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The American Association of Nurse Anesthetists Foundation conducts an ongoing study of closed malpractice claims that involve nurse anesthetists. A team of 8 CRNA researchers has to date investigated 223 closed claim files from the St Paul Fire and Marine Insurance Company. Research findings have demonstrated that failure to provide appropriate anesthesia care relative to the Scope and Standards for Nurse Anesthesia Practice was significantly associated with adverse anesthetic outcomes.

Claims that involved inadequate preinduction activities (n = 22) were analyzed in the context of their compliance with published standards of care. The largest group of claims in this analysis (59%) involved damaging respiratory events, 28% entailed damaging cardiovascular events, and the principal issue in 13% of these claims involved failure to seek available information such as laboratory studies on the medical record. The most prevalent occurrence with damaging respiratory events was undocumented airway assessment in 27% of the claims. In 55% of these claims, the medical history was not completely documented. The surgical procedure categories were general surgical (32%), obstetrical (27%), otolaryngological (23%), orthopedic (14%), and gynecologic (5%). The involved standards of care are reviewed, and recommendations are made regarding consistent completion of preinduction activities.

Key words: Closed malpractice claims, outcome, payout, preinduction activities.

PREINDUCTION ACTIVITIES: A CLOSED MALPRACTICE CLAIMS PERSPECTIVE

“The only real mistake is the one from which we learn nothing.”—John Powell

Closed malpractice claims have been used to study anesthesia risk and outcomes since the early 1980s. Concern over rising malpractice premiums in the 1970s led the National Association of Insurance Commissioners (NAIC) to initiate closed malpractice claims research. The NAIC study found anesthesia was a high-risk specialty in terms of medical malpractice liability. Findings from the NAIC study noted that personal error on the part of the anesthesia provider was a prime factor in medicolegal risk. Errors in performance occurred in 69% of the cases studied, and errors in planning were detected in 37%.¹

Closed claims research in anesthesia has been conducted by the American Society of Anesthesiologists Committee on Professional Liability since 1985, and by the AANA Foundation (AANAF) since 1994. The majority of closed claims studied reveal that ASA physical status II patients undergoing elective surgery are the most frequently represented cases in these databases.^{2,3} Research findings also reveal that the involved surgical procedures are usually not complex, eg, cardiothoracic or neurosurgical cases.² Closed claims investigators believe that issues with the process of care, such as deviations from nationally promulgated standards of care, contribute to the genesis of damaging events and adverse outcomes.

Preinduction activities

The Scope and Standards for Nurse Anesthesia Practice⁴ are comprised of 12 standards with accompanying interpretations. The first standard reads as

follows: “A thorough and complete pre-anesthetic assessment shall be performed.” The interpretive statement for this standard states: *“The responsibility of a CRNA begins before the actual administration of anesthesia. Except under unusual or emergency situations, the CRNA has an obligation to determine that relevant tests have been completed and thorough assessment of the patient has been made.”*⁴ Note that the majority of cases (86%) captured in the closed claims database were scheduled, elective procedures.²

Assessment is the collection of data about an individual’s state of health. In nurse anesthesia practice, this collection of data concerning the individual patient’s health status is focused on the entire perioperative period. Although anesthesia providers are concerned with a finite portion of the patient’s health as it relates to the anesthetic process, this portion cannot be accurately assessed without fully considering the whole person and his or her current health status.^{5,6} Responsibility for this critical process is shared by the surgery and anesthesia teams. The data collected help determine the anesthesia care plan.

In an emergency surgery, the anesthetist may only be able to obtain critical information, such as the airway evaluation, nothing by mouth (NPO) status, allergies, current medications, and presenting health problems. General information obtained during the history should culminate in an ASA physical status assignment on the basis of medical history, surgical history, social habits, and diagnostic data.⁷

Airway management is a primary responsibility of the anesthesia provider, and preoperative airway assessment is essential. Closed claims research has

identified difficult intubation as a cause of increased morbidity and mortality. Failed airway management also has been identified as the commonest contributory factor to anesthetic-related maternal death.⁸ Rather than one simple means by which airway assessment is guaranteed, the anesthesia provider should use a variety of physical examination techniques to detect a potentially difficult airway. These parameters include Mallampatti class, thyromental distance, interincisor gap, and weight. It is vital to document the findings of the airway examination for future providers as well as helping external reviewers determine if the examination was performed. In addition to performing the airway assessment, the related findings should be documented. If abnormal airway anatomy is encountered, the anesthetist should be prepared to implement the ASA difficult airway algorithm.

A range of 30% to 40% of all anesthetic deaths are attributed to the inability to manage a difficult airway, so it is essential that evaluation of the airway be completed and documented. Patients with anatomic variants indicative of a possibly difficult intubation, eg, an airway assessed as Mallampatti class II, should be subjected to a careful history and physical examination to minimize unexpected airway problems.⁹

Documentation of the physical examination findings, including airway assessment data, medical and surgical histories, and laboratory studies are essential components of preinduction activities. Other preinduction activities involve checking the anesthesia machine and related monitoring equipment.

Vigilance is required with respect to the anesthesia machine as well as the patient. Vigilance is not adequate, however, unless the user knows how the system is designed to operate and has personally checked and verified its proper working condition. Routine use of appropriate monitoring devices and techniques, an integral part of machine system operation, also is required to ensure that life-sustaining information is accurate, complete, and available. It is incumbent on the nurse anesthetist to thoroughly check the functioning of all machine components prior to use in the anesthetic management of patients.¹⁰ The anesthesia apparatus checkout guidelines promulgated by the US Food and Drug Administration, as well as related policies and procedures of the local practice setting, should be observed.

Standard VIII of the Scope and Standards for Nurse Anesthesia Practice indicates that "appropriate safety precautions shall be taken to minimize the risks of fire, explosion, electrical shock, and equipment malfunction." The interpretation of this standard reads: "Safety precautions and controls, as established within the institution, shall be strictly adhered to, so as to min-

*imize the hazards of electricity, fire, and explosion in areas where anesthesia care is provided. The anesthetic machine shall be inspected by the CRNA according to guidelines before use. The CRNA shall check the readiness, availability, cleanliness, and working condition of all equipment to be utilized in the administration of the anesthesia care. Documentation shall be made on the patient's medical record that the anesthesia machine and equipment were checked. Policies for routine safety and maintenance checks of anesthesia equipment and monitors shall be developed and adhered to by the appropriate individuals and departments within the institution."*⁴

In the following sections of this article, the methodology for retrieval and analysis of closed claims involving inadequate preinduction activities will be discussed. The related discussion and conclusion reinforce the need to provide care congruent with published standards of care.

Methods

One of the items on the AANAF closed claims research instrument reads: "Were inadequate preinduction activities the basis for the lawsuit?"² Following examination of the AANAF closed claims database, 22 files were identified where CRNA investigators determined that inadequate preinduction activities contributed to the damaging event and adverse outcome. Inadequate preinduction activities were defined as those cases where medical records did not show evidence of provider compliance with Standards I and VIII from the Scope and Standards for Nurse Anesthesia Practice.⁴

The authors examined these files and stratified them by surgical specialty category, financial payout data, and the areas of concern related to preinduction activities. Narratives of each case written by CRNA investigators were examined to determine the impact of inadequate preinduction activities on patient outcomes. Investigators for the AANAF closed claims study had interrater reliability of 72%,² indicating that agreement between the investigators on whether standards of care were met was fairly high.

Results

Examination of 22 cases in the AANAF closed claim database demonstrated financial payouts for 19 (86%) of the claims against CRNAs involved in cases with inadequate preinduction activities. In 21 of 22 cases, preanesthetic assessments were missing or incomplete. Seven (33%) of the cases had no ASA physical status classification assigned. Eighteen (86%) of the 21 cases were elective; patients of high acuity and procedures of increased complexity, eg, cardiovascular or neurosurgical, were not represented in this data set.

The amount paid on behalf of the CRNA ranged from \$3,500 to \$437,500, with an average cost of \$133,477.52 (Figure 1). There was no payout in 3 of the claims. These 3 claims were discontinued or dropped, or the statute of limitations had run its course before liability could be assigned. The categories of missing or incomplete data are summarized in Figure 2. Twelve (55%) of the claims involved instances where the patient's medical history was not documented by the involved anesthesia providers. Five patients either had unrecognized significant medical problems or deterioration of a preexisting medical condition that was not considered when planning the anesthetic. In this analysis it was judged that 3 patients received inappropriate or inadequate care based upon reasonable consideration of their presenting health status. The NPO guidelines were not observed in 4 patients. Lack of informed consent was an issue in 1 case. Three of the claims involved diagnostic studies that were not noted prior to the surgical procedures, the results of which had an impact on patient outcomes.

Airway assessment was not documented in 6 (27%) of claims that involved an unanticipated difficult airway. Two of these cases resulted in inability to ventilate or intubate, with patient demise ensuing. For example, concerns related to orthopedic anesthesia include potential airway compromise due to disease processes such as rheumatoid arthritis that can be prospectively identified. When potential problems with airway management were not anticipated, equipment for the management of the difficult airway was not always readily available.

As noted earlier, preoperative checks of the anesthesia machine, related equipment, and monitors are standards of care. When monitors such as oximeters and capnographs were not operative, management of the difficult airway was compounded by inability to rapidly assess oxygen saturation and ventilation.

Physiologic changes associated with pregnancy mandate thorough preanesthetic assessment and appropriate planning for anesthesia care. Known changes in the airways of parturients coupled with the hemodynamic effects of concomitantly administered drugs in the labor and delivery setting were not always factored into anesthesia care provided in the 6 obstetrical cases reviewed for this analysis.

The types of surgical procedures involved in this analysis were general surgical (32%), obstetrical (27%), otolaryngological (23%), orthopedics (14%), and gynecologic (5%). These surgical case categories are represented with the following frequencies in the closed claims database: general surgery (20%); obstet-

Figure 1. Financial payouts for cases with incomplete preinduction activities

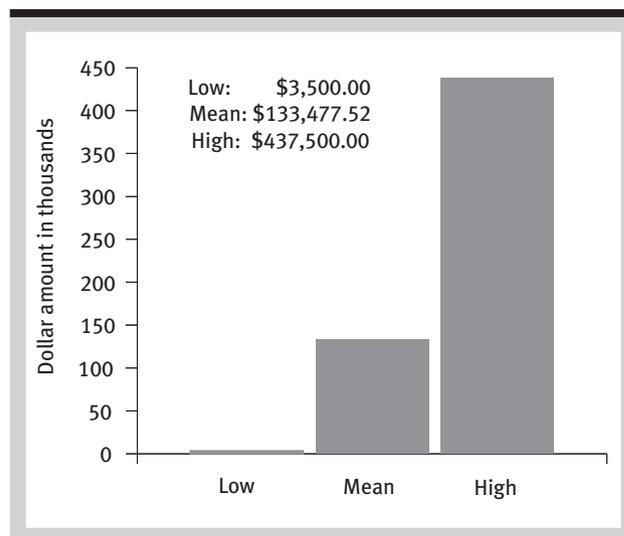
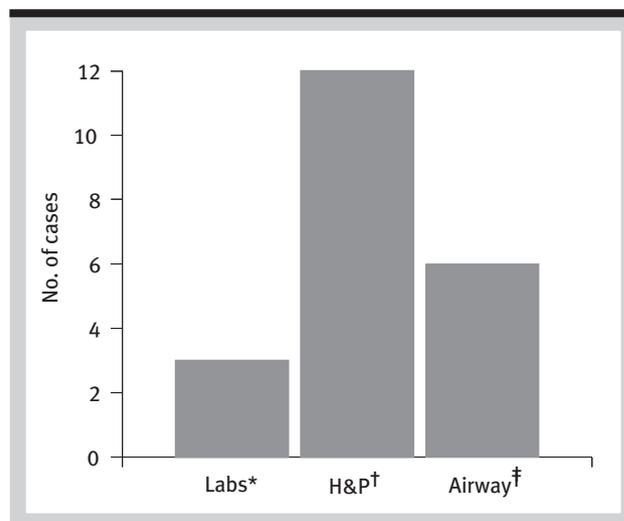


Figure 2. Major areas of incomplete preanesthetic assessment



* Labs—missing basic preoperative laboratory data

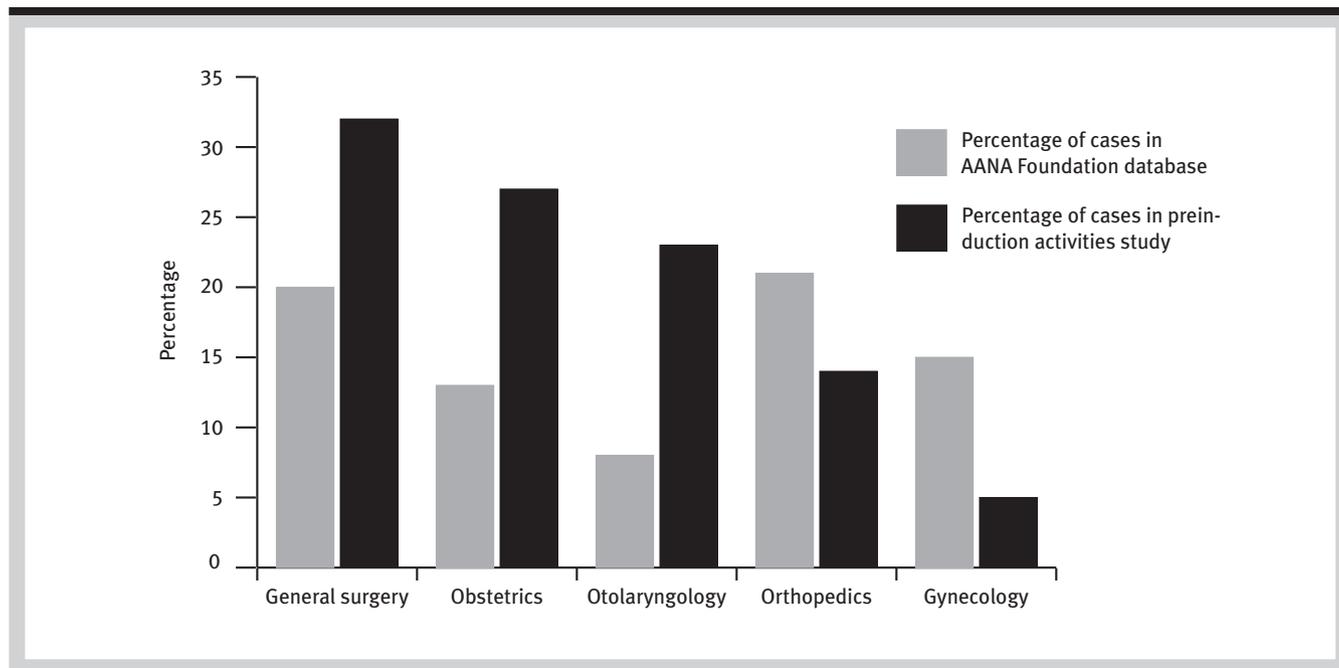
† H&P—lack of complete preanesthetic history and physical examination

‡ Airway—preoperative airway assessment not documented

rics (13%); otolaryngology (8%); orthopedics (21%), and gynecology (15%) (Figure 3).

Regardless of the surgical specialty area involved, themes emerged in the analysis of these cases. Damaging respiratory events, such as aspiration, resulted in 13 (59%) of the cases with inadequate preinduction activities. Cardiovascular complications, such as bradycardia or asystole, occurred in 4 (18%) of these cases. Failure to seek available information, such as the results of diagnostic studies on the chart at the time anesthesia was administered or examination of the surgical consent form, was seen in 5 (23%) of claims examined.

Figure 3. Surgical specialty area and inadequate preinduction activities—percentage of total cases in AANA Foundation closed claims database (n = 223) and cases with inadequate preinduction activities (n = 22)



Discussion

The objective of the AANAF closed claims study is to improve anesthesia care. Closed claim review is limited due to its retrospective nature. Therefore, it is difficult to determine exactly which events led to the damaging events and resulting adverse outcomes in these closed claims files. However, interrater reliability is high among the closed claims researchers, with investigators able to find consensus regarding the probable causes for damaging events.

The data gathered from each claim come from source material contained in closed claims files, such as medical records, depositions, written statements of involved providers, and correspondence between claims managers and legal counsel. The sample size in the ongoing AANAF study reflects claims filed with the St Paul Fire and Marine Insurance Company between 1989 and 1994. Additional insurance carriers will be participating in future data collection for the AANAF study.

Conclusion

Research findings reported here demonstrate that incomplete preinduction activities can contribute to damaging events and adverse outcomes in anesthesia. The investigators used published standards of care as the template against which claims with incomplete preinduction activities were evaluated.

In the medical malpractice arena, standard of care is construed as what a reasonable practitioner in similar circumstances would do. However, as structured

analyses of closed claims demonstrate, objective criteria such as those contained in the Scope and Standards for CRNA Practice are essential to plan, implement, and evaluate anesthesia care.

CRNAs practice according to their expertise, state statutes and regulations, and institutional policies. CRNAs provide anesthesia care in the following areas:

1. Preanesthetic preparation and evaluation;
2. Anesthesia induction, maintenance, and emergence;
3. Postanesthesia care; and
4. Perianesthetic and clinical support functions.¹¹

Preinduction activities, including the preanesthetic assessment, are key elements of anesthesia care. The scope of practice for a CRNA includes, but is not limited to “*Performing and documenting a preanesthetic assessment and evaluation of the patient, including requesting consultations and diagnostic studies; selecting, obtaining, ordering, or administering preanesthetic medications and fluids; and obtaining informed consent for anesthesia.*”⁴

Failure to comply with these nationally promulgated standards of care does not always result in a medical error. However, when such errors occur, they are devastating (eg, undetected esophageal intubation), resulting in brain damage or death. As anyone who has experienced a case with a damaging event would acknowledge, “The only real mistake is the one from which we learn nothing.” Anesthesia providers realize that errors may occur, but their rate can be reduced

through study of their origins, continuing education on standards of care, and use of technology, such as whole body simulators for crisis management education.

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