To Err is Human, to AIR is to Improve

Patrick Guffey, MD
Assistant Professor, University of Colorado
Associate Medical Director
AQI AIRS Committee Chair

Disclosures
Travel & Expense support from the ASA, AQI, Omnicell, and Epic
Presentation contains unpublished data from the AQI registries
I am very biased towards event reporting and data

Objectives
1. Identify the basic principles of errors in medicine
2. Analyze how anesthesia incident reporting can improve your practice
3. Illustrate the principles that help make a successful incident reporting system
4. Describe the AQI’s reporting initiatives
4. Discuss the results and impact of the national anesthesia incident reporting system and NACOR

Video

To Error is Human
What’s wrong with this picture?
Humans make hundreds of mistakes every day

To Error is Human
Death every 5.5 minutes
100K a year in US
10X Significant harm
10X Minor harm
10X Near Miss
How Safe is Healthcare?

<table>
<thead>
<tr>
<th>Activity</th>
<th>Number of Encounters for Each Death</th>
</tr>
</thead>
<tbody>
<tr>
<td>Driving in US</td>
<td>100K</td>
</tr>
<tr>
<td>Scheduled Commercial Airlines</td>
<td>10M</td>
</tr>
<tr>
<td>European Railroads</td>
<td>1M</td>
</tr>
<tr>
<td>Nuclear Power</td>
<td>100K</td>
</tr>
<tr>
<td>Chemical Manufacturing</td>
<td>1M</td>
</tr>
<tr>
<td>Mountaineering</td>
<td>100K</td>
</tr>
<tr>
<td>Bungee Jumping</td>
<td>10M</td>
</tr>
<tr>
<td>Health Care</td>
<td>100,000</td>
</tr>
</tbody>
</table>

Total lives lost per year: 100,000

Number of encounters for each death: 10 100 1,000 10,000 100K 1M 10M

Risk of Harm

- Handing over a child
- Checking a bag

The risk is the same

Patient Harm in the OR

Two Million Cases – AQI Registries PACU and Operating Room

- Minor: 10.21%
- Major: 0.52%
- MORTALITY 0.03%

Risk of Anesthesia - Perioperative

Perioperative Mortality
1.85% all cause
(0.07% hernia-5.97% major vascular)

Preoperative  Surgery  Inpatient  Recovery

Perioperative Harm

Netherlands, 3 million cases, Noordzij PG. Anesthesiology 2010

What is an Error?

Circumstances in which planned actions fail to achieve the desired outcome
- Dr. James Reason

Adverse Event - Patient did not respond optimally to an appropriate treatment
  - Side Effects, Patient Differences, Expected complications
  - Undesirable & Unintentional

Error - an adverse event that could be prevented given the current state of medical knowledge.
Basic Tenets of Human Error

Everyone commits errors.

Human error is generally the result of circumstances beyond the control of those committing the errors.

Systems or processes that depend on perfect human performance are inherently flawed.

Types of Errors

The resident pathogens: fatigue, inadequate rest, pressure, inadequate design and construction deficiencies.

Types of Errors

Active Failures
Acts committed by those in direct contact with the patients: slips, lapses, fumbles, mistakes, procedural violations.

Latent Conditions
The resident pathogens in the system: time pressure, inadequate equipment, fatigue, non failsafe procedures, design and construction deficiencies.

Near Misses

A Near-Miss is an opportunity to improve safety, health, environmental and security aspects of an operation based on a condition or an incident with potential for more serious consequence.

A Near-Miss is an unplanned event that did not result in injury, illness, or damage - but had the potential to do so.

A Near-Miss is a close call.

A Near-Miss is an event that does not result in harm, but may result in an elevated pulse, profuse sweating, blanching of the skin, abdominal cramping and the speaking of involuntary expletives on the part of the anesthesiologist.

Pyramid of Safety

Near Miss: 29 Minor Injury
300 Incidents (near miss)
1,200 Minor Injuries
38 Lost Work Cases
300 Reported Injuries
28 Fatal Injuries
1,865 Unreported Incidents
8,865 An-Miss/Injuries-estimated

Preventing Errors - Near Miss

Near Miss: 29 Minor Injury
300 Incidents (near miss)
Reducing Injury

Culture of Medical Error

Past: Individual is always responsible
Shame and blame culture
Hiding mistakes
Improvement difficult
Low morale - fear

Future: Culture of Safety
Recognise systems contribute
Speak openly about mistakes / errors
Concerns are valued and acted upon
Participants take ownership

The System

Humans make mistakes
The system stops human error from reaching the patient
Systems or processes that depend on perfect human performance are inherently flawed

Fix the System

Incredibly complex
Dependencies on everything and everyone
Highly variable
Can’t fix what we don’t know about

A history of Reporting in Aviation

1974 - TWA Flight 514
Pilots misunderstood Air Traffic Control instructions and the plane impacted Mt. Weather on final approach
Investigation yielded near misses from the exact same problem and one airline reported the issue to its pilots
The Aviation Safety Reporting System was formed to detect and collect near misses. This system is administered by NASA

A History of Reporting in Anesthesia

The Australian Incident Monitoring System
Created 20 years ago, retired in 2005. Was expanded to all events, internationally and lost anesthesia significance. Reporting stopped.
The Australian and New Zealand Tripartite Anaesthetic Data Committee
Formed in 2006, now has a new electronic reporting system, the AQI system uses much of the same terminology / format
The Critical Incident Reporting System (CIRS)
Successful system in Switzerland, may be expanded across Europe
A History of Reporting in Anesthesia

University of California, San Francisco & University of Colorado
Focused on near misses
3500 reports from faculty, housestaff and CRNA/AAs
Researched why individuals choose not to report and optimized system to address needs of anesthesiologists
With interventions, reporting increased ~20 fold compared to using hospital systems.

United States - Patient Safety Organization
Creates a framework of aggregating information across institutions
Approved in 2009
Allows for a national anesthesia reporting system that is secure

Disincentives for Reporting

Cognitive and behavioral reasons
- Poor education about what constitutes an event
- Concern over legal or credentialing consequences
- Personal shame
- Fear of implicating others

Systems reasons
- Time consuming
- Difficult to access
- Lack of anonymity
- Potentially discoverable
- Slow infrastructure
- Arduous, poorly designed interfaces
- Lack of feedback and follow-up, no perceived value

Tenets of a successful system

Secure and non-discernable
AIRS is part of AQI which is a registered PSO
Quick entry time and ease of use
Balance of data resolution against time
Accessibility
Ideally, from any computer, anywhere in the world
Captures both near misses and incidents of patient harm
Option of anonymity
Searchable
Summary reports to departments, hospitals
Many events are locally influenced

Near Miss Reporting

To Err is Human, to AIR is to Improve
Benefits of Reporting

Advance the safety of perioperative care

Discover system issues you can fix

Gather quantitative data to influence organizations

Avoid repeating mistakes!

AIRS – Anesthesia Incident Reporting System

Over 1000 cases
95% Confidential

70 Unique institutions

100 Unique providers

30 Newsletter Reports

www.aqairs.org
AIRS – Anesthesia Incident Reporting System

Hazards of Electronic medical records and AIMS
Air embolus during ERCP
Drug errors due to shortages
Importance of teamwork
Place for cognitive aids

Recommendations

Form a QI group, appoint a QI officer
Report patient harm and near misses locally and nationally
Monthly M&M meetings and start a newsletter
Join the AQI!
Share your trends and data with your group
Use your data to influence your hospitals and surgicenters

Ski safely
Don’t CRASH

AIRS

Severities of cases

Type of cases

Preventable?

Importance of teamwork

Place for cognitive aids

AQI Registries

NACOR
AIRS
PPAI
Closed Claims

www.aqihq.org

patrick.guffey@childrenscolorado.org