

Risks with unfractionated heparin to maintain patency of intravascular devices

Background

Unfractionated heparin (heparin) has the potential to cause serious harm when used incorrectly, and is among the drugs most commonly associated with adverse incidents. There are many types and causes of errors associated with heparin. Many of the issues related to the dosing and monitoring of heparin in the treatment and prevention of venous thromboembolism and acute coronary syndromes have been covered in the WA Anticoagulation Medication Chart ([OD 0270/10](#)). However, one of the most serious types of errors, involving the use of heparin in maintaining venous access, has not been addressed.

Following a West Australian case where high dose heparin (25,000 units in 5mL) was administered as a heparin flush, the WA Medication Safety Group convened a Working Group to examine current practice around the use heparin to maintain vascular patency, and make recommendations that could reduce the possibility of confusion between the various look-a-like vials of heparin.

Recommendations to health services

1. Irrespective of dose and indication, heparin must only be used with specific practice guidelines that clearly outline:
 - The requirements for the prescription, administration and monitoring of heparin, including appropriate documentation.
 - The medical history required prior to prescribing heparin includes
 - Past history of heparin induced thrombocytopenia or other heparin related allergies,
 - Co-existing diseases or conditions, including recent trauma that could affect the decision to prescribe or dose requirements
 - Concomitant therapy that may interact with heparin
 - Double checking in the preparation and administration of heparin.
2. Rationalise and minimise the different formulations of heparin stocks.
 - Store only those heparin formulations that are commonly required in each clinical area. Where multiple formulations are required store these in a manner to minimise the risk of confusion.
 - Given the risks associated with high dose heparin (25,000 units in 5 mL), this should be stored away from other heparin formulations In clinical areas where it is required. The container should be prominently labelled.
3. Limit the use of heparin in the maintenance of central vascular devices.
 - Guidelines and education should reflect appropriate flushing techniques.
 - Use of saline flushes is recommended. Heparin flushes may only be used in clinical areas where specific guidelines are in place.
 - Heparin locks should only be used in accordance with best practice and manufacturer requirement (i.e. Infusaports, Vascath or Hickman lines). Always use of the lowest possible concentration of heparin.
 - Where appropriate purchase access devices that do not require heparin to maintain patency.

Further reading

Institute for Safe Medical Practice (2007) Another heparin error: Learning from mistakes so we don't repeat them. ISMP Medication Safety Alert Newsletter (Acute Care). November 29, 2007. <http://ismp.org/newsletters/acutecare/articles/20071129.asp>

National Patient safety Agency, NHS (2008). Risks with intravenous heparin flush solutions. Rapid Response Report, NPSA/2008/RRR002. <http://www.nrls.npsa.nhs.uk/resources/?entryid45=59892>

Institute for Safe Medical Practice, Canada (2008). Enhancing safety with unfractionated heparin: A national and international area of focus. ISMP Canada Safety Bulletin, 8 (5). <http://www.ismp-canada.org/download/safetyBulletins/ISMPCSB2008-05UnfractionatedHeparin.pdf>

Victorian Medicines Advisory Committee (2009). Unfractionated heparin. Quality use of medicines alert 1(3) <http://www.health.vic.gov.au/qum/downloads/heparin-alert.pdf>

Agency for Healthcare Research and Quality (2009) Vial mistakes involving heparin. Morbidity and Mortality Rounds on the web (Surgery/anaesthesia) May 2009 <http://webmm.ahrq.gov/case.aspx?caseID=201>

Institute for Safe Medical Practice (2010) Latest heparin fatality speaks loudly - what have you done to stop the bleeding? ISMP Medication Safety Alert Newsletter (Acute Care). April 8 2010. <http://ismp.org/newsletters/acutecare/articles/20100408.asp>

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