

Rapid Response Report

NPSA/2008/RRR002

From reporting to learning

24 April 2008

Risks with Intravenous Heparin Flush Solutions

For IMMEDIATE ACTION by the NHS and the independent sector, the deadline date for ACTION COMPLETE is 24 July 2008. This guidance is applicable to all healthcare professionals prescribing, dispensing or administering intravenous flush solutions to NHS patients. All relevant healthcare professionals and organisations should be made aware of this guidance, including independent contractors and out of hours providers. Actions should be co-ordinated by the Chief Pharmacist or Pharmaceutical Advisor.

Issue

Intravenous heparin flushes are widely used in healthcare to keep both peripheral and central lines open. Risks with heparin flushes are not well recognised by practitioners and risks are increased if they are not formally prescribed or subject to a patient group direction. Other problems include confusion with other 'look-alike' products, selecting wrong medicine when placed in an unlabelled syringe and errors in calculating and making up dilutions.

Patient Safety Incidents

An independent report has recently been published reviewing the circumstances of four patient safety incidents where an anaesthetist mis-selected sodium heparin 25,000 units in 5 ml (Monoparin) instead of sodium heparin 50 units in 5 ml (Hepsal) and administered the more concentrated solution in unlabelled syringes to four children. Thankfully the four children only experienced some temporary bleeding and otherwise are not reported to have suffered longer term harm. However, the potential for serious harm was recognised by the hospital trust. The independent report provides important learning for safer practice. The report can be found at:

www.ubht.nhs.uk/documents/oct_UBHT_final_report_heparin.doc

The NPSA has reviewed patient safety incident reports concerning mis-selection of sodium heparin products and has received 28 incident reports between January 2005 and December 2007. In addition there were also 8 reports where other medicines including diamorphine, lidocaine and magnesium were mis-selected for heparin flush solution products.

Evidence on heparin flushes recently reviewed by UK Medicines Information (UKMi) indicates no advantage over normal saline for maintaining peripheral intravenous catheters (www.druginfozone.nhs.uk/Record%20Viewing/viewRecord.aspx?id=591809). This is also noted in the British National Formulary. For more complex devices, such as central venous or arterial catheters, the evidence is less clear. More specific policies may be required locally depending on the individual devices in use.

Action

- Organisations should review local policies to minimise the use of heparin flush solutions in all devices, including complex central venous or arterial catheters. This should take into account the evidence reviewed by UK Medicines Information (UKMi) which confirms that heparin flushes should not normally be used to flush peripheral intravenous catheters.
- All flush solutions should only be administered following a prescription or patient group direction.
- Local policy and procedures should be reviewed to ensure risk with heparin flush solutions is minimised.
- Healthcare organisations should ensure that all relevant staff are made aware of this guidance and revised policy.

Previous related NPSA recommendations concerning injectable medicines

- The NPSA has previously recommended that the use of concentrated sodium heparin products should be minimised, and wards and departments should normally only stock sodium heparin products of 1,000 units / ml or less. (NPSA Alert 18 – March 2007).
- The NPSA has previously recommended that healthcare organisations should review their multidisciplinary policies and procedures for the preparation and administration of injectable medicines (NPSA Alert 20 – March 2007). These should include the following safe practice guidance:
 - All syringes, including flushes and infusions, must be labelled immediately after preparation by the person who prepared them. The only exception to this is in situations where preparation and bolus (push) administration is one uninterrupted process and the unlabelled product does not leave the hands of the person who prepared it. Only one unlabelled medicine must be handled at one time.
 - For high risk injectable products, such as concentrated heparin, consider the use of double checking systems such as an independent check by another practitioner.
 - Implement a 'purchasing for safety' policy to promote procurement of injectable medicines with inherent safety features.

Further Information

Support information on this *Rapid Response Report* is available at www.npsa.nhs.uk/patientsafety or David Cousin, Head of Safe Medication Practice, c/o rrr@npsa.nhs.uk Telephone: 020 7927 9356