		Type: Drug Guideline	Document reference: 0649	Manual Classification: Waikato DHB Drug Guidelines
Title: Dopamine for Neonates			Effective date: 30 March 2022	
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BRIEF ADMINISTRATION GUIDE

For detailed information refer to [The Australasian Neonatal Medicines Formulary dopamine guideline](#)



Critical Note: there are minor variations between the ANMF and Waikato DHB best practice within this drug guideline – see **yellow shaded text**

Indications: To improve cardiac output, blood pressure and urine output in infants with hypotension

Route: Intravenous (continuous IV infusion).
Note: Administration via an UAC is not recommended

- Supplied as dopamine hydrochloride, equivalent to dopamine 200 mg/5 mL (40 mg/mL) ampoule
 - pH of dopamine is approx 4 (range 2.5 to 5)

Dose:

- Initially 2.5 microgram/kg/min
- Adjust according to response to 1 – 20 microgram/kg/min
Dose range determined by desired clinical effect (see full guideline)
- The usual maximum recommended dose is 20 microgram/kg/min, however doses up to **50** microgram/kg/min have been used

Preparation and administration

Compatible fluids: glucose 5%, glucose 10%, sodium chloride 0.9%, glucose in sodium chloride

Continuous IV Infusion

- Select the **concentration** of dopamine required based on the weight of the infant and in the context of any fluid restrictions (refer to appendix for assistance) and dilute the appropriate volume of dopamine injection using compatible fluid in accordance with the table below:

Final Dopamine Concentration	0.8 mg/mL	1.6 mg/mL	3.2 mg/mL	6 mg/mL
Volume of dopamine (200mg/ 5mL)	1 mL	2 mL	4 mL	4.5 mL
Volume of compatible fluid	49 mL	48 mL	46 mL	25.5 mL
Total volume	50 mL	50 mL	50 mL	30 mL


Note: The maximum recommended concentration is 3.2 mg/mL, however higher concentrations have been used in fluid restricted infants via a central line only.

- Administer by continuous infusion at the prescribed rate (using Guardrails profile) preferably via a central line but may be used peripherally in an emergency when central access is not available.
- Do NOT flush line or suddenly stop infusion

$$\text{Rate (mL/hr)} = \frac{60 \times \text{Dose (microgram/kg/min)} \times \text{Weight (kg)}}{\text{Concentration (microgram/mL)}}$$

Monitoring

- Continuous heart rate, blood pressure and ECG monitoring
- Document vital signs hourly and as required
- If administering peripherally observe for injection site reactions or signs of extravasation
- Assess skin colour and temperature of extremities frequently
- Monitor urine output
- Monitor for hypersensitivity reactions or severe adverse reactions

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Storage and Stability

- Prepare a fresh solution at least every 24 hours or earlier if discolouration occurs
- Discard ampoule once opened
- Visually inspect solution for precipitation and discolouration; do not use if present.

Competency for Administration

This procedure is carried out by, or under, the direct supervision of a registered nurse/registered midwife who holds current Waikato DHB Generic Medicine Management and IV certification as well as Neonatal specific competency NCV/NAC and NIC2.

Guardrails Information

Dopamine is Guardrail profiled on the CC pump for NICU. Following are the guardrail limits:

Guardrails Drug Name	Dopamine
Concentration (mg/ml)	
Minimum	0.4
Maximum	6
Dose rate (mcg/kg/min)	
Default	2.5
Soft minimum	0.5
Soft maximum	20
Hard max	50


References

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Note: Printed copies are only valid on the day of printing – they are not controlled and may not be the current version in use. Please refer to the online version.

Note: Dopamine is a high risk medication which has resulted in patient harm when used in error. Please ensure you have selected the correct product and are using the correct guideline.

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Appendix: Infusion tables to assist concentration selection

Table 1: Infusion rates when using dopamine concentration **0.8 mg/mL**
(most useful for neonates ≤ 1 kg)

Rate (mL/hr)	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1
Weight (kg)	Approximate micrograms/kg/minute									
0.5	2.7	5.3	8.0	10.7	13.3	16.0	18.7	21.3	24.0	26.7
1	1.3	2.7	4.0	5.3	6.7	8.0	9.3	10.7	12.0	13.3
1.5	0.9	1.8	2.7	3.6	4.4	5.3	6.2	7.1	8.0	8.9
2	0.7	1.3	2.0	2.7	3.3	4.0	4.7	5.3	6.0	6.7

Table 2: Infusion rates when using dopamine concentration **1.6 mg/mL**
(likely useful for neonates 1 – 3 kg)

Rate (mL/hr)	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1
Weight (kg)	Approximate micrograms/kg/minute									
0.5	5.3	10.7	16.0	21.3	26.7	32.0	37.3	42.7	48.0	53.3
1	2.7	5.3	8.0	10.7	13.3	16.0	18.7	21.3	24.0	26.7
1.5	1.8	3.6	5.3	7.1	8.9	10.7	12.4	14.2	16.0	17.8
2	1.3	2.7	4.0	5.3	6.7	8.0	9.3	10.7	12.0	13.3
2.5	1.1	2.1	3.2	4.3	5.3	6.4	7.5	8.5	9.6	10.7
3	0.9	1.8	2.7	3.6	4.4	5.3	6.2	7.1	8.0	8.9

Table 3: Infusion rates when using dopamine concentration **3.2 mg/mL**
(most useful for neonates 2 - 4 kg)

Rate (mL/hr)	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1
Weight (kg)	Approximate micrograms/kg/minute									
2	2.7	5.3	8	10.7	13.3	16	18.7	21.3	24	26.7
2.5	2.1	4.3	6.4	8.5	10.7	12.8	14.9	17.1	19.2	21.3
3	1.8	3.6	5.3	7.1	8.9	10.7	12.4	14.2	16	17.8
3.5	1.5	3	4.6	6.1	7.6	9.1	10.7	12.2	13.7	15.2
4	1.3	2.7	4	5.3	6.7	8	9.3	10.7	12	13.3
4.5	1.2	2.4	3.6	4.7	5.9	7.1	8.3	9.5	10.7	11.9
5	1.1	2.1	3.2	4.3	5.3	6.4	7.5	8.5	9.6	10.7

Table 3: Infusion rates when using dopamine concentration **6 mg/mL** (central line only)
(most useful for neonates > 3 kg)

Rate (mL/hr)	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1
Weight (kg)	Approximate micrograms/kg/minute									
2.5	4	8	12	16	20	24	28	32	36	40
3	3.3	6.7	10	13.3	16.7	20	23.3	26.7	30	33.3
3.5	2.9	5.7	8.6	11.4	14.3	17.1	20	22.9	25.7	28.6
4	2.5	5	7.5	10	12.5	15	17.5	20	22.5	25
4.5	2.2	4.4	6.7	8.9	11.1	13.3	15.6	17.8	20	22.2
5	2	4	6	8	10	12	14	16	18	20