

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