APNOEA AND BRADYCARDIA

RECOGNITION AND ASSESSMENT

Apnoea

Pause(s) in breathing >20 sec (or less, when associated with bradycardia or cyanosis)

Bradycardia

Heart rate <100 bpm, associated with desaturation

Types

Central

- Caused by poorly developed neurological control
- Respiratory movements absent

Obstructive

- Caused by upper airway obstruction, usually at pharyngeal level
- Respiratory movements continue initially but then stop

Mixed

- Initially central, followed by obstructive apnoea

Significance

- Most babies born <34 weeks' gestation have primary apnoea of prematurity (PAP). Hence babies born <34 weeks should have SpO_2 monitoring until ≥34 weeks' post conceptional age (PCA)
- multiple aetiologic factors can exacerbate apnoea in preterm babies
- sudden increase in frequency warrants immediate action
- Consider causes other than apnoea of prematurity if occurs:
- in term or near-term baby (>34 weeks' gestation)
- on first day after birth in preterm baby
- onset of apnoea after aged 7 days in a preterm baby

Causes

Infection

- Sepsis
- Necrotising enterocolitis
- Meningitis

Respiratory

- Inadequate respiratory support
- Upper airway obstruction
- Surfactant deficiency

CNS

- Intracranial haemorrhage
- Seizure
- Congenital malformations

CVS

- Patent ductus arteriosus

Other

- Metabolic abnormalities, especially hypoglycaemia
- Haematological: anaemia
- Inherited metabolic disorders e.g. non-ketotic hyperglycinaemia
- Consider physiological response to stress from handling/environmental factors. Ensure appropriate developmental care (see **Developmental care** guideline)

MANAGEMENT

Terminate episode

- If apnoea not self-limiting (clinician to agree threshold to intervene), perform the following in sequence to try to terminate episode:
  - ensure head in neutral position
  - stimulate baby by tickling feet or stroking abdomen
  - if aspiration or secretions in pharynx suspected, apply brief oropharyngeal suction
  - face mask ventilation
  - emergency intubation
- Once stable, perform thorough clinical examination to confirm/evaluate cause

Screen for sepsis

- If apnoea or bradycardia increasingly frequent or severe, screen for sepsis as apnoea and bradycardia can be sole presenting sign

TREATMENT

- Treat specific cause, if present
- Primary apnoea of prematurity is a diagnosis of exclusion and may not require treatment unless pauses are:
  - frequent (>8 in 12 hr) or
  - severe (>2 episodes/day requiring positive pressure ventilation)

Pharmacological treatment

- Caffeine citrate 20 mg/kg loading dose oral/IV (over 30 min) followed, after 24 hr, by maintenance dose of 5 mg/kg oral/IV (over 10 min) once daily, increasing to 20 mg/kg if required until 34 weeks' PCA
- If desaturations and bradycardias persist, may continue beyond 34 weeks' PCA. If so, review need for treatment regularly

Non-pharmacological treatment

- CPAP, SiPAP/BiPAP [see **Ventilation: continuous positive airway pressure (CPAP)** guideline]
- If above fails, intubate and ventilate