AIRS Integration with Epic Workshop

The merger of quality and informatics

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Presentation contains unpublished data from the AQI registries and data, slides used with permission

Objectives

1. Discuss the basis of human error
2. Review the theory and benefits of reporting
3. Describe how to participate in event reporting
4. Review the latest results from the AIRS database
5. Discuss Epic / EMR Integration
6. Brainstorm and plan for the future!
**Triple Aim and Quality Improvement**

**Value Proposition**

\[
V = \frac{Q+S}{E}
\]

Value in healthcare is measured in terms of patient outcomes achieved per dollar expended.

Reward for:
- Best overall care
- Lowest cost
- Minimize complications

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**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?

- Number of encounters for each death
- Total lives lost per year
- How Safe is Healthcare?
- Checking a bag
- Handing over a child
- Risk of Harm
- Risk is the Same
Risk of Harm

Hospital

Chemical Plant

Patient Harm in the OR
Four 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]
What is an Error?

Circumstances in which planned actions fail to achieve the desired outcome

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

Humans make more errors during routine activities, less when focused and thinking critically

Types of Errors

The resident pathogens: equipment, fatigue, non-deficiencies.

Press the inadequate sign and construction
Near Misses

On average, there are 8 errors that occur to result in patient harm.

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

Wharton Risk Center - Wharton School of the University of Pennsylvania

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 window into the future.

Analyzing near misses may represent opportunity.

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Pyramid of Safety

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

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Direct Hits

A **Near-Miss** is a window into the future.

Analyzing near misses may represent opportunity.
Preventing Errors - 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
Recognize 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 administrated 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.

University of California, San Francisco & University of Colorado
Focused on near misses
3500 reports from faculty, housestaff and CRNA/AAs
Re-searched 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
- Ambiguous, poorly designed interfaces
- Lack of feedback and follow-up, no perceived value
Tenets of a successful system

- Secure and non-discoverable
  AIRS is part of AQI which is a registered PSO
- Quick entry time and ease of use
  Balance of data resolution against time
- Accessibility
  Ideal, 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

Well Designed Systems Work

Well Designed Systems Work

Benefits of Reporting

- Advance the safety of perioperative care
- Discover system issues you can fix
- Gather quantitative data to influence organizations
- Avoid repeating mistakes!
Getting what you need
Anecdotal evidence vs. quantifiable reports

How to start
Paper form – all cases or notable events
Collaborate with hospital / facility
Adapt an existing electronic system
Build your own system
Need IT infrastructure and support
Use the AQI’s system
Local vs. national reporting / reports

AQT Registries
NACOR
AIRS
PPAI
Closed Claims
AIRS data

Event Classification

- 1600 Cases
- 90 Institutions
- Hundreds of reporters
- Some are bulk submitted

AIRS data

Procedure Types

- AIRS data
- Procedure Types

AIRS data

Case Severity

- Cases preventable by 1:1
Case Discussion

80yo F for ERCP gallstone pancreatitis
GETA (propofol, lidocaine, inhaled agent) stable vitals
1 hour in – EtCO2 35 ->5, Pulse ox perfusion 9->0.2
No pulse or blood pressure
Supine, CPR, Epi, Calcium, Bicarb, Vasopressin
Complete recovery

Conclusions – ERCP Air embolus

GI and Radiology
ERCP – Airway, medications, 3 arrests
Pressurized air used during the procedure
Instrumentation used
Numerous case reports (21)

Case Discussion

26 yo F for cosmetic surgery
Routine induction until patient started retching
Reached for suction, no suction
Copious vomiting
Bronchoscopy noted vomit in airway
Aspiration pneumonitis, 2 weeks in the ICU
Preventable
Trending

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

Trending IT

Charting on the wrong patient
Sudden system failure
Failure to record vital signs
Failure of pharmacy dispensing systems
Incorrect calculations
Flawed / Incorrect decision support

Distraction from all these issues

Trending - Equipment

After induction, no blood pressure reading, weak pulses – checked O2 sat, didn’t work
No ECG cable in room noticed after case
No BP for an hour
No suction, needed suction
Monitor broken
No capnograph in room
Integrating with the EMR

Good system design is integrated in workflow

What’s the denominator?

Moving towards 100% event capture

Local vs hosted?
Adjusting the navigation functions provided, Please do not use your index finger, Thumb, or Thumbtack functions.

Described

1. Patient
2. Age
3. Race
4. ASA Physical Status
5. Area
6. Time Incident Occurred
7. Anesthesia Staffing
8. Procedure/Service Involved

Event Reporting from Epic

Data sent to AQI

1. Institution ID (ID number given by AQI to provider group)
2. Anesthesia CSN (NEF: This is the contact serial number for the anesthesia encounter)
3. HSB ID (NEF: This is a unique ID for the anesthesia record; the combo of the 52 and 53 encounters)
4. Service Date
5. ASA Score
6. Anesthesia Type
7. Case ID (ORL ID)
8. Service
9. Facility City
10. Facility State
11. Patient Age

Event Reporting from Epic

This second set of data will be passed in if the 4th parameter of your copy of LPP 89122 - AN QI Summary is set to “Yes” and the data is available:

1. Reporter First Name
2. Reporter Last Name
3. Reporter Gender
4. Reporter Years Practicing
5. Reporter Role
6. Reporter Email
Event Reporting from Epic

- Flowsheet row populated
- Close Encounter checks
- Hard stop vs. Soft stop
- Forcing function to create a denominator

AIRS Options

- Local AIRs system
- Integration with QM software
- Connection with NACOR
- Reports back to participating groups
Discussion

The Intersection of Quality and Informatics is:
High Reliability

Conclusions

Medical errors are preventable
System errors predominate
Incident reporting detects system errors
Strong system design leads to better reporting
National databases allow aggregation and earlier detection
Healthcare registries are everywhere - the goal is how do we maximize their potential