



Learning From Others:

Anesthesia  
Quality Institute   
ANESTHESIA INCIDENT  
REPORTING SYSTEM (AIRS)

# A Case Report From the Anesthesia Incident Reporting System

Review of unusual patient care experiences is a cornerstone of medical education. Each month, the AQI-AIRS Steering Committee abstracts a patient history submitted to the Anesthesia Incident Reporting System (AIRS) and authors a discussion of the safety and human factors challenges involved. Real-life case histories often include multiple clinical decisions, only some of which can be discussed in the space available. Absence of commentary should not be construed as agreement with the clinical decisions described. Feedback regarding this article can be sent by email to [airs@asahq.org](mailto:airs@asahq.org). Report incidents or download the AIRS mobile app at [www.aqiairs.org](http://www.aqiairs.org).

## Case 2018-9: What Price Education?

*We train a lot of EMT students. Esophageal intubation is one complication of being a training institution. Only way to decrease incidence of this complication is to stop training EMT students and other trainees.*

### Discussion

This brief, frustrated AIRS submission illustrates two important issues in anesthesia safety: effective airway management and effective integration of teaching into clinical practice. The first issue has been a frequent topic for scientific exploration, with thousands of papers written over the past decades collectively documenting steady improvement in technique and outcomes of endotracheal intubation. The role of cricoid pressure, pulse oximetry, capnometry, difficult airway assessment, supraglottic airways, video laryngoscopy, fiber optics and high-flow oxygen have all been explored both individually and as part of increasingly sophisticated management algorithms. The result is a near-perfect record of routine intubation in the O.R., with such a dramatic decrease in serious adverse events that malpractice insurance for anesthesiologists has reached record lows. For the anesthesiologist who entered this AIRS record, esophageal intubation is an easily recognizable complication that, with modern technology, should never occur; the provider's disgust is palpable.

This raises the second issue of the submission: the delicate balance between clinical education and clinical care. On the one hand, most anesthesiologists feel a strong obligation to provide education in the O.R. Many do this as a matter of course, working in teaching hospitals with anesthesia residents on a daily basis. Many others, including many private practitioners, also teach others: student nurse anesthetists, emergency room physicians, oral surgeons, medical students and emergency medical technicians (EMTs). Even when working with fellow professionals in the care team environment, it is normal and respectful for team members to teach each other based on their knowledge and

experience. Ongoing learning (and thus teaching) may be the single most important indicator of a high-quality anesthesia department. For novices, airway management is such an important and life-saving skill that the opportunity to learn in the controlled conditions of an elective anesthetic, under the tutelage of an experienced master, is highly sought after. To many besieged anesthesia educators, elective intubations in the O.R. are the most desirable teaching opportunity in the entire hospital.

Many anesthesiologists teach on pragmatic grounds. It's part of the job, it's necessary for society and we'd like to be well cared for if we ever need health care ourselves. For others, the motivations are emotional – we are repaying the debt owed to those who taught us, and we get satisfaction from increasing the knowledge and skills of others. Whatever the motivation, however, all of us who teach clinical techniques in the O.R. must balance the needs of our students against our responsibility to the patient we are caring for. Endotracheal intubation is a complex skill, with a substantial learning curve and a significant risk to the patient if misperformed. How do we teach airway management safely? On this point, there is less scientific guidance available.

The first step should be a commitment to transparency. Patients should be aware that they are receiving care in a training environment and that appropriately supervised trainees may participate in their procedures. While pre-disclosure will not excuse the occurrence of serious adverse events, it will help to align expectations around minor inefficiencies and overheard teaching conversations. Done properly, a teaching environment provides reassurance to the patient regarding the expertise of the attending physicians; a perception supported by numerous studies showing no decrement in clinical outcomes in teaching versus non-teaching hospitals. Transparency can be accomplished as part of the preoperative interview, as a component of the anesthesia or surgical consent form, or even as a generic statement at the time of hospital admission or scheduling for surgery.

In New Zealand, the national Medical Council has prepared a global statement on medical student training that includes recommendations for ensuring transparency of educational practice.

Simulation is part of the answer to safe education, as it is for many technical skills. It would be rare for a trainee to arrive in the O.R. today without intubation experience on a mannequin. While there are substantial differences between intubating plastic and intubating people, airway management simulators can improve anatomic recognition, task sequencing and familiarity with equipment. Technology also plays a role in the O.R.; planned use of a bougie stylet can make a novice intubation easier. Video laryngoscopy may also improve the performance of novice intubators, while (observationally) increasing the time taken to place the endotracheal tube. One theory for this finding has to do with reducing the coronary stress experienced by the teacher – and thus the time allowed to the trainee. The teacher has a better idea of what the trainee is looking at and can provide better guidance on what to do differently.

Another useful teaching approach, especially for novices, is to keep their attention tightly focused on the technical task (inserting the endotracheal tube in the correct place) in an environment where the teacher is entirely responsible for the comfort and well-being of the patient. In the early stages of learning, this kind of focus can reduce stress in the trainee and thus improve success. As students progress, of course, they need to gain a broader understanding of the patient's physiology, the choice of medications and doses, and the options for resolving technical difficulties – Plan A, Plan B, Plan C, etc. Experienced teachers will give trainees increasing responsibility for decision-making as they progress, but no hard-and-fast guide exists for how much is appropriate at each stage of learning. The situation described in the case report – EMTs in the O.R. – is inherently challenging; the trainee may be there on a one-off basis, with unknown prior training and experience and no prior relationship with the teacher. On the one hand, this situation would argue for educational conservatism: keeping the training tightly focused on the technical skill of intubation. On the other hand, EMTs are headed for an environment where they will have little expert support, with significant responsibility to consider the big picture and react appropriately. The best resolution of this intellectual conflict may be deeper interaction between teachers and students, with anesthesiologists participating in EMT training not just in the O.R. but also in curriculum design, classroom teaching and simulation.

A checklist for airway training in the O.R. might include:

1. Documented participation in mannequin-based training, with a minimum number of attempts and techniques.

2. Restriction to patients with the physiologic ability to tolerate prolonged or esophageal intubation:
  - a. BMI < 35
  - b. ASA Physical Status 3 or less, without active cardiac disease
  - c. No indication for rapid sequence intubation
  - d. Normal upper-airway anatomy; Mallampati score 1 or 2
  - e. Intact or absent dentition.
3. Full-time attention of an experienced instructor.

A final antidote for the angst of the case reporter would be an open discussion of the outcomes expected from the teaching interaction. Most anesthesiologists would say there is little harm in an esophageal intubation, as long as it is promptly recognized and corrected, and so “no harm, no foul.” Teaching in response to an esophageal intubation should include 1) recognizing the failure to confirm end-tidal CO<sub>2</sub>, 2) not panicking, 3) checking the patient's vital signs, 4) mask ventilation if needed, and 5) improved or alternative approach to achieve successful endotracheal intubation.

On the larger scale, the teacher should not be “dinged” for an esophageal intubation. Rather, the department should recognize that this is a normal event when delivering airway training. In a teaching environment, the process rate of esophageal intubations may not be a good quality measure because it has the unintended consequence – as voiced by the case reporter – of limiting teaching efforts. A better metric would focus on a patient-centered outcome – significant desaturation, perhaps.

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