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 meningitides, 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
Cmax: 102 mcg/L
Half-life: 1.1 hours
Volume of distribution: 14L

**Adverse Reactions:**
Hypersensitivity: Maculopapular rash, Urticaria, Pruritis, Anaphylaxis/angioedema, eosinophilia
Hematologic: Hypoprothrombinemia, Neutropenia, Leukopenia, Thrombocytopenia
GI: Diarrhea, C. difficile disease
Renal: Interstitial nephritis

**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/kd/day divided q4-6h
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:
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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