South Australian Neonatal Medication Guidelines

DOBUTamine

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

Hypoperfusion, hypotension related to myocardial dysfunction

Severe sepsis and septic shock

Intravenous infusion

5 to 20 microgram/kg/minute

Start at 5 microgram/kg/minute and titrate dose every 10-20minutes if required according to clinical response.

Preparation and Administration

Intravenous Infusion

Administer preferably via a central line but may be used peripherally in an emergency when central access is not available.

Select the strength required based on the weight of the infant in the context of any fluid restrictions. Maximum concentration for infusion is 4000microgram/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.

Dilute the appropriate volume of the 250mg/20mL DOBUTamine solution using compatible fluid; and administer by continuous infusion. Diluted preparation is stable for 24 hours at room temperature. Discard any remaining solution.

The three standard concentrations to select from are:

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

Formulae

To calculate infusion rate (mL/hr):

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

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

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

DOBUTamine Concentration Selection Tables

DOBUTamine 1000microgram/mL

To make 25mL syringe:
Dilute 2mL DOBUTamine (12.5mg/mL) with 23mL of compatible fluid (total of 25mL). The resulting solution contains 1000microgram/mL

To make 50mL syringe:
Dilute 4mL DOBUTamine (12.5mg/mL) with 46mL of compatible fluid (total of 50mL). The resulting solution contains 1000microgram/mL

Table ONE: Concentration selection table for DOBUTamine 1000microgram/mL

Recommended for neonates weighing <1kg

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 microgram/kg/minute									Weight (kg)
0.5	7	10	13	17	20	23				0.5
1	3	5	7	8	10	12	13	15	17	1
1.5	2	3	4	6	7	8	9	10	11	1.5
2	2	3	3	4	5	6	7	8	8	2
2.5	1	2	3	3	4	5	5	6	7	2.5
3	1	2	2	3	3	4	4	5	6	3
3.5	1	1	2	2	3	3	4	4	5	3.5

DOBUTamine 2000microgram/mL

To make 25mL syringe:
Dilute 4mL DOBUTamine (12.5mg/mL) with 21mL of compatible fluid (total of 25mL). The resulting solution contains 2000microgram/mL

To make 50mL syringe:
Dilute 8mL DOBUTamine (12.5mg/mL) with 42mL of compatible fluid (total of 50mL). The resulting solution contains 2000microgram/mL

Table TWO: Concentration selection table for DOBUTamine 2000microgram/mL

Generally used for neonates weighing 1kg to 3kg

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 microgram/kg/minute									Weight (kg)
1	7	10	13	17	20	23				1
1.5	4	7	9	11	13	16	18	20	22	1.5
2	3	5	7	8	10	12	13	15	17	2
2.5	3	4	5	7	8	9	11	12	13	2.5
3	2	3	4	6	7	8	9	10	11	3
3.5	2	3	4	5	6	7	8	9	10	3.5
4	2	3	3	4	5	6	7	8	8	4

DOBUTamine 4000microgram/mL

To make 25mL syringe:
Dilute 8mL DOBUTamine (12.5mg/mL) with 17mL of compatible fluid (total of 25mL). The resulting solution contains 4000microgram/mL

To make 50mL syringe:
Dilute 16mL DOBUTamine (12.5mg/mL) with 34mL of compatible fluid (total of 50mL). The resulting solution contains 4000microgram/mL

Table 3: Concentration selection table for DOBUTamine 4000microgram/mL

Generally used for neonates >3kg

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 microgram/kg/minute**									Weight (kg)
2	7	10	13	17	20	23				2
2.5	5	8	11	13	16	19	21	24		2.5
3	4	7	9	11	13	16	18	20	22	3
3.5	4	6	8	10	11	13	15	17	19	3.5
4	3	5	7	8	10	12	13	15	17	4
4.5	3	4	6	7	9	10	12	13	15	4.5
5	3	4	5	7	8	9	11	12	13	5

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

- Observe intravenous site for inflammation, extravasation, and extreme vasoconstriction (tracking)
- Continuous heart rate
- Invasive blood pressure monitoring is recommended

Practice Points

- Contraindications include ventricular arrhythmias, rapid atrial fibrillation and phaechromocytoma.
- Hypovolaemia - should be corrected prior to DOBUTamine administration
- DOBUTamine is incompatible with alkaline solutions (e.g., sodium bicarbonate, phenytoin).
- DOBUTamine is considered Y-site compatible with parenteral nutrition (PN) and lipid emulsions where DOBUTamine concentration is 4000microgram/mL or weaker. Co-infusion with PN or lipid emulsions with inotropic agents can result in pulsatile flow of inotropic agents and should only occur if there is no alternative line access.
- Do not bolus other drugs via a line which shares a Y-site with DOBUTamine infusion as may cause haemodynamic instability.
- Caution when changing IV line (avoid bolus or prolonged interruption of drug infusion).
- 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.

Document Ownership & History

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