



TOGETHER FOR SAFER CARE



B1: Practical Application of High Reliability Principles in Health Care to Promote Quality and Safety Outcomes

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Conflict of Interest

- The presenters for this presentation have disclosed no conflict of interest related to this topic.



Objectives

- Define high reliability organization (HRO) principles.
- Describe how to apply HRO principles into daily healthcare work processes.
- Discuss how HRO principles drive quality outcomes, safety, and culture.

Context

- **Organization**
 - A **faith-based, nonprofit** health care organization
 - Colorado's **fourth largest private employer** with nearly 16,000 associates with 5000 RNs
- **Hospital**
 - **Specialty** - Adult and Geriatric Psychiatric Services; Cancer Care Center; Cardiovascular Institute; Center for Joint Replacement; Centura Health Transplant Program; Complex Medicine; Craniofacial & Skull Base Disorders; Robotics Institute; Spine Institute
 - **Magnet® designation**
 - **500+ Registered Nurses**
 - **83% Bachelor's or Higher**
 - **46% National Nursing Certification**



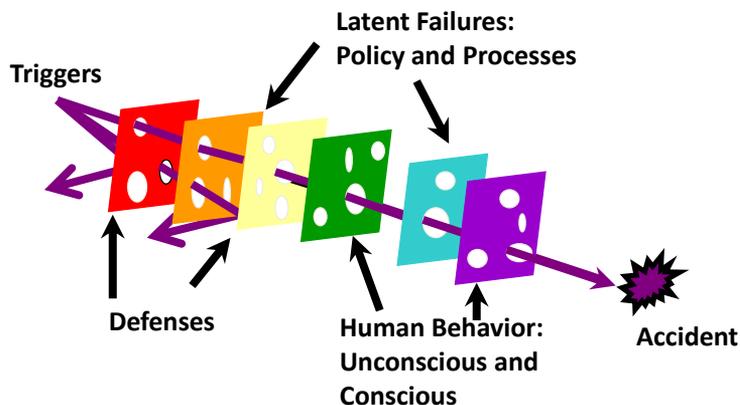
Safety Science

- **New Concepts:** science of error causation (“systems thinking”), complex systems, human factors, cognitive psychology, applied informatics
- **New Skills:** error analysis, leadership, change management
- **New Attitudes:** teamwork, discipline, professionalism, balancing “no blame” with accountability, disclosure



Wachter, 2011

Swiss Cheese Model of Organizational Accidents



Complex systems fail because of the combination of multiple small failures, each individually insufficient to cause an accident. These failures are *latent* and their pattern changes constantly.
Reason, 1990

Culture of Safety

- Permeates **all levels** of organization
 - Acknowledgement of high-risk, error prone activities
 - Blame-free environment
 - Expectation of collaboration
 - Resource availability



Wachter, 2012

High Reliability Science

- Study of “organizations in industries like commercial aviation and nuclear power that operate under hazardous conditions while maintaining safety levels that are better than in healthcare.”



Chassin and Loeb, 2013

High Reliability Organizations

- High reliability organizations (HROs) are those organizations that are high-risk, dynamic, turbulent, and potentially hazardous, yet operate nearly error-free.



Weick and Sutcliffe, 2007

High Reliability Relevance

- Healthcare **application** of high reliability principles is **complicated** by the complex adaptive **nature of care delivery systems**. (Lipsitz, 2012)
- Healthcare is **moving** from a reactive to a **proactive paradigm**. (Latney, 2016)
- **Near misses** are **influential** in evaluating healthcare structures and processes prior to experiencing negative outcomes. (Speroni, Fisher, Dennis and Daniel, 2014)
- HRO principle **application and integration** supports **proactive identification** of potential adverse events. (Clark, 2012)

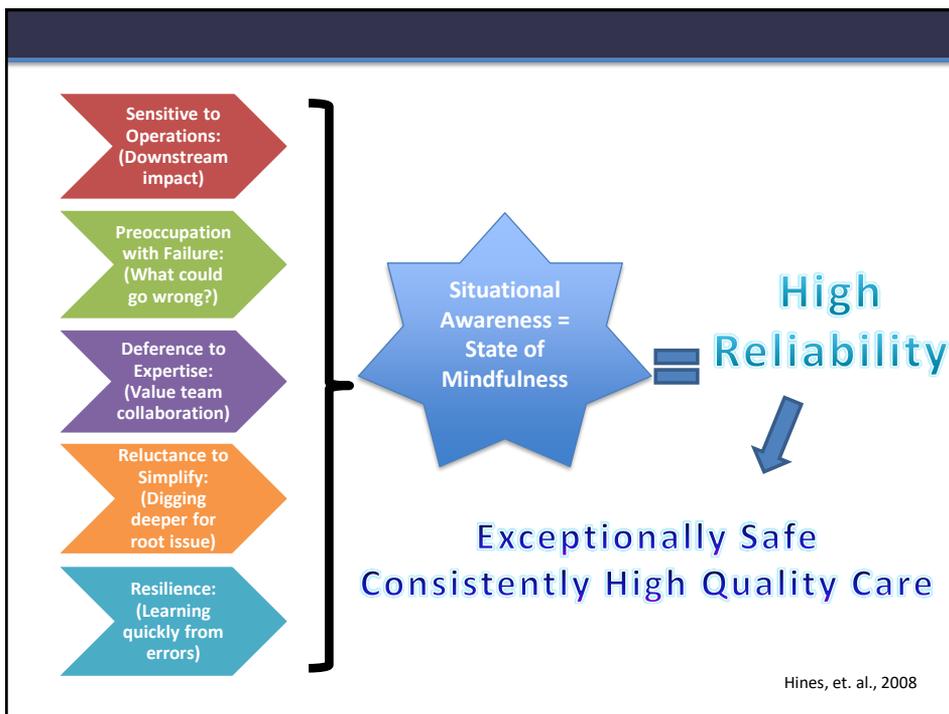
High Reliability Organization Principles

- **High Reliability Principles**

- Sensitivity to Operations
- Preoccupation with Failure
- Deference to Expertise
- Reluctance to Simplify
- Commitment to Resilience



Kemper & Boyle, 2009; Weick and Sutcliffe, 2007



HRO Principle: Sensitivity to Operations

Leaders and staff situationally aware of how processes and systems affect the organization.

Examples in Daily Processes

- Handoffs
- Standardized Communication
- Shift Huddles
- Daily Huddles
- Throughput plans
- Briefs
- CPOE



Be aware of your “down stream” impact.
How do my actions impact the whole?

Kemper & Boyle, 2009; Melnyk, 2012

HRO Principle: Preoccupation with Failure

All associates are encouraged to think of ways their work processes might break down.

Examples in Daily Processes

- Speak Up
- Room set-up prior to admit
- Mock Codes
- Simulation
- Close call error reporting
- System focus of error processing



Think ahead!
If something would go wrong....
What would that be?
How would I act?

Kemper & Boyle, 2009; Melnyk, 2012

HRO Principle: Deference to Expertise

Correctly migrated responsibility from formal executive authority to experiential competency-based decision-making.

Examples in Daily Processes

- Effective Structured Communication
- Shift Huddles
- Daily Huddles
- Frontline decision making
- RRT
- Evidence-based practice
- CNS availability



Am I the expert?
Who is the best person for this job?
Who knows this process best?

Kemper & Boyle, 2009; Melnyk, 2012

HRO Principle: Reluctance to Simplify

Leaders and staff dig deeper into the solution of a situation or issue.

Examples in Daily Processes

- Developed diverse CNS-led checks and balances from multiple perspectives
- Process Improvement: LEAN, PDCA, Six-Sigma
- No work arounds
- Inter-professional input into system processes and solutions



Am I settling for an easy fix?
Have I dug deeper?

Work  **ounds**

Kemper & Boyle, 2009; Melnyk, 2012

HRO Principle: Commitment to Resilience

Prepared in how to respond to failures and continually find new solutions.

Examples in Daily Processes

- Inter-professional team training
- Rewards and recognition promoting transparency
- Spirit of inquiry
- Reporting and managing errors
- Facility wide sharing of lessons learned

"Failure is only the opportunity to begin again, only this time more wisely."

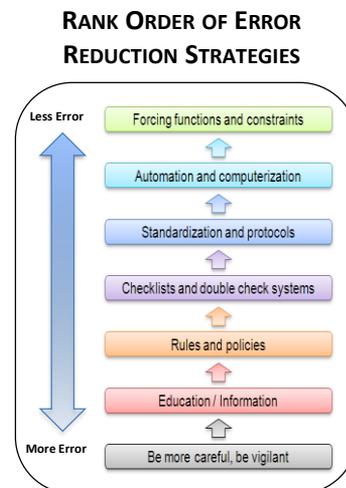
~ Henry Ford

How can I learn from this experience?
How can I share my learning with others?

Kemper & Boyle, 2009; Melnyk, 2012; Riley et.al., 2010

HRO Principle: Commitment to Resilience

- Implementation of innovative technology
- Supported standardized, low-variation practice



Carroll, 2011

HRO Principle: Commitment to Resilience

If I could do only one thing. What would that be? Where would I start?

Daily Hospital Huddle

Components

Look back: Significant safety or quality issue from last 24 hours

Look ahead: Anticipate safety or quality issues in next 24 hours

Follow-up: Status reports on issues identified today or days before

Who and How

Senior leadership lead – set tone and pace

All check in – no exceptions

Keep it brief – no more than 15 minutes

Daily huddle – same time and place every day

Standard format – same format every time



Cooper & Meara, 2002; Stockmeir & Clapper, 2011

Huddle Template – Slide 1

What Our Patients Want	Announcements	DAILY SAFETY AND EXPERIENCE HUDDLE – THURSDAY, JULY 26, 2016
<ul style="list-style-type: none"> • Don't harm me • Make me better • Be nice and actively listen to me • Tell me what you're going to do to me • Check on me frequently • Work as a team include the family • "I will remember how you made me feel" <p>Associates new to attending huddle:</p> <p>October: 25 Nov: 24 Dec: 17 Jan: 20 Feb: 36 Mar: 13 Apr: 11 May: 50 June: 14</p> <p>7/1:1 7/12:3 7/5:1 7/15:7 7/6:2 7/7:0 7/8:1 7/11:3</p>	<p>Fall Free since 7/7: 6 Days! Record to break is 11 days (12/23-1/3)</p> <p>Associate injury/exposure since 7/13: 0 Days! Record to break is 7 days (1/7/16-1/14/16; 3/16-3/23)</p> <p>Announcements:</p> <ul style="list-style-type: none"> • TJC survey – Coming soon!- Leaders –look for escort document 	
*Good Stories *Great Catches *Got Your Back *High Five for HRO *Positive Patient Experiences- <i>Lead with Love</i>		
HRO: Preoccupation with Failure: Maria McQueen- 1S Night Shift– Staff availability for an appropriate take-down		

Huddle Template – Slide 2

Follow Up from Last Huddle	Peak Capacity Debrief	DAILY SAFETY AND EXPERIENCE HUDDLE – THURSDAY, JULY 14, 2016
Peak Capacity 		
Looking Back – Key Events and Patient Experiences in Last 24 Hours		
<ul style="list-style-type: none"> • Patient Experience: • Safety Events: 		
Looking Ahead – Anticipate and Prevent: Any Concerns?		
<ul style="list-style-type: none"> • 0600 census xx of 237 		

HRO Principle: Commitment to Resilience

If I could do only one thing. What would that be? Where would I start?

Daily Hospital Huddle

One month Benefits and Outcomes:

- Generation of awareness to preventative safety and improvement practices
- Showcase best practice
- Shared Celebrations
- Re-enforcement of existing safety policies
- Several acknowledgements to individuals for the Great Catch Award
- Over 50 different topics addressed in the month thus creating awareness of the different events that reach our patients
- Over 61 follow-ups communicated- this has improved response turn-a-round for occurrences reported
- Ten referrals to other committees/councils-increases collaboration
- Improved awareness for high reliability concepts- will lead to decreased harm and improved care and experience for our patients



HRO Principle: Commitment to Resilience Daily Hospital Huddle

What the Evidence Says:

Transparent/Non-Punitive Safety Culture:

- ✓ Increase efficiency of exchanging critical information
- ✓ Review events
- ✓ Real time problem solving
- ✓ Improve patient safety
- ✓ Promotes interdisciplinary collaboration

Staff Engagement:

- ✓ Opportunities for all staff to stay informed
- ✓ Increase efficiency of exchanging critical information
- ✓ Venue for raising concerns
- ✓ Improve team work
- ✓ Reduce silos
- ✓ Increase trust across departments
- ✓ Helps staff appreciate and respect others
- ✓ Fosters empowerment

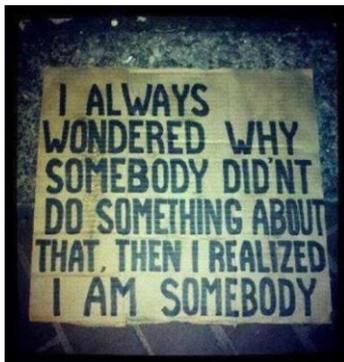
Increase High Reliability

Characteristics:

- ✓ Designed to reduce failures and eliminate harm
- ✓ Improve situational awareness
- ✓ Heightened risk awareness
- ✓ Increase 360 accountability
- ✓ Promotes system thinking
- ✓ Prompt resolution of issues
- ✓ Organizational resiliency

Cooper & Lee, 2013; Cooper & Meara, 2002; Goldenhar, et. al., 2013; Provost, et.al., 2014; Stockmeir & Clapper, 2011

Promotion of HRO Principles



• See It



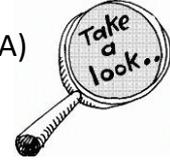
• Fix It



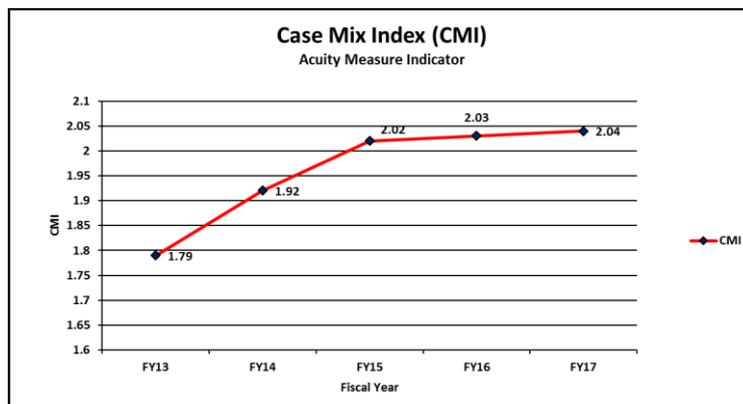
• Report It

Outcomes

- **Preventable Harm**
 - Case Mix Index (CMI)
 - Case Mix Index Adjusted Admissions (CMIAA)
 - Preventable Harm Incidents
- **Nurse Sensitive Indicators**
 - Catheter Associated Urinary Tract Infection (CAUTI)
 - Central Line Associated Blood Stream Infection (CLABSI)
 - Hospital Acquired Pressure Ulcer (HAPU)
 - Patient Fall

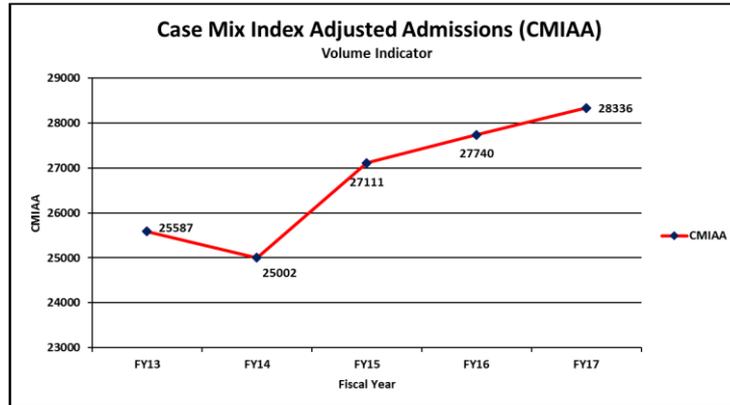


Preventable Harm - CMI



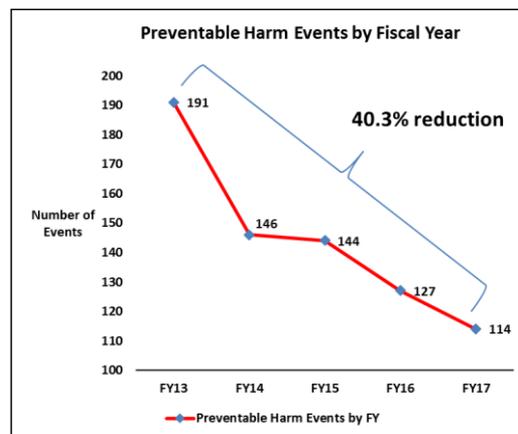
13.96% CMI increase FY13 to FY17

Preventable Harm - CMIAA

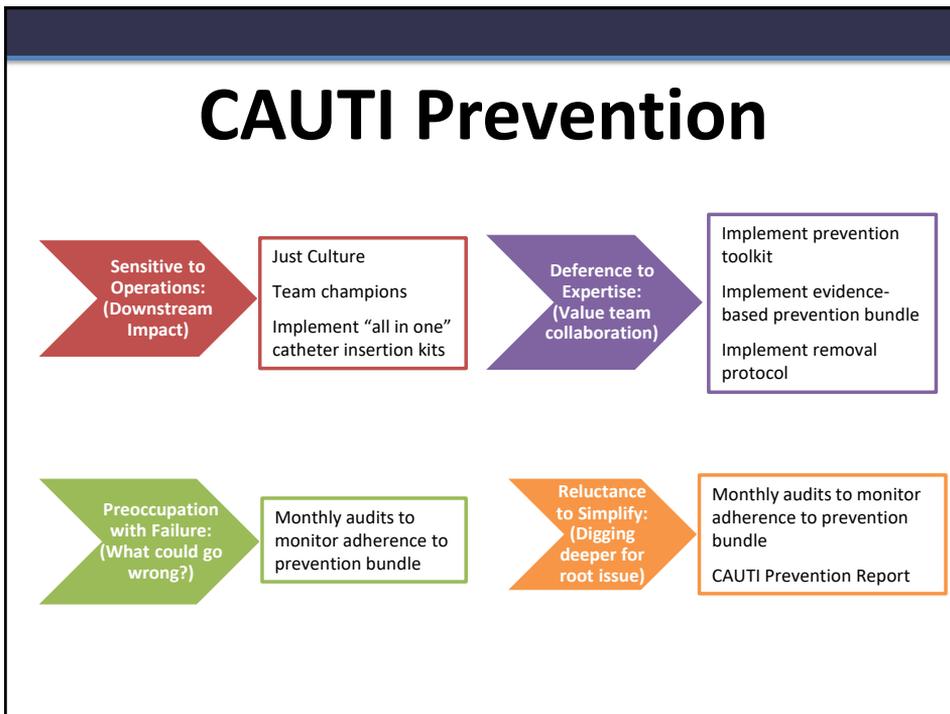
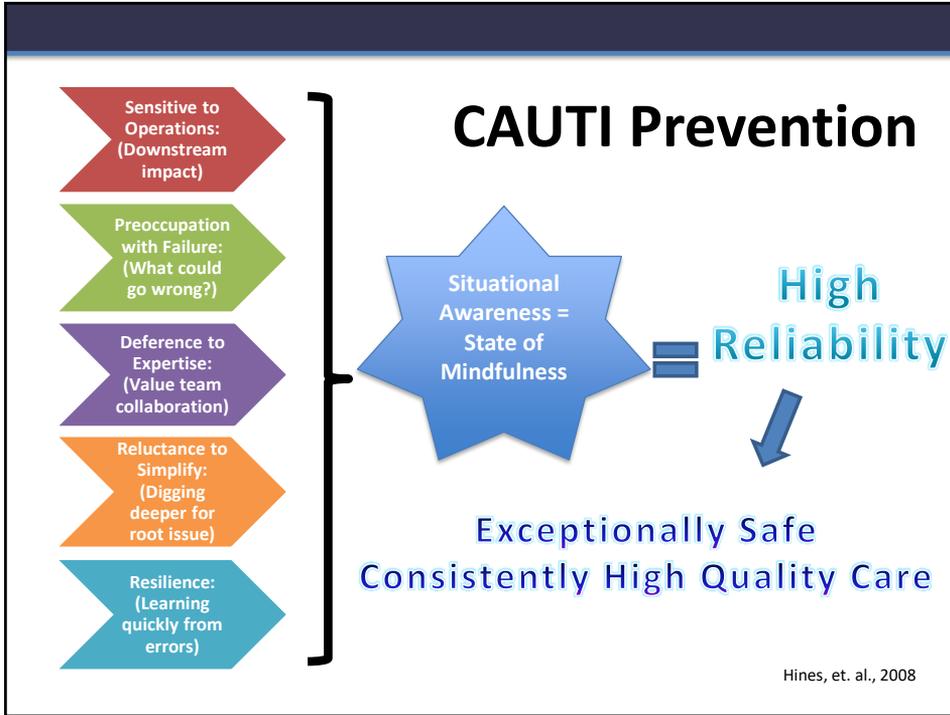


10.7% CMIAA increase FY13 to FY17

Preventable Harm - Incidents



40.3% reduction FY13 to FY17

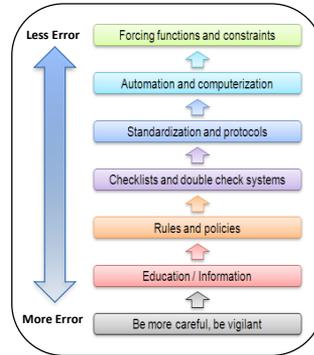


CAUTI Prevention

Resilience:
(Learning quickly from errors)

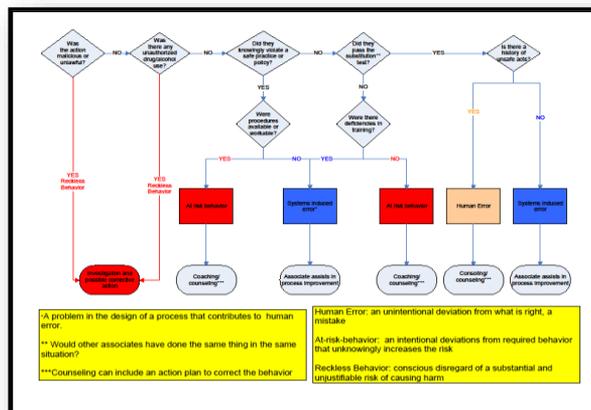
- Education on use of indwelling catheters: insertion, maintenance, removal
- Competency validation
- Standardize documentation
- Conduct just-in-time prevention bundle education
- Conduct just-in-time peer review
- Report unit specific outcome metrics monthly
- Ongoing audits
- Learning from defects

RANK ORDER OF ERROR REDUCTION STRATEGIES



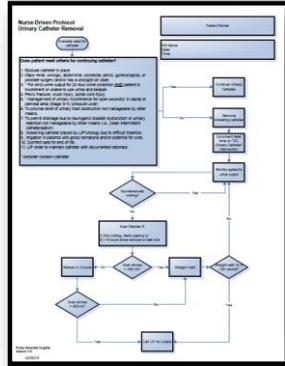
Carroll, 2011

CAUTI Prevention

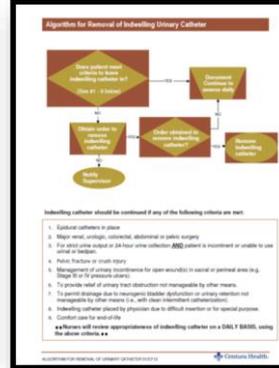


Dekker, 2016

CAUTI Prevention



Removal Protocol



Daily Need Assessment

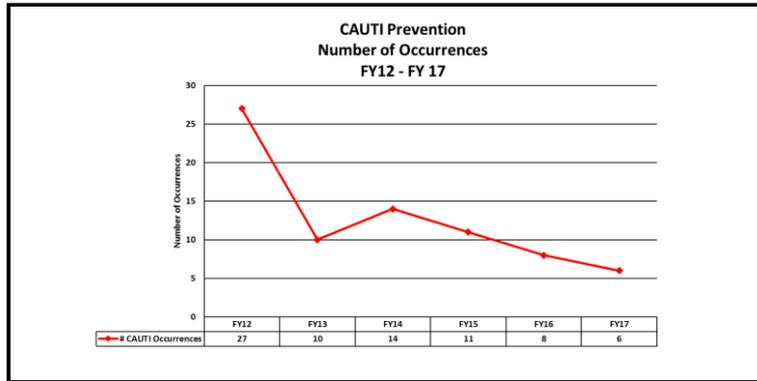
CAUTI Prevention

Insertion Checklist

Monthly Audit Tool

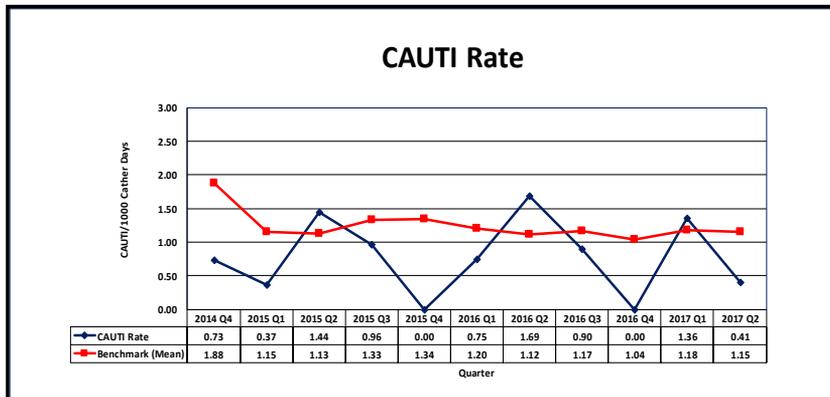
Patel, 2010

CAUTI Prevention



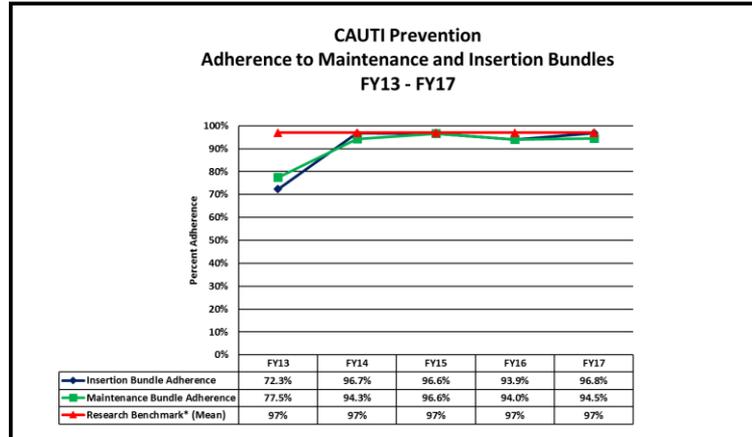
77% decrease CAUTI occurrences FY12 to FY17

CAUTI Prevention



8 of 11 quarters below benchmark

CAUTI Prevention



Bundle adherence 94% or greater

*Rosenthal, et. al., 2012

CAUTI Prevention

Celebrate Success!!

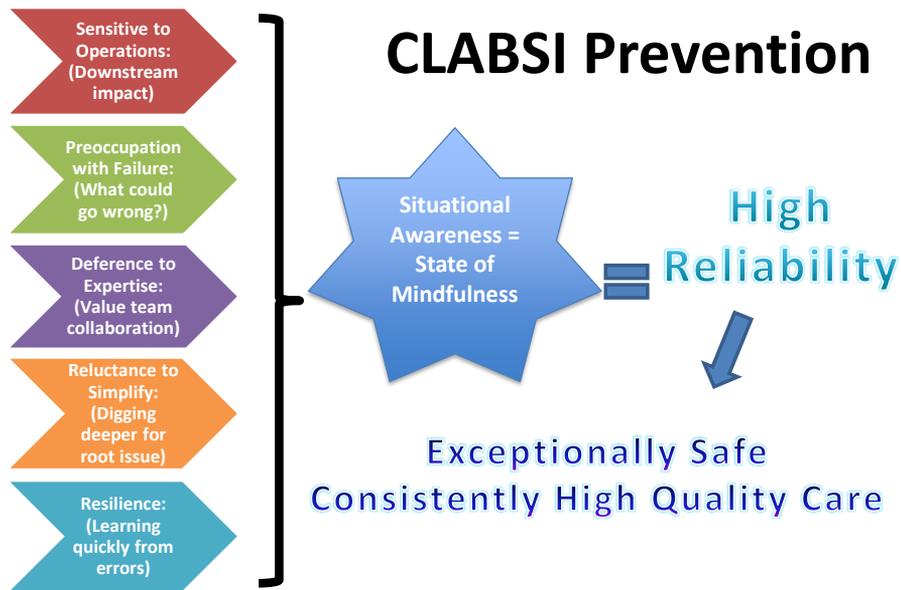


**ICU/SDU UBPC Meeting July 2013
One Year CAUTI Free!!!!!!**

CAUTI Prevention

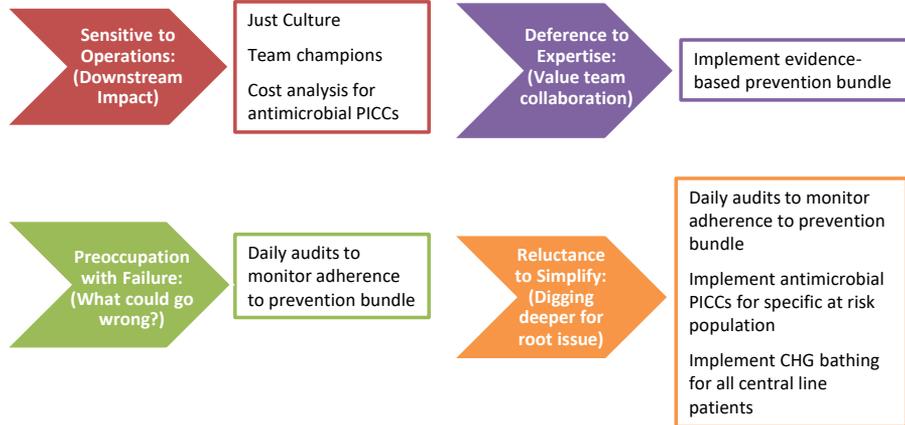
\$969,220 ESTIMATED DIRECT COST AVOIDANCE FY12 to FY17

FY Year	Actual	Avoided	Cost per	Cost Avoidance	Actual Cost
FY12	27	0	\$11,270	\$ --	\$304,290
FY13	10	17	\$11,270	\$191,590	\$112,700
FY14	14	13	\$11,270	\$146,510	\$157,780
FY15	11	16	\$11,270	\$180,320	\$123,970
FY16	8	19	\$11,270	\$214,130	\$ 90,160
FY17	6	21	\$11,270	\$236,670	\$ 67,620
			Total	\$969,220	\$856,520

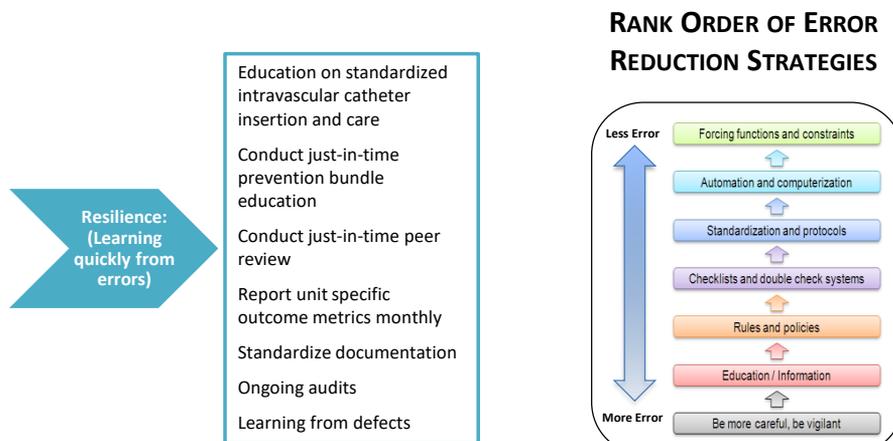


Hines, et. al., 2008

CLABSI Prevention

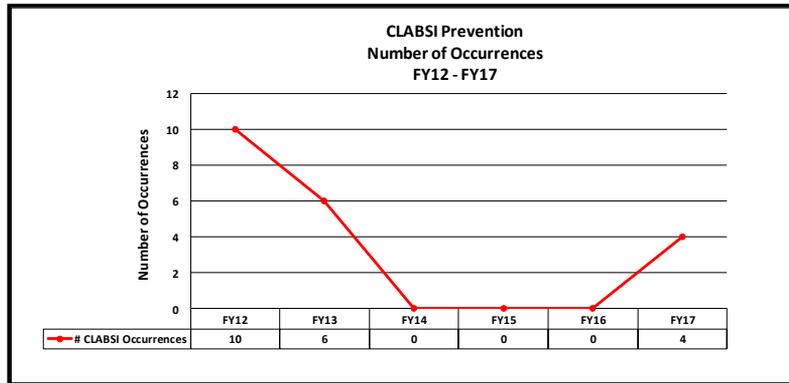


CLABSI Prevention



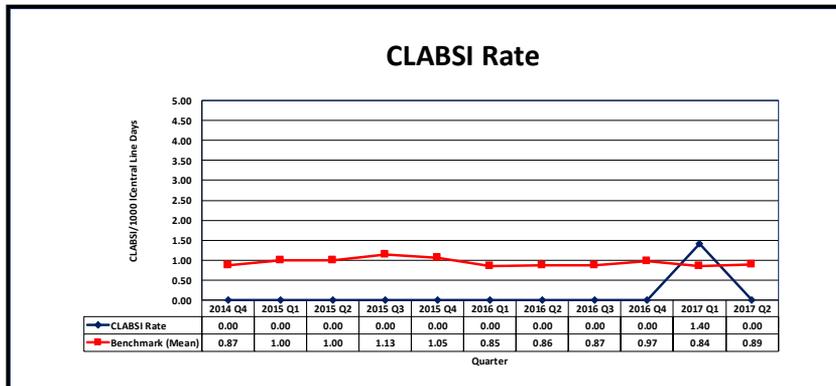
Carroll, 2011

CLABSI Prevention



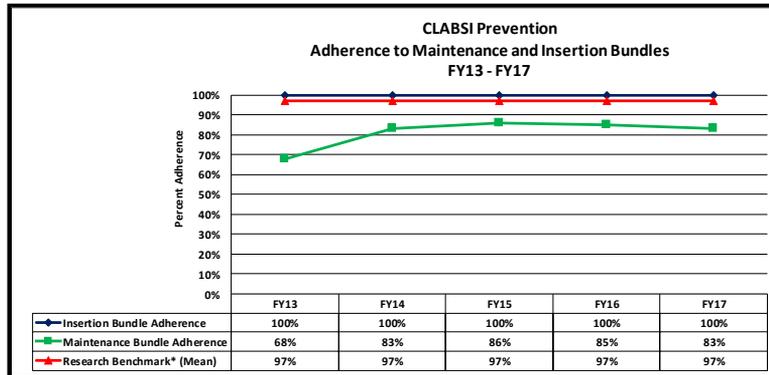
3.5 years CLABSI free

CLABSI Prevention



10 of 11 quarters below benchmark

CLABSI Prevention



*Rosenthal, et. al., 2012

CLABSI Prevention

Celebrate Success!!



Porter Perspectives: June 6, 2014

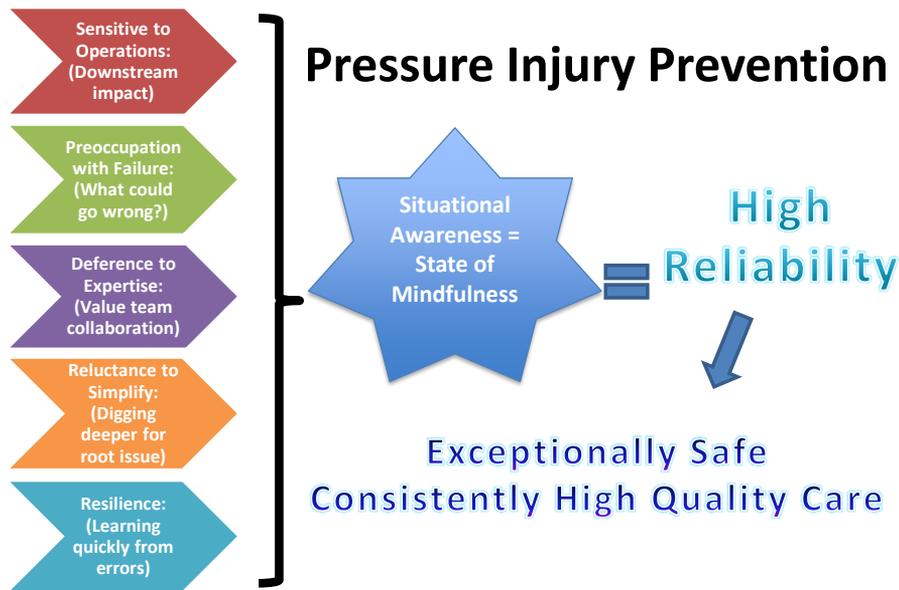


Lobby Poster

CLABSI Prevention

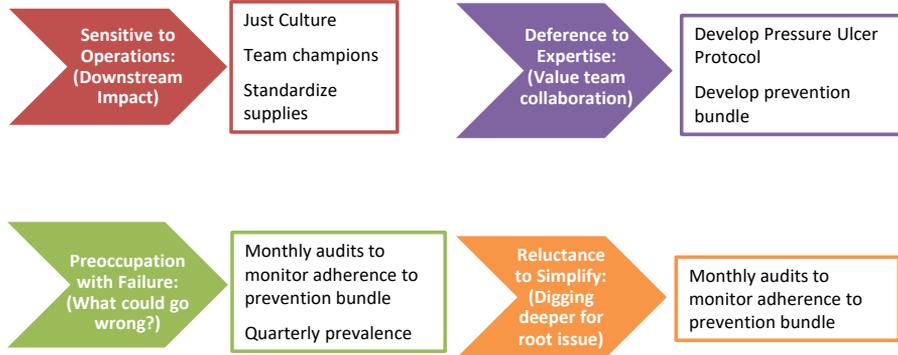
\$650,000 ESTIMATED DIRECT COST AVOIDANCE FY12 to FY17

FY Year	Actual	Avoided	Cost per	Cost Avoidance	Actual Cost
FY12	10	0	\$20,000	\$ --	\$200,000
FY13	6	4	\$16,000	\$ 64,000	\$ 96,000
FY14	0	10	\$17,000	\$170,000	\$ --
FY15	0	10	\$16,000	\$160,000	\$ --
FY16	0	10	\$16,000	\$160,000	\$ --
FY17	4	6	\$16,000	\$ 96,000	\$ 64,000
			Total	\$650,000	\$360,000

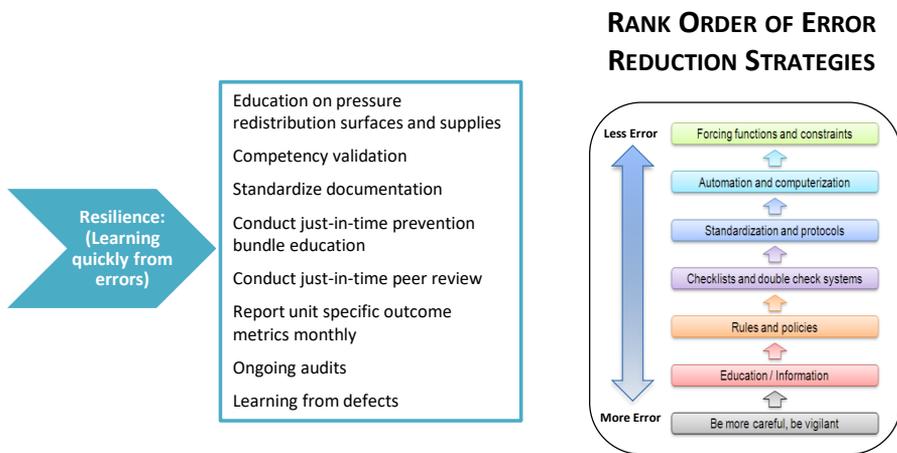


Hines, et. al., 2008

Pressure Injury Prevention



Pressure Injury Prevention



Carroll, 2011

Pressure Injury Prevention

PUP Adverse Event Analysis

Patient Name	Division ID
Patient ID	Date of Occurrence
Client Location	Date Reported
Unit	Date Analysis Due
Priority	
Summary	

Objectives:

- The clinical leader facilitates the analysis by extracting the questions below and returns to the Patient Safety Manager when complete.
- The clinical leader analyzes the information reported under "Explanations" to identify the appropriate action to prevent this event from happening in the future.
- The clinical leader reports the results of the analysis to the patient safety manager to determine if there are additional actions to be taken.
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Question	Response	Explanation
1. Were the standard policies, procedures and protocols that govern patient care followed during this event?	Yes/No	
2. Were the standard policies, procedures and protocols that govern patient care followed during this event?	Yes/No	
3. Were the standard policies, procedures and protocols that govern patient care followed during this event?	Yes/No	
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14. Were the standard policies, procedures and protocols that govern patient care followed during this event?	Yes/No	
15. Were the standard policies, procedures and protocols that govern patient care followed during this event?	Yes/No	
16. Were the standard policies, procedures and protocols that govern patient care followed during this event?	Yes/No	
17. Were the standard policies, procedures and protocols that govern patient care followed during this event?	Yes/No	
18. Were the standard policies, procedures and protocols that govern patient care followed during this event?	Yes/No	
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CONFIDENTIAL, QUALITY MANAGEMENT INFORMATION
Page 1 of 2

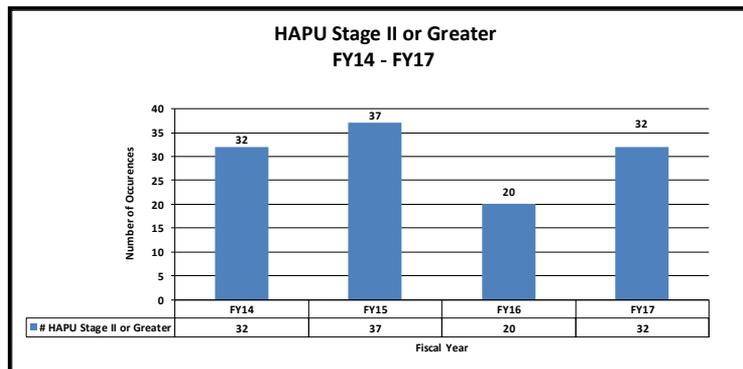
PUP Adverse Event Analysis

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Page 2 of 2

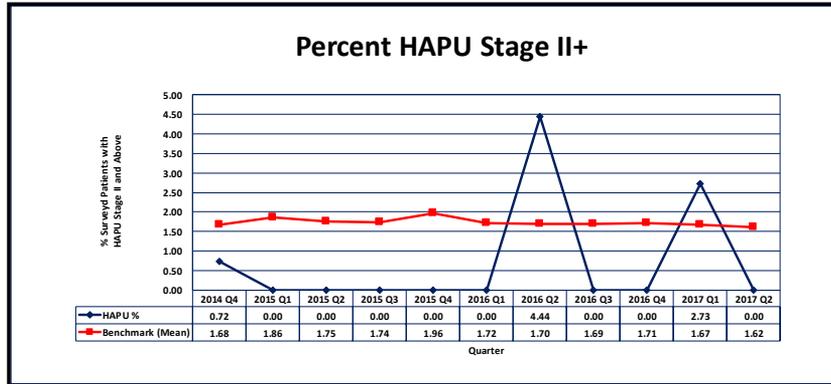
Adverse Event Analysis

Pressure Injury Prevention



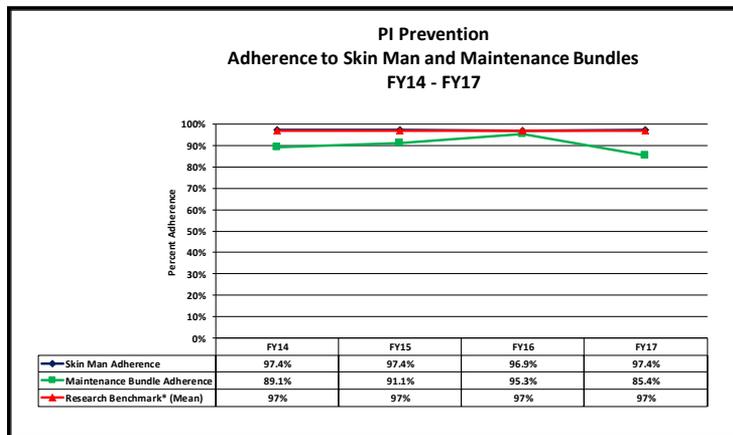
Opportunity for improvement

Pressure Injury Prevention



9 of 11 quarters below benchmark

Pressure Injury Prevention



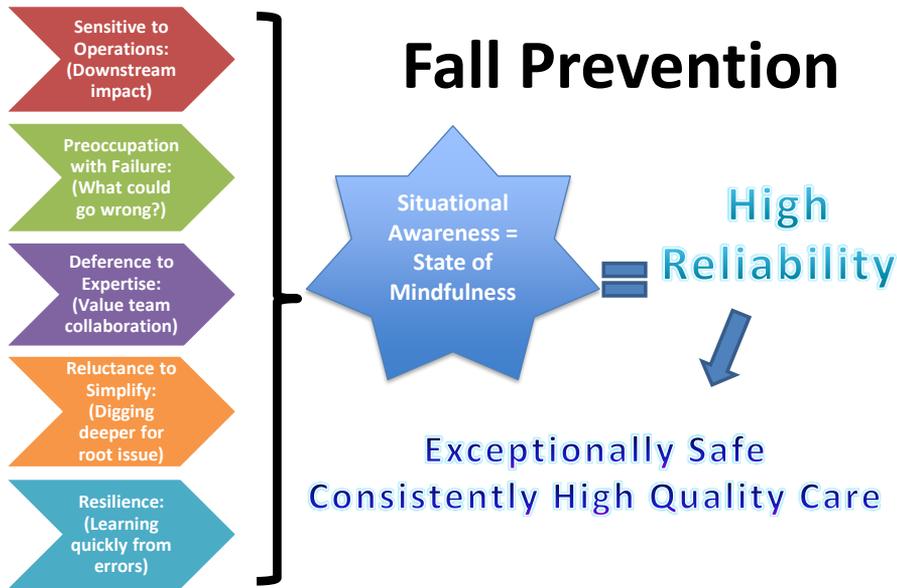
Bundle adherence 85% or greater

*Rosenthal, et. al., 2012

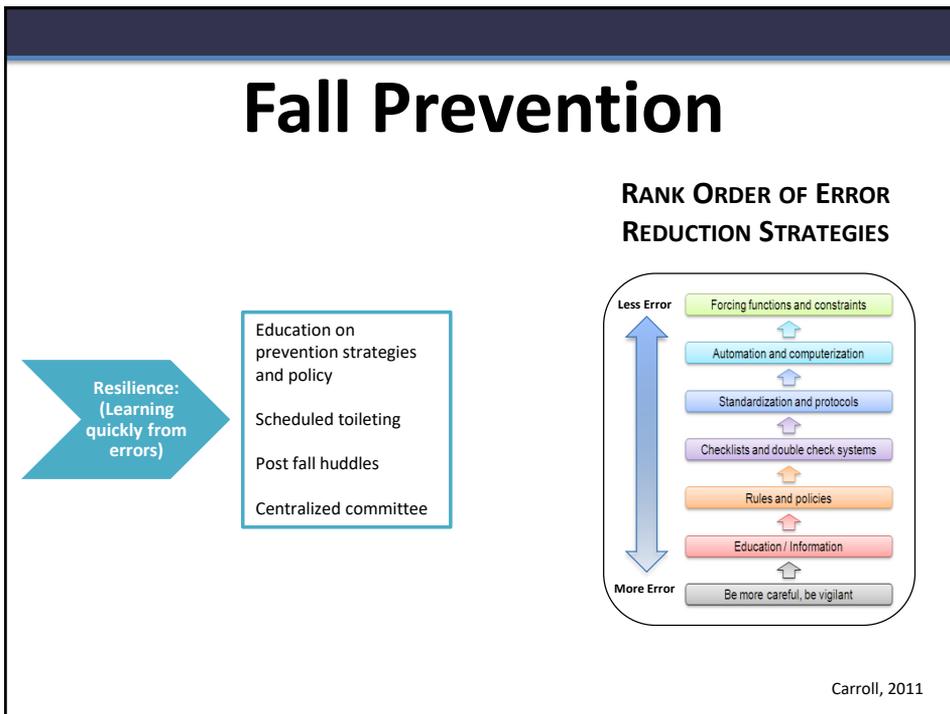
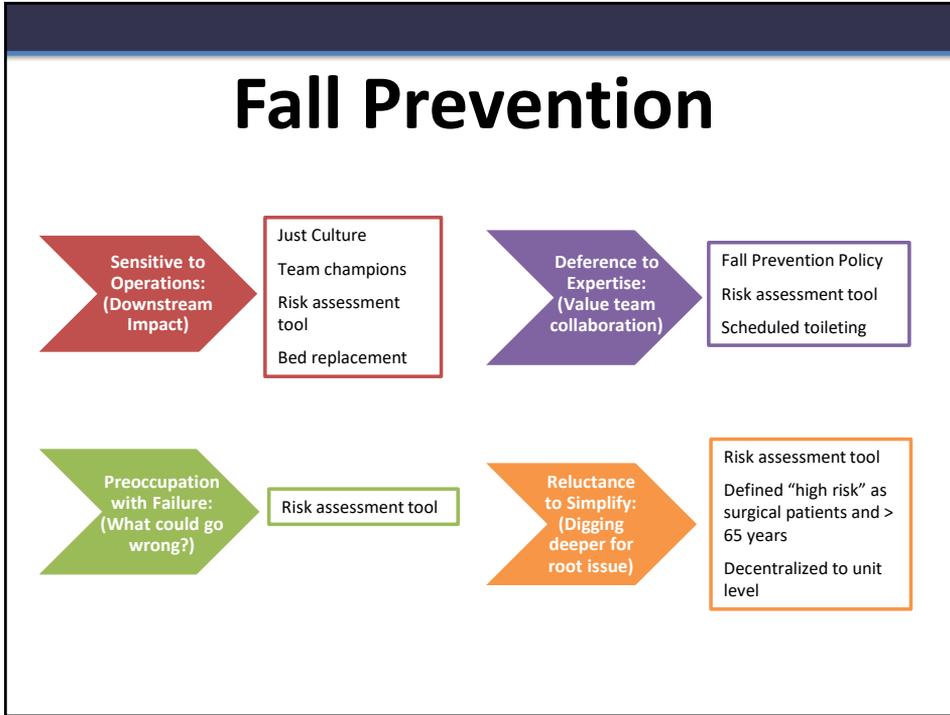
Pressure Injury Prevention

\$134,952 ESTIMATED DIRECT COST AVOIDANCE FY14 to FY17

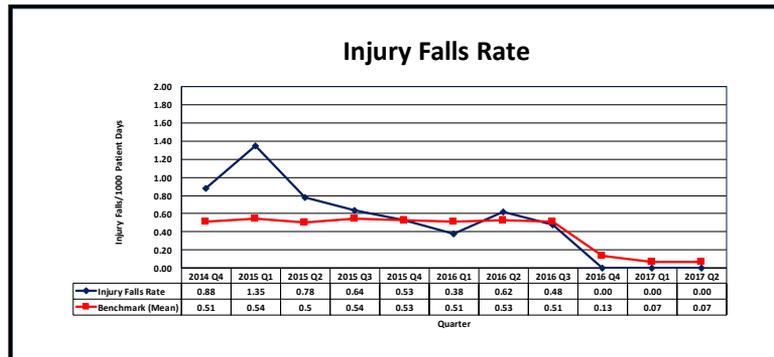
FY Year	Actual	Avoided	Cost per	Cost Avoidance	Actual Cost
FY14	32	0	\$11,246	\$ --	\$359,872
FY15	37	0	\$11,246	\$ --	\$416,102
FY16	20	12	\$11,246	\$134,952	\$224,920
FY17	32	0	\$11,246	\$ --	\$359,872
			Total	\$134,952	\$1,360,766



Hines, et. al., 2008



Fall Prevention



5 of 11 quarters below benchmark

Fall Prevention

\$241,000 ESTIMATED DIRECT COST AVOIDANCE FY13 to FY17
Total Preventable Inpatient Falls: No Injury

FY Year	Actual	Avoided	Avg Cost per	Cost Avoidance	Actual Cost
FY13	134	0	\$1000	\$ --	\$134,000
FY14	91	43	\$1000	\$ 43,000	\$ 91,000
FY15	95	39	\$1000	\$ 39,000	\$ 95,000
FY16	65	69	\$1000	\$ 69,000	\$ 65,000
FY17	44	90	\$1000	\$ 90,000	\$ 44,000
			Total	\$241,000	\$429,000

Fall Prevention

\$345,000 ESTIMATED DIRECT COST AVOIDANCE FY13 to FY17
Total Preventable Inpatient Falls: With Injury

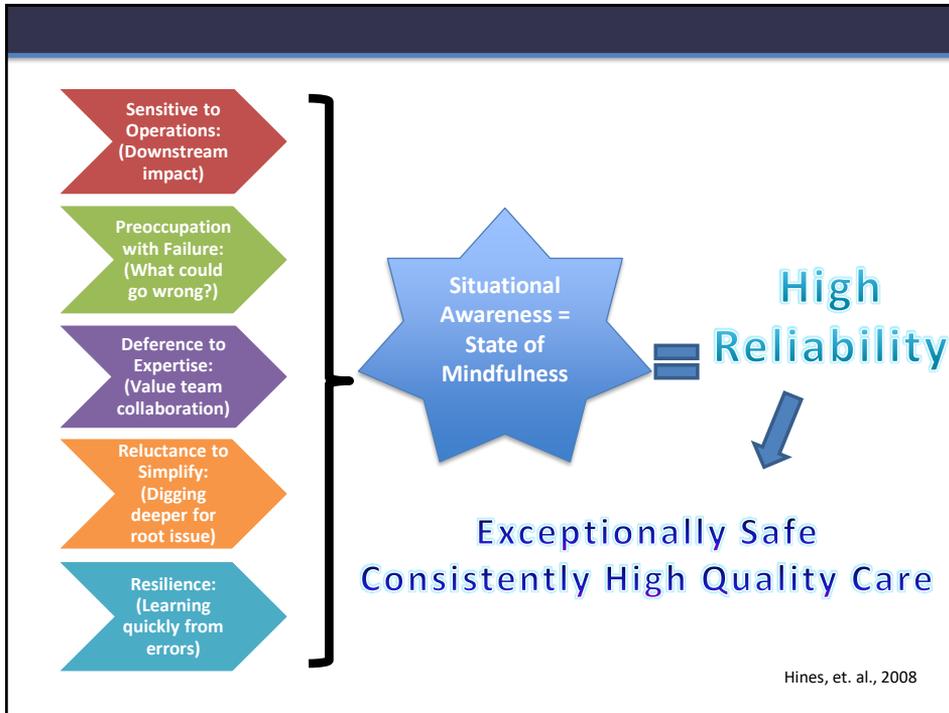
FY Year	Actual	Avoided	Avg Cost per	Cost Avoidance	Actual Cost
FY13	37	0	\$5000	\$ --	\$185,000
FY14	25	12	\$5000	\$ 60,000	\$125,000
FY15	29	8	\$5000	\$ 40,000	\$245,000
FY16	20	17	\$5000	\$ 85,000	\$100,000
FY17	5	32	\$5000	\$160,000	\$ 25,000
			Total	\$345,000	\$580,000

Nursing Value

\$2,340,172 ESTIMATED DIRECT COST AVOIDANCE
FY12 – FY 17

	Cost Avoidance
CLABSI Prevention FY12 to FY 17	\$ 650,000
CAUTI Prevention FY12 to FY17	\$ 969,220
Pressure Injury Prevention FY14 to FY17	\$ 134,952
Fall Prevention FY13 to FY17	\$ 586,000
Total Estimated Direct Cost Avoidance	\$2,340,172

Oster & Deakins, 2018; Pappas, 2013



Implications for Practice

• High Reliability Organization

- Culture of safety
- Patient-centered outcomes
- Professional autonomy
- Frontline staff accountability and engagement
- Leadership accountability and engagement



Value-based care

Oster, 2016

Implications for Practice

- **Leadership**
 - **Motivate** employees to transcend their own self-interest to improve performance through organizational learning and innovation
 - **Essential** to facilitate psychological safety



Applebaum, et. al., 2016; Carmeli, et. al. 2014

Leadership Commitment

- **Civility**
 - For ALL interactions
 - Zero tolerance for intimidating or disruptive behaviors
- **Respect**
 - Bedrock of shared understanding
 - Communication style with greater team
- **Support**
 - Language matters



Blouin, 2013; Sutcliffe, 2011

Leadership Commitment

- **Professionalism**
 - Skill
 - Good judgement
 - Polite behavior
- **Accountability**
 - Clear what is acceptable and unacceptable behavior
 - Conduct expectations the same regardless of discipline



Blouin, 2013

Implications for Practice

- **Clinical Frontline Staff**
 - Be **proactive**
 - Anticipate **change** in risk
 - Plan to **adapt**
 - **DO NOT wait** for an adverse event to occur to make corrections!
 - **OWN IT!**



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Sustaining a High Reliability Culture

- **Theory, Practice and EBP/Research**

- **Everyone** accountable for outcomes
- **Partnership** among patient safety, quality, nurse scientist, clinical staff and leadership



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Questions???



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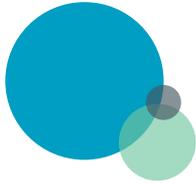


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