Ticarcillin/clavulanate

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 clavulanic acid)
Dose 200mg
Cmax: 8.5-14.3 mcg/L
Protein binding: 20%
Volume of distribution: 0.16-0.25L/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: 3.1g q6h
Severe: 3.1g q4h

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

Disease state based dosing:
Renal failure: CrCl > 60mL/min: Standard dosing
CrCl 30-60mL/min: 2g q4h
CrCl 10-30mL/min: 2g q8h
CrCl <10mL/min: 2g q12h (q24h with hepatic dysfunction)
Hepatic failure: Half-life may be increased in severe hepatic disease (See creatine clearance < 10mL/min)
Table 9

Dosing during Continuous Renal Replacement Therapy
CVVH (Continuous venovenous hemofiltration): 2g IV q6-8h
CVVHD (Continuous venovenous hemodialysis): 3.1g IV q6h
CVVHDF (Continuous venovenous hemodiafiltration) 3.1g 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 ticarcillin

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: Timentin/GlaxoSmithKline