The Anesthesia Closed Claims Project

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Disclosures

Sources of Funding

- Anesthesia Quality Institute
- American Society of Anesthesiologists
- Society for Anesthesia and Sleep Medicine
- Laura Cheney Endowment in Anesthesia Patient Safety
- Department of Anesthesiology & Pain Medicine, University of Washington
Trends in Death & Permanent Brain Damage

% of claims in year

N=10,546
Outline

• Brief history and introduction to the Anesthesia Closed Claims Project
• Trends in anesthesia malpractice claims
  • *Death/brain damage and respiratory events*
  • *Chronic pain management*
  • *Burns and OR fires*
• Other topics
• Conclusions
Anesthesia Closed Claims Project: How It All Started

1980’s malpractice crisis:

• Insurance difficult to obtain
• Expensive:
  ➢ $41,000 (in 2015 dollars)
Anesthesia Closed Claims
Project: How It All Started

• 1985: ASA assigns project to the Committee on Professional Liability
• F.W. Cheney, M.D., Committee Chair
• Faculty at the Department of Anesthesiology, University of Washington, Seattle
Ellison “Jeep” Pierce, ASA President

Fred Cheney, Chair, ASA Committee on Professional Liability
ASA Closed Claims Project

Objectives

- Identify causes of anesthesia-related patient injury
- Identify liability risk patterns
- Improve patient safety
ASA Closed Claims Project: Data Collection

- Malpractice insurance companies provide access to claims
- ASA member anesthesiologists volunteer to review claims
- Database grows by ~250 claims/yr
- Current database = 10,546 claims
Anesthesia Closed Claims Project

- 35 insurers
- 20 in active panel
- Insure 13,000+ anesthesiologists
- Organizations cover ~30% of practicing anesthesiologists in the U.S.
Utility of Closed Claims Data

• Study of rare serious outcomes
• Collection of sentinel events
Sentinel Events Associated with Anesthesia

<table>
<thead>
<tr>
<th>Event</th>
<th># Claims</th>
</tr>
</thead>
<tbody>
<tr>
<td>Permanent brain damage</td>
<td>1,035</td>
</tr>
<tr>
<td>Spinal cord injury</td>
<td>694</td>
</tr>
<tr>
<td>Airway injury</td>
<td>671</td>
</tr>
<tr>
<td>Difficult intubation</td>
<td>530</td>
</tr>
<tr>
<td>Aspiration of gastric contents</td>
<td>258</td>
</tr>
<tr>
<td>Central venous catheter injury</td>
<td>220</td>
</tr>
</tbody>
</table>

Anesthesia Closed Claims
N=10,546
Utility of Closed Claims Data

- Study of rare serious outcomes
- Collection of sentinel events
- Identify areas of recurrent risk
- Provide direction for in-depth analysis
- Snapshot of anesthesia liability
Most Common Complications 2000 or later

- Death: 30%
- Other: 38%
- Nerve Damage: 22%
- Permanent Brain Damage: 10%
- Claims for dental damage are not included
  
  Other Complications:
  - Airway injury: 6%
  - Emotional distress: 6%
  - Eye injury: 4%
  - Stroke: 3%
  - MI: 3%
  - Back pain: 2%
  - Pneumothorax: 2%
  - Newborn Injury: 2%
  - Headache: 2%
  - Awareness: 1%

N=10,546
Malpractice Claims Data: Limitations and Bias

- No denominator for calculating risk
- Small subset of injuries
- More severe, permanent injuries
- More substandard anesthesia care
How Have the Data Been Used?

• Support ASA Standards of Practice
  ➢ Pulse Oximetry for all anesthetics: 1990
  ➢ End tidal CO$_2$ for verification of endotracheal intubation: 1991
  ➢ Pulse oximetry in PACU: 1992

• Support for ASA Practice Guidelines
  ➢ Practice Advisory for the Prevention of Perioperative Peripheral Neuropathies: 2000

• Stimulate Research to Improve Patient Safety
How Have the Data Been Used?

- Support ASA Standards of Practice
  - Pulse Oximetry for all anesthetics: 1990
  - End tidal CO₂ for verification of endotracheal intubation: 1991
  - Pulse oximetry in PACU: 1992
Endotracheal Intubation
The Airway vs. The Esophagus
Esophageal Intubation Claims in Year

% Esophageal Intubations in Year

3% - 8% per year

1% - 2% per year

New Monitoring Standards

N=10,811
How Have the Data Been Used?

• Support ASA Standards of Practice
  ➢ Pulse Oximetry for all anesthetics: 1990
  ➢ End tidal CO\textsubscript{2} for verification of endotracheal intubation: 1991
  ➢ Pulse oximetry in PACU: 1992

EARLY RESULTS - IMPROVED PATIENT SAFETY:

✓ REDUCTION IN RESPIRATORY EVENTS ASSOCIATED WITH DEATH AND BRAIN DAMAGE
Trends in Death/Permanent Brain Damage and Respiratory Events

% of claims in year

Death/Brain Damage
Respiratory Events

New Monitoring Standards

N=10,546
Types of Anesthesia Management
2000 or later

- Surgical Anesthesia: 65%
- Chronic Pain: 18%
- Acute Pain: 8%
- OB: 9%

Closed Claims Project
N=10,546
Trends in Chronic Pain Over Time

% of claims in time period

* p<0.001

n=670 n=1560 n=1405 n=1817 n=2059 n=1818 n=1102

N=10,546
Trends in Chronic Pain Claims and Pain Medicine Anesthesiologists

- Pain Anesthesiologists
- Pain Claims

% within time period

- 0%
- 5%
- 10%
- 15%
- 20%
- 25%
Outcomes in Chronic Pain Claims by Decade

- 79% Temporary Minor Injury in the 1980s (n=95)
- 45% Severe Nerve Injury in the 1980s (n=95)
- 29% Death in the 1980s (n=95)

*p<0.001

Closed Claims Project
N=10,546
Treatment Trends in Chronic Pain Claims

% of chronic pain claims in decade

- Cervical Injections
- Lumbar Injections
- Medication Management
- Implant, Maintain or Remove Devices

1980s (n=95)
1990s (n=437)
2000s (n=505)

* p<0.01

Anesthesiology 2015; 123:1133-41
Drug overdose deaths in the United States hit record numbers in 2014

- The majority of drug overdose deaths (more than six out of ten) involve an opioid.
- From 2000 to 2014 nearly half a million people died from drug overdoses.
- 78 Americans die every day from an opioid overdose.
- Overdoses from prescription opioid pain relievers are a driving factor in the 15-year increase in opioid overdose deaths.

https://www.cdc.gov/drugoverdose/epidemic/
Malpractice Claims Associated with Medication Management for Chronic Pain


What We Already know about This Topic

- Opioid prescribing is common in chronic pain management, yet legal claims relating to such prescribing by anesthesiologists have not been reviewed.
Outcomes in Medication Management Claims

Medication Management
- Death, 57%
- Other, 43%

Other Pain Claims
- Other, 91%
- Death, 9%

Fitzgibbon et al.: Anesthesiology 2010; 112:948-56
<table>
<thead>
<tr>
<th>Condition</th>
<th>n</th>
<th>(%)</th>
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<tbody>
<tr>
<td>Male</td>
<td>29</td>
<td>(57%)</td>
</tr>
<tr>
<td>At least one risk factor</td>
<td>41</td>
<td>(80%)</td>
</tr>
<tr>
<td>Depression</td>
<td>23</td>
<td>(45%)</td>
</tr>
<tr>
<td>Drug or alcohol problems</td>
<td>18</td>
<td>(35%)</td>
</tr>
<tr>
<td>Inappropriate MD management only</td>
<td>7</td>
<td>(14%)</td>
</tr>
<tr>
<td>Patient compliance</td>
<td>12</td>
<td>(24%)</td>
</tr>
<tr>
<td>Both physician and patient</td>
<td>23</td>
<td>(45%)</td>
</tr>
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</table>

Fitzgibbon et al.: Anesthesiology 2010; 112:948-56
Issues in Medication Management (n=51)

- Both physician mismanagement and patient did not cooperate: 45%
- Inappropriate MD management only: 14%
- Others Issues: 18%
- Patient did not cooperate in own care: 24%

Fitzgibbon et al.: Anesthesiology 2010; 112:948-56
Malpractice Claims Associated with Medication Management for Chronic Pain


What We Already know about This Topic

➢ Opioid prescribing is common in chronic pain management, yet legal claims relating to such prescribing by anesthesiologists have not been reviewed.

What This Article Tells Us That Is New

➢ In a review of the American Society of Anesthesiologists Closed Claims Database from 2005-2008, medication management represented 17% of claims in chronic pain

➢ Malpractice claims in this area involved opioid prescribing, especially in young men with back pain, were commonly associated with patient and physician contribution, and often involved death
Types of Anesthesia Management 2000 or later

Surgical Anesthesia 65%

Closed Claims Project N=10,546
• Maintenance of body temperature is an important part of anesthetic management
• Methods for temperature maintenance can cause burns
• Few reports in the literature
Burns from Warming Devices

- Warming Devices, 29%
- Heated Material, 71%
- IV Bag/bottle, 64%
- Hot compresses, 7%

Cheney et al.: Anesthesiology 1994; 80:806-10
Warming Devices
Recurring Patterns

• Literature was “silent” on bags and bottles 1970-1993
• Bags and bottles: warmed in oven then applied to skin
• Controlled warming devices – associated factors
  • Extremes of age
  • Applied to ischemic skin
  • Excess contact (e.g. “hosing”)

Cheney FW: Anesthesiology 1994; 80:806-10
Conclusions:

- IV bags warmed in the OR oven represent a hazard to anesthetized patients
- IV bags are an inefficient method of patient warming
- There seems little justification for their use
OR Burns Follow-Up

Analysis of burns in malpractice claims before and after Cheney 1994 report

Trends in Burn Claims Over Time

- % of burn claims in time period

- IV Bag or Bottle
- Warming Device
- Cautery
- Fire
- Other

1994 or Earlier
1995 and Later

* p<0.05 between time periods
OR Burns

- Cause of burns changed
- Cautery fires
- Fire triad
  - Oxygen
  - Alcohol prep
  - Cautery
Fire Triad

IGNITION SOURCE
(cautery, laser)

OXIDIZER
(oxygen, nitrous oxide)

COMBUSTIBLE SUBSTANCE
0 seconds
0.25 seconds
1.8 seconds
Operating Room Fires
A Closed Claims Analysis
Anesthesiology 2013; 118:1133-9

What We Know about This Topic
• The relative importance of factors contributing to operating room fires remains unclear
Cautery Fires by Year of Event

% of surgery claims in time period

N=10,093

Mehta SP: Anesthesiology 2013; 118:1133-9
Cautery Fire Trends Over Time by Anesthetic Technique

% of total claims in anesthetic group in time period

- **GA**
- **MAC**

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<thead>
<tr>
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<tbody>
<tr>
<td>%</td>
<td>0.0%</td>
<td>0.3%</td>
<td>0.6%</td>
<td>0.9%</td>
</tr>
<tr>
<td><strong>p</strong>&lt;0.05</td>
<td></td>
<td></td>
<td>*</td>
<td>*</td>
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<tr>
<td><strong>p</strong>&lt;0.01</td>
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<td></td>
<td><strong>2</strong></td>
<td><strong>3</strong></td>
</tr>
</tbody>
</table>

* N=10,093
On-Patient Fires during Monitored Anesthesia Care (1985 or later)

101 (22%) of 463 MAC claims involved burns due to on-patient fires.

- **Electrocautery** was almost always the ignition source.
- **Supplemental Oxygen** was always the oxidizer.
- Masks and drapes (not alcohol prep) were the most common fuel.

Closed Claims N=10,546
ASA Practice Advisory for the Prevention and Management of OR Fires - Updated

- Place drapes open to room for $O_2$ venting
- Allow flammable skin prep to dry
- Place moistened sponges near cautery
- Surgeon to give notice before cautery use
- STOP or reduce $O_2$ delivery to minimum, STOP nitrous oxide, WAIT a few minutes
- Use LMA or ETT if high $O_2$ requirement

Anesthesiology 2013; 118:271-90
Reduce Oxidizer Risk

• Use “open draping” to avoid $O_2$ build-up under drapes
Operating Room Fires
A Closed Claims Analysis
Anesthesiology 2013; 118:1133-9

What We Know about This Topic
• The relative importance of factors contributing to operating room fires remains unclear

What This Article Tells Us That Is New
• In evaluation of the Closed Claims database, electrocautery was responsible for 90% of the fire claims
• Most fire claims occurred in patients who had monitored anesthesia care with open oxygen delivery for upper chest, neck, and head procedures
Other Recent Topics

- Massive hemorrhage
- Postoperative respiratory depression
- Obstetrics
- Situational awareness
- Communication
Lessons Learned

- Study of rare events
- Low cost
- Improved patient safety for specialty
- Interaction with ASA’s practice parameters
- Respiratory monitoring
  - Esophageal intubation detection
  - End-tidal CO₂ during sedation
- Oxygen/cautery fire risk
Welcome to the Closed Claims Project and its Registries

- Closed Claims Project
- Anesthesia Awareness Registry

www.asaclosedclaims.org
posner@uw.edu
Thank you!

Questions?