



HUMAN FACTOR'S ROLE IN MEDICATION ERRORS: DILUTING INTRAVENOUS MEDICATIONS AT HOSPITAL WARDS - A STUDY BASED ON INCIDENT REPORTS

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Several human factors exposed the intravenous medication preparation process to risks.



Diluting medications, calculating doses, performing tasks with cognitive loads has resulted in medication errors and patient harm.



Evaluating how humans think and process information should be included in developing measures to prevent patient harm from dilution errors.

Background and importance

- Humans make mistakes, inadvertently when making poor decisions, being distracted or when not perceiving risk whilst managing medications.
- A human factors approach can be applied to address the causation of medication errors from a process point of view while addressing our error-prone human nature.
- Intravenous medications are complex to prepare and administer, and thus are at a higher risk of medication errors.

Aim

- To address human factors in medication calculation errors involving dilution of intravenous medications.

Methods

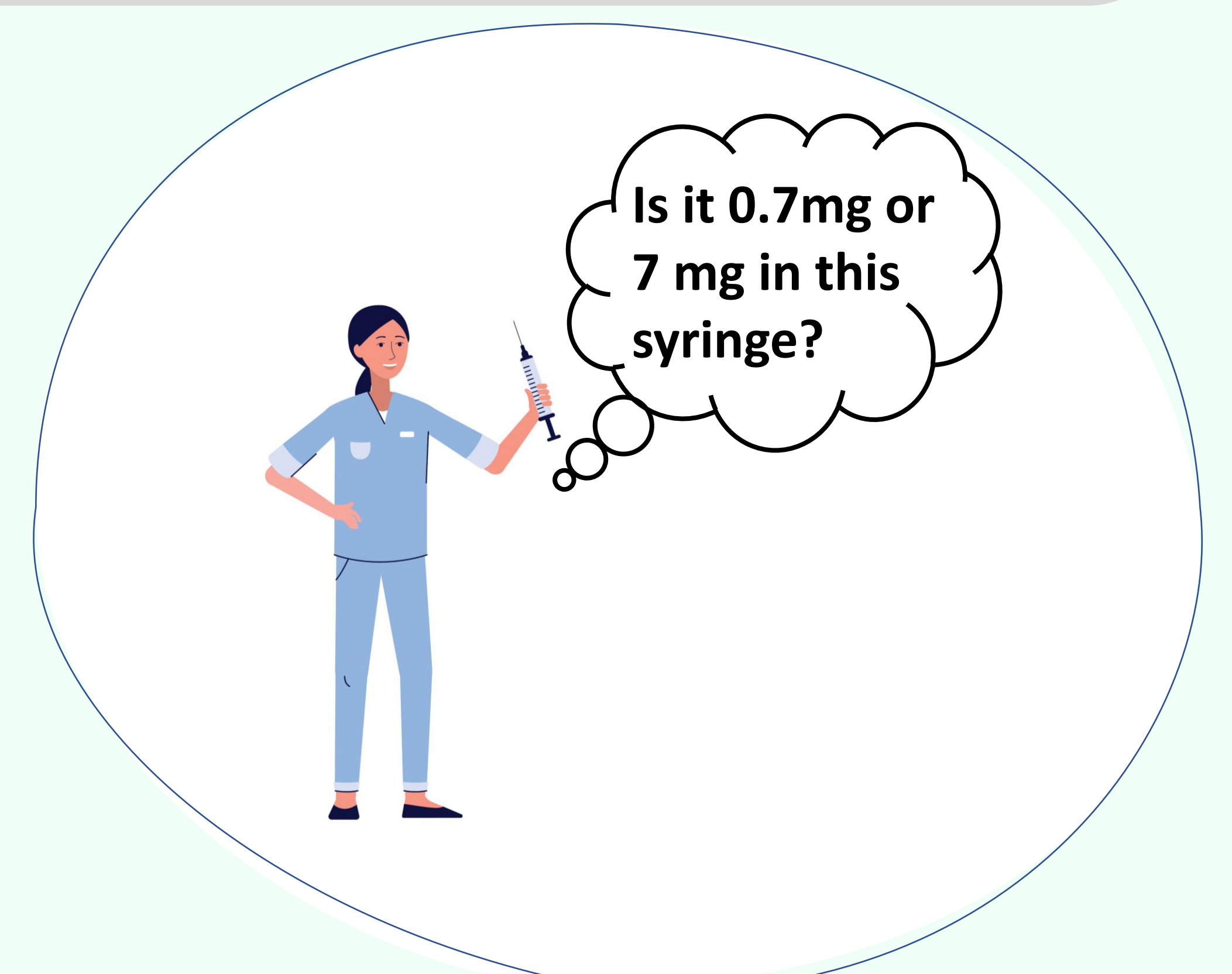
- From the medication errors reported in 2016 and 2017 to the Norwegian Incident Reporting System, we specifically scrutinized medication calculation errors that required dilution during medication preparation, dispensing or administration.
- From the incident descriptions, we conducted a content analysis of human factors.

Results

- 14 incidents met the inclusion criteria and involved the dilution of morphine, oxycodone, adrenalin, and noradrenalin.
- Human factors that exposed the intravenous preparation process to risks were for example performing tasks with cognitive loads.
- Some dilution errors were caused by not knowing the exact concentration after dilution, which resulted in one infant receiving 7 mg of morphine instead of 0.7 mg.
- Most dilution errors led to overdosages and resulted in patient harm.

Conclusion and relevance

- Addressing human factors that contributed to medication errors should involve systemic measures which take in account how humans think and process information to avoid patient harm from dilution errors.



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