Alert | 1:10,000 (1 mg/10 mL) ampoule is the preferred preparation for adrenaline infusion.
---|---
Indication | Treatment of hypotensive shock with or without myocardial dysfunction.
Action | Catecholamine with alpha and beta adrenergic actions. Haemodynamic effects are dose dependent:
| • At low doses of 0.01–0.1 microgram/kg/minute primarily stimulates cardiac and vascular beta 1- and beta 2-adrenoreceptors leading to increased inotropy, chronotropy, conduction velocity and peripheral vasodilation.
| • At doses greater than 0.1 microgram/kg/minute adrenaline also stimulates vascular and cardiac alpha 1-receptors causing vasoconstriction and increased inotropy. The net effects are increases in blood pressure and systemic blood flow caused by the drug-induced increases in systemic vascular resistance (SVR) and cardiac output.\(^1\)
---|---
Drug Type | Inotropic vasopressor.
Trade Name | Aspen Adrenaline 1: 10,000 injection; Adrenaline 1:1,000 injection.
Presentation | 1 mg/10 mL or 1:10,000 ampoule [100 microgram/mL]
| 1 mg/mL or 1:1,000 ampoule [1000 microgram/mL]
Dosage / Interval | Low dose: 0.05–0.1 microgram/kg/minute
| High dose: 0.1–1 microgram/kg/minute
Route | Continuous IV infusion.
Preparation/Dilution | **Preparation using 1:10,000 (1 mg/10 mL) ampoule**

### LOW CONCENTRATION IV infusion

<table>
<thead>
<tr>
<th>Infusion dose</th>
<th>Prescribed amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 mL/hour = 0.05 microgram/kg/minute</td>
<td>150 microgram/kg adrenaline and make up to 50 mL</td>
</tr>
</tbody>
</table>

Draw up 150 microgram/kg [1.5 mL/kg] of 1:10,000 adrenaline and add glucose 5%, glucose 10% or sodium chloride 0.9% to make a final volume of 50 mL with a concentration of 3 microgram/kg/mL. Infusing at a rate of 1 mL/hour = 0.05 microgram/kg/minute.

### HIGH CONCENTRATION IV infusion

<table>
<thead>
<tr>
<th>Infusion dose</th>
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</tr>
</thead>
<tbody>
<tr>
<td>1 mL/hour = 0.2 microgram/kg/minute</td>
<td>600 microgram/kg adrenaline and make up to 50 mL</td>
</tr>
</tbody>
</table>

Draw up 600 microgram/kg [6 mL/kg] of 1:10,000 adrenaline and add glucose 5%, glucose 10% or sodium chloride 0.9% to make a final volume of 50 mL with a concentration of 12 microgram/kg/mL. Infusing at a rate of 1 mL/hour = 0.2 microgram/kg/minute.

For infants requiring fluid restriction consider:

**VERY HIGH CONCENTRATION IV infusion**

<table>
<thead>
<tr>
<th>Infusion dose</th>
<th>Prescribed amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 mL/hour = 0.4 microgram/kg/minute</td>
<td>1200 microgram/kg adrenaline and make up to 50 mL</td>
</tr>
</tbody>
</table>

Draw up 1200 microgram/kg [12 mL/kg] of 1:10,000 adrenaline and add glucose 5% ONLY to make a final volume of 50 mL with a concentration of 24 microgram/kg/mL. Infusing at a rate of 1 mL/hour = 0.4 microgram/kg/minute.

*Stability data only available for 5% glucose for very high concentration.

**Preparation using 1:1,000 (1 mg/mL) ampoule** – Occasionally used for infants>4
Adrenaline (epinephrine) IV infusion

LOW CONCENTRATION IV infusion

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<tbody>
<tr>
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<td>150 microgram/kg adrenaline and make up to 50 mL</td>
</tr>
</tbody>
</table>

Draw up 150 microgram/kg [0.15 mL/kg] of 1:1000 adrenaline and add glucose 5%, glucose 10% or sodium chloride 0.9% to make a final volume of 50 mL with a concentration of 3 microgram/kg/mL. Infusing at a rate of 1 mL/hour = 0.05 microgram/kg/minute.

HIGH CONCENTRATION IV infusion

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<thead>
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</tr>
</tbody>
</table>

Draw up 600 microgram/kg [0.6 mL/kg] of 1:1000 adrenaline and add glucose 5%, glucose 10% or sodium chloride 0.9% to make a final volume of 50 mL with a concentration of 12 microgram/kg/mL. Infusing at a rate of 1 mL/hour = 0.2 microgram/kg/minute.

For infants requiring fluid restriction consider:

VERY HIGH CONCENTRATION IV infusion*

<table>
<thead>
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</tr>
</tbody>
</table>

Draw up 1200 microgram/kg [1.2 mL/kg] of 1:1000 adrenaline and add glucose 5% ONLY to make a final volume of 50 mL with a concentration of 24 microgram/kg/mL. Infusing at a rate of 1 mL/hour = 0.4 microgram/kg/minute.

*Stability data only available for 5% glucose for very high concentration.

Administration

Continuous intravenous infusion via a central line. Use with caution via a peripheral line.

Monitoring

Continuous heart rate, ECG and blood pressure monitoring preferable. Assess urine output and peripheral perfusion frequently. Observe IV site closely for blanching and extravasation.

Contraindications


Precautions

Ensure adequate circulating blood volume prior to commencement. Adrenaline is a potent chronotrope and vasopressor – may cause excessive tachycardia, severe hypertension and ventricular arrhythmias. Adrenaline may cause lactic acidosis and hyperglycaemia.

Drug Interactions

Hypotension may be observed with concurrent use of vasodilators such as glyceryl trinitrate, nitroprusside and calcium channel blockers. Concurrent use of digitalis glycosides may increase the risk of cardiac arrhythmias. Concurrent use of IV phenytoin with adrenaline may result in dose dependent, sudden hypotension and bradycardia.

Adverse Reactions

Tachycardia and arrhythmia. Systemic hypertension especially at higher doses. May cause hypokalaemia. Tissue necrosis at infusion site with extravasation. Digital ischaemia.

Compatibility

Fluids: Glucose 5%, glucose 10%, Hartmann’s, sodium chloride 0.9%. Stability data only available for 5% glucose for very high concentration.
| Y-site: Amino acid solutions. Amiodarone, anidulafungin, atracurium, bivalirudin, caspofungin, cisatracurium, dexamethasone, dabutamine, dopamine, ethanol, fentanyl, glyceryl trinitrate, heparin sodium, milrinone, morphine sulfate, pancuronium, potassium chloride, ramipril, remifentanil, sodium nitroprusside, tigecycline, tirofiban, vecuronium. |
| Y-site: Acyclovir, aminophylline, ampicillin, atropine, azathioprine, calcium chloride, calcium gluconate, cefalotin, chloramphenicol, digoxin, ergometrine, ganciclovir, hyaluronidase', hydrocortisone sodium succinate, indomethacin, noradrenaline, phenobarbitone sodium, sodium bicarbonate, thiopentone, vancomycin. |

**Incompatibility**

**Stability**

**Storage**

**Special Comments**

**Evidence summary**

**References**

Original version Date: 31/03/2016
Current Version number: 1.1
Risk Rating: Medium
Approval by: As per Local policy

Author: NMF Consensus Group
Current Version Date: 10/11/2016
Due for Review: 31/03/2019
Approval Date: