Dose and Indications

This is a High Risk Medication

An overdose can be rapidly fatal.

There are two strengths of adrenaline (epinephrine) available. This guideline uses the undiluted 1mg/mL form and it requires diluting prior to intravenous infusion.

For information on adrenaline (epinephrine) for resuscitation, see adrenaline (epinephrine) (diluted) 0.1mg/mL for resuscitation

Synonyms

Epinephrine

Dose and Indications

Circulatory Support

Intravenous infusion

0.05 to 1 microgram/kg/minute; commence at low dose and titrate based on clinical response

Infusion through a central line is preferable.
Reactive Oedema Post-Extubation

Inhaled via nebuliser

0.5mL/kg (Max. 0.5mL) of adrenaline (epinephrine) 1mg/mL diluted with 2mL of 0.9% sodium chloride

If there is an initial response but subsequent worsening, repeat same dose. If there is no response to the first dose and airway obstruction is severe, re-intubate.

Preparation and Administration

Inhaled

Adrenaline (epinephrine) may be administered undiluted via nebuliser. If small volumes of adrenaline (epinephrine) 1mg/mL (1 in 1000) are required, dilute with 2mL of 0.9% sodium chloride prior to administration.

Intravenous Infusion

Select the strength required based on the weight of the infant in the context of any fluid restrictions. Adrenaline (epinephrine) 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 adrenaline (epinephrine) 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:

- Adrenaline (epinephrine) 20microgram/mL (equivalent to 0.02mg/mL)
- Adrenaline (epinephrine) 60micrograms/mL (equivalent to 0.06mg/mL)
- Adrenaline (epinephrine) 180micrograms/mL (equivalent to 0.18mg/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):

\[
\text{Dose (microgram/kg/min)} = \frac{\text{Rate (mL/hr)} \times \text{Strength (microgram/mL)}}{60 \times \text{weight (kg)}}
\]
Adrenaline (epinephrine) Concentration Selection Table

Adrenaline (epinephrine) 20microgram/mL

To make 25mL syringe:
Dilute 0.5mL adrenaline (epinephrine) (1mg/mL) with 24.5mL of compatible fluid (total of 25mL). This makes a 20microgram/mL solution (0.02mg/mL).

To make 50mL syringe:
Dilute 1mL adrenaline (epinephrine) (1mg/mL) with 49mL of compatible fluid (total of 50mL). This makes a 20microgram/mL solution (0.02mg/mL).

Recommended for neonates weighing <1kg

<table>
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<tr>
<th>Rate (mL/hr)</th>
<th>0.2</th>
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Discard remaining solution.

Adrenaline (epinephrine) 60microgram/mL

To make 25mL syringe:
Dilute 1.5mL adrenaline (epinephrine) (1mg/mL) with 23.5mL of compatible fluid (total of 25mL). This makes a 60micrograms/mL solution (0.06mg/mL).

To make 50mL syringe:
Dilute 3mL adrenaline (epinephrine) (1mg/mL) with 47mL of compatible fluid (total of 50mL). This makes a 60micrograms/mL solution (0.06mg/mL).

Generally used for neonates weighing 1kg -3kg

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Discard remaining solution.
**Adrenaline (epinephrine) 180microgram/mL**

**To make 25mL syringe:**
Dilute 4.5mL adrenaline (epinephrine) (1mg/mL) with 20.5mL of compatible fluid (total of 25mL). This makes a 180micrograms/mL solution (0.18mg/mL).

**To make 50mL syringe:**
Dilute 9mL adrenaline (epinephrine) (1mg/mL) with 41mL of compatible fluid (total of 50mL). This makes an 180micrograms/mL solution (0.18mg/mL).

Generally for neonates weighing >3kg

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<th>Approximate micrograms/kg/min</th>
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<tr>
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Discard remaining solution.
South Australian Neonatal Medication Guidelines

adrenaline (epinephrine) (undiluted)
1mg/mL injection (1 in 1000)

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

Adverse Effects

Common
Tachycardia, tremor, sweating, hyperglycaemia

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

Rare
Allergic reaction (sodium metabisulfite in preparations)

Monitoring
When administering by the intravenous route:
> ECG monitoring and continuous medical supervision advised
> Continuous heart rate
> Intra-arterial blood pressure
> Observe intravenous site for signs of extravasation

Practice Points
> Caution - there are two strengths of adrenaline (epinephrine) available.
> Adrenaline (epinephrine) may be of value in obvious stridor.
> Adrenaline (epinephrine) is not a substitute for intubation, if intubation indicated.
> Provide adequate hydration and correct underlying hypovolaemia.
> Correct acidosis prior to administration to enhance effectiveness.
> Adrenaline (epinephrine) is sensitive to light and air. Protection from light is recommended.
South Australian Neonatal Medication Guidelines

adrenaline (epinephrine) (undiluted)
1mg/mL injection (1 in 1000)

Document Ownership & History

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Does this policy replace another policy with a different title?  N
If so, which policy (title)? Adrenaline (undiluted)

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