Learning From Others:

A Case Report From the Anesthesia Incident Reporting System

Anesthesia Quality Institute
ANESTHESIA INCIDENT REPORTING SYSTEM (AIRS)

Detailed review of unusual cases is a cornerstone of anesthesiology education. Each month, the AQI-AIRS Steering Committee will abstract a case and provide a detailed discussion based on a submission to the national Anesthesia Incident Reporting System. Feedback regarding this item can be sent by email to ***r.dutton@asahq.org****. Report incidents to* ***www.aqiairs.org****.*

Case 2012-11: For Want of a Light Bulb, an Airplane Was Lost

"Computer screen for new electronic anesthesia record froze. During the time of distraction while I was working on the problem, the patient blood pressure jumped 70mm Hg due to increased surgical stimulation, and I did not notice it immediately."

"Due to focusing on new electronic anesthesia record, forgot to put ECG monitoring on patient before induction."

On December 29, 1972, Eastern Airline flight 401 was on final approach to Miami. As the crew prepared for landing, the light indicating that the forward landing gear had been appropriately lowered and locked did not illuminate. The cockpit crew aborted the landing, rose to 2,000 feet and put the plane on auto-pilot. The captain and co-captain stayed in the cockpit to try to resolve the monitor problem, and the navigator was sent to visually inspect the landing gear. During this commotion, the auto-pilot was inadvertently disengaged and the plane began to slowly lose altitude. Despite (admittedly obtuse) warnings from air traffic control and the sounding of an audible cockpit alarm, the frustrated and distracted crew did not notice the loss of altitude until it was too late. The plane crashed into the Everglades at a speed of 227 mph, killing 101 of the 176 people on board. Investigation determined that the light bulb had simply burned out.[1] There were many lessons learned from this accident; high among them is the extent to which distraction caused by malfunctioning technology can lead to adverse events.

The use of an anesthesia information management system (AIMS) has some clear advantages. It creates legible and consistently structured anesthesia records. It allows for real-time data capture and subsequent analysis. When combined with prompts or feedback, AIMS systems improve the timely administration of prophylactic antibiotics[2] and perioperative beta blockers.[3] Finally, in theory, the automatic capture of vital signs and ventilation data should provide the anesthesia team more time and fewer distractions.

Of the 632 cases in AIRS, 16 explicitly use the word "distraction." Seven of these are due to malfunctioning of an AIMS. In addition, six more incidents identify problems with AIMS that led to delays or other problems but did not indicate that the computer issue caused distraction. Thus, 13 of 632 (2.06 percent) of the cases in AIRS are related to problems with AIMS, and seven (1.11 percent) led to intraoperative distraction from patient care.

Distraction during anesthesia has become a growing topic in both the academic and lay press. Campbell et al. found that anesthesia providers were distracted from patient care or interrupted every three to five minutes. Forty-six of the 424 distractions identified (10.85 percent) were related to equipment (the authors did not specifically identify AIMS-related distraction).[4] Twenty-two percent of the distractions and 55 percent of the interruptions had a negative impact on patient care. In a similar study, Scavodelli et al. found an average of five distractions per case during induction of general anesthesia (range 1-14), for an average of one every 1.7 minutes. Forty and one-half percent were equipment-related (they did not specifically measure AIMS-related problems), and 82.8 percent had observable impact on patient care.[5] While no link between these distractions

and patient harm was made, other studies have linked surgical errors to disruptions in flow.[6] It would be reasonable to assume that this is true in anesthesia as well.

The impact of AIMS on anesthesia provider vigilance has received very little attention. While the argument that not manually charting vital signs allows the anesthesia team to attend to more pressing patient care issues is compelling, the counter argument is that the need to manually chart creates greater vigilance. Davis et al. attempted to compare intraoperative vigilance between those with AIMS and those who used paper anesthesia charts.[7] The authors asked anesthesia providers to report on 10 significant intraoperative parameters within 30 minutes of the end of the case. After collecting data from 214 cases, they were not able to detect a difference in the ability to recall these parameters. While AIMS have not been shown to be more distracting than standard anesthesia monitors, the cases of AIMS distraction in the AIRS database indicate that further study is required on the effect of AIMS-specific distractions on anesthetic safety.

The final issue related to the use of AIMS and anesthesia provider vigilance relates to the accessibility of the computer. An AIMS requires a computer to run, and it should have access to at least the hospital-wide network so that patient data can be imported to the system. Most also allow at least limited access to the Internet, e-mail or other Web-based sites. This, of course, opens up an assortment of potential distractions. Cell phones, PDAs, tablets and other electronic devices further expand this problem. No data exist of the impact of these distractions on the performance of anesthesia, but extrapolation from data on operating a vehicle is sobering. Texting while driving lengthens stopping distance nearly 20 times more than does being drunk.[8]

Conclusion:

AIMS are the future of anesthesia record-keeping, with penetration now approaching 25 percent of all practices. They offer advances in charting, decision support, data capture and standardization of practice. As with any advance, we must be vigilant for the unintended consequences of AIMS, including unexpected breakdown, electronic failure, data capture errors and other technologic "glitches." This is evident in the two cases cited above and in about 2 percent of the cases in AIRS. The growing availability of computers in the O.R. also raises concerns about distraction due to texting, surfing the Web, answering e-mails or even using the computer to legitimately look up patient-specific data. Until we fully understand the impact of these distractions on the care we provide, we can only listen to expert opinion, be aware of the potential hazards, share our experiences (e.g., report events to systems like AIRS) and make every effort to maintain vigilance in the care of our patients. Future solutions to intraoperative distraction will include more effective and intuitive alarm systems, more widespread use of checklists that promote attention to detail and a better understanding of what distractions should be allowable during anesthesia care.

References:

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