

Adrenaline (Epinephrine) NICU

Presentation:	Adrenaline (epinephrine) base 1mg/ml ampoules = adrenaline (epinephrine) 1 in 1000
Indications:	Inotropic support
Dose:	<p>Neonate: Initially 100 nanograms/kg/minute, adjusted according to response, higher doses up to 1.5 micrograms/kg/minute have been used in acute hypotension</p> <ul style="list-style-type: none"> Start at lower dose and adjust doses according to clinical response. When stopping the infusion, the dose should be gradually decreased rather than stopping suddenly to avoid sudden falls in blood pressure.
Route of administration:	Continuous IV infusion using a syringe driver, via a central line or intra-osseous line only
Directions for Administration:	<p>Preparation of syringe for CENTRAL LINE use:</p> <ul style="list-style-type: none"> Using ampoules containing adrenaline (epinephrine) base 1mg/ml = adrenaline (epinephrine) 1 in 1000 Total mgs adrenaline base (1mg/ml) required = 3 x weight (kg) <i>round to nearest 0.1mg for ease of measuring</i> Make up to final volume of 50ml with glucose 5% <p>A dose of 100 nanograms/kg/minute (0.1micrograms/kg/min) will be provided by a flow rate of 0.1 ml/hour</p> <p>The calculated infusion rate should be rounded to the nearest 0.1ml. Subsequent dose changes can be made by altering the infusion rate.</p> <p>Administer by continuous intravenous infusion via SMART pump</p> <p>**In fluid restricted babies it may be necessary to use 'double' or 'quadruple' strength syringes. These MUST be administered centrally**</p> <p>Double = number of mg of adrenaline = 6 x baby's weight (kg) made up to 50ml. A dose of 100 nanograms/kg/min will be provided by a flow rate of 0.05ml/hr</p> <p>Quadruple = number of mg of adrenaline = 12 x baby's weight (kg) made up to 50ml. A dose of 100 nanograms/kg/min will be provided by a flow rate of 0.025ml/hr</p> <ul style="list-style-type: none"> Protect the syringe from light – please contact pharmacy if a black bag is required Discard diluted adrenaline (epinephrine) solution after 24 hours or if brown colouration develops.
Prescribing:	<p>Prescribe on paper drug chart (see below example for 2kg baby)</p> <p>**Please ensure concentration (in micrograms/ml) is completed to enable use of SMART pumps**</p> <p>To calculate concentration of infusion for SMART pumps (in micrograms/ml) divide total mg in infusion by total volume of infusion (mls) and multiply by 1000:</p> <p>e.g. 6mg in 50mls = $\frac{6\text{mg}}{50\text{mls}} = 0.12\text{mg/ml} \times 1000 = 120\text{micrograms/ml}$</p> <p>See overleaf for sample prescription</p>

	Drug (approved name)		Dose	
	Adrenaline		6mg	
	Infusion fluid		Volume	
	Glucose 5%		50ml	
	Concentration		Type of line	
	120 micrograms/ml			
	Minimum rate		Maximum rate	
100 nanograms/kg/min (0.1ml/hr)		1.5 micrograms/kg/min (1.5ml/hr)		
Route	Infuse over	hrs	Pharm	
IV				
Start date	Print name & sign (incl. bleep)		Stop date	
9/6/2017	A Doctor			
Cautions and Contraindications:	Hypovolaemia should be corrected before adrenaline (epinephrine) infusions are started.			
	Use with caution in: Arrhythmias; cerebrovascular disease; diabetes mellitus; hypercalcaemia; hyperreflexia; hypertension; hyperthyroidism; hypokalaemia; obstructive cardiomyopathy; occlusive vascular disease; organic brain damage; phaeochromocytoma; susceptibility to angle-closure glaucoma			
	Increased risk of arrhythmias when used with volatile anaesthetics, tricyclic antidepressants and digoxin Increased risk of hypertension and bradycardia with beta blockers, dobutamine or noradrenaline (norepinephrine) Increased risk of hypertension when used with tricyclic antidepressants Response to adrenaline may be reduced if on concurrent beta blockers			
Common Side Effects:	Side effects include: hypertension, arrhythmias, hyperglycaemia, nausea and vomiting, cold extremities, tachycardia, reduced renal blood flow and urine output, chest pain, dizziness, dry mouth, dyspnoea, tremor, headache, hypokalaemia, tissue necrosis at injection site			
	Most side effects are easily controlled by reducing the dose of adrenaline (epinephrine) or stopping the infusion because the drug has a short duration of action.			
Compatibility (Y – site):	Compatible –			Incompatible
	Acetylcysteine Amiodarone (both drugs must be in glucose 5%) Atracurium Calcium salts Ceftazidime Clonidine Dobutamine Dopamine Fentanyl	Furosemide (both drugs must be in 0.9% sodium chloride) Heparin Hydrocortisone Insulin Labetalol Midazolam Milrinone Morphine* Noradrenaline (norepinephrine) Potassium chloride	Ranitidine Remifentanyl Vecuronium Sodium chloride 0.9% Glucose 5% Glucose 10% *Whilst adrenaline is compatible with morphine, it is recommended not to mix them in the line as a morphine bolus would result in an bolus of adrenaline	Aminophylline Sodium bicarbonate and other strongly alkaline solutions
Additional Comments:	Cardiovascular and renal parameters should be monitored, including heart rate and ECG, blood pressure, urine output and cardiac output. Adrenaline (epinephrine) contains sodium bisulphite. Bisulphite can cause allergic type reactions, including anaphylactic symptoms, in susceptible patients. Sulphite sensitivity is seen more frequently in asthmatic patients.			

References

- Adrenaline injection BP 1 in 1000, Hameln Pharmaceuticals Ltd, SmPC (last updated 18/12/15), accessed via www.medicinescomplete.com, 17/08/2017
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- Trissel LA (ed), Handbook on Injectable Drugs, accessed via www.medicinescomplete.com 17/08/2017