



## NEONATAL Medication Monograph


# SODIUM NITROPRUSSIDE (SNP)

This document should be read in conjunction with this [DISCLAIMER](#)

**Highly Restricted:** Requires Neonatologist/Cardiologist approval before commencing






**HIGH RISK Medication**

<b>Presentation</b>	<b>Vial:</b> 50 mg/2 mL <i>(Available at PCH only – contact pharmacy if required at KEMH)</i>
<b>Description</b>	Short acting hypotensive agent/Vasodilator Blood pressure reduction by SNP is a temporary measure and longer acting hypotensive agents should be commenced as soon as possible while blood pressure is controlled.
<b>Indications</b>	Hypertensive emergencies (irrespective of aetiology)
<b>Contraindications</b>	Compensatory hypertension (e.g. atriovenous shunt, coarctation of the aorta). Acute heart failure. Concomitant use with a PDE-5 inhibitor (e.g. sildenafil). Congenital (Leber's) optic atrophy. Inadequate cerebral circulation or in moribund patients requiring surgery. Tobacco amblyopia. Severe vitamin B12 deficiency.
<b>Precautions</b>	Hepatic dysfunction: predisposes patient to cyanide toxicity. Increased intracranial pressure, encephalopathy- may be aggravated Hypothyroidism- thiocyanate (degradation product of SNP) inhibits uptake and binding of iodine Hypothermia: may be aggravated Pulmonary impairment – may worsen hypoxaemia Avoid abrupt withdrawal – may cause rebound hypertension, reduce rate over at least 10 to 30 minutes. <div> Use extreme caution when titrating dosage and changing lines/fluids as sudden changes to rates can result in blood pressure fluctuations.</div>

<b>Dose</b>	Initially 0.5 microgram/kg/minute, titrate according to response every few minutes.  Maximum 4 microgram/kg/minute if used longer than 24 hours.  Maximum 10 microgram/kg/minute if used for <u>no longer</u> than 10 minutes.
<b>Dose Adjustment</b>	<b>CrCL &lt;30mL/min:</b> Limit average infusion rate to less than 3microgram/kg/minute  <b>Anuria:</b> Limit average infusion rate to less than 1microgram/kg/minute
<b>Adverse Reactions</b>	<b>Common:</b> Severe hypotension, tachycardia, dyspnoea, dizziness, vomiting, sweating, flushing  <b>Serious:</b> Cyanide toxicity ( <b><i>cyanide ions are metabolites of sodium nitroprusside and can reach toxic, potentially lethal levels</i></b> )  absent reflexes, dilated pupils, pink colouring of skin, shallow respiration, ataxia, metabolic acidosis, coma, imperceptible pulse  Anaphylactic shock is not commonly seen in the neonates
<b>Interactions</b>	Other medications that increase the risk of hypotension.  Topical local anaesthetics – may increase risk of methaemoglobinaemia.
<b>Compatible Fluids</b>	Glucose 5%  <i>Y-site only:</i> sodium chloride 0.9%, potassium chloride 20 mmol/L
<b>Preparation</b>	<b><u>IV:</u></b>  Dilute 1.5 mg (0.06 mL) per kilogram of baby's weight to a final volume of to 50 mL with a compatible fluid.  Concentration =1 mL/hour = 0.5 microgram/kg/minute  <b><i>Maximum concentration (e.g. if fluid restricted): 1 mg/mL on consultant advice</i></b>
<b>Administration</b>	<b><u>Continuous IV Infusion:</u></b>  <b>Administer in a syringe using a dedicated syringe driver.</b>  Rate determined by continuous monitoring of blood pressure.  Use extreme caution when titrating dosage and handling syringe driver. Even small, transient increase in the infusion rate can result in excessive hypotension.  Terminate infusion slowly over 15 to 30 minutes to avoid any rebound effects.

<b>Monitoring</b>	<p>Continuous BP and HR monitoring</p> <p>Blood cyanide and thiocyanate levels must be monitored in patients receiving high doses (more than 3 microg/kg/minute) for more than 3 days.</p> <p>Renal and hepatic function (impairment increases risk of cyanide toxicity).</p> <p>Blood pH (risk of metabolic acidosis).</p>
<b>Storage</b>	<p>Store at room temperature, below 25°C.</p> <p>SNP infusion must be light protected – wrap syringe or infusion bag with aluminium foil or black outer packaging from pharmacy (<b>not necessary to cover tubing</b>):</p> <ul style="list-style-type: none"> <li>• Infusion is stable for 24 hours if protected from light.</li> </ul>
<b>Notes</b>	<p>When diluted nitroprusside solution should be very faintly brownish in colour. Discard if the infusion solution shows any blue, green or red discolouration or particulate matter.</p>
<b>Related clinical guidelines</b>	<p><b>CAHS Neonatology Guidelines:</b></p> <p><a href="#">Cardiac: Complications Management Following Surgery</a></p> <p><a href="#">Congenital Diaphragmatic Hernia (CDH)</a></p> <p><a href="#">Cardiac: Neonatal Circulation Changes / Unbalanced Circulation</a></p> <p><a href="#">Cardiac: Routine Post-Operative Care</a></p> <p><a href="#">Hypoxic Ischaemic Encephalopathy (HIE) and Therapeutic Hypothermia</a></p> <p><a href="#">Sepsis: Neonatal</a></p>
<b>References</b>	<p>British National Formulary. BNF for Children 2018-2019. London, UK: BMJ Group and Pharmaceutical Press; 2018. p. 118-119.</p> <p>Kemp AC, McDowell JM. Paediatric Pharmacopoeia. 13<sup>th</sup> edition. Parkville, VIC: Royal Children's Hospital Pharmacy Department; 2002. p. 188-189.</p> <p>Plover C, Porrello E. Paediatric injectable guidelines 2019 ed. Flemington (Victoria): The Royal Children's Hospital Melbourne; 2019. p. 84</p> <p>Society of Hospital Pharmacists of Australia. Sodium Nitroprusside. In: Australian Injectable Drugs Handbook [Internet]. [St Leonards, New South Wales]: Health Communication Network; 2020 [cited 2020 Aug 10]. Available from: <a href="http://aidh.hcn.com.au">http://aidh.hcn.com.au</a></p> <p>Takemoto CK, Hodding JH, Kraus DM. Pediatric &amp; neonatal dosage handbook with international trade names index: a universal resource for clinicians treating pediatric and neonatal patients. 24th ed. Hudson (Ohio): Lexicomp; 2019. p1815.</p>

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