Mayo Clinic Mortality Reviews: Next Generation Patient Safety

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Disclosure

- I am fundamentally biased about the potential this work has to save lives, improve systems of care delivery, build effective teams, create a culture of safety and just plain make a difference.
- I am the founder of the international SLS Collaborative & HB Healthcare Safety, SBC and nonprofit

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Agenda

1. Mayo Clinic experience with Mortality Review
2. Tenants of a Safety Learning System
3. Application of Six Sigma analysis and principles
4. Safety Learning System Collaborative Invitation

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St Marys Campus, Mayo Clinic Hospital

Annual Patient Encounters

Total clinic patients:
1,260,000

Hospital admissions:
131,000

Hospital days:
608,000

Hospital deaths:
1000-1200

Employees:
> 65,000

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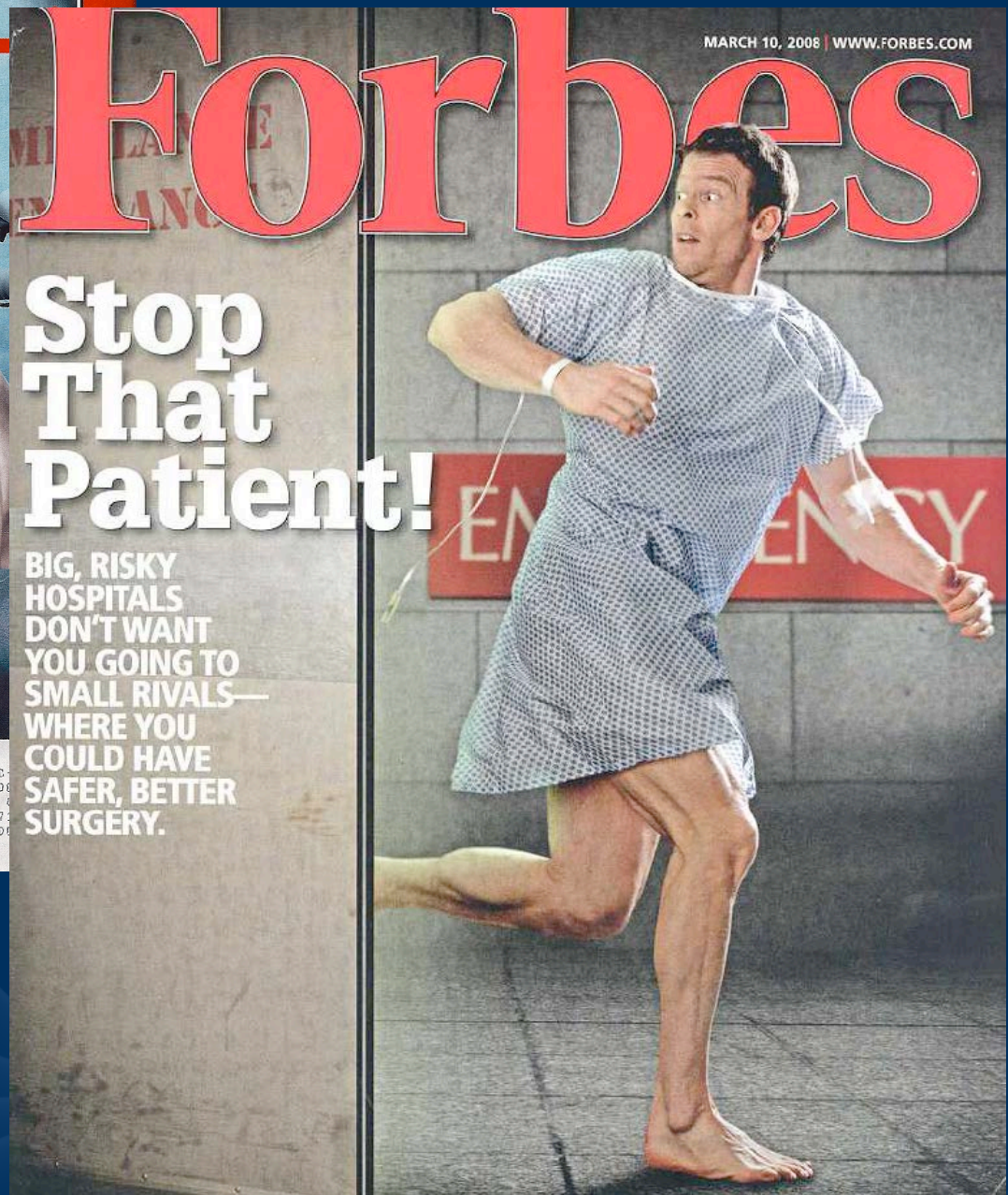
TIME
DR. PETERSEN
Metropolitan Hospital
STAFF
DR. MICHAEL PETERSEN
ATTENDING PHYSICIAN
WHAT DOCTORS HATE ABOUT HOSPITALS
An insider's view of what can go wrong—and how you can improve your odds of getting the right treatment
JEANNE HUDDLESTON
2565 ASPEN PL SW
ROCHESTER MN 55902-0995


Forbes
MARCH 10, 2008 | WWW.FORBES.COM
Stop That Patient!
BIG, RISKY HOSPITALS DON'T WANT YOU GOING TO SMALL RIVALS—WHERE YOU COULD HAVE SAFER, BETTER SURGERY.

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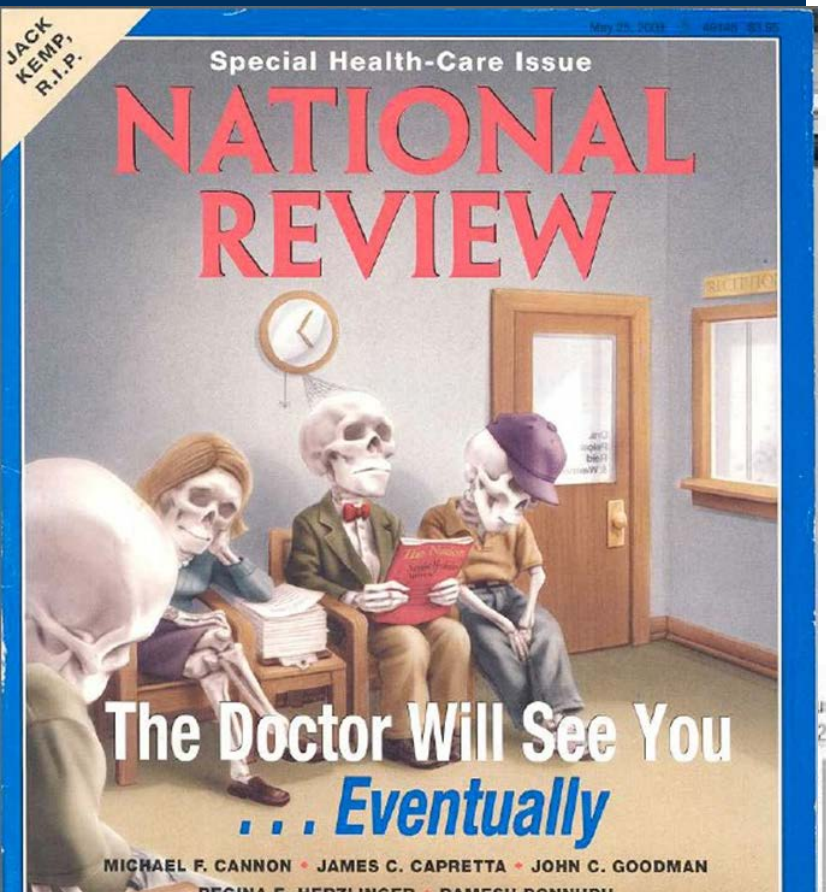
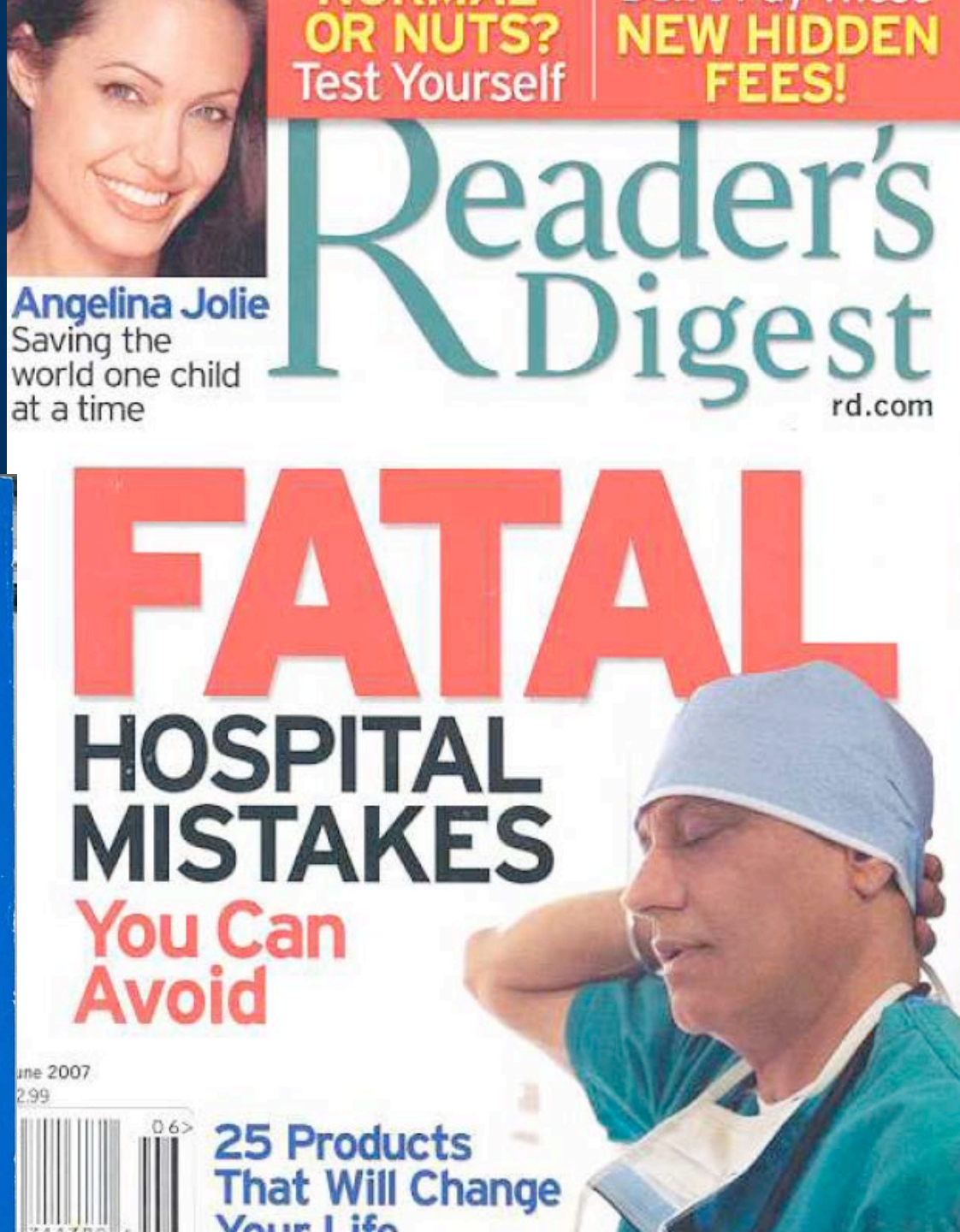
21st century health care

- Inefficient processes
- Poor system integration
- High levels of variation
  - Care delivery
  - Outcomes
- Suboptimal value





Early experience with GTT

Nosocomial infection

Medication-related

Procedure-related

Pressure ulcers

Device failure

Patient falls

Found things, but…

- Not much new
- Not much that pointed to strategic needs
- Nothing that resulted in new actions

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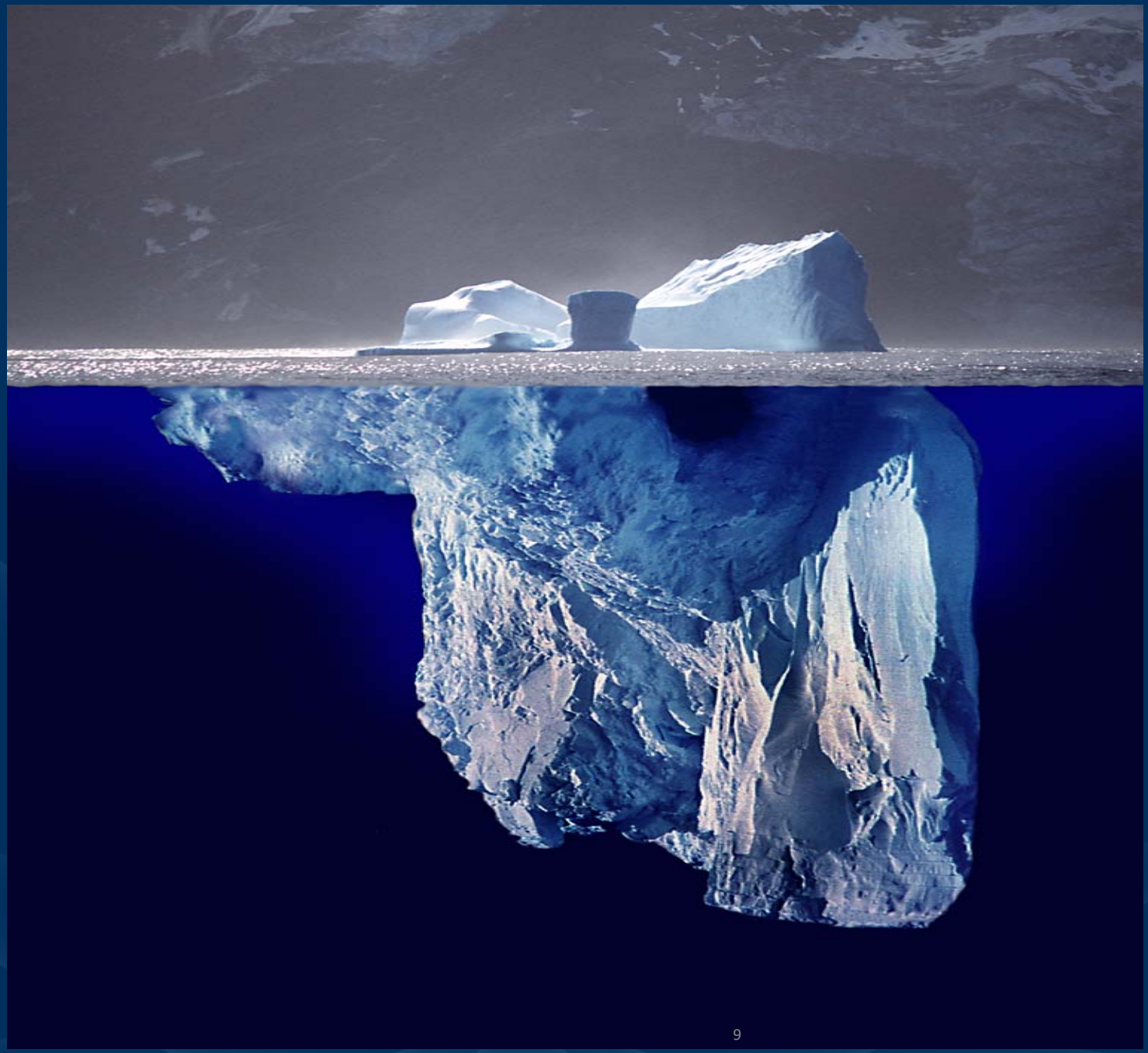

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Original Charge from Hospital Leadership

1. To create a meaningful mechanism to review deaths at MCR hospitals:
    - Thoroughly understandable
    - Measurable
    - Improvable
2. To identify and quantify unanticipated deaths
3. To identify rate of adverse events in patients who die in MCR hospitals
4. To classify and quantify system level changes which will improve mortality rate.

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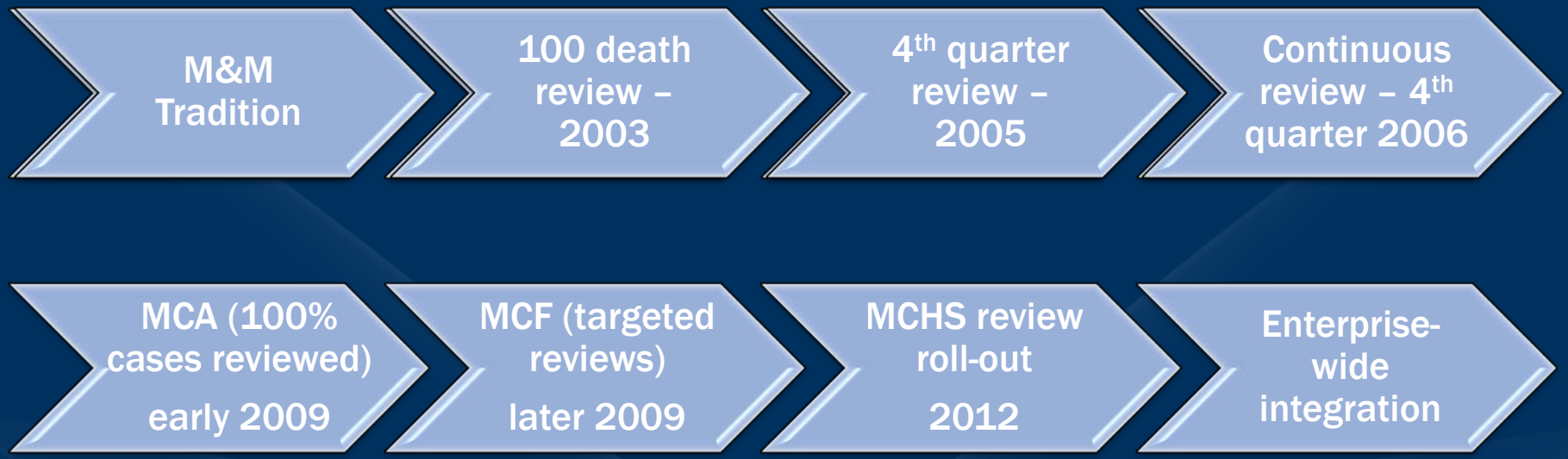
Iterative Learning: 13 year journey



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SPECIAL ARTICLE

Learning From Every Death

Jeanne M. Huddleston, MD,† Daniel A. Diedrich, MD,§ Gail C. Kinsey, RN,‖ Mark J. Enzler, MD,‡ and Dennis M. Manning, MD**

The concepts of peer review and the venerable morbidity and mortality conference are familiar improvement approaches to health care providers. These 2 entities are typically provider or patient centric and are not typically extended within hospitals and health systems as a tool for organizational learning for care process or system failures. Out of a desire to deepen our understanding and accelerate learning about quality and safety opportunities in our hospitals, Mayo Clinic embarked on journey to analyze the stories of all patient deaths. This paper illuminates the lessons learned through the development and evolution of the Mayo Clinic Mortality Review System (Rochester, MN).

Guiding principle of Mayo Clinic Mortality Review System:
"No one should ever suffer or die as the result of process of care or system failure."

BACKGROUND

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Guiding Principles: *Not Negotiable*

1. System review (not peer review)
2. Deference to expertise: Every case is reviewed by a practicing nurse and physician
3. All findings are recorded in the central registry
4. Multidisciplinary, multispecialty sessions used to build consensus re: findings
5. Implementation is local

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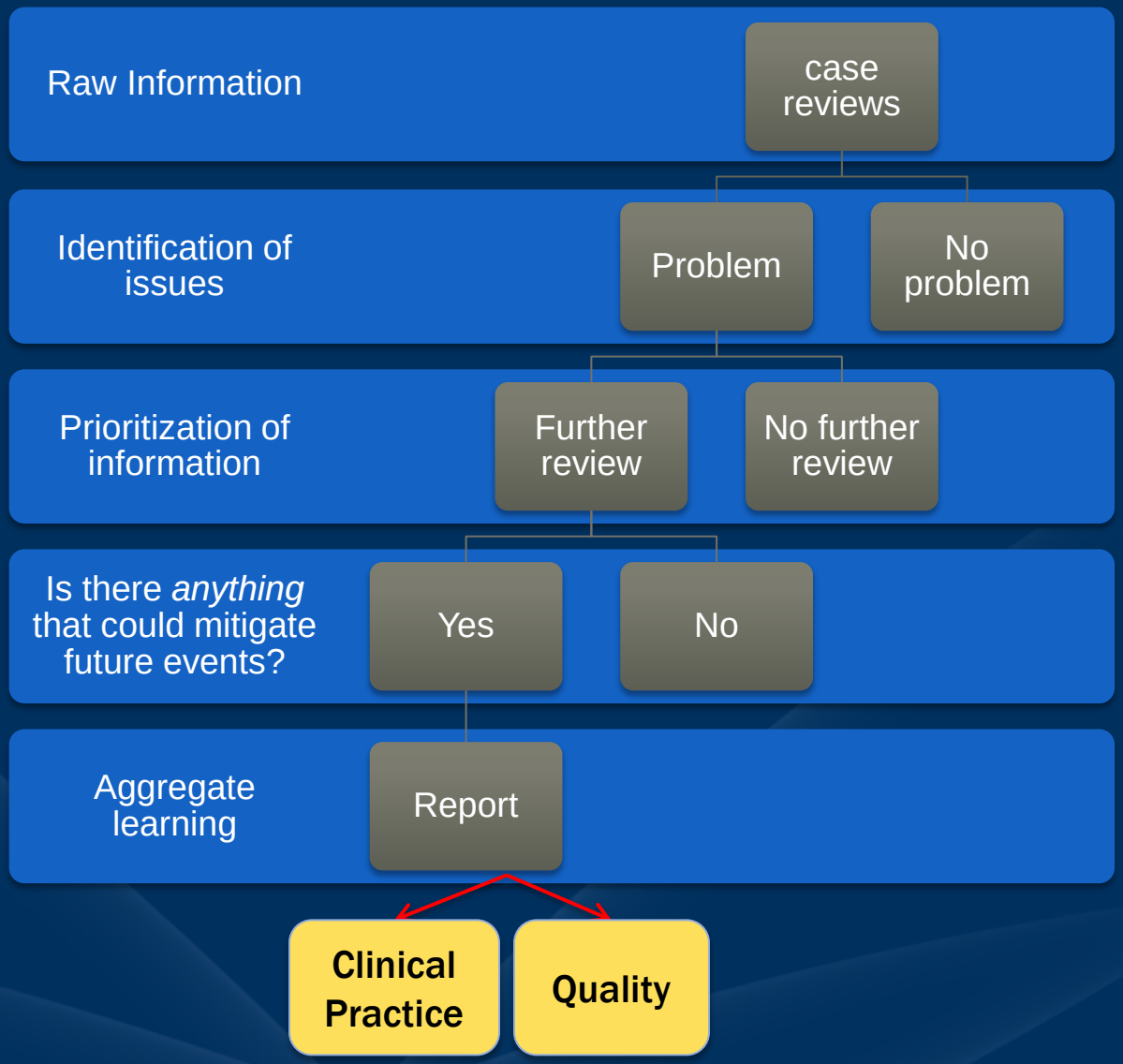
Reviewer Work

Committee Work



Principles of Identifying Opportunities

- NOT about preventability
  - Opportunity for improvement (OFI)
  - No opportunity for improvement
- NOT about causality
- NOT about attribution
- Did the care meet the standard of care at this institution?
- Would you have wanted your loved one to receive the same care?

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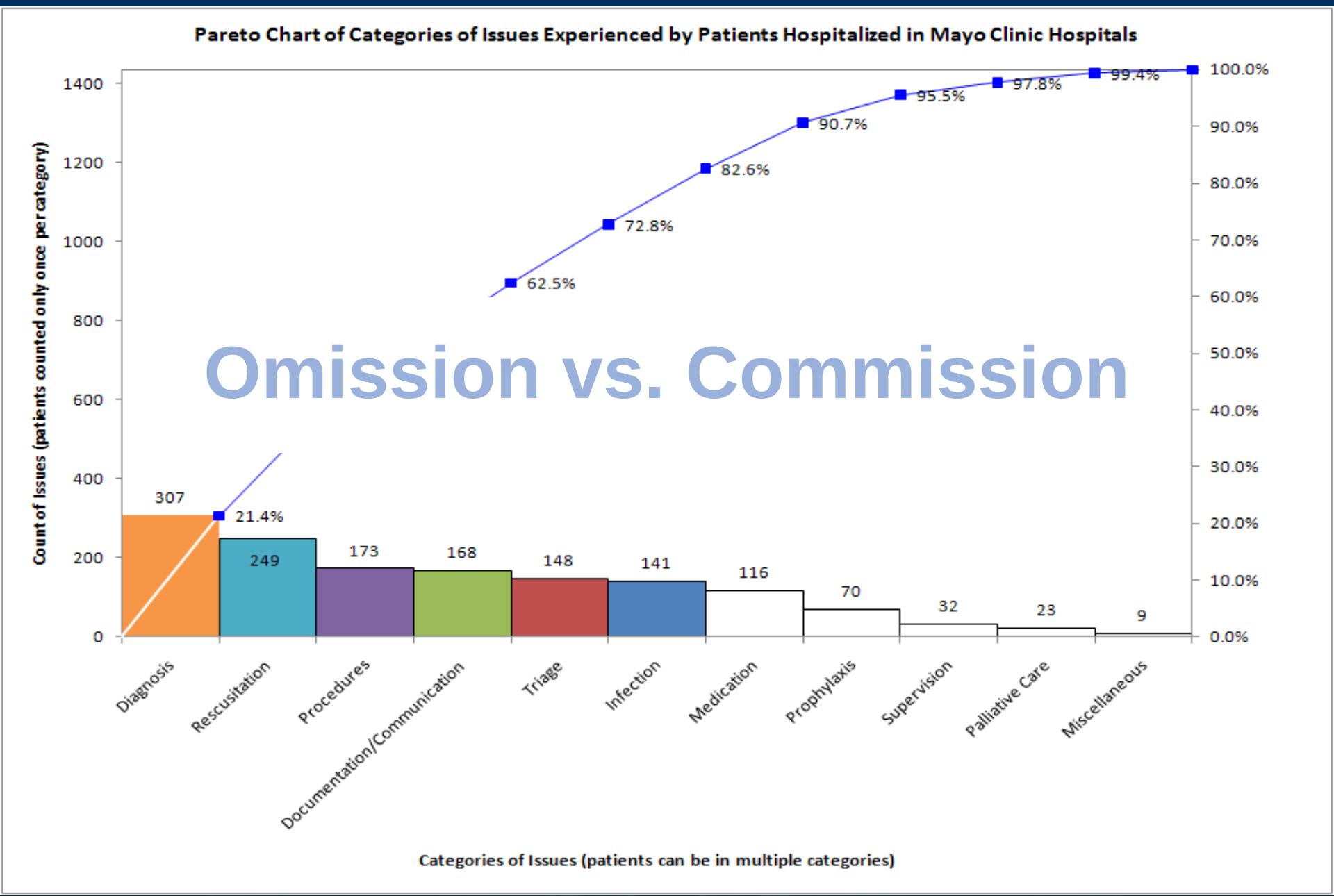
Pareto Chart of Categories of Issues Experienced by Patients Hospitalized in Mayo Clinic Hospitals
Count of Issues (patients counted only once per category)
1400
1200
1000
800
600
400
200
0
100.0%
90.0%
80.0%
70.0%
60.0%
50.0%
40.0%
30.0%
20.0%
10.0%
0.0%
62.5%
72.8%
82.6%
90.7%
95.5%
97.8%
99.4%
Omission vs. Commission
307
249
173
168
148
141
116
70
32
23
9
21.4%
Diagnosis
Rescusitation
Procedures
Documentation/Communication
Triage
Infection
Medication
Prophylaxis
Supervision
Palliative Care
Miscellaneous
Categories of Issues (patients can be in multiple categories)

Why does the structure work?

- Moves away from insular peer review
- Promotes culture change
- It's NOT about adverse events
  - Identifying process of care and system failures
  - Identifying opportunities for improvement
  - Inspiring action through stories
- Right size quality improvement initiatives

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SLS Multidisciplinary Team Principles

§ Operates under Chatham House Rule

> *When a meeting, or part thereof, is held under the* **Chatham House Rule**, *participants are free to use the information received, but neither the identity nor the affiliation of the speaker(s), nor that of any other participant, may be revealed.*

- Discuss patient's experience and system failures, not just peer's care
- Professionalism is critical.
- Committed to closing the loop on Actionable Information.

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Example: delayed diagnosis of sepsis & delayed recognition of a postoperative complication

59 year old female underwent TAH

POD #3 – AKI, urinary retention with new abdominal distension and pain

POD #4 – AKI worse, significant abdominal pain – narcotics stopped. Episode of PAF (130's)

POD #5 – hypotensive (70/45) with diaphoresis and nausea

RRT called but no blood pressure on their arrival

Code called with > 1hr of resuscitation efforts

On autopsy, abdomen filled with pus and a knick in the small bowel.

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On autopsy, abdomen filled with pus and a knick in the small bowel.

- Communication Issues
- Documentation Issues
- Delayed or missed diagnosis
- Treatment Issues
- Delayed rescue of deteriorating patient
- Procedural complication
- Palliation issues
- Triage or transition of care issues

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Can patients have a “good” death?

Joshua Bright: *A Good Death*

82 year old male with severe COPD and pancreatic cancer was hospitalized for bowel obstruction.

Postoperative delirium

Postoperative respiratory failure

Pain meds held

Per nursing notes

- patient routinely called out in pain
- family members consistently asked that he be kept comfortable.

Average pain score was 8/10 in the 24 hours preceding death.

Patient was made comfort care only and died within hours.

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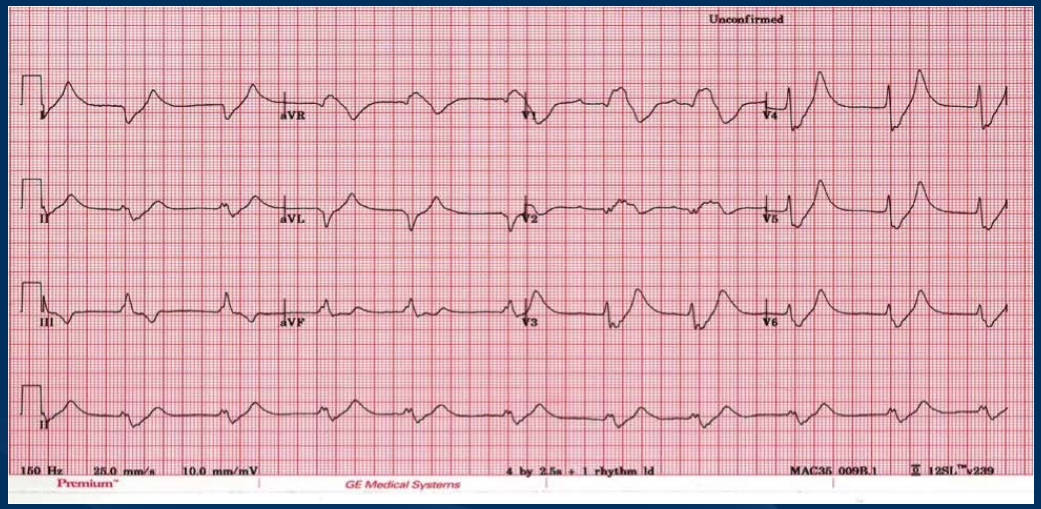
Example of missed opportunity for monitoring after treatment



56 year old female with uncontrolled diabetes and poor compliance presents to ED via ambulance with weakness.

K > 8

Treated with single doses of insulin, calcium, bicarb, glucose, Kayexelate

No repeat labs

4 hours later coded in CT scanner

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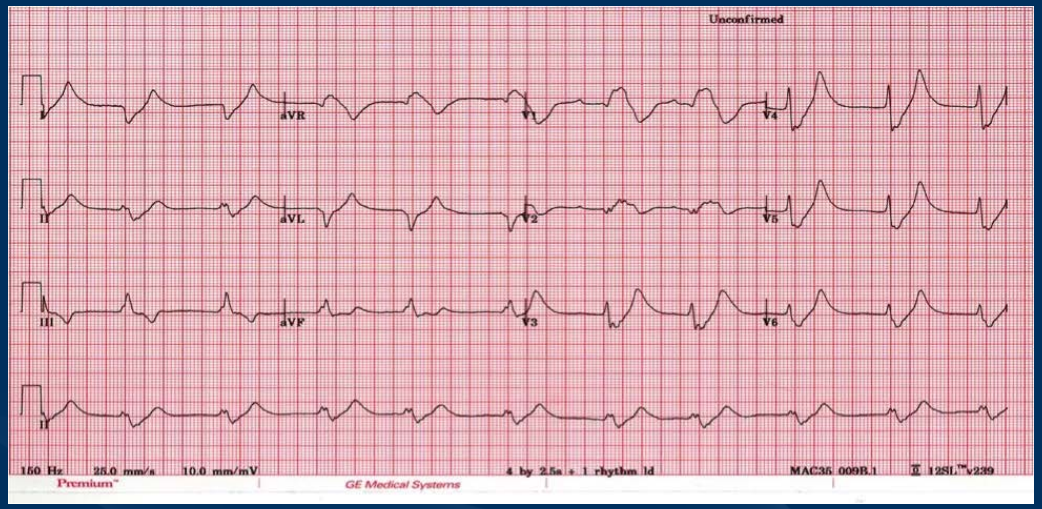
Example of missed opportunity for monitoring after treatment



All beds in ED full

Patient boarded in hallway

Waiting room with more than 20 patients

Middle of the night

CT scanner suddenly available

IR unavailable to put in emergent dialysis catheter

Patient coding in the next room

ICU beds full

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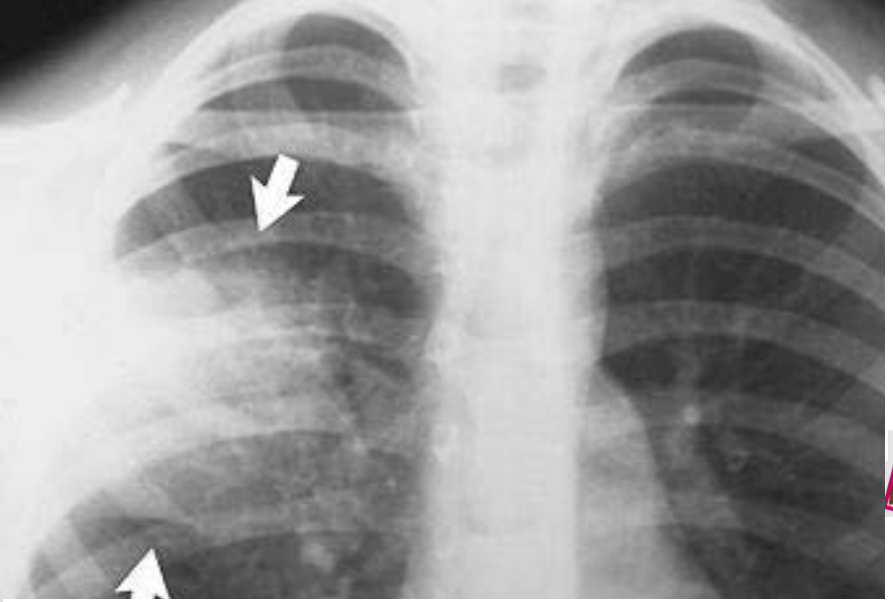
ANTI
BIOTICS
C.Diff


PDI
SANI-CLOTH® PLUS
GERMICIDAL DISPOSABLE CLOTH
160

RR 62.1
FTR
death


1 mL Single-dose
NALOXONE HCl
Injection, USP 0.4 mg/mL
For I.V., I.M., or S.C. use.
Protect from light. Rx only
RL-0591 (9/04)
HOSPIRA, INC., LAKE FOREST, IL


60
120 /80
90
98
20
37.7
37.2
0.5



Common Causes of *QT* Prolongation

- ***Drugs*** — Type 1A (quinidine, procainamide, disopyramide) and Type III (sotalol, dofetilide, amiodarone) antiarrhythmic agents;
  — Tricyclic antidepressants/phenothiazines
- ***"Lytes"*** — Hypokalemia (or hypomagnesemia)
  — Hypocalcemia
- ***CNS*** — CNS catastrophes (ie, stroke, seizure, coma, intracerebral or brainstem bleeding)

Note — Several *other* conditions (ie, bundle branch block, infarction, and ischemia) may *also* cause QT prolongation. However, the presence of these ***other conditions*** will usually be *obvious* from inspection of the ECG.

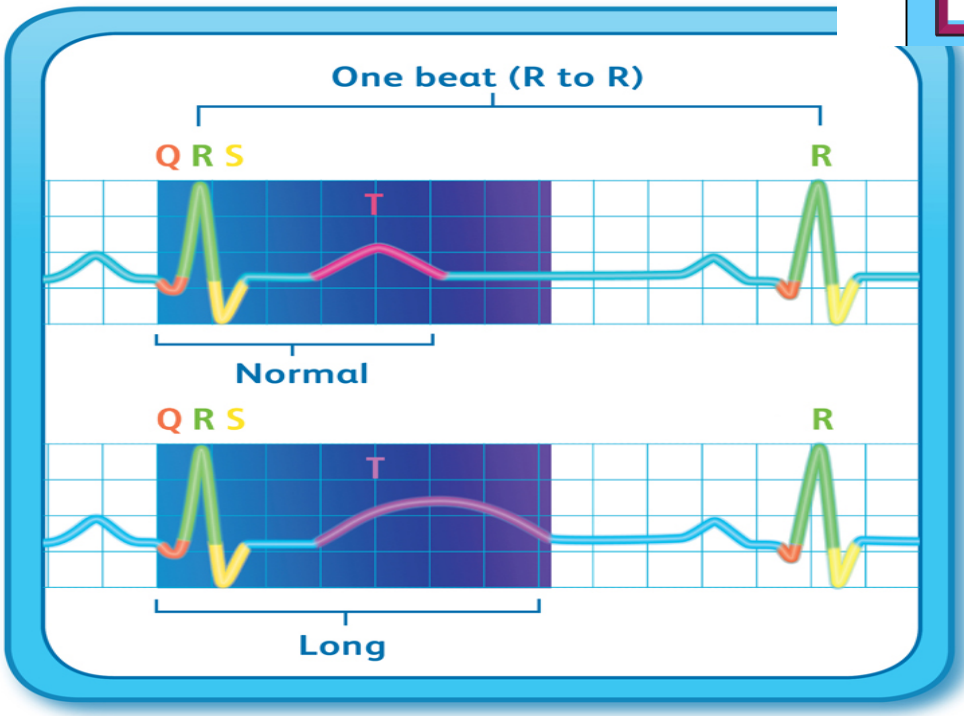


Illustration showing prolonged QT interval on an electrocardiogram (ECG)

“No one should ever suffer or die as a result of failures in our systems or processes of healthcare delivery.”

MC Mortality Review Subcommittee, May 2007

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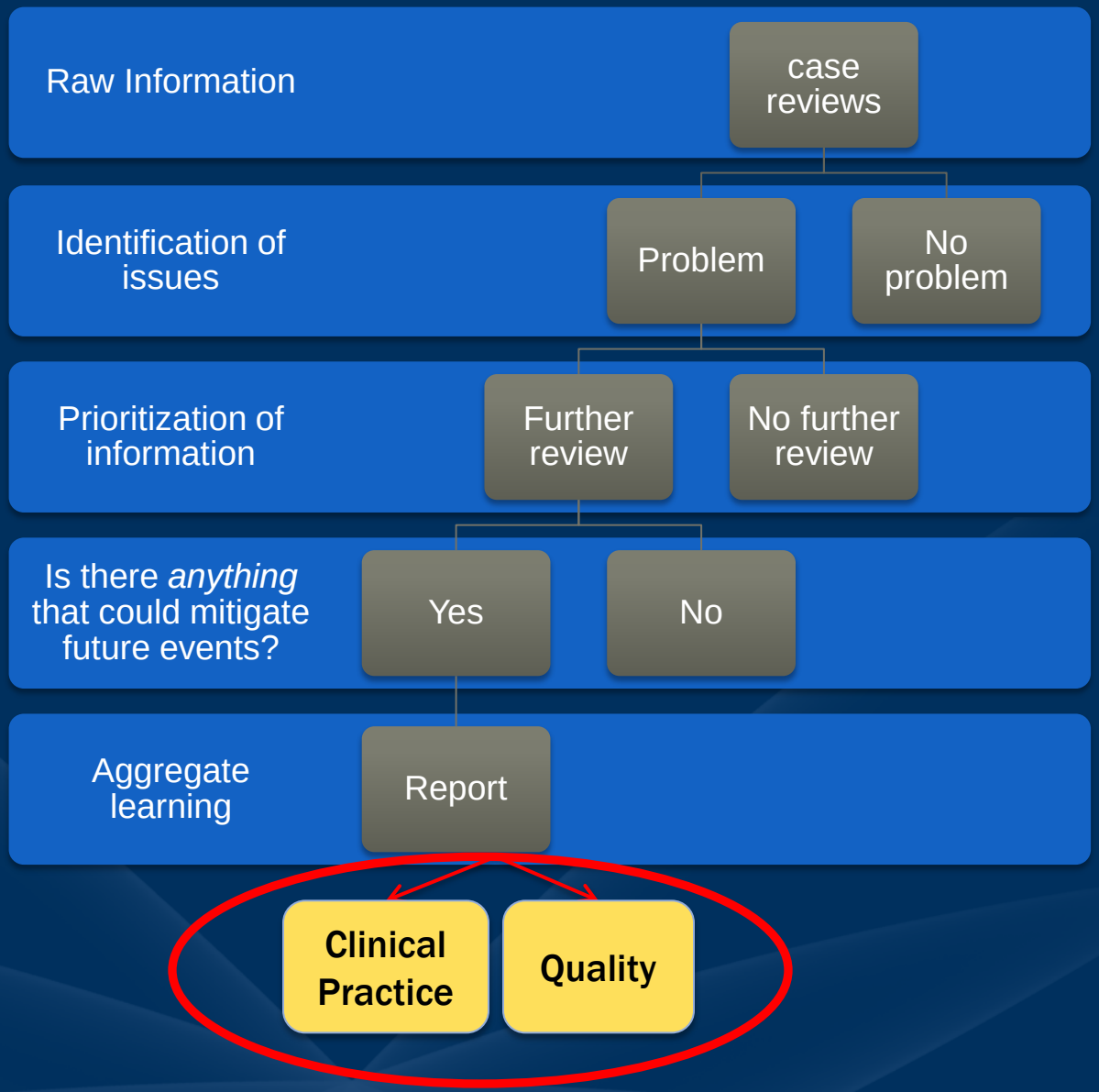
Reviewer Work

Committee Work



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Sharing Knowledge to Inspire Change

1. Case Reports (stories)
   - Distributed to clinical leaders of each department whose providers cared for the patient
   - Allowed grass roots response
2. Quarterly Reports (data)
   - Distributed to all members of hospital practice and quality committees
   - Distributed to all clinical department chairs
   - Distributed to all nursing units (nurse manager)
3. Quarterly Presentation (data + stories)

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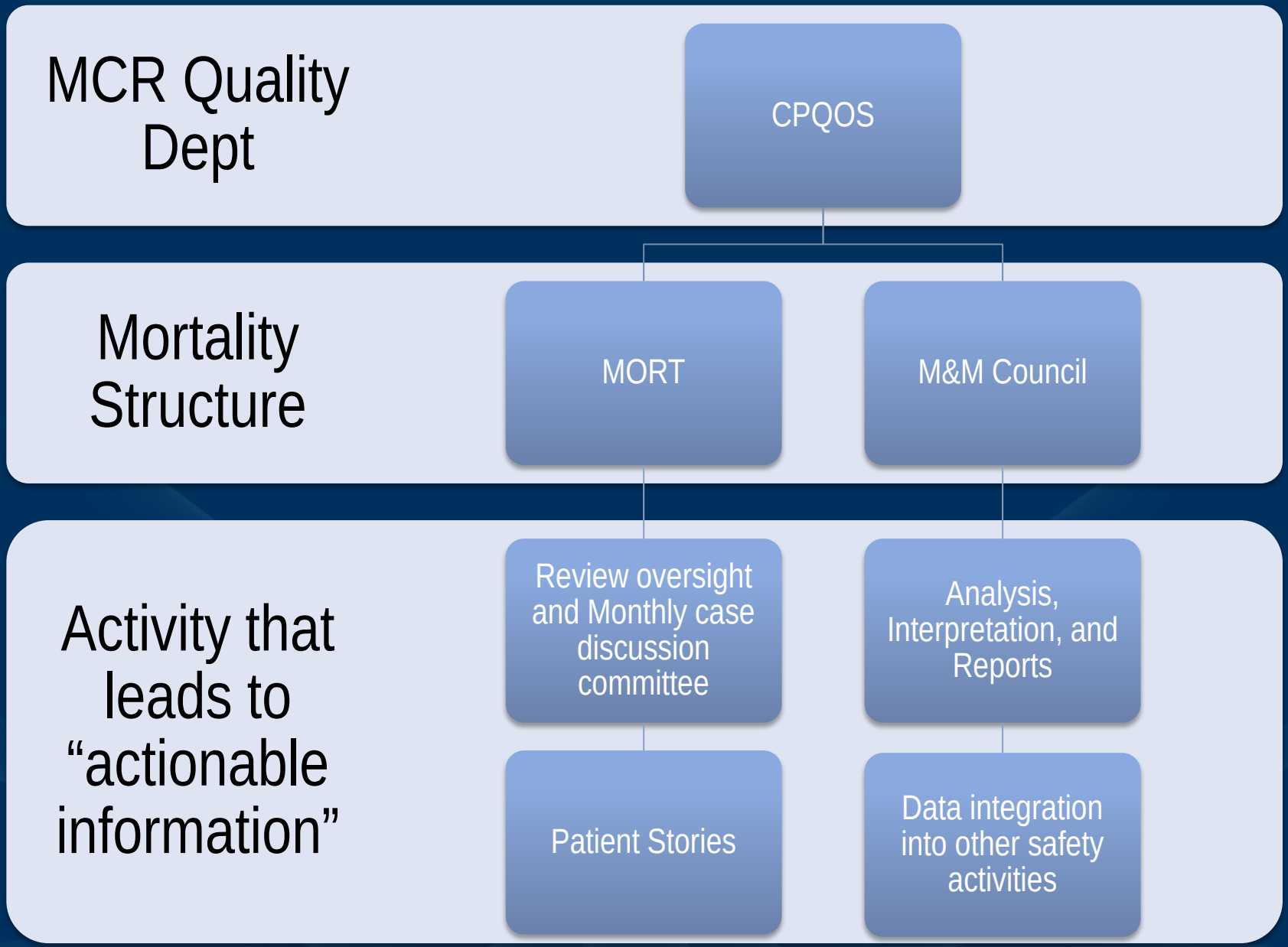
Organizational Structure



Morbidity and Mortality Council

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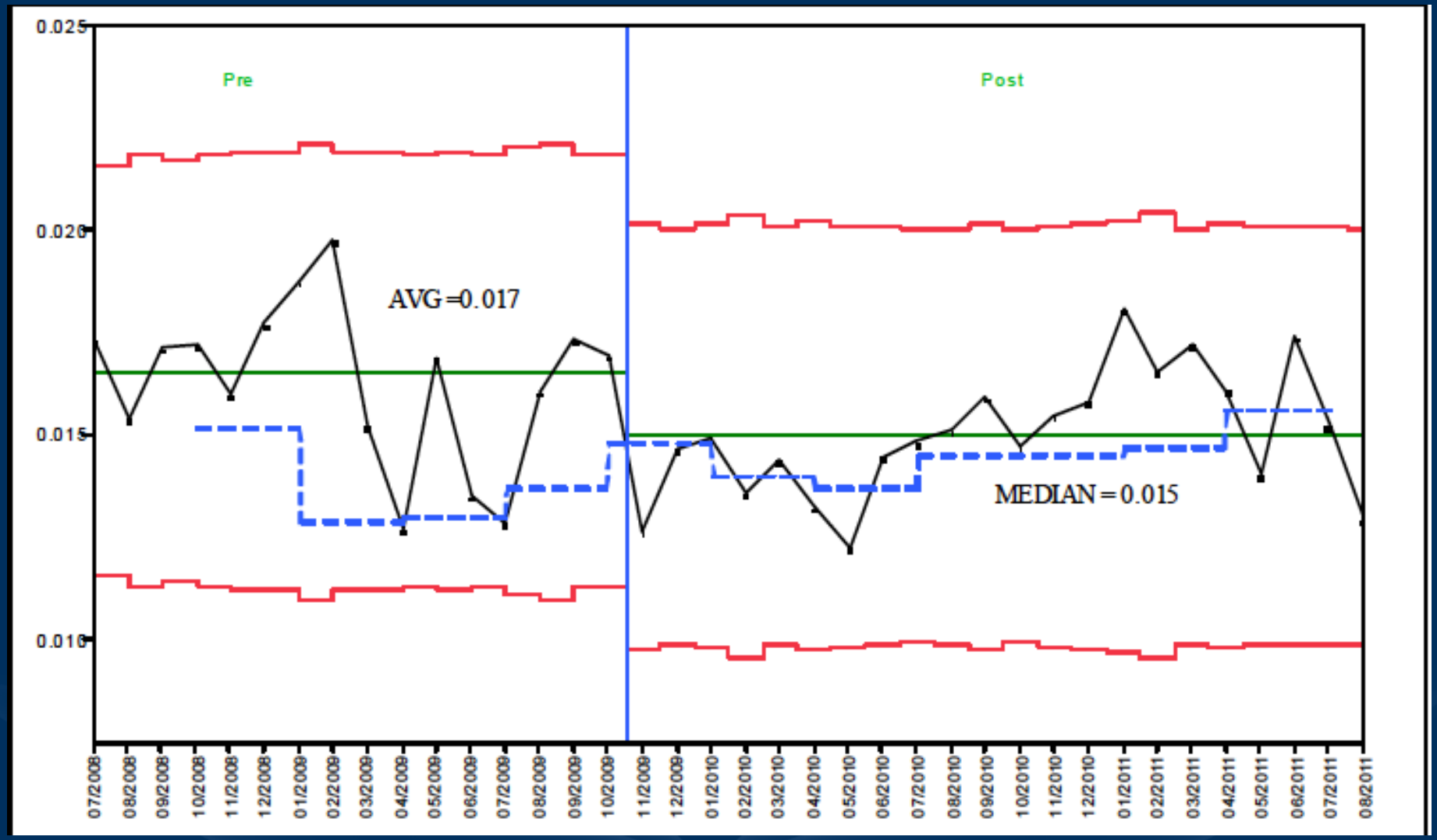
SPC p-chart of MCR mortality rate



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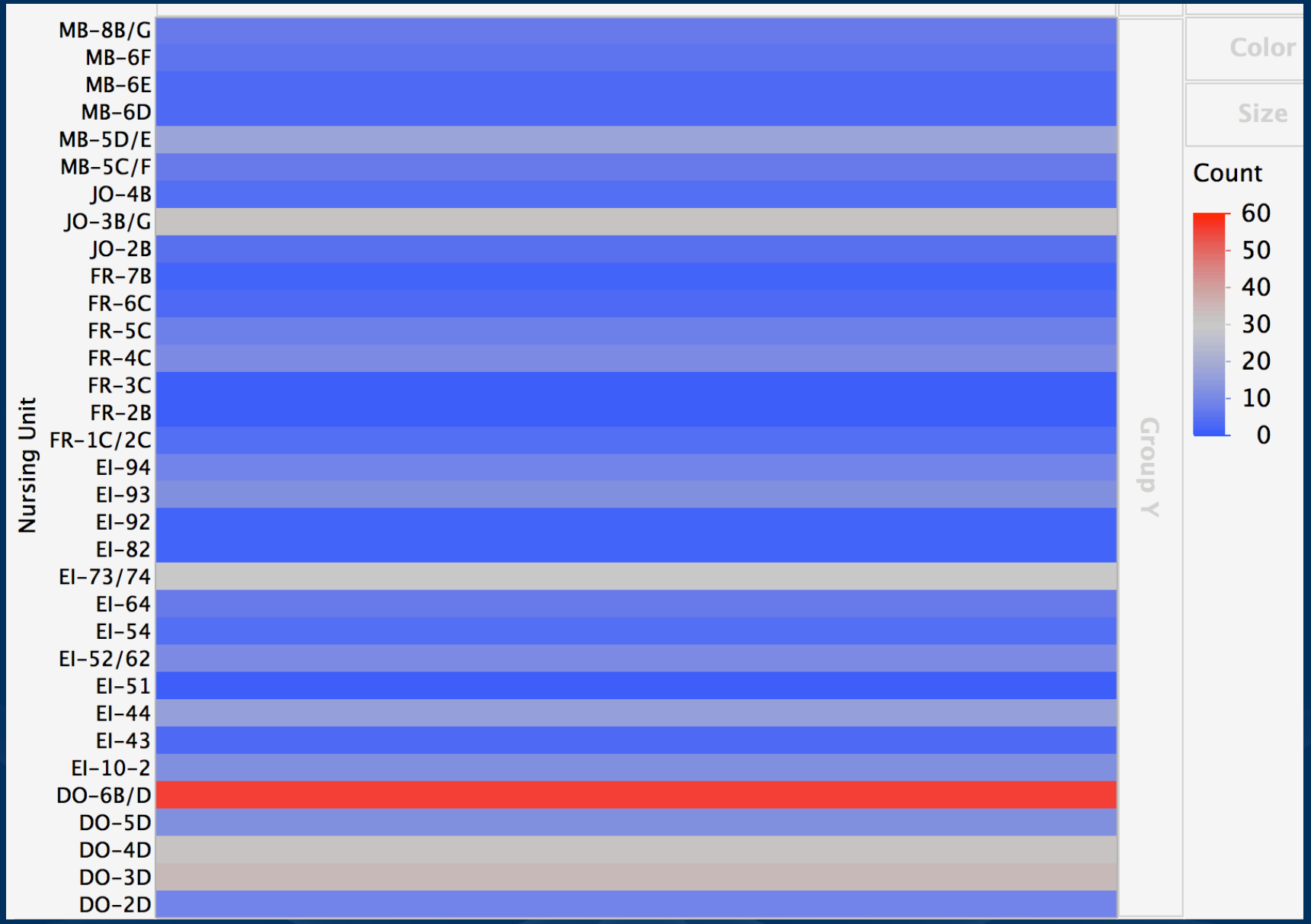
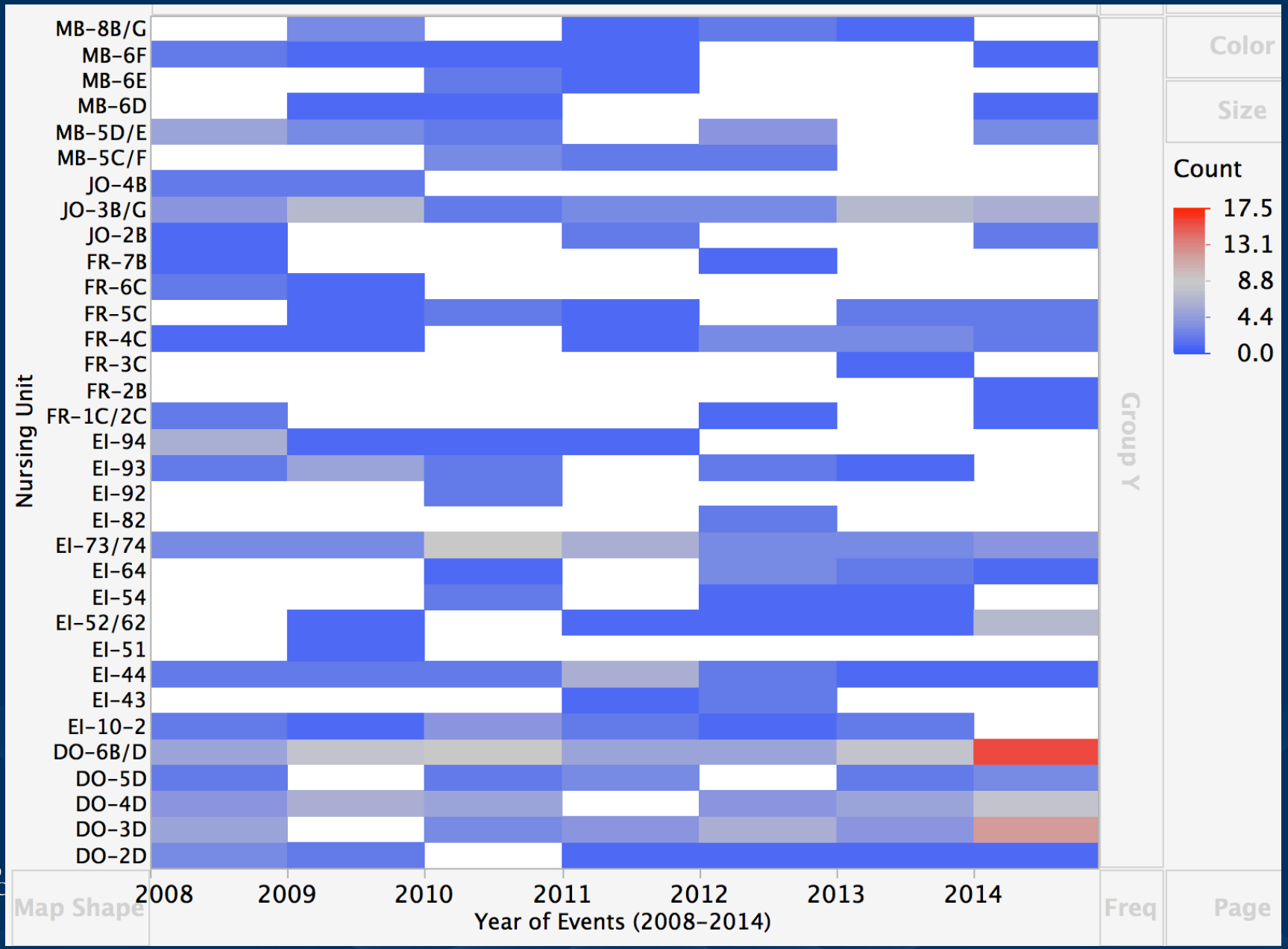
Data source: DSS and UHC

FTRR events by nursing unit



FTRR events for non-ICU nursing units by year



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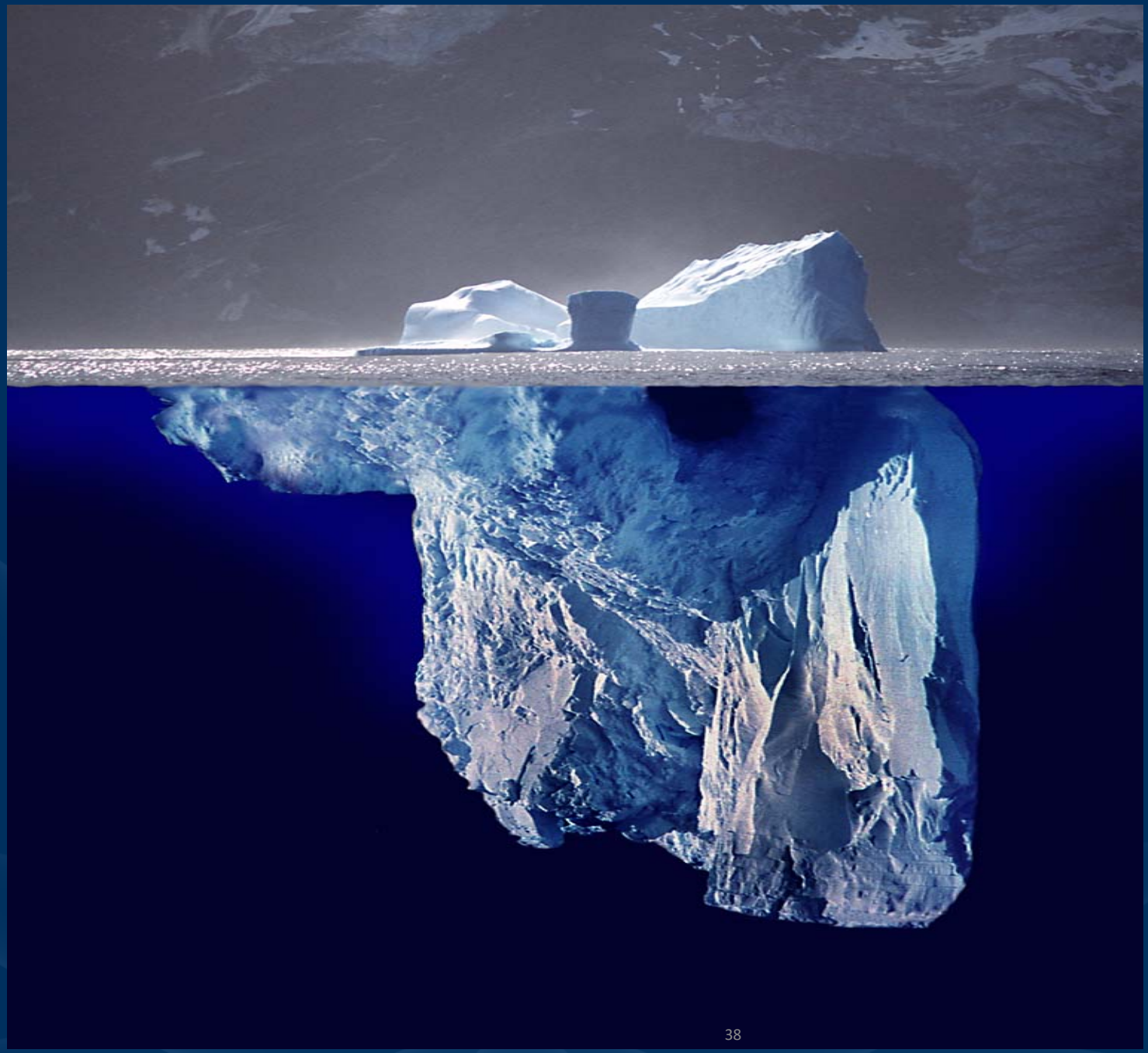

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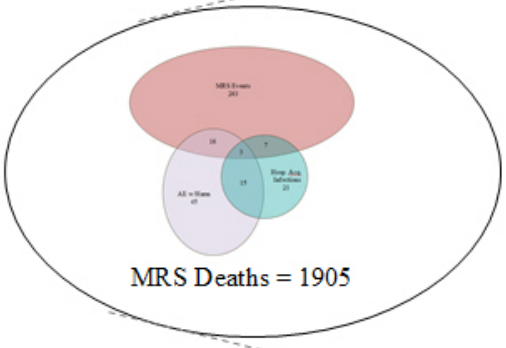
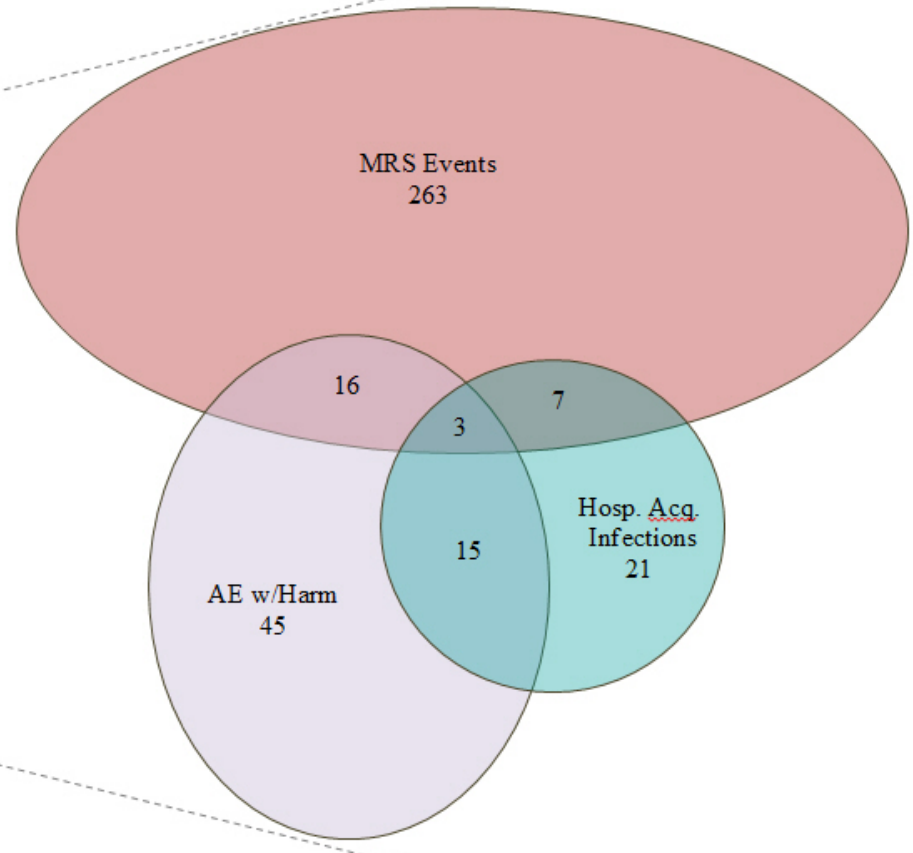
“It takes too much time and resource.”





2013-2014 Data

Why are we spending so much time and effort on this?

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What is it that we are really trying to accomplish?

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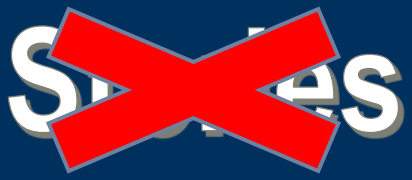

Data + Stories = Actionable Information

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Why does the structure work?

- Moves away from insular peer review
- Promotes culture change
- It's NOT about adverse events
  - Identifying process of care and system failures
  - Identifying opportunities for improvement
  - Inspiring action through stories
- Right size quality improvement initiatives

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It's a delicate balance…
What can you learn from failures to save lives?

“What about the living?”

Paula Santrach, MD

Chief Quality Officer, Mayo Clinic

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Safety Learning System

- Next generation organizational learning
- Identification of opportunities for improvement
- Application of lessons learned from Mortality Review to other “challenging” cohorts
- Addition of human factors taxonomy

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Learning from the Living: Other Challenging Cohorts

- Readmissions
- High cost cases
- Respiratory failure
- “Hot spots”
- Sepsis
- PSI-4

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Tenets of a Safety Learning System

1. Multidisciplinary reviews
   - Nurses have equal voice
   - Multiple perspectives on patient journey
   - Identification of “contributing factors” (HF nomenclature)
2. Practicing providers & Deference to expertise
   - Omissions provide bigger opportunities
   - Increases physician involvement
3. Multispecialty, multidisciplinary case discussions
4. Actionable Information and Influence
   - Case-based teaching with patient stories
   - Six Sigma structure and analytics
   - Leading “up” and influencing change

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Safety Learning System Research Collaborative 2016

- Mayo Clinic Rochester
- Regions Hospital, Minneapolis
- Beaumont Health, Michigan
- Sharp HealthCare
- MedStar Health
- University of Mississippi Medical Center
- University of Washington Medical Center

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Safety Learning System Research Collaborative 2017

- Penn State Hershey Medical Center
- Tasmania Health System, Australia
- Hoag Hospital
- Aurora Health System
- Eastern Maine Health System
- UT Southwestern

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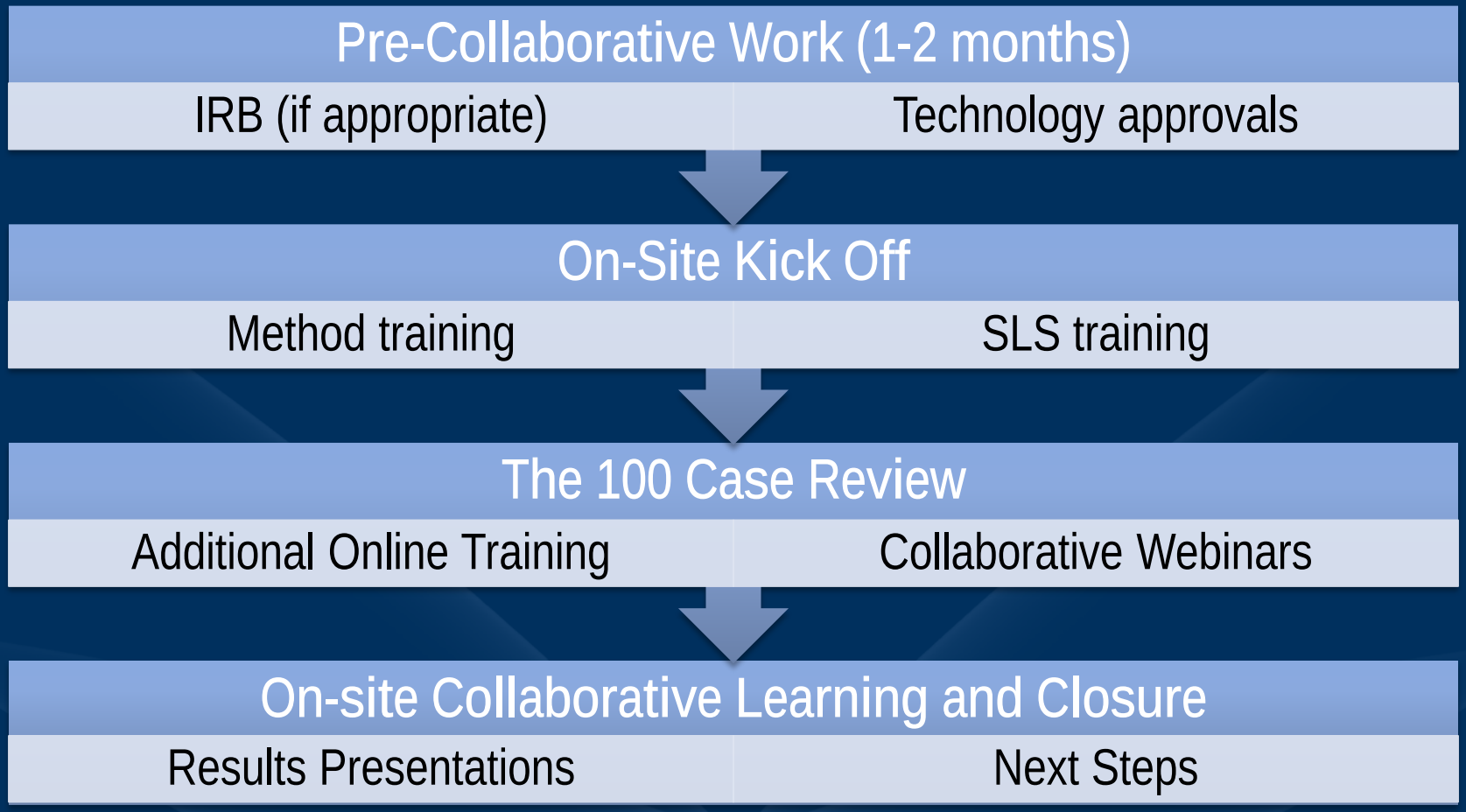
SLS Collaborative Timeline



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Safety Learning System: Review & Organizational Learning Execution

Group Buy-In

Philosophical Approach

- Large group session: lecture format with Q&A (onsite or video)
- History and evolution of SLS
- Multidisciplinary, multispecialty collaboration
- Importance of reaching consensus
- Chatham House Rule
- Care good enough for your family?
- System and process of care review – NOT peer review
- Not related to preventability or causality
- Opportunities for Improvement

Individual Training and Site Preparation

Site Configuration

- One live webinar with administrative lead of project to describe components of the configuration.
- Complete Excel template
- Review configuration completed by HBHS for accuracy
- This configuration will duplicated for hospital-specific training sites

Case Entry Training

- Select two people to participate in live webinar training
- Hospital training site will be used
- Cases entered here will be used for the reviewer training

Tier 1 Review Training

These are screening reviews intended for detailed data collection or to minimize physician time spent reviewing cases

Clinical Review Training

- Select 1-2 nurse and 1-2 physician "super-users" to participate in live webinar training
- Include committee leads
- Hospital training site will be used
- Cases reviewed will be used for committee prep training

Group Training

Committee/Case Discussion Preparation

- Committee Leads participate in live webinar
- Review OFIs identified by reviewers and reconcile duplicates
- If necessary, split aggregated OFI's into more specific ones
- Synthesize all reviews with case discussion and generate a final summary for distribution

Case Discussion Training

- One facilitator and one note-taker
- Multidisciplinary, multispecialty case discussion
- Discuss only cases with OFI's
- Stress Chatham House rule
- Identify missed OFI

Reporting and Enhancing Organizational Knowledge to Influence Change

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Collaborative Participants Receive:

- Two ONSITE training visits by Dr. Huddleston
- Dr. Huddleston's consulting time as needed and 2x/month webinars for training and collaborative learning
- Materials for standardized case review training
- Project management support
- Study design, data aggregation and analysis
- Manuscript coordination, publication costs
- Site-specific report generation and benchmarking
- Safety Learning System (SLS) configuration & support
- Use of SLS at no cost (no license fee) for duration of collaborative (provided by HB Healthcare Safety, SBC)

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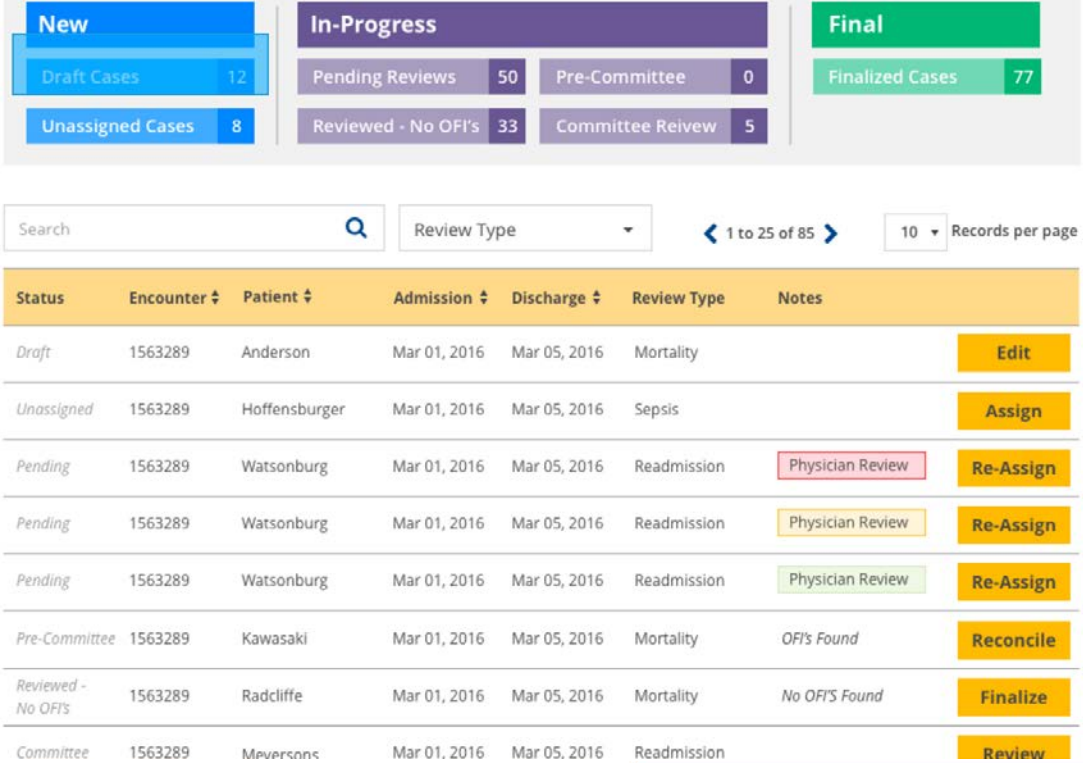


Standardized reviews

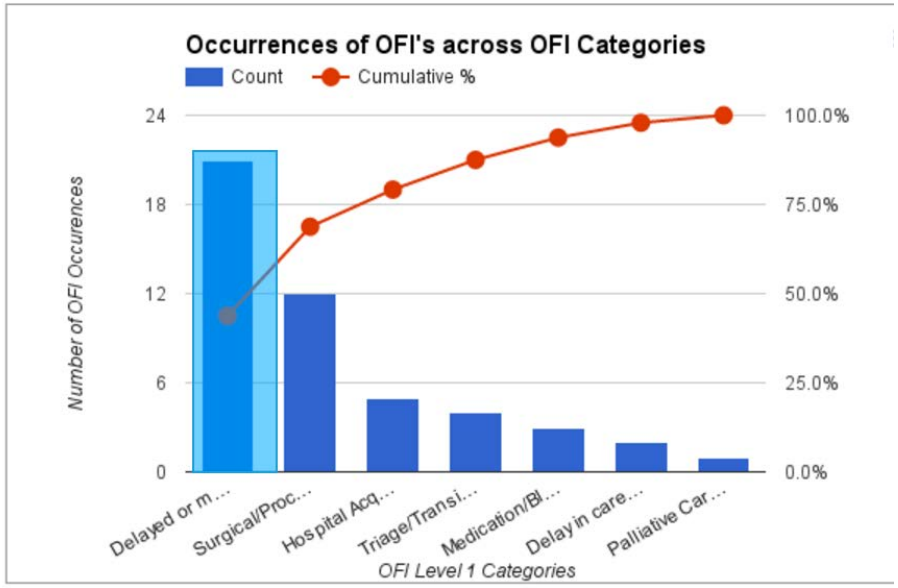
Workflow management

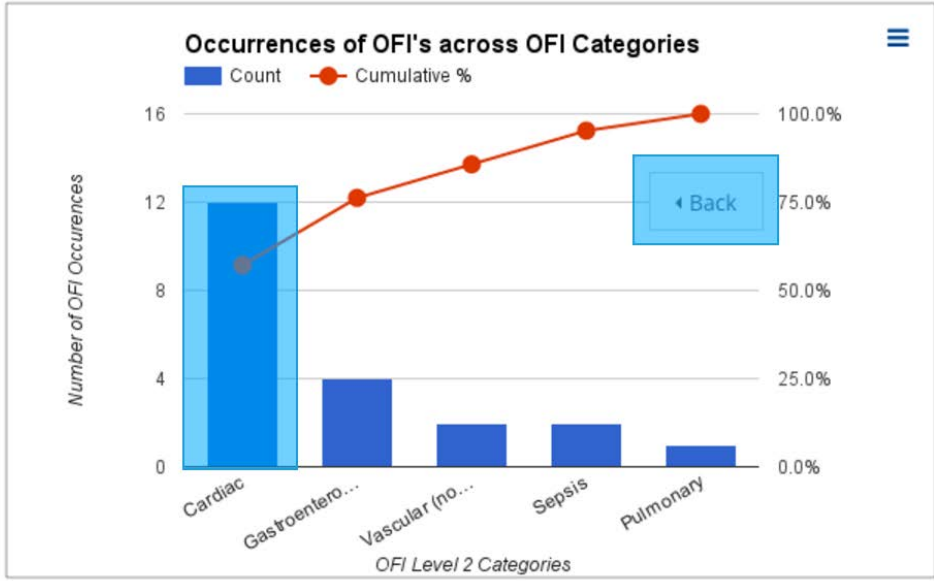
Dynamic analysis

Chart downloads

Enterprise solution

PARETO REPORT





What are you doing to learn from process of care and system failures?

JOIN US!!

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Literature/Resources

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SPECIAL ARTICLE

Learning From Every Death

Jeanne M. Huddleston, MD,† Daniel A. Diedrich, MD,§ Gail C. Kinsey, RN,‖ Mark J. Enzler, MD,‡ and Dennis M. Manning, MD**

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Journal of Patient Safety, April 2014

Contents lists available at ScienceDirect

Safety Science

journal homepage: www.elsevier.com/locate/ssci

Learning from patient safety incidents in incident review meetings: Organisational factors and indicators of analytic process effectiveness

Janet E. Anderson [a,*], Naonori Kodate [b,1]

[a] Florence Nightingale Faculty of Nursing and Midwifery, King's College London, James Clerk Maxwell Building, 57 Waterloo Road, London SE1 8WA, United Kingdom
[b] School of Applied Social Science, Hanna Sheehy-Skeffington Building, University College Dublin, Belfield, Dublin 4, Ireland

A 100% Departmental Mortality Review Improves Observed-to-Expected Mortality Ratios and University HealthSystem Consortium Rankings

Martin J Heslin, MD, MSHA, FACS, Benjamin Taylor, MD, Mary T Hawn, MD, MPH, FACS, James E Davies, MD, FACS, Ryan T Heslin, Andrew H Mims, John E Morgan, R Luke Rabun, W Andrew Smedley, Melanie S Morris, MD, FACS, Donald A Reiff, MD, FACS, Gerald McGwin, PhD, Kirby I Bland, MD, FACS, Loring W Rue, MD, FACS

The Joint Commission Journal on Quality and Patient Safety

Methods and Tools

Saving Lives by Studying Deaths: Using Standardized Mortality Reviews to Improve Inpatient Safety

Helen Lau, R.N., M.H.R.O.D.; Kerry C. Litman, M.D.

The Joint Commission Journal on Quality and Patient Safety

Methods, Tools, and Strategies

The Mortality Review Committee: A Novel and Scalable Approach to Reducing Inpatient Mortality

John S. Barbieri, BA; Barry D. Fuchs, MD, MS, FACP; Neil Fishman, MD; Carolyn Crane Cutilli, RN, PhD-c, MSN, ONC, CRRN; Craig A. Umscheid, MD, MSCE; Craig Kean, MS; Sherine Koshy, MHA, RHIA, CCS; Patricia Garcia Sullivan, PhD; PJ Brennan, MD; Rachel R. Kelz, MD, MSCE