Piperacillin/tazobactam

Antibiotic Class:
Beta-lactam/beta-lactamase inhibitor

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*, *Pseudomonas aeruginosa*

Mechanism of Action:
The beta-lactamase inhibitors are recognized as substrates for the beta-lactamases produced by bacteria. This allows the actual beta-lactams to attack the bacterial cell wall by binding to penicillin binding proteins.

Pharmacodynamics
Time dependent killer (Time > MIC)

Pharmacokinetics:
(of the tazobactam)
Dose 200mg  
Cmax: 29 mcg/L  
Protein binding: 20-23%  
Volume of distribution: 0.18-0.33L/kg
Table 5

Adverse Reactions:
No new adverse effects are seen as a result of adding beta-lactamase inhibitors to beta-lactam antibiotics. The adverse reactions would remain the same for the parent compound.

Dosage:
IV: Complete listing on Table 6

Dosing in adults:
Mild/Moderate: 2.25-3.375g q6h  
Severe: 3.375-4.5g q6h

Dosing in pediatrics:
Not indicated in children < 12 years of age
Table 8

Disease state based dosing:
Renal failure:  CrCl > 40mL/min: 3.375g q4-6h  
CrCl 20-40mL/min: 2.25g q6h  
CrCl < 20mL/min: 2.25g q8h
Hepatic failure: Dosage adjustment not necessary

Table 9

**Dosing during Continuous Renal Replacement Therapy**
CVVH (Continuous venovenous hemofiltration): 2.25g IV q6h
CVVHD (Continuous venovenous hemodialysis): 2.25-3.375g IV q6h
CVVHDF (Continuous venovenous hemodiafiltration) 2.25g-3.375g IV q6h
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:**
See piperacillin

**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

**Brand names/Manufacturer:** Zosyn/Wyeth pharmaceuticals