

NICU/Paeds: Dopamine

Presentation:	Solution for injection 40mg/ml, 5ml ampoules												
Indication:	Inotropic support for neonates and paediatric patients												
Dose:	<table border="1"> <thead> <tr> <th></th> <th>Initial Dosing</th> <th></th> <th>Maximum Dosing</th> </tr> </thead> <tbody> <tr> <td>Neonate</td> <td>3micrograms/kg/min</td> <td>Adjusted according to response*</td> <td>20micrograms/kg/min</td> </tr> <tr> <td>Child</td> <td>5micrograms/kg/min</td> <td>Adjusted according to response*</td> <td>20micrograms/kg/min</td> </tr> </tbody> </table> <p>*Doses >10micrograms/kg/min can cause an increase in systemic resistance, a fall in gut blood flow and a reduction in cardiac output in the neonate, especially in the first few days of life</p>		Initial Dosing		Maximum Dosing	Neonate	3micrograms/kg/min	Adjusted according to response*	20micrograms/kg/min	Child	5micrograms/kg/min	Adjusted according to response*	20micrograms/kg/min
	Initial Dosing		Maximum Dosing										
Neonate	3micrograms/kg/min	Adjusted according to response*	20micrograms/kg/min										
Child	5micrograms/kg/min	Adjusted according to response*	20micrograms/kg/min										
Route of administration:	<p>Preferably administer via a central venous access via SMART pumps, to avoid potential venous irritation as the product has a high osmolarity and low pH.</p> <p>Max concentration for peripheral use = 3.2mg/ml (see below for preparation). If given peripherally, choose a large vein and monitor the injection site closely using a recognised infusion phlebitis scoring tool.</p>												
Instructions for preparation and administration:	<p><i>*NOTE that this monograph is NOT in line with coMET due to pump variations*</i></p> <p><u>Preparation of standard dopamine syringe for CENTRAL LINE administration:</u></p> <ol style="list-style-type: none"> 1) Total number of mg of dopamine = 30 x patients weight (kg) – rounded to the nearest multiple of 4mg 2) Dilute the dopamine with glucose 5% or sodium chloride 0.9% to a final volume of 50ml 3) This will provide 1 micrograms/kg/min if infused at 0.1ml/hour <p>**In fluid restricted babies it may be necessary to use ‘double’ or ‘quadruple’ strength syringes**</p> <p>Double = number of mg of dopamine = 60 x baby’s weight (kg) made up to 50ml A rate of 0.5ml/hr will provide 10micrograms/kg/min</p> <p>Quadruple = number of mg of dopamine = 120 x baby’s weight (kg) made up to 50ml A rate of 0.25ml/hr will provide 10micrograms/kg/min</p> <p><u>In exceptional circumstances a syringe for PERIPHERAL use can be prepared:</u></p> <ol style="list-style-type: none"> 1) Total number of mg of dopamine = 3 x patients weight (kg) – rounded DOWN to the nearest multiple of 4mg 2) Dilute the dopamine with glucose 5% or sodium chloride 0.9% to a final volume of 50ml 3) This will provide 1 micrograms/kg/min if infused at 1ml/hour 4) Monitor for peripheral ischemia. <p>*Discard the solution after 24 hours or if darker than slightly yellow/ discoloured in any other way*</p> <p><u>Flushing Information:</u></p> <p>IV infusion via a central venous access device:</p>												

	<p>Do <u>not</u> flush the central venous access device. After the infusion is discontinued, disconnect the administration set, aspirate the cannula contents and then flush with sodium chloride 0.9% at the same speed as drug.</p> <p>IV infusion via peripheral cannula: Flush the cannula with sodium chloride 0.9% at the same speed as the rate of infusion to avoid adverse haemodynamic effects.</p>																																								
Prescribing	<p>QHB- Prescribe on Meditech RDH- Prescribe on paper drug chart</p> <p>**Please ensure concentration (in mg/ml) is completed to enable use of SMART pumps**</p> <p>To calculate concentration of infusion for SMART pumps (in mg/ml) divide total mg in infusion by total volume of infusion (mls): e.g. 76mg in 50mls = $\frac{76\text{mg}}{50\text{mls}} = 1.52 \text{ mg/ml}$</p> <p>Example for a standard strength central line infusion for a 2.5kg baby:</p> <table border="1"> <tr> <td>Drug</td> <td>Drug amount in syringe</td> <td>Diluent</td> <td>Total volume (ml)</td> <td>Route</td> </tr> <tr> <td>Dopamine</td> <td>76mg</td> <td>sodium chloride 0.9%</td> <td>50mL</td> <td>IV</td> </tr> <tr> <td>Start date</td> <td>Drug concentration per ml</td> <td>Infusion range</td> <td>Min</td> <td>Max</td> </tr> <tr> <td>23/5/20</td> <td>1.52mg/ml</td> <td>Dose/kg/time</td> <td>3 microgram/kg/min</td> <td>20 microgram/kg/min</td> </tr> <tr> <td>Pharm</td> <td></td> <td>ml/hr</td> <td>0.3ml/hour</td> <td>2ml/hour</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td>Name, Sig, Bleep</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td><i>A. Doctor</i></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td><i>#1234</i></td> </tr> </table>	Drug	Drug amount in syringe	Diluent	Total volume (ml)	Route	Dopamine	76mg	sodium chloride 0.9%	50mL	IV	Start date	Drug concentration per ml	Infusion range	Min	Max	23/5/20	1.52mg/ml	Dose/kg/time	3 microgram/kg/min	20 microgram/kg/min	Pharm		ml/hr	0.3ml/hour	2ml/hour					Name, Sig, Bleep					<i>A. Doctor</i>					<i>#1234</i>
Drug	Drug amount in syringe	Diluent	Total volume (ml)	Route																																					
Dopamine	76mg	sodium chloride 0.9%	50mL	IV																																					
Start date	Drug concentration per ml	Infusion range	Min	Max																																					
23/5/20	1.52mg/ml	Dose/kg/time	3 microgram/kg/min	20 microgram/kg/min																																					
Pharm		ml/hr	0.3ml/hour	2ml/hour																																					
				Name, Sig, Bleep																																					
				<i>A. Doctor</i>																																					
				<i>#1234</i>																																					
Known compatibility issues	<p>Incompatible with bicarbonate and other alkaline solutions. See 'Y-site' compatibility table on Medusa</p>																																								
SMART pump directions	<p>Load Syringe, prime line using the pump for accurate dosing.</p> <ul style="list-style-type: none"> Open 'NICU' or 'Children' folder then open 'doPamine' programme. Using DATA chevrons enter concentration in mg/ml and confirm Enter the Baby's/Child's weight in kg and confirm Enter/confirm the dose in micrograms/kg/min Visually confirm the rate (ml/h) against the prescribed dose (microgram/kg/min) Perform STOP moment with medical team (Pump against prescription) Connect to Baby/Child Press start button 																																								
Additional Comments:	<ul style="list-style-type: none"> Avoid abrupt withdrawal. Reduce dose gradually to avoid unnecessary hypotension. Peripheral infusions of inotropic doses should be used with caution as vasoconstriction and gangrene of the fingers or toes may occur. In low doses, cardiac stimulation and renal vascular dilation occur and in larger doses vasoconstriction occurs. 																																								

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

References:

- Handbook on Injectable Drugs, Accessed Via www.medicinescomplete.com on 11/12/23
- BNFc, accessed via <https://bnfc.nice.org.uk/drug/dopamine-hydrochloride> on 11/12/23
- Medusa, accessed via www.medusa.wales.nhs.uk on 11/12/23
- Yorkshire and Humber Neonatal Operational Delivery Network Drug Administration Guide, Accessed via www.networks.nhs.uk on 11/12/23
- Evelina, accessed via <http://cms.ubgo.com/public/d2595446-ce3c-47ff-9dcc-63167d9f4b80> on 11/12/23
- Hospira (Dopamine 40mg/mL) SPC, accessed via www.medicines.org.uk/emc/product/3789/smpe on 11/12/23
- Neonatal Formulary, 2007, Dopamine, page 192-193

Suitable for printing to guide individual patient management but not for storage Review Due: Dec 2026

Document control sheet

GUIDELINE NUMBER	
AREA IN WHICH THIS MONOGRAPH APPLIES	Paeds/NICU

DIVISIONAL AUTHORISATION	
GROUP	DATE
Paediatric monograph review group	12/12/23

AUTHORS		
Author	Position	Date
Written by: Lisa Taylor	Paediatric Pharmacist	June 2017
Checked by: Kevin Inglesant	Paediatric Pharmacist	June 2017

If review:

	Position	Date
Updated and transferred to new template by: Harriet Hughes	Advanced Pharmacist, Women's & Children's	March 2020
Checked by: Carol Bright/Naomi Gladwell	Advanced Pharmacist, Education & Training/Specialist Pharmacist, Women's and Children's	March 2020
Checked by:	Lamia Ahmed, Advanced Pharmacist- Women's and Children's	December 2023

Change history:

Changes Reference	Change details	Date
1	Addition of flushing information	March 2020
2	QHB prescribing instruction. Compatibility instructions- to refer to Medusa.	December 2023