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 triptiline 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.
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 overdosage)

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
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
3. Prescribing and administration of noradrenaline in specific critical areas of St. George Hospital
5. Cardiac services intravenous drug protocol- Noradrenaline Prince of Wales Hospital

Risk rating: Low. Review in 2020
Noradrenaline intravenous drug preparation guide

<table>
<thead>
<tr>
<th>Drug Name</th>
<th>Action/Indication</th>
<th>Presentation</th>
<th>IV administration</th>
<th>Adverse effects</th>
<th>Comments</th>
</tr>
</thead>
</table>
| Noradrenaline | 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 | 2mg/2mL or 4mg/4mL   
MUST be diluted before administration | Via Central access  
Via infusion pump as a continuous infusion  
Add 6mg of Noradrenaline to 94mL of Glucose 5%  
(withdraw 6mLs from a 100mL bag of Glucose 5%)  
Initial rate of 2-3mL/hour  
Titrating to response | 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 over dosage) | 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.  
Daily ECGs are required to monitor for ischaemic changes  
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