IMIPENEM-CILASTATIN AND AZTREONAM

Dennis E. Martin, DPM

IMIPENEM-CILASTATIN

I. CLASSIFICATION
- A. Carbapenam (B-Lactam)
- B. Imipenem - the active portion of the antibiotic Cilastatin renal dehydropeptidase inhibitor (prevents renal metabolism of Imipenem). No antibacterial activity.

II. MAIN INDICATIONS
- A. Broad spectrum with high potency
- B. Empiric therapy for life/limb threatening diabetic infections. Will cover most gram-positive aerobes and anaerobes as well as most gram-negative organisms.
- C. Nosocomial infections caused by multiple resistant gram-negative bacilli or infections where mixed aerobic and anaerobic organisms are identified.
- D. Excellent anaerobic coverage including Bacteroides and Clostridia (except *C. difficile*).

III. MAIN PROPERTIES AND ADVANTAGES
- A. Bactericidal
- B. Broadest antimicrobial spectrum of activity
- C. Resistant to most B - Lactams
- D. Excellent tissue penetration
- E. 70% excreted unchanged in urine
- F. Little cross resistance to other B - Lactams
- G. Minimal nephrotoxicity and ototoxicity

IV. DISADVANTAGES
- A. *Cost*
- B. Increased risk of seizures in patients with documented seizure history and/or decreased renal function.
- C. Occasional G.I. upset with nausea or vomiting
- D. Possible resistance when used as single therapy for Pseudomonas infection.

V. ADVERSE EFFECTS
- A. G.I. upset
- B. Increased seizure risk

VI. DOSAGE AND ADMINISTRATION
- A. 500 mg. Q 6 to 8 h for most infections. Adjustments for a history of seizure disorder or decreased renal function should be made.
- B. 250 mg. Q 6 to 8 h for less severe infections.
- C. Higher dosages (4 gm/day) for more severe infections have increased tendency for seizure or renal complications.

AZTREONAM (AZACTAM®)

I. CLASSIFICATION
- A. Monobactam (B - Lactam)
- B. Similar in structure to B - Lactams but work similar to the aminoglycosides in clinical coverage.

II. MAIN INDICATIONS
- A. Limited coverage to aerobic Gram negative bacilli. This includes *Pseudomonas aeruginosa*
- B. No activity against Gram - positive organisms or anaerobes
- C. Possible alternative to Aminoglycosides in combined therapy
- D. Questionable use in combined therapy for gram-negative pneumonias and intra - abdominal infections

III. MAIN PROPERTIES AND ADVANTAGES
- A. Bactericidal
- B. Good tissue absorption and penetration
- C. Resistant to most B - Lactamases

D. Little cross-reaction with other B-Lactamases.
E. Minimal Toxicity

IV. DISADVANTAGES
A. Limited spectrum of activity.
B. Some *Pseudomonas aeruginosa* and Acinetobacter are resistant.

V. ADVERSE EFFECTS
A. Minimal adverse effects. Safety profile is similar to most other B - Lactams

VI. DOSAGE AND ADMINISTRATION
A. 1 to 2 g Q 8h IV. The 2 g dose is reserved for more severe cases.
B. Consider reducing doses in cases of renal insufficiency.