

Potential for Data Systems Implementation to Prevent Medication Errors among Anesthesia Learners

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Background/Introduction: Robust evidence exists supporting the utilization of clinical decision support (CDS) in reducing medication errors and improving safety and quality for patients undergoing anesthesia¹. However, many healthcare environments lack the implementation of such systems. We hypothesized that a substantial medication calculation error rate exists amongst pediatric anesthesia learners when relying upon electronic medical records without CDS.

Methods: We sampled 8 learners during their first pediatric anesthesiology clinical rotation at a large tertiary children's hospital. Learners included 3rd year anesthesiology residents and 2nd year student nurse anesthetists. Participants were given an anesthesia medication survey that elicited unassisted dose calculations for eight commonly used drugs in pediatric anesthesia. A maximum of fifteen minutes was allowed to complete the survey.

Results: All 8 participants made at least one prescribing error in the survey responses. Roughly 88% of the learners made a dosing error with a high-risk medication. High-risk medications, such as narcotic, local anesthetic, or intravenous anesthetic, comprised 75% of potential medication errors.

Conclusion: The complex, dynamic perioperative environment makes anesthesiologists uniquely predisposed to commit medication errors without direct supervision or safety checks that occur in other areas of the hospital.² The potential for medication error is heightened in the pediatric environment secondary to recognizing the appropriate dose and calculating the correct amount to administer. A recent study from Boston Children's Hospital found that the majority of medication errors were made by trainees, which contrasts the 2017 Wake-Up Safe report that identified attending anesthesiologists as the most common responsible provider.^{2,3} Balancing the priorities of patient safety and education demand better safety measures to prevent medication errors in this vulnerable patient population. Most current anesthesia information management systems (AIMS) lack CDS or at best provide passive and post hoc systems.⁴ The sizeable potential medication error rate demonstrated by our small sample of learners further demonstrates the need for real-time CDS that mitigates risk to patients while supporting a learning environment.

References:

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