



Clinical Practice Guideline

Guideline coverage includes NICU KEMH, NICU PCH and NETS WA

# Apnoea of Prematurity

This document should be read in conjunction with the [Disclaimer](#)

## Definition

Absence of breathing in the premature infant for a period of > 15 seconds often associated with bradycardia and/or hypoxia.

## Epidemiology

Recurrent prolonged apnoea and bradycardia occurs in most infants under 30 weeks gestation, in about 50% of infants at 30-32 weeks gestation, and only about 10% of those at 34-36 weeks gestation. The more premature the infant, the greater the possibility of apnoea occurring. Apnoea of prematurity is primarily due to immaturity of the respiratory centre and control of the upper airway; most cases are due to a combination of central and obstructive apnoea.

It is important to manage the following additional factors which can either cause or accentuate apnoea:

- Systemic illness - sepsis, hypoxemia, shock.
- CNS – IVH, seizures, asphyxia, cerebral malformations.
- CVS conditions: eg PDA
- Anaemia
- Drugs - opiates, sedation.
- Post-general anaesthesia.
- Metabolic disturbances: hypoglycaemia, hypocalcaemia, inborn error of metabolism.
- Hypothermia, hyperthermia.
- Obstructive respiratory problems - macroglossia, micrognathia, tracheomalacia, choanal atresia
- Gastro-oesophageal reflux.

## Management

- Address any underlying factor that may be aggravating apnoeic episodes.
- Monitor infants with cardio-respiratory monitoring and oxygen saturation. Refer to [Monitoring and Observation Frequency](#).
- If an episode of apnoea/bradycardia does not resolve spontaneously, gentle tactile stimulation maybe required. If response is slow or cyanosis present then bag and mask ventilation may be needed.
- Prone positioning stabilises the chest wall, reducing the frequency of apnoea.
- CPAP should be optimised. Occasionally non-invasive ventilation (NIPPV) may be required. Intubation is sometimes required when the above fails.

- Caffeine is a potent cardiac, respiratory and CNS stimulant and is the pharmacological agent of choice. It has been shown to decrease apnoea and reduce the need for ventilator support. It also reduces short term morbidities such as BPD and ROP, is cost-effective and improves long term outcomes with lower rates of developmental co-ordination disorder. For dosage and side effects refer to Neonatal Medication Protocols - [Caffeine](#).

### Who to Treat

- Infants < 30 weeks gestation are generally prescribed caffeine routinely. Caffeine has been shown to reduce post-extubation apnoea.
- Infants 30-34 weeks gestation are generally prescribed caffeine if they are symptomatic.
- Consider prescribing caffeine for a neonate in the immediate post-operative period following a general anaesthetic, or prior to immunisations in an ex-preterm neonate.

### Stopping Caffeine

There are no trial data to support decisions to cease treatment. Apnoea of prematurity decreases with advancing age and can generally be expected to resolve by 37 weeks corrected gestational age (CGA). Apnoea which continues beyond this period is often multifactorial (see above).

- Caffeine can generally be ceased between 32 & 34 weeks gestation, provided the baby has been stable. Some extremely preterm neonates will require treatment for longer.
- Once the infant has ceased caffeine, infants should remain monitored with an oximeter for a minimum of 5 days and for 48 hours after the last apnoea/bradycardia. Refer to [Monitoring and Observation Frequency](#).

In general we do not measure caffeine levels routinely. Consider measuring caffeine levels:

- To check therapeutic levels if there are ongoing symptoms.
- If there is concern that caffeine levels may be too high (signs may include persistent tachycardia).

### References

1. Schmidt B, Roberts RS, Davis P, Doyle LW, Barrington KJ, Ohlsson A, et al. Caffeine therapy for apnea of prematurity. The New England journal of medicine 2006, 354(20): 2112-2121.
2. Doyle LW, Schmidt B, Anderson PJ, Davis PG, Moddemann D, Grunau RE, et al. Reduction in developmental coordination disorder with neonatal caffeine therapy. The Journal of pediatrics 2014, 165(2): 356-359 e352.
3. Dukhovny D, Lorch SA, Schmidt B, Doyle LW, Kok JH, Roberts RS, et al. Economic evaluation of caffeine for apnea of prematurity. Pediatrics 2011, 127(1): e146-155.
4. Kreutzer K, Bassler D. Caffeine for Apnea of Prematurity: A Neonatal Success Story. Neonatology 2014, 105(4): 332-336

## Related WNHS policies, procedures and guidelines

Neonatal Clinical Guideline - [Monitoring and Observation Frequency](#)  
 Neonatal Medication Protocols - [Caffeine](#)

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