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BACKGROUND: Intravenous (IV) medication administration has traditionally been regarded to be error-prone with high potential for harm. A recent US multisite study revealed surprisingly few potentially harmful errors despite a high overall error rate. However, there is limited evidence about infusion practices in England and how they relate to prevalence and types of error.

OBJECTIVES: To determine the prevalence, types and severity of errors and discrepancies in infusion administration in English hospitals, and to explore sources of variation in errors, discrepancies and practices, including the contribution of smart pumps.

DESIGN: Phase 1 comprised an observational point-prevalence study of IV infusions, with debrief interviews and focus groups. Observers compared each infusion against the medication order and local policy. Deviations were classified as either errors or discrepancies based on their potential for patient harm. Contextual issues and reasons for deviations were explored qualitatively during observer debriefs, and analytically in supplementary analyses. Phase 2 comprised in-depth observational studies at five of the participating sites to better understand causes of error and how safety is maintained. Workshops were held with key stakeholder groups, including health professionals and policy-makers, the public and industry.

SETTING: Sixteen English NHS hospital trusts.

RESULTS: Point-prevalence data were collected from 1326 patients and 2008 infusions. In total, 240 errors were observed in 231 infusions and 1489 discrepancies were observed in 1065 infusions. Twenty-three errors (1.1% of all infusions) were considered potentially harmful; one might have resulted in short-term patient harm had it not been intercepted, but none was judged likely to prolong hospital stay or result in long-term harm. Types and prevalence of deviations varied widely among trusts, as did local policies. Deviations from medication orders and local policies were sometimes made for efficiency or to respond to patient need. Smart pumps, as currently implemented, had little effect. Staff had developed practices to manage efficiency and safety pragmatically by working around systemic challenges.

LIMITATIONS: Local observers may have assessed errors differently across sites, although steps were taken to minimise differences through observer training, debriefs, and review and cleaning of data. Each in-depth study involved a single researcher, and these were limited in scale and scope.

CONCLUSIONS: Errors and discrepancies are common in everyday infusion administration but most have low potential for patient harm. Findings are best understood by viewing IV infusion administration as a complex adaptive system. Better understanding of performance variability to strategically manage risk may be more helpful for improving patient safety than striving to eliminate all deviations.

FUTURE WORK: There is potential value in reviewing policy around IV infusion administration to reduce unnecessary variability, manage staff workload and engage patients, while retaining the principle that policy has to be fit for purpose, contextualised to the particular ward situation and treatment protocol, and sensitive to the risks of different medications. Further work on understanding infusion administration as a complex adaptive system might deliver new insights into managing patient safety.

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Reference:

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