The Science of Safety

UCLA Health IP Leader Academy

Presenter 1: Dana Russell, MPH
Presenter 2: Melissa Moore, RN, BSN, CCRN
Outline

* Introduction to CUSP and the Science of Safety
* What is the Science of Safety?
* Examples from Our Own Backyard
* The CTICU Story: Empowering Nurses to Create a Culture of Safety
Apply CUSP

- Learn about CUSP
- Assemble the Team
- Engage the Senior Executive
- Implement Teamwork & Communication
- Identify Defects through Sensemaking

Understand the Science of Safety
The Science of Safety

100,000 preventable deaths each year in the U.S. from HAIs alone.

According to the WHO, it’s more dangerous to go to the hospital than it is to get on a plane.

Peter Pronovost, MD
Johns Hopkins

• The Science of Safety is healthcare’s response to this problem.
• This is not OK.
• Give us an approach, a framework to prevent harm.
Advances in medicine have led to positive outcomes:

- Most childhood cancers are curable
- AIDS is now a chronic disease
- Life expectancy has increased 10 years since the 1950s

However, sponges are still found inside patients’ bodies after operations. As long as humans are involved in healthcare, there is the potential for error.
Health Care Defects

In the U.S. health care system:

- 7 percent of patients suffer a medication error\(^2\)
- On average, every patient admitted to an intensive care unit suffers an adverse event\(^3,4\)
- 44,000 to 99,000 people die in hospitals each year as the result of medical errors\(^5\)
- Over half a million patients develop catheter-associated urinary tract infections resulting in 13,000 deaths a year\(^6\)
- Nearly 100,000 patients die from health care-associated infections (HAIs) each year, and the cost of HAIs is $28 to $33 billion per year\(^7\)
- Estimated 30,000 to 62,000 deaths from central line-associated blood stream infections per year\(^8\)
How Can These Errors Happen?

- People are fallible
- Medicine is still treated as an art, not a science
- Systems do not catch mistakes before they reach the patient
Principles of The Science of Safety

* Every system is perfectly designed to achieve its end results
* Safe design principles must be applied to technical work and teamwork
* Teams make wise decisions when there is diverse and independent input
* Removes personal blame but not accountability
System-Level Factors Affect Safety

Institutional
Hospital
Departmental Factors
Work Environment
Team Factors
Individual Provider
Task Factors

Patient Characteristics
Safety is a Property of the System

System-Level Factors Can Predict Performance

<table>
<thead>
<tr>
<th>System Factor</th>
<th>Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daily rounds with an intensivist</td>
<td>When ICUs are staffed with a multidisciplinary team, including daily rounds with an intensivist, mortality is reduced</td>
</tr>
<tr>
<td>Nurses responsible for more than two patients</td>
<td>When nurses are responsible for more than two patients, there is an increased risk of pulmonary complications in the ICU patient population</td>
</tr>
<tr>
<td>Point-of-care pharmacist or pharmacist who participates in rounds</td>
<td>A point-of-care pharmacist or one who participates in rounds reduces prescribing errors</td>
</tr>
</tbody>
</table>
Principles of Safe Design

- Standardize
- Create independent checks
- Learn from defects
Amsterdam Airport

• Urinals changed from standard large to small.

• Had problems with spillage.

• What would YOU do?
  • Plant monitor with checklist next to each urinal.
  • Do EPI study to assess who is at risk of spillage.
  • Change all urinals back to large size.
Principles of Safe Design
Standardize When You Can

Standardize When You Can (1 min., 42 sec.)
Create Independent Checks

Create Independent Checks (2 min., 13 sec.)
CUSP suggests this exercise 1x/month

The more lenses you have, the more you see. Teams make wise decisions when there is diverse and independent input.

Encourage staff to speak up, create environment for that to happen (drop boxes).
Learn From Defects

Learn From Defects (2 min., 58 sec.)
Format for Learning from Defects

Think about a recent safety issue in your unit and answer the four Learning from Defects questions:

* What happened?
* Why did it happen?
* How will you reduce the risk of recurrence?
* How will you know it worked?
Technical Work and Teamwork

Principles of Safe Design Apply to Technical and Teamwork (6 min., 27 sec.)
Teams Make Wise Decisions When There is Diverse and Independent Input
How To Ensure Diverse and Independent Input

Appreciate the wisdom of crowds

- Emphasize that health care is a team effort
- Develop an environment where frontline providers can voice concerns, and are acknowledged when they express concerns
- Gather as many viewpoints as possible

Alternate between convergent and divergent thinking

- Divergent thinking occurs on rounds, during brainstorming sessions, and when trying to understand what might be occurring\(^\text{10}\)
- Convergent thinking occurs while formulating a treatment plan or focusing on a specific task\(^\text{10}\)
Diverse and Independent Input

Teams Make Wise Decisions With Diverse and Independent Input
An Intervention to Decrease Catheter-Related Bloodstream Infections in the ICU

Peter Pronovost, M.D., Ph.D., Dale Needham, M.D., Ph.D., Sean Berenholtz, M.D., David Sinopoli, M.P.H., M.B.A., Haitao Chu, M.D., Ph.D., Sara Cosgrove, M.D., Bryan Sexton, Ph.D., Robert Hyzy, M.D., Robert Welsh, M.D., Gary Roth, M.D., Joseph Bander, M.D., John Kepros, M.D., and Christine Goeschel, R.N., M.P.A.

- 103 ICUs in Michigan. Led by research team at Johns Hopkins.
- Intervention: comprehensive QI approach (daily goals, insertion checklist, line cart)
- 66% reduction in CLABSI
- Sustained reduction over 18 months
Examples in Our Own Backyard

* Patients making it from the OR to the ICU with newly placed central lines and no dressings
* Patient has an unnecessary Foley in for 30+ days and gets a UTI, becomes septic
* Patients with new onset diarrhea being ruled-out for C. diff and not placed in isolation
* CLABSI in patient; the RNs did not know how to change the dressing using aseptic technique
Summary

* Every system is designed to achieve its anticipated results
* The Science of Safety calls for removing personal blame but not accountability.
* The principles of safe design are standardize when you can, create independent checks, and learn from defects
* The principles of safe design apply to technical work and teamwork
* Teams make wise decisions when there is diverse input
Empowering Nurses to Create a Culture of Patient Safety

Melissa Moore
RN, BSN, CCRN
Clinical Nurse III, Cardiothoracic ICU
University of California, Los Angeles
MAMoore@mednet.ucla.edu
Objectives

1. Describe the implementation of *On the CUSP: Stop CAUTI* Project on UCLA 7ICU

2. Identify how UCLA 7ICU Empowers Nurses to Improve Patient Safety
7ICU Healthy Work Environment

- True Collaboration
- Effective Decision Making
- Appropriate Staffing
- Meaningful Recognition
- Authentic Staffing

Example: Multidisciplinary rounds – primary RN presents the patient and makes recommendations
Implementation

- Email Communication
- Science of Safety Video
- HSOPS Survey
- Data Collection
- Point of Care Teaching
- Collaborative Committee Meetings
- Collaborate with Hospital Leadership
- Executive Rounds
- Physician Involvement
Appropriate/Inappropriate Catheter Indication Rates

![Bar chart showing appropriate and inappropriate indications for catheter use.]

- **Ronald Reagan University of California Los Angeles Medical Center - 7ICU**
  - Number of Catheterized Patients: 384
  - Percent of Catheterized Patients: 96.73%
  - Number of Patients with at least one appropriate indication: 1,040
  - Number of Patients with no appropriate indication: 112,139
  - Percent of Catheterized Patients: 87.83%

- **National Data**
  - Number of Catheterized Patients: 13
  - Percent of Catheterized Patients: 3.27%
  - Number of Patients with at least one appropriate indication: 1,040
  - Number of Patients with no appropriate indication: 15,534
  - Percent of Catheterized Patients: 12.17%
CAUTI Rate (by Catheter Days)
CAUTI Catheter Days/Patient Days (Prevalence) Trends
HSOPS Results

- Feedback & Communication About Error
- Overall Perceptions of Pt Safety
- Management Support for Pt Safety
- Organizational Learning-Continuous Improvement
- Manager Expectations & Actions Promoting Pt Safety
- Teamwork Within Units

Bar chart comparing Michigan and UCLA results.
HSOPS Results

- Nonpunitive Response to Error
- Handoffs & Transitions
- Staffing
- Teamwork Across Units
- Frequency of Events Reported
- Communicate Openness

Michigan vs. UCLA