quality safe use of medicines

Medication Alert

Heparin (Unfractionated)

Alert 12 September 2011

For the attention of: Chief Executive Officers
For action by: Chair of Medication Safety Committees/ Medicine Advisory Committees

Purpose of this alert

To highlight the risks for patients on heparin and to promote safer practice. Heparin can cause death or major bleeding events if not administered and monitored correctly

Required Action

Organisation level

1. Standardise the policy and protocols for heparin and these must include a dosing algorithm

2. A heparin specific chart should be used and the design must include the following safety features:
   - Patient weight
   - Target activated partial thromboplastin time (aPTT)
   - Requirement for baseline aPTT and space to record the result
   - Dosage and monitoring instructions
   - Space for aPTT results and the time for the next aPTT test – visible to prescriber and administrator

3. Standardise the infusion method i.e. syringe or bag and use pre-mixed heparin infusion preparations where possible

4. Standardise the infusion strength e.g. 100 units per ml to allow specific instructions on dose changes on the heparin chart

5. Check there is a clear understanding between clinicians as to who is responsible for monitoring the aPTT, checking the results in a timely manner and adjusting the dose i.e. nurse or doctor and include in clinical handovers

6. Heparin preparations stocked in ward areas must match the heparin protocols

7. Review the use of heparin to maintain catheter patency and ensure the heparin protocols and preparations stocked on wards reflect the required use e.g. haemodialysis catheters, central venous lines etc.

Background to this Safe Use of Medicines Alert

Heparin is considered to be a "high risk" medicine internationally. It is commonly cited in medication error reporting and can cause death, major bleeding events or clotting problems if not prescribed, administered and monitored appropriately.

Reasons for errors

- Heparin is prescribed for multiple indications
- Heparin has a narrow therapeutic range
- Heparin can cause unpredictable adverse reactions at therapeutic doses
- Presentations of heparin look alike and may lead to selection error
- Low molecular weight heparin has replaced unfractionated heparin for many indications and this means that prescribers and administrators are less familiar with the use of unfractionated heparin than previously

Major risks

- Inappropriate dose prescribed
- Administration errors: incorrect formulation of heparin selected, preparation errors, miscalculation of infusion concentration or incorrect infusion rate
- Incorrect monitoring of heparin therapy
- Delayed or inappropriate dose adjustment made in response to aPTT results

New Zealand experience

An audit of heparin prescribing and administration practice in three district health boards was carried out to review current practice and to aid the formulation of solutions for process improvement. The audit identified that compliance with protocols was low and that heparin therapy was frequently not monitored correctly[1]. The audit identified system changes that if implemented could improve the safety and effectiveness of heparin use. These are included in the recommended actions.

Reference

1. Loe E A, Parsotam N, Blumgart A F, Jansen L J. Inter-Regional Collaboration for Errors and Near Misses with Unfractionated Heparin. JPPR 2008; 38: 209-11.

For further action by Safe and Quality Use of Medicines Group

- Lobby manufacturers to commercially manufacture and register pre– mixed heparin bags and syringes to a standard concentration
- Evaluate District Health Board compliance with the recommended actions
- Work towards a national heparin chart incorporating the features recommended

Further information and resources

- Royal Australasian College of Surgeons: Prevention of Venous Thromboembolism: Best Practice Guidelines for Australia and New Zealand URL: http://www.surgeons.org/media/19372/VTE_Guidelines.pdf
- Quality Use of Medicines Alert, Victoria: Unfractionated Heparin (Mar 2009). URL: http://www.health.vic.gov.au/qum/downloads/heparin-alert.pdf

For an electronic version of this alert download from the website, www.safeuseofmedicines.co.nz or contact Beth Loe, beth.loe@hqsc.govt.nz

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