Paediatric Intensive Care Unit

INOTROPE & VASOACTIVE DRUGS INFUSION CHANGEOVER

Staff relevant to:	Medical and Nursing staff caring for children in the PICU
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1. Indications

This guidance is intended for use by medical, nursing and allied health professional staff involved in the inotrope & vasoactive drugs with short half-life such as SNP, Epoprostenol changeover process at PICU/CICU & East Midlands Congenital Heart Centre. These drugs are used in critical care to maintain cardiovascular function which is achieved by administration of continuous infusion. When one infusion is about to finish another infusion is commenced, failure to administer these drugs appropriately may result in haemodynamic instability, in extreme cases death. This document describes a safe method of inotropes & vasoactive drugs changeover based on evidence from the latest literature.

2. Guideline Standards and Procedures

Preparation

- An accurate and clear prescription of the inotropic drug
- An appropriate and patent IV access - a peripheral line or a central venous catheter (CVC) in situ
- A newly prepared and labelled infusion ensuring the sticker does not cover the graduations on the syringe
- A correct line for the pump (never use a pressure line in a non-pressure line capable pumps)
- A three-way tap
- A spare pump (a high-risk syringe driver)
- Non-sterile gloves
- Chlorhexidine wipe (2% chlorhexidine in 70% isopropyl alcohol solution)
- Patient monitoring equipment in situ, including:

- A three-lead electrocardiograph
- Invasive blood pressure monitoring preferably or non-invasive blood pressure with cycling every 2 min during the changeover period (once stability achieved cycling can be liberalised)
- An oxygen saturation probe

Procedure

1. The inotropes changeover should be performed during the day shift preferably.

2. Prepare at least 3 hours before the previous infusion is due to run out.

3. Securely attach the administration set with a three way tap connected and manually prime the administration line, ensuring there is no air in the line.

4. Make sure there is **a spare port** available for further inotrope changeover. Attach another three way tap if needed.

5. Attach a syringe driver at the same level as the level of the bed or above.
   Position and moving the syringe pump matters. A vertical displacement of syringe driver - a syringe driver placed under the level of the bed increases resistance to the infusion delivery by increasing the hydrostatic pressure and can alter delivery of infused volume.

6. Load the syringe onto the syringe driver. Turn the pump on and set with the same setting as the old infusion (or according to the prescription).

7. Purge at least 2mls of your new infusion into a container - this is to reduce the mechanical slack of the pump.

8. Decontaminate a dedicated administration port on the CVC using the chlorhexidine wipe.
   Inotropic drugs should be administered via a dedicated port to avoid the risk of boluses.

9. Ensure that fluid is dripping from the end of the line, attach the new infusion via the three-way tap, make sure that the hub is filled with the infusion fluid.

10. Press start on the new infusion and wait till delivery pressure on the infusion pump reaches the same delivery pressure than in the old infusion.

11. Turn the three-way tap open to the new infusion and wait for systolic pressure to rise by 10 and stop the old infusion, disconnect. If no rise in blood pressure occurs then after approximately 10 minutes despite both running then stop old infusion (if patient haemodynamically unstable wean down the old infusion).

12. Monitor haemodynamics closely for a period of at least 10 min.

13. Titrate the rate of administration to achieve the desired blood pressure.
    The dose should be calculated in microgram/kg/minute (vasopressin in units).

14. This describes routine practice for all inotropes & vasoactive agents such as SNP & Epoprostenol. Obviously, there are occasions when there isn't a spare port, or where the

swap of central lines is required (UVC to femoral/neck CVL) so practice may differ. However, the above describes routine, day to day practice.

Observation

1. Monitor delivery pressure on the syringe pump and be vigilant for signs of occlusion since the short half-life of inotropes means that any interruptions in the infusion may lead to cardiovascular instability.

2. Watch for any arrhythmias or excessive increases in mean arterial pressure; report any concerns immediately to a senior member of staff.

3. If you are unsure or inexperienced in changing the infusion, seek the support of a senior member of staff. The patient's condition can become highly unstable during an infusion change.

4. Once the patient is weaned off their inotrope infusion, aspirate the infusion port with an empty syringe until blood is withdrawn, flush this port with 0.9% sodium chloride prepared in a second syringe.

5. Poor skin perfusion as a result of significant vasoconstriction at higher inotrope doses can cause unreliable reading of oxygen saturation; it also can result in peripheral ischaemia (up to a loss of digits in severe cases) and faster development of pressure areas. Regular assessment of skin integrity and recording as well as use of pressure-relieving devices is recommended. Any concerns should be reported to the medical team.

6. The patient's blood glucose and electrolytes levels should also be closely monitored since hyperglycaemia and electrolyte disturbances are common in critical illness.

3. Education and Training

Training and raising awareness are on-going processes. On-going awareness is promoted through the induction and continuous bedside teaching. Training is provided for medical staff during lunchtime teaching (Wednesdays) and other sessions, and at junior doctors' induction training. Nursing education is supported by the Practice Development teams, and nursing educators.

4. Monitoring Compliance

None identified

5. Supporting References

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6. Key Words

Inotropes, vasoactive drugs, changeover

The Trust recognises the diversity of the local community it serves. Our aim therefore is to provide a safe environment free from discrimination and treat all individuals fairly with dignity and appropriately according to their needs.
As part of its development, this policy and its impact on equality have been reviewed and no detriment was identified.

CONTACT AND REVIEW DETAILS	
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Details of Changes made during review: October 2023 Title change from Inotropes Infusion changeover to Inotrope & vasoactive drugs infusion changeover No other changes	