2003 American Society of Anesthesiologists Annual Meeting

A-1358
2003

Anesthesia Drug Administration Errors in a University Hospital

Andrew Bowdle, M.D., Ph.D., Cornelis Kruger, M.D., Robert Grieve, M.D., Diana Emmens, B.S., Alan Merry, M.D.

Anesthesiology and Pharmaceutics, University of Washington, Seattle, Washington.

Introduction: There is increasing concern in medical practice and in society generally about the frequency of medical errors and their potential to cause iatrogenic harm. Errors related to drug administration may be particularly important. There is relatively little information about drug errors that occur in anesthetic practice. In a previous prospective study based upon anonymous self-reporting carried out in two hospitals in New Zealand a drug administration error was reported in 0.75% of anesthetics and a "pre-error" in 0.40%.[1] We have now carrried out a similar study in the United States.

Methods: Attending anesthesiologists, anesthesiology residents and nurse anesthetists in a university medical center were asked to return an anonymous survey form for every anesthetic, indicating whether or not a drug administration error or pre-error occurred. A pre-error was defined as any incident with the potential to become an error. If an incident occurred, the survey called for additional information about the nature of the incident, which was provided by checking boxes and filling in blanks on the form. The design and content of the survey form was similar to that previously used in New Zealand.[1]

Results: During a 21 week period, 6066 forms were returned for 6709 anesthetics, a response rate of 90%. There were 41 reports of errors (0.68%) and 23 reports of pre-errors (0.38%). Drug administration errors and pre-errors were distributed among personnel as follows (numbers of cases in parentheses): attendings (20), residents (30), CRNA's (7), both members of the anesthesia care team (3), unspecified (4). Drug administration errors were distributed in the following categories (definitions in []; numbers of cases in parentheses): "incorrect dose" (18), "substitution"[incorrect drug instead of intended drug](7), "insertion"[drug never intended](4), "other"[specify] (4), "repetition"[extra dose](2), "incorrect route" (2), "omission" (3), "incorrect label"[specify](1). Most of the pre-errors were categorized as "substitution". Drug administration errors resulted in transient unintended drug effects (<5 min) in 17 cases, and prolonged unintended drug effects (>5 min) in 12 cases. Of these 29 cases of unintended drug effect, 14 were associated with drug infusions administered by a pump. One patient had possible intraoperative awareness associated with an empty vaporizer, and one patient had a longer than expected hospital stay due to inadvertent administration of spinal morphine. There were no cases of drug-related permanent physical injury.

Conclusions: The rate of errors (0.68%) and pre-errors (0.38%) was nearly identical to those found by a similar study carried out in New Zealand.[1] Errors were committed by experienced, board certified attending anesthesiologists as well as CRNA's and trainees. Errors took many forms, but there were a remarkably large number of cases (14) associated with drug infusions administered by a pump, suggesting that this mode of administration may be particularly prone to problems. While there were no permanent physical injuries associated with errors in this study, a rate of error approaching 1% certainly suggests the need for improvement. Novel systems of drug administration have been proposed to reduce the rate of error.[2]

References:

1.Webster CS et al. Anaesth Intensive Care 20:494-500, 2001
2. Merry AF et al. Anesth Analg 93:385-390, 2001.

Anesthesiology 2003; 99: A1358