COLISTIN

Belongs to the polymyxin class of antibiotics. They bind to the lipopolysaccharide molecules in the outer membrane of Gram-negative bacteria leading to disruption of outer membrane stability, leakage and bacterial lysis.

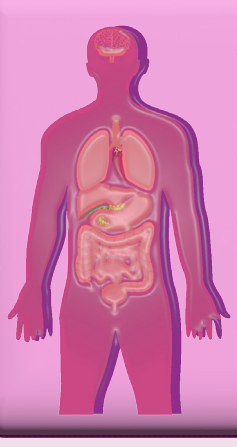
ANTIMICROBIAL SPECTRUM

- **Primarily used in the treatment of nosocomial infections with extensively drug-resistant (XDR) pathogens,** such as carbapenem-resistant *Enterobacterales* (*Escherichia coli*, *Klebsiella pneumoniae*, *Enterobacter* spp.), *Pseudomonas aeruginosa* and *Acinetobacter baumannii*.
- Moderate activity against ***Stenotrophomonas maltophilia*.**
- No activity against all **Gram-positive organisms, anaerobes** and **Gram-negative cocci.**
- Among **Gram-negative, *Proteus* spp., *Providencia* spp., *Burkholderia cepacia*, *Morganella* spp. and *Serratia* spp.** are intrinsically resistant to colistin.

ROUTE

Mainly intravenous, rarely inhalation or intraventricular

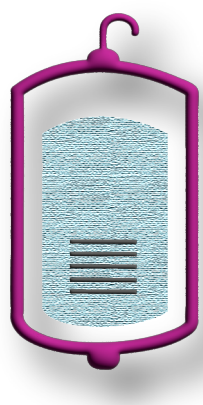
MAIN INDICATIONS



- XDR Gram-negative bacilli hospital-acquired pneumonia, bacteraemia and sepsis.
- Complicated urinary tract infections.
- Adjunctive inhalation therapy for pneumonia caused by XDR Gram-negative bacilli (controversial).
- **Warning:** Distribution of IV colistin is poor to the lung parenchyma, pleura, cerebrospinal fluid and bones.

ADULT DOSE

Intravenous



- 1,000,000 units = 80 mg colistimethate sodium (CMS) = 30 mg colistin base activity (CBA).
- 1 mg CBA = 2.7 mg CMS = 30,000 units.
- A loading dose of 9 million international units (IU) CMS is warranted, followed 12 hours later by 9 million IU CMS (equivalent to approximately 300 mg CBA) per day in two or three divided doses for patients with normal renal function.
- Use of ideal rather than actual body weight is associated with a lower risk of adverse effects.

Dosing in patients with renal impairment

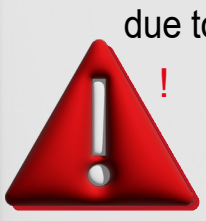
A loading dose of 300 mg CBA should be administered followed by a maintenance dose based on creatinine clearance, in 2 or 3 divided doses:

- **Intermittent haemodialysis (IHD)**
  - On the assumption of 3 times/week, complete IHD sessions.
  - Administer after haemodialysis on dialysis days.
  - IV Loading dose 300 mg CBA followed by 130 mg CBA once daily. On dialysis days, a supplemental dose of 40 mg CBA or 50 mg CBA for a 3- or 4-hour IHD session, respectively, should be added to the daily maintenance dose.
- **Nebulisation (controversial):**
  - It must be mixed immediately prior to administration, a dose range of 75 to 150 mg CBA (2.25 to 4.5 million international units CMS) twice daily.
  - Given in a dose of 10 mg CMS (equivalent to 125,000 IU CMS or 4.2 mg CBA) per day in one daily dose or two divided doses every 12 hours.

Intrathecal / intraventricular

- Intraventricular colistin is administered through intraventricular catheter, as an adjunct to systemic antibiotic therapy.
- Given in a dose of 10 mg CMS (equivalent to 125,000 IU CMS or 4.2 mg CBA) per day in one daily dose or two divided doses every 12 hours.

SIDE EFFECTS



- ! Reversible nephrotoxicity (20-60%), haematuria, proteinuria, oliguria and acute renal failure due to acute tubular necrosis.
- ! Neurotoxicity (7%) includes reversible dizziness, vertigo, ataxia, facial paraesthesia and vertigo.
- ! Aerosolisation of polymyxins into the airway can be complicated by bronchospasm; bronchodilatation prior to administration may be beneficial.
- ! Skin hyperpigmentation.

MONITORING

- Renal function should be closely monitored during administration of colistin. If the patient has a decrease in creatinine clearance while on colistin, the dose should be reduced accordingly.
- Avoid other nephrotoxic agents if possible, and daily monitor renal function any time nephrotoxic combinations are necessary (e.g, vancomycin, aminoglycosides).

PREGNANCY

FDA Category C

It should be given only if the potential benefits outweigh the potential risk to the foetus.

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References can be found at www.APUA.org

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