South Australian Neonatal Medication Guidelines

# DOBUTamine

## 250mg injection



### This is a High Risk Medication ⚠

An overdose can be rapidly fatal.



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**Contact:** South Australian Neonatal Medication Guidelines Workgroup at:
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SA Health

# DOBUTamine

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## Dose and Indications

### Circulatory Support

**Intravenous infusion**

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

## 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.

A double dilution will be required.

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

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

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

**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 |
|---|---|---|---|---|---|---|---|---|---|
| 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



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# DOBUTamine
## 250mg injection



**Double Dilution for DOBUTamine 4000microgram/mL**

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

**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 |
|---|---|---|---|---|---|---|---|---|---|
| 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

## DOBUTamine Concentration Selection Table for 50mL syringes

**Double Dilution for DOBUTamine 1000microgram/mL**

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

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

**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.**



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# DOBUTamine

## 250mg injection



| Rate (mL/hr) | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 1 |
|---|---|---|---|---|---|---|---|---|---|
| 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 | | 4.5 |
| 7 | | | | | | | | | | |

Discard remaining solution

**<u>Double Dilution for DOBUTamine 4000microgram/mL</u>**

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

**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 |
|---|---|---|---|---|---|---|---|---|---|
| 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

## 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



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**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.

## Version control and change history

**PDS reference:** OCE use only

| Version | Date from | Date to | Amendment |
|---|---|---|---|
| 1.0 | November 2012 | current | Original version |
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