



## MONOGRAPH

# DOPAMINE

Scope (Staff):	Medical, Pharmacy, Nursing, Anaesthetic Technicians
Scope (Area):	All Clinical Areas

### Child Safe Organisation Statement of Commitment

CAHS commits to being a child safe organisation by applying the National Principles for Child Safe Organisations. This is a commitment to a strong culture supported by robust policies and procedures to reduce the likelihood of harm to children and young people.

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

## ! HIGH RISK MEDICINE !

### QUICKLINKS

<a href="#">Dosage/Dosage Adjustments</a>	<a href="#">Administration</a>	<a href="#">Compatibility</a>	<a href="#">Monitoring</a>
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### DRUG CLASS

Sympathomimetic <sup>1</sup>

Dopamine is a [High Risk Medicine](#).

### INDICATIONS AND RESTRICTIONS

- Dopamine is used at PCH for the correction of haemodynamic instability due to septic shock, myocarditis/cardiomyopathy, cardiac failure, post-cardiac surgery, or other causes.

### CONTRAINDICATIONS

- Hypersensitivity to dopamine or any component of the formulation.
- Phaeochromocytoma <sup>2,3,4</sup>  
Dopamine-associated catecholamine activity may cause acute hypertension and atrial or ventricular tachyarrhythmias.
- Hyperthyroidism <sup>2,3,4</sup>  
May be associated with an increased risk of cardiovascular effects.
- Atrial or ventricular tachyarrhythmias. <sup>2,3,4</sup>

- Cyclopropane and halogenated hydrocarbon anaesthetics<sup>2,3,4</sup>  
These agents may sensitise the myocardium to the effects of dopamine, leading to the potential development of ventricular arrhythmias or hypertension.
- Ergot and related compounds<sup>2</sup>  
May result in excessive vasoconstriction and should be avoided.
- Phenytoin<sup>3</sup>  
Concurrent use of intravenous phenytoin with dopamine may result in dose-dependent sudden hypotension and bradycardia and possible cardiac arrest.  
If anticonvulsant therapy is necessary during administration of dopamine, an alternative to phenytoin should be considered.
- Dopamine solutions which are coloured must not be used.<sup>2</sup>

## PRECAUTIONS

- Sodium metabisulfite, which is present as an excipient, may cause allergic reactions in susceptible people.<sup>2,5</sup>
- Hypovolaemia should be fully corrected prior to treatment with dopamine.<sup>2,3,4</sup>
- Pulmonary hypertension.<sup>3</sup>
- Acidosis, hypercapnia or hypoxia may reduce the effectiveness and/or increase the incidence of adverse effects of dopamine. These conditions should be corrected prior to or concurrently with administration of dopamine.<sup>2</sup>

## FORMULATIONS

Listed below are products available at PCH, other formulations may be available, check with pharmacy if required:

- 200mg/5mL Ampoule

Imprest location: [Formulary One](#)

## DOSAGE & DOSAGE ADJUSTMENTS

**Neonates:** [Refer to Neonatal Medication Protocols](#)

**IV / [Intraosseous](#):** By continuous infusion

**1 month to 18 years:** 2 – 20 micrograms/kg/minute. Titrate gradually in 5 to 10 microgram/kg/minute increments, up to the desired clinical response.<sup>7</sup>

Wean the dose before ceasing.

**Renal impairment:**<sup>6</sup>

- There is conflicting information as to whether dosage adjustment is required in patients with renal impairment. Instead, dose according to clinical response. [eGFR calculator](#)

**Hepatic impairment:**<sup>6</sup>

- There is conflicting information as to whether dosage adjustment is required in patients with hepatic impairment. Instead, dose according to clinical response.

## ADMINISTRATION

**Dopamine infusions are only to be administered in the Paediatric Critical Care ward; or in Emergency, Operating Theatres and Diagnostic Imaging under the direct supervision of a Consultant.**

- Administer into a central vein to reduce the risk of extravasation.<sup>2</sup>
- Administration via a large peripheral vein should only occur when urgent inotropic support is required prior to central venous access.

**If administering peripherally, use lower concentration preparation (30 mg in 30 mL).**<sup>3,4,6</sup>

Patient's Weight	Concentration	Notes
<b>10 kg or less</b>	30 mg in 30 mL (1 mg/mL)	In a 3 kg patient 2 microg/kg/min = 0.36 mL/hour
<b>Above 10 kg</b>	200 mg in 50 mL (4 mg/mL)	In a 20 kg patient 2 microg/kg/min = 0.6 mL/hour

- Any sign of extravasation must be dealt with immediately ([CVAD and Midline Insertion and Management Guidelines – Appendix 10](#)).
- Care must be exercised to prevent boluses through the same IV line or CVC lumen, as an inadvertent bolus can be catastrophic.
- Dopamine infusions must be weaned and **not** stopped abruptly.
- Intraosseous administration is described [here](#).

## COMPATIBILITY (LIST IS NOT EXHAUSTIVE)

### Compatible fluids:<sup>5</sup>

Sodium chloride 0.9%, glucose 5%, glucose/sodium chloride solutions, Compound Sodium Lactate (Hartmann's) solution.

### Compatible at Y-site:<sup>5,8</sup>

Adrenaline (epinephrine), alprostadil, amikacin, atracurium, aztreonam, caffeine citrate, calcium chloride, calcium gluconate, caspofungin, cefepime, cefotaxime, cefoxitin, ceftazidime, ceftriaxone, ciclosporin, ciprofloxacin, clindamycin, clonidine, dexamethasone, dexmedetomidine, dobutamine, ephedrine sulfate, esmolol, ethanol, fentanyl, fluconazole, foscarnet, gentamicin, glyceryl trinitrate, haloperidol lactate (in glucose), heparin sodium, hydrocortisone sodium succinate, hydromorphone, labetalol, lidocaine, meropenem, methylprednisolone sodium succinate, metronidazole, micafungin, midazolam, milrinone, morphine sulfate, noradrenaline (norepinephrine), ondansetron, pethidine, piperacillin-tazobactam, potassium chloride, remifentanyl, sodium nitroprusside, suxamethonium, tacrolimus, tigecycline, tobramycin, vancomycin, verapamil.

Only commonly used drugs are listed below. This is not a complete list of incompatible drugs. [Compatibilities of IV drugs](#) must be checked when two or more drugs are given concurrently.

**INCOMPATIBLE drugs:** <sup>5,8</sup>

Aciclovir, aldesleukin, alteplase, ampicillin, azathioprine, cefazolin, ganciclovir, hydroxocobalamin, insulin (regular), sodium bicarbonate, thiopental sodium.

**MONITORING**

Blood pressure, ECG and urine output should be monitored continuously during therapy.<sup>2</sup>

**ADVERSE EFFECTS**

**Common:** Ectopic beats, nausea, vomiting, tachycardia, angina, palpitations, dyspnoea, headache, hypotension, or hypertension.<sup>1</sup>

**Infrequent:** Abnormal ventricular conduction, bradycardia, piloerection, uraemia, mydriasis, vasoconstriction, extravasation<sup>1</sup>

**Rare:** Allergic reaction (from the excipient sodium metabisulfite)<sup>1</sup>

**STORAGE**

Protect ampoules from light.<sup>2</sup>

Store below 25°C.<sup>2</sup>

**INTERACTIONS**

This medication may interact with other medications; consult PCH approved references (e.g. [Clinical Pharmacology](#)), a clinical pharmacist or PCH Medicines Information Service on extension 63546 for more information.

*\*\*Please note: The information contained in this guideline is to assist with the preparation and administration of **dopamine**. Any variations to the doses recommended should be clarified with the prescriber prior to administration\*\**

**Related CAHS internal policies, procedures and guidelines**

[Intraosseous access - PCH Emergency Department Guidelines](#)

[CVAD and Midline Insertion and Management Guidelines – Appendix 10](#)



**References**

1. Australian Medicines Handbook [online] [accessed 6/6/2023]. Dopamine monograph.
2. MIMS Australia Pty Ltd. [online] [accessed 2/11/23]. Dopamine monograph.
3. Dopamine monograph. In Martindale: The complete drug reference. [online] London: Pharmaceutical Press; 2023 [accessed 2/11/23].
4. Dopamine monograph. In BNF for Children. [online] London: Pharmaceutical Press; 2023 [accessed 2/11/23].

## References

5. Dopamine monograph. In Symons K, Ermer J, editors. Australian Injectable Drugs Handbook. 9th ed. [on-line] The Society of Hospital Pharmacists of Australia; 2023 [accessed 2/11/23].
6. Dopamine monograph. In Pediatric Injectable Drugs. [on-line] American Society of Health-System Pharmacists; 2023 [accessed 2/11/2023].
7. Dopamine: Pediatric drug information. [on-line] Lexicomp; 2023 [accessed 2/11/2023].
8. Dopamine monograph. In ASHP Injectable Drug Information. [on-line] Bethesda: American Society of Health-System Pharmacists; 2023 [accessed 2/11/23].

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<b>Document Owner:</b>	Chief Pharmacist		
<b>Reviewer / Team:</b>	Senior Pharmacist, PCC Consultant, Clinical Nurse Specialist, Anaesthetist.		
<b>Date First Issued:</b>	August 2014	<b>Last Reviewed:</b>	Oct 2024
<b>Amendment Dates:</b>	Oct 2024	<b>Next Review Date:</b>	Oct 2027
<b>Approved by:</b>	Medication Safety Committee	<b>Date:</b>	Oct 2024
<b>Endorsed by:</b>	Drugs and Therapeutics Committee	<b>Date:</b>	Nov 2024
<b>Standards Applicable:</b>	NSQHS Standards:   NSMHS: N/A Child Safe Standards: N/A		

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