Neonatal respiratory distress and CPAP in babies ≥ 32 weeks gestation

**Signs**
- Tachypnoea > 60 breaths/minute
- Increased respiratory effort
  - Audible expiratory grunt
  - Recession—sternal, intercostal, subcostal
  - Nasal flaring
- Cyanosis—oxygen needed

**Indications for CPAP**
- Signs of respiratory distress or
- O2 requirement ≥ 30% to maintain SpO2 within target range

**Principles of care**

- **Oxygenation**
  - Maintain SpO2 within target
    - Term baby 92–98%
    - Preterm baby 90–95%
- **Monitor**
  - Monitor continuously SpO2 (sensor—right hand/wrist), respiratory rate, heart rate
  - Observe for signs of increasing respiratory distress
- **Blood gas**
  - pCO2 may assist assessment (capillary)
- **Fluids**
  - Glucose 10% IV at 60 mL/kg/day
  - Small gavage feeds if stable
- **Sepsis management**
  - Full blood count and blood cultures
  - Antibiotics:
    - As per local protocol or
    - Penicillin or ampicillin and gentamicin (refer to QCG NeoMedQ)
- **Chest x-ray to identify:**
  - Respiratory disease
  - Air leak (e.g. pneumothorax)
  - Congenital diaphragmatic hernia
  - Chest masses
  - Cardiomegaly
  - Other anomalies
- **Blood glucose level**
  - Refer to QCG Hypoglycaemia-newborn guideline
- **Supportive care**
  - Family centred approach
  - Observe baby unclothed in incubator
  - Thermoneutral environment
  - Position prone/quarter prone
  - Developmental care—minimal handling
  - Skin-to-skin if stable
- **Consult/refer/transfer** as indicated

**Ongoing care as indicated**
- Clinical assessment
- Supportive care
- Consult with higher level service for advice or to organise transfer/retrieval
  - Contact NeoRESQ or ANTS-NQ via RSQ phone 1300 799 127
  - Intubation and mechanical ventilation

**CPAP**

- **Capability**
  - Level 4 neonatal service or above
  - Appropriate equipment and human resources available
- **Commence**
  - CPAP at 7–8 cm H2O; 6–8 L/minute
  - O2 to maintain SpO2 within target
  - OGT 6–8 FG on free drainage
- **Neonatal care**
  - Monitor continuously:
    - SpO2 (preferably right hand/wrist)
    - Respiratory rate
    - Heart rate
    - FiO2
  - Record hourly:
    - Vital signs* and work of breathing
    - CPAP—pressure, flow, FiO2
    - Humidifier and circuit temperature
    - Water level in humidifier
  - Vigilant surveillance and record hourly
  - CPAP interface positioned correctly
  - Septal columella integrity
  - Eyes are clearly visible
  - Securing devices not causing indentation, pitting or periorbital oedema
- **Signs of deterioration/CPAP failure**
  - O2 > 50% to maintain SpO2 within target range
  - A rapid rise in O2 requirement—10% over 2 hours (e.g. an increase from 30% to 40%) 
  - A respiratory acidosis (e.g. pH < 7.25 with a normal base excess or pCO2 > 60 mmHg)
  - Recurrent apnoeic episodes requiring stimulation
  - Increased work of breathing (sternal and intercostal recession, grunting, tachypnoea)
  - Agitation that cannot be relieved—refer to QCG HIE guideline
- **Signs of improvement**
  - Decreased
    - Respiratory rate
    - Grunting
    - Sternal/intercostal recession
    - Nasal flaring
    - O2 requirement
  - Improved
    - Blood gas
    - Chest x-ray
    - Baby comfort
- **Weaning**
  - Commence when:
    - O2 < 25% and SpO2 within target
    - Respiratory distress not present
    - ≤ 3 self-reverting apnoeas, bradycardia, desaturations in previous 6 hours
  - Wean
    - O2 until 25% then,
    - Pressure incrementally—1 cm as tolerated until 5 cm H2O
- **Cease if stable**
  - 21% O2 and CPAP 5 cm H2O

**Flowchart: F20.3-1-V7-R25**

Queensland Clinical Guideline. Respiratory distress and CPAP Flowchart: F20.3-1-V7-R25

**Abbreviations**
- NeoRESQ: Neonatal Retrieval Emergency Service Southern Queensland, CPAP: continuous positive airway pressure, FG French gauge, FiO2: fractional inspired oxygen, HIE: Hypoxic-ischaemic encephalopathy, IV: intravenous, NeoRESQ Neonatal Retrieval Emergency Service Southern Queensland, pCO2: partial pressure of carbon dioxide, QCG: Queensland Clinical Guidelines, RSQ: Retrieval Services Queensland, SpO2: peripheral capillary oxygen saturation, >: greater than, ≥: greater than or equal to, <: less than; ≤: less than or equal to

**Queensland Clinical Guidelines**