Adrenaline (epinephrine) IV infusion 2017

<table>
<tr><td>Alert</td><td>1:10,000 (1 mg/10 mL) ampoule is the preferred preparation for adrenaline infusion.</td></tr>
<tr><td>Indication</td><td>Treatment of hypotensive shock with or without myocardial dysfunction.</td></tr>
<tr><td>Action</td><td>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]</td></tr>
<tr><td>Drug Type</td><td>Inotropic vasopressor.</td></tr>
<tr><td>Trade Name</td><td>Aspen Adrenaline 1: 10,000 Adrenaline Acid Tartrate injection; Adrenaline 1:1,000 Adrenalin Acid Tartrate injection.</td></tr>
<tr><td>Presentation</td><td>1 mg/10 mL or 1:10,000 ampoule [100 microgram/mL]
1 mg/mL or 1:1,000 ampoule [1000 microgram/mL]</td></tr>
<tr><td>Dosage / Interval</td><td>Low dose: 0.05–0.1 microgram/kg/minute
High dose: 0.1–1 microgram/kg/minute</td></tr>
<tr><td>Route</td><td>Continuous IV infusion.</td></tr>
<tr><td>Preparation/Dilution</td><td>
<h2>Preparation using 1:10,000 (1 mg/10 mL) ampoule</h2>
LOW CONCENTRATION IV infusion
<table>
<tr><th>Infusion dose</th><th>Prescribed amount</th></tr>
<tr><td>1 mL/hour = 0.05 microgram/kg/minute</td><td>150 microgram/kg adrenaline and make up to 50 mL</td></tr>
</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>
<tr><th>Infusion dose</th><th>Prescribed amount</th></tr>
<tr><td>1 mL/hour = 0.2 microgram/kg/minute</td><td>600 microgram/kg adrenaline and make up to 50 mL</td></tr>
</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>
<tr><th>Infusion dose</th><th>Prescribed amount</th></tr>
<tr><td>1 mL/hour = 0.4 microgram/kg/minute</td><td>1200 microgram/kg adrenaline and make up to 50 mL</td></tr>
</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.
</td></tr>
</table>

<table>
<tr><td></td><td>

Preparation using 1:1,000 (1 mg/mL) ampoule – Occasionally used for infants>4 kg. : 1:1000 (1 mg/mL) ampoule is generally not kept in the NICUs

LOW CONCENTRATION IV infusion

Infusion dose	Prescribed amount
1 mL/hour = 0.05 microgram/kg/minute	150 microgram/kg adrenaline and make up to 50 mL

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

Infusion dose	Prescribed amount
1 mL/hour = 0.2 microgram/kg/minute	600 microgram/kg adrenaline and make up to 50 mL

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*

Infusion dose	Prescribed amount
1 mL/hour = 0.4 microgram/kg/minute	1200 microgram/kg adrenaline and make up to 50 mL

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.**

</td></tr>
<tr><td>**Administration**</td><td>Continuous intravenous infusion via a central line. Use with caution via a peripheral line.</td></tr>
<tr><td>**Monitoring**</td><td>Continuous heart rate, ECG and blood pressure monitoring preferable.
Assess urine output and peripheral perfusion frequently.
Observe IV site closely for blanching and extravasation.</td></tr>
<tr><td>**Contraindications**</td><td>Arrhythmia and tachyarrhythmia.
Cardiovascular disease resulting in arterial narrowing including cerebrovascular disease, coronary artery disease and digital ischaemia.
Phaeochromocytoma.
Thyrotoxicosis.
Glaucoma.
Known hypersensitivity to sympathomimetic amines.</td></tr>
<tr><td>**Precautions**</td><td>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.</td></tr>
<tr><td>**Drug Interactions**</td><td>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.</td></tr>
<tr><td>**Adverse Reactions**</td><td>Tachycardia and arrhythmia.
Systemic hypertension especially at higher doses.
May cause hypokalaemia.
Tissue necrosis at infusion site with extravasation.
Digital ischaemia.</td></tr>
<tr><td>**Compatibility**</td><td>Fluids: Glucose 5%, glucose 10%, Hartmann's, sodium chloride 0.9%. Stability data only available for 5% glucose for very high concentration.</td></tr>
</table>

	Y-site: Amino acid solutions. Amiodarone, anidulafungin, atracurium, bivalirudin, caspofungin, cisatracurium, dexmedetomidine, dobutamine, dopamine, ethanol, fentanyl, glyceryl trinitrate, heparin sodium, milrinone, morphine sulfate, pancuronium, potassium chloride, ranitidine, remifentanil, sodium nitroprusside, tigecycline, tirofiban, vecuronium.
Incompatibility	Fluids: Sodium bicarbonate. Y-site: Aciclovir, aminophylline, ampicillin, atropine, azathioprine, calcium chloride, calcium gluconate, cefalotin, chloramphenicol, digoxin, ergometrine, ganciclovir, hyaluronidase', hydrocortisone sodium succinate, indomethacin, phenobarbitone sodium, sodium bicarbonate, thiopentone, vancomycin. No information: Adrenaline HCL is compatible with noradrenaline bitartrate but no stability data is available for Adrenaline acid tartrate and noradrenaline bitartrate
Stability	Ampoule: Store below 30°C. Protect from light. Diluted solution: Stable for 24 hours below 25°C.
Storage	Ampoule: Store below 25°C. Protect from light. Discard remainder after use.
Special Comments	Ensure adrenaline has a "dedicated" line to avoid accidental bolus. Do not use as a side line with maintenance fluids. Discard if exhibiting colour change.
Evidence summary	Refer to full version.
References	Refer to fullversion.

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