

# 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



# 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.

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# Putting Safety in Context

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<sup>2</sup>
- On average, every patient admitted to an intensive care unit suffers an adverse event<sup>3,4</sup>
- 44,000 to 99,000 people die in hospitals each year as the result of medical errors<sup>5</sup>
- Over half a million patients develop catheter-associated urinary tract infections resulting in 13,000 deaths a year<sup>6</sup>
- 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<sup>7</sup>
- Estimated 30,000 to 62,000 deaths from central line-associated blood stream infections per year<sup>8</sup>

# 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

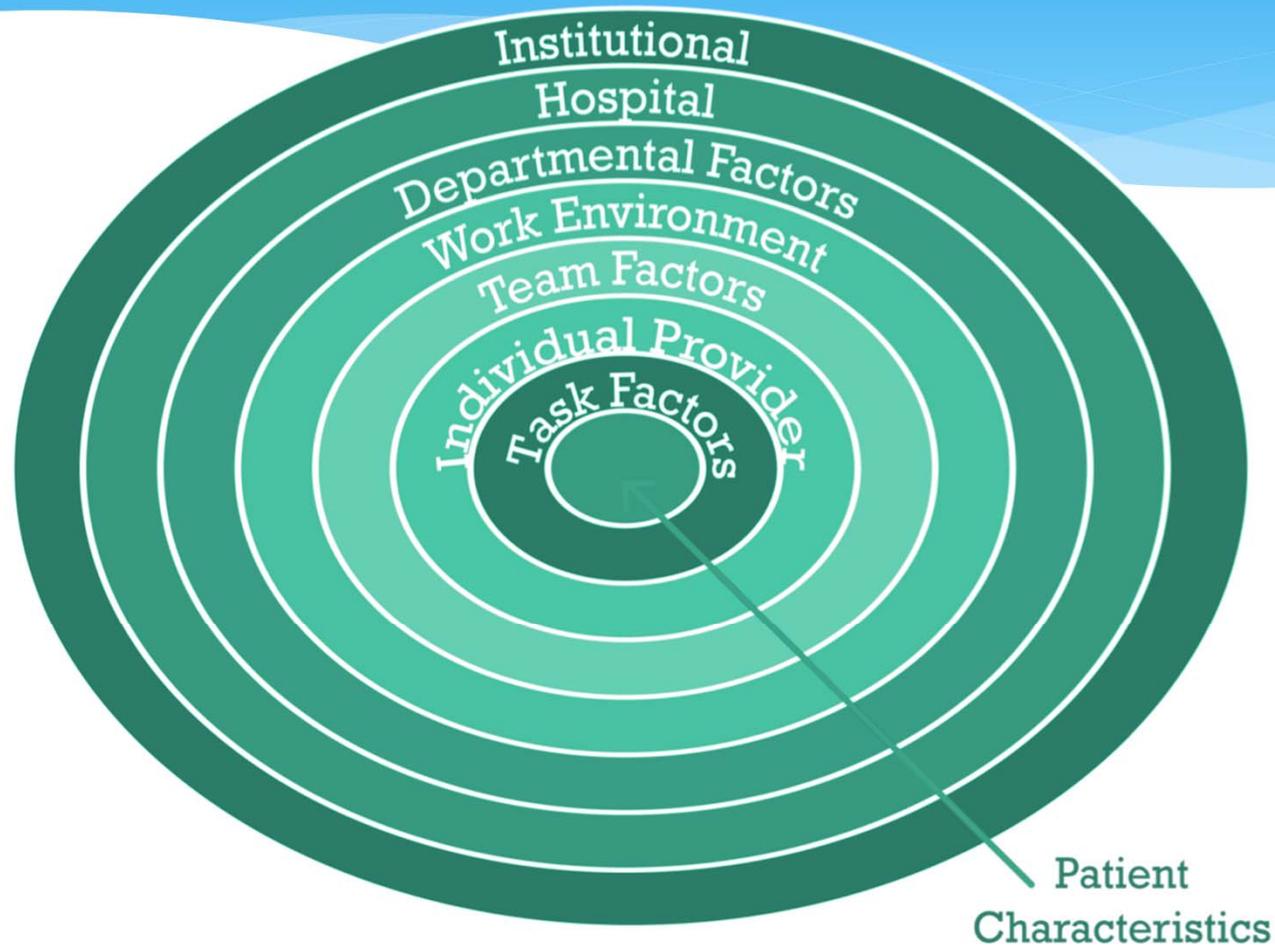


# Principles of The Science of Safety

- \* 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



# Safety is a Property of the System



[http://www.ahrq.gov/professionals/education/curriculum-tools/cusptoolkit/videos/o4b\\_safeproperty/index.html](http://www.ahrq.gov/professionals/education/curriculum-tools/cusptoolkit/videos/o4b_safeproperty/index.html)

# System-Level Factors Can Predict Performance

## Examples of Impact of System-Level Factors

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

# Principles of Safe Design

Standardize

Create  
independent  
checks

Learn from  
defects

# Principles of Safe Design

## 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.



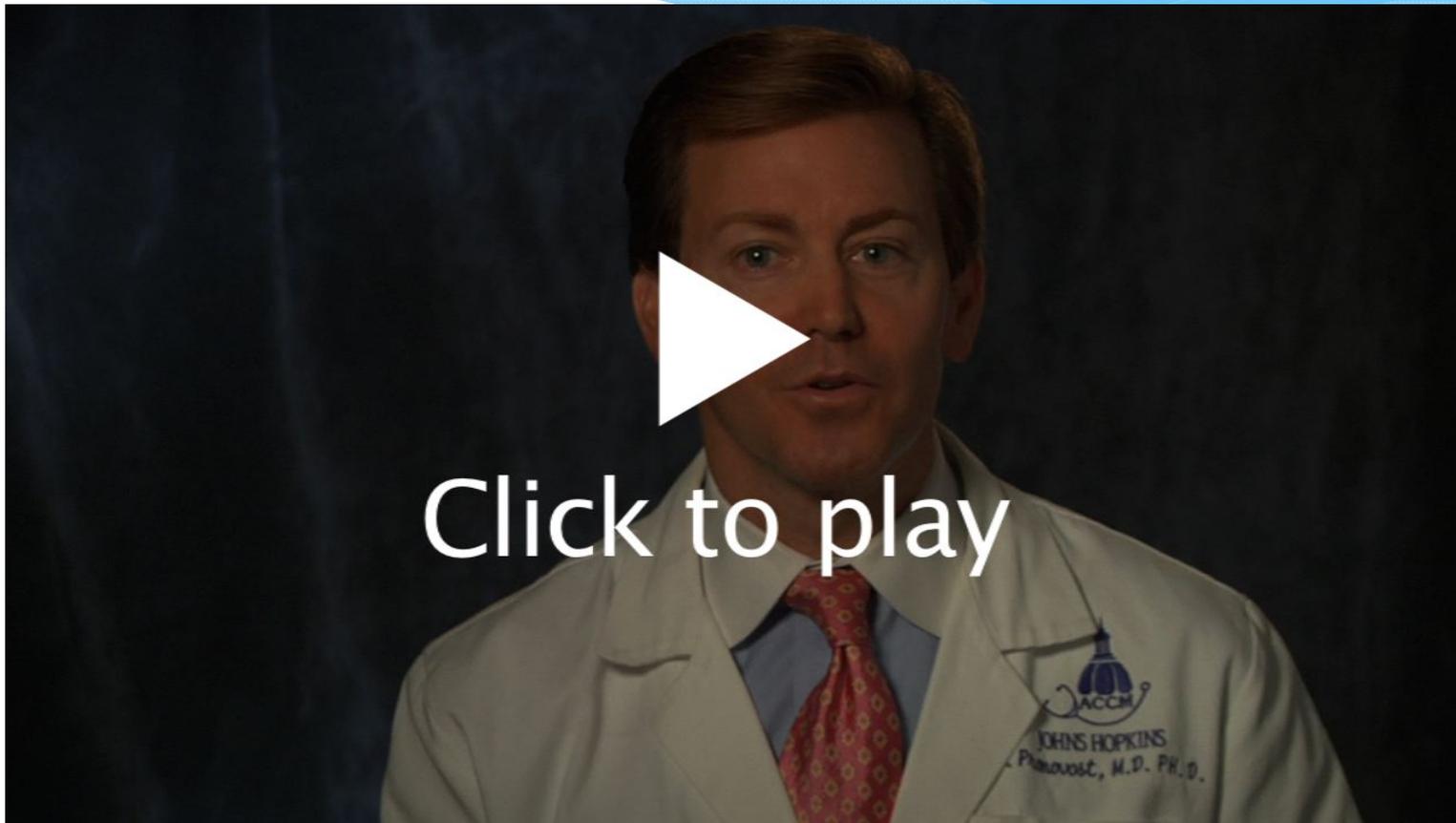
# Principles of Safe Design



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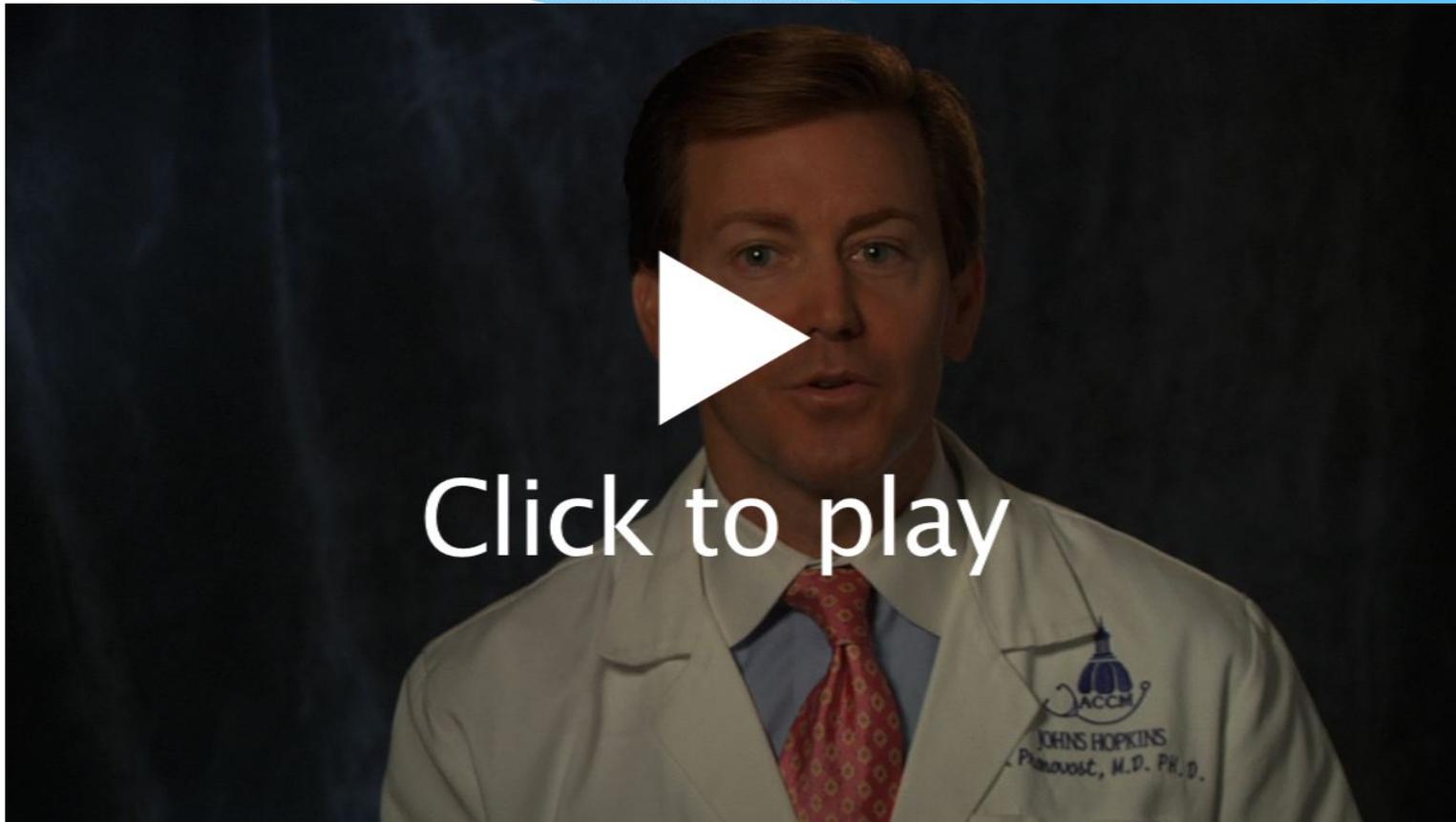
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# Standardize When You Can



[Standardize When You Can](#) (1 min., 42 sec.)

# Create Independent Checks



[Create Independent Checks](#) (2 min., 13 sec.)

# Learning from Defects

CUSP suggests this exercise  
1x/month



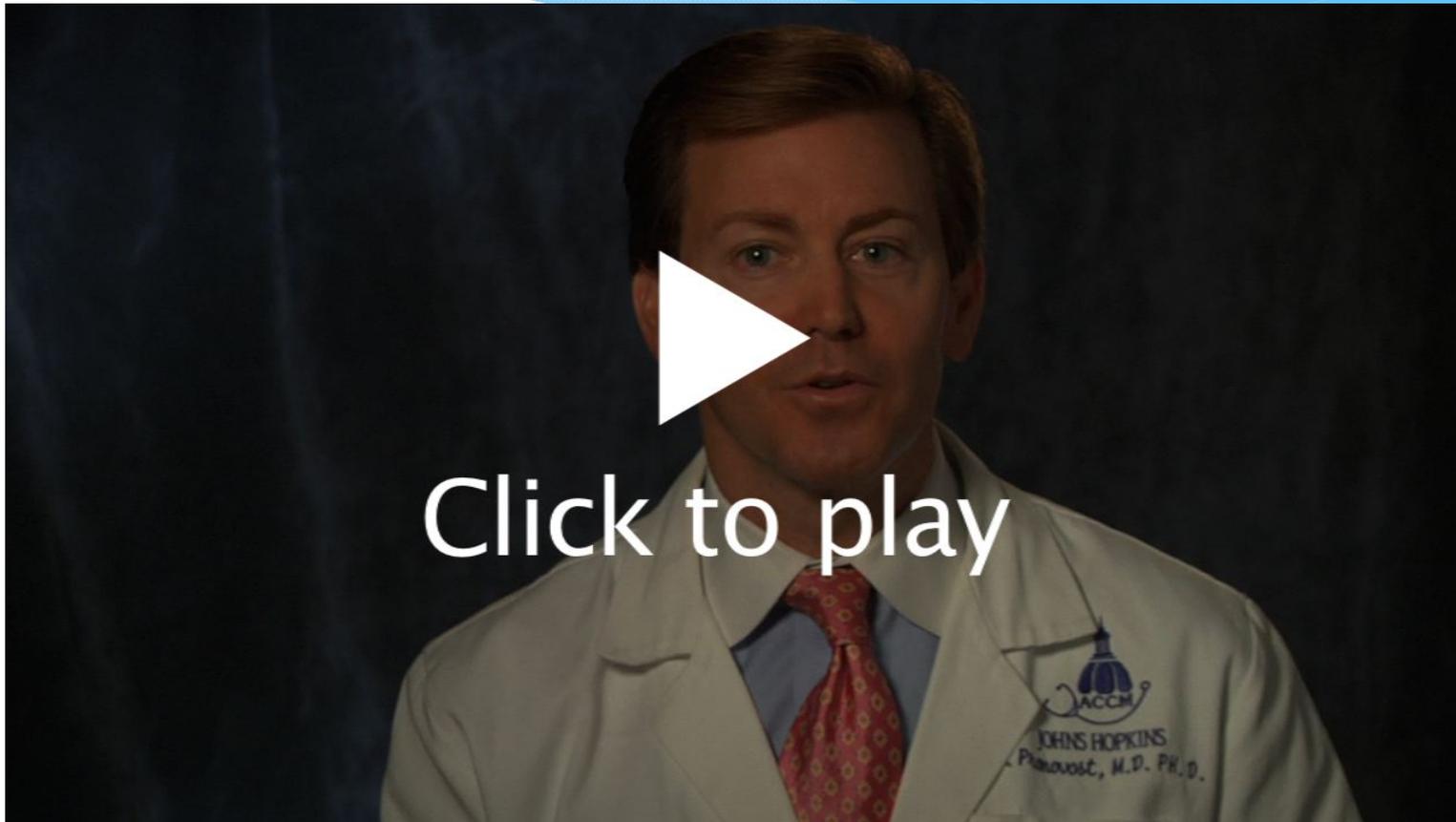
The more lenses you have, the more you see.  
Teams make wise decisions when there is diverse  
and independent input.

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

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# 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., 27sec.)

# Teams Make Wise Decisions When There is Diverse and Independent Input



# How To Ensure Diverse and Independent Input

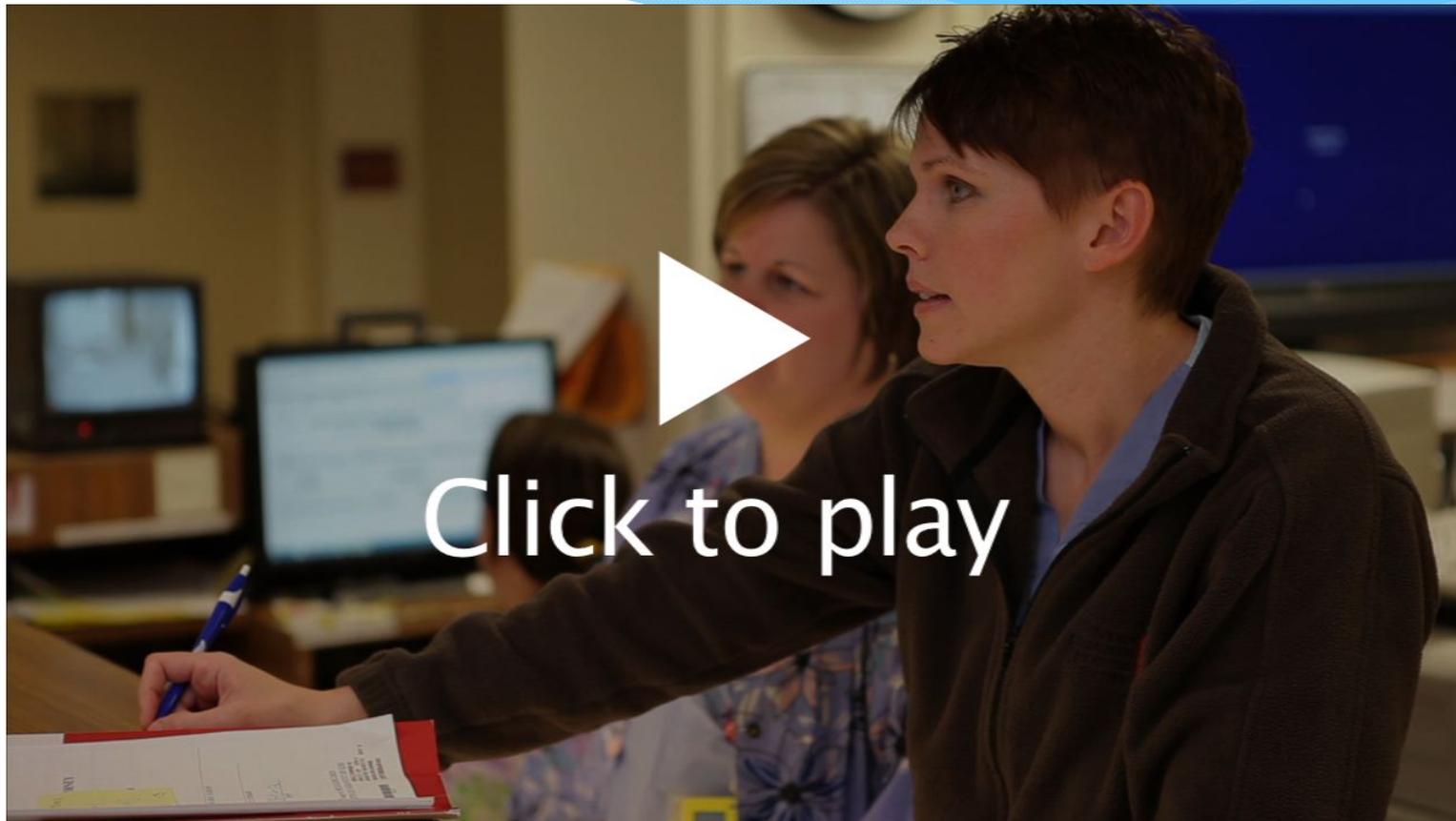
## Appreciate the wisdom of crowds

- 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

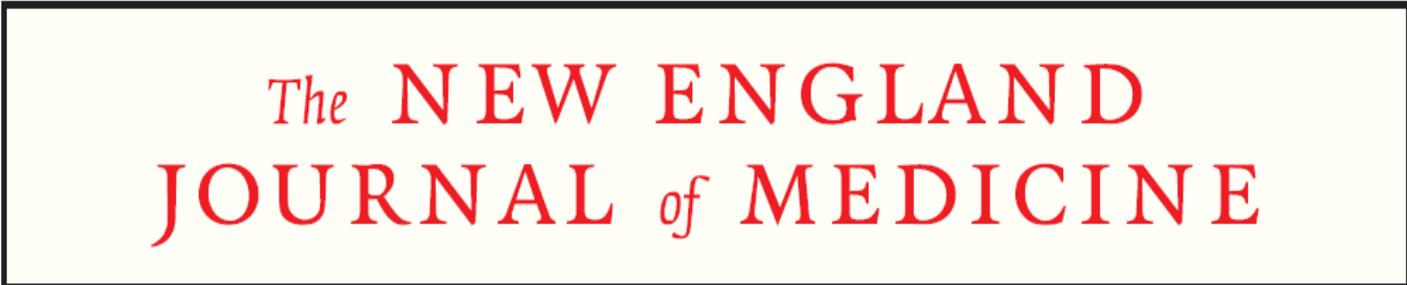
- Divergent thinking occurs on rounds, during brainstorming sessions, and when trying to understand what might be occurring<sup>10</sup>
- Convergent thinking occurs while formulating a treatment plan or focusing on a specific task<sup>10</sup>

# Diverse and Independent Input



[Teams Make Wise Decisions With Diverse and Independent Input](#)

# The Intervention: CLIP



The NEW ENGLAND  
JOURNAL of MEDICINE

ESTABLISHED IN 1812

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## 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

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# 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

Appendix R



## **DOES YOUR PATIENT REALLY NEED A URINARY CATHETER?**

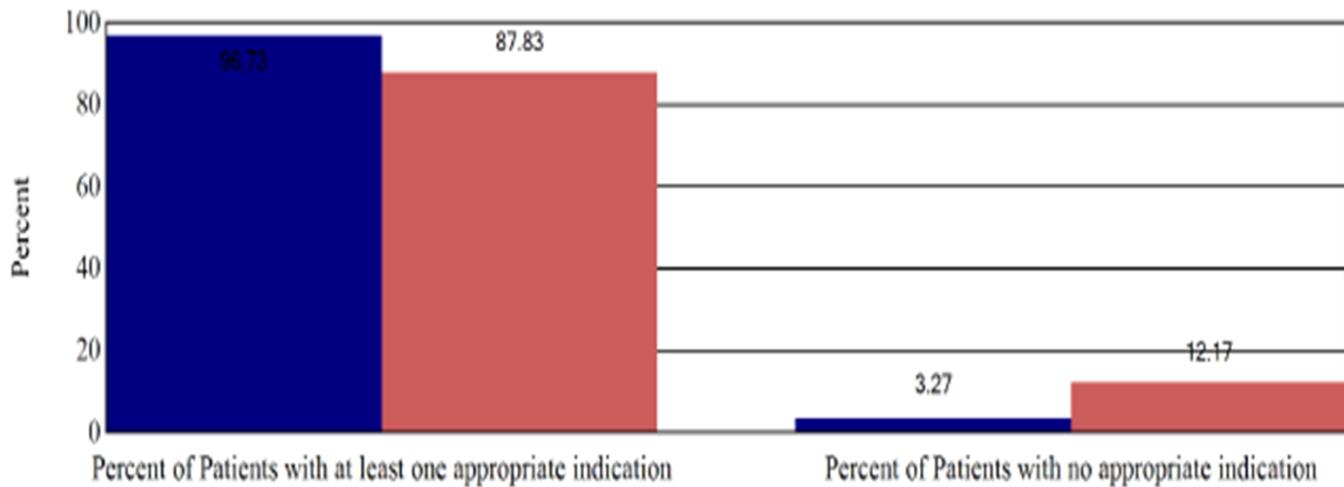
### **INDICATIONS FOR URINARY CATHETER USE INCLUDE:**

- Acute urinary retention or obstruction
- Perioperative use in selected surgeries
- Assist healing of perineal and sacral wounds in incontinent patients
- Hospice/ comfort care/ palliative care
- Required immobilization for trauma or surgery
- Chronic indwelling urinary catheter on admission
- Accurate measurement of urinary output in the critically ill patients (intensive care)

ANY QUESTIONS, PLEASE CONTACT MELISSA MOORE,  
MAMOORE@MEDNET.UCLA.EDU



# Appropriate/Inappropriate Catheter Indication Rates



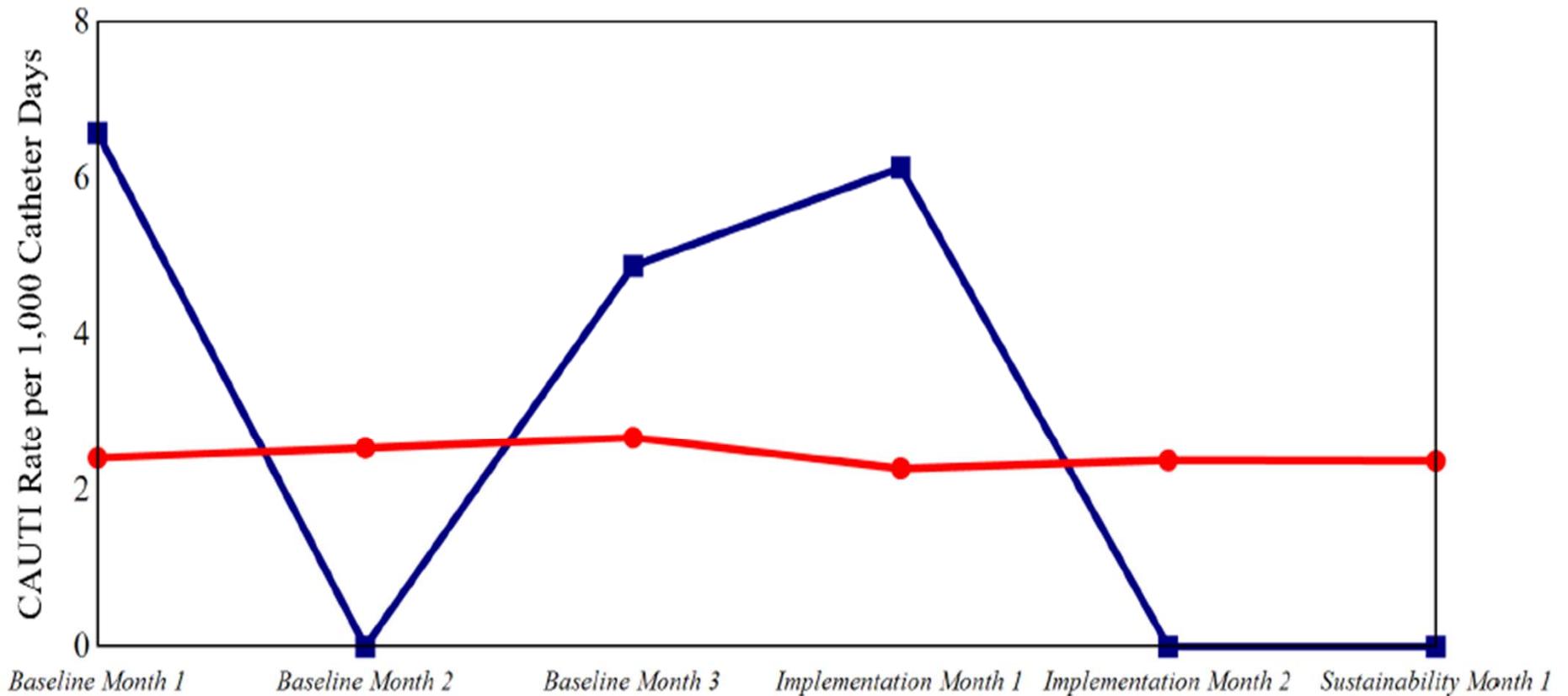
■ Ronald Reagan University of California Los Angeles Medical Center - TICU  
■ National Data

Indication / Reason	<i>Ronald Reagan University of California Los Angeles Medical Center - TICU</i>		<i>National Data</i>		
	Number of Catheterized Patients	Percent of Catheterized Patients	Unit Counts	Number of Catheterized Patients	Percent of Catheterized Patients
Number of Patients with at least one appropriate indication	384	96.73	1,040	112,139	87.83
Number of Patients with no appropriate indication	13	3.27	1,040	15,534	12.17

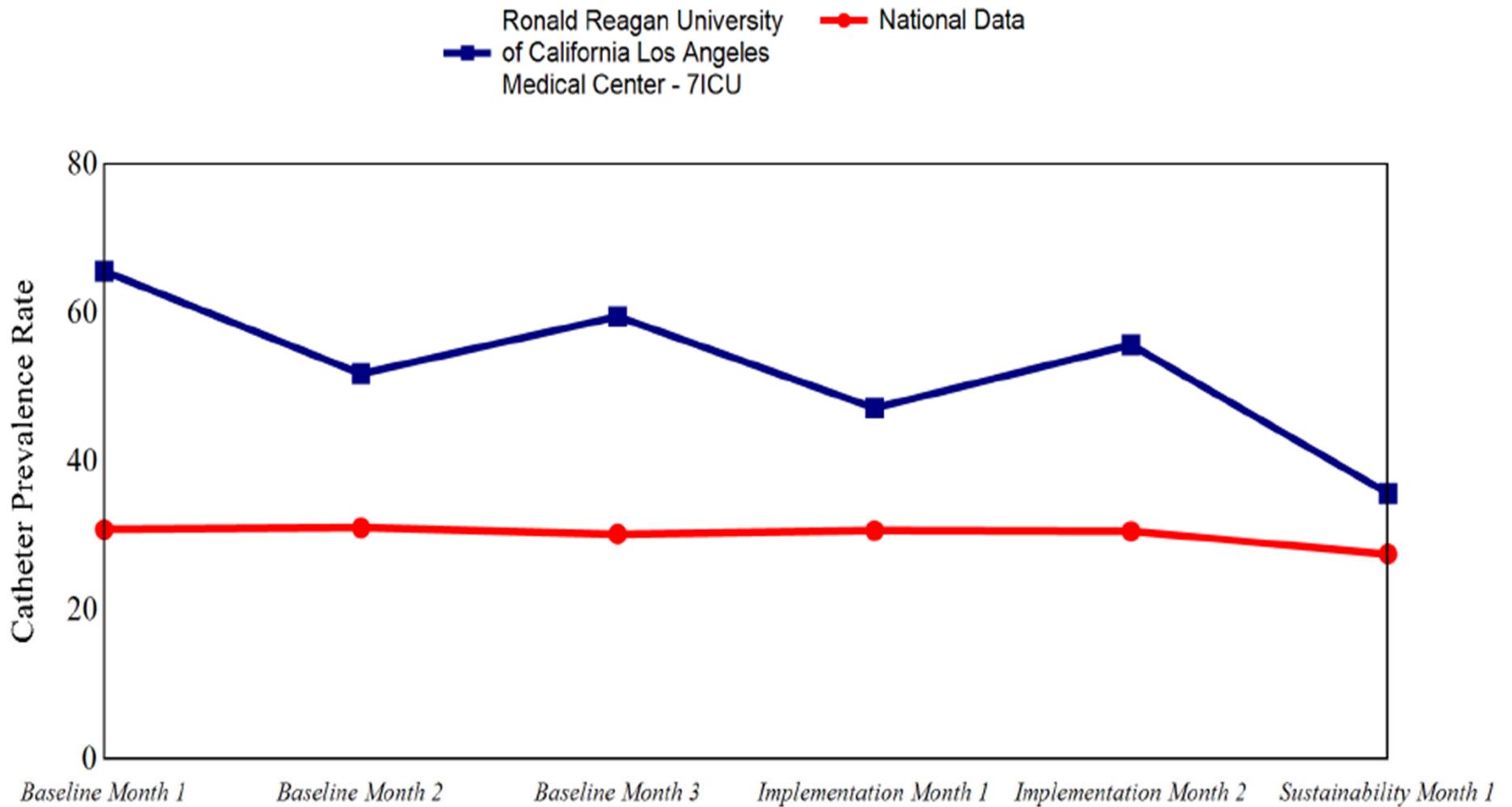
# CAUTI Rate (by Catheter Days)

Ronald Reagan University  
of California Los Angeles  
Medical Center - 7ICU

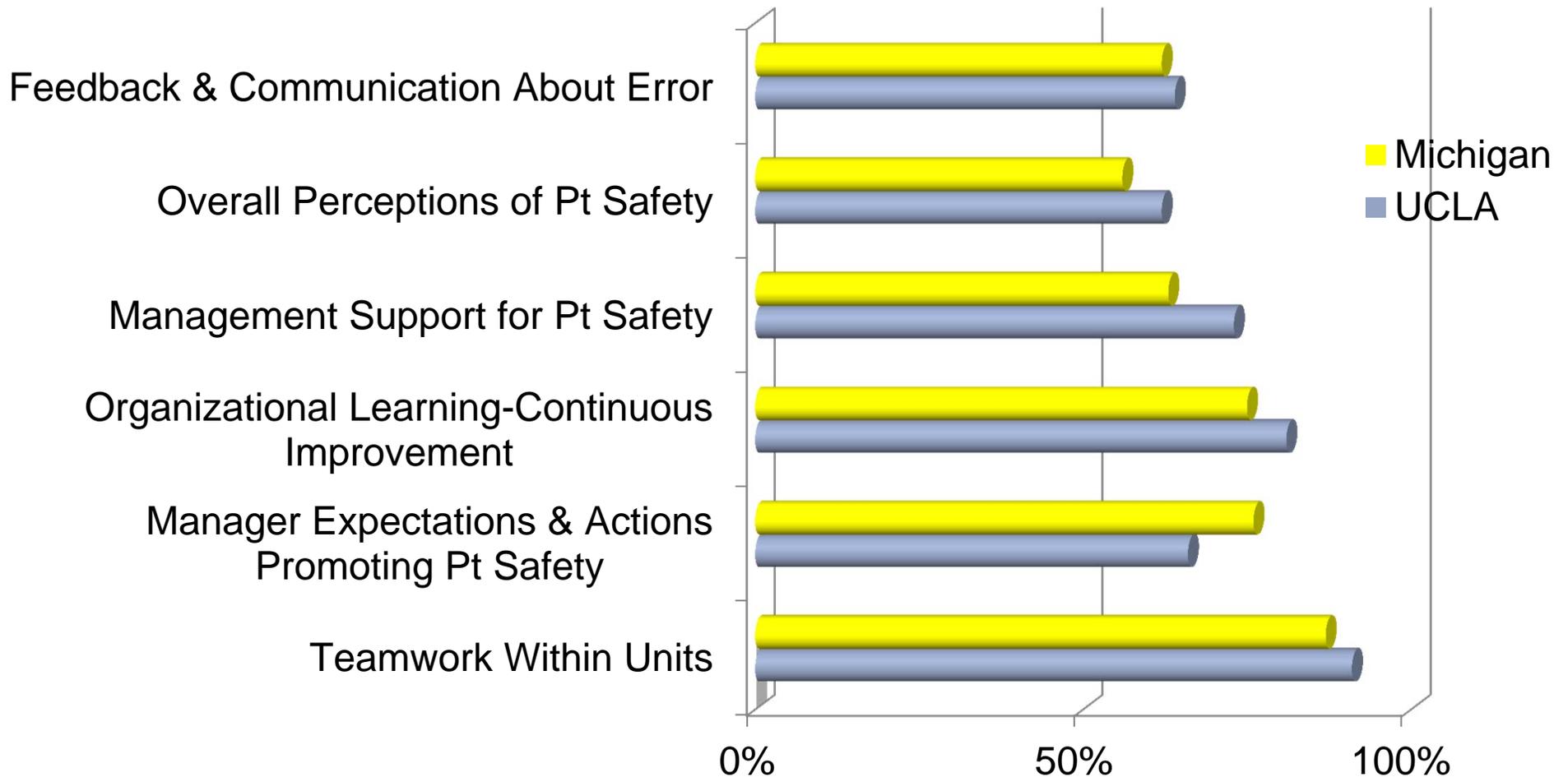
National Data



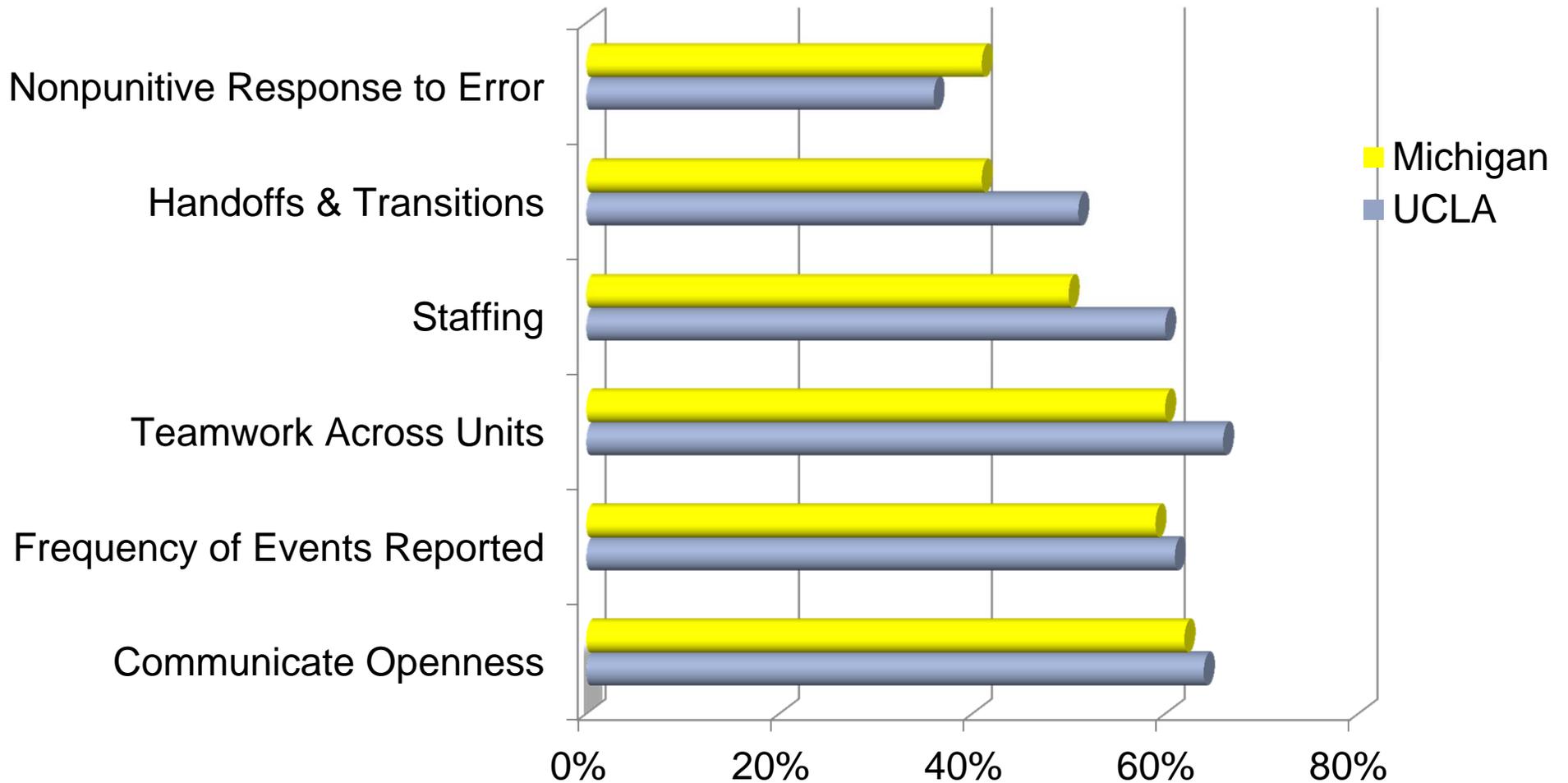
# CAUTI Catheter Days/Patient Days (Prevalence) Trends



# HSOPS Results



# HSOPS Results





**COVID-19**  
It's really bad!  
\$800 per day  
CAUTION: DON'T USE RSI!  
BILLION in per-year.

**COVID-19**  
Help from staff goes up  
every day you leave it in...  
so - wash it down!  
TAKE IT OUT!

**COVID-19**  
PPE: Personal Protective Equipment  
- you're in there  
- you're in there  
- you're in there  
- you're in there

**COVID-19**  
Did you know??  
Dr. Fauci is the doctor  
The CDC called in to  
the WHO's (World Health  
Org.)

**COVID-19**  
COVID-19 is a new  
coronavirus that causes  
respiratory illness. It can be  
spread through direct contact  
with an infected person or  
through droplets in the air.  
- coughs / sneezes / spit

