Are You Ready to take the TRiP?

An Integrated Model for Improving Quality and Patient Safety

Armstrong Institute for Patient Safety and Quality
Christine Goeschel ScD MPA MPS RN FAAN
Learning Objectives

Participants will be able to:

1. Recognize the need for measurable improvements in quality and safety
2. Describe the Hopkins “TRiP+ CUSP” integrated model for improvement
3. Recall examples of where TRiP+CUSP resulted in measurable improvement in patient outcomes and unit safety culture
4. Discuss ways the model might be useful in their own setting
The Armstrong Institute for Patient Safety & Quality
The New Hospital ~ Opening 2012
Reality
Vision
Saving lives by leading the world in patient safety and quality care.

Mission
To continuously improve patient outcomes and enhance the value of care for all, around the world, by advancing the science of patient safety and quality through discovery, implementation, education, evaluation, and collaborative learning.
Values

Johns Hopkins Medicine Core Values

- Excellence and Discovery
- Leadership and Integrity
- Diversity and Inclusion
- Respect and Collegiality

To live these values, the Institute will encourage transparency and patient family centered care.
Armstrong Institute Framework

- Live the Johns Hopkins Medicine Values
- Build Capacity
- Advance the Science
- Improve Patient Outcomes and Value
- Be Accountable
- Listen, Learn and Share
Targeted Muscle Re-Innervation
(courtesy of Dr. Albert Chi)

1. Nerve Transfers

2. Motor Imagery (3 mo)

3. TMR Prosthetic (6 mo)

4. Sensory functions

JHU/APL has the ONLY fully motor and sensory advanced prosthesis limb
The Problem is Large

• In U.S. Healthcare system
  – 7% of patients suffer a medication error ²
  – On average, every patient admitted to an ICU suffers an adverse event ³,⁴
  – 44,000–98,000 people die each year as the result of medical errors ⁵
  – Nearly 100,000 deaths from HAIs ⁶
  – Estimated 30,000 to 62,000 deaths from CLABSIs ⁷
  – Cost of HAIs is $28-33 billion ⁷

• 8 countries report similar findings to the U.S.

Increasing Focus on Surgical Care: (New AI SUSP Project*)

- 230 million surgeries / yr worldwide
  - More common than births (36 million / yr)
  - 1 in 25 people
- 25% in-patient surgeries followed by complication
  - 7 million disabling complications / yr
- 0.5 – 5% deaths following surgery
  - 1 million deaths / yr
- 50% of all hospital adverse events linked to surgery
  - At least 50% of adverse surgical events are avoidable

Healthcare-Associated Infections: A Preventable Epidemic

• Focus on 4 HAIs: VAP, SSI, CLABSI, UTI
• $5 billion per year excess costs
• 1.7 million patients per year
  – 1 out of 20 patients
• 98,000 deaths per year
  – As many deaths as breast cancer and HIV/AIDS put together
  – 6th leading cause of preventable deaths

http://oversight.house.gov/story.asp?id=1865
## TRIP and CUSP Model

<table>
<thead>
<tr>
<th>TRIP ¹</th>
<th>CUSP ²</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Summarize the evidence</td>
<td>1. Educate on the science of safety</td>
</tr>
<tr>
<td>2. Identify local barriers to implementation</td>
<td>2. Identify defects</td>
</tr>
<tr>
<td>3. Measure performance</td>
<td>3. Assign executive to adopt unit</td>
</tr>
<tr>
<td>4. Ensure all patient receive the intervention</td>
<td>4. Learn from Defects</td>
</tr>
<tr>
<td>5. Implement teamwork &amp; communication tools</td>
<td></td>
</tr>
</tbody>
</table>

¹ BMJ 2008;337:963-965  
² Jt Comm J Qual Patient Saf 2010;36:252-60
What is the Evidence?


Evidence-based Behaviors to Prevent CLABSI

- Remove Unnecessary Lines
- Wash Hands Prior to Procedure
- Use Maximal Barrier Precautions
- Clean Skin with Chlorhexidine
- Avoid Femoral Lines

MMWR. 2002;51:RR-10
Impact on Catheter-Related BSI

Michigan Keystone ICU

**Median and Mean CRBSI Rate**

![Graph showing the median and mean CRBSI rate over time](image)

- **Time (months)**: Baseline, Intervention, 0-3, 4-6, 7-9, 10-12, 13-15, 16-18, 19-21, 22-24, 25-27, 28-30, 31-33, 34-36
- **Median CRBSI Rate**
- **Mean CRBSI Rate**

Rhode Island ICU CLABSI Rates
23 ICUs representing 11 hospitals

Qual Saf Health Care 2010;19(6):555-561
This work was funded by a grant from the Agency for Healthcare Research and Quality, and for every dollar invested, approximately $200 was SAVED.

The Keystone Project’s Five Steps to Success

- Saving 1,500 lives
- & $200 Million

The Keystone Project reduced infections by 66% throughout the state, saving over 1,500 lives and $200 million in the first 18 months alone.

The Keystone Project

- INVESTED
- APPROXIMATELY
- $200
- SAVED

Eliminating Infections & Saving Lives in Michigan
On the CUSP: Stop BSI
(47 States; 1055 hospitals)
On the CUSP: Stop BSI
(31 States; >850 ICUs; 41% reduction)

Unpublished data
1 in 20
About 1 in 20 patients gets an infection each year while receiving medical care.

41,000
About 41,000 bloodstream infections strike hospital patients with central lines each year.

37,000
About 37,000 bloodstream infections happen each year to kidney dialysis patients with central lines.

Making Health Care Safer
Reducing bloodstream infections

A central line is a tube that a doctor usually places in a large vein of a patient's neck or chest to give important medical treatment. When not put in correctly or kept clean, central lines can become a freeway for germs to enter the body and cause serious bloodstream infections. These infections can be deadly. Of patients who get a bloodstream infection from having a central line, up to 1 in 4 die. Bloodstream infections in patients with central lines are largely preventable when healthcare providers use CDC-recommended infection control steps. Medical professionals have reduced these infections in hospital intensive care unit (ICU) patients by 39% since 2001. Even so, many still occur in ICUs, in other parts of hospitals, and in outpatient care locations. In 2008, about 37,000 bloodstream infections occurred in hemodialysis* outpatients with central lines.

Learn what you can do to reduce central line bloodstream infections.

See page 4

Want to learn more? Visit

www.cdc.gov/vitalsigns

National Center for Emerging and Zoonotic Infectious Diseases
Division of Healthcare Quality Promotion
VAP Prevention Guidelines

• American Thoracic Society/ Infectious Diseases Society of America

• Canadian VAP Prevention Guidelines

• Society for Healthcare Epid of America
  • *ICHE* 2008;29:S31-S40.

• CDC Guidelines
  • *MMWR Recomm Rep.* 2004;53:1-36
Michigan Keystone ICU

Improving Care takes technical work, and adaptive (culture) work

The safety culture of an organization is the product of individual and group values, attitudes, perceptions, competencies, and patterns of behavior that determine the commitment to, and the style and proficiency of, an organization's health and safety management.

“The Way We Do Things Around Here”
NASA's safety culture blamed

Columbia accident causes: foam, bad management

'Loss of its checks and balances'

Blistering report urges changes before next flight

By Jeff Kunerth

Orlando Sentinel
Why measure Patient Safety Culture?

- Data will increase your understanding of employees’ perceptions of patient safety culture within their respective units, hospitals; across professional roles.
- Differences exist by role in perceptions of safety.
- A strong culture of patient safety encourages providers and hospital administrators to consciously work to reduce errors and mitigate hazards within their units and hospitals.
- A weak patient safety culture DIScourages actions supporting safety and teamwork.
% of respondents within an ICU reporting good safety climate
Culture of Safety - Michigan

Teamwork Climate Across Michigan ICUs

Graph showing the teamwork climate across Michigan ICUs from 2004 to 2006.

- Black dots represent the year 2006.
- Blue triangles represent the year 2004.

The graph indicates an increasing trend in teamwork climate across the years.
Culture of Safety - Michigan

Safety Climate Across Michigan ICUs

% of respondents within an ICU reporting good safety climate

2006
2004
Impact of Statewide Quality Improvement Initiative on Hospital Mortality

Pre-implementation (12 months: Oct 02 - Sept 03)
Project Initiation (5 months: Oct 03 - Feb 04)
Implementation (12 months: Mar 04 - Feb 05)
Post-implementation (12 months: Mar 05 - Feb 06)
Post-implementation (12 months: Mar 06 - Dec 06)

Study Group Adjusted OR
Comparison Group Adjust OR

BMJ 2011;342:d219
Keystone ICU project: Business Case

• 30 CLABSI s averted annually
• 18 VAP cases averted annually
• Financial benefits exceed costs of intervention
  – $1.1 million saved per year for average hospital

Lessons Learned

• Harm is preventable
  – Majority of healthcare acquired infections are preventable; should be viewed as defect
• Focus on systems; Not individuals
• Far more complex than checklists
  – Imperative for frontline staff to be engaged and take ownership
  – Able to achieve unprecedented improvements in patient safety
Why Did This Work?
Why Did This Work

- Guided by science (biologic, human factors, psychology, sociology, economics, epidemiology)
- Had clear theory of change
- Kept score with measures clinicians believed valid
- Modified locally to fit context
- Focused on adaptive work
- Unit level intervention with senior support
- Framed CLABSI as a social program capable of being solved
- Created a clinical community for QI
What is a Clinical Community?

- Clinical communities are groups of people who come together to achieve goals related to quality in healthcare.

- Clinical communities chartered by the AI will include clinicians, managers, patients and others who are committed to creating a community of action that supports the tripartite mission and vision of JHM.
What do we know about Clinical Communities?
Published for more than eighty years, The Milbank Quarterly features peer-reviewed original research, policy review, and analysis from researchers, clinicians, and policymakers. According to the Institute for Scientific Information, the Quarterly has either led or been in the top three “high-impact factor” (based on citations of published articles) of fifty-six journals in Health Policy & Services and of seventy-one journals in Health Services since 2003. The Quarterly’s multidisciplinary approach and commitment to applying the best empirical research to practice and policymaking offer in-depth assessments of the social, economic, historical, legal, and ethical dimensions of health and health care policies. For information regarding submission to The Milbank Quarterly, please see the Instructions to Authors and Publication Policies.

The Milbank Quarterly is published in March, June, September, and December by the Milbank Memorial Fund and Wiley-Blackwell. Subscribers are entitled to access all full-text articles published since 1997 online on Wiley Online Library by visiting http://onlinelibrary.wiley.com/journal/1468-0009. Non-subscribers may also view full-text articles on Wiley Online Library on a pay-per-view basis. In case of difficulties, contact Wiley-Blackwell’s customer services department at cs-journals@wiley.com.

All articles from The Milbank Quarterly published between 1923 and the most recent one-year period are now available for no charge to libraries and institutions that subscribe to JSTOR’s Arts & Sciences IV Collection (http://www.jstor.org); single article purchases are also available to nonsubscribers.

CURRENT FEATURED ARTICLE

“Explaining Michigan: Developing an Ex Post Theory of a Quality Improvement Program”
Mary Dixon-Woods, Charles L. Bosk, Emma Louise Aveling, Christine A. Goeschel, and Peter J. Pronovost
June 2011 (Volume 89, Number 2)
Key Attributes of Effective Clinical Communities

1. Establish a small, strong ‘integrating core’
   - Communities are not “self organizing”
   - They need leadership and vision from the center
   - Coordination among multiple lead figures, with credibility among peers is vital

2. Have a clear theory of change~ but are able to adapt
   - A range of strategies and methods is available
   - These may need to be adapted to contexts and circumstances
   - Clinical communities should be ‘light on their feet’
3. Identify and provide resources and training
   - QI is not always an organizational priority ~managerial support for time and resources required is important
   - Training in QI methods and change management may be needed

4. Deal with Conflict: Hold the Community together
   - Communities may be fragmented and conflict-ridden
   - Groups may need to be empowered to participate
   - Divergent views (e.g.) on evidence base, improvement process, goals and methods of data collection and reporting need to be discussed openly
Effective Clinical Communities

5. **Foster a sense of community**
   - A sense of ownership increases engagement
   - The community defines the problem; identifies the solutions; holds themselves accountable

6. **Collect and use data wisely**
   - Data need to be robust, comparable across teams, easy to collect, have face validity
7. **Balance soft and hard tactics**
   - Intrinsic motivation to improve quality is powerful tool
   - Back it up with carrots and sticks
   - “Holy Grail” is hard tactics that reinforce rather than undermine

8. **Recognize the importance of context**
   - Organizations, professions, clinical disciplines have their own norms, routines, expectations
   - Adaptability is crucial
What We Are Learning

• Clinical community approach is extremely promising; consistent with theoretical literature

• Clinical teams generally see this as more acceptable than “top down” initiatives
  – Success hinges on acceptance of problem “definition”
  – Balancing tensions between research and “QI + evaluation”
Ways to Begin this Journey, or Learn from ours…
Closing the Gap

Translational Research Model

- **Understanding Disease Biology**
  - T1 Translating to Humans
  - Formulating, Analyzing, and Testing Pre-Clinical Models

- **Identifying and Comparing Effective Therapies**
  - T2 Translating to Practice
  - Summarizing evidence and understanding if and how these therapies work in practice

- **Disseminating and Implementing Research, Registries, and Outcomes**
  - T3 Translating to Operations
  - Leading and managing health care delivery and Shaping Health Policy

- Improved Health Outcomes
Regulatory

Scientifically Sound

Feasible

Local Wisdom/Market
Transformation of Healthcare from the outside “in”

• Quality Measurement and Payment
• Health Information Technology
• Comparative Effectiveness
• Quality Improvement Collaboratives and Learning Networks
• Clinician Training
Transformation of Healthcare from the Inside “Out”
What We Know

- Change involves technical challenges
  - Evidence
  - Measurement
  - Analysis

- Change involves adaptive challenges
  - How to Engage nurses, physicians, executives
  - Competing priorities
  - Organization hierarchies
  - How to hardwire practice changes
Context Matters

“characteristics of the organization and its environment that influence the implementation and effectiveness of the patient safety practice”
Context Matters

- *Organizational characteristics* include size, location, academic status, financial status, and, more challengingly, organization complexity.

  - These features are mostly fixed; the organization can influence them only slowly, if at all.
Context Matters

• *External factors* are the environment in which the healthcare organization resides.

  – External contextual factors are generally not under the influence of the organization itself (although they may be influenced by policymakers or payers).
• *Teamwork, leadership and patient safety culture* are inter-related concepts that likely influence whether and how well the organization can implement and sustain an intervention.

  – Over time, organizations can change these factors; the literature regarding the role of specific efforts to improve safety culture and teamwork is hopeful but mixed.
Context Matters

• *presence of management tools* is easily influenced by the organization.
  – Examples include the use of internal audit-and-feedback, training, offering financial incentives, designating a local champion or coach, or the hiring of an external consultant.
Ready to Begin?
Things to consider

1. What do you want to achieve?
2. What is driving that goal?
3. Who else supports the goal?
4. What will change if you achieve the goal?
5. Has another organization already done this work?
# Leading Change

<table>
<thead>
<tr>
<th></th>
<th>Senior leaders</th>
<th>Team leaders</th>
<th>Staff</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engage Adaptive</td>
<td><em>How does this make the world a better place?</em></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Educate technical</td>
<td><em>What do we need to know?</em></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Execute adaptive</td>
<td><em>What do we need to do?</em></td>
<td><em>How can we do it with my resources and culture?</em></td>
<td></td>
</tr>
<tr>
<td>Evaluate technical</td>
<td><em>How do we know we improved safety?</em></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Pronovost: Health Services Research 2006

Armstrong Institute for Patient Safety and Quality
**The Johns Hopkins Armstrong Institute* Model to Improve Care**

### Translating Evidence Into Practice (TRiP)

1. Summarize the evidence in a checklist
2. Identify local barriers to implementation
3. Measure performance
4. Ensure all patients get the evidence
   - Engage
   - Educate
   - Execute
   - Evaluate

### Comprehensive Unit based Safety Program (CUSP)

1. Educate staff on science of safety
2. Identify defects
3. Assign executive to adopt unit
4. Learn from one defect per quarter
5. Implement teamwork tools

---

*Johns Hopkins Medicine*
1. Summarize the Evidence
   - Identify interventions associated with improved outcomes
   - Select interventions with the largest benefits and lowest barriers to use
   - Convert interventions to behaviors
   - Observe staff performing the interventions
   - "Walk the process" to identify defects in each step of intervention implementation
   - Enlist all stakeholders to share concerns and identify potential gains / losses associated with intervention implementation
   - Select Measures (Process and/or outcome)
   - Develop and pilot test measures
   - Measure Baseline Performance

2. Identify local barriers to implementation: understand the process and context of work
   - Envision the problem within the larger healthcare system
   - Engage Collaborative multi-disciplinary teams centrally (stages 1, 2, & 3) and locally (stage 4)

3. Measure Performance
   - Engage
     - Explain why the interventions are important
     - Educate
       - Share the evidence supporting the interventions
     - Evaluate
       - Regularly assess performance measures
     - Execute
       - Design an intervention on "toolkit" targeted to barriers employing standardization, independent checks and reminders, and learning from mistakes

4. Ensure all patients receive the interventions

Pronovost, BMJ 2008
CUSP Step 1:
Educate Staff on Science of Safety

Principles of Safe Design

• Standardize
  – Eliminate steps if possible

• Create independent checks

• Learn when things go wrong
  – What happened
  – Why
  – What did you do to reduce risk
  – How do you know it worked
System Factors Impact Safety

Adapted from Vincent
System Failures Lead to Errors

- Fatigue
- Bronch cart not stocked
- Communication between resident and nurse
- Patient suffers
- Hypoxic arrest
- Patient Illness
CUSP Step 2: Identify Defects

- Review error reports, liability claims, sentinel events or M and M conference

- *Staff Safety Assessment*: Ask staff how will the next patient be harmed
CUSP Step 3: Create Executive Partnership

- Executive should become a member of CUSP team
- Executive should meet monthly with CUSP team
- Executive should review defects, ensure CUSP team has resources to reduce risks, and hold team accountable for improving risks
CUSP Step 4: Commit to Learn from Defects

• What happened?

• Why did it happen (system lenses) ?

• What could you do to reduce risk ?

• How do you know risk was reduced ?
  – Create policy / process / procedure
  – Ensure staff know policy
  – Evaluate if policy is used correctly
CUSP Step 5:
Implement Tools to Improve

- Shadowing
- Briefings and Debriefings
- Culture Checkup
- Barriers identification and mitigation
- Many more
Improve Patient Safety Culture: Create Trust

• Caring
  – Keep Patients your North Star
  – Commit that preventable harm is not tenable
  – Tell your own Josie Story

• Competent
  – Learn from mistakes
  – Implement teamwork tools (CUSP)
Value Staff Empowerment

Keep patient as north star ~ Harm is not tenable

• Support decision to speak up
  – Must feel competent
  – Must feel it is safe
  – Must feel it will work

• Transparency when harm occurs
  – At patient level
  – At provider level
  – At organization level
Structures that Support Empowered Staff

• Performance Level
  – Orientation /Skill Building
  – Annual Competency Assessment
  – Recognition/Reward
    • clinical ladder (nurses)
    • compensated time (physician staff)
CUSP Lessons Learned

- Culture is local
  - Implement in a few units, adapt and spread
  - Include frontline staff on improvement team

- Not linear process
  - Iterative cycles
  - Takes time to improve culture

- Couple with clinical focus
  - No success improving culture alone
  - CUSP alone viewed as ‘soft’
  - Lubricant for clinical change
Local Team Accountability
Types of Barriers (4As)

- Awareness → Implement education
- Agreement → Group discussion
- Ambiguity → Clarify any type of ambiguity
- Ability → Identify any impeding system factors and eliminate them or reduce their impact
Ambiguities

- Task ambiguity
- Expectation ambiguity
- Responsibility ambiguity
- Method ambiguity
- Exception ambiguity
Beliefs of a Clinician

• Behavioral beliefs: Does complying lead to positive outcome(s)?

• Normative beliefs: What are the expectations of my colleagues regarding complying?

• Control beliefs: What are the factors that may impede or facilitate compliance and how much I can control these?
Questions to Contemplate

• What is your infrastructure to support patient safety at the unit, department and hospital levels
• Do safety leaders have the appropriate knowledge and skills?
• What theories and approaches are you using to reduce preventable harm
• How well are you engaging front line staff to innovate
• How will you take safety to the next level
“Never doubt that a small group of thoughtful committed citizens can change the world. Indeed, it’s the only thing that ever has.”

Margaret Meade
For More Information

cgoesch1@jhmi.edu

http://armstronginstitute.blogs.hopkinsmedicine.org/


