South Australian Neonatal Medication Guidelines

dobutamine

250mg injection, 250mg/20mL injection

Note

This guideline provides advice of a general nature. This statewide guideline has been prepared to promote and facilitate standardisation and consistency of practice, using a multidisciplinary approach. The guideline is based on a review of published evidence and expert opinion.

Information in this statewide guideline is current at the time of publication.

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Health practitioners in the South Australian public health sector are expected to review specific details of each patient and professionally assess the applicability of the relevant guideline to that clinical situation.

If for good clinical reasons, a decision is made to depart from the guideline, the responsible clinician must document in the patient's medical record, the decision made, by whom, and detailed reasons for the departure from the guideline.

This statewide guideline does not address all the elements of clinical practice and assumes that the individual clinicians are responsible for discussing care with consumers in an environment that is culturally appropriate and which enables respectful confidential discussion. This includes:

- The use of interpreter services where necessary,
- Advising consumers of their choice and ensuring informed consent is obtained,
- Providing care within scope of practice, meeting all legislative requirements and maintaining standards of professional conduct, and
- Documenting all care in accordance with mandatory and local requirements

This is a High Risk Medication ⚠
An overdose can be rapidly fatal.

Dose and Indications

Circulatory Support

Intravenous infusion

5 to 25 micrograms/kg/minute beginning at a low dose and titrate by clinical response.

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Preparation and Administration

Intravenous Infusion

Infusion through a central line preferable.

Select the strength required based on the weight of the infant in the context of any fluid restrictions. Maximum concentration for infusion is 5mg/mL.

DOBUTamine Concentration Selection Tables can be found on the following pages of this guideline to assist prescribers to gauge which strength is best for the patient.

There are **TWO STEPS** to this process if using DOBUTamine **powder** for injection.

STEP ONE: Reconstitute 250mg DOBUTamine **powder** for injection vial with 20mL of water for injection. The resulting solution contains 250mg/20mL (12.5mg/mL) DOBUTamine.

Step ONE is NOT required if using DOBUTamine 250mg/20mL (12.5mg/mL) injection which is already in a liquid form.

STEP TWO: Dilute the appropriate volume of the 12.5mg/mL DOBUTamine solution using compatible fluid; and administer by continuous infusion. Diluted preparation is stable for 24 hours at room temperature.

The three standard concentrations to select from are:

- DOBUTamine 1mg/mL (1000microgram/mL)
- DOBUTamine 2mg/mL (2000microgram/mL)
- DOBUTamine 4mg/mL (4000microgram/mL)

Formulae

To calculate infusion rate (mL/hr):

$$\text{Rate (mL/hr)} = \frac{60 \times \text{dose (micrograms/kg/min)} \times \text{weight(kg)}}{\text{Strength(microgram/mL)}}$$

To calculate the dose (micrograms/kg/min):

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

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DOBUTamine Concentration Selection Table for 25mL syringes

Double Dilution for DOBUTamine 1000microgram/mL

STEP ONE: Required only for powder for injection. Refer to Preparation and Administration for reconstitution instructions.

STEP TWO: Dilute 2 mL DOBUTamine (12.5mg/mL) with 23mL of compatible fluid (total of 25mL). The resulting solution contains 1mg/mL (1000micrograms/mL) DOBUTamine.

Rate (mL/hr)	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1	Rate (mL/hr)
Weight (kg)	Approximate micrograms/kg/min									Weight (kg)
0.5	7	10	13	17	20	23	27	30	33	0.5
1.5	2	3	4	6	7	8	9	10	11	1.5
2.5	1	2	3	3	4	5	5	6	7	2.5
3.5	1	1	2	2	3	3	4	4	5	3.5
4.5					2	3	3	3	4	4.5

Discard remaining solution

Double Dilution for DOBUTamine 2000microgram/mL

STEP ONE: Required only for powder for injection. Refer to Preparation and Administration for reconstitution instructions.

STEP TWO: Dilute 4 mL DOBUTamine (12.5mg/mL) with 21mL of compatible fluid (total of 25mL). The resulting solution contains 2mg/mL (2000micrograms/mL) DOBUTamine.

Rate (mL/hr)	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1	Rate (mL/hr)
Weight (kg)	Approximate micrograms/kg/min									Weight (kg)
0.5	13	20	27	33	40	47	53	60	67	0.5
1.5	4	7	9	11	13	16	18	20	22	1.5
2.5	3	4	5	7	8	9	11	12	13	2.5
3.5	2	3	4	5	6	7	8	9	10	3.5
4.5		2	3	4	4	5	6	7	7	4.5

Discard remaining solution

Double Dilution for DOBUTamine 4000microgram/mL

STEP ONE: Required only for powder for injection. Refer to Preparation and Administration for reconstitution instructions.

STEP TWO: Dilute 8 mL DOBUTamine (12.5mg/mL) with 17mL of compatible fluid (total of 25mL). The resulting solution contains 4mg/mL (4000micrograms/mL) DOBUTamine.

Rate (mL/hr)	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1	Rate (mL/hr)
Weight (kg)	Approximate micrograms/kg/min									Weight (kg)
1	14	20	26							1
2	7	10	13	17	20	23	27	30	33	2
3	4	7	9	11	13	16	18	20	22	3
4	3	5	7	8	10	12	13	15	17	4
5	3	4	6	7	8	10	11	12	13	5

Discard remaining solution

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DOBUTamine Concentration Selection Table for 50mL syringes

Double Dilution for DOBUTamine 1000microgram/mL

STEP ONE: Required only for powder for injection. Refer to Preparation and Administration for reconstitution instructions.

STEP TWO: Dilute 4mL DOBUTamine (12.5mg/mL) with 46mL of compatible fluid (total of 50mL). The resulting solution contains 1mg/mL (1000micrograms/mL) DOBUTamine.

Rate (mL/hr)	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1	Rate (mL/hr)
Weight (kg)	Approximate micrograms/kg/min									Weight (kg)
0.5	7	10	13	17	20	23	27	30	33	0.5
1.5	2	3	4	6	7	8	9	10	11	1.5
2.5	1	2	3	3	4	5	5	6	7	2.5
3.5	1	1	2	2	3	3	4	4	5	3.5
4.5					2	3	3	3	4	4.5

Discard remaining solution

Double Dilution for DOBUTamine 2000microgram/mL

STEP ONE: Required only for powder for injection. Refer to Preparation and Administration for reconstitution instructions.

STEP TWO: Dilute 8mL DOBUTamine (12.5mg/mL) with 42mL of compatible fluid (total of 50mL). The resulting solution contains 2mg/mL (2000micrograms/mL) DOBUTamine.

Rate (mL/hr)	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1	Rate (mL/hr)
Weight (kg)	Approximate micrograms/kg/min									Weight (kg)
0.5	13	20	27	33	40	47	53	60	67	0.5
1.5	4	7	9	11	13	16	18	20	22	1.5
2.5	3	4	5	7	8	9	11	12	13	2.5
3.5	2	3	4	5	6	7	8	9	10	3.5
4.5		2	3	4	4	5	6	7	7	4.5

Discard remaining solution

Double Dilution for DOBUTamine 4000microgram/mL

STEP ONE: Required only for powder for injection. Refer to Preparation and Administration for reconstitution instructions.

STEP TWO: Dilute 16mL DOBUTamine (12.5mg/mL) with 34mL of compatible fluid (total of 50mL). The resulting solution contains 4mg/mL (4000micrograms/mL) DOBUTAmine.

Rate (mL/hr)	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1	Rate (mL/hr)
Weight (kg)	Approximate micrograms/kg/min									Weight (kg)
1	14	20	26							1
2	7	10	13	17	20	23	27	30	33	2
3	4	7	9	11	13	16	18	20	22	3
4	3	5	7	8	10	12	13	15	17	4
5	3	4	6	7	8	10	11	12	13	5

Discard remaining solution

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Compatible Fluids

Glucose 5%, glucose 10%, glucose / sodium chloride combinations, sodium chloride 0.9%

Adverse Effects

Common

Tachycardia, increased blood pressure, ventricular ectopic activity, hypotension (if patient is hypovolemic)

Infrequent

Phlebitis, rash, ventricular tachycardia or fibrillation, cutaneous vasodilation

Rare

Allergic reaction (due to sodium metabisulfite)

Monitoring

- Continuous heart rate
- Intra-arterial blood pressure
- Observe intravenous site for signs of extravasation.

Practice Points

- Dose may be increased every 10 to 30 minutes as required
- Use with CAUTION in patients with hypertension or liver impairment
- Hypovolaemia - should be corrected prior to DOBUTamine administration
- Acidosis, hypercapnia, hypoxia – may reduce the effectiveness and/or increase the incidence of adverse effects
- DOBUTamine is incompatible with alkaline solutions (eg sodium bicarbonate, phenytoin).
- Do not bolus other drugs via DOBUTamine infusion
- Caution when changing IV line (avoid bolus or prolonged interruption of drug infusion)
- Contraindications include ventricular arrhythmias and rapid atrial fibrillation
- DOBUTamine may be used in combination with low to moderate doses of DOPamine to optimise cardiac output without increasing peripheral vascular resistance
- DOBUTamine is about 4 times as potent as DOPamine in stimulating myocardial contractility in low concentrations.
- Dobutamine solutions may show a pink discolouration which increases with time. This colour is due to a slight oxidation of the drug. However, there is no significant loss of drug within the recommended storage times for solutions of the drug.

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1.0	November 2012	current	Original version

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