

# Paediatric: Phenytoin

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> </ul>																		
Dose:	<p><b>**If patient takes phenytoin as a regular medication (and they are likely to have taken it), consider taking a plasma concentration level and adjust the doses below accordingly ('top-up dose) or use alternative drug as per Prolonged Convulsive Epileptic Seizures or Convulsive Status Epilepticus guideline.</b></p> <p><b>Loading dose by IV infusion**</b></p> <p>Child &lt;1 month – See NICU guideline.          Child 1 month-17 years: 20 mg/kg (maximum dose 2000mg) if not previously on Phenytoin</p> <p><b>Maintenance dose by slow IV injection or infusion:</b></p> <p>Child &lt;1 month – See NICU guideline          Child 1 month – 11 years: 2.5-5 mg/kg twice daily          Child 12-17 years: up to 100 mg 3 to 4 times daily</p>																		
Route of administration:	Intravenous injection or infusion into a central venous access device or large vein. Each administration <b>must</b> be preceded and followed by a sodium chloride 0.9% flush (given at the same rate as the infusion) to help to avoid contact with incompatible drugs and irritation of veins caused by the high alkalinity of the injection.																		
Instructions for preparation and administration:	<table border="1"> <thead> <tr> <th>Weight</th> <th colspan="3">Preparation Instructions</th> <th>Administration</th> </tr> </thead> <tbody> <tr> <td>≤ 25kg</td> <td>Syringe</td> <td>Dilute with sodium chloride 0.9% to a concentration of <b>10mg/mL</b></td> <td>Use SMART Pump</td> <td>Give over 20 mins</td> </tr> <tr> <td>&gt; 25kg</td> <td>Dilute in 100mL bag of sodium chloride 0.9%</td> <td>This will give a concentration of ≤10mg/mL</td> <td>Use Evo Pump</td> <td>Maximum rate 50 mg/minute</td> </tr> </tbody> </table> <ul style="list-style-type: none"> <li>Give into a large vein through an in-line filter (0.22–0.5 micron)</li> <li>Administer at a <b>rate no greater than 1mg/kg/min</b> (maximum rate is 50mg/min)</li> <li>Reduce rate if bradycardia or hypotension occurs.</li> <li>Complete administration within 1 hour of preparation</li> <li>Avoid rapid flushing of IV lines which may deliver a bolus</li> </ul> <p><b>**Rapid infusion of phenytoin may precipitate cardiovascular collapse and/or central nervous system depression which may be fatal**</b></p> <p>Observe syringe for crystallisation and signs of haziness before and during the infusion, do not give and/or discontinue infusions showing such an appearance.</p> <ul style="list-style-type: none"> <li>Monitor ECG, heart rate and blood pressure during infusion</li> <li>Observe for signs of respiratory and CNS depression</li> </ul>				Weight	Preparation Instructions			Administration	≤ 25kg	Syringe	Dilute with sodium chloride 0.9% to a concentration of <b>10mg/mL</b>	Use SMART Pump	Give over 20 mins	> 25kg	Dilute in 100mL bag of sodium chloride 0.9%	This will give a concentration of ≤10mg/mL	Use Evo Pump	Maximum rate 50 mg/minute
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<u>Prescribing</u>	<u>QHB</u> - Prescribe on Meditech <u>RDH</u> - Prescribe infusion on paper drug chart
Known compatibility issues	<b>Do not infuse with any other medicines or infusions other than sodium chloride 0.9%.</b> If using the same line used to administer another infusion, flush the line with sodium chloride 0.9% (at the same rate as the phenytoin infusion) both before and after giving phenytoin.
Additional Comments:	<p><b>Trough levels need to be taken after 7 days</b> (for steady state to be reached)</p> <ul style="list-style-type: none"> <li>• Take trough sample immediately prior to next dose</li> <li>• Therapeutic range is:           <ul style="list-style-type: none"> <li>Child 1 – 3 months: 6 - 15 mg/L (25 - 60 micromol/ L)</li> <li>Child 3 months – 18 years: 10 – 20 mg/L (40 – 80 micromol/ L)</li> </ul> </li> </ul> <p>➤ Beware that IV phenytoin sodium is not bioequivalent to <i>all</i> oral phenytoin preparations some of which contain phenytoin as base, therefore see BNFC or contact a pharmacist for more information.</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://bnfc.nice.org.uk/drugs/phenytoin/#indications-and-dose> Resource last accessed 24/07/23.

Phenytoin Hospira 50 mg/ml Injection BP, SPC, online: <https://www.medicines.org.uk/emc/product/3794/smpc> Last updated 2023. Resource last accessed 24/07/23.

Medusa, online: <https://www.medusaimg.nhs.uk/IVGuideDisplay.asp> Last updated 2022. Resource last accessed 24/07/23

CEWT Available online: [http://www.cewt.org.uk/CEWT/Epilepsy-to-go\\_files/CEWT%20Prolonged%20Seizure%20guideline%202019.pdf](http://www.cewt.org.uk/CEWT/Epilepsy-to-go_files/CEWT%20Prolonged%20Seizure%20guideline%202019.pdf) Last updated 2019. Resource last accessed 24/07/23

Phenytoin: A Guide to Therapeutic Drug Monitoring online: <https://journals.sagepub.com/doi/pdf/10.1177/201010581302200307> Resource last accessed 24/07/23

## Document control sheet

<b>GUIDELINE NUMBER</b>	
<b>AREA IN WHICH THIS MONOGRAPH APPLIES</b>	Paeds

<b>DIVISIONAL AUTHORISATION</b>	
<b>GROUP</b>	<b>DATE</b>
Paediatric monograph review group	27/12/23

<b>AUTHORS</b>		
<b>Author</b>	<b>Position</b>	<b>Date</b>
Written by:	Lisa Taylor, Paediatric Pharmacist	February 2016
Checked and transferred to new template by:	Sharon Conroy Advanced Pharmacist Paediatrics	June 2019

If review:

	<b>Position</b>	<b>Date</b>
Reviewed by:	Ellie Cheale	July 2023
Name	Pharmacist Women's & Children's	
Checked by:	Lamia Ahmed	December 2023
Name	Advanced pharmacist, Womens and Childrens	

Change history:

<b>Changes Reference</b>	<b>Change details</b>	<b>Date</b>
1	Paediatric information separated from NICU information by Harriet Hughes and checked by Sharon Conroy	December 2019
2	Presentation information updated by Harriet Hughes and checked by Naomi Gladwell	February 2020
3	Updated the references and added the full titles for other relevant guidelines. Added administration instructions in table. Prescribing instructions for both sites added. Changed max dose of loading to 2g as per CEWT Compatibility information updated- avoid	December 2023