Knowledge Strengthening for Patient Safety

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Overview

• In a last session, we will try to reflect on questions and comments from the participants and also review the previous sessions. We will also suggest how to advance learning and where to find other useful resources for future study.

• Review of Key Messages: Lectures 1-7
A Transforming Concept

Corollary # 1:
It makes no sense to punish people for making errors

Corollary # 2:
You can decrease errors by improving systems
Safety Culture

...exhibits the following five high-level attributes that health care professionals strive to operationalize through the implementation of strong safety management systems.

(1) A culture where all workers (including front-line staff, physicians, and administrators) accept responsibility or the safety of themselves, their coworkers, patients, and visitors.

(2) [A culture that] prioritizes safety above financial and operational goals.

(3) [A culture that] encourages and rewards the identification, communication, and resolution of safety issues.

(4) [A culture that] provides for organizational learning from accidents.

(5) [A culture that] provides appropriate resources, structure, and accountability to maintain effective safety systems.
Common Themes

- Patient safety appears to be a problem in all nations
- Definitions are important so we can count the same things
- Common themes include issues with human performance, human factors, and communications
- Need more information about the frequency of adverse events, errors by country and setting
- Research needed to:
  - Identify and describe safety issues
  - Develop and test safety solutions
Components:

1. Measuring Harm
2. Understanding Causes
3. Identifying Solutions
4. Evaluating Impact
5. Translating Evidence into Safer Care
Patient Safety Research Overview

- Five key domains in patient safety research
  - Selection of study type will depend on domain
  - Also on resources available
  - Qualitative and quantitative studies are both valuable
- Need more evaluations of solutions in particular
  - But often have to define problem in a particular setting and having data can enable move to action
What Are We Trying to Measure?

• Errors: the failure of a planned action to be completed as intended or use of a wrong plan to achieve an aim
  • Latent errors: defects in the system eg, poor design, understaffing
  • Active errors: errors made by frontline health staff eg, dose errors

• Adverse Events: harm caused by health care

• Safety targets: medication errors, HAI, surgical complications, device complications, identification errors, death
4 Basic Methods of Collecting Data

- Observation
- Self-reports (interviews and questionnaires)
- Testing
- Physical evidence (document review)
Measurement Methods

• Prospective
  • Direct observation of patient care
  • Cohort study
  • Clinical surveillance

• Retrospective
  • Record review (Chart, Electronic medical record)
  • Administrative claims analysis
  • Malpractice claims analysis
  • Morbidity & mortality conferences/autopsy
  • Incident reporting systems
Relative Utility of Methods to Measure Errors

Latent errors

- Incident reporting
- Autopsies and morbidity and mortality conferences
- Malpractice claims files analysis

Active errors

- Chart review
- Administrative data analysis
- Information technology

Adverse events

- Direct observation
- Clinical surveillance

Thomas & Petersen, JGIM 2003
Direct Observation

- Good for active errors
- Data otherwise unavailable
- Potentially accurate, precise
- Training/expensive
- Information overload
- Hawthorne effect?
- Hindsight bias?
- Not good for latent errors
Cohort / Clinical Surveillance

- Potentially accurate and precise for adverse events
- Good to test effectiveness of intervention to decrease specific adverse event
- Can become part of care
- Expensive
- Not good for detecting latent errors
Chart Review

- Uses readily available data
- Common
- Judgments of adverse events not reliable
- Expensive
- Records incomplete, missing
- Hindsight bias
Provider Survey

- Good for latent errors
- Data otherwise unavailable
- Wisdom of crowds
- Can be comprehensive
- Hindsight bias (bad outcome = bad care)
- Need good response rate
Malpractice Claims Analysis

- Good for latent errors
- Multiple perspectives (patients, providers, lawyers)
- Hindsight bias
- Reporting bias
- Non-standardized source of data
Reporting & Learning System

- Can detect latent errors
- Provide multiple perspectives over time
- Can be a standard procedure
- Reporting bias
- Hindsight bias
Summary

- Different methods to measure and understand errors and adverse events have different strengths and weaknesses
- Mixed methods approaches can improve understanding
Two Types of Solutions

- Solution not yet identified:
  - Pre-post
  - Randomized (double blind, controlled) trial
  - Cluster randomization

- Known solution
  - Improving reliability of effective practices
Locus of Intervention

- Patient
- Health care worker
- Workplace
- System
Hierarchy of Research Evidence

- Systematic Reviews
- Randomized Controlled Trials
- Cohort Studies
- Case-Control Studies
- Case Series, Case Reports
- Editorials, Expert Opinion
Annu. Rev. Public Health 31:479–97
Randomized Controlled Trials

- Strong evidence for efficacy
- Control for unmeasured variables
- Require acceptability/equipoise to be conducted
- Not ideal for effectiveness
- Expensive, time-consuming
- Not good for subgroups
Interventions to Improve Safety

• Much needs to be learned about effective interventions to improve safety
  • Identifying effective interventions requires well designed and conducted studies

• There are evidence based procedures and interventions that can improve safety
  • Once implemented, need to be evaluated
How do we know if we are safer?

- Harm (outcome)
- Appropriate care (process, explicitly defined)
- Learning
  - Measure **presence** of policy or program
  - Staff **knowledge** of policy or program (testing)
  - Appropriate **use** of policy or program (direct observation)
- Safety culture
Integrated Approach to Translating Evidence to Practice

- A focus on systems (how we organise work) rather than care of individual patients
- Engagement of local interdisciplinary teams to assume ownership of the improvement project
- Creation of centralised support for the technical work
- Encouraging local adaptation of the intervention
- Creating a collaborative culture within the local unit and larger system.
Institute for Healthcare Improvement (IHI) Model for Improvement
Strategy for Translating Evidence to Practice

1. Summarise the evidence
   - Identify interventions associated with improved outcomes
   - Select interventions with the largest benefit and lowest barriers to use
   - Convert interventions to behaviours

2. Identify local barriers to implementation
   - Observe staff performing the interventions
   - “Walk the process” to identify defects in each step of implementation
   - Enlist all stakeholders to share concerns and identify potential gains and losses associated with implementation

3. Measure performance
   - Select measures (process or outcome)
   - Develop and pilot test measures
   - Measure baseline performance

4. Ensure all patients receive the interventions
   - Implement the “four Es” targeting key stakeholders from front line staff to executives

   - Engage: Explain why the interventions are important
   - Evaluate: Regularly assess for performance measures and unintended consequences
   - Educate: Share the evidence supporting the interventions
   - Execute: Design an intervention “toolkit” targeted at barriers, standardisation, independent checks, reminders, and learning from mistakes

Overall concepts
- Envision the problem within the larger healthcare system
- Engage collaborative multidisciplinary teams centrally (stages 1-3) and locally (Stage 4)

Pronovost, BMJ 2008
Ensure All Patients Receive the Intervention

• Final and most complex stage is to ensure that all patients reliably receive the intervention

• Interventions must fit each hospital’s current system, including local culture and resources

• 4 “Es”
  • Engage
  • Educate
  • Execute
  • Evaluate
Concluding Remarks

• Additional skills beneficial
• Research ethics
• Mentored research experience crucial
• Proposal writing skills, identification of funding sources
• Additional learning opportunities
• Online resources
Additional skills beneficial

- Basic epidemiology and biostatistics
- Data management
- Survey research methods
- Writing, dissemination
The Research Protocol

- Research question
- Significance
- Design
  - Subjects
    - Entry Criteria
    - Recruitment
  - Variables
    - Predictor
    - Outcome
  - Statistical issues
    - Sample size and power
Data Management

- Defining the variables
- Creating the study database and data dictionary
- Entering the data and correcting items
- Creating a dataset for analysis
- Backing up and storing the dataset
Survey Research Methods

• Identifying the concepts to be measured
• Selecting good instruments, or
• Designing good questions
• Assembling the instruments for the study
• Administering the instruments
Writing, Dissemination

- Papers for publication
- Presentations
- Press releases
- Policies, protocols, guidelines
- Grant proposals
Research Ethics

- Basic Principles
  - Respect for persons
  - Beneficence
  - Justice
- Institutional/Ethical Review Board
- Additional considerations
  - What are appropriate comparison groups?
  - Affordability of interventions
  - Status of collaborators
Mentored Research Experience

- A mentor is someone who doesn’t rest until you succeed
- The strongest predictor of academic success
- Single mentor or committee of mentors
Proposal writing skills
Identification of funding sources

• Practice in writing proposals
• Elements of proposals
• Characteristics of good proposals
  • Scientific quality
  • Technical quality
  • Responsiveness
• Funding sources of support
References


- American College of Surgeons National Surgical Quality Improvement Project [https://acsnsqip.org/login/default.aspx](https://acsnsqip.org/login/default.aspx)


- WHO Patient Safety [www.who.int/patientsafety](http://www.who.int/patientsafety)
http://webmm.ahrq.gov/
About ACS NSQIP

Program Overview

The ACS National Surgical Quality Improvement Program (ACS NSQIP) is the first nationally validated, risk-adjusted, outcomes-based program to measure and improve the quality of surgical care. The program employs a prospective, peer controlled, validated database to quantify 30-day risk-adjusted surgical outcomes, which allows valid comparison of outcomes among all hospitals in the program. Participating hospitals and their surgical staff are provided with the tools, reports, analysis, and support necessary to make informed decisions about improving quality of care. The program involves the following key components:

DATA COLLECTION

ACS NSQIP collects data on 136 variables, including preoperative risk factors, intraoperative variables, and 30-day postoperative mortality and morbidity outcomes for patients undergoing major surgical procedures in both the inpatient and outpatient setting. The data are collected, validated, and submitted by a trained Surgical Clinical Reviewer (SCR) at each site.

DATA MONITORING & VALIDATION

Once trained, the SCR submits data to ACS NSQIP through a secure Web-based system with built-in software checks and user information prompts to ensure completeness, uniformity, and validity of the data. Data automation tools are also available to lower the data entry burden on the SCRs and to improve the quality of data being captured. In addition, Inter-Rater Reliability (IRR) audits are conducted to ensure the data are examined on a routine basis.

REPORT GENERATION

Hospitals enrolled in ACS NSQIP have their data presented to them via comprehensive semiannual reports and real-time, continuously updated, online benchmarking reports. Both sets of reports allow participating sites to continually
http://www.jointcommission.org/PatientSafety/NationalPatientSafetyGoals/
www.who.int/patientsafety
Questions?
Course Evaluation
Thank You