

20 to 25 cm H₂O is adequate for most preterm infants. If a prompt improvement in heart rate or chest movement is not obtained, higher pressures may be needed. There is insufficient information about the value of PEEP during resuscitation. If ongoing ventilation is considered necessary, however, PEEP should be employed as soon as practicable. PEEP can be delivered in the labor room with T piece resuscitator till the baby can be shifted to transport incubator. Various devices are available for administration of PEEP which includes nasal prongs and masks (Fig 5) In the COIN trial published in 2008, it was seen that in infants born at 25-to-28-weeks' gestation, early nasal CPAP did not significantly reduce the rate of death or bronchopulmonary dysplasia, as compared with intubation²⁶. Even though the CPAP group had more incidence of pneumothorax, fewer infants received oxygen at 28 days, and they had fewer days of ventilation.

KEY MESSAGES

1. Hyaline Membrane Disease is a disorder of preterm neonates
2. Presenting symptoms include tachypnea, retractions, grunting and increasing oxygen requirements occurring immediately or within few hours of birth
3. Antenatal treatment with glucocorticoids decreases the incidence and severity of the disease
4. Early surfactant therapy should be given as soon as possible in neonates with symptoms suggestive of the disease and prophylactically in neonates less than 28 weeks

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DRUG PROFILE

COLISTIMETHATE SODIUM

Mode of action: Colistimethate sodium is a cyclic polypeptide antibiotic derived from *Bacillus polymyxa* var. *Colistin* and belongs to the polymyxin group. Work by damaging the cell membrane and is selective for Gram-negative bacteria that have a hydrophobic outer membrane. Microbiology: Commonly susceptible species *Pseudomonas aeruginosa* acinetobacter species citrobacter species, *Escherichia coli* neisseria species proteus species anaerobes all gram-positive organisms. Pharmacokinetics: In healthy volunteers given a bolus injection of 150 mg (2 million units approx.), peak serum levels of 18 mg/L are observed 10 minutes after injection. When given by nebulisation, absorption is variable. Protein binding is low. The steady-state volume of distribution in cystic fibrosis patients is 0.09 L/kg. Colistimethate sodium undergoes conversion to its base (Colistin) in vivo. The main route of elimination after parenteral administration is by renal excretion with 40% of a parenteral dose recovered in the urine within 8 hours and around 80% in 24 hours dose reduction is required in renal impairment to prevent accumulation. After intravenous administration to healthy adults, the elimination half-life is around 1.5 hours. In a study in a cystic fibrosis patients given a single 30-minute intravenous infusion, the elimination half-life was 3.4±1.4 hours.

Indications: Serious infections caused by Gram-negative bacteria by inhalation of *Pseudomonas aeruginosa* lung infection in patients with cystic fibrosis. **Dosage and method of administration:** The drug is given as a 50 ml intravenous infusion over a period of 30 minutes. Minimum of 5 days treatment is generally recommended. For the treatment should be continued for up to 12 days. **For the adult up to 60 kg :** 50,000 units/kg/day to a maximum of 75,000 units/kg/day. Given at approximately 8 hour intervals. For over 60 kg: subject 1-2 million units three times a day. The maximum dose is 6 million units in 24 hours. Serum level estimations are recommended impairment, neonates and cystic fibrosis patients. Levels of 10-15 mg/L colistimethate sodium should be adequate for most infections. For children <2

years: 500,000-1 million units twice daily, for children >2 years and adults: 1-2 million units twice daily. **Reconstitution for Inhalation** the required amount of powder is dissolved, preferably, in 2-4 mL of 0.9% sodium chloride solution and poured into the nebuliser. **CONTRAINDICATIONS :** In patients with known hypersensitivity to colistimethate sodium (colistin) or to polymyxin B and in patients with myasthenia gravis. **Drug Interactions:**

Table : Dosage Adjustment in Renal Impairment

Grade	Creatinine Clearance (mL/min)	Over 60 kg Bodyweight
Mild	20-50	1-2 million units every 8 hours
Moderate	10-20	1 million units every 12-18 hours
severe	<10	1 million units every 18-24 hours

Concomitant use of colistimethate sodium with aminoglycoside (increased risk of nephrotoxicity) neuromuscular blocking drugs and either colistimethate sodium crosses the placental barrier and hence should be used during pregnancy only if the potential benefit justifies the potential risk to the foetus, the drug is secreted in breast milk.

Undesirable effects : Adverse events may be related to the age, renal function and condition of the patient. In cystic fibrosis patients, neurological events occur in up to 27% of patients. These patients treated with the recommended dosage limits, nephrotoxicity appears to be rare (less than 1%). Hypersensitivity reactions, including skin rash and drug fever, have been reported. Inhalation may induce coughing or bronchospasm.