NORADRENALINE BASE

ACTION and USES
Noradrenaline is a potent vasoconstrictor sympathomimetic agent which is used for the treatment of severe refractory hypotension (eg septic shock). It should be used in conjunction with low dose dopamine to sustain renal blood flow.

DOSAGE
All doses refer to the dose of noradrenaline base.

20-100nanograms/kg/minute increasing slowly to achieve desired effect.
Doses greater than 100 nanograms are at consultant discretion. Max dose is 1000nanograms/kg/min.

ADMINISTRATION
By continuous infusion of a diluted solution

RECONSTITUTION
The injection is available as a solution containing **1mg/ml noradrenaline base** equivalent to 2mg/ml noradrenaline acid tartrate in a 2ml ampoule (other sizes are available). Reconstitution is not necessary but it must be diluted.

Standard Strength Dilution(60micrograms/kg/ml)
Add 1.5mg/kg (ie 1.5ml/kg noradrenaline base injection 1mg/ml) to a 50ml syringe and make up to a final volume of 25ml with glucose 5%.

At this concentration the rate of infusion is calculated by the following formula:
Rate (ml/hr) = 0.001 x dose (nanograms/kg/min)
E.g. 100nanograms/kg/min is provided by 0.1ml/hr

Make up a fifth strength dilution if dose to be administered is less than 100nanograms/kg/min ie rate of <0.1ml/hr

Fifth Strength Dilution (12micrograms/kg/ml)
Add 300micrograms/kg (ie 0.3ml/kg noradrenaline base injection 1mg/ml) to a 50ml syringe and make up to a final volume of 25ml with glucose 5%.

At this concentration the rate of infusion is calculated by the following formula:
Rate (ml/hr) = 0.005 x dose (nanograms/kg/min)
E.g. 20nanograms/kg/min is provided by 0.1ml/hr
See explanation of formula and examples overleaf.

Other Compatible Diluent
Sodium chloride 0.9%

INCOMPATIBILITIES
Sodium bicarbonate, phenytoin, phenobarbital.

STORAGE
Opened ampoules should be discarded immediately after opening. Unopened ampoules are stored in IV drug cupboard. Protect from light, discard if discoloured.

MONITORING
Monitor heart rate and blood pressure. Monitor central vascular pressure where possible. Monitor limb perfusion and renal output. Check infusion site frequently for extravasation as it may cause tissue necrosis.

EXPLANATION OF FORMULA TO CALCULATE RATE OF ADMINISTRATION OF NORADRENALINE

Standard strength dilution is based on the premise that a dose of 100 nanograms/kg/min will be given if infusion rate is 0.1ml/hr irrespective of body weight if noradrenaline base 1mg/ml is diluted to 1.5mg/kg/25ml (60 microgram/kg/ml).

Therefore: 100 nanograms/kg/min
= 6 micrograms/kg/hr (multiplied by 60 minutes)
= 6 micrograms/kg in 0.1ml (chosen rate = 0.1ml/hr) = 60 micrograms/kg in 1ml
= 1500 micrograms/kg in 25ml (multiplied by 25)
= 1.5mg/kg in 25ml which is the same concentration as 60 micrograms/kg/ml

Example 1. Standard strength (1.5mg/kg/25ml) 100 nanograms/kg/min is provided at 0.1ml/hr.

Infant weighs	=	2.9kg
1.5mg/kg	=	1.5ml/kg noradrenaline base (1mg/ml)
For 2.9kg Infant	=	2.9 x 1.5 (rounded up to 4.4ml)

Add 4.4ml Noradrenaline Injection plus 20.6ml of glucose 5% (ie 25ml)
To administer 100 nanograms/kg/min
Rate of Infusion = 0.1ml/hr
To administer 500 nanograms/kg/min
Rate of Infusion = 0.5ml/hr

Example 2. Fifth strength (600micrograms/kg/50ml) 20nanograms/kg/min is provided at 0.1ml/hr.

Infant weighs	=	1.6kg
600micrograms/kg	=	0.6ml/kg noradrenaline base 1mg/ml
For a 1.6kg infant	=	1.6 x 0.6 = 0.96ml

Add 0.48ml noradrenaline Injection plus 24.52 ml of glucose 5% (i.e. 25)
To administer 20 nanograms/kg/min = 0.1ml/hr
To administer 80 nanograms/kg/min = 0.4ml/hr