# Improving Usability and Patient Safety: Lessons from Anesthesiology

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# Who am I?

Clinical Anesthesiologist

Informatics Post Doctoral Fellow

Masters Degree in Geography

Former software developer

**Not your typical EMR user…**

# Why am I here?

What can Anesthesiology tell us about usability?

**A century of usability experience**

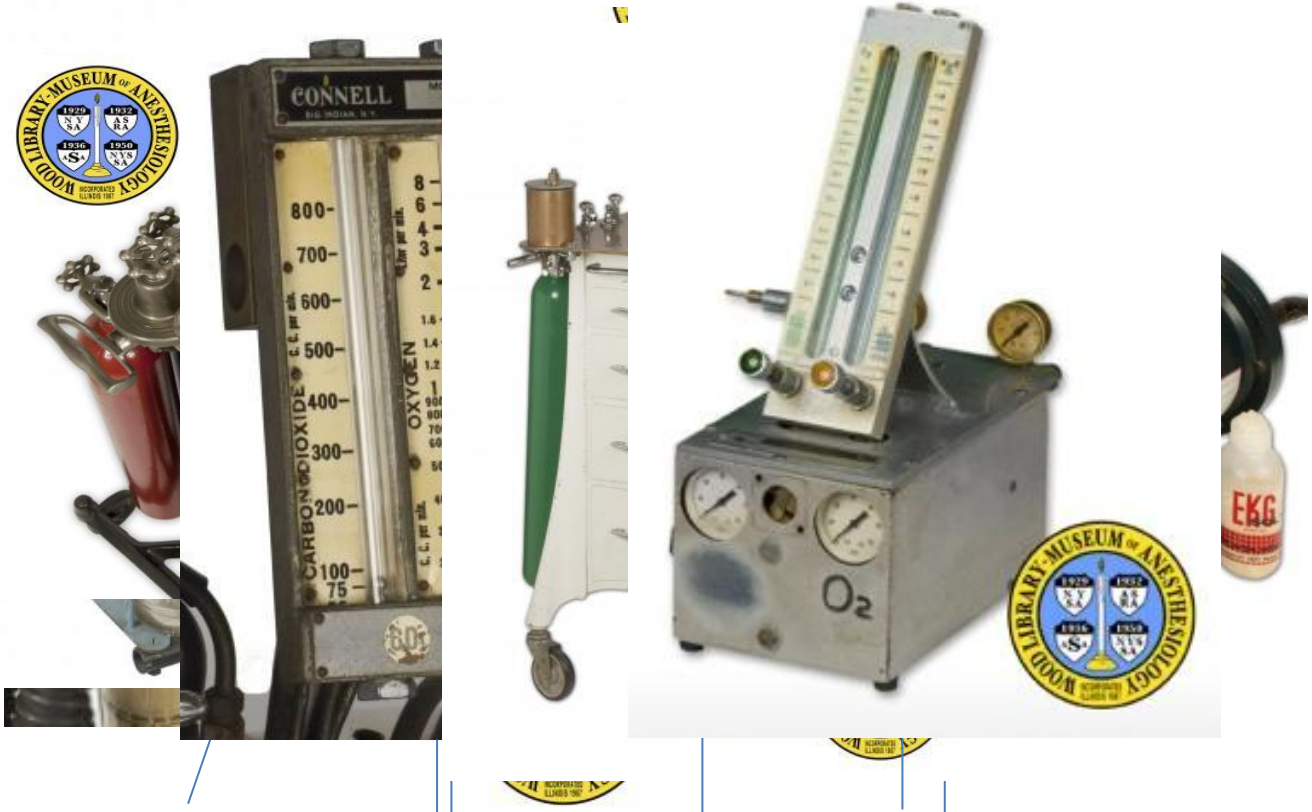
1911 — 2011

1935 — 1960 — 1985

What about Patient Safety?

20 fold decrease in mortality

# Innovation didn't happen all at once….




~1915 1924 1930s 1952 ~1960s

1911 2011

1935 1960 1985

Photographs courtesy of the Wood Library Museum - http://www.woodlibrarymuseum.org/museum/

# Error Analysis and Safety 1950s-1970s

## Engineering Safety

Uniform connector sizes for breathing circuits

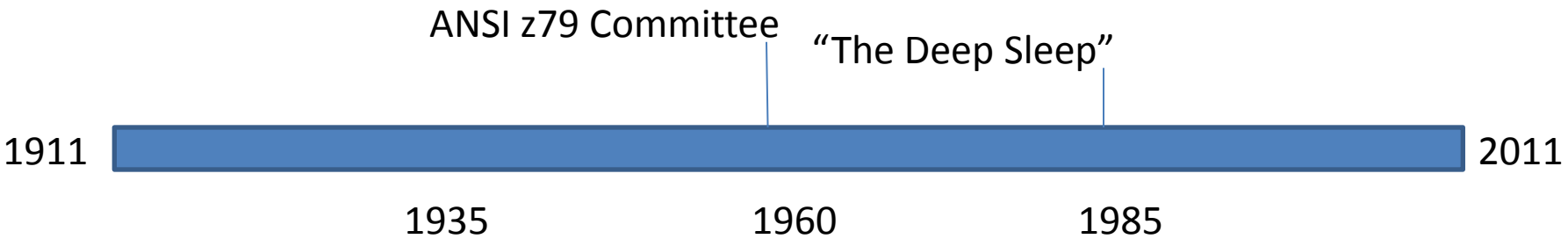
“Touch identification” of oxygen flow control

Pin and Diameter indexing

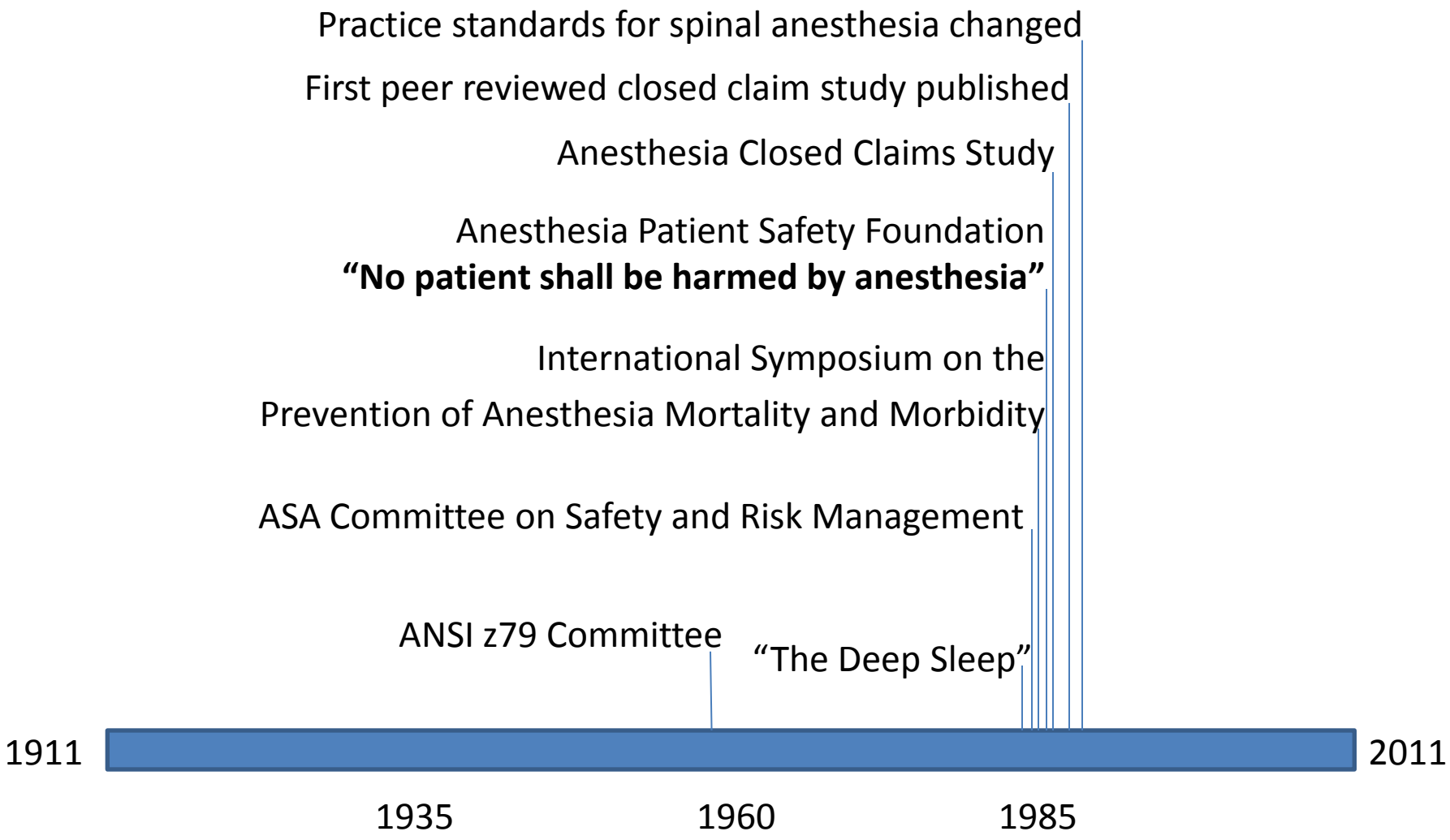
## “Unacceptable Risk”

Perceived mortality 1-2 per 10,000

Disproportionate malpractice



# Error Analysis and Safety - 1980's



# Anesthesia Today

- Mortality 10-20 times lower than 1980s
- Liability payout proportional to workforce
- *Miller's Anesthesia* (2009) includes chapters on:
  - Informatics, Human Factors, Patient Safety, and Quality Improvement

**"A Culture of Patient Safety"**

Data collected and analyzed for multiple adverse outcomes

**Small changes that make sense, make a difference**

# Parallels to EMR Adoption?

September 26, 2011 | 9:35 AM | By Carey Goldberg

'My Dog Has Better Medical Records Than My Daughter'

FILED UNDER: Medicine/Science, Personal Health

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Electronic Medica
y Concerns

January 04, 2011

The Institute of Medicine's Co
ember to review concerns
surrounding the safety of elec
6-member committee
conducted a yearlong study o

by MARGALIT GUR-ARIE

highwaygirl67/flickr

1911 2011

1935 1960 1985 ?

# Where are we now…

**Anesthesia**

"no patient shall be harmed by Anesthesia"

- Anesthesia Patient Safety Foundation

Standardized process to evaluate mishaps

- Anesthesia Closed Claims Database

**Health Information Technology**

"no patient shall be harmed by an EMR?"

- EMR Patient Safety Foundation (???)

Standardized process to evaluate mishaps?

- EMR Adverse Outcomes Database (???)

# Are more usable systems safer?

Fixing the obvious

**Make it easy to do it right, hard to do it wrong**

- Anesthesia - Pin Index Safety System
- EMR – Dose-Range Checking

Less obvious, but important

- **Some problems require data to understand**
- Closed Claims Project beneficial in < 3 years
- **Independent review is critical for sensitive issues**

# …The Future

A more usable EMR

- Support needs of clinicians
- Improve work flow and efficiency
- Reduce cognitive effort

Facilitate continuous quality improvement

Patient Safety

**Make it easy to do it right, hard to do it wrong**

# Acknowledgements

Salary support through a training fellowship from the Keck Center - National Library of Medicine Training Program in Biomedical Informatics of the Gulf Coast Consortia (NLM Grant No. T15LM007093)