Open Book
Learning from close calls and adverse events

Different presentations of heparin

This report aims to alert providers to the key findings of a recent review, with emphasis on the changes implemented by that provider to prevent recurrence. Providers are advised to consider this report, and whether the changes made are relevant to their own systems.

This report is relevant to:

- operating theatre staff
- hospital pharmacists
- chairs of relevant medication safety or medicines advisory committees.

Incident

A patient was administered an overdose of heparin in an operating theatre. A contributory factor was the availability in the hospital of heparin in different presentations. This resulted in confirmation bias and calculation error.

Chronology

- A patient was prescribed a dose of 3000 units of heparin to be given intravenously.
- The clinician administering the heparin was more familiar with 1mL ampoules of heparin, which contain 5000 units.
- The only ampoules available in the theatre were 5mL, containing 25,000 units of heparin.
- The clinician misread the label on the ampoule to be '2500 units in 5mL', and administered a total of 6mL, resulting in 30,000 units of heparin being administered.
- The review found that six different strengths/ presentations of heparin were used in the hospital.

Actions subsequently taken

- Review of heparin usage from the anaesthesia record system indicated that, outside the specialist cardiac operating theatre, only low doses of heparin are administered. The 5000 units in **1mL** presentation should be the only presentation stocked in general theatres.
- The specialist cardiac operating theatre is the only operating theatre that holds the 25,000 units in **5mL** presentation.
- The review identified that other wards and departments held stock of the 25,000 units in **5mL** presentation. This is now being reviewed to ensure wards hold the most appropriate strength to suit their clinical requirements and standardised where possible.

Health Quality & Safety Commission comment

- Heparin is a high-risk medicine because of its effect and the potential for an administration error to occur due to its differing presentations and concentrations.
- The Commission recommends:[1]
  - only strengths needed are stocked on a ward/unit
  - high concentrations are stored in secure areas
  - premix supplies are used, where available
  - other interventions – such as barcode verification, if available – are used to help reduce risk of error.
- Other medicines come in a variety of presentations and concentrations. The actions taken in this case may also be appropriate for those medicines.

[1] www.open.hqsc.govt.nz/medication/heparin

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