

# Analysis of patient injury based on anesthesiology closed claims data from a major malpractice insurer

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**Introduction:** The analysis of malpractice claims can provide risk managers with a detailed view of patient mortality and morbidity. The data comes from many institutions, encompasses a diverse group of practitioners and practice settings, and contains detailed clinical information. Analysis can help identify patterns of injury, risk factors, and rare and sentinel events.

**Methods:** We examined most recent anesthesia closed claims data collected by The Doctors Company, a large national malpractice insurer. We analyzed data from claims closed between 2007 and 2012. Each claim underwent a review by physician and nurse experts, and was then coded using the Comprehensive Risk Intelligence Tool. Injury distribution and association between the injury and patient comorbidity were also examined.

**Results:** A total of 607 claims were analyzed. Most frequent injuries were teeth damage (20.8%), death (18.3%), nerve damage (13.5%), organ damage (12.7%), pain (10.9%), and arrest (10.7%). Obesity was most frequently identified as a contributing factor leading to a claim. Injury-to-claim rates were highest in hospitals with fewer than 100 beds, while ambulatory surgery centers had the lowest death-to-claim rate (12%). Average indemnity for an anesthesia claim was \$309 066, compared to \$291 000 for all physician specialties.

**Conclusions:** The most frequent claims were death and nerve damage when teeth damage was excluded. Obesity impacted anesthesia outcomes more frequently than did other comorbidities. Although there were fewer claims from the smaller hospitals, those claims had higher rates of mortality and nerve damage compared to larger-size hospitals. Further analysis is needed to evaluate these trends as well as impact of specific patient comorbidities on anesthesia outcomes.

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## INTRODUCTION

The specialty of anesthesiology has seen a significant improvement in patient safety over the past century, and many improvements, such as better monitoring and creation of practice standards have been introduced. Although recent trends show a decline in anesthesia-related deaths,<sup>1,2</sup> the patterns of major anesthesia-related injuries continue to evolve.<sup>3</sup> Over the past several decades, pulse oximeter and capnography use have become standard anesthesia practice, newer and safer anesthetic drugs have been introduced, and various practice guidelines have been developed by the American Society of Anesthesiologists.<sup>4-7</sup>

The analysis of closed malpractice claims can provide a detailed view of mortality and morbidity related to the administration of anesthesia and pain management. In the United States, much of the data has been reported by the American Society of Anesthesiologists Closed Claims Project, established in 1984. Other large international database studies have also contributed to our understanding of anesthesia-related injury.<sup>3,8-10</sup>

There are several advantages to examining insurance company data. For example, the data comes from many institutions, encompasses a diverse group of practitioners and practice settings, and contains detailed clinical information. It also helps to capture rare adverse events and is an efficient and cost-effective way of collecting and analyzing a large amount of information.<sup>11</sup> Although this type of analysis has inherent limitations, delving into the nature and clinical circumstances of adverse events can help identify patterns of injury, risk factors, and sentinel events in an effort to improve safety and quality of care.<sup>12-14</sup>

Recently published reports based on the examination of closed claims have helped recognize most common damaging events across different anesthesia subspecialties and types of anesthesia.<sup>15-20</sup> A recent review of anesthesia claims reported that the most common complications were death, nerve injury, and permanent brain damage. In addition, most common events included those related to respiratory events, regional anesthesia, cardiovascular, equipment, and medications.<sup>12,21</sup> Regarding the location of the anesthetic, a recent study reported that malpractice claims for major damaging events are less common in the outpatient settings than in inpatient settings.<sup>17</sup> Pino et al examined non-OR anesthesia cases, showing that respiratory adverse events accounted for more complications than any other types of events.<sup>22</sup> Another study of anesthetics performed at remote locations showed that the location posed a significant risk for the patient, particularly related to oversedation and inadequate oxygenation/ventilation during monitored anesthesia care.<sup>16</sup> Finally, the most recent analysis of claims associated with regional anesthesia showed an increase in permanent injury from eye blocks, and high-severity injury resulting from neu-

roxial hematomas associated with coagulopathy, neuraxial cardiac arrest, and local anesthetic toxicity.<sup>23,24</sup>

Our study examines the most recent anesthesia-related mortality and morbidity trends as reported by a large national malpractice insurance company. The main objectives comprise examining patterns of injuries and frequency of distribution, comparing those trends to previously published reports, analyzing how patient comorbidities can affect outcomes, and determining whether patterns of injury vary depending on the practice setting. In addition, we examine how anesthesia-related indemnity payments compare to other specialties and whether they vary according to the type of injury.

## MATERIALS AND METHODS

The closed claim data in this study was from The Doctors Company (Napa, California), a private medical insurance company that covers physicians from different surgical and medical specialties, including more than 2600 anesthesiologists. We analyzed the closed claims data that was reported during a 6-year period, between 2007 and 2012. The study did not distinguish between the types of anesthesia providers. In most cases, anesthesiologists either provided the care or supervised the certified registered nurse anesthetist (CRNA).

The study approach listed patient injuries to determine the range of outcomes that occurred when anesthesia care was provided. We examined allegations made by patients/claimants to present these events from their perspective. We analyzed factors that contributed to patient injury that were identified by physician and nurse experts.

We reviewed the procedures associated with the allegation of “improper performance of anesthesia procedure.” We also examined “technical performance” and “patient assessments,” which were identified as the most common factors that contributed to patient injury. We conducted a study of patient comorbidities to determine how their conditions impacted the outcomes of their care. The comorbidity data was available only from 2010 to 2012.

After categories of cases were identified, we reviewed the clinical summaries of each case to gain insights into system failures and errors in judgment that resulted in patient harm. A nurse analyst would then code each claim with information provided by physician reviewers, using the Comprehensive Risk Intelligence Tool (CRIT), a web-based system with extensive taxonomy.<sup>25</sup> The insurance company conducts monthly or quarterly quality checks for quality assurance of coding. Since each claim usually has more than 1 injury, the total number of injuries is sometimes more than the total number of claims. Each injury would be classified into 1 of the 9 severity levels, from emotional only to death.

**Table 1: Severity Distribution of the Most Frequent Injuries**

Injury	Minor n (%)	Medium n (%)	Severe n (%)	# Total Claims
Teeth damage	133 (99.3)	1 (0.7)	0 (0)	134
Death	0 (0)	0 (0)	113 (100)	113
Nerve damage	15 (17.9)	69 (82.1)	0 (0)	84
Organ damage	2 (2.5)	34 (43.0)	43 (54.4)	79
Pain	39 (59.1)	27 (40.9)	0 (0)	66
Arrest	5 (7.7)	10 (15.4)	50 (76.9)	65

## RESULTS

### Patient injuries

Between 2007 and 2012, there were a total of 607 claims in which an anesthesia professional was named as a defendant, which constituted about 5% of all claims filed against physicians insured by The Doctors Company. Average claim frequency, defined as number of claims reported per 100 anesthesiologists, was 0.05 during the study period (2007 = 0.055; 2008 = 0.054; 2009 = 0.055; 2010 = 0.045; 2011 = 0.049; 2012 = 0.053). There could be more than 1 injury reported in each claim. The most frequent injuries were tooth damage (20.8%), death (18.3%), nerve damage (13.5%), organ damage (12.7%), pain (10.9%), and arrest (10.7%), as shown in **Table 1**. Most nerve damage injuries (82.1%) were of medium severity, while almost 77% of arrest cases resulted in severe outcomes.

Anesthesia claims included a relatively large number of low severity claims (25%) compared to all other physician claims (13%) (**Figures 1a** and **1b**). This is due to the large number of tooth damage claims, which are low severity claims but are the most common anesthesia patient injury. The second most common anesthesia injury was patient death (18.3%). These deaths were from respiratory complications due to the procedure. Patients also died from anoxic brain damage, cardiac arrest, side effects of opioids, aspiration pneumonia, respiratory arrest, and other problems associated with anesthesia administration. Anesthesiologists were also named in cases where the primary problem was the surgical care that patients received. Examples include hemorrhages, punctures or lacerations, pulmonary embolism, and other surgical complications.

### Allegations

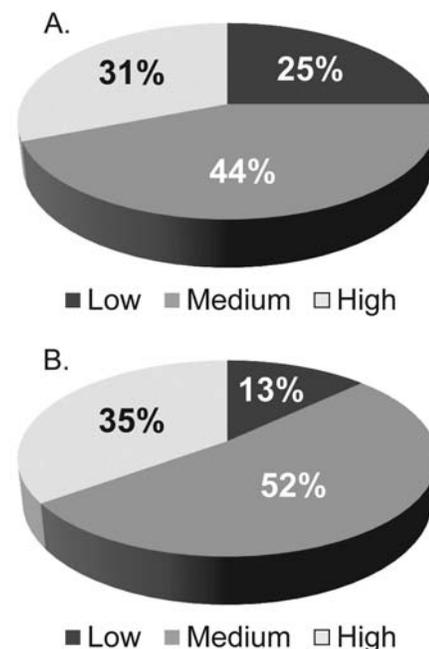
The 5 most common allegations in anesthesia comprise improper performance of anesthesia procedure(s), tooth damage related to intubation and extubation, improper management of the patient under anesthesia, failure to

monitor patient's physiological status, and patient positioning. We now discuss the most frequent allegations in detail, as outlined in **Figure 2**.

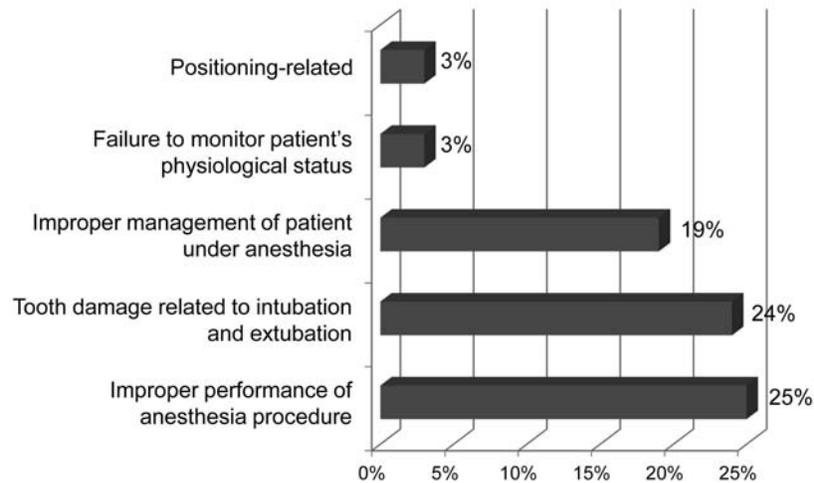
### Allegation: Improper Performance of Anesthesia Procedure

In these claims and lawsuits, the most common allegation (25%) was improper performance of anesthesia procedure. The five most common procedures associated with this allegation comprise injection of anesthesia into spinal

**Figure 1:**  
**Severity of Patient Injuries for Anesthesia (A) and All Specialties (B)**



**Figure 2:**  
**Five Most Common Allegations in Anesthesia Claims**



canal (37%), oral intubation and extubation (35%), injection of anesthesia into a peripheral nerve (20%), injection of anesthesia into a sympathetic nerve (3%), and nasopharyngeal intubation (2%) (Figure 3).

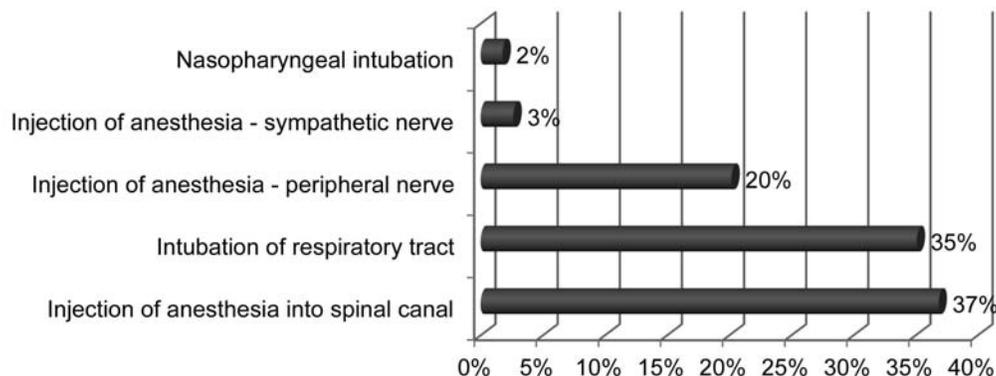
**Allegation: Tooth damage related to intubation and extubation**

The second most common allegation (24%) was damage to teeth, crowns, implants, and bridges. Many of the cases

of damage to teeth and oral appliances involved the following factors:

1. Difficult intubations—Mallampati score  $\geq 3$ , patients have short or thick necks, limited jaw openings, or vocal cords difficult to visualize.
2. Poor condition of teeth—due to poor oral hygiene, lack of dental care, radiation therapy, chemotherapy, or long-term exposure to some medications.

**Figure 3:**  
**Procedures Related to Allegation, “Improper Performance of Anesthesia Procedure”**



3. Bite on oral airway—while under anesthesia.
4. Excessive use of force during intubation.

Patients sometimes suffered problems in addition to teeth damage. Broken crowns and dental implants needed to be replaced, loose teeth needed braces, fractured teeth resulted in gum infections, and bent or broken bridges needed to be repaired or replaced. In some cases, the damage was cosmetic. Veneers were broken and fell from teeth and crowns. In a few cases, patients required invasive procedures to retrieve teeth, crowns, and portions of bridges that were swallowed or fell into patients' airways. In some cases, it appeared that no assessment of the condition of patients' teeth was done. There was no documentation to note the condition of teeth or to identify oral appliances. In a majority of these cases, there was no documentation of challenging airways or difficult intubations. Tooth damage is a known complication and can happen in the absence of negligence.

### **Allegation: Improper management of patient under anesthesia**

The third most common allegation (19%) related to decisions made by anesthesia professionals while patients were under anesthesia. These cases comprised a variety of events:

1. Inadequately monitored vital signs permitted blood pressure or oxygen levels to remain low for extended periods of time resulting in brain damage.
2. Delayed response to obstructed ventilation or esophageal intubation resulted in brain damage.
3. Delayed responses to deteriorating vital signs because the equipment was suspected of producing erroneous information.
4. Inadequate responses to respiratory or cardiac arrests.
5. Fires facilitated by 100% oxygen flowing under drapes caused patient burns.
6. Air embolism from blood transfusion bags or cell savers resulted in brain damage.
7. Improper positioning of patients resulted in nerve damage.
8. Improper placement of compression garment resulted in nerve damage.
9. Nerve damage to extremities when tourniquet was left in place for too long.
10. Extubation too soon after oral surgery resulted in patient death. Swelling and bleeding made it difficult to reestablish an airway before patient suffered anoxic event.
11. Attempts to reestablish airways were impeded by patient's anatomy and emergency equipment for cricothyrotomies was not available.

### **Factors that contributed to patient injury**

Physician experts identified technical performance as the most common factor (44%) that contributed to patient injury. This statement is misleading, however, because it includes patient injuries that were not due to negligence. Almost 80% of the claims in this category were complications that represented risks of the procedure known to patients prior to surgery. Only 20% of these cases (9% of all anesthesia claims) were identified as coming from substandard performance of an anesthesia procedure.

The second most common factor was inadequate patient assessments (15%). This included inadequate history and physical for conditions such as sleep apnea, stomach contents, seizure activity, allergies, reactions to anesthetics, comorbidities, and difficult intubations. They also included failure to consider important information that was available such as abnormal electrocardiogram, elevated potassium, and pulmonary stenosis.

The third most common problem associated with patient injury was lack of documentation (14%). Documentation was missing for clinical findings such as low blood pressure and oxygen saturation. Experts also noted inadequate review of care in situations such as resuscitation attempts. There are several possible explanations for gaps in documentation. Anesthesia professionals were not monitoring patient vital signs, were distracted, or failed to note what they were observing. Gaps in documentation imply inadequate vigilance and made these cases difficult to defend. Gaps in documentation may be explained by the fourth most common factor, inadequate patient monitoring (12%). This was seen in cases where there were drops in vital signs or end-tidal CO<sub>2</sub> with no response for an unreasonable period of time. There were also delays in responses to clinical alarms. They were either disregarded or were turned off and not heard.

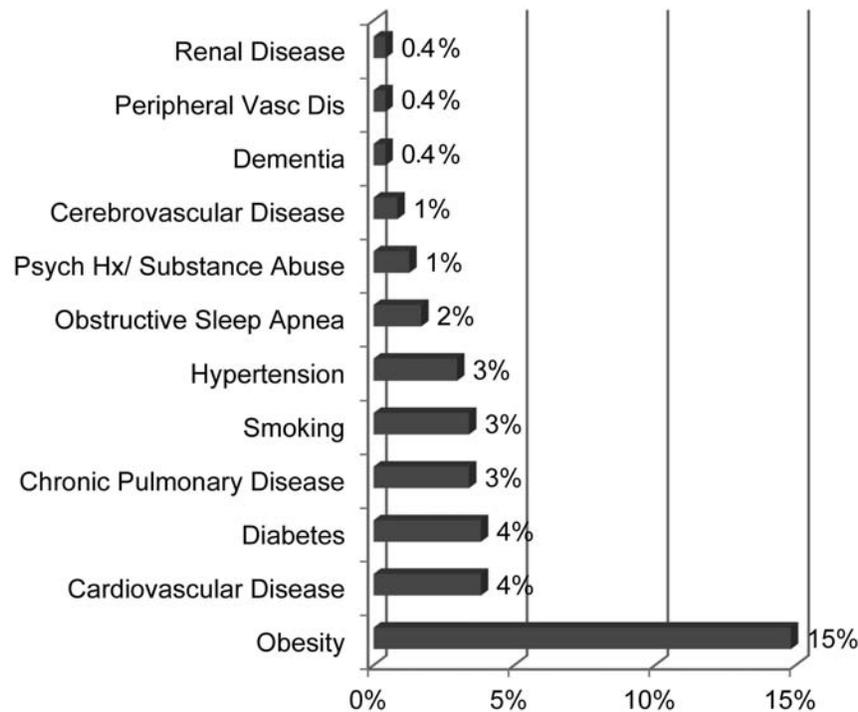
The fifth most common factor that contributed to patient injury was patient characteristics. Most of these were related to patient anatomy causing difficult or delayed intubations. Patient comorbidities that impacted outcomes of care were also found in our data (**Figure 4**).

The most significant comorbidity was obesity. Body habitus complicated surgical procedures and made the administration of anesthesia more difficult. Anesthesiologists struggled to find landmarks for epidurals and regional blocks. Initial intubations were often difficult. Obesity made intubation more challenging when patients with regional anesthesia or spinal blocks had difficulty breathing or lost consciousness. Other patients were extubated following a procedure only to have the airway close due to swelling or body habitus.

### **Locations where anesthesia patient injuries occurred**

Anesthesia services are provided in a variety of locations inside and outside of hospitals. Most claims arise from

**Figure 4:**  
**Comorbidities that Impacted the Outcome of Care**



anesthesia care provided in hospital operating rooms or ambulatory surgery centers (81%). Anesthesia claims also arise from care provided in labor and delivery (7%); patient's room (4%); special procedures areas such as cardiac catheterization labs, endoscopy, angiography (2%); postanesthesia care units (2%); intensive care units (1%); and hospital clinics, physician offices, emergency departments, and radiology (<1% each). Most claims were from hospitals with 100 to 299 beds, followed by ambulatory surgery center, hospitals with 300 or more beds, then hospitals with fewer than 100 beds (Table 2). Even though there were fewer claims related to death or nerve damage injuries reported from hospitals with fewer than 100 beds compared to larger facilities, the injury-to-claim rates were highest in those hospitals: 34% for death and 21% for nerve damage. Ambulatory surgery centers had the lowest death-to-claim rate (12%), and hospitals with 100 to 299 beds had the lowest nerve damage-to-claim rate (12%).

### Indemnity payments

Among the 607 claims related to anesthesia, 182 claims ended with indemnity. The average indemnity for each anesthesia claim was \$309,066, compared to an average indemnity payment of \$291,000 for all physician specialties. However, median indemnity for anesthesiology was \$100,000, compared to \$112,000 for all specialties. Compared to other specialties, the average indemnity for anesthesia ranked at 10th place, lower than that for emergency medicine but higher than that for hospitalist medicine (Figure 5). The highest average indemnity for a specific injury type was for arrest, amounting to \$1,037,068 (Figure 6). The average indemnity for tooth damage was \$6,174. The percentage of claims with indemnity was 30% for anesthesiology, compared to only 25% for all physician specialties. The number of claims with payment (settled and judgment at trial) was 30% (182 out of 607), whereas the remaining 70% of claims were closed with no payment.

**Table 2: Death/Nerve Damage and Practice Settings**

Practice Setting	Total Claims	Death <i>n</i> (%)	Nerve Damage <i>n</i> (%)
Ambulatory surgery center	179	22 (12)	23 (13)
Hospital of 300 or more beds	151	35 (23)	23 (15)
Hospital of 100–299 beds	197	37 (19)	24 (12)
Hospital of fewer than 100 beds	29	10 (34)	6 (21)
Other	51	7 (14)	6 (12)
Total	607	111 (18)	82 (14)

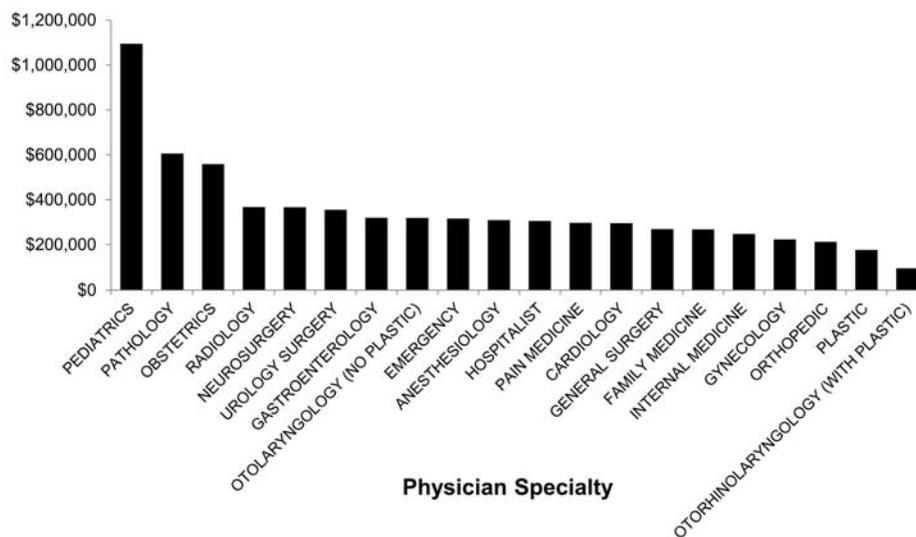
**DISCUSSION**

In this study, we analyzed closed claim data from a single medical insurance company. The data covers a diverse group of anesthesia practitioners and various practice settings. It is worthwhile to compare our results to those in the most recent study by Metzner et al, which examined the 1990 to 2007 data from the American Society of Anesthesiologists (ASA) Closed Claims database.<sup>12</sup> However, our data covers a time period from 2007 to 2012, reflecting the most up-to-date anesthetic practices.

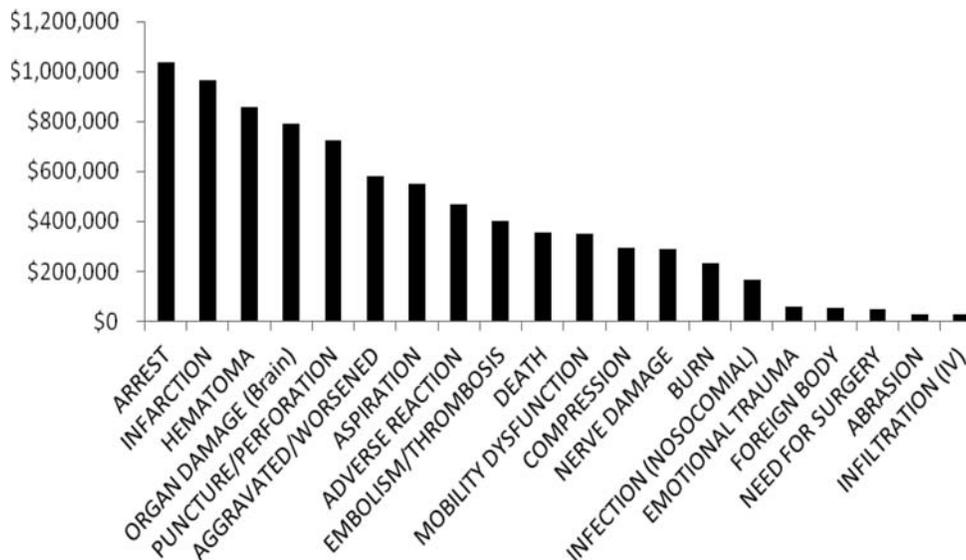
In our analysis, tooth damage, death, and nerve damage are the top injuries. Although the ASA Closed

Claims data from 1990 to 2007 reported by Metzner et al also shows death and nerve damage as the top 2 injuries, the frequencies of those events are significantly less in our study. Death and nerve damage were 26% and 22% in ASA Closed Claims data from 1990 to 2007, respectively, whereas our data shows only 18.3% and 13.5%. The lower death and nerve damage rates in our study may reflect the overall improvement in anesthesia practice, although our study contained a smaller sample size. Since there is no denominator (ie, total number of anesthetics performed) in closed claim data, we could not calculate an overall incidence of nerve injury and death.

**Figure 5:  
Average indemnity by specialty**



**Figure 6:**  
**Average Indemnity by Injury Type.**



*Note: Injuries with average indemnity less than \$20 000 were not included in the figure, such as pain (\$7 500), wrong-site surgery (\$7 500), and teeth damage (\$6 174).*

Welch et al conducted a retrospective study of perioperative peripheral nerve injuries based on more than 380 000 cases during a 10-year period at 1 institution.<sup>26</sup> Their analysis identified 118 cases of peripheral nerve injury (frequency = 0.03%). Lagasse reported the frequency of anesthesia-related mortality of less than 0.01% based on a review of literature and data from 2 large healthcare networks in New York State.<sup>27</sup>

## Obesity

Obesity causes various physiological derangements and poses special challenges during anesthetic management.<sup>28-31</sup> Our closed claim data showed that obesity was most frequently judged by expert reviewers to affect anesthesia outcome, even more frequently than cardiovascular disease or diabetes mellitus. The top injuries related to obesity were also of higher severity levels, such as death, organ damage, arrest, and nerve damage. In the Welch et al study of perioperative peripheral nerve injury, hypertension, tobacco use, and diabetes were significantly associated with peripheral nerve injury.<sup>26</sup> Our analysis identified obesity as another potential factor associated with perioperative nerve injury.

## Small versus large facilities

Our data, although not risk-adjusted for patient comorbidities, showed higher rates of death and nerve damage

in small-size hospitals when compared to ambulatory surgery centers or larger hospitals. The patients who underwent surgeries at ambulatory surgery centers were usually of lower ASA physical status classification, and the surgeries performed at ambulatory surgery centers are usually less complex than those performed in hospital settings. Thus, it is not surprising to see lower rates of mortality and nerve damage in ambulatory surgery centers. Data from the ASA Closed Claims Project suggested that malpractice claims for major damaging events are less common in the outpatient setting than the inpatient setting.<sup>17,32</sup> One may assume that patients and surgeries in larger tertiary care hospitals are on average more complex. However, even though not risk adjusted for patient comorbidities, it was a surprising finding that the hospitals with fewer than 100 beds showed the highest mortality and nerve damage claim rates. This is supported by previously published reports showing that hospital volume was inversely related to preventable adverse events.<sup>33,34</sup>

## Patient injuries

Anesthesia patients experienced a wide range of injury severity. These included minor injuries such as tooth damage, moderate injuries such as nerve damage, and severe injuries such as paralysis, brain damage, and death. Injuries during intubation included punctures or tears

to airways, reactions to anesthetic agents, and damage to teeth. There were anoxic events due to esophageal intubations and delayed intubations due to patient anatomy. Patient anatomy made it difficult to establish an airway when patients with spinal or regional anesthesia suffered respiratory depression or cardiac arrest. Attempts to gain control of the airway were delayed by the need to evaluate the problem, reposition patients, access needed supplies, and intubate. When attempts at intubation were unsuccessful, cricothyrotomies were done.

Regional anesthesia has its own set of risks. Infrequent problems identified in these claims included incorrect placement of anesthetic agents, incorrect agent infusion, and incorrect doses. Patients suffered reactions to anesthetic agents, experienced nerve damage from swelling or tourniquet pressure, and bleeding or pneumothorax from punctures due to incorrect placement of needles.

Patients also suffered injuries intraoperatively. In some situations, alarms were turned off and deteriorating vital signs were not recognized. In other situations, anesthesia professionals did not trust the alarms and readings postponing a response. They either replaced equipment or waited until other symptoms revealed that the patient was in crisis.

In a number of these cases, it was difficult to determine the sequence of events due to gaps in the documentation. This created challenges to defending the anesthesia professionals and arguing that the care that they provided was appropriate.

Decisions related to extubation resulted in harm if too much medication was given close to the time of extubation. Some of these patients suffered anoxic brain damage when they slipped into a coma due to sleep apnea, overdoses of opioids, or drug reactions.

There were also problems from loss of control of the airway if extubations were performed too soon after surgery. Some patients had anatomic structures, such as thick necks, that made the initial intubation difficult. Reintubation in a crisis was even more challenging. Patients who had surgery on structures around airways were difficult to reintubate due to swelling or bleeding. In a few of these cases, rescue was delayed because equipment for emergency tracheotomies or cricothyrotomies was not readily available.

A significant number of anesthesia claims arose from complications that were known to patients prior to the procedure. However, patients may not have sufficient clinical knowledge to associate those risks with their injury.

## Special procedures

Claims from special procedures–based anesthetics were also examined, as this field of anesthesia has seen significant increase in volume in recent years.<sup>16,22</sup> One challenge regarding utilization of anesthesia services is determin-

ing when an anesthesia professional is needed to protect patients' safety. Some anesthetics may be used for intravenous "conscious sedation." The risk is the possibility of introducing too much sedation, thereby inducing a deeper level of anesthesia. When this is a risk, anesthesia professionals need to be onsite to help rescue patients by securing an airway and providing respiratory support.

Current controversy surrounds the use of anesthetics in special procedures areas.<sup>22</sup> Depending on the utilization of anesthesia personnel, the economic impact can be significant. Healthcare administrators and department chairpersons want to determine whether providing anesthesia personnel for special procedures is a cost-effective utilization.

Although the severity of patient injuries in special procedures areas is similar to injuries suffered by anesthesia patients in other settings, the frequency appears to be very low. Only 2% of claims filed against anesthesia professionals occurred in special procedures areas. This raised the question of whether patients in special procedures areas were experiencing respiratory depression/arrest and other symptoms that resulted when patients slipped into deep sedation and anesthesia professionals were not present.

## Key issues

### Patient assessments

Physician experts identified inadequate preoperative assessments in 15% of cases filed against anesthesia professionals. Knowledge of patient history, comorbidities, chronic conditions, and current status are essential for planning appropriate anesthetic agents and routes of administration. Assessments are also critical for anticipating complications that may arise during surgery such as blood loss, electrolyte imbalance, respiratory depression, and low blood pressure. Anesthesia professionals need to know about increased risks due to cardiac conditions and chronic illnesses such as lupus, renal, liver, and pulmonary diseases.

### Patient monitoring and documentation

Anesthesiologists must make sure that monitoring alarms are operational. They need to recognize complications such as low blood pressure in special situations such as elevated patient head as in beach chair positions. Documentation that reflects actual care provided is essential to high-quality care and the defending anesthesia professionals in cases where patients suffer harm.

### Postoperative monitoring

Patients diagnosed with sleep apnea are at increased risk when treated with opioids. It is essential that patients be screened for sleep apnea. Patients who are diagnosed with sleep apnea should be monitored postoperatively to reduce the risk of an anoxic event.

Patients receive doses of medications in surgery to control postoperative pain. It is important to use test doses for

epidural blocks and provide enough time for reactions to occur before giving the full dose. There have been occasions when epidural catheters have migrated into intrathecal spaces during surgery.

## Indemnity

The average indemnity for each anesthesia claim was \$309 066 compared to an average indemnity payment of only \$291 000 for all other physician specialties combined. However, this data was not controlled for payment caps that may exist in some US states or for the differences in tort laws and litigation climate. Although variation from one state to another does exist, the aggregate claim indemnity data provides a reasonable estimate of the costs of these claims.

## CONCLUSION

There is value in reviewing the events that prompted claims and lawsuits. Failure to adequately evaluate patients preoperatively may lead to complications and delayed responses. Incorrect acuity ratings may lead to lack of preparation and ability to respond to crisis situations. Inadequate documentation may hurt anesthesia providers' ability to refute allegations of substandard care. Inadequate monitoring postoperatively, especially for patients with risk factors, could allow patients to experience an anoxic event. Even with significant improvements to anesthesia safety, preventable events still did occur. Based on our study findings, risk managers must encourage safer practices related to nerve blocks and encourage multidisciplinary efforts to prevent positioning injuries. This may be accomplished with development of procedural protocols, use of safety checklists, and educational initiatives.<sup>35</sup> Our closed claim data showed that obesity impacted anesthesia outcomes more frequently than did other comorbidities such as cardiovascular disease or diabetes mellitus. Risk managers can take an active role in encouraging the development of protocols aimed at improving the perioperative safety of obese patients. Special procedures are often performed in remote locations that may be less familiar to anesthesia staff. In addition, the availability of drugs, supplies, equipment, and backup personnel is often limited, rendering the delivery of patient care more challenging. The risk manager can become an advocate for maintaining the same standard of care in these patient areas. Finally, although there were fewer claims from the smaller hospitals, those claims had higher rates of mortality and nerve damage compared to larger hospitals. These results may indicate larger systemic issues unique to smaller health-care facilities.

It is important for physicians to communicate with patients about the outcomes of their care and to link informed consent discussions with the complication that they experienced. Patients may still be unhappy with the

outcome, but they will have a better understanding of the cause of their injury and be less likely to incorrectly ascribe the injury to substandard care.

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