

# Cefotaxime

## Antibiotic Class:

Third-Generation Cephalosporin

## Antimicrobial Spectrum:

*Staphylococcus aureus* (methicillin susceptible), Coagulase negative Staphylococci, *Streptococcus pneumoniae* (penicillin susceptible), *Streptococcus spp.*, *Haemophilus influenzae*, *Moraxella catarrhalis*, *Neisseria meningitidis*, *Neisseria gonorrhoeae*, *Enterobacteriaceae*, *E. coli*

## Mechanism of Action:

Cephalosporins exert bactericidal activity by interfering with bacterial cell wall synthesis and inhibiting cross-linking of the peptidoglycan. The cephalosporins are also thought to play a role in the activation of bacterial cell autolysins which may contribute to bacterial cell lysis.

## Pharmacodynamics

Cephalosporins exhibit time-dependent killing ( $T > MIC$ )

## Pharmacokinetics:

Dose of 1g

C<sub>max</sub>: 102 mcg/L

Half-life: 1.1 hours

Volume of distribution: 14L

Table 11

## Adverse Reactions:

Hypersensitivity: Maculopapular rash, Urticaria, Pruritis, Anaphylaxis/angioedema, eosinophilia

Hematologic: Hypoprothrombinemia, Neutropenia, Leukopenia, Thrombocytopenia

GI: Diarrhea, *C. difficile* disease

Renal: Interstitial nephritis

Table 14

## Dosage:

IV: Powder for reconstitution: 500mg, 1g, 2g, 10g, 20g

Intravenous Solution: 1g/50mL, 2 g/50mL

Dosing in adults:

Meningitis: 1-2 g IV/IM q8h

Bone and/or joint infection: 1-2g IV/IM q8h

Gonococcal urethritis: 0.5g IM x 1 dose

Lower respiratory tract infection: 1-2 g IV/IM q8h

Bacterial peritonitis: 1-2g q8-12h

Dosing in pediatrics:

100-150mg/kg/day divided q4-6h

## Table 12

### **Disease state based dosing:**

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

CrCl 10-50mL: 1-2g q8-12h

CrCl < 10mL/min 1-2g q24h

Hepatic failure: No dosing changes recommended at this time.

### **Dosing during Continuous Renal Replacement Therapy**

CVVH (Continuous venovenous hemofiltration): 1-2g IV q12h

CVVHD (Continuous venovenous hemodialysis): 2g IV q12h

CVVHDF (Continuous venovenous hemodiafiltration) 2g IV q12h

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

### **Contraindications/Warnings/Precautions:**

Precautions: hypersensitivity to penicillins, history of gastrointestinal disease, particularly colitis, renal impairment

### **Drug Interactions:**

Live Typhoid Vaccine: decreased immunological response to the typhoid vaccine

### **Pregnancy Risk Factor:**

B

### **Monitoring parameters:**

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

Toxic: Urinalysis, BUN, SCr, AST and ALT, skin rash, Neutropenia and leukopenia,

Prothrombin time in patients with renal or hepatic impairment or poor nutritional state, as well as patients receiving a protracted course of antimicrobial therapy, and patients previously stabilized on anticoagulant therapy.

**Brand names/Manufacturer:** Cefotaxime®/American Pharmaceuticals; Claforan®/Aventis