Aztreonam

**Antibiotic Class:**
Monobactam (monocyclic bacterially derived beta-lactam)

**Antimicrobial Spectrum:**

**Mechanism of Action:**
Interferes with bactericidal cell wall synthesis by binding to and inactivating penicillin-binding-proteins. This binding causes the formation of elongation or bacterial filamentation resulting in cell lysis and cell death.

**Pharmacodynamics**
Aztreonam produces time-dependent killing.

**Pharmacokinetics:**
- Cmax: 255mg/L (after 2g IV dose)
- Half-life: 1.7 to 2 hours
- Protein binding: 56 to 72%
- Volume of distribution: 0.06 L/kg

**Adverse Reactions:**
- Dermatologic: rash (rare)
- Gastrointestinal: nausea, vomiting, diarrhea, pseudomembranous colitis (rare), increased liver enzymes, pancytopenia and neutropenia
- Dermatologic: painful, injection-site reactions

**Dosage:**
- IV: 500mg, 1 gram, 2 gram vials for injection
  - Adult dose: IV/IM: 1-2 g q8h
  - Systemic or life-threatening infections: 2 g IV/IM q6h
  - Severe systemic infections: 2g IV q6-8h, maximum of 8g per day
  - Urinary tract infection: 0.5-1g IV/IM q8-12h

**Pediatric dose:**
- Infants less than 1 week of age: 30 mg/kg q12h
- Infants 1 to 4 weeks of age: 30 mg/kg q8h
- Infants greater than 1 month of age: 30 mg/kg q6-8h

**Disease state based dosing:**
- Renal failure: CrCl 10-30 mL/min: Normal loading dose, followed by a 50% reduction of the loading dose given at the same frequency of normal patients
CrCl less than 10 mL/min: Normal loading dose, followed by a 75% reduction of the loading dose given at the same frequency of normal patients

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: extremely low birth-weight infants or infants with congenital/acquired arginase deficiency; use aztreonam arginate with caution
Warnings: Although cross-reactivity with penicillins and cephalosporins is exceedingly rare, ceftazidime and aztreonam share a common side-chain. For this reason, use caution in administering aztreonam in patients who endorse a ceftazidime allergy.

**Drug Interactions:**
No clinically significant drug interactions have been identified.

**Pregnancy Risk Factor:**
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**Monitoring parameters:**
Therapeutic: Culture and sensitivities, serum levels, signs and symptoms of infection (e.g. fever, WBC)

**Brand names/Manufacturer:**
- AZACTAM (Bristol-Myers Squibb – AUSTRALIA, FRANCE, ITALY, USA, SPAIN, UK, IRELAND, SWEDEN, SWITZERLAND, BELGIUM, NORWAY, AUSTRIA, GERMANY, DENMARK, PORTUGAL, BRAZIL, HONG KONG, ISRAEL, SINGAPORE, FINLAND, SOUTH AFRICA, NEW ZEALAND, GREECE, CHILE, CZECH REPUBLIC, JAPAN, THAILAND)
- AZTREOTIC (Kleva - GREECE)
- MONOBAC (Bristol-Myers Squibb - MEXICO)
- PRIMBACTAM (Menarini - ITALY)
- UROBACTAM (Bristol-Myers - SPAIN)