kg

## Adverse Effects:

Renal: interstitial nephritis, nephrotoxicity

Hematologic: neutropenia, inhibition of platelet aggregation, thrombocytopenia

CNS: seizures

Hepatic: transient increases in transaminases

Other: thrombophlebitis, Jarisch-Herxheimer Reaction (fever, chills, sweating, tachycardia, hyperventilation, flushing, and myalgia)

## Dosage:

Adult: Susceptible infections: 1-2 g IV every 4-6 hr; 1 g IM every 4-6 hr

Pediatric: Susceptible infections:

- neonates less than 7 days of age, 50-75 mg/kg/day IV/IM divided every 8-12 hr; neonates 7 days of age and older, 75-100 mg/kg/day IV/IM divided every 6-8 hr
- infants and children, 100-200 mg/kg/day IV/IM divided every 6 hr; maximum 12 g/day

Disease state based dosing:

Renal failure: Dosage intervals should be increased for patients with renal failure.

Mild renal failure: GFR > 50 mL/min: normal dose every 4 to 6 hours

Moderate renal failure: GFR 10 to 50 mL/min: normal dose every 6 to 8 hours

Severe renal failure: GFR < 10 mL/min: normal dose every 8 to 12 hours.

Hepatic failure: No dosing adjustment necessary.

## Contraindications/Warnings/Precautions:

Contraindications: Anaphylaxis to methicillin or other penicillins

Precautions: Cephalosporin hypersensitivity

**Drug Interactions:**

Live Typhoid Vaccine - decreased immunological response to the typhoid vaccine  
Probenecid - increased oxacillin levels

**Pregnancy:**

Category B: No evidence of risk in humans but studies inadequate.

**Monitoring Requirements:**

Therapeutic: Culture and sensitivities, signs and symptoms of infection

Toxic: Periodic CBC, urinalysis, BUN, SCr, AST and ALT

**Brand names/Manufacturer:**

- CELBENIN (Beecham Research, UK)
- CHIBRO-FLABELLINE (Merck Sharp & Dohme-Chibret - FRANCE)
- LUCOPENIN (Durascan - DENMARK)
- METIN (CSL - AUSTRALIA)
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- STAFICYN (Firma - ITALY)
- STAPHCILLIN (Apothecon - USA)