



# CAFFEINE CITRATE

<b>Indication</b>	<ul style="list-style-type: none"> <li>• Treatment of apnoea of prematurity<sup>1,2</sup></li> <li>• Prevention of apnoea of prematurity (birthweight less than 1250 g)<sup>3,4</sup></li> <li>• Facilitate extubation from mechanical ventilation<sup>5,6</sup></li> </ul>	
<b>ORAL</b>	<b>Presentation</b>	
	<b>Dosage</b>	
	<b>Preparation</b>	
	<b>Administration</b>	
<b>INTRAVENOUS</b>	<b>Presentation</b>	
	<b>Dosage</b>	
	<b>Preparation</b>	
	<b>Administration</b>	
<b>Special considerations</b>	<ul style="list-style-type: none"> <li>• Contraindications: <ul style="list-style-type: none"> <li>◦ Concurrent administration of other xanthine preparations<sup>8</sup></li> </ul> </li> <li>• Caution if: <ul style="list-style-type: none"> <li>◦ Gastrointestinal bleeding, liver or renal impairment</li> <li>◦ Heart rate greater than 180 beats per minute, withhold until medical officer review<sup>8,9</sup></li> </ul> </li> <li>• Prescribe as caffeine citrate (not caffeine base) <ul style="list-style-type: none"> <li>◦ 2 mg caffeine citrate = 1 mg caffeine base<sup>10</sup></li> </ul> </li> <li>• Approximate time to reach steady state blood levels is 5–6 days<sup>8</sup> (i.e. apnoea may occur until steady state is reached, despite loading dose)</li> <li>• UAC route: discuss with neonatologist/paediatrician prior to use</li> </ul>	
<b>Monitoring</b>	<ul style="list-style-type: none"> <li>• Drug levels not routinely required<sup>1</sup> <ul style="list-style-type: none"> <li>◦ If collected, aim for 5–30 mg/L and take weekly (12 hours after dose administered)<sup>11</sup></li> </ul> </li> <li>• Cardio-respiratory monitoring (continue 5–7 days after cessation)</li> <li>• Number and severity of apnoeic episodes, assess for agitation</li> <li>• Blood glucose monitoring<sup>2</sup></li> </ul>	
<b>Compatibility</b>	<ul style="list-style-type: none"> <li>• Fluids<sup>7</sup> <ul style="list-style-type: none"> <li>◦ 5% glucose</li> </ul> </li> <li>• Y-site<sup>7</sup> <ul style="list-style-type: none"> <li>◦ Dopamine, fentanyl, heparin</li> </ul> </li> </ul>	

<b>Incompatibility</b>	<ul style="list-style-type: none"> <li>• PN and fat emulsion: co-infusion with caffeine not recommended (evidence limited). If unavoidable, seek pharmacist advice first, filter infusion and flush before and after</li> <li>• Minimal data: aciclovir<sup>7</sup>, furosemide (frusemide)<sup>7</sup>, ibuprofen<sup>8</sup></li> </ul>
<b>Interactions</b>	<ul style="list-style-type: none"> <li>• Ciprofloxacin<sup>9</sup>, verapamil<sup>9</sup>, phenytoin<sup>9</sup></li> </ul>
<b>Stability</b>	<ul style="list-style-type: none"> <li>• Vial <ul style="list-style-type: none"> <li>○ Store below 30 °C<sup>7,9</sup></li> </ul> </li> <li>• Infusion solution<sup>7</sup> <ul style="list-style-type: none"> <li>○ Discard unused portion</li> </ul> </li> </ul>
<b>Side effects</b>	<ul style="list-style-type: none"> <li>• Gastrointestinal: vomiting and reduced weight gain <ul style="list-style-type: none"> <li>○ Suggested association (unproven) with necrotising enterocolitis (NEC)<sup>2</sup></li> </ul> </li> <li>• CNS: agitation, tachycardia, increased or decreased blood glucose levels<sup>8,10</sup></li> <li>• Signs of toxicity: gastric irritation (e.g. feed intolerance/vomiting), agitation/irritability, tachycardia, hypotension, hyperglycaemia, seizures and diuresis<sup>7,10</sup> <ul style="list-style-type: none"> <li>○ Serious toxicity is associated with serum levels greater than 50 micrograms/mL<sup>8,10</sup></li> </ul> </li> </ul>
<b>Actions</b>	<ul style="list-style-type: none"> <li>• Increases respiratory centre output, chemoreceptor sensitivity to carbon dioxide, smooth muscle relaxation and cardiac output<sup>8</sup> <ul style="list-style-type: none"> <li>○ Increases the respiratory rate (breaths/minute) in premature infants and reduces the number of short and prolonged attacks of apnoea</li> <li>○ In ventilator dependent preterm infants reduces pulmonary resistance and increases lung compliance with a concomitant reduction in the requirement for inspired oxygen<sup>9</sup></li> </ul> </li> </ul>
<b>Abbreviations</b>	CNS central nervous system, IV: intravenous, NEC: necrotising enterocolitis, OGT: oral gastric tube, NGT: nasogastric tube, PN: parenteral nutrition, UAC umbilical arterial catheter
<b>Keywords</b>	caffeine citrate, methylxanthines, apnoea of prematurity, extubation

The Queensland Clinical Guideline *Neonatal Medicines* is integral to and should be read in conjunction with this monograph. Refer to the disclaimer. Destroy all printed copies of this monograph after use.

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## Document history

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