

2006 CAS Medical Student Prize Winner

Anesthesiologists: Pioneers in Patient Safety

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Over the past decade, there has been increasing activity and attention devoted to enhancing patient safety. The issue of patient safety extends across all patient populations, healthcare environments, and healthcare professionals. Furthermore, governments, stakeholders, and the public have endeavoured in collaboration to develop effective strategies to address this issue.

The climate for bringing patient safety to the forefront has evolved out of media reports, high-profile lawsuits, landmark research studies, and individuals' willingness to speak out about their experiences in the healthcare system. In Canada, the Canadian Patient Safety Institute was founded in 2003; its mandate is to build and advance a safer healthcare system for Canadians.¹ One important mission of this organization is to reduce the number of adverse events experienced by hospitalized patients. The Canadian Adverse Events Study (May 2004) revealed that 7.5% of patients admitted to acute care hospitals in Canada during the year 2000 experienced one or more adverse events, and that 36.9% of those patients were deemed to have experienced highly preventable adverse events. In comparison, rates of adverse events in other countries range from 2.9% in the United States to 16.6% in Australia.²

In the United States, similar institutes exist. For example, the Veterans Affairs (VA) National Center for Patient Safety was established in 1999 to lead the VA's patient safety efforts and to develop and nurture a culture of safety.³ This centre has been significantly influential in encouraging "prevention, not punishment." Moreover, new legislation introduced in July 2005, known as the *Patient Safety and Quality Improvement Act*, will implement anonymous disclosure of mistakes, root-cause analysis examining critical incidents, sharing of reports, and making improvements.⁴ Interestingly, the Institute of Medicine has commented that few professional groups in healthcare have dedicated efforts to reducing errors related to patient care, with one exception: anesthesiologists.

The leadership role anesthesiologists have taken in advancing the field of patient safety has grown from its own evolution. From its inception when Dr William Morton administered ether at the Massachusetts Hospital in Boston, the concept of rendering someone unconscious, unable to move or experience pain, and then successfully waking him or her at the completion of a procedure has been under public and professional scrutiny. Although the profession has made profound advancements since its early days, reports of patient fatalities due to anesthesia and ever-increasing malpractice insurance premiums prompted the American Association of Anesthesia to establish the Anesthesia Patient Safety Foundation in 1985. In Canada, similar concerns regarding patient outcomes and exponentially increasing medical-legal costs led to the Canadian Anesthesiologists' Society's (CAS's) development and publication of guidelines and basic standards of care.⁵ The pursuit of excellence in patient safety has dramatically decreased the risk associated with undergoing anesthesia. The CAS states "the chance of a healthy person dying as a result of anesthesia is probably between 1 in 200,000 and 1 in 400,000 (down from approximately 1 in 5000). This is certainly comparable with the risks of commercial airline travel and much safer than travelling by car."⁶

Not only have the development of organizations devoted solely to patient safety and the establishment of comprehensive practice guidelines been paramount, but so, too, have changing practices related to medication administration, patient monitoring, patient simulations, and operative system proceedings.

With respect to medication administration, the CAS has established a subcommittee dedicated to three priority programs: drug labelling, infusion pump safety, and medication error reporting. Although significant strides are being made, several articles still report that medication errors are the leading cause of anesthesia-related adverse events.^{7,8} Moreover, these authors call for a coordinated approach between health professionals, hospitals, and administrators, as well as involvement from the pharmaceutical industry, to ensure that appropriate labelling and packaging of medications are standard of care. Given the nature, potency, and frequency of the medications administered by anesthesiologists, it is not surprising that these professionals have been front-runners when it comes to patient safety. In fact, in a recent issue of the *Canadian Medical Association Journal*, readers are once again reminded of the vigilance and tireless efforts of anesthesiologists in improving medication administration practices and calling on industry to make patient safety its utmost priority.⁹

Standard monitoring in anesthesia, according to the CAS, encompasses several different aspects, all contributing to the overall goal of administering safe anesthesia. First and foremost, a trained anesthesiologist must be present at all times. With respect to documentation, there must be a complete pre-anesthetic checklist and a peri-operative anesthetic record. Finally, continually monitoring oxygenation, ventilation, circulation, and temperature must be undertaken. This is done both quantitatively and clinically. The incorporation of pulse oximetry and capnography as mandatory components of patient monitoring have substantially reduced errors in oxygenation and ventilation. This example once again highlights the exceptional role anesthesiologists have played in reviewing their own cases of mortality and morbidity, acknowledging their shortcomings and advocating for their patients to change the system. Other examples include real-time record keeping, temperature monitoring, and technological advances in fluid and body warmers.¹⁰

A third very important example of anesthesiologists' commitment to enhancing patient care is demonstrated by their use of a patient simulator. Upholding patient safety in practice requires a skilled practitioner who is familiar with complex equipment and always ready to intervene in potential life-saving measures requiring emergency procedures, such as treatment of anaphylactic shock or emergency invasive airway access, such as a cricothyotomy.^{11,12} Clearly, practising these techniques on live patients would be unethical and put patients at unnecessary risk. Recognizing this, the American Anesthesia Patient Safety Foundation established funding for research that led to the development of virtual patients, capable of duplicating many physiological responses and reactions to anesthesia. The human patient simulator has also been used by some medical schools to prepare clinical clerks for their rotation through anesthesia in an attempt to familiarize the student with common clinical scenarios and equipment seen in the peri-operative period.

A final example of the accountability demonstrated by anesthesiologists with respect to patient safety stems from examining their attitude towards leadership, teamwork, and communication. Overall, it has been documented that anesthesiologists have positive attitudes towards their interpersonal working environments, including their leadership roles, and are astutely aware of the need to stress teamwork and communication in the operating room and beyond. Moreover, they acknowledge the significance of human error and how it adversely impacts patient safety and have willingly implemented several strategies, founded in evidence, to address this issue.¹³ Clinical examples of these strategies include attending

preoperative clinics to assess surgical candidates for anesthetic risk, employing specific and stringent checklists and procedures when patients enter the operating theatre, and emphasizing the importance of team communication.^{14,15}

The aforementioned examples and clinical evidence highlight the leadership role anesthesiologists have proudly assumed with respect to patient safety. This group of medical professionals recognized within itself the need to do better for patients, to demonstrate accountability to society, and to continue forward on this path. Furthermore, their actions have tremendously influenced the climate of patient safety facing all healthcare professionals and institutions today. With respect to patient safety, anesthesiologists are not only leaders, but examples for colleagues, advocates for patients, and mentors for future physicians. A constant reminder for the need to enhance these endeavours, both within and outside of anesthesia, is solemnly founded in the very history of medicine: "First, do no harm."

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