


THIAMINE (Vitamin B1)

Trade Name	Oral: Thiamine Hydrochloride (Max Health) IV: Benerva ® (Farmaceutica Teofarma Suisse SA)										
Class	Water soluble B group vitamin										
Mechanism of Action	Important co-factor in carbohydrate metabolism										
Indications	Indication 1: Maple Syrup Urine Disease Indication 2: Congenital lactic acidosis										
Contraindications	Hypersensitivity to thiamine or any component of the formulation Note: some thiamine injection preparations contain phenol and or aluminium – avoid use of these products in neonates.										
Supplied As	Oral: 50mg tablets IV: 100mg/mL clear, colourless solution										
Dilution	<p>Oral: Tablets can be crushed and either mixed with milk or dispersed in 5 mL of water to give a 10mg/mL solution</p> <p>IV: For doses ≥ 50mg no need to dilute For doses < 50mg follow the dilution steps below</p> <table border="1" data-bbox="523 1070 1430 1317"> <thead> <tr> <th>Drug</th> <th>Sodium Chloride 0.9%</th> <th>Final Volume</th> <th>Final concentration</th> </tr> </thead> <tbody> <tr> <td>1mL (100mg)</td> <td>4 mL</td> <td>5 mL</td> <td>20 mg/mL</td> </tr> </tbody> </table>			Drug	Sodium Chloride 0.9%	Final Volume	Final concentration	1mL (100mg)	4 mL	5 mL	20 mg/mL
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Dosage	<p>Indication 1: Maple Syrup Urine Disease Oral or IV : 5 – 10 mg/kg/dose</p> <p>Indication 2: Congenital Lactic Acidosis Oral or IV: 50 -100mg/kg/dose</p> <p>The volume required for an oral dose is high so iv is the preferred route for these higher doses</p>										
Interval	12 hourly										
Administration	<p>Oral: can be given with or without food</p> <p>IV: infusion over 30 minutes into a large vein is the preferred route for administration of thiamine to neonates to minimise the risk of anaphylactic reactions.</p> <p>IM: administer undiluted if this route is required</p>										

Compatible With	<p>Solution: glucose 5%, 10%, glucose/sodium chloride, sodium chloride 0.45% and 0.9%, Lactated Ringer's.</p> <p>Terminal Y-site: adrenaline, amikacin, ascorbic acid, atropine sulphate, aztreonam, benzylpenicillin, bumetanide, calcium chloride, calcium gluconate, cefazolin, cefotaxime, cefotetan, cefoxitin, ceftriaxone, cefuroxime, clindamycin, cyanocobalamin, dexamethasone, digoxin, dobutamine, dopamine, ephedrine, erythromycin, famotidine, fentanyl, gentamicin, glycopyrrolate, heparin, insulin, labetalol, morphine sul anphate, multivitamins, naloxone, noradrenaline, pentamidine, phentolamine, phenylephrine, piperacillin, potassium chloride, procainamide, promethazine, propranolol, pyridoxine, quinidine, ranitidine, streptokinase, succinylcholine, ticarcillin, tobramycin, urokinase, vancomycin, vasopressin, verapamil.</p>
Incompatible With	<p>Aminophylline, amphotericin B, azathioprine, ceftazidime, chloramphenicol, dantrolene sodium, diazepam, diazoxide, folic acid, furosemide, ganciclovir, hydralazine, hydrocortisone, imipenem, indomethacin, methylprednisolone, phenobarbital, pentobarbital, phenytoin, sodium bicarbonate, sulfamethoxazole/trimethoprim.</p>
Monitoring	<p>Watch for signs of hypersensitivity reactions, phlebitis at the injection site or tenderness and induration at the site of IM injection.</p> <p>Therapeutic range: 74 – 222 nanomol/L.</p>
Stability	<p>Oral: tablets- manufacturer's expiry.</p> <p>Tablets dispersed in water: each dose should be freshly prepared, discard any leftover solution immediately after use.</p> <p>IV: manufacturer's expiry, discard immediately after use.</p>
Storage	<p>Oral: Store at room temperature, protect from light.</p> <p>IV: Store at room temperature, protect from light.</p>
Adverse Reactions	<p>Serious allergic reactions have been associated with infusions of thiamine , for this reason, infusion over 30 minutes is recommended.</p>
Metabolism	<p>Metabolised by the liver and excreted by the kidneys.</p>
Comments	<p>As at 7 July 2022 the IV formulation of thiamine available in NZ is Benerva®. This is a section 29 product and not registered for use in NZ. Application for NPPA funding will be required for subsidised supply in the community.</p> <p>Consider Pabrinex® as an alternative if an intravenous form of thiamine as a single agent is not available.</p>

References	<ol style="list-style-type: none">1. National Formulary for Inherited Metabolic Diseases (IMDs) 2nd Edition October 2020  BIMDG_Metabolic_Formulary_Second_E2. www.uptodate.com3. www.noids.nz4. www.nzf.org5. Trissell's Notes on Injectable Drugs in www.micromedexsolutions.com
Updated By	A Lynn, B Robertshawe July 2022