

Noradrenaline (norepinephrine) 4 mg/4 mL injection

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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.

2 mg/mL of noradrenaline acid tartrate is equivalent to noradrenaline base 1 mg/mL (1:1000)

Synonyms

Norepinephrine

Dose and Indications

For severe, refractory hypotension

Intravenous infusion:

Starting dose of 0.1 to 0.2 microgram/kg/min, titrate according to response up to a maximum dose of 1.5 microgram/kg/min.



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Preparation and Administration

Intravenous Infusion

Store noradrenaline (norepinephrine) 1 mg/mL vials protected from light.

Select the strength required based on the weight of the infant in the context of any fluid restrictions. Noradrenaline 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 1 mg/mL noradrenaline solution using compatible fluid; and administer by continuous infusion. Diluted preparation is stable for 24 hours at room temperature.

Must be infused into a central venous catheter to avoid potential extravasation.

Discard solution if discoloured brown.

The three standard concentrations to select from are:

- > Noradrenaline 40 microgram/mL (equivalent to 0.04 mg/mL)
- > Noradrenaline 80 microgram/mL (equivalent to 0.08 mg/mL)
- > Noradrenaline 160 microgram/mL (equivalent to 0.16 mg/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):

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



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Noradrenaline Concentration Selection Table

Noradrenaline 40 microgram/mL

To make 25 mL syringe:

Dilute 1 mL noradrenaline (1 mg/mL) with 24 mL of compatible fluid (total of 25 mL). This makes a 40 microgram/mL solution.

To make 50 mL syringe:

Dilute 2 mL noradrenaline (1 mg/mL) with 48 mL of compatible fluid (total of 50 mL). This makes a 40 microgram/mL solution.

Table 1: Concentration selection table for Noradrenaline (norepinephrine) 40 microgram/mL

Recommended for neonates weighing less than 1 kg

Rate (mL/hr)	0.2	0.4	0.6	0.8	1	Rate (mL/hr)
Weight (kg)	Approximate microgram/kg/minute					Weight (kg)
0.5	0.27	0.53	0.80	1.07	1.33	0.5
1	0.13	0.27	0.40	0.53	0.67	1
1.5	0.09	0.18	0.27	0.36	0.44	1.5
2	0.07	0.13	0.20	0.27	0.33	2
2.5	0.05	0.11	0.16	0.21	0.27	2.5
3	0.04	0.09	0.13	0.18	0.22	3
3.5	0.04	0.08	0.11	0.15	0.19	3.5

Noradrenaline 80 microgram/mL

To make 25 mL syringe:

Dilute 2 mL noradrenaline (1 mg/mL) with 23 mL of compatible fluid (total of 25 mL). This makes a 80 microgram/mL solution.

To make 50 mL syringe:

Dilute 4 mL noradrenaline (1 mg/mL) with 46 mL of compatible fluid (total of 50 mL). This makes a 80 microgram/mL solution.

Table 2: Concentration selection table for Noradrenaline (norepinephrine) 80 microgram/mL

Generally used for neonates weighing 1 kg to 3 kg

Rate (mL/hr)	0.2	0.4	0.6	0.8	1	Rate (mL/hr)
Weight (kg)	Approximate microgram/kg/minute					Weight (kg)
1	0.27	0.53	0.80	1.07	1.33	1
1.5	0.18	0.36	0.53	0.71	0.89	1.5
2	0.13	0.27	0.40	0.53	0.67	2
2.5	0.11	0.21	0.32	0.43	0.53	2.5
3	0.09	0.18	0.27	0.36	0.44	3
3.5	0.08	0.15	0.23	0.30	0.38	3.5
4	0.07	0.13	0.20	0.27	0.33	4



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Noradrenaline 160 microgram/mL

To make 25 mL syringe:

Dilute 4 mL noradrenaline (1 mg/mL) with 21 mL of compatible fluid (total of 25 mL). This makes a 160 microgram/mL solution.

To make 50 mL syringe:

Dilute 8 mL noradrenaline (1 mg/mL) with 42 mL of compatible fluid (total of 50 mL). This makes a 160 microgram/mL solution.

Table 3: Concentration selection table for Noradrenaline (norepinephrine) 160 microgram/mL

Generally used for neonates weighing greater than 3 kg

Rate (mL/hr)	0.2	0.4	0.6	0.8	1	Rate (mL/hr)
Weight (kg)	Approximate microgram/kg/min					Weight (kg)
2	0.27	0.53	0.80	1.07	1.33	2
2.5	0.21	0.43	0.64	0.85	1.07	2.5
3	0.18	0.36	0.53	0.71	0.89	3
3.5	0.15	0.30	0.46	0.61	0.76	3.5
4	0.13	0.27	0.40	0.53	0.67	4
4.5	0.12	0.24	0.36	0.47	0.59	4.5
5	0.11	0.21	0.32	0.43	0.53	5

Compatible Fluids

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

Dilution with sodium chloride 0.9% alone is not recommended due to rapid oxidation.

Adverse Effects

Common

Tachycardia, extravasation may cause peripheral ischaemia, sloughing, necrosis and gangrene

Infrequent

Hypertension, respiratory distress, bradycardia (reflex consequence of increased BP), digital and renal ischemia possible with prolonged infusion and/or high dose

Rare

Allergic reactions (to sodium metabisulphite in product) are extremely rare in neonates

Monitoring

- > Continuous heart rate
- > Invasive blood pressure monitoring is required



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Practice Points

- > Hypotension and/or poor cardiac output can occur due to vasoconstriction and increased afterload where myocardial function is impaired. Echocardiography can assist in defining haemodynamics and inotrope strategy.
- > Infusion should be weaned and not ceased abruptly.
- > Noradrenaline is considered Y-site compatible with parenteral nutrition solutions (PNS) and lipid solutions. Co-infusion of PNS 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.

Document Ownership & History

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09/11/2017	V2.0	SA Health Safety and Quality Strategic Governance Committee	Review and amendment to dosing tables, consistent with other inotropes
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