

Intravenous infusion practices across England and their impact on patient safety: a mixed-methods observational study

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Plain English summary

The ECLIPSE study

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Plain English summary

Infusion devices deliver controlled volumes of liquid medications and fluids into patients' veins at a defined rate. If the rate is wrong, or if other kinds of error occur (e.g. incorrect patient identification), this can cause patient harm. In this study, we investigated how both hospital policies and the design of infusion devices influence safety. Some new infusion devices, called 'smart pumps', incorporate dose error reduction software that is designed to reduce errors. One key question is whether or not smart pumps improve patient safety.

We worked with 16 English hospital organisations and carried out observations, interviews and focus groups to identify which factors affect practice. A total of 2008 infusions were observed and their administration and documentation was compared against prescription and local policy documents to identify any deviations between the two.

Although we identified 1720 deviations, including errors in 231 infusions, we identified only one error that was likely to have resulted in short-term patient harm had it not been intercepted. Many of the deviations that were observed could be considered 'workarounds' (informal adaptations to solve problems). Some of these were done in the best interests of the patient, such as setting up the next bag of fluids that a patient needed despite it not yet having been prescribed.

There was wide variability in numbers and types of deviation across both wards and hospitals, suggesting that local practices respond to local situations. Practices with smart pumps were different from those with other pumps. However, we did not find evidence of greater safety with smart pumps.

Overall, observed deviations were largely associated with local and national policies and practices that staff had evolved to manage their time and workload. It is necessary to recognise the complexity of the system and find ways of adapting technology and practices to maintain safety.

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