Continuous Positive Airway Pressure (CPAP) in Neonatal Units

- **CPAP** was first used in 1971. Its use has increased steadily over the last 20 years. It is now the mainstay of ventilatory support for preterm infants.
- Consider extubation of the ventilated infant to CPAP if PCO2 < 8.6 kPa, pH > 7.2, FiO2 < 50%, rate < 20.
- Infants on CPAP without Surfactant administration are at increased risk of Pneumothorax 6-9%. Be aware of this complication and undertake transillumination and chest x-ray if the infant has any clinical or blood gas deterioration.
- Nasal prongs cause nasal trauma in 7% of infants.
- **COIN trial** 616 infants 25-28 wks gest. randomised to CPAP or intubation. 58% CPAP infants subsequently needed intubation. Pneumothorax rate 9% in CPAP & 3% in intubated group. No difference in death or BPD.
- **SUPPORT trial** 1316 infants 24-27 wks gest. randomised to CPAP or intubation. 34% CPAP infants subsequently needed ventilation. Pneumothorax rate 7% in both groups.
- **CPAP after Extubation** - Cochrane review of 9 studies found that the use of CPAP significantly reduced the need for reintubation (NNT 6).
- **Trial of nasal prongs vs nasal masks** showed masks had a lower intubation rate prongs 52% mask 28%.

**Clinical Indications:** For infants ≤ 26 wks gest. intubation & surfactant should be considered. For infants 26-30 weeks gest. initial management should be CPAP unless intubation is needed for resuscitation in which case give surfactant. Start Caffeine medication. If infant > 30 weeks gest. commence CPAP if there are signs of RDS. CPAP should be administered after extubation in those who have RDS.

**How to use CPAP:** Apply nasal CPAP using a nasal mask or short binasal prongs. Nasal mask is associated with a lower rate of subsequent intubation. Start PEEP 5 cms increasing to 8 cms if necessary. Intubate if Apnoea, pH < 7.2, PCO2 > 9 kPa, FiO2 > 40%.

**NIPPV** (Neonatal Nasal Intermittent Pos. Press. Ventilation) Mostly in infants after extubation for RDS. The optimal settings are uncertain. Use PEEP 3-5 cms & PIP 8-15 cms, rate 30/min.
References:


3. Davis PG, Henderson-Smart DJ. Nasal continuous positive airway pressure immediately after extubation for preventing morbidity in preterm infants. Cochrane database of systematic reviews 2003, issue 2 Art No: CD 000143


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