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Is the safety of injectable medicine improving along the right lines?

An NPSA alert regarding the safety of injectable drugs was released in March 2007.

A year later, health professionals met to discuss the progress made. Christine Clark reports

Improving patient safety is our day job, not an optional extra, according to Linda Matthew, senior pharmacist, National Patient Safety Agency. The NPSA receives 800 reports each month concerning injectable medicines, which accounts for 24 per cent of all reported medication incidents. Furthermore, 58 per cent of incidents resulting in death or severe harm to patients are related to injectable medicines. It is estimated that about 10 per cent of incidents are reported to the NPSA.

In March 2007, the NPSA released an alert concerned with improving the safe use of injectable medicines. This requires a good understanding of risks at a local level. The goal is widespread, sustainable and measurable improvement, said Ms Matthews. Often, changes are effective in the short term but are not sustained or embedded in the system. The key to success is culture change, and this involves changing procedures and mindsets.

Legal requirements Ms Matthews pointed out that the Corporate Manslaughter and Homicide Act 2007 was to come into effect on 6 April 2008. Elements of this act could apply if a patient dies from a medication incident for which the risks were recognised but recommendations to lessen the risk were not implemented, she suggested.

The impact of changes made to improve safety must be audited to see if they have made the expected difference. Residual risks (those that cannot be avoided) and recommendations for change that have not been achieved must be recorded on the trust risk register, Ms Matthews emphasised.

— Lack of awareness

Many errors in the preparation of injectable medicines in intensive care areas are not reported because the staff involved are not aware that they have made an error, said

The programme for "Safety with injectable medicines — implementing the NPSA alert" was designed by an independent advisory group. The meetings were supported by an unrestricted grant from Baxter Healthcare. The latest meeting took place in London on 20 March 2008. **Christine Clark** is a freelance journalist. Her travel expenses were paid by Baxter Healthcare.



Linda Matthew expects widespread, sustainable and measurable improvement in patient safety

Mark Borthwick, consultant pharmacist, Oxford Radcliffe Hospitals NHS Trust. One study, conducted in four British hospitals, had shown that most acetylcysteine infusions prepared in emergency departments were more than 10 per cent outside the intended concentration, and nearly one in ten were more than 50 per cent outside the intended concentration.

In a study conducted in Canada, in which volunteer clinical staff prepared opioid injections in an unhurried laboratory situation, 35 per cent had more than 10 per cent concentration errors and 8 per cent had a two-fold or larger errors in concentration. These findings suggest that preparation errors cannot simply be attributed to pressure of work, said Mr Borthwick.

— Collaborating with industry

The use of standardised products might help to avoid some preparation errors, but pharmacists need to advise the industry about the strengths and presentations that are required. In the past, some products have been launched that only met the needs of a minority of customers, so uptake was poor, said Mr Borthwick.

A recent survey conducted by the Concentration Standardisation Group (an ad hoc group of critical care specialists including anaesthetists, pharmacists and nurses) examined how 20 commonly-used intensive care

medicines are used in practice. A total of 154 intensive care units responded. Results showed that the 20 drugs were used in 372 different ways (excluding diluent variations). Phosphate, noradrenaline and adrenaline topped the list with 45, 39 and 38 variations respectively.

A similar pattern was seen when the concentrations of the 20 agents were charted. Phosphate and amiodarone were the most variable (25 and 20 different concentrations respectively) followed by noradrenaline, adrenaline and morphine sulphate.

The group has concluded there is enough common ground to standardise some products and work is in progress to set up a representative stakeholder group to take this forward. A second survey will be undertaken to clarify some issues. For example, to understand the reasons why some unusual concentrations of drug are used.

— Guidance practicalities

During workshop sessions, participants tackled several scenarios involving high-risk injectable medicines, one of which was based on an adult neurological intensive care unit. The unit requested a stock of 30 per cent sodium chloride injection to prepare a 3 per cent solution for the urgent treatment of raised intracranial pressure.

Given the known risks of using hypertonic solutions, possible risk reduction measures include using:

- A 1.8 per cent injection
- A written preparation procedure
- A "kit" containing ingredients and instructions for formulating a 3 per cent solution
- Separate storage space for 30 per cent sodium chloride injection from that used to store other sodium chloride preparations

Clare Crowley, medicines safety pharmacist at Oxford Radcliffe, explained that in her trust, a 2.7 per cent solution (that is available as a "special") is used for this purpose. However, national treatment guidelines recommend a 3 per cent solution. This should be referred back to the authors of the guidelines, suggested Dr Crowley.