

Moxalactam

Antibiotic Class:

Second-Generation Cephalosporin (3rd generation cephamycin)

Antimicrobial Spectrum:

Methicillin-susceptible *Staphylococcus aureus* (MSSA), Coagulase negative Staphylococci, penicillin-susceptible *Streptococcus pneumoniae*, *Streptococci spp.* (less activity compared to 1st generation and 2nd generation cephalosporins), *Haemophilus influenzae*, *Moraxella catarrhalis*, *Neisseria meningitidis*, *Neisseria gonorrhoeae*, *Enterobacteriaceae*

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:

IM bioavailability: 92%; Total protein binding: 52%; Volume of distribution: 0.18-0.44 L/kg;
Half-life: 5.4-7.6 hours

Adverse Effects:

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

Hematologic: Hypoprothrombinemia, Neutropenia, Leukopenia, Thrombocytopenia

GI: Diarrhea, *C. difficile* disease

Renal: Interstitial nephritis

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Dosage:

IV: 1g, 2g

Dosing in adults:

Serious gram-negative infections: 1 to 2 g q8h

Gram-negative bacillary meningitis: 1 to 2 g q8h

IV/IM: 2 to 4 g/day in divided doses q8h or q12h for 5 to 10 days, or up to 14 days

Severe, life-threatening infections: 6 to 12 g/day IV in divided doses q8h or q12h

Dosing in pediatrics:

25-200mg/kg/day divided q6-12h

Disease state based dosing:

Renal failure: CrCl > 80mL/min: standard dosing

CrCl 50-80mL/min 0.5-1g q8h

CrCl 25-50mL/min 0.25-1g q12h

CrCl 2-25mL/min 0.25-0.5g q8h

Hepatic failure: No dosing changes recommended at this time.

Contraindications/Warnings/Precautions:

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

Drug Interactions:

Heparin: increased risk of bleeding

Live Typhoid Vaccine: decreased immunological response to the typhoid vaccine

Warfarin: increased risk of bleeding

Pregnancy:

Category C. Risk established, but benefits may outweigh risk.

Monitoring Requirements:

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: Moxam®/Eli Lilly