

# NICU: Phenytoin

Reference No: CH PH N21

Presentation:	Phenytoin sodium 250 mg in 5 ml injection												
Indication:	<ul style="list-style-type: none"> <li>Status epilepticus</li> <li>Prolonged convulsive epileptic seizure</li> <li>Management of neonatal seizures</li> </ul>												
Dose:	<p><b>Loading dose by IV infusion using SMART PUMP:</b> Neonate:</p> <table border="1"> <thead> <tr> <th>Dose</th> <th>Indication</th> <th>Maximum rate of administration required for SMART pump</th> <th rowspan="3"><i>This ensures that the loading dose is given over at least 20 minutes</i></th> </tr> </thead> <tbody> <tr> <td>18mg/kg</td> <td>Seizures</td> <td>0.9mg/kg/minute</td> </tr> <tr> <td>20mg/kg</td> <td>Status</td> <td>1 mg/kg/minute</td> </tr> </tbody> </table> <p><b>Maintenance dose by slow IV injection or infusion using SMART pump adjusted according to response and serum levels (see below):</b> Neonate: 2.5-5 mg/kg twice daily, at a rate of no more than 1 mg/kg/minute</p>			Dose	Indication	Maximum rate of administration required for SMART pump	<i>This ensures that the loading dose is given over at least 20 minutes</i>	18mg/kg	Seizures	0.9mg/kg/minute	20mg/kg	Status	1 mg/kg/minute
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18mg/kg	Seizures	0.9mg/kg/minute											
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Route of administration:	Administer into a central venous access device or large vein as phenytoin is highly irritant. Rapid infusion may precipitate serious cardiovascular collapse, arrhythmias and respiratory depression.												
Instructions for preparation and administration:	<p>For all doses dilute with sodium chloride 0.9% a concentration equivalent to 10mg/ml*, allow for minimal overage, prime the line with the drug then then discard excess to avoid potential over infusion.</p> <p><i>*Further dilution to 1mg/ml may be necessary for measurability of <b><u>maintenance doses</u></b> in particularly small babies.</i></p> <p><b>Give via central access or into a large vein through an in-line filter (0.22–0.50 micron)</b></p> <ul style="list-style-type: none"> <li><b>SMART PUMP INSTRUCTION:</b> rate in units <b>mg/kg/minute</b> as above depending on if loading dose/maintenance dose: reduce rate if bradycardia or hypotension occurs (<i>SMART pump allows for a rate 0.45mg/kg/min</i>) in such cases.</li> <li>Complete administration within 1 hour of preparation</li> <li>Flush with sodium chloride 0.9% before and after infusion to reduce irritation however avoid rapid flushing of IV lines which may deliver a bolus</li> </ul> <p>Observe syringe for crystallisation and signs of haziness before and during the infusion, do not administer or discontinue infusions showing such an appearance.</p> <p>Monitor ECG, heart rate and blood pressure during infusion. Observe for signs of respiratory and CNS depression. Cardiac resuscitation equipment should be available.</p>												
Prescribing	Paper chart as Trust Medicines Code												
Known compatibility issues	<b>Crystallisation can occur if phenytoin mixes with glucose, therefore flush lines with sodium chloride 0.9% before and after administration. See separate compatibility chart.</b>												

Additional Comments:	<p><b>Trough levels need to be taken after 7 days</b> (for steady state to be reached. Be aware that it may take up to 2 weeks in preterm babies.)</p> <ul style="list-style-type: none"><li>• Take trough sample immediately prior to 8<sup>th</sup> day dose</li><li>• Therapeutic range: Neonate – 3 months: 6 - 15 mg/L (25 - 60 micromol/ L)</li></ul> <p>➤ Beware that IV phenytoin sodium is not bioequivalent to oral phenytoin preparations, see BNFC or contact a pharmacist.</p>

Note: The contents of this monograph should be read in conjunction with information available in the BNFC and Medusa

**References:**

British National Formulary for Children accessed via [https://www.medicinescomplete.com/#/content/bnfc/\\_789756225?hspl=Phenytoin](https://www.medicinescomplete.com/#/content/bnfc/_789756225?hspl=Phenytoin) on 4.11.19

Epanutin® Ready Mixed Parenteral Phenytoin SPC, Pfizer, accessed via <https://www.medicines.org.uk/emc/product/57/smpc> (last updated 29.5.19) on 4.11.19

Medusa Phenytoin paediatric monograph accessed through <http://medusa.wales.nhs.uk/IVGuideDisplay.asp> on 30.10.19

### Document control sheet

<b>GUIDELINE NUMBER</b>	CH PH N21
<b>AREA IN WHICH THIS MONOGRAPH APPLIES</b>	NICU

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If review:

	<b>Position</b>	<b>Date</b>
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Transferred to new template by:	Sharon Conroy, Paediatric Pharmacist	June 2019

Change history:

<b>Changes Reference</b>	<b>Change details</b>	<b>Date</b>
1	NICU information separated from paediatric information by Harriet Hughes, Paediatric Pharmacist and checked by Sharon Conroy	November 2019