

# Ceftazidime

## Antibiotic Class:

Third-Generation Cephalosporin

## Antimicrobial Spectrum:

*Haemophilus influenzae*, *Moraxella catarrhalis*, *Neisseria meningitides*, *Neisseria gonorrhoeae*, *E. Coli*, *P. aeruginosa*

## 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>: 83 mcg/L

Half-life: 1.8 hours

Volume of distribution: 13.6L

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: 1g, 2g, 6g, 10g, 500mg

Dosing in adults:

Bone and/or joint infection: 2 g IV q12h

Intra-abdominal infection: 2 g IV q8h

Meningitis: 2g IV q8h

Pneumonia: 0.5-1g IV q8h

Uncomplicated UTI: 250mg IV/IM q12h

Complicated UTI: 500mg IV/IM q8-12h

Dosing in pediatrics:

75-150mg/kg/day divided q8h

Table 12

**Disease state based dosing:**

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

CrCl 30-50mL/min: 1g q12h

CrCl 10-29mL/min: 1g q24h

CrCl < 10mL/min: 1g q48h

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, risk factors for altered prothrombin time (renal or hepatic impairment, poor nutritional status, prolonged course of antibiotic therapy)

**Drug Interactions:**

Chloramphenicol: decreased ceftazidime effectiveness

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:** Ceptaz®/Glaxo Smith Kline; Fortaz®/Glaxo Smith Kline; Tazicef®/Bristol-Myers Squibb; Tazidime®/Eli Lilly;