CPAP GUIDELINES

Indications for Pre-term babies

- Spontaneous breathing
- Preterm neonate
- Respiratory distress (Silverman score >3)
- Recurrent apneas
- Post extubation

Indications for term babies

- Pneumonia
- Meconium Aspiration

Contraindications

- Poor respiratory efforts
- Congenital diaphragmatic hernia
- Tracheo-esophageal fistula
- Cardiovascular instability
- Choanal atresia, cleft palate

Preparation

- Connect to a Pulseoximeter
- Fix the CAP (size)
- Right size prongs, interface and device
- Check the circuit

Prongs Sizes

Size 0	<700g
Size 1	700-1000g
Size 2	1000-2000g
Size 3	2000-3000g
Size 4	3000-4000g
Size 5	>4000g

Cap sizes

- < 25 cm,
- 25 – 29 cm,
- 30 – 35 cm

Initiation: <u>Flow, PEEP and FiO2 (rule of 5)</u>

- PEEP - 5 cms (Chest recessions, air entry, CXR)
- FiO_2 - 50%
- Flow - 2 to 5 liters
  - Minimum to ensure continuous bubbling
  - High flow- check for leaks (open mouth)

Trouble shooting : FiO2

- FiO_2 (21% to 60 %) : SpO_2 90% - 94%
- FiO_2 : Air-oxygen lending
- FiO2 = 0.2x air flow + O2 flow
  air flow + O2 flow
- Temperature of inspiratory gases at 37° C
- Relative humidity of 100%
- No condensation in the inspiratory circuit
- The temperature measurement near the prongs

Trouble shooting: Flow

- Ventilator 6 to 8 cms of water
- Bubble minimal bubbling (1 to 7 ltrs./min)

Trouble shooting: PEEP

- PEEP (4 to 8 cms) : Recessions / CXR
- PEEP of < 4 cm H_2O never given!
- CPAP of 4-7 cm H_2O is a good range
- CPAP of > 7 cm H_2O is a bad range

Monitoring

- **Sensorium**
  - Posture
  - Activity,
  - Tone,
  - Responsiveness
  - Comfortable baby

- **Temperature**
  - Temperature in humidifier
  - Avoid condensation in the tube

- **Oxygen saturation**
  - Position
  - Colour
  - SpO2 in air / with oxygen – Normal saturations: 87% - 93%
  - Nasal prongs (proper size, no leak)
  - Check the circuit for condensation
  - Abdominal distension & OGT – CXR

- Respiratory rate / Silverman scoring
- Minimal retraction, no grunt
- Air entry
- Chest expansion
- Abdominal breathing
- ABG – (PaO_2 60-80, $PaCO_2$ 40-60, pH 7.35-7.45, BE±2)

- Perfusion
  - Heart rate
  - Normal NIBP
  - Normal CRFT
  - Pulse volume
  - Urine output (ml/kg/hr)

- Sugar

- Monitoring

TIME	HR	RR	SA Score	CRT	CPAP	SPO2	FIO2	Flow Rate	UO/ GA

- **CPAP failure**

  - ✓ Insufficient applied pressure
  - ✓ Insufficient circuit flow
  - ✓ Inappropriate prong size or placement
  - ✓ Baby's open mouth

- **Increase CPAP pressures**
  - Continuing or increased retractions, grunt
  - Recurrent apneas
  - Desaturation [SpO_2<85%/ PaO_2<50 : PEEP>7 & FiO_2>60%]
  - Worsening lung disease / Opaque X-rays
  - $PaCO_2$> 55,
  - Poor respiratory efforts –Asynchrony between chest and abdominal muscles
  - Baby not tolerating CPAP
  - Downe's Score > 7
  - FiO2 > 50% and PEEP > 6 at 30minutes

- **De-saturating**
  - D isplaced-distorted prongs
  - O bstructed nares
  - P neumothorax
  - E quipment failure
  - Complete or partial circuit disconnect
  - Complete or partial prong disconnect
  - Displaced prongs
  - Inadequate flow through the circuit
  - Prongs are too small for the patient
  - Patient's mouth is open

- **Weaning**
  - Gradually decrease FiO_2 to 30-21% (steps of 5%)
  - Decrease PEEP to 4 cm (step of 1cm)
  - The disease process has improved
  - If PEEP 4 cms& FiO_2< 30% & clinically well (no RD, SpO_2> 90% & Normal ABG) : Remove CPAP

Nursing Issues

- **Airway Monitoring**
  - Suction the mouth, nose and pharynx every 3 hrly
  - More frequent if symptomatic
  - Moisten the nares with normal saline or sterile water
  - Pass a suction catheter more at-least in each shift to ensure adequate airway clearance
  - Suction the mouth, nose and pharynx
  - Moisten the nares with normal saline or sterile water
  - Note the color, consistency, & quantity of nasal secretions

- **Nasal septal injury is preventable**
  - Careful observation
  - Correct prong size
  - Correct prong position
  - Effective attachment
  - Careful infant positioning
  - Maintain 2-3 mm between bridge of prongs and septum
  - Evaluate the nasal septum every hour
  - Use correct prong size and avoid twisting of prongs
  - Secure prongs in place correctly
  - Do not use creams/gels/ointments/adhesive barriers (Duoderm) on the septum
  - Avoid fixing the prongs too close to the septum
  - Use lubricants for cleaning the nostrils
  - Frequent suction
  - Humidification/warmth

- **Assessing Skin integrity**
  - Color
  - Quality of perfusion
  - Possible areas of pressure or excoriation
  - Frequent observation
  - Minimize points of contact
  - Keep dry and clean
  - Avoid topical applications – spirit x

- **INTERFACE: Assessing Nose**
  - Note the size, shape, and position in relation to the rest of the face
  - Are the nares symmetrical, stretched out?
  - Is there any blanching of skin at nares?
  - Is there a skin breakdown?