Impact of surgical catastrophes on anesthesiologists

Most anesthesiologists will experience a patient catastrophe over the course of their careers. Very little is known about the emotional impact of these events and their effects on subsequent patient care.

Researchers from the University of Virginia Health System, Charlottesville, conducted a national survey of 1,200 members of the American Society of Anesthesiologists to examine the incidence and emotional impact of perioperative catastrophes and to elucidate the postevent support desired. A total of 659 (56%) anesthesiologists completed the survey.

Of the respondents, 84% said they had been involved in a catastrophic event involving death or injury to a patient during surgery. More than 70% said they experienced guilt, anxiety, and a reliving of the event, and most felt personally responsible for the death or injury of the patient even if they considered the event to be unpreventable.

Nearly 90% of respondents said they required time to recover emotionally from the event, 19% said they have never fully recovered, and 12% considered a career change. Two-thirds believed their ability to provide patient care was compromised in the first 4 hours after the event, but only 7% were given time off.

The researchers concluded that patient catastrophes may have a profound and lasting emotional impact on the anesthesiologists involved and may affect their ability to provide patient care in the aftermath.

An accompanying editorial notes that this study shows surgical catastrophes may have additional victims. Such events can have a lasting emotional impact on anesthesiologists, making them the second victim. If an anesthesiologist is required to return to work immediately, it raises the possibility that a subsequent patient could become the third victim.

Barriers to reporting of adverse events, errors by anesthesiologists

Though anesthesiologists are recognized as leaders in patient safety strategies, there has been little research on factors affecting their reporting of adverse events and errors.

Australian researchers surveyed 629 anesthesiologists and 263 anesthesia residents on their attitudes and perceived barriers of reporting adverse events and if reporting differed based on whether the event was caused by an error. The usable survey response rate was 52% for anesthesiologists and 39% for anesthesia residents, with an overall response rate of 49%.

The majority of anesthesiologists did not agree that the 13 attitudinal and emotional barriers surveyed would influence their reporting of an adverse event caused by error, except for the barrier of being concerned about blame by their colleagues.

Respondents agreed that of 17 perceived barriers to reporting an adverse event of anaphylaxis, 6 were influenced by whether the anaphylaxis was a result of error rather than no error.

The respondents strongly favored assistive reporting strategies that included generalized non-identified feedback about adverse events and error reports, role models such as senior colleagues and department directors who openly encouraged reporting, and legislated protection of information provided from use in litigation.

The researchers concluded that there are differences between the results of this study of anesthesiologists and previously published research of other physician groups for perceived barriers to adverse event and error reporting.
Infection prevention

Use of immediate-use steam sterilization in arthroplasty procedures

When performed correctly, immediate-use steam sterilization (IUSS), formerly known as flash sterilization, is a safe means to sterilize contaminated instruments for urgent use. However, inappropriate use may lead to an increased risk for surgical site infections.

The aim of this retrospective, case-controlled study from Vanderbilt University School of Medicine, Nashville, Tennessee, was to identify risk factors, rationale, and variability in procedural adherence in cases of IUSS. Researchers compared patients undergoing hip and knee arthroplasty in which IUSS was (104 patients) and was not (81 patients) performed.

Less than 10% of cases using IUSS had an acceptable reason. Four factors predicted use:

- a history of malignancy
- obesity
- procedure performed in 1 of the 2 ORs included in the study
- Monday procedure.

One factor, a morning procedure, was found to protect against use.

The most common reasons for using IUSS were OR turnover (37.5%), instrument received unsterile (45.2%), instrument contaminated intraoperatively (9.5%), and one-of-a-kind instrument (3.0%). Intraoperative contamination was the only acceptable indication.

The researchers also found lapses in documentation, including not recording the rationale for IUSS and not documenting the cycle time, temperature, pressure, biological and chemical indicator use, or items in the load.

The study suggests that IUSS is associated with several factors predicting its use, the researchers concluded. They encourage institutions to strictly assess the rationales for IUSS and documentation of core components.

Aldehyde-resistant mycobacteria linked to endoscope reprocessing systems

It is well known that bacteria can develop resistance to antibiotics, but little is known about their ability to increase resistance to biocides used for disinfection.

This study from Steris Corporation, Mentor, Ohio, investigated the potential for development of resistance in automated endoscope reproprocessors using aldehyde disinfectants at 3 clinical sites in the US. The reproprocessors were sampled for bacterial survival immediately after reprocessing cycles. Any isolates detected were examined for disinfectant sensitivity.

Bacterial contamination was detected in all of...
the reprocessors after disinfection. Some mycobacteria isolates demonstrated significant resistance to glutaraldehyde and ortho-phthaldehyde.

The researchers concluded that bacteria can develop significant resistance to aldehyde-based high-level disinfectants and may pose a cross-contamination risk to patients.


Comparison of alcohol-based hand disinfection and traditional surgical scrub

Waterless antiseptic surgical hand scrub products, alcohol-only cleansers, and the traditional surgical scrub are all techniques used for hand cleansing and disinfection before invasive procedures.

Researchers from Wake Forest University School of Medicine, Winston-Salem, North Carolina, and Brigham and Women’s Hospital, Boston Children’s Hospital, and Harvard Medical School, Boston, hypothesized that an alcohol-only cleanser (62% ethyl alcohol) and a waterless antiseptic scrub (1% chlorhexidine gluconate and 61% ethyl alcohol, Avagard, 3M Health Care, St Paul, Minnesota) would be as effective as a traditional surgical scrub (5-minute scrub with 4% chlorhexidine soap using a sterile scrub brush with water) for hand cleansing before placement of central venous catheters.

Fingers of fellows, residents, and attending anesthesiologists were plate-cultured for 24 hours after 5 methods of hand cleansing:
- traditional surgical scrub
- traditional surgical scrub followed by a 15-minute break, then alcohol-only cleanser
- alcohol only cleanser
- alcohol only cleanser followed by a 15-minute break, then traditional surgical scrub
- waterless surgical scrub.

The 15-minute break allowed for a short period of recontamination before testing for residual effects from the initial cleansing.

The alcohol-only cleanser was significantly less effective than the traditional surgical scrub. There were no significant differences between the traditional surgical scrub and the other methods studied.

The researchers concluded that an alcohol-only hand cleanser should not be used as the sole method of hand cleansing before placing a central line. Clinicians may be able to perform a surgical scrub before starting a case, and then use an alcohol-only hand cleanser before gowning and gloving for central-line placement after induction of anesthesia.


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Patient safety

Patient and surgical characteristics of pressure ulcer development

Despite years of research, pressure ulcers remain one of the most common complications patients experience in health care facilities.

This study from the University of Michigan, School of Nursing, Ann Arbor, examines the relationship between patient and process characteristics and the development of pressure ulcers in surgical patients. The researchers analyzed data of 3,225 surgical patients admitted to a Midwest hospital from November 2008 to August 2009.

A total of 383 (12%) patients had at least 1 pressure ulcer. Multivariate analysis showed that Braden Scale scores at admission, low body mass index, administration of vasopressors, number of surgeries during the hospitalization, total OR time, and mortality risk were significant predictors of pressure ulcers.

The researchers concluded that Braden Scale scores on admission can be used to identify patients at increased risk for pressure ulcers. For other high-risk factors, such as long operative procedures and low body mass, appropriate clinical interventions such as special padding or mattresses can help prevent pressure ulcers.


Surgical site infection

Effect of traffic flow on air quality during orthopedic surgery

Strategies to minimize the risk of surgical site infection (SSI) after orthopedic implant surgery focus on 3 areas—the patient, surgical technique, and surgical environment.

This study from Sweden focuses on strategies aimed at optimizing the surgical environment. Researchers investigated:

- air quality (expressed as colony-forming units \( \text{CFU/m}^3 \)) during orthopedic trauma implant surgery in a displacement-ventilated OR
- how traffic flow and the number of persons present in the OR affected the air contamination rate in the vicinity of the surgical wound
- reasons for door openings in and out of the OR.

Active air sampling and observations were performed during 30 orthopedic procedures. In 57% of the air samples collected, the CFU/m\(^3\) values exceeded recommended levels. After controlling for procedure duration, there was a strongly positive correlation between the total CFU/m\(^3\) and traffic flow per procedure. The data showed a weaker yet positive correlation between CFU/m\(^3\) and the number of persons present in the OR. Traffic flow, number of persons present, and procedure duration explained 68% of the variance in CFU/m\(^3\).

The researchers concluded that the findings clearly link elevated airborne bacterial counts to door openings in conventionally ventilated ORs. The results support interventions aimed at preventing SSIs by reducing traffic flow.


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Povidone-iodine-alcohol skin disinfection prevents SSIs

Preoperative disinfection of the surgical site with an antiseptic skin preparation is standard practice before a surgical procedure to decrease skin microbial counts before the incision is made. Chlorhexidine-based preparations have been shown to be significantly more effective for catheter insertion care than povidone-iodine solutions to prevent catheter-associated infections, which suggests that the use of povidone-iodine-alcohol (polyvinylpyrrolidone) should be reevaluated for disinfection of the surgical site. The majority of European hospitals still use povidone-iodine-alcohol as the standard of care for preoperative skin preparation.

In this study, researchers from Switzerland examined the impact of residual bacteria at the incision site after disinfection with povidone-iodine-alcohol and the association with postoperative SSIs. The researchers analyzed 1,014 skin cultures of surgical sites, of which 36 (3.6%) revealed significant colonization. A total of 41 SSIs were detected for an SSI rate of 4.04%. Residual bacteria on the skin after disinfection were completely unrelated to the incidence of SSIs.

The researchers concluded that the data provide clear evidence that povidone-iodine-alcohol is effective for preoperative skin preparation. The remaining bacteria after disinfection did not at all correlate with the development of an SSI.


Standards and regulations

American College of Surgeons
American Society for Metabolic and Bariatric Surgery

Unified National Accreditation Program for Bariatric Surgery Centers. The American College of Surgeons and American Society for Metabolic and Bariatric Surgery announced plans March 9 to combine their bariatric surgery accreditation programs into a single unified national standard for bariatric surgery. As of April 1, all institutions that have met the standards under the 2 programs will be extended accreditation in the new joint program. The arrangement will not affect recognition by Medicare or other payors.


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American Society of Anesthesiologists

*Practice Guidelines for Central Venous Access.* The American Society of Anesthesiologists has published new Practice Guidelines for Central Venous Access. The guidelines apply to patients having elective central venous access by anesthesiologists or professionals under the supervision of anesthesiologists.

The guidelines differ from existing guidelines in insertion site selection and verification of venous location of the catheter. Other differences include the use of bundled techniques, use of an assistant during catheter placement, and management of arterial injury.


Joint Commission

*Links to Pertinent Sentinel Event Information.* New links to pertinent sentinel event information are available on the Joint Commission’s website. Links include:

- general sentinel event data
- root causes by event type
- event type by year
- sentinel event data summary.

[http://www.jointcommission.org/issues/article.aspx?Article=C80ztoDjAyJml%2fDPTL%2bG5NhMjcn00Vz%2b9r3mOxDFk%3d](http://www.jointcommission.org/issues/article.aspx?Article=C80ztoDjAyJml%2fDPTL%2bG5NhMjcn00Vz%2b9r3mOxDFk%3d)

Society for Healthcare Epidemiology of America

Infectious Diseases Society of America

Pediatric Infectious Diseases Society

*Policy Statement on Antimicrobial Stewardship.* This position paper from the Society for Healthcare Epidemiology of America, Infectious Diseases Society of America, and Pediatric Infectious Diseases Society outlines recommendations for the mandatory implementation of antimicrobial stewardship programs throughout all healthcare institutions. Such programs optimize antimicrobial use to achieve the best clinical outcomes while minimizing adverse events and limiting the emergence of resistance plus reducing excess costs attributable to suboptimal antimicrobial use.

The statement also suggests process and outcome measures to monitor program interventions and addresses deficiencies in education, research, and accurate data on antimicrobial use.


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