CHANGING INOTROPE SYRINGE INFUSIONS

REF NO:	Version 4

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INITIATING FORUM	DATE RATIFIED
Workforce, Education and Training Forum (WEaT)	April 2022
TARGET AUDIENCE	**REVIEW DATE**
Adult Critical Care Workforce	April 2024

The governing principles outlined within this document are fully supported in every respect by the Clinical Effectiveness Group.

1. Full Guideline Title : Changing Inotrope Syringe Infusions

2. Adaptation: Adapted from Guidelines for noradrenaline and adrenaline syringe changes (Critical Care Unit, St. George's Healthcare NHS Trust) cited in Morrice et.al. (2004)

3. Guideline Aim: This guideline aims to promote a safe, standardised process for critical care practitioners to follow when changing inotrope syringe infusions

4. Target population: Adult Critical Care Practitioners responsible for the administration of inotrope infusion delivery

5. Guideline: Vasoactive drugs (e.g. inotropes), namely adrenaline and noradrenaline, are frequently used in critical care to maintain cardiovascular function. This is achieved by ensuring that a continuous infusion of the vasoactive drug is administered so that when one infusion is about to finish another infusion is commenced. This is commonly known as ''double pumping'' or ''piggy backing''. Failure to administer these drugs appropriately may result in haemodynamic instability (hypotension and hypertension) and in extreme cases death.

The aim of this guideline is to promote evidence based practice across the Adult Critical Care Units of Lancashire and South Cumbria with regard to the practice of changing inotropic syringe infusions. In doing so, instances of adverse events will be minimised and safer, standardised practice will be adopted. Inotrope and vasoactive drugs such as adrenaline, noradrenaline and doBUTamine have a very short half-life and need to be infused continuously to maintain their therapeutic effect. The following guide is to help practitioners to manage the changing of a syringe to ensure continuous therapy whilst maintaining haemodynamic stability.

- Inotrope infusions should be placed on a dedicated access line on the central venous catheter and should be delivered via a high risk syringe driver as these are thought to be associated with fewer adverse effects to patient blood pressure because they are designed to limit the time delay before the drug is delivered (Fox, 2000).

- When there is 1-2 hours or 5 mLs left in the current syringe (whichever comes first), or the syringe will soon be out of date, the practitioner should be prepared for changing to a new syringe. The new infusion should have been prepared according to local policy and should have been placed in an empty syringe driver directly above or below the existing infusion at bed height. The infusion line should be already attached to the central line (or if a new line is being attached, it should be primed first, before attaching to the central line). The new line /infusion should be clamped.

- If the drug concentration has changed, a new line should be used and primed as above.

- Ensure all clamps are released and begin the new infusion **at the same rate** as the current infusion

- Remember that the new infusion will take a few minutes before it reaches the patient – the lower the rate the longer it will take

- Closely monitor the patient's blood pressure and when **a rise of >5 mmHg** is seen in the **systolic blood pressure** stop the old infusion

- Clamp the old infusion line and turn off the pump

- A transient rise/drop in BP is to be expected but will settle as the half-life of the drugs are only a few minutes

- **Do not leave the patient** or perform other activities during inotropic syringe changes.

- **Do not bolus inotropes**. If the patient becomes hypotensive during a syringe change, the recommended practice is to increase the infusion rate until the patient's blood pressure stabilises.

6. Clinical Algorithm:

GUIDELINE FLOW CHART for CHANGING AN INOTROPIC SYRINGE on Critical Care

METHOD	----	RATIONALE
Choose dedicated central line access.	----	To reduce risk of accidental vaso active drug administration.
↓		
Choose high risk syringe pump e.g.Alaris, Asena Pump – Graseby 3150 for Vaso-active drug administration.	----	High risk syringe drivers give accurate & constant flow pressure.
↓		
Ensure syringe drivers are located together at bed height.	----	To encourage safe practice during syringe changes.
↓		
A syringe change is recommended when there is at least 1 hour or 5mls of the infusion remaining.	----	To ensure the syringe change occurs before the infusion runs out.
↓		
If the concentration of the infusion is changed the infusion line must be changed.		
↓		
Once new syringe connected, release clamp and ***start infusion at the same rate*** as the existing one **Do not leave the patient during a syringe change**		
↓		
Run both syringe drivers together until a rise in BP is seen of >5mmHg. Turn the nearly empty infusion off and clamp the line.	----	To minimize blood pressure variation & mechanical start up delay of syringe driver.
↓		
Once haemodynamic stability achieved following syringe change, disconnect previous infusion and discard as per local policy.	----	To encourage safe practice.
↓		
Document HR & BP on the observation chart. Complete medication chart documentation.		

DO NOT bolus inotropes.
If the patient becomes hypotensive during a syringe change the recommended practice is to increase the infusion rate until the blood pressure stabilises. If blood pressure does not respond please seek medical advice.

DO NOT leave the patient or perform other activities during this procedure

9. References

Fox N. (2000) *Armed and dangerous*. Nursing Times **96**(44) pp.24—6.

Morrice A, Jackson E, Farnell S (2004) *Practical considerations in the administration of vasoactive drugs in the critical care setting: Part II – How safe is our practice?* Intensive and Critical Care Nursing **20** pp 183-189

Trima JC, Roeb J (2004) *Practical considerations in the administration of intravenous vasoactive drugs in the critical care setting: the double pumping or piggyback technique—part one* Intensive and Critical Care Nursing **20**, pp. 153—160