

Neonatal Medication Guideline

Clinical Guideline

Noradrenaline (norepinephrine)

Policy developed by: SA Maternal, Neonatal & Gynaecology Community of Practice

Approved SA Health Safety & Quality Strategic Governance Committee on: 9 November 2017

Next review due: 9 November 2020

Summary The purpose of this guideline is to guide nursing, medical and pharmacy staff in the dosing and administration of noradrenaline (norepinephrine)

Keywords Noradrenaline, neonatal medication guideline, norepinephrine, hypotension, noradrenaline acid tartrate, inotrope, adrenaline, epinephrine, vasoconstriction, blood pressure

Policy history Is this a new policy? **N**
Does this policy amend or update an existing policy? **Y v1.0**
Does this policy replace an existing policy? **N**
If so, which policies?

Applies to All SA Health Portfolio
All Department for Health and Ageing Divisions
All Health Networks
CALHN, SALHN, NALHN, CHSALHN, WCHN, SAAS

Staff impact All Clinical, Medical, Midwifery, Nursing, Students, Allied Health, Emergency, Mental Health, Pathology, Pharmacy

PDS reference CG276

Version control and change history

Version	Date from	Date to	Amendment
1.0	March 2014	November 2017	Original version
2.0	9 November 2017	Current	Review and amendment to dosing tables, consistent with other inotropes

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Noradrenaline (norepinephrine) 1mg/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.

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

Synonyms

Norepinephrine

Dose and Indications

For severe, refractory hypotension

Intravenous infusion:

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

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9/11/17
South Australian Neonatal Medication Guidelines Workgroup at:
Health:NeoMed@sa.gov.au

Noradrenaline (norepinephrine)

1mg/mL injection

Preparation and Administration

Intravenous Infusion

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 1mg/mL noradrenaline 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:

- > Noradrenaline 40microgram/mL (equivalent to 0.04mg/mL)
- > Noradrenaline 80micrograms/mL (equivalent to 0.08mg/mL)
- > Noradrenaline 160micrograms/mL (equivalent to 0.16mg/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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Noradrenaline Concentration Selection Table

Noradrenaline 40microgram/mL

To make 25ml syringe:

Dilute 1mL noradrenaline (1mg/mL) with 24mL of compatible fluid (total of 25mL).

To make 50ml syringe:

Dilute 2mL noradrenaline (1mg/mL) with 48mL of compatible fluid (total of 50mL).

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

Recommended for neonates weighing <1kg

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

Discard remaining solution

Noradrenaline 80microgram/mL

To make 25ml syringe:

Dilute 2mL noradrenaline (1mg/mL) with 23mL of compatible fluid (total of 25mL).

To make 50ml syringe:

Dilute 4mL noradrenaline (1mg/mL) with 46mL of compatible fluid (total of 50mL).

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

Generally used for neonates weighing 1kg to 3kg

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

Discard remaining solution

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Noradrenaline (norepinephrine)

1mg/mL injection

Noradrenaline 160microgram/mL

To make 25ml syringe:

Dilute 4mL noradrenaline (1mg/mL) with 21mL of compatible fluid (total of 25mL).

To make 50ml syringe:

Dilute 8mL noradrenaline (1mg/mL) with 42mL of compatible fluid (total of 50mL).

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

Generally used for neonates weighing >3kg

Rate (mL/hr)	0.2	0.4	0.6	0.8	1	Rate (mL/hr)
Weight (kg)	Approximate micrograms/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

Discard remaining solution

Noradrenaline (norepinephrine)

1mg/mL injection

Compatible Fluids

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

Adverse Effects

Common

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

Infrequent

Hypertension, respiratory distress, bradycardia (reflex consequence of increased BP);

Rare

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

Monitoring

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

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.
- > Must be infused into a central vein to avoid potential extravasation.
- > Do not mix with other medications unless confirmed with pharmacy.
- > Infusion should be weaned and not ceased abruptly.
- > Dilution with sodium chloride 0.9% alone is not recommended due to rapid oxidation.
- > Protect infusion mixture from light; discard solution if discoloured brown.

Version control and change history

PDS reference: OCE use only

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