

# **ASA Closed Claims: Lessons Learned and Clinical Implications**

**Karen B. Domino, MD, MPH**

**Chair, ASA Committee on Professional Liability  
Director ASA Closed Claims Project**

**Professor of Anesthesiology and  
Neurological Surgery (Adjunct)  
University of Washington School of Medicine  
Seattle, WA**

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*"The doctor is in court on Tuesdays and Wednesdays."*

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# Overview



- **General description of Closed Claims Project**
- **Trends in liability**
- **Emerging concerns**

# ASA Closed Claims Project

- **35 insurance organizations have participated since 1985**
- **17 companies in current active panel**
- **13,000+ anesthesiologists insured by current panel of companies**
- **Organizations cover ~36% of practicing anesthesiologists in U.S.**

# Utility of Closed Claims Data

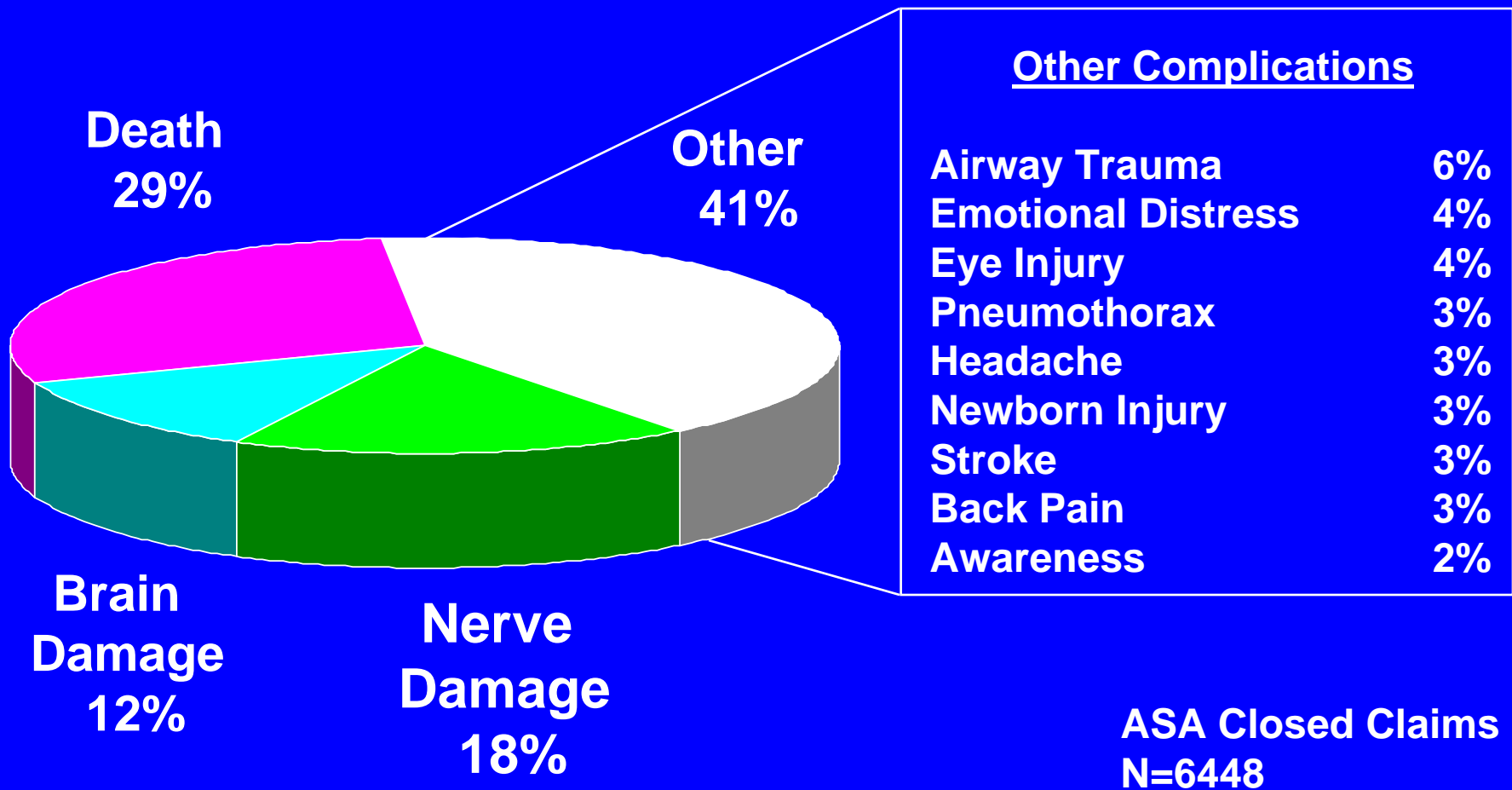
- **Collection of “Sentinel Events”**
- **Identify areas of recurrent risk**
- **Provide direction for in-depth analysis**
- **Snapshot of anesthesia liability**

# Bias with Malpractice Claims

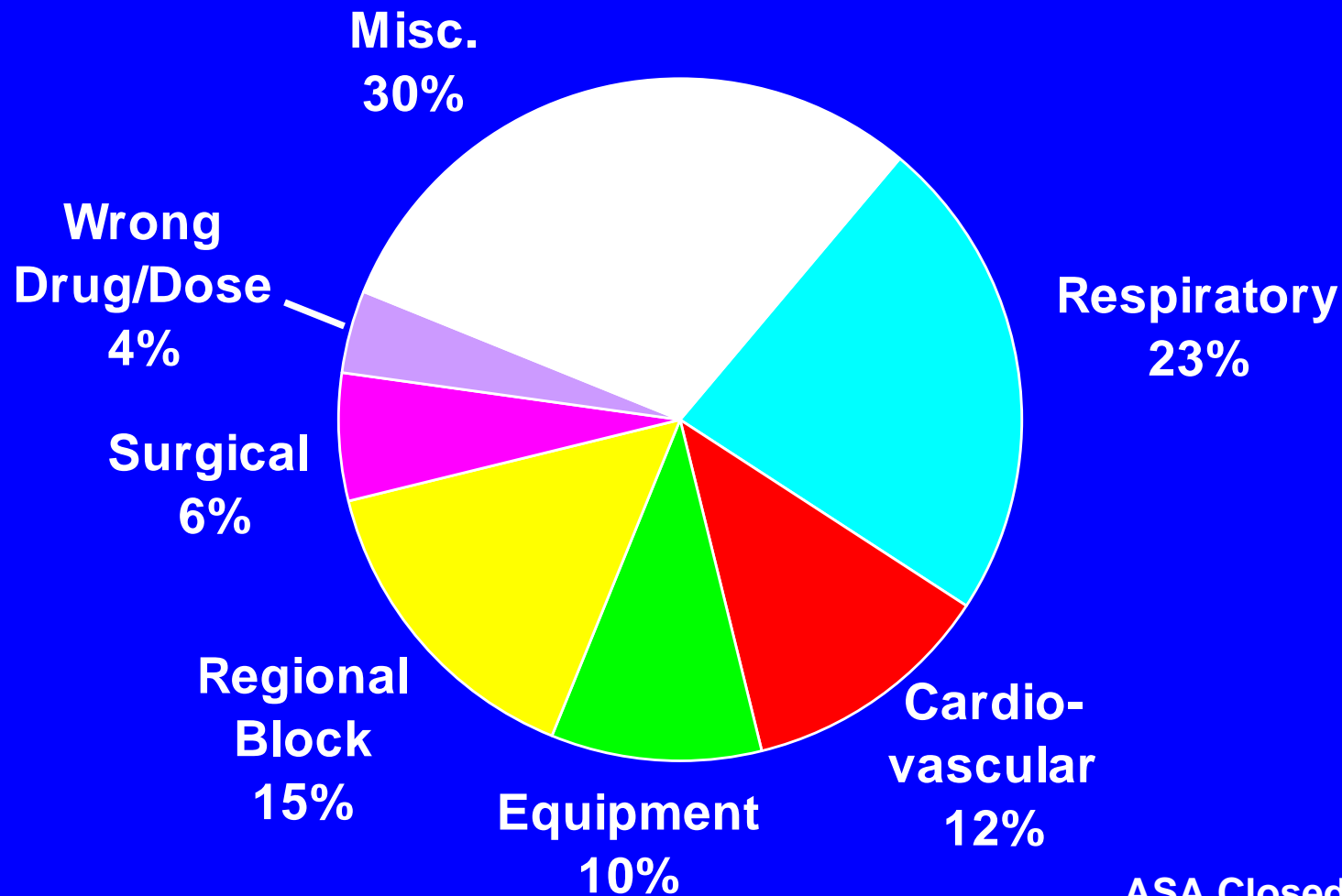
- **No denominator for calculating risk**
- **Small subset of injuries**
- **More severe, permanent injuries**
- **More substandard anesthesia care**



# Complications in Closed Claims Database



# Most Common Damaging Events



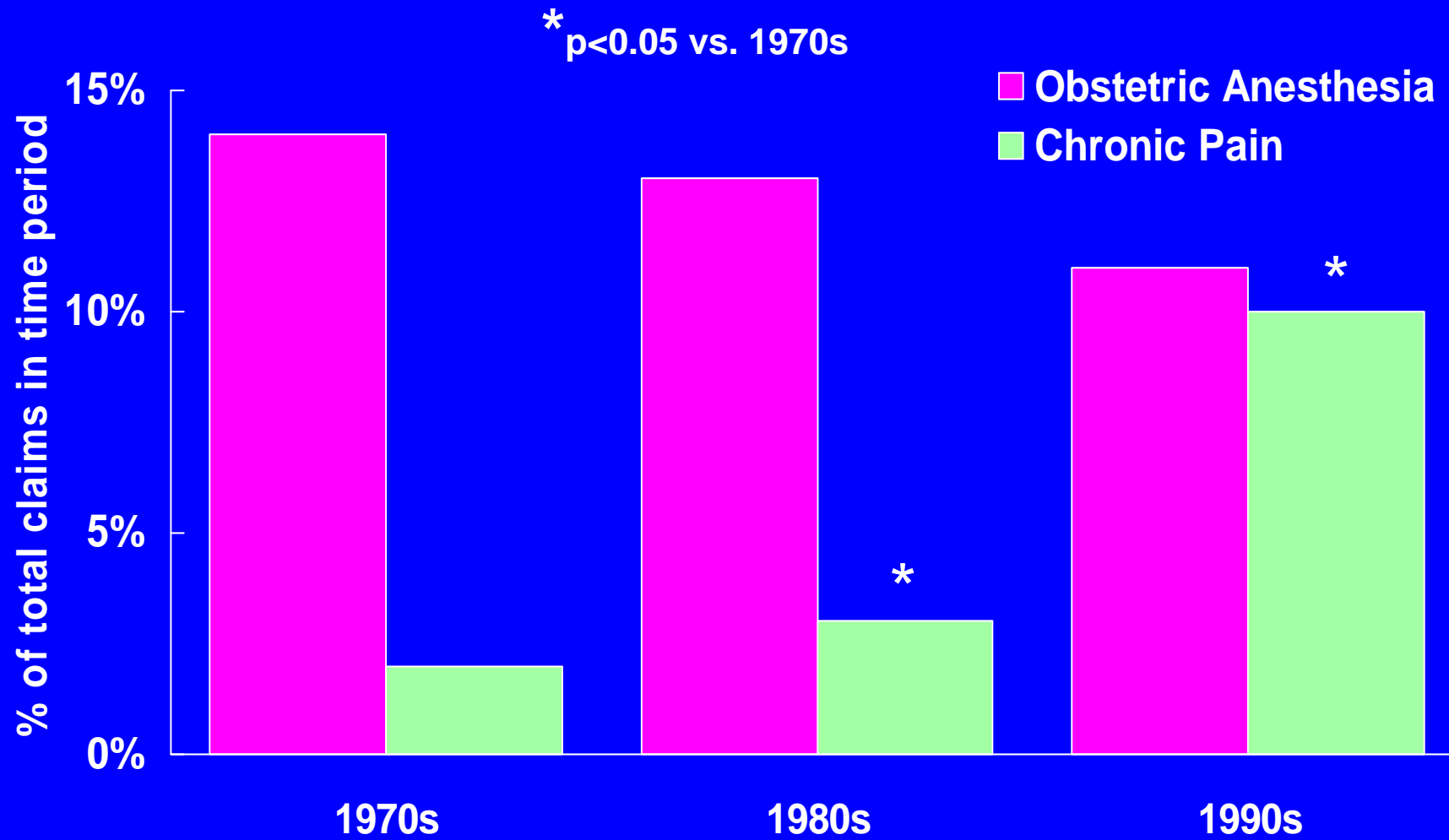
ASA Closed Claims  
N=6448

# **“Sentinel Events” Associated with Anesthesia**

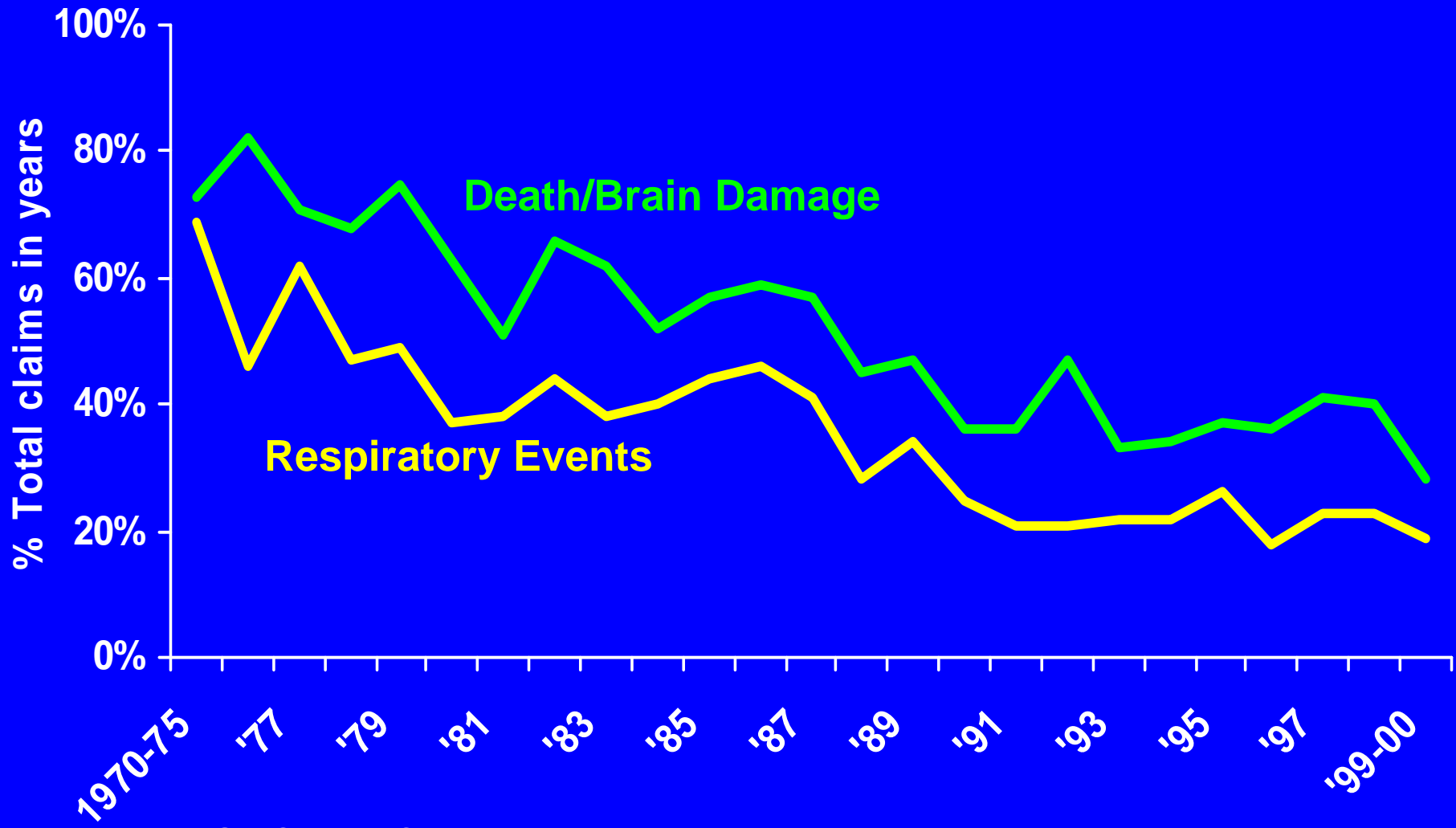
	<b><u># Claims</u></b>
<b>Difficult Intubation</b>	<b>359</b>
<b>Esophageal Intubation</b>	<b>208</b>
<b>Aspiration</b>	<b>137</b>
<b>Ulnar Neuropathy</b>	<b>272</b>
<b>Brachial Plexopathy</b>	<b>216</b>
<b>Spinal Cord Injury</b>	<b>210</b>

**ASA Closed Claims  
N=6448**

# Proportion of Chronic Pain and OB Claims by Decade



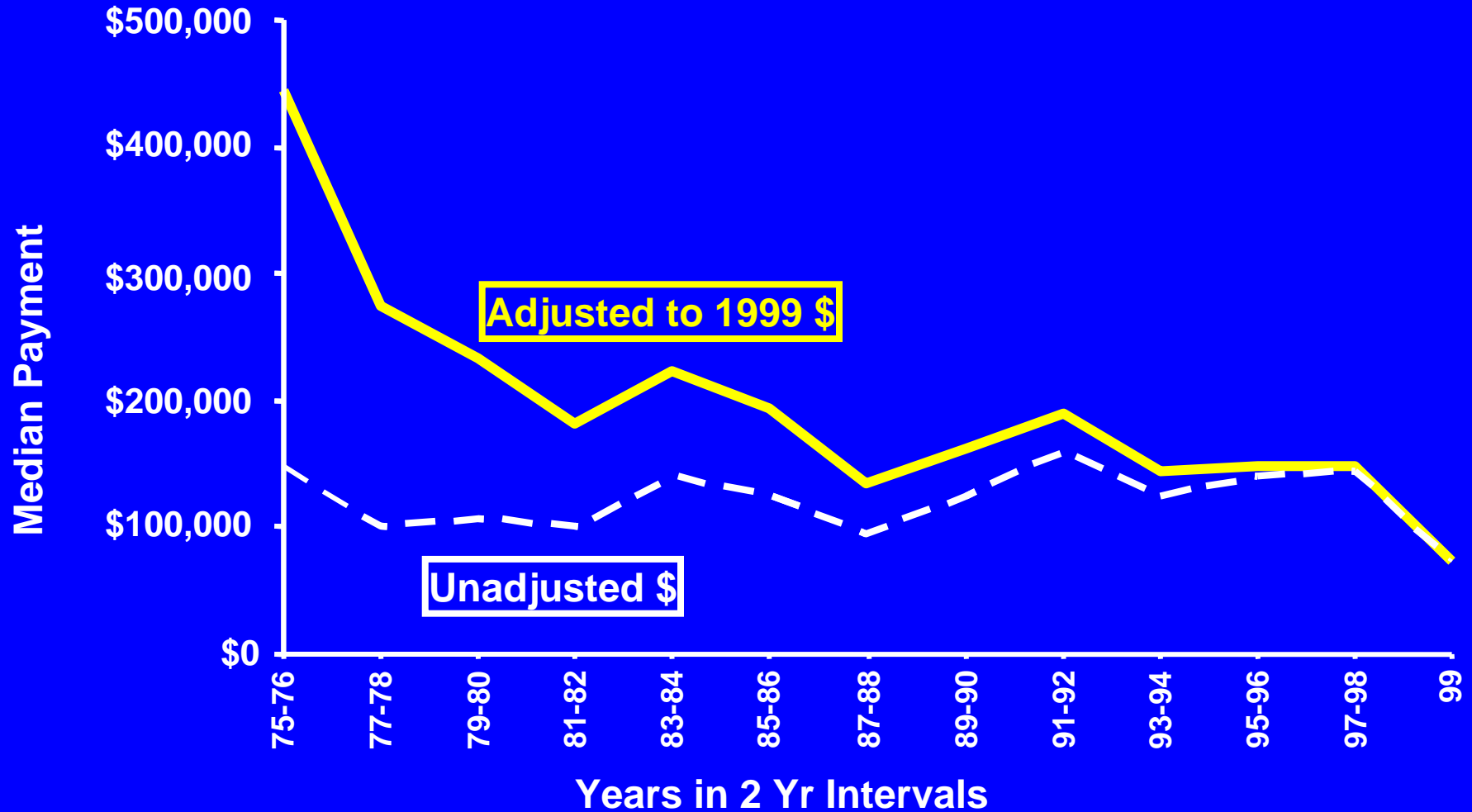
# Trends in Death and Permanent Brain Damage Intraoperative General Anesthesia



ASA Closed Claims  
N=6448

Cheney et al.: Anesthesiology 2006; 105:1081-6

# Adjusted vs Unadjusted Payments in Lawsuits 1975-1999



ASA Closed Claims  
N=6448

# Anesthesia Liability Trends

- **Decrease in death**
- **Increase temporary injuries**
- **Fewer payments**
- **Lower payment amounts**



# Emerging Concerns

- **Regional anesthesia**
- **Central vascular catheters**
- **MAC**
- **Burn injury**



# Unrecognized Epidural Hematoma

- 65 y.o. ASA 3 man
- Thoracotomy under GA
- Surgeon asks for thoracic epidural
- Block “slow” to wear off
- Epidural hematoma
- Persistent leg weakness



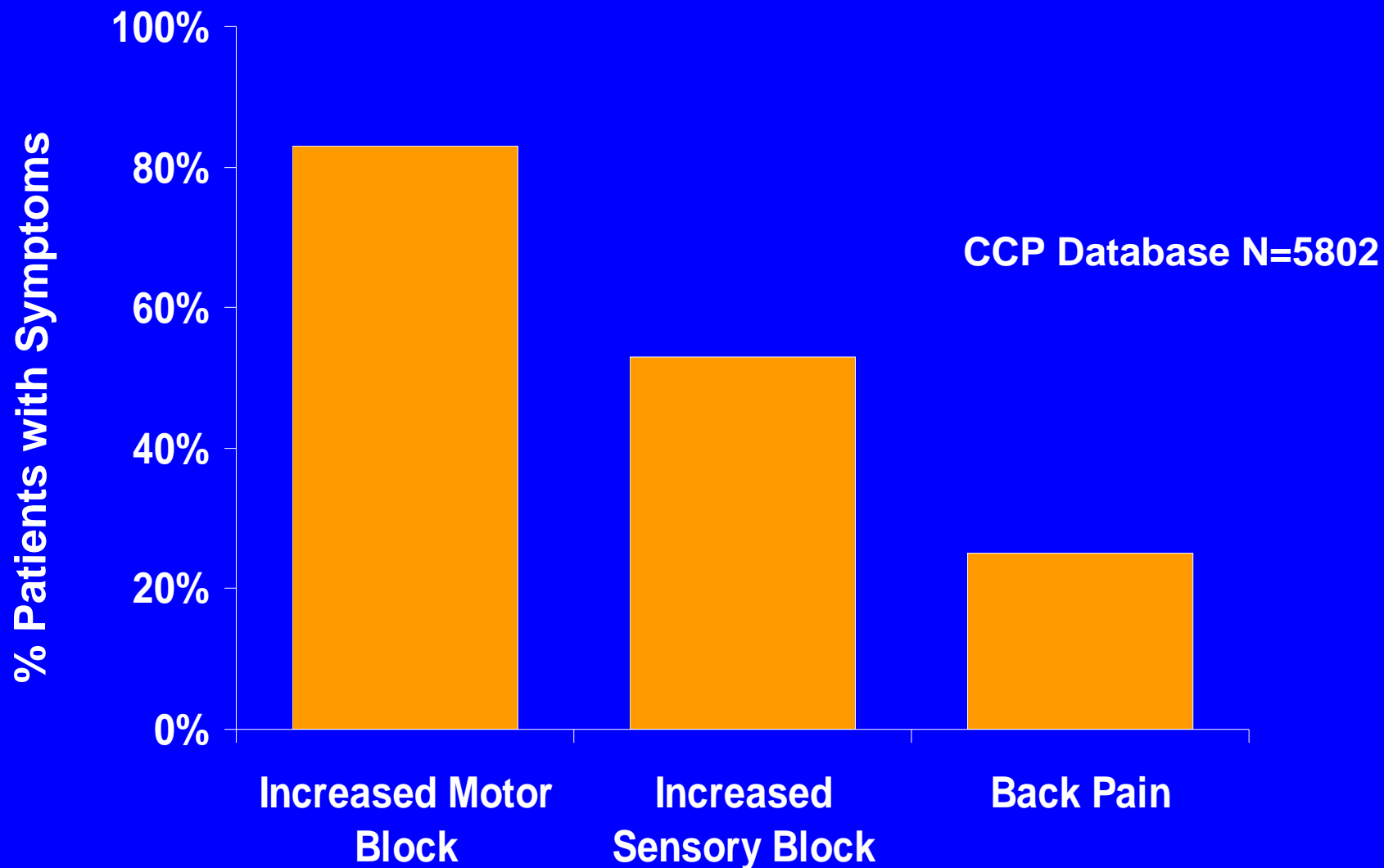
## **Associated Factors for Epidural/Spinal Hematoma in Regional Anesthesia Claims 1980-1999 (n=36)**

<b>Any coagulopathy</b>	<b>26 (72%)</b>
<b>Catheter removed on anticoagulation</b>	<b>6 (17%)</b>
<b>Needle trauma above L1</b>	<b>6 (17%)</b>
<b>Symptom onset (mean)</b>	<b>POD 1.1 (range 0-3)</b>
<b>Time of diagnosis (mean)</b>	<b>POD 2.1 (range 0-5)</b>

**ASA Closed Claims N=5805**

**Lee et al. Anesthesiology 2004; 101:143-52**

# Symptoms Associated with Neuraxial Hematoma (n = 36)



Lee et al. Anesthesiology 2004; 101:143-52

# **Clinical Implications: Neuraxial Block and Anticoagulation**

- **Monitor for symptoms/signs**
- **Weakness most prominent – not pain**
- **High index of suspicion**
- **R/O epidural hematoma promptly**

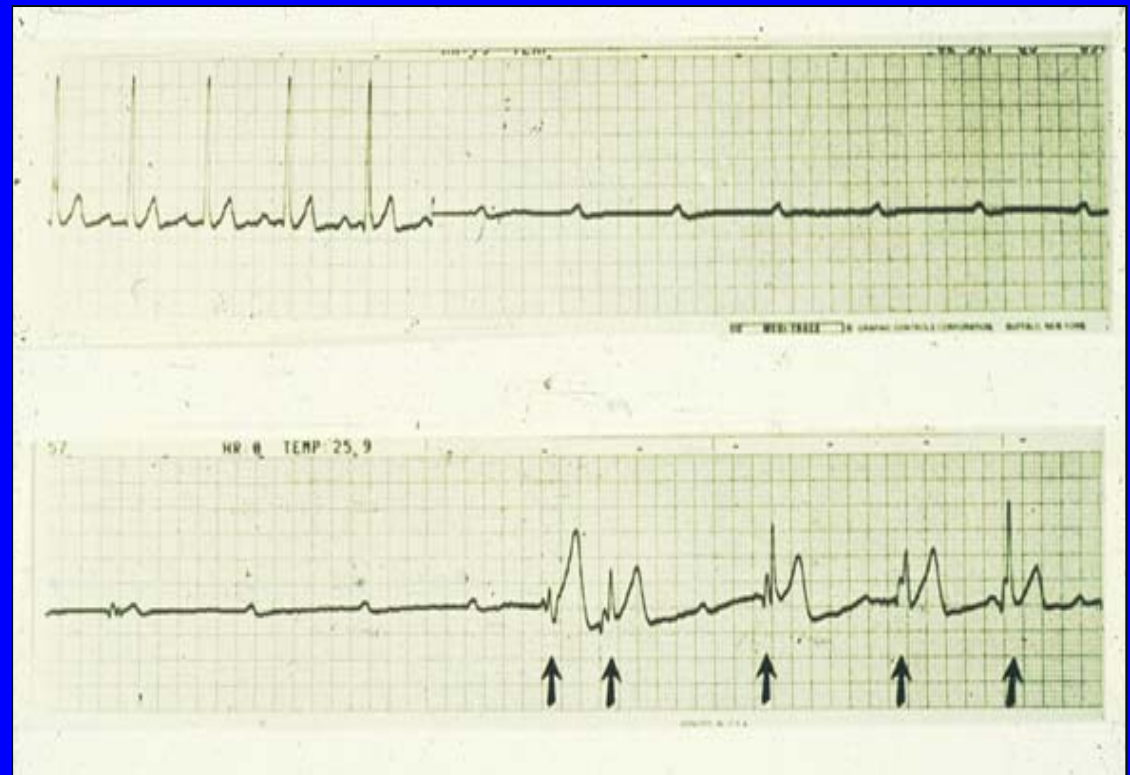
# Neuraxial Cardiac Arrest

- 25 year old ASA 1 female
- C-section under SAB
- T4 level with HR 50/min
- 30 min after block, sudden cardiac arrest
- Resuscitation over 10 min
- Sustained brain damage



# Definition of Neuraxial Cardiac Arrest

**Sudden and unexpected severe bradycardia and/or asystole occurring during neuraxial block with relatively stable hemodynamic events preceding the event.**



**Chester WL: Anesthesiology 1988; 69:601**

# Major Complications of Regional Anesthesia

- 56/158,083 regional blocks
- 10 cardiac arrests/  
41,079 SAB (2.7 per 10,000)
- Deaths: 4 (3 SAB)
- Nerve injury (14 with SAB)
  - Lidocaine 14.4/10,000
  - Bupivacaine 2.2/10,000

*Anesthesiology 2002; 97:1274-80*

## *Major Complications of Regional Anesthesia in France*

*The SOS Regional Anesthesia Hotline Service*

*Yves Auroy, M.D., Dan Benhamou, M.D., Laurent Bagues, M.D., Claude Ecoffey, M.D., Bruno Falissard, M.D., Ph.D., Frederic Mercier, M.D., Ph.D., Herve Bouaziz, M.D., Ph.D., Kamran Samii, M.D.*

# Bradycardia during Spinal and Epidural Anesthesia

- 6,663 neuraxial blocks
- 46 (0.7%) severe bradycardia
- Risk factors for HR<40
  - Baseline HR<60 (OR=14.1)
  - Male gender (OR=2.1)
- May occur anytime during case
  - Mean 63.0 ± 8.1 min

Anesthesiology 2003; 99:859-66

*Severe Bradycardia during Spinal and Epidural Anesthesia Recorded by an Anesthesia Information Management System*

*Jonathan B. Lesser, M.D., Kevin V. Sanborn, M.D., Rytis Valskys, M.D., Max Kuroda, Ph. D., M.P.H.*

# Treatment of Bradycardia/Hypotension Associated with Neuraxial Block

**Treat aggressively!**  
**Pharmacologic Treatment**

Heart rate

Drug

<60

Atropine 0.5-1.0 mg

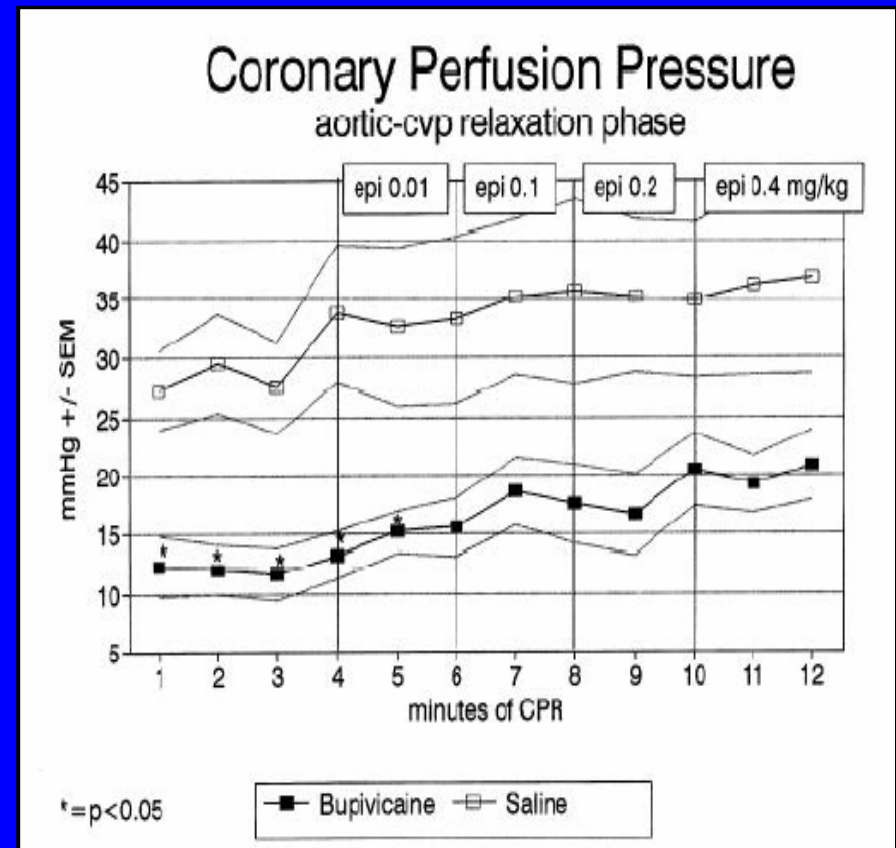
<50

Ephedrine 10-20 mg

<30

Epinephrine 0.1 mg

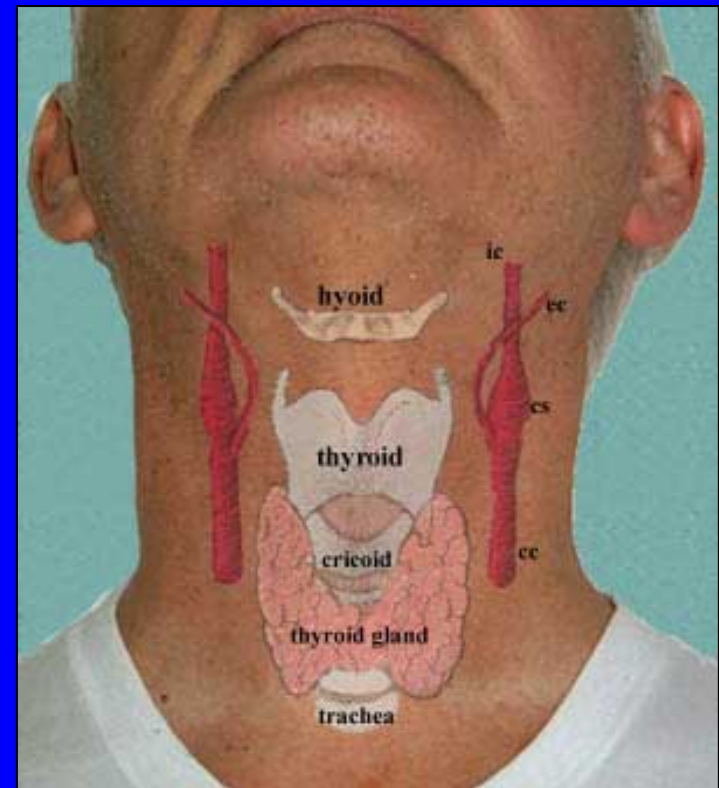
**Asystole Epi. 1.0 mg (0.01-0.02 mg/kg), up to 0.1 mg/kg**



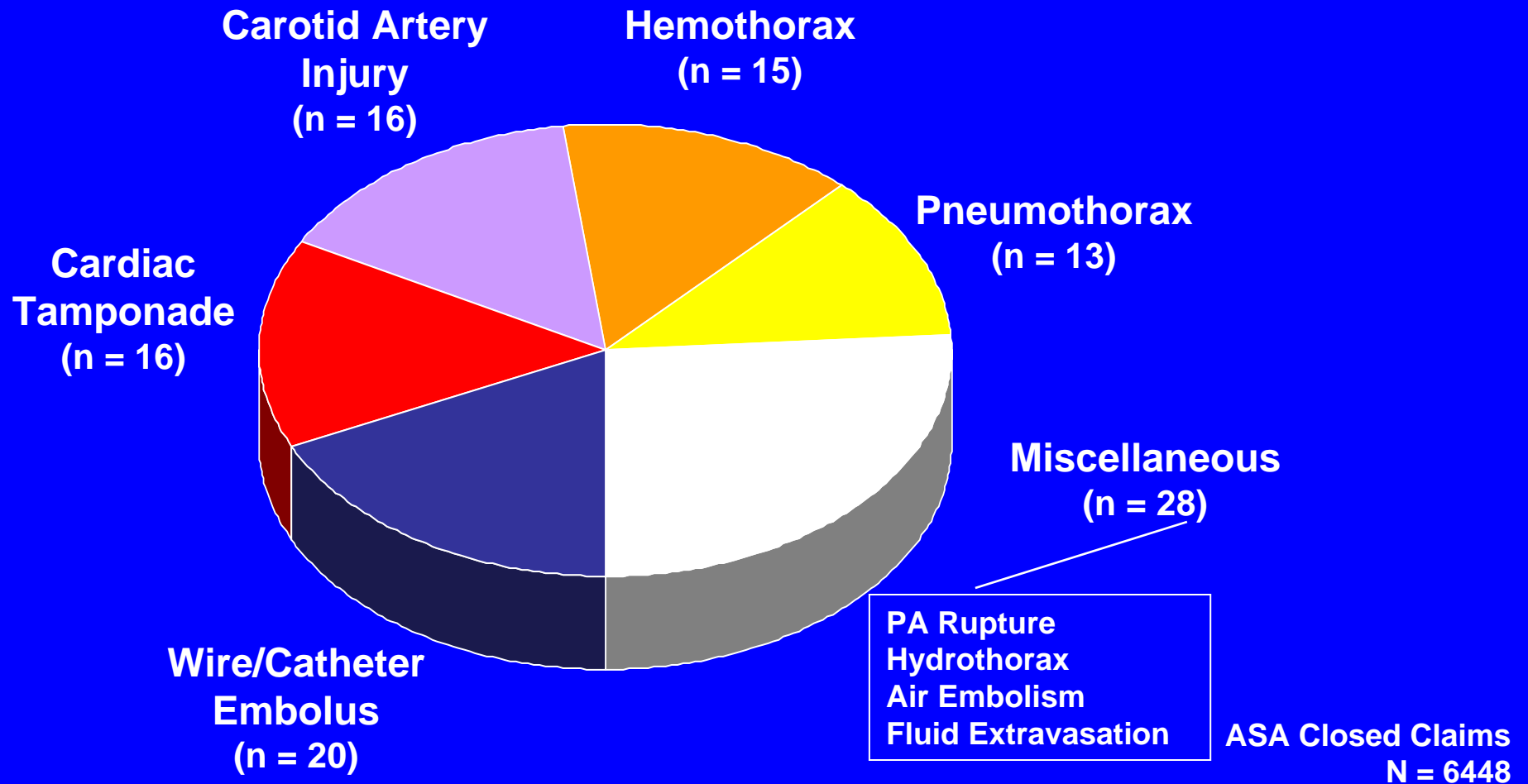
**Rosenberg, et al.:**  
**Anesth Analg 1996; 82:84-7**

# Carotid Artery Injury

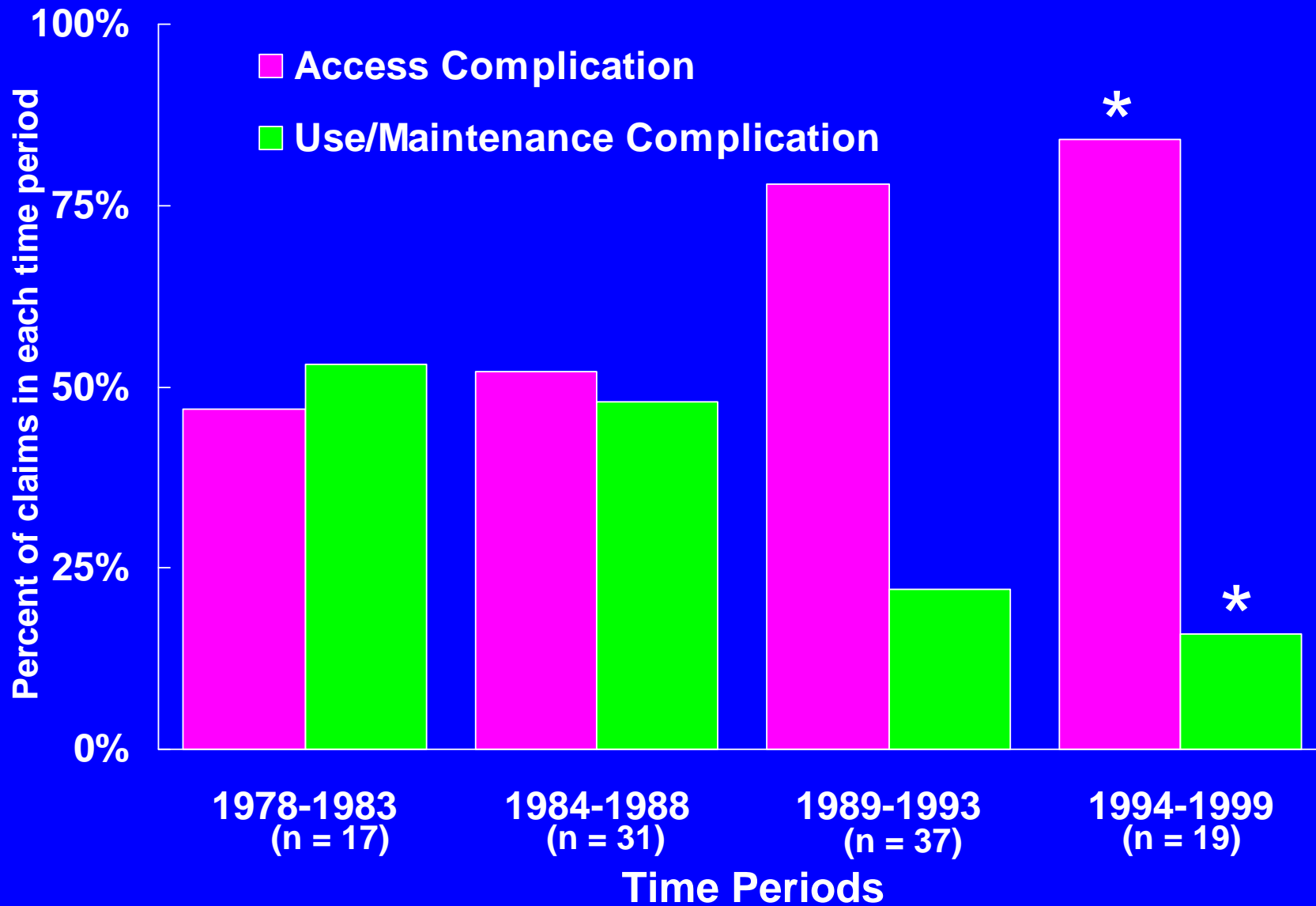
- 67 year old ASA 4 female
- Multiple myeloma, CAD, IDDM
- ORIF pathological femur Fx
- Right carotid artery cannulated with PA introducer
- Slow to awaken/hemiparesis
- Right embolic stroke



# Types of Central Line Complications (n = 108)



# Proportion of Claims or Injuries Related to Vascular Access or Catheter Use/Maintenance



# Ultrasound Guidance for IJ



# Ultrasound-Guided Cannulation of IJ

	<u>Landmark (n=83)</u>	<u>Ultrasound (n=77)</u>
Successful cannulation	54	73*
First attempt (%)		
Attempts per cannulation	2.8 ± 3.0	1.4 ± 0.7*
Mean ± SD		
Time per cannulation (s)	117 ± 136	61 ± 46*
Mean ± SD		
Arterial punctures	7	1

Troianos et al.:  
Anesth Analg 1991; 72:823-6

# Recommendations: Ultrasound Guidance

- “Experienced anesthesiologists can continue to place most CVCs without ultrasound guidance.”
- Use in difficult patients



Institute of Medicine Report 2001,  
Rothschild (Chapter 21)

## ■ CLINICAL INVESTIGATIONS

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Anesthesiology 2006; 104:228-34

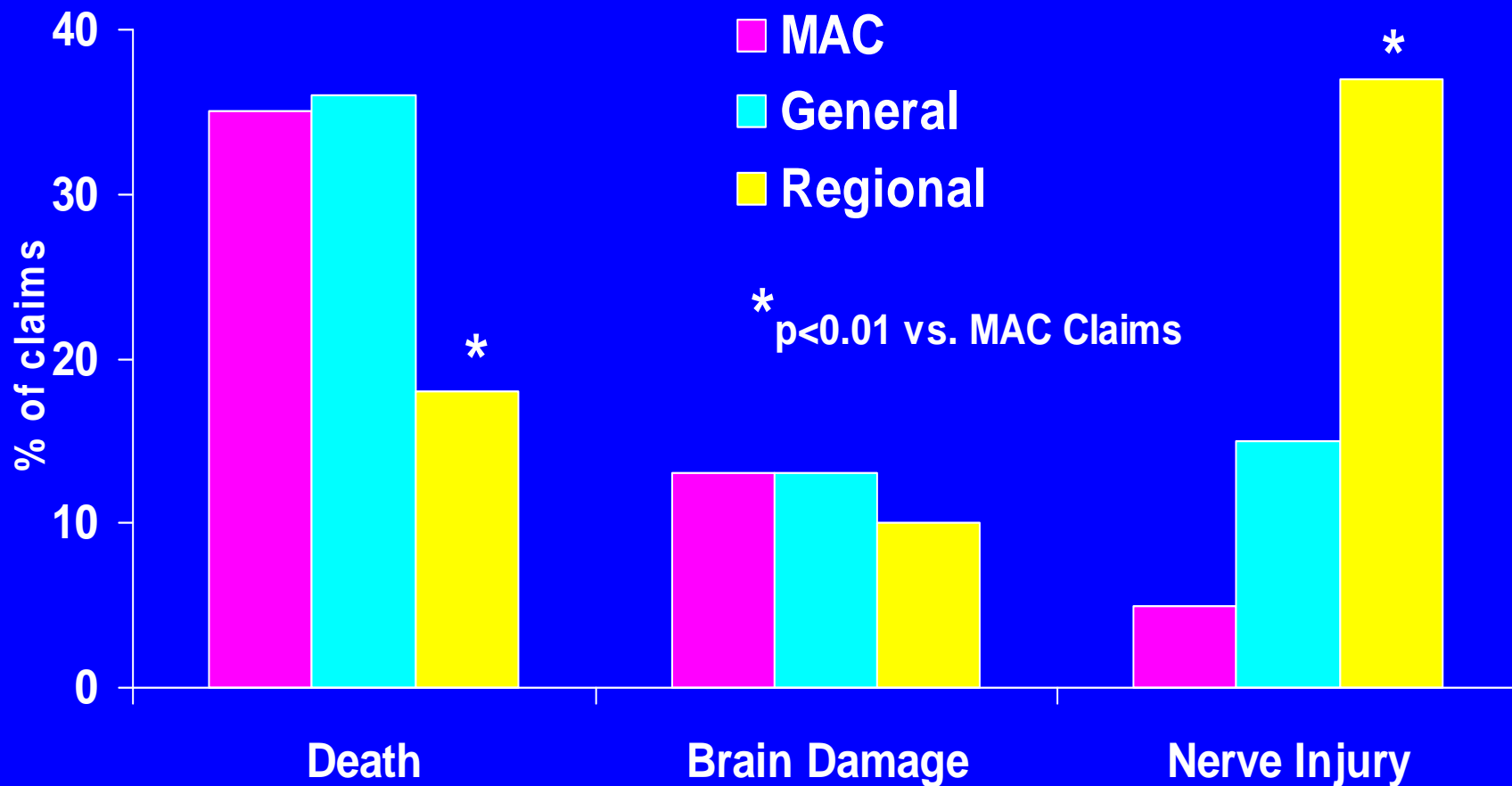
© 2006 American Society of Anesthesiologists, Inc. Lippincott Williams & Wilkins, Inc.

### *Injury and Liability Associated with Monitored Anesthesia Care*

#### *A Closed Claims Analysis*

Sanjay M. Bhananker, M.D., F.R.C.A.,\* Karen L. Posner, Ph.D.,† Frederick W. Cheney, M.D.,‡ Robert A. Caplan, M.D.,§  
Lorri A. Lee, M.D.,|| Karen B. Domino, M.D., M.P.H.#

# Type of Anesthesia Associated with Injuries



# Characteristics of MAC Claims Associated with Oversedation - 1 (n=25)

<u>Characteristic</u>	<u>n (%)</u>
Age 70 or older (n=24)	10 (42%)
ASA PS 3-5 (n=22)	10 (45%)
Obese (n=18)	6 (33%)
Endoscopy (n=25)	6 (24%)

Bhananker et al.: Anesthesiology 2006; 104:228-34

# Characteristics of MAC Claims Associated with Oversedation - 2 (n=25)

## Sedative agents

(where known) (n=22)

n (%)

Propofol alone

2 (9%)

Propofol plus others

11 (50%)

Benzodiazepine + opioid

7 (32%)

Benzodiazepine or opioid alone

2 (9%)

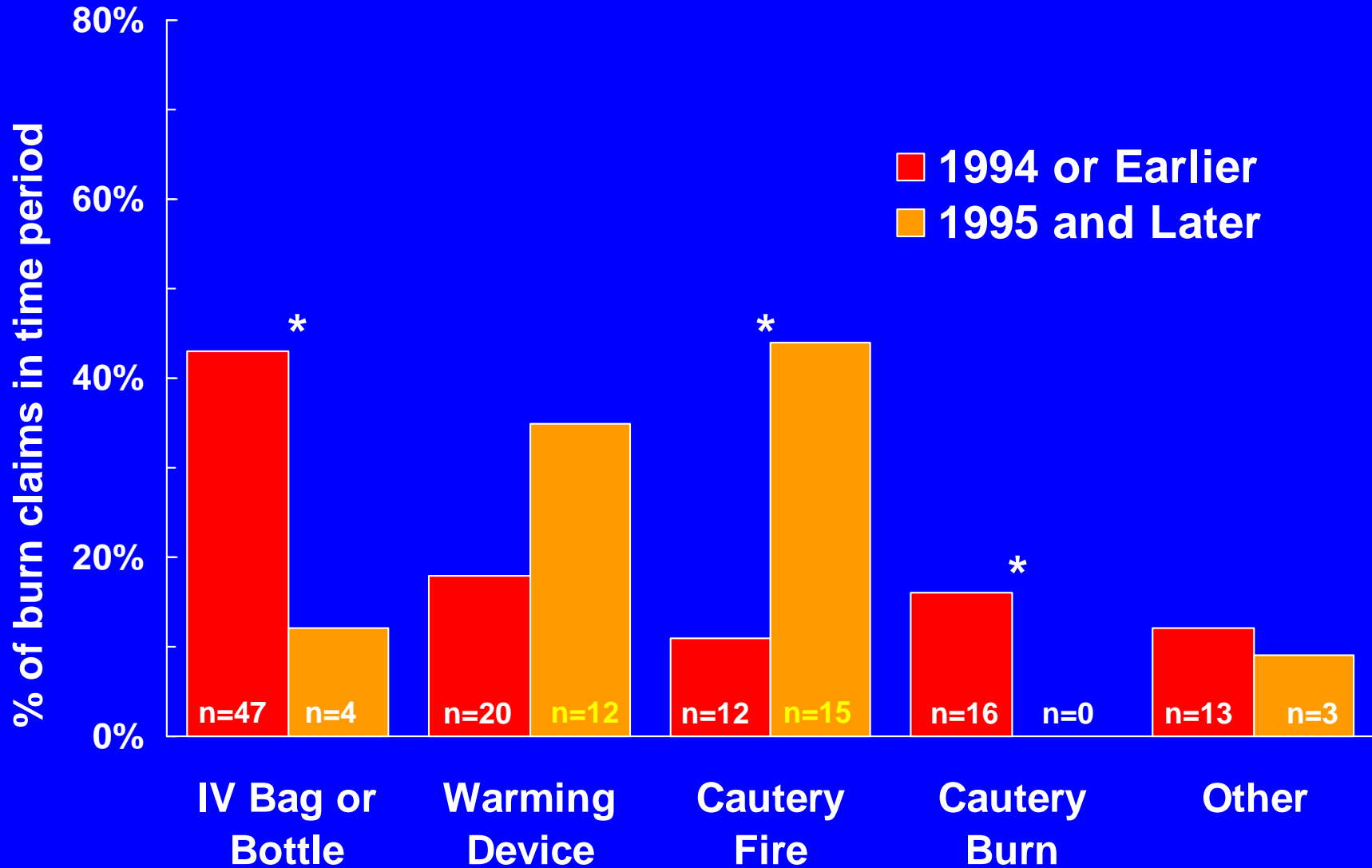
**Bhananker et al.: Anesthesiology 2006; 104:228-34**

# Characteristics of MAC Claims Associated with Oversedation - 3 (n=25)

	<u>n (%)</u>
<b>Monitoring in use (n=25)</b>	
Pulse oximetry only	17 (68%)
Both pulse ox and capnography	5 (20%)
Neither	3 (12%)
<b>Preventable by better monitoring (n=25)</b>	11 (44%)
Pulse oximetry	3 (12%)
Capnography	5 (20%)
Both	1 (4%)

Bhananker et al.: Anesthesiology 2006; 104:228-34

# Trends in Burn Claims Over Time



\* p < 0.05 between time periods

# On-Patient Fires During Monitored Anesthesia Care

20 (17%) of 121 MAC claims involved burns due to on-patient fires.



Mostly head and neck burns.



The anesthetic care for half of the burns was substandard.



Most (89%) plaintiffs received payment.  
Median: \$71,375  
Range: \$8,175-\$321,323

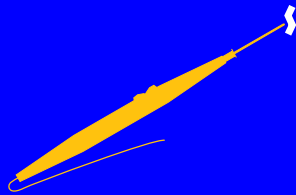


Bhananker SM, et al.  
Anesthesiology, 104:  
228-34, 2006.



# On-Patient Fires During Monitored Anesthesia Care

20 (17%) of 121 MAC claims involved burns due to on-patient fires.



**Electrocautery**  
was always  
the ignition source.



**O<sub>2</sub>**  
**Supplemental Oxygen**  
was always  
the oxidizer.

**Alcohol prep solution and drapes**  
were the most common fuel.

Bhananker SM, et al. Anesthesiology, 104: 228-34, 2006.

# Fire Safety Video

- Excerpt from an Educational Booth Show
- Presented at 2006 ASA Annual Meeting



# Recommendations to Avoid Fires During MAC

- Open face draping
- Administer O<sub>2</sub> based upon SpO<sub>2</sub>
- Use compressed air
- Stop O<sub>2</sub> 1 min. before cautery use
- Avoid alcohol prep solutions

# Fuels Commonly Encountered During Surgery

- **Prepping Agents**
  - **Degreasers** (ether, acetone)
  - **Aerosol adhesives**
  - **Alcohol** (also in suture packets)
  - **Tinctures:** Hibitane (chlorhexidine digluconate), Merthiolate (thimerosal), DuraPrep (iodophor)
- **Ointments**
  - **Petrolatum** (petroleum jelly)
  - **Tincture of Benzoin** (74% to 80% alcohol)
  - **Aerosols** (e.g., Aeroplast)
  - **Parafin**
  - **Lacrilube**

# OR Burns

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



# Summary



- **ASA Closed Claims Project**
- **Decreasing death/brain damage**
- **Emerging concerns**
  - **Regional anesthesia**
  - **Central vascular catheters**
  - **MAC**
  - **Burn injury**

