Meropenem
Updated September 2016

Meropenem is a semi-synthetic β-lactam antibiotic that belongs in the penicillin-based group of drugs called carbapenems. It is the same drug class as Imipenem. Like all β-lactam antibiotics, meropenem interferes with bacterial wall synthesis after binding to penicillin-binding proteins (PBPs) in the cell wall. Meropenem has a broad antibacterial spectrum and is relatively resistant to bacteria that produce β-lactamase. Meropenem should only be used in veterinary patients when culture results indicate it as the best antibiotic choice.

Metabolism and Pharmacodynamics
- Solubility: Water soluble
- Bioavailability: 84% bioavailable after SQ injection in dogs with wide distribution in body tissues and fluid
- Half-life: ~40 minutes in dogs
- Elimination: Renal

Mechanism of action and spectrum of activity
- Bacteriocidal
- Time-dependent with significant post-antibiotic effect
- Rapid bacterial lysis after penetration through the cell wall and interference of bacterial wall synthesis
- Gram-negative aerobes, gram-positive aerobes, and anaerobic bacteria

Advantage over other drugs in the same class (Imipenem)
- Improved activity against Pseudomonas aeruginosa and Enterobacteriaceae spp. (E. coli, Klebsiella, Salmonella)
- Reduced risk of renal toxicity

Dosing Recommendations:
- For treatment of documented infections sensitive to meropenem, with an MIC ≤ 0.12 μg/mL
  - Intravenous administration in hospital: 8 mg/kg IV q8hrs
  - Subcutaneous administration in hospital or at home: 8 mg/kg SQ q12hrs
- For severe sepsis/septic shock or treatment of Pseudomonas spp. with an MIC = 1 μg/mL
  - Intravenous administration in hospital: 12 mg/kg IV q8hrs
  - Subcutaneous administration in hospital or at home: 12 mg/kg SQ q12hrs
Example
A 30kg dog has a resistant urinary tract infection that is sensitive to meropenem. The dog is stable and ready to be discharged from the hospital. The owner is comfortable giving SQ injections at home. The easiest way to dilute meropenem is to do 2 vials at a time. Instructions to the owner may read as such:

1. Withdraw 20ml from the 100ml bag of 0.9% saline.
2. Inject 10ml into each of the 2 vials of meropenem. Swirl gently to reconstitute.
3. Withdraw the contents from each vial and then inject back into the bag of saline. The concentration of this solution is 20 mg/mL. Store the bag in the fridge and discard after 5 days.
4. Fluffy’s dose is 240mg (12ml). Give 12ml of the prepared solution under the skin every 12 hours for 12 days.

**Dispense 6 vials for full course of medication**

References: