Critical Care Directorate Guidelines

# Use of a dilute phenylephrine vasoconstrictor infusion in patients receiving a postoperative epidural infusion

## Background

Epidural local anaesthetic infusions cause vasodilation by blocking sympathetic nerve fibres. The vasodilation lowers blood pressure and extra intravenous fluid is often given to treat hypotension. This may contribute to a large positive fluid balance in postoperative patients.

In some patients a vasoconstrictor infusion may be used to partially reverse the vasodilation caused by the epidural local anaesthetic. **The aim is not to produce marked vasoconstriction and high doses should not be used. Vasoconstriction is not the appropriate treatment for hypovolaemia resulting from haemorrhage or other fluid losses, nor for a low cardiac output.** It is not usually appropriate to keep increasing the vasoconstrictor dose in a patient with a low blood pressure. Instead the patient should be reviewed. It should be considered whether the target blood pressure is appropriate and whether additional IV fluid is required.

**Vasoconstrictors should be used with caution in patients with coronary artery disease**. However, a low dose used to partially reverse the vasodilation caused by the epidural local anaesthetic is usually well tolerated. All patients in the HDU should have monitoring of the ECG and ST segments in leads II and V5 to help detect signs of myocardial ischaemia.

Phenylephrine may be given through a peripheral intravenous cannula unlike noradrenaline. It has a longer duration of action than noradrenaline so that brief interruptions to the infusion have little effect on the blood pressure. When the dilute solution described below is used, an inadvertent flush or bolus of a ml or two of phenylephrine has only a slight effect.

## Preparation and infusion rate

- Add 10 mg of phenylephrine to 500 ml of 5 % dextrose (final concentration 20 micrograms/ml)
- Use within 24 hours of preparation.
- Use an antireflux valve if administered with IV fluids (same as PCA set)
- Usual infusion rate 10 - 30 ml/h
- Prescribe a target mean or systolic BP to aim for on epidural chart eg Aim SBP≥90

**If a patient is considered to require higher doses of a vasoconstrictor then senior anaesthetic / ICM advice is recommended.**
The infusion rate should be reduced if the blood pressure is high.
The infusion should be reduced and stopped when the epidural infusion is discontinued.

**The volume of phenylephrine in 5 % dextrose being infused should be taken into account when prescribing intravenous fluids**. For example if it is intended to give a total of 80 ml/h of crystalloid fluid and the phenylephrine infusion is running at 20 ml/h and the epidural infusion at 10 ml/h, then the intravenous fluids should be reduced to 50 ml/h.

**Note on intravenous drug infusions**

IV drug infusions should either be given through a separate IV cannula or central line lumen or, if given through the same cannula or lumen as an IV fluid infusion, an anti-reflux valve must be used to prevent the drug being pumped backwards into the IV fluid infusion tubing. "PCA" type drug administration sets with a Y-connector incorporating an anti-reflux valve for IV fluid infusions are available.

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