

Colistin (Polymyxin E or Colistimethate)

IV Only

Use requires formal ID Consult

Colistin (also known as Polymyxin E or Colistimethate) and Polymyxin B are the two different polymyxin antibiotics. Colistin is a prodrug (Colistimethate sodium). The product vials may be labeled as International Units (IU) of prodrug, or mg of the active product: colistin base activity (CBA).

To avoid major dosing errors, carefully read vial labels.

Recommend that all doses be converted to mg of CBA.

Conversion: 1,000,000 units of Colistimethate (prodrug) = 80 mg of Colistimethate (prodrug) = 30 mg of colistin base activity (CBA)

Activity: Coverage against most gram-negatives, including many multi-drug resistant (MDR) Enterobacteriaceae (such as *E. coli*, *Klebsiella spp.*; including ESBL-producing and carbapenem-resistant Enterobacteriaceae), *Pseudomonas spp.*, and *Acinetobacter spp.*

NOT ACTIVE against *Proteus spp.*, *Serratia spp.*, *Providencia spp.*, *Burkholderia spp.*, *Stenotrophomonas spp.*, gram-negative cocci, gram-positive organisms, or anaerobes

Criteria for Use:

- Treatment of infections due to MDR Enterobacteriaceae, *Pseudomonas spp.*, and *Acinetobacter spp.* with **no other** treatment options
- Treatment of UTI. Colistin preferred over polymyxin B for UTIs

Unacceptable Uses:

- Empiric treatment of suspected gram-negative infections
- Use as monotherapy due to rapid resistance development

Dosing in Adults: Optimal dosing regimens are not well established

- Standard dose: 5 mg CBA/kg ONCE (load), then 2.5 mg CBA/kg Q12H
- Renal dose adjustment:
 - CrCl 20-50 mL/min: 5 mg CBA/kg ONCE (load), then 2.5 mg CBA/kg Q24H
 - CrCl < 20 mL/min: 5 mg CBA/kg ONCE (load), then 2.5 mg CBA/kg Q48H
 - Hemodialysis: 5 mg CBA/kg ONCE (load), then 30 mg CBA IV Q12H, AD
- No hepatic dose adjustment
- Use **ideal body weight** in obese patients for dosing
- **Caution in use > max product recommended daily dose (300 mg CBA)**

Monitoring:

- BUN/ SCr at baseline and at least twice weekly

Considerations for Use:

- The most important side effect of IV colistin is nephrotoxicity (rates 50-60% of patients); less frequently reported concerns include neurotoxicity and neuromuscular blockade

AD= After dialysis; BUN= Blood urea nitrogen; CBA= Colistin base activity; CrCl= Creatinine clearance; ESBL= Extended spectrum beta-lactamase; H= hour(s); ID= infectious diseases; IU= international units; IV= Intravenous; MDR= multi-drug resistant; Q= every; SCr= Serum creatinine; spp= species; UTI= Urinary tract infection