CAFFEINE CITRATE

<table>
<tr><td>Trade Name</td><td>Caffeine Citrate Injection®
Caffeine Citrate Oral® Biomed</td></tr>
<tr><td>Class</td><td>Respiratory stimulant</td></tr>
<tr><td>Mechanism of Action</td><td>Direct stimulation of CNS and respiratory centre, decreases sensitivity to CO_2, relaxes smooth muscle in bronchial wall. Stimulates glycogeno-lysis and lipolysis</td></tr>
<tr><td>Indications</td><td>Prophylaxis and treatment of apnoea of prematurity
Assists with weaning from ventilation</td></tr>
<tr><td>Contraindications</td><td>Hypersensitivity to caffeine
Use with caution in patients with cardiovascular disorders, hepatic or renal impairment or seizure disorders</td></tr>
<tr><td>Supplied As</td><td>Caffeine Citrate 20mg/mL</td></tr>
<tr><td>Dilution</td><td>Oral: No dilution required
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
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<tr><th>Drug</th><th>Water Added</th><th>Final Volume</th><th>Concentration</th></tr>
<tr><td>2mL (40mg)</td><td>6mL</td><td>8mL</td><td>5mg/mL</td></tr>
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<tr><td>Dosage</td><td>Prescribed as Caffeine Citrate
Loading dose: 20mg/kg
Maintenance: 7.5-15mg/kg
Start at 7.5mg/kg if ≥ 28 weeks at birth
Start at 10mg/kg if <28 weeks at birth

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</td></tr>
<tr><td>Interval</td><td>Maintenance to start the morning after the loading dose
Dose once a day at 10am for consistency
If on ≥15mg/kg/day and the baby is unstable the daily dose can be given 12 hourly at 1000 and 2200 (SMO decision)</td></tr>
<tr><td>Administration</td><td>Oral
IV: Infusion over 30 min
If caffeine is commenced IV switch to the oral route once the infant has reached half enteral feeds.</td></tr>
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Compatible With	Dextrose 5% and 10%, sodium chloride 0.9% Y-site: Adrenaline, alprostadil, amikacin, aminophylline, calcium gluconate, cefotaxime, clindamycin, dexamethasone, dobutamine, dopamine, doxapram, fentanyl, gentamicin, heparin ≤1u/mL, lignocaine, lipid, metoclopramide, morphine, nitroprusside, pancuronium, penicillin G, phenobarbital, potassium chloride, sodium bicarbonate, vancomycin
Incompatible With	Aciclovir, adenosine, furosemide, ibuprofen, mexilitine, pantoprazole
Interactions	Ciprofloxacin, erythromycin and fluconazole may inhibit metabolism of caffeine citrate resulting in reduced clearance and higher than expected plasma concentrations of caffeine Phenytoin may increase caffeine clearance.
Monitoring	**Trough levels**: if apnoeas are uncontrolled or concern re side effects or dosing >15mg/kg/day Levels of 35mg/L (175 micromol/L) required for effective prophylaxis against apnoea after extubation[2]. Levels of 70mg/L (350 micromol/L) recorded without problems Previous therapeutic range reported as 40-150 micromol/L [4] Call the lab to have a green non-gel tube sent over for the caffeine level
Stability	Check for precipitate. Ampoules single use. Further dilution to 5mg/ mL (if required due to the baby's small size) is safe and stable to use for immediate administration. Oral mixture: discard one week after opening bottle (no preservative).
Storage	Store at room temperature <30ºC. Do not refrigerate (precipitation can occur)
Adverse Reactions	Tachycardia, vomiting, gastric irritation agitation, Overdose symptoms - arrhythmia and seizures.
Metabolism	86% excreted unchanged in urine, 14% transformation to theophylline in liver. High reabsorption by renal tubules. Half life 80-100 hours depending on gestation, decreasing to 6 hours after 60 weeks post-conceptual age.
Comments …	**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. Flush IV tubing with 0.9% NaCl before and after administration **Outpatient scripts** -Prior to discharge check which community pharmacy is to be used and contact that pharmacy to ensure they have a supply. –write unstable medicine, dispense weekly

	(contains no preservative)
References	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. www.micromedexsolutions.com 10. www.nzf.org.nz
Updated By	N Austin Jan 2000 A Lynn, B Robertshawe March 2008, July 2008 (change label) A Lynn, B Robertshawe, F Robertson May 2009 (T34 pumps) A Lynn, B Robertshawe, N Austin August 2010 (caffeine citrate) SMO Decision 7.5mg/kg start dose July 2011 A Lynn, B Robertshawe June 2012 (re-order profile) Sept 2015 outpatient scripts A Lynn, B Robertshawe, M Young Aug 2016 outpatient scripts A Lynn, M Wallentstein, B Robertshawe July 2020 (update and revision)