

NORADRENALINE

Action:

- Positive inotrope (beta-1 adrenergic effect) without marked increase in heart rate
- Dilation of coronary arteries (beta-adrenergic effect)
- Peripheral vasoconstriction (alpha-adrenergic effect)
- Acts predominantly on beta-1 and alpha receptors; little effect on beta-2 receptors
- At lower doses, beta-1 effects predominate. Alpha effects occur at higher doses

Indications:

- Acute hypotension
- Shock
- Anaphylaxis unresponsive to adrenaline.
- As an adjunct post-cardiac arrest to restore and maintain adequate blood pressure after return of spontaneous circulation

Contraindications:

- Hypotension secondary to hypovolaemia (except where given as an emergency measure until blood volume replacement therapy can be completed)
- Cyclopropane and halothane anaesthesia (risk of ventricular tachycardia/fibrillation)
- Mesenteric or peripheral vascular thrombosis (risk of increasing ischaemia and extending area of infarction). May be given if, in the opinion of the treating doctor, administration is life-saving

Precautions:

- Use with extreme caution in patients receiving monoamine oxidase inhibitors (MAOI's) or triptyline or imipramine type antidepressants (risk of severe, prolonged hypertension), within 14 days of treatment
- Use with caution in patients with hypersensitivity to sulphites, particularly those with asthma
- Correct hypovolaemia prior to, or concurrent with, administration of noradrenaline
- Avoid hypertension
- Prolonged administration of any potent vasopressor may result in plasma volume depletion which should be continuously corrected by appropriate fluid and electrolyte replacement therapy.
- Higher doses may exacerbate myocardial ischaemia
- Pregnancy - should be given only if clearly indicated
- All inotropes may enhance arrhythmias.
- Reflex bradycardia may occur secondary to rise in blood pressure.

CLINICAL POLICIES, PROCEDURES & GUIDELINES

Approved by Quality & Patient Safety Committee
19 February 2015

NORADRENALINE cont'd

Adverse Reactions:

- Cardiovascular- tachycardia, angina, hypertension and arrhythmias
- Tissue necrosis at site of extravasation. Check site frequently for signs of extravasation or blanching.
- Peripheral vasoconstriction; ischaemic injury due to potent vasoconstrictor action and tissue hypoxia
- Headache (may be a symptom of hypertension due to overdose)

Presentation:

2mg/2mL (1:1000) of noradrenaline base
4mg/4mL (1:1000) of noradrenaline base

Administration

- Add 6mg of Noradrenaline to 94mL of Glucose 5% (withdraw 6 mL from a 100mL bag of Glucose 5%)
- Commence infusion at initial rate of 2-3mL/hour and titrate by 1mL every 15 minutes to response.
- The noradrenaline prescription and titration and target parameters must be documented on the NSW Health Fluid Order Chart or the Obstetric and Gynaecological High Acuity Chart.
- The half-life of noradrenaline is 1-2 minutes so therefore caution must be taken with line and bag changes. Ensure adequate time for loading and priming a new bag is allowed.
- A Central Venous Catheter is required for administration. A large peripheral vein (eg antecubital) may be used in an emergency, pending the insertion of a PICC/central line.
- Noradrenaline should be administered via a dedicated lumen
- Noradrenaline interacts with many other medications; do not mix with other infusions without gaining advice from Pharmacy.

Monitoring

- Blood pressure (BP) or Mean Arterial Pressure (MAP) should be monitored continuously via an arterial pressure monitor.
- BP/MAP should be monitored every 2-5 minutes following dosage increases, until stable and then hourly.
- If the patients' blood pressure remains unstable on noradrenaline which is requiring continual anaesthetic review, the patient should be referred for consultation by the ICU fellow.
- Daily ECGs are required to monitor for ischaemic changes
- Blood glucose levels should be monitored every 6 hours

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NORADRENALINE cont'd

Discontinuation

- Aspirate line post cessation of infusion
- Wean infusion as abrupt withdrawal may lead to severe hypotension

Management of tissue ischaemia secondary to extravasation

- Extravasation may cause necrosis and sloughing of surrounding tissue.
- To prevent sloughing and necrosis in ischaemic areas, the area should be infiltrated **as soon as possible** with 10 - 15 mL of a sodium chloride 0.9% solution containing 5-10 mg of phentolamine.
- Consult the Pharmacist or Pharmacy Department for further information.

References:

1. MIMS online 2014. Accessed 17/11/14
2. Australian Injectable Drugs Handbook 6th Edition, Society of Hospital Pharmacists of Australia 2014
3. Prescribing and administration of noradrenaline in specific critical areas of St. George Hospital
4. T.E.O.H 1990 Third Edn, Intensive Care Manual Butterworths New York.
5. Cardiac services intravenous drug protocol- Noradrenaline Prince of Wales Hospital

Risk rating: Low. Review in 2020

REVISION & APPROVAL HISTORY

Reviewed and endorsed Therapeutic & Drug Utilisation Committee 10/2/2015

Approved Quality & Patient Safety Committee 18/2/10

Reviewed and endorsed Therapeutic & Drug Utilisation Committee 15/12/09

Approved Quality Council 21/11/05

FOR REVIEW : FEBRUARY 2020

Noradrenaline intravenous drug preparation guide

Drug Name	Action/Indication	Presentation	IV administration	Adverse effects	Comments
Noradrenaline	<p>Acute hypotension</p> <p>Shock</p> <p>Anaphylaxis unresponsive to adrenaline.</p> <p>As an adjunct post-cardiac arrest to restore and maintain adequate blood pressure after return of spontaneous circulation</p>	<p>2mg/2mL or 4mg/4mL</p> <p>MUST be diluted before administration</p>	<p>Via Central access</p> <p>Via infusion pump as a continuous infusion</p> <p>Add 6mg of Noradrenaline to 94mL of Glucose 5% (withdraw 6mLs from a 100mL bag of Glucose 5%)</p> <p>Initial rate of 2-3mL/hour Titrate to response</p>	<p>Cardiovascular-tachycardia, angina, hypertension and arrhythmias</p> <p>Tissue necrosis at site of extravasation. Check site frequently for signs of extravasation or blanching.</p> <p>Peripheral vasoconstriction; ischaemic injury due to potent vasoconstrictor action and tissue hypoxia</p> <p>Headache (may be a symptom of hypertension due to over dosage)</p>	<p>Blood pressure (BP) or Mean Arterial Pressure (MAP) should be monitored continuously via an arterial pressure monitor.</p> <p>BP/MAP should be monitored every 2-5 minutes following dosage increases, until stable and then hourly.</p> <p>Daily ECGs are required to monitor for ischaemic changes</p> <p>Blood glucose levels should be monitored every 6 hours</p> <p>Aspirate line post cessation of infusion</p> <p>Wean infusion as abrupt withdrawal may lead to severe hypotension</p>