Ticarcillin/clavulanate

**Antibiotic Class:**
Beta-lactam/beta-lactamase inhibitor

**Antimicrobial Spectrum:**
*Staphylococcus aureus* (methicillin susceptible), Coagulase negative Staphylococci,* Strepococcus 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
- CVVHHD (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 CVVHHD 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