

South Australian Neonatal Medication Guidelines

Adrenaline (epinephrine) - for resuscitation

0.1mg/mL injections (1 in 10,000)

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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. There are two strengths of adrenaline available. This guideline uses the dilute 0.1mg/1mL (1 in 10, 000) formulation.

For information on adrenaline (epinephrine) for intravenous infusion or inhaled via nebuliser, see adrenaline (epinephrine) 1mg/mL (1 in 1,000)

Synonyms

Epinephrine



Adrenaline (epinephrine) - for resuscitation

0.1mg/mL injections (1 in 10,000)

Dose and Indications

Resuscitation

Intravenous

An umbilical vein catheter (UVC) is the suggested intravascular route for adrenaline (epinephrine) by ANZCOR (Australian and New Zealand Committee on Resuscitation)

10 to 30 microgram/kg (0.1 to 0.3 mL/kg of 1 in 10,000), but as weight is usually not available at birth below table can be used:

Gestation	Dose
23-26 weeks	0.1 mL per dose
27-37 weeks	0.25 mL per dose
38-43 weeks	0.5 mL per dose

Give as a bolus dose. Flush line with minimum 2mL 0.9% sodium chloride after administration.

Dose can be repeated every 3 to 5 minutes if the heart rate remains <60 beats per minute despite effective ventilation and cardiac compressions.

ANZCOR suggest intraosseous route may be an alternative route, especially if umbilical or direct venous access is not available.

Endotracheal

Endotracheal route can be used if umbilical access is delayed, although evidence of effectiveness is unclear. Administration of endotracheal adrenaline should not delay establishing venous access.

50 to 100 microgram/kg (0.5 to 1 mL/kg of 1 in 10,000) as per ANZCOR, but as weight is usually not available at birth, the following can be used as consensus-based dosing table:

Gestation	Dose
23-26 weeks	0.5 mL per dose
27-30 weeks	1 mL per dose
31-37 weeks	1.5 mL per dose
38-43 weeks	2 mL per dose

Give as a bolus dose followed by positive pressure ventilation (PPV)

Endotracheal absorption is delayed at birth and repeat doses via this route may lead to accumulation and increased adverse effects (including post resuscitation hypertension).



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Preparation and Administration

Intravenous

Only administer adrenaline (epinephrine) 0.1 mg/mL (1 in 10,000) formulation for resuscitation. This is equivalent to 100microgram/mL adrenaline

Dose	25microgram	50microgram	75microgram	100microgram	125microgram
Volume	0.25 mL	0.5 mL	0.75 mL	1 mL	1.25 mL

Administered as a quick push.

Flush line with minimum 2mL 0.9% sodium chloride after administration.

Discard remaining solution.

Endotracheal

Administer adrenaline (epinephrine) 0.1 mg/mL (1 in 10,000) formulation via endotracheal tube followed by positive pressure ventilation (PPV). This is equivalent to 100microgram/mL adrenaline

Dose	50microgram	100microgram	150microgram	200microgram
Volume	0.5 mL	1 mL	1.5 mL	2 mL

Discard remaining solution.

Compatible Fluids

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

Adverse Effects

Common

Tachycardia, tremor, sweating and hyperglycaemia.

Infrequent

Peripheral ischaemia and necrosis at infusion site, excessive increase in blood pressure, ventricular arrhythmias, cerebral haemorrhage, renal vascular ischaemia and pulmonary oedema. These are mostly related to overdose or rapid IV administration.

Rare

Allergic reaction (sodium metabisulfite in preparations).

Monitoring

Cardiac monitoring and continuous medical supervision



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Practice Points

- > Caution - there are two strengths of adrenaline available
- > Adrenaline (epinephrine) rapidly decomposes in alkaline conditions; it is **incompatible with sodium bicarbonate**
- > There is insufficient evidence for the use of endotracheal adrenaline (epinephrine), but it is likely that a higher dose will be required to achieve similar blood levels and effect
- > Adrenaline (epinephrine) is sensitive to light and air. Protection from light is recommended

References

- > SA Health Neonatal Resuscitation Group
- > ANZCOR Guideline 13.7 - Medications of Fluids for the Resuscitation of the newborn, Australian Resuscitation Council, April 2021
- > ANZCOR Neonatal Flowchart: Newborn Life Support, April 2021
- > Sankaran D et al, Randomised trial of epinephrine dose and flush volume in term newborn lambs, 2021, Archives of Disease in Childhood. Fetal and Neonatal Edition

Document Ownership & History

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