

CAFFEINE CITRATE

Trade Name	Caffeine Citrate Injection® Biomed Caffeine Citrate Oral® Biomed								
Class	Respiratory stimulant								
Mechanism of Action	Direct stimulation of CNS and respiratory centre, decreases sensitivity to CO ₂ , relaxes smooth muscle in bronchial wall. Stimulates glycogeno-lysis and lipolysis								
Indications	Prophylaxis and treatment of apnoea of prematurity Assists with weaning from ventilation								
Contraindications	Hypersensitivity to caffeine Use with caution in patients with cardiovascular disorders, hepatic or renal impairment or seizure disorders								
Supplied As	Caffeine Citrate 20mg/mL								
Dilution	<p>Oral: No dilution required</p> <p>IV: No dilution required in most instances. If the dose volume is <0.5mL then will need to further dilute to 5mg/mL before infusing via the T34 pump</p> <table border="1"> <thead> <tr> <th>Drug</th> <th>Water Added</th> <th>Final Volume</th> <th>Concentration</th> </tr> </thead> <tbody> <tr> <td>2mL (40mg)</td> <td>6mL</td> <td>8mL</td> <td>5mg/mL</td> </tr> </tbody> </table>	Drug	Water Added	Final Volume	Concentration	2mL (40mg)	6mL	8mL	5mg/mL
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Dosage	<p>Prescribed as Caffeine Citrate</p> <p>Loading dose: 20mg/kg</p> <p>Maintenance: 7.5-15mg/kg</p> <p style="padding-left: 40px;">Start at 7.5mg/kg if ≥ 28 weeks at birth Start at 10mg/kg if <28 weeks at birth</p> <p>Bolus Dose: 5-10mg/kg If apnoeas are not well controlled and the maintenance dose is being increased then a bolus may be ordered at the SMO's discretion</p>								
Interval	<p>Maintenance to start the morning after the loading dose</p> <p>Dose once a day at 10am for consistency</p> <p>If on ≥15mg/kg/day and the baby is unstable the daily dose can be given 12 hourly at 1000 and 2200 (SMO decision)</p>								
Administration	<p>Oral: Give with a feed if possible to reduce gastric irritation</p> <p>IV: Infusion over 30 min</p> <p>If caffeine is commenced IV switch to the oral route once the infant has reached half enteral feeds.</p>								

Compatible With	<p>Solution: Dextrose 5% and 10%, sodium chloride 0.9%</p> <p>Y-site: Adrenaline, alprostadil, amikacin, aminophylline, benzylpenicillin, calcium gluconate, cefotaxime, clindamycin, dexamethasone, dobutamine, dopamine, doxapram, fentanyl, gentamicin, heparin ≤ 1u/mL, lidocaine, lipid, meropenem, metoclopramide, morphine, naloxone, nitroprusside, pancuronium, phenobarbital, potassium chloride, sodium bicarbonate, TPN, vancomycin</p>
Incompatible With	Aciclovir, adenosine, furosemide, ibuprofen, mexilitine, pantoprazole
Interactions	<p>Ciprofloxacin, erythromycin and fluconazole may inhibit metabolism of caffeine citrate resulting in reduced clearance and higher than expected plasma concentrations of caffeine</p> <p>Phenytoin may increase caffeine clearance.</p> <p>Caffeine can antagonise the sedative effect of midazolam</p>
Monitoring	<p>Trough levels: if apnoeas are uncontrolled or concern re side effects or dosing >15mg/kg/day</p> <p>Levels of 35mg/L (175 micromol/L) required for effective prophylaxis against apnoea after extubation².</p> <p>Levels of 70mg/L (350 micromol/L) recorded without problems</p> <p>Previous therapeutic range reported as 40-150 micromol/L ⁴</p> <p>Call the lab to have a green non-gel tube sent over for the caffeine level</p>
Stability	<p>IV: Check for precipitate. Ampoules single use.</p> <p>Further dilution to 5mg/ mL (if required due to the baby's small size) is safe and stable to use for immediate administration.</p> <p>Oral mixture: Check for precipitation prior to use. Discard one week after opening bottle (no preservative).</p>
Storage	<p>Store at room temperature $<30^{\circ}\text{C}$.</p> <p>Do not refrigerate (precipitation can occur)</p>
Adverse Reactions	Tachycardia, vomiting, gastric irritation agitation, Overdose symptoms - arrhythmia and seizures.
Metabolism	<p>86% excreted unchanged in urine, 14% transformation to theophylline in liver. High reabsorption by renal tubules.</p> <p>Half life 80-100 hours depending on gestation, decreasing to 6 hours after 60 weeks post-conceptual age.</p>
Comments ...	<p>Caffeine Citrate 5mg/kg is equivalent to 2.5mg/kg Caffeine Base. Review babies who are transferred from other units and are on caffeine and prescribe as caffeine citrate according to our protocol and not caffeine base.</p> <p>Flush IV tubing with 0.9% NaCl before and after administration</p>

	<p>Outpatient scripts Prior to discharge check which community pharmacy is to be used and contact that pharmacy to ensure they have a supply. On the prescription write “unstable medicine, dispense weekly” (contains no preservative)</p>																				
<p>References</p>	<ol style="list-style-type: none"> 1. Scanlon et al, ADC 1992, 67:425-8 2. Clin Pharmacol Ther 1997, 61:628-40 3. Cochrane Library: Caffeine vs Theophylline 1998 4. Paed Clin North Am 1981 28:113-33 5. Steer PA. Archives Dis Child Fetal Neonatal Ed. 2004; 89 F499-503 6. NEJM 2006 CAP Trial 354;2112-21 7. NEJM 2007 CAP Trial Long Term 357 8. Neofax in www.micromedexsolutions.com 9. Trissels Compatibility Data in www.micromedexsolutions.com 10. www.nzf.org.nz 11. www.anmfonline.org 																				
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