Vasopressor Therapy - Step Down Unit - Full Clinical Guideline

Reference no.: CG-STEP/2023/005

Purpose

Hypotension secondary to vasoparesis from neuroaxial anaesthesia +/- recent general anaesthesia is a common side effect.
Frailty and in some patients with high cardiac risk, hypotension following general anaesthesia may also be persistent.
Depending on underlying patient co-morbidities, this hypotension may or may not be acceptable.
If unacceptable, management of this side effect should initially be treated with fluid boluses aiming to increase the intravascular volume and cardiac output, with the aim of replacing perioperative fluid losses.
In some patients, hypotension persists despite having an adequate intravascular volume and continuing to infuse fluid in these patients is potentially hazardous and may result in cardiac failure.

Aim and Scope

To clarify the use of vasopressor infusions, initiated by senior clinicians. Indications include:

- In patients who clinically have an adequate intravascular volume, yet still have persistent hypotension
- Patients suffering from hypotension due to residual effects of general anaesthesia, recent spinal or continuous epidural anaesthesia during their stay on the SDU.
- In stable patients who have been stepped down from ITU, requiring vasopressor support which is being weaned down/off

The aim of therapy is to optimize organ perfusion without fluid overload.

This protocol aims to:

- identify those patients in whom vasopressor therapy is appropriate
- define a standard concentration for use
- recommend a standard infusion rate
- define the monitoring required
- guide alterations in infusion rate according to drug effect
- Identify limits to its use, beyond which senior review is necessary and a higher level of care required.

Definitions Used

Hypotension

A MAP < 70 mmHg or a fall in systolic blood pressure of $\geq 20\%$ of the usual preoperative systolic blood pressure.

Phenylephrine

A weak vasopressor with predominantly alpha-adrenergic activity. It causes peripheral vasoconstriction and increases arterial pressure

Noradrenaline

A potent vasopressor with predominantly alpha-adrenergic activity.

Monitoring

The nursing observations and measurements made on patients, and their frequency.

Preparation

Phenylephrine Infusion

- Phenylephrine is supplied by pharmacy as 10mg vials
    - Draw up 20mg (2 vials)
    - Add into 500ml of normal saline to make up 20mg in 500ml concentration

Metaraminol Infusion

- Metaraminol is supplied by pharmacy as 10mg vials.
    - 50 mgs (5 vials) to be drawn up
    - Add into 250 mls bag 0.9% Normal saline as per ITU monograph.

Noradrenaline

- Noradrenaline will be supplied by pharmacy as 1mg vials and is to be prepared by nursing staff.
    - To prepare 60mcg/ml solution, withdraw 15ml from a 250ml bag of glucose 5%, draw up (15mg) 15ml of noradrenaline using a filter needle
    - Add noradrenaline to the glucose bag using new needle

Implementing The Policy

This policy refers to the use in patients on the SDU only. A similar policy is in place on medical HDU/ITU.

All prescriptions must be signed by a doctor and vasopressors are only to be used within the bounds of the protocol unless authorised by a Consultant Anaesthetist.

Protocol (see algorithm)

Phenylephrine is only to be used within the following limits;

- Only to be initiated, or when started in theatre agreed to continue, by the Consultant Anaesthetist responsible for the Step-Down Unit (SDU).
- May be used in patients following ELECTIVE or EMERGENCY. Its use following emergency surgery should be limited to situations where further invasive monitoring/higher level of critical care is deemed not appropriate.
- Assess for evidence of a hypovolaemic, septic or cardiogenic cause for hypotension. Refer for senior support if present.
- Central pressure monitoring or invasive arterial monitoring is not necessarily required.
- **DAILY SENIOR REVIEW** of vasopressor therapy should be recorded.
- Phenylephrine may be infused via a central line or peripheral cannula.
- If infused with any type of maintenance fluid-a one way valve must be placed on the vasopressor infusion line
- The dose range to be used is 10-50 ml/hr (ie. 0-2 mg/hr).
- If the patient remains hypotensive after 15 mins on any given dose, then the dose should be increased by 10 ml/hr up to a maximum of 50 ml/hr.
- Aim for a MAP of 70 - 80 mmHg with a urine output of > 0.5mls/kg/hr
- Patients receiving phenylephrine must have their blood pressure and ECG monitored.
    - Blood pressure
        - Every 15min for 1 hour once stable
        - Thereafter hourly observations unless the patient becomes symptomatic or a concerning change in blood pressure in noted.
    - If urine output is < 0.5 mls/kg/hr in absence of hypotension, consider other causes
- If the infusion is interrupted for any reason, 5 min observations should be commenced, and the infusion restarted as soon as possible. Any hypotension should be reported to the doctor.
- Rising phenylephrine requirements especially after being stable for 4 hrs should prompt reassessment of the patient and consideration of other potential causes. A further fluid challenge should be considered.
- Fluid challenge should be given at least once every 12 hours and the response assessed by a clinician. A further fluid challenge should be considered
- Phenylephrine should not be needed for longer than 12 hours post spinal or general anaesthesia for elective surgery. For persistent hypotension after this time other causes should excluded.

Metaraminol

ONLY to be used when phenylephrine is unavailable

Doses and infusion rates are different according to the flow chart but otherwise the above limitations and indications are the same.

Noradrenaline is only to be used within the following limits;

- Should **ONLY** be initiated on SDU if transfer of patient to a higher level of care is imminent e.g. Theatres, ITU or interhospital transfer.
- Patients may be transferred to SDU on an established reducing infusion on agreement with the Consultant Anaesthetist responsible for the unit
- May be used in patients following ELECTIVE or EMERGENCY surgery.
- Assess for evidence of a hypovolaemic, septic or cardiogenic cause for hypotension. Refer for senior support if present.
- Central line for the infusion is required.
- Invasive arterial monitoring is required at least initially. If blood pressure is stable and noradrenaline is being weaned this may not be necessary.
- **DAILY SENIOR REVIEW** of vasopressor therapy should be recorded in notes.
- If infused with any type of maintenance fluid-a one way valve must be placed on the vasopressor infusion line.
- The dose range to be used is 0-5ml/hr. Seek senior support & refer to ITU if higher doses are required.
- If the patient remains hypotensive after 15 mins on any given dose, then the dose should be increased by < 1ml/hr up to a maximum of < 5ml/hr. Aim for a MAP of 70 - 80 mmHg with a urine output of > 0.5mls/kg/hr
- Patients receiving noradrenaline must have their blood pressure and ECG monitored.
    - Blood pressure
        - Every 15min for 1 hour once stable
        - Thereafter hourly observations unless the patient becomes symptomatic or a concerning change in blood pressure is noted.
    - If urine output is < 0.5 mls/kg/hr in absence of hypotension, consider other causes
- If the infusion is interrupted for any reason, 5 min observations should be commenced, and the infusion restarted as soon as possible. Any hypotension should be reported to the doctor.
- Rising noradrenaline requirements especially after being stable for >4 hrs should prompt reassessment of the patient and consideration of other potential causes.
- A fluid challenge should be given at least once every 12 hours and the response assessed by a clinician. Infusion rates may then be reduced.
- Do not rely on CVP measurements with noradrenaline as these may be raised due to venoconstriction.

References

1 – ABPI Compendium of Data Sheets and Summaries of product Characteristics 1998-99. Published by Datapharm Publications Ltd. Pg 592

Documentation Control

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