Anesthesia Quality May Be Improved Through Mandatory Reporting of Intraoperative Adverse Events

Presenting Author: Richard H. Epstein, MD, Sidney Kimmel Medical College, Thomas Jefferson University and Miller School of Medicine, University of Miami
Co-Author: David M. Gratch, DO, Sidney Kimmel Medical College, Thomas Jefferson University

Introduction: Major anesthetic complications coded in the hospital discharge records of surgical patients are uncommon (≈ 0.9/1000 discharges). However, little is known about the prevalence of intraoperative complications that may not be serious enough to be reported at discharge. We previously described the development of a process within our anesthesia information management system (AIMS) to record intraoperative adverse events (AEs). We report on the prevalence of intraoperative AEs noted over the 2 years that our process has been in place.

Methods: Intraoperative AEs, selected from an extensive list of potential complications, are recorded by anesthesia providers in our AIMS as a Quality Assessment (QA) activity and reported daily by secure e-mail to the department’s quality officer (DMG). Outcomes for all cases performed at the Thomas Jefferson University Hospital (TJUH) and TJUH Ambulatory Surgical Center between July 1, 2013 and June 30, 2015 were retrieved from the AIMS database. Each anesthesia-related outcome, associated free text comment, and other chart documentation were examined independently by RHE and DMG, and grouped into categories. Each outcome was characterized as being “likely not preventable” or “possibly preventable”. Data were analyzed using the method of batch means. The numbers of adverse events and cases during each 3-month quarter were computed. The prevalence of adverse events was computed as the number of events divided by the number of cases (overall complication rate), and as the number of cases with at least 1 adverse event divided by the number of cases (patient complication rate). Trends were assessed via the Mann-Kendall Test using Systat® 12 (Systat Software, Inc., San Jose, CA), with \( P < 0.05 \) required for significance.

Results: The AE completion rate was 96.7% (N=25 4-week bins, 95% CI 96.5% to 97.3%, \( P=\text{NS} \) for trend). There was an overall reduction in the number of AEs in all categories between Year 1 and Year 2 (Fig. 1), despite no change in case volume, and an overall decrease in the case AE rate from 1.2% to 0.6% (Fig. 2). Among all AEs, airway issues and physical injuries were reported most commonly, but the overall incidence of any specific AE was low. A significant linear decrease was noted in both the overall AE rate and the rate of AEs judged to be possibly preventable by approximately 50% (Fig. 2).

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Conclusion: Our providers maintained a high level of compliance with our non-punitive process of mandatory intraoperative AE reporting. Unexpectedly, the rate of potentially avoidable AEs decreased linearly over time, which suggests that the self-reflective process of AE reporting itself may have lead to a reduction in complications through increased attention to the quality of care. This cannot be explained simply by progressive underreporting, as the rate of AEs classified as likely not preventable did not change over the study interval. If a reduction in complications as a byproduct of mandatory QA reporting of intraoperative AEs is confirmed at other institutions, such reporting should be considered for adoption as a standard of care.