Cephalexin

**Antibiotic Class:**
First-Generation Cephalosporin

**Antimicrobial Spectrum:**
Gram-positive bacteria: methicillin-susceptible *Staphylococcus aureus* (MSSA), coagulase – negative *Staphylococci*, penicillin-susceptible *Streptococcus pneumoniae*, *Streptococcus spp.*
Gram-negative bacteria: *Moraxella catarrhalis*, *Escherichia coli*, *Klebsiella pneumoniae*, *Proteus mirabilis*

**Mechanism of Action:**
Cephalosporins exert bactericidal activity by interfering with the later stages of bacterial cell wall synthesis through inactivation of one or more penicillin-binding proteins and inhibiting cross-linking of the peptidoglycan structure. 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 produce time-dependent killing

**Pharmacokinetics:**
500mg dose; Cmax: 20.7mcg/ml; Half-life: 0.6hr; Protein binding: 18-20%; Table 10

**Adverse Effects:**
Hematologic: Neutropenia, leukopenia, eosinophilia, thrombocytopenia, thrombocytosis, impaired platelet aggregation
Dermatologic: Rash (maculopapular), puritis, urticaria
Gastrointestinal: Diarrhea
Hepatic: Abnormal liver function tests
Renal: Interstitial nephritis
Other: Anaphylaxis

**Dosage:**
PO: 250mg, 500mg tablet or capsule
125mg/5ml, 250mg/5ml powder for reconstitution (suspension)

Adult dose:
0.25-1g PO q6-12h
Cystitis (uncomplicated): 500mg PO q12h
Skin/skin structure infections: 500mg PO q12h
Streptococcal pharyngitis: 500mg PO q12h

Pediatric dose: 50-100mg/kg/day, divided q6-8h
Otitis media: 75-100 mg/kg/day PO, divided q6h
Disease state based dosing:
Renal failure: CrCl 10-29ml/min administer usual dose q12-24h
   Hemodialysis: Give normal dose after hemodialysis
Hepatic failure: No dosing changes recommended at this time.

**Contraindications/Warnings/Precautions:**
Contraindications: Hypersensitivity to cephalosporins
Precautions: hypersensitivity to penicillins

**Drug Interactions:**
Cholestyramine – decreased cephalosporin absorption
Live Typhoid Vaccine - decreased immunological response to the typhoid vaccine

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

**Monitoring Requirements:**
Therapeutic: Culture and sensitivities, serum levels, signs and symptoms of infection (e.g. fever, WBC)
Toxic: Urinalysis, BUN, SCr, AST and ALT, skin rash, neutropenia and leukopenia

**Brand names/Manufacturer:**
Available by many names and manufacturers