Role of Academic Medical Centers in the National Quality Agenda

Dr. Peter Pronovost
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UNIVERSITY OF CALIFORNIA UC Health

Center For Health Quality And Innovation

ARMSTRONG INSTITUTE
FOR PATIENT SAFETY AND QUALITY

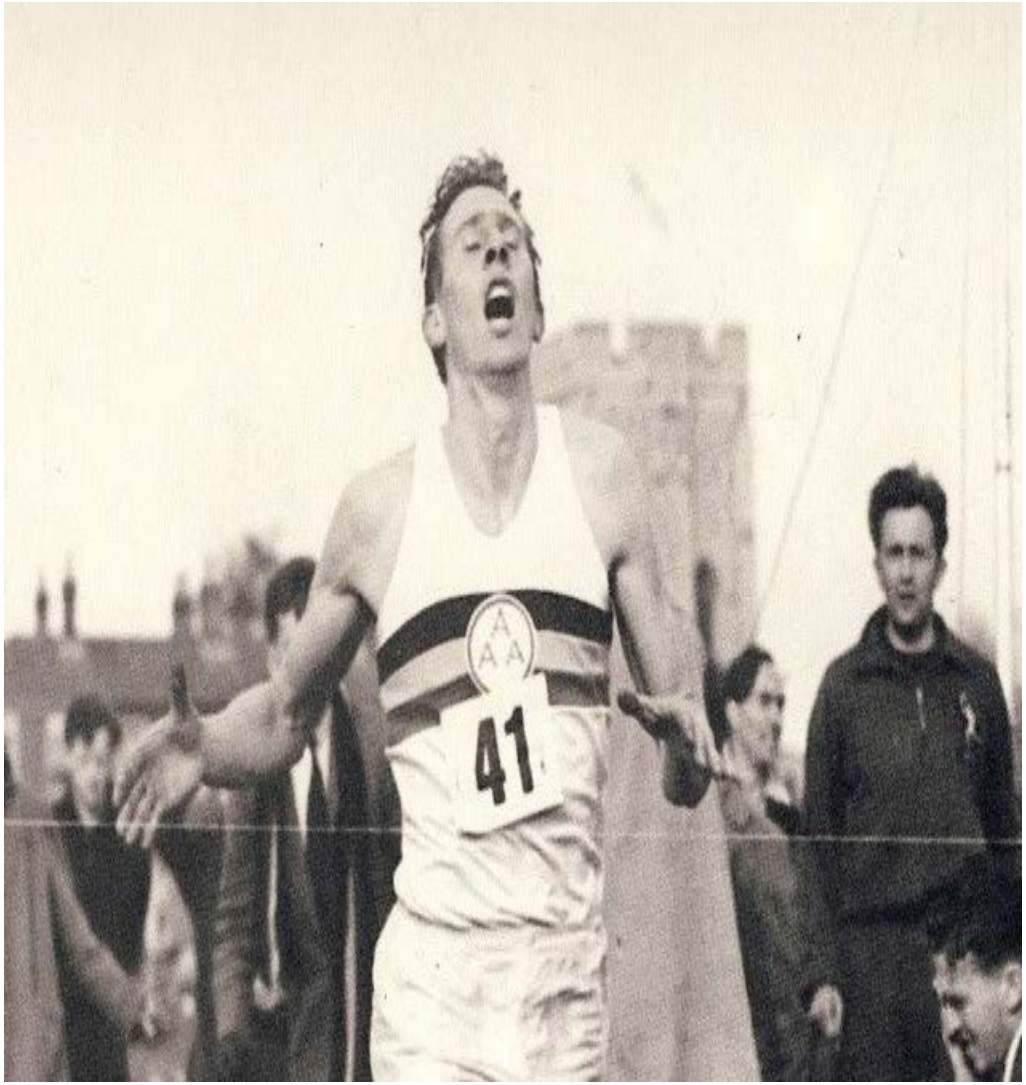
JOHNS HOPKINS
MEDICINE

Toward eliminating all harm; the need for new narratives

Peter Pronovost, MD, PhD, FCCM

The Johns Hopkins University

I will …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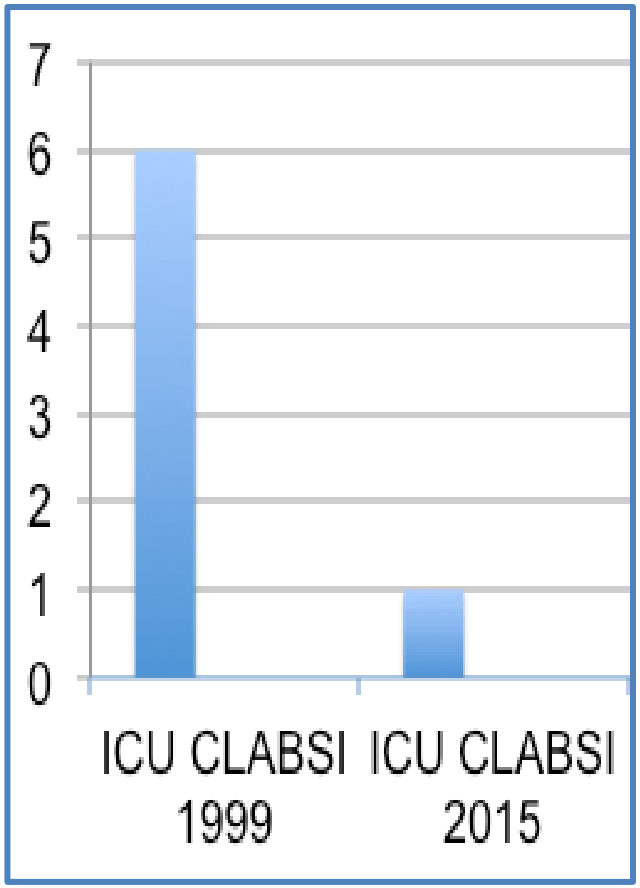
Three Narratives that hinder progress

- Harm is inevitable rather than preventable
- Safety is a local project rather than an integrated operating management system
- Safety is based on the heroism of clinicians rather than the design of safe systems

New Narrative: Harm is preventable

Change in US CLABSI Rates



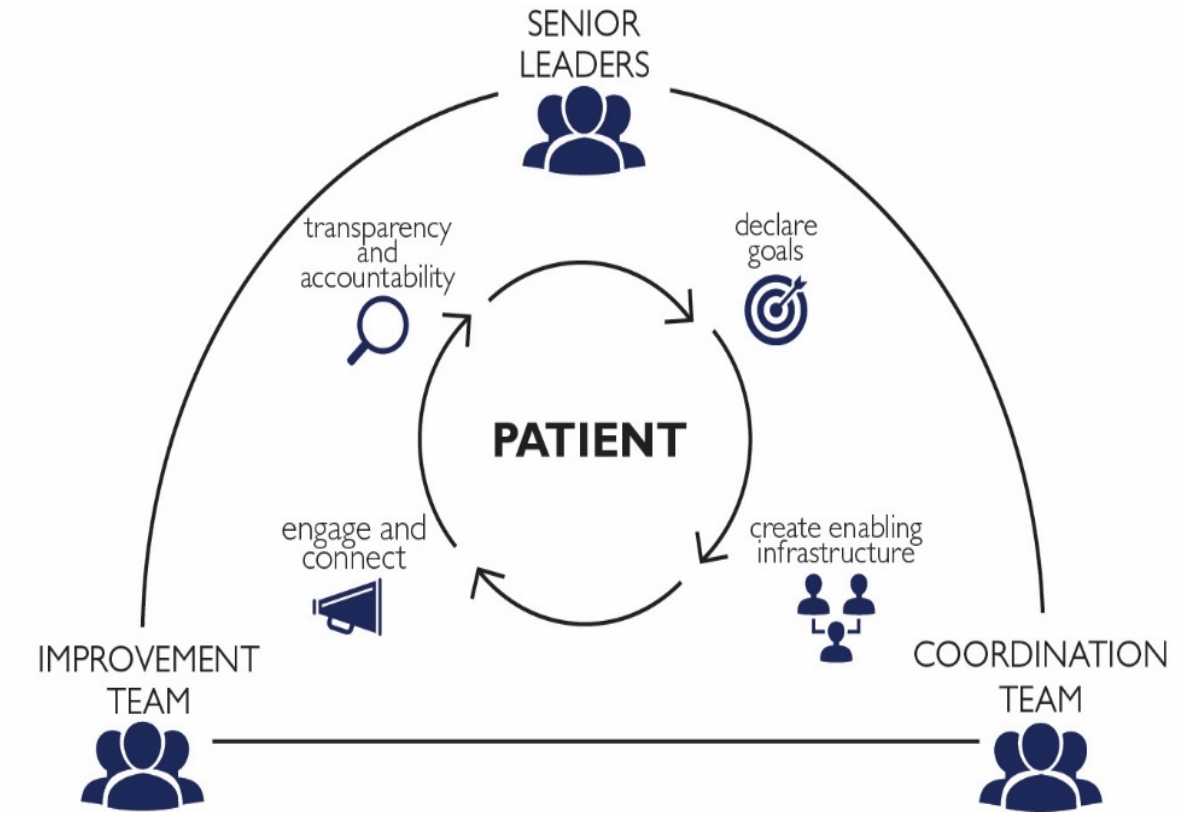
Why did CLABSI Work at Policy Level?

- Reliable and valid measurement system
- Evidence-based practices from clinical and basic research
- Investment in implementation (improvement) science*
- Local ownership (CUSP team) and peer learning communities
- Align and synergize efforts of many around a common goal and measure

Pronovost; 15 years after to err is human: a success story to learn from; BMJQS 2015

*

What did this work at organizational level



Pronovost J Health Outcomes and Management 2017

What did this work at a team and individual level

Dixon-Woods; Explaining Michigan Milbank Quarterly

New Narrative: Safety is an integrated operating management system rather than a project

The Armstrong Institute

- Purpose: To partner with patients their loved ones and others to end preventable harm, continuously improve patient outcomes and experience and eliminate waste

- Principles
  - I am humble curious and compassionate
  - I respect appreciate and help other
  - I am accountable to continuously improve myself, my organization and my community

- Programs; advance science, build capacity, implement interventions, inform policy

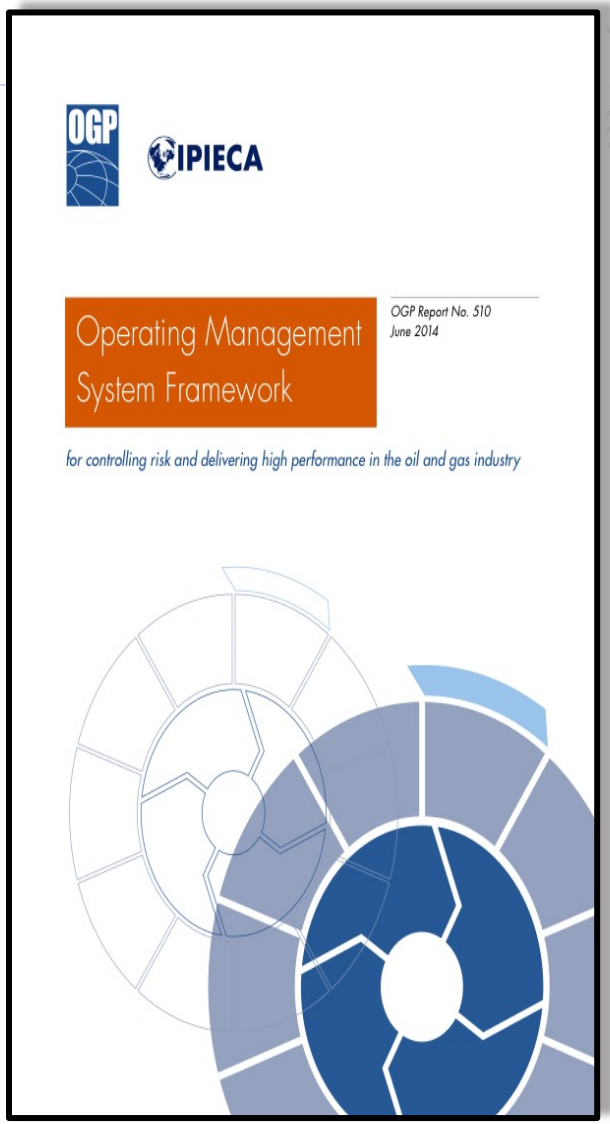
High Reliability Organizations

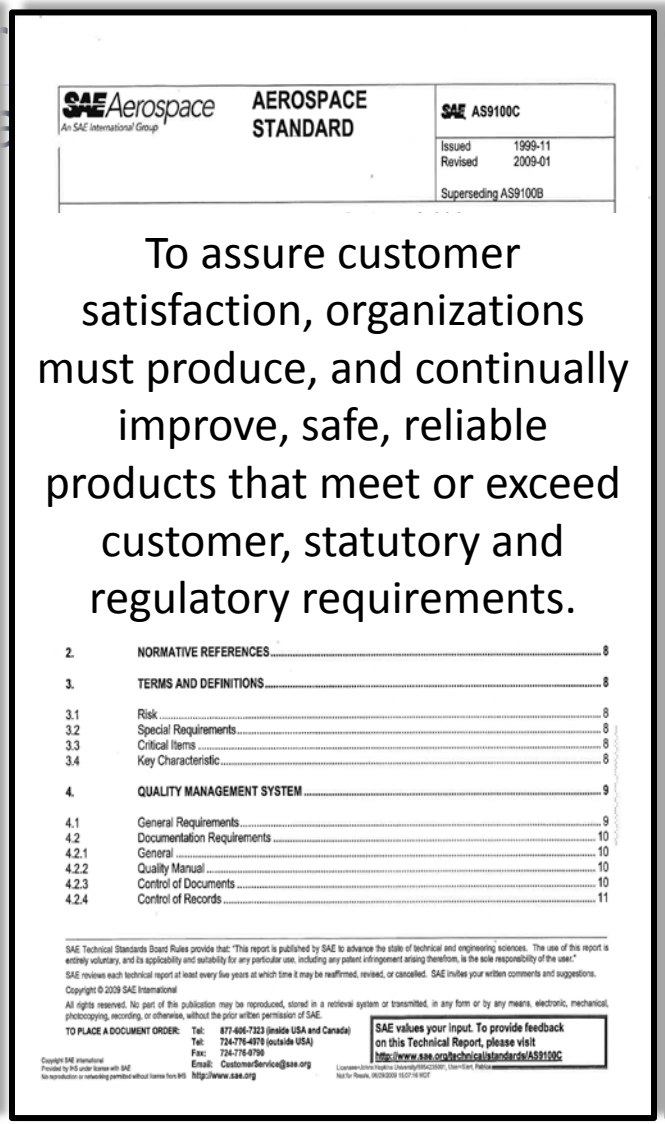
Photo credit: U.S. Navy

Pursuit of excellent performance under complex and dynamic conditions

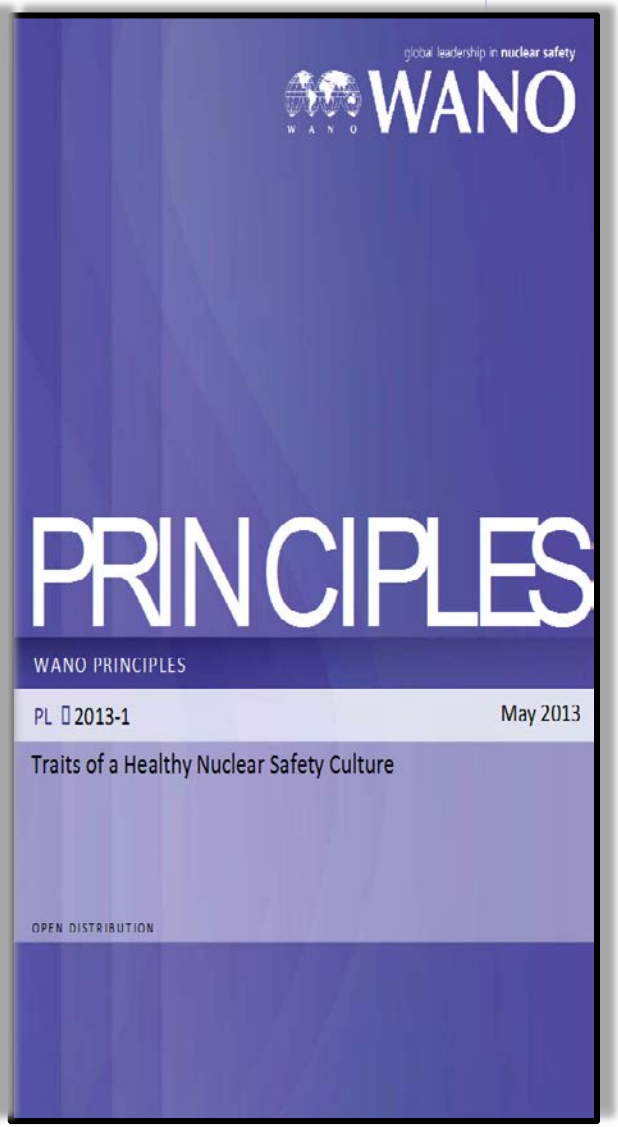
Weick & Sutcliffe 2015

HRO Industries Created Operating Management Systems



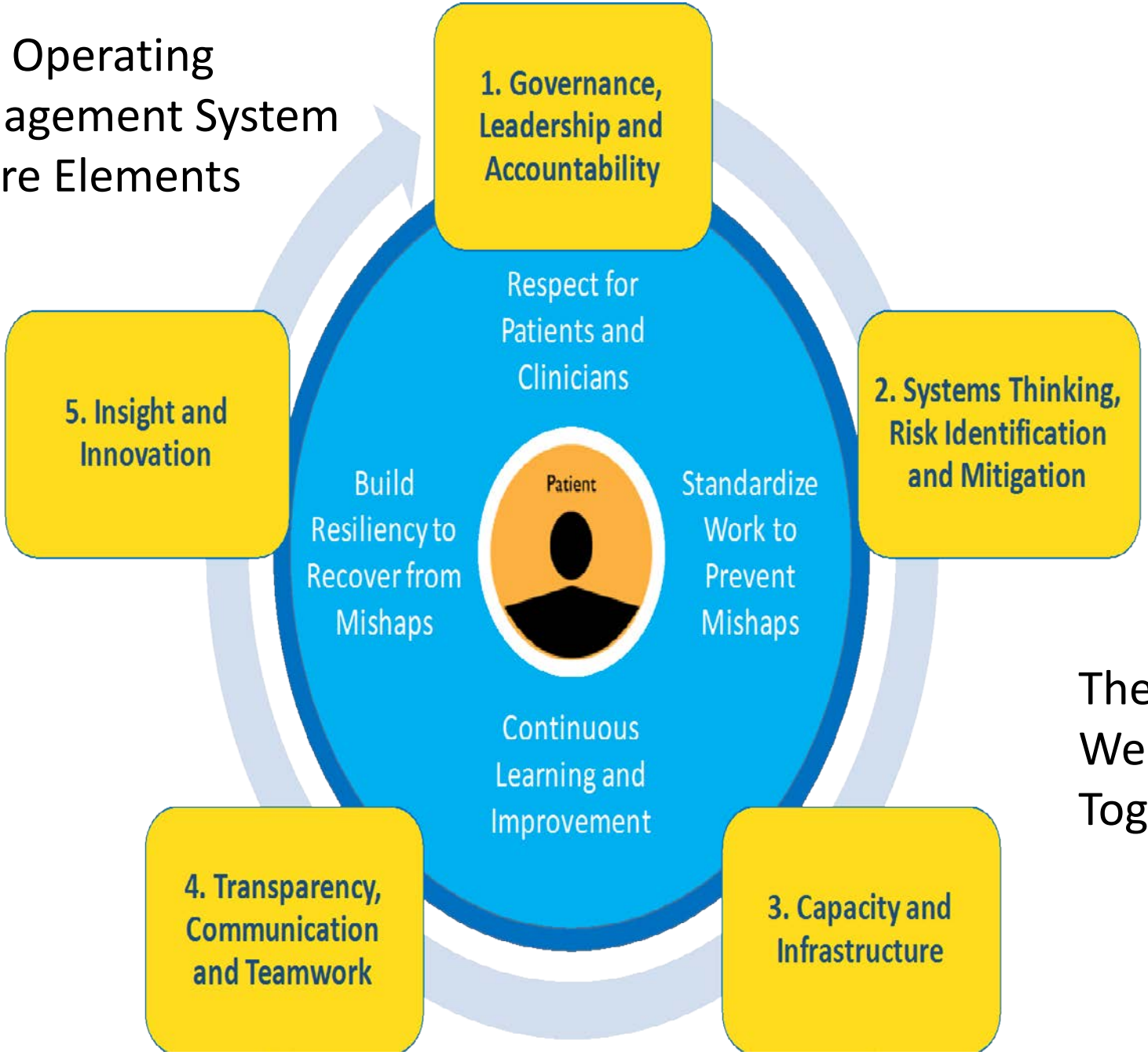


To assure customer satisfaction, organizations must produce, and continually improve, safe, reliable products that meet or exceed customer, statutory and regulatory requirements.



Integrated approach for organizational learning and continuous improvement

JHM Operating Management System 5 Core Elements



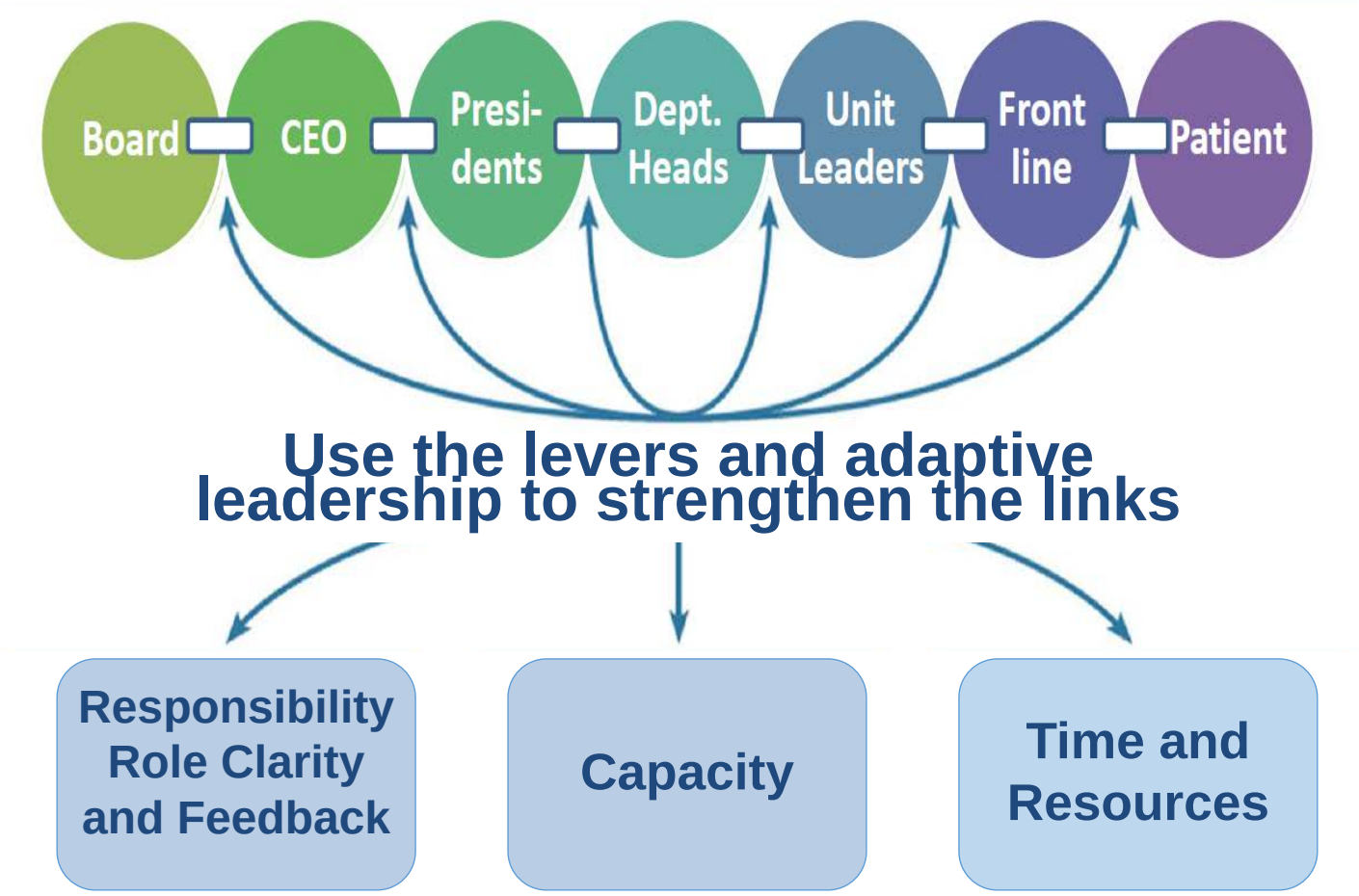
The Way We Work Together

Element 1 – Governance, Leadership and Accountability

- Can you name the accountable quality leaders for your entire delivery system from board to care delivery sites
- Can you map the flow of quality measures from the care delivery sites up to board
- Do you have explicitly defined shared leadership accountability processes
- Do you have a fractal management structures in which each higher level of the organization creates a structure in which each lower level has a voice providing horizontal links for learning and vertical for accountability
- Do you have a standard framework to organization quality work throughout your delivery system

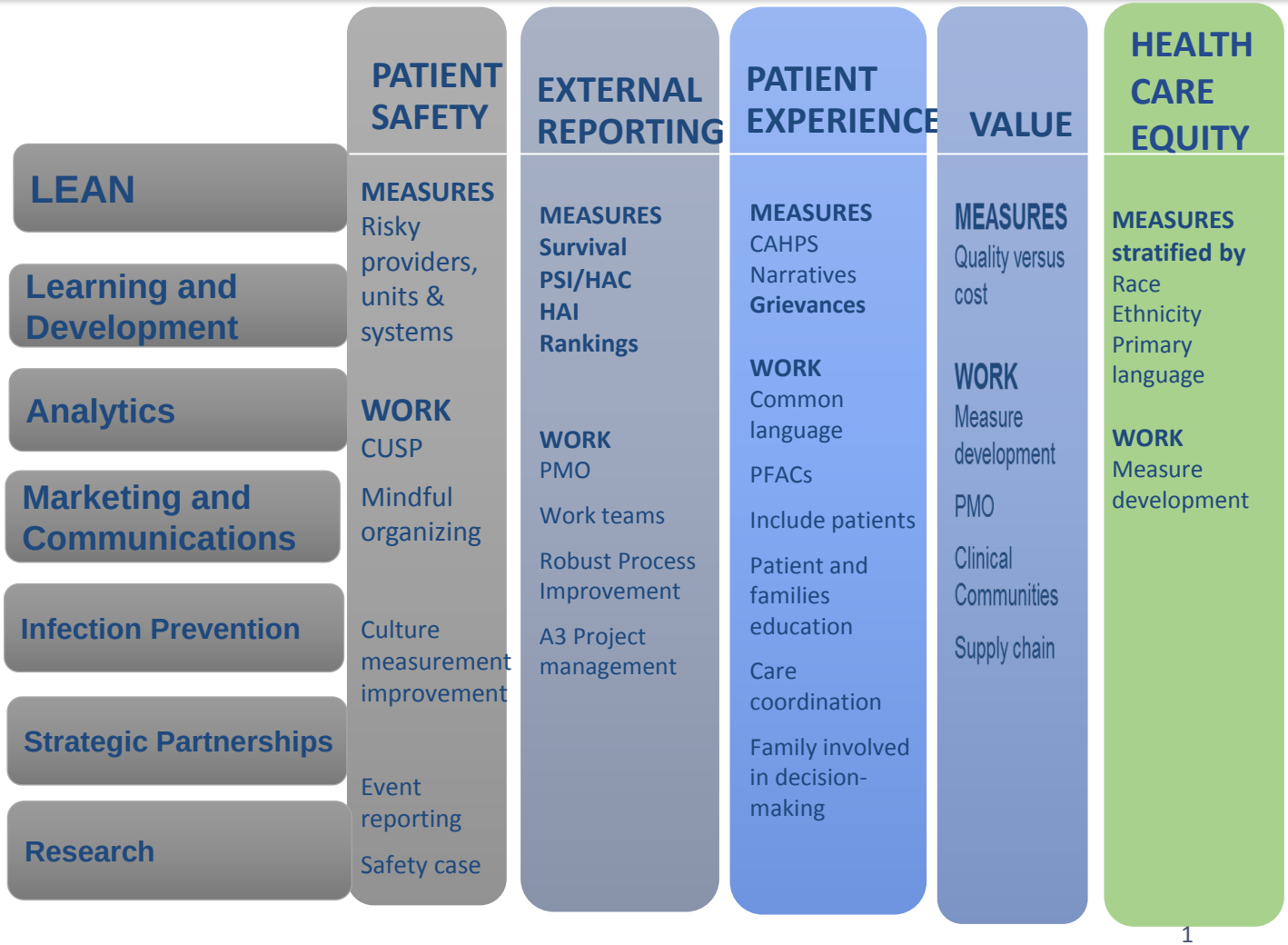
Change Progresses at the Speed of Trust

Shared Leadership Accountability



Weaver; J Healthcare Management

Framework for Organizing Quality and Safety Work



Element 2 – Systems Thinking, Risk Identification and Mitigation

- Do you have mechanisms to identify and mitigate risky providers, units, systems, and management systems
- Do you have unit based improvement teams (CUSP)

Element 3 –
Capacity and Infrastructure

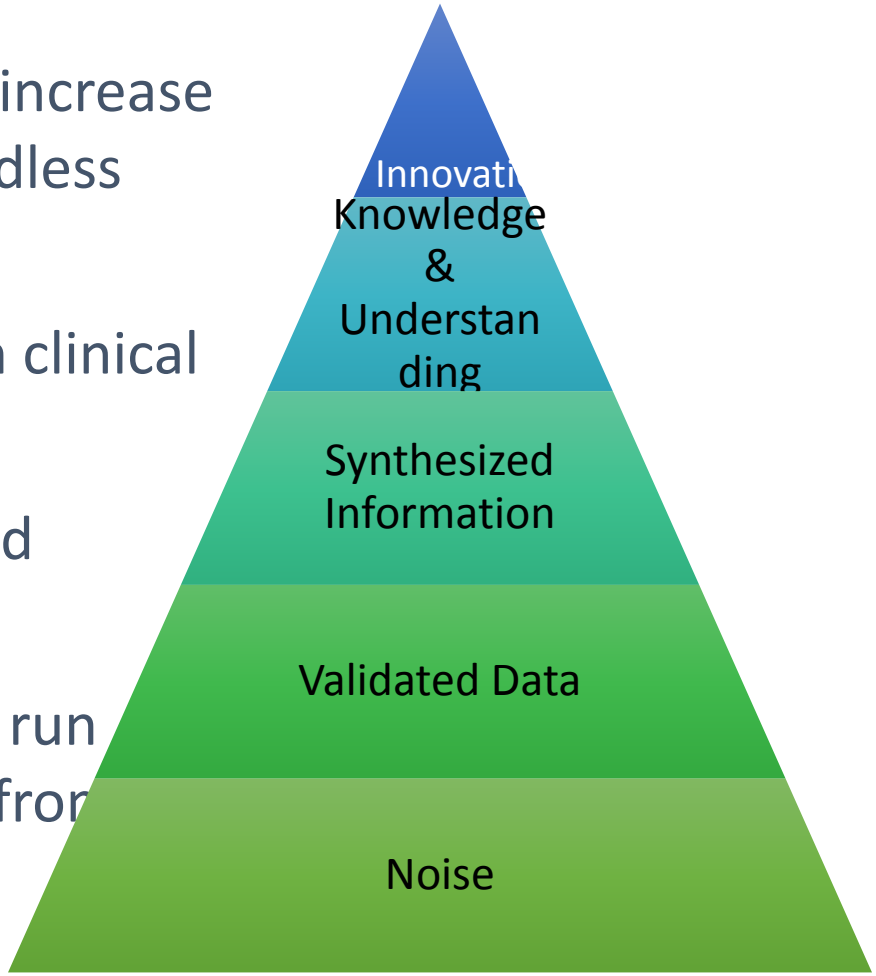
- Have you defined and ensured capabilities and capacity to eliminate harm, continuously improve outcomes and experience and eliminate waste among all staff, those who manage quality and those who lead quality
- Have you defined and ensured competencies to prevent the common causes of harm among all staff
- Have you created an enabling infrastructure to coordinate project managing, learning and development, analyt improvement science, communications, and researcl

Element 4 – Transparency, Communication and Teamwork

- Do leaders declare and communicate purpose, principles and goals
- Do leaders create a culture of respect, build trust and instill a hunger to learn and improve
- Do leaders ensure all staff are respected, have resources and are recognized
- Do leaders create a culture where all can speak out and up, addressing the “untouchables”
- Do you create structures and build trust c between upstream and down stream teams
- Do you implement huddles (daily management) at a unit, department, and organizational levels

Element 5 –
Insight and Innovation

- Have leaders created a culture to increase mindful variation and reduce mindless variation
- Have leaders engaged clinicians in clinical communities
- Have leaders triangulated data and analytics to learn and improve
- Does the organization at all levels run experiments and learn, including from outside organizations



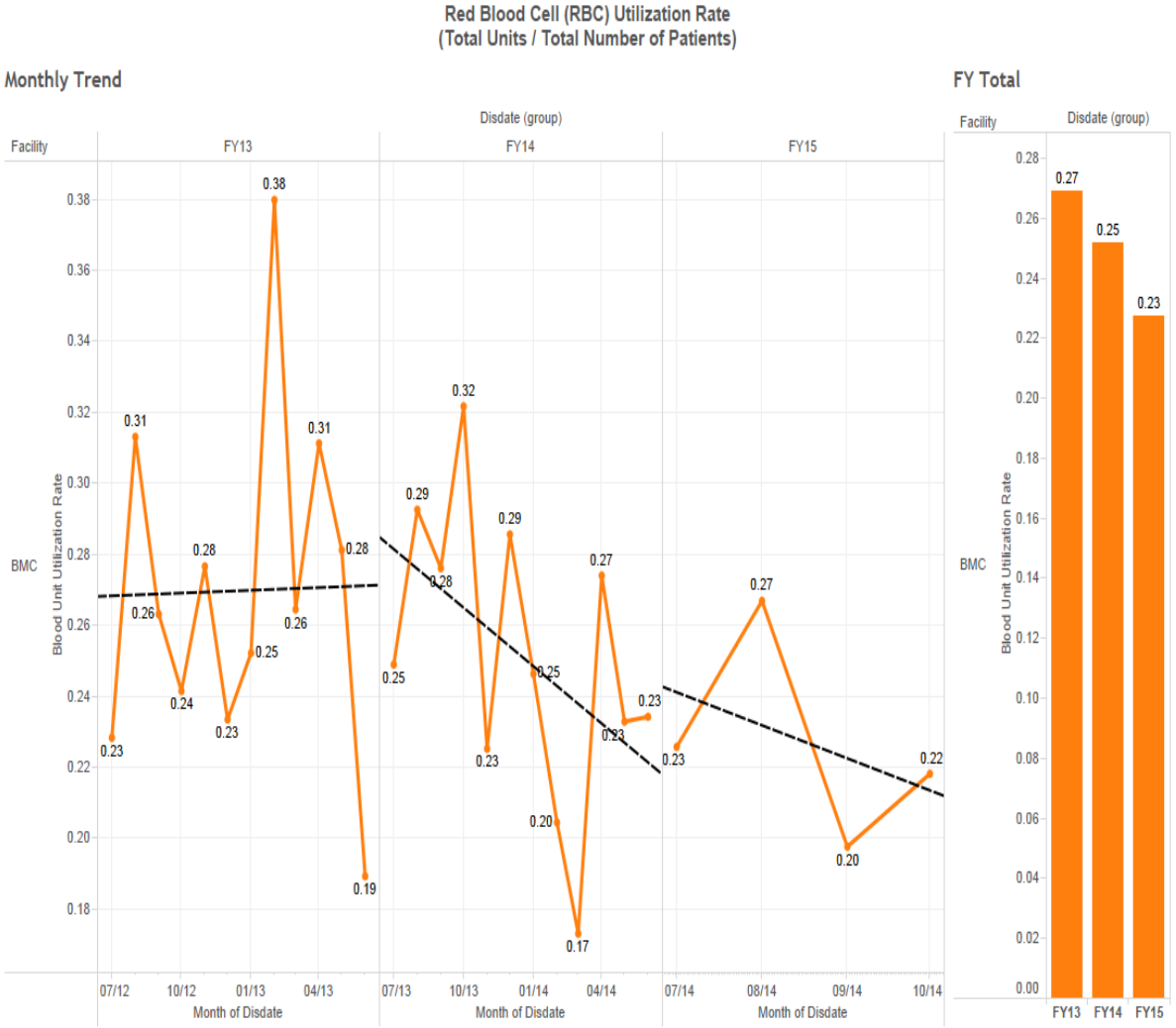
Clinical Communities

- Self-governing networks with representation from entire health system
- Led by local physicians (1 academic lead, 1 community lead) with interdisciplinary membership that includes patients and families
- Set and communicate clear goals and measures related to purpose
- Armstrong Institute provides vertical support for project management, peer learning, analytics, and robust process improvement
- Work collaboratively on quality improvement projects, empowered to make changes

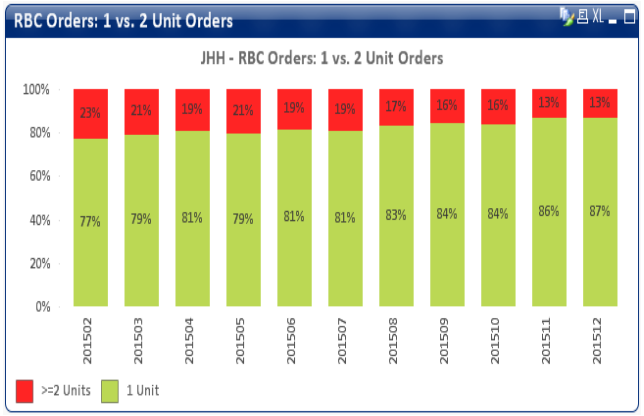
Clinical Communities

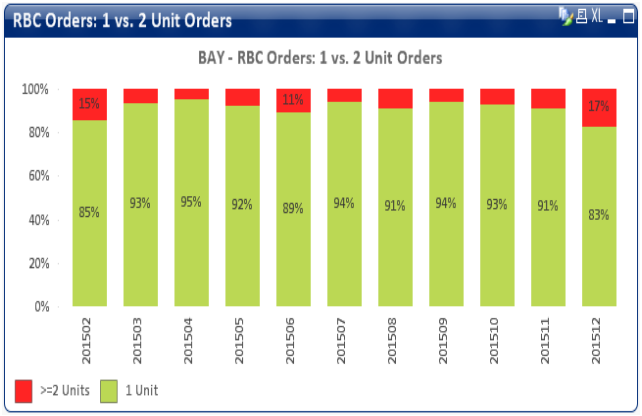
- Joint Replacement
- Blood Management
- Spine
- Surgery
- Cardiac Surgery
- ICUs
- Congestive Heart Failure
- Diabetes
- Palliative Care
- Cardiac Rhythm Management
- Hospitalists (EQUIP)
- Stroke
- Craniotomy
- Psychiatry and Behavioral Sciences
- Patient and Family Centered Care
- Patient Centered Care/Maternal Health
- Cleaning, Disinfection, Sterilization
- Medication Safety

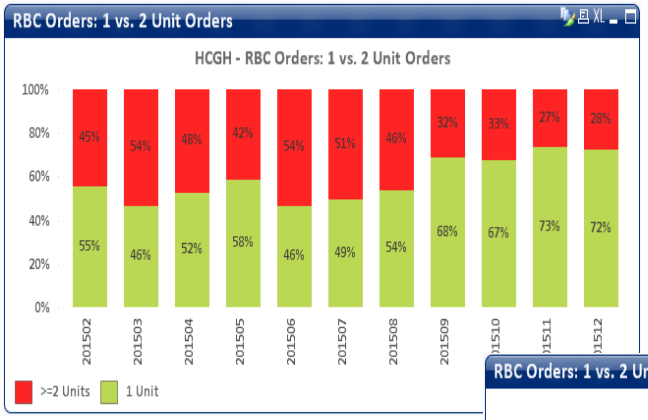
Red Blood Cell Use in JHHS

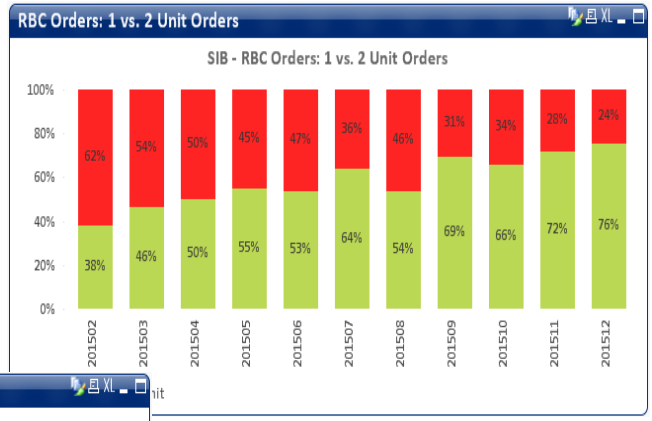


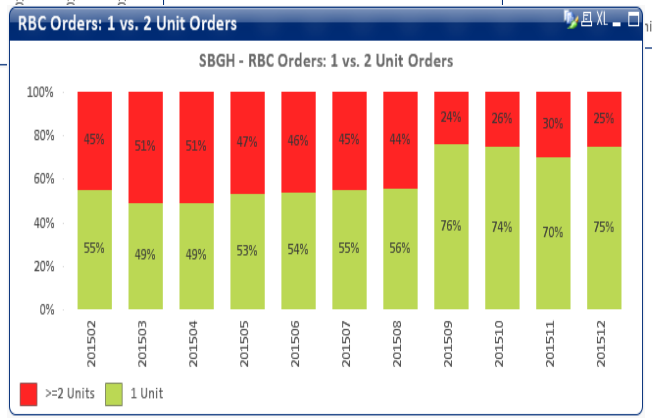
Red Blood Cell Utilization Rate by Individual Hospitals





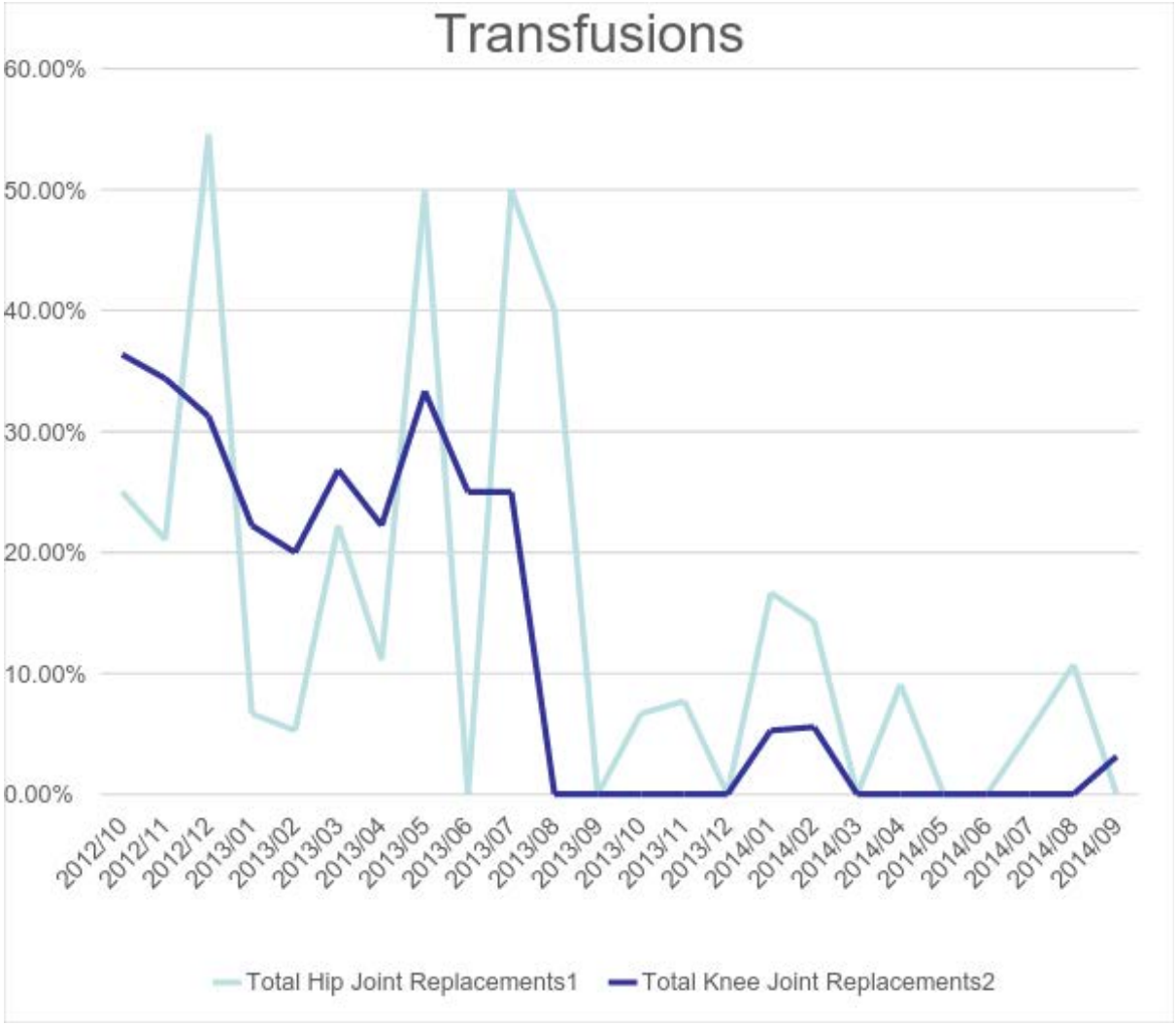




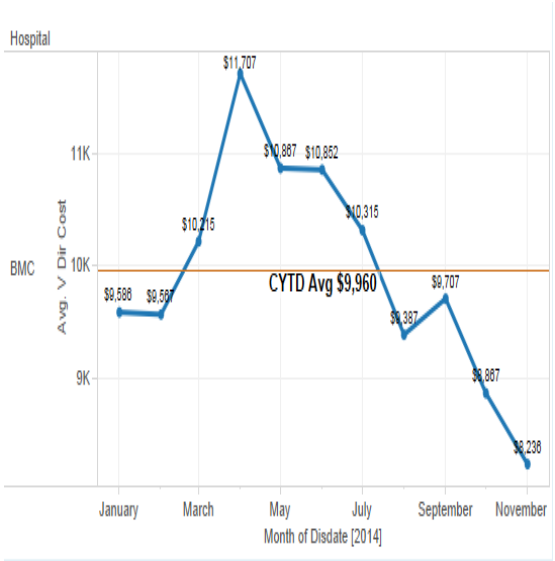


FY 2015

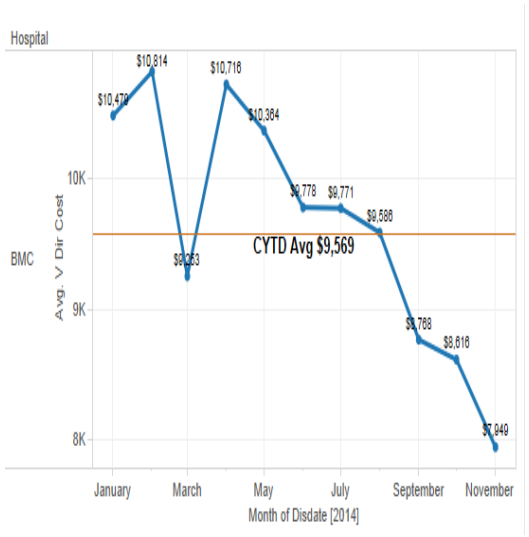
Transfusion in Hip and Knee replacement across JHHS



HIP



KNEE



HIP Volumes

JHBMC: 200 cases/year
Suburban: 500 cases/year
Sibley: 500 cases/year

KNEE Volumes

JHBMC: 300 cases/year
Suburban: 900 cases/year
Sibley: 500 cases/year

~$2,000 per case reduction
In variable direct cost at JHBMC

Supply Chain Initiatives

- Spine
  - Vendor capping initiative- $3.3 million
- ICU
  - CVL kits
  - Foley Kits
  - Pharmaceuticals
- Blood Management
  - $1.3 million
- Joint
  - Cement- $150,000
  - Vendor capping initiative- $1.5 million
- Surgery
  - $780,000 savings by reducing the number of vendors for sutures and endomechanicals
  - Hemostasis
- Cardiac Surgery
  - Opportunity by reducing Nitric oxide usage- $920,000

Spine

Accomplishments to date:

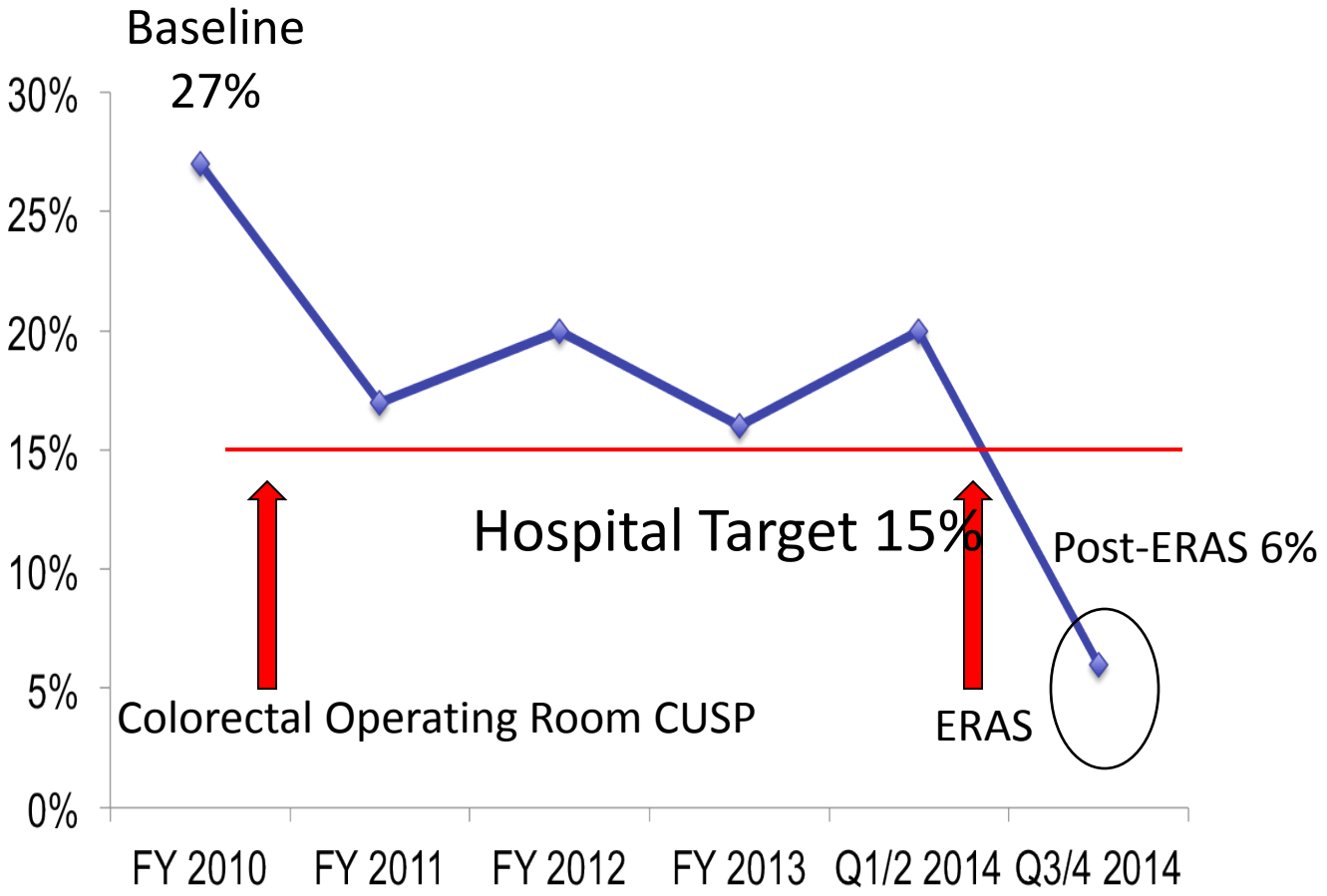
- Development and implementation of ACDF pathway- LOS

	On Pathway	Off Pathway
Ortho	1.63	2.71
Neuro	1.64	3.95

Current initiatives:

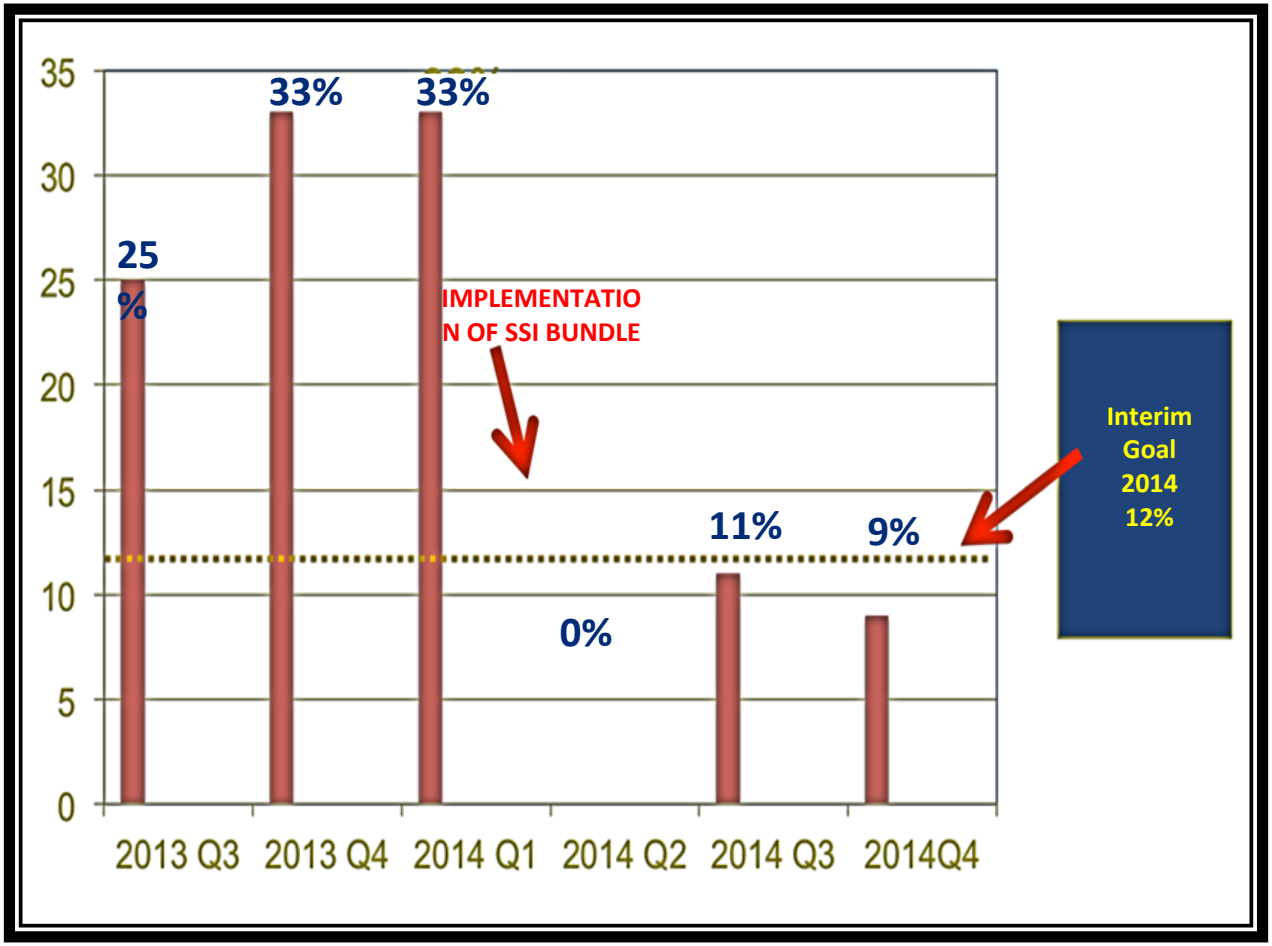
- Final review and implementation of Lumbar Fusion Pathway
- Development of pathway for deformity procedures
- Partnership with JHHC to develop a bundling strategy

Colorectal CUSP/ERAS Surgical Site Infection Rate

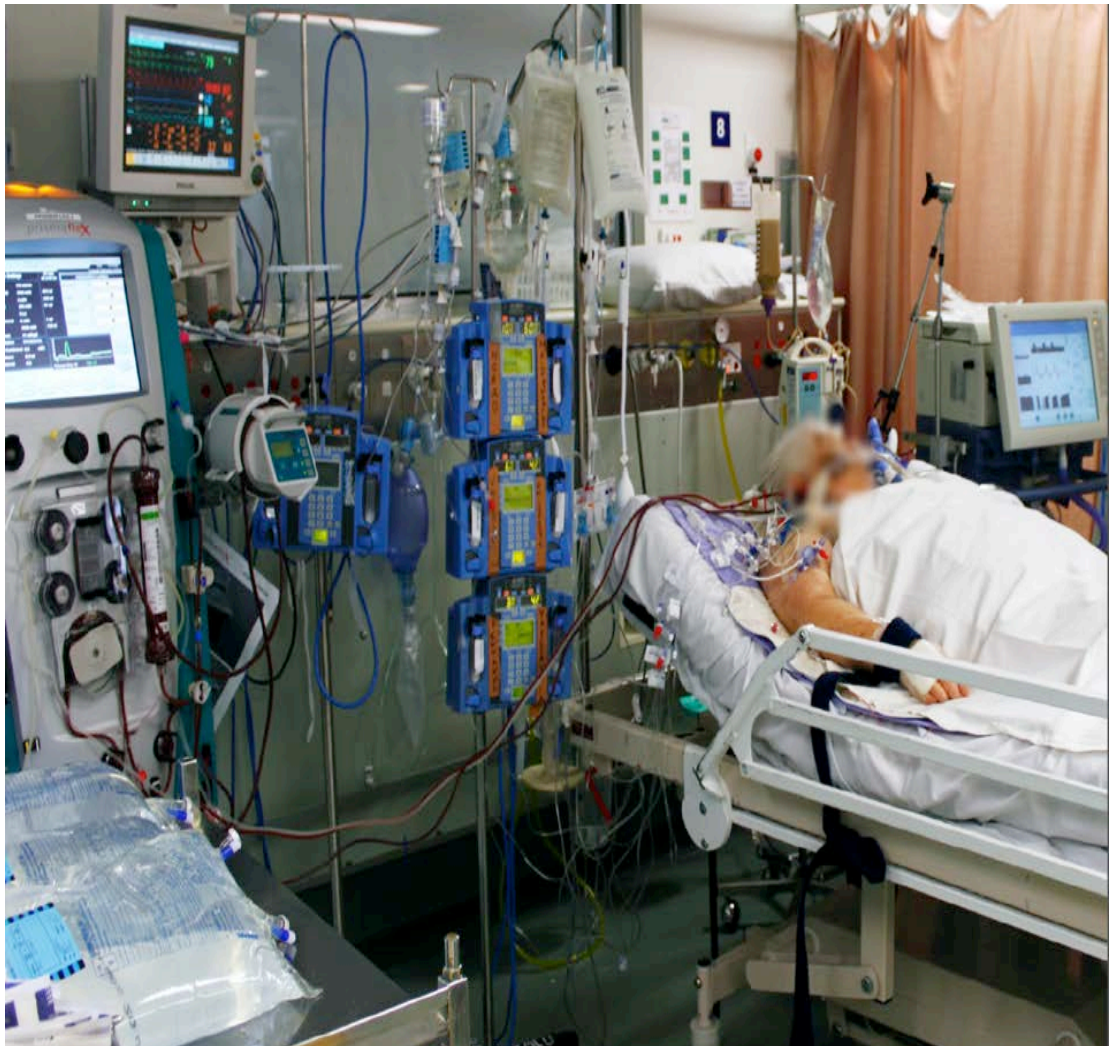


ACS-NSQIP data

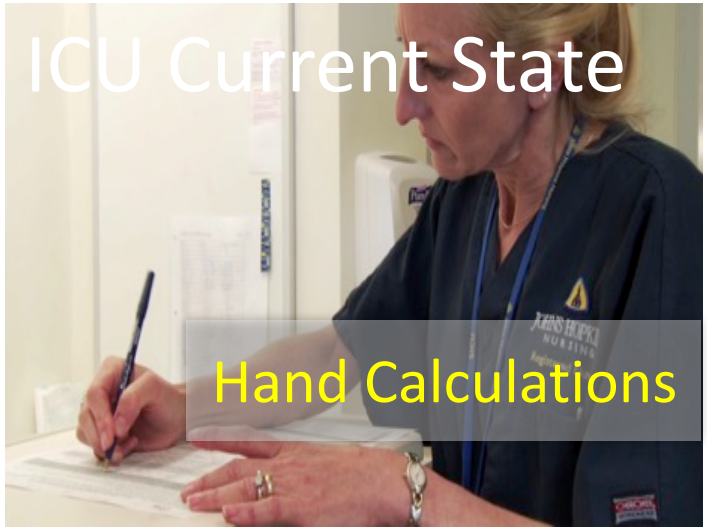
SSI Rates in JHH GYN ONC Colon Cases: 2013 - 2014



Narrative 3: Safety is based on design of safe systems

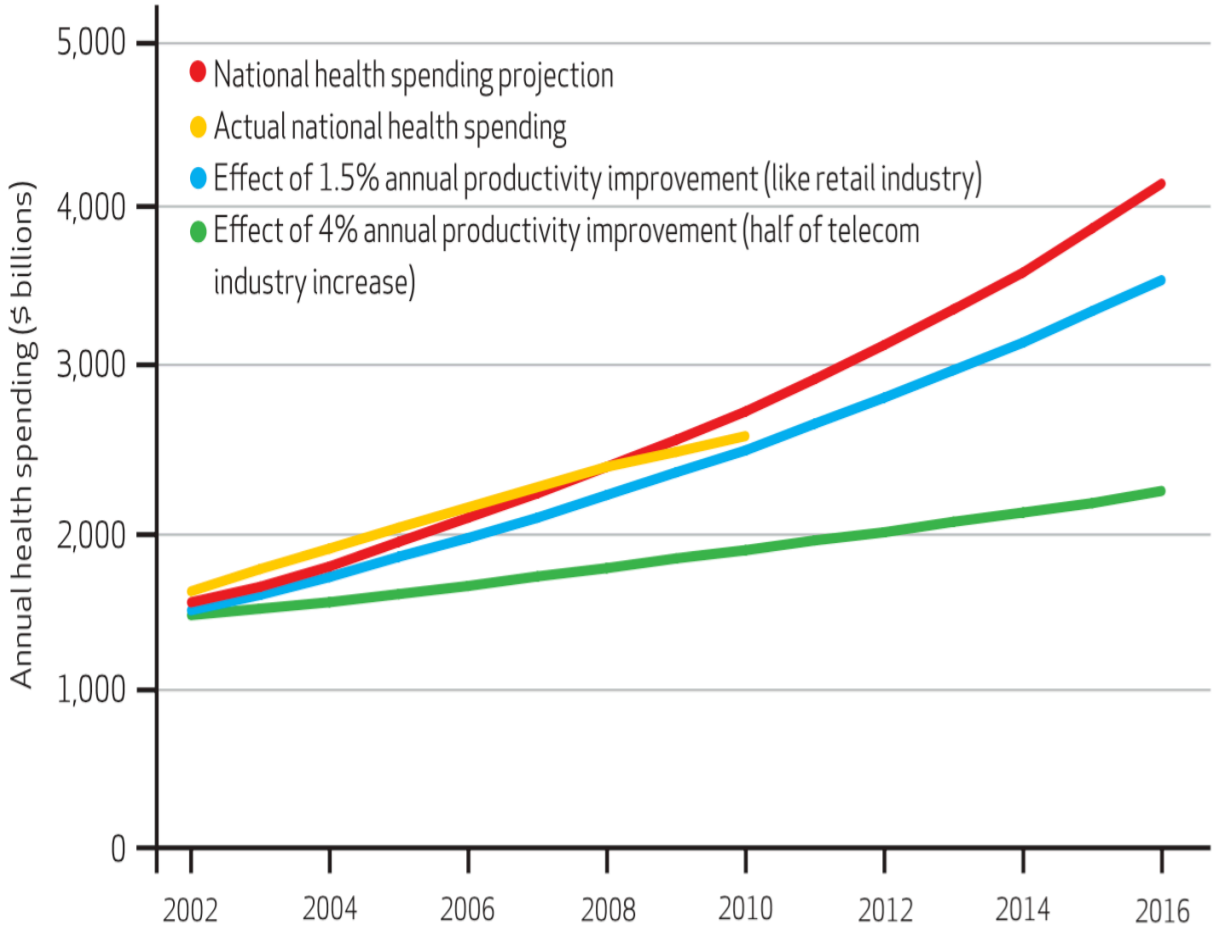


ICU Current State



Potential of Productivity

Possible Improved Productivity Effects Of Health Information Technology On Future National Health Spending, 2002-16



Source: Kellerman, Health Affairs, 2013

Harms to be eliminated – Associated Tasks

Harms
Delirium
Acquired Physical Impairment
Ventilator associated infections and harms
DVT-PE
CLABSI
Loss of Respect and Dignity
Failure to provide care consistent with patient goals

DELIRIUM
CAM ICU assessments
Automated screening
Modifiable factors
Non-pharmacologic interventions
Sedation management
Pain Scores
Family education

CLABSI
Hand washing
Chlorhexidine
Full Barrier Precautions
Avoid femoral site
Remove Unnecessary line
Use of checklist
Availability of cart

VAP
Head of Bed Elevation (HOB) (≥ 30 degrees).
Spontaneous Awakening and Breathing Trials (SAT & SBT)
Oral Care
Oral Care with Chlorhexidine
Subglottic Suctioning ETTs

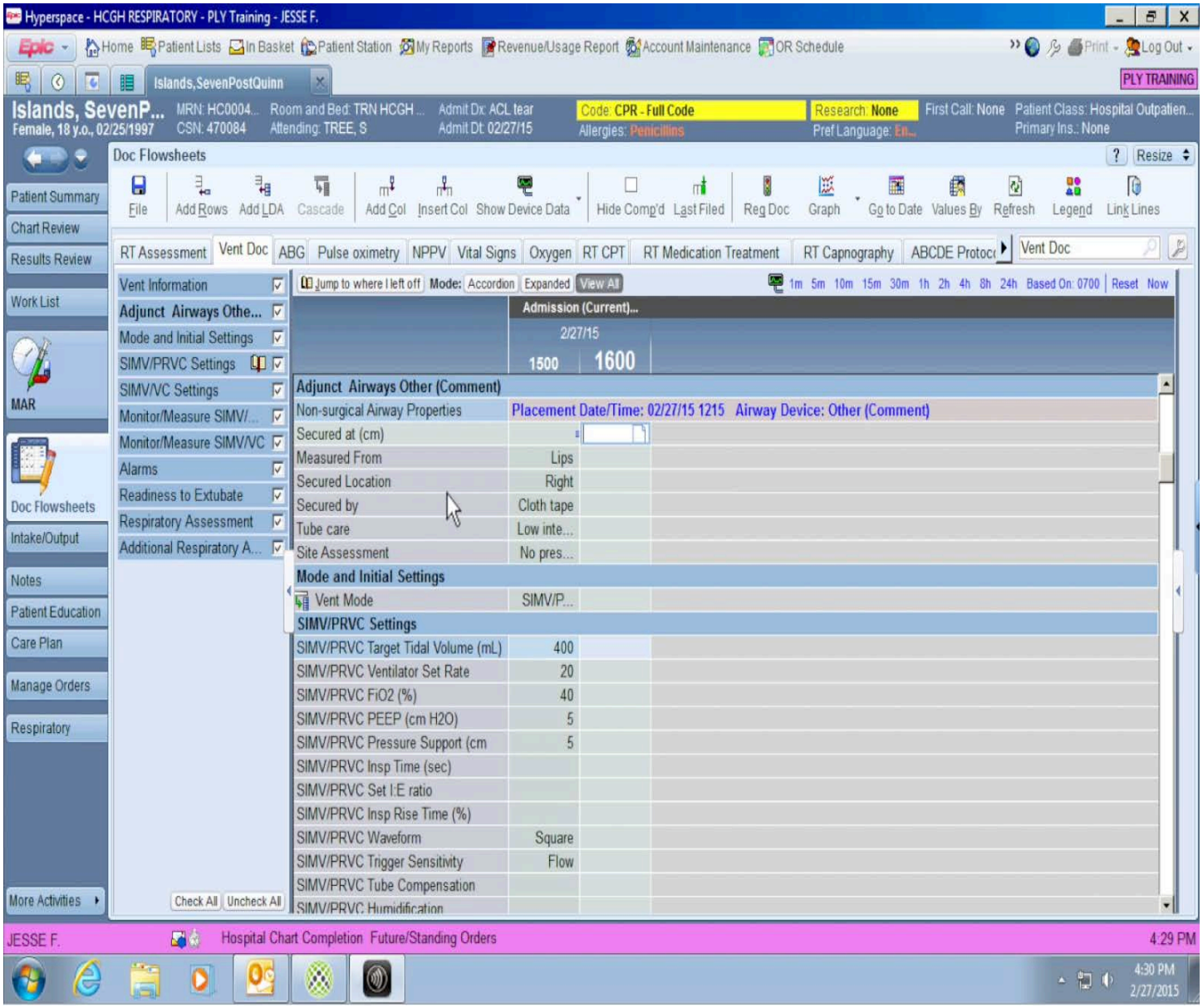
Failure to provide care consistent with patient goals
Family meetings
Advanced directives
All teams meetings
Ethics engagement
Palliative Care

Loss of Respect and Dignity
Interpersonal communication
Scheduling
Education
Goals alignment
Access to care team
Inclusion
Continuity

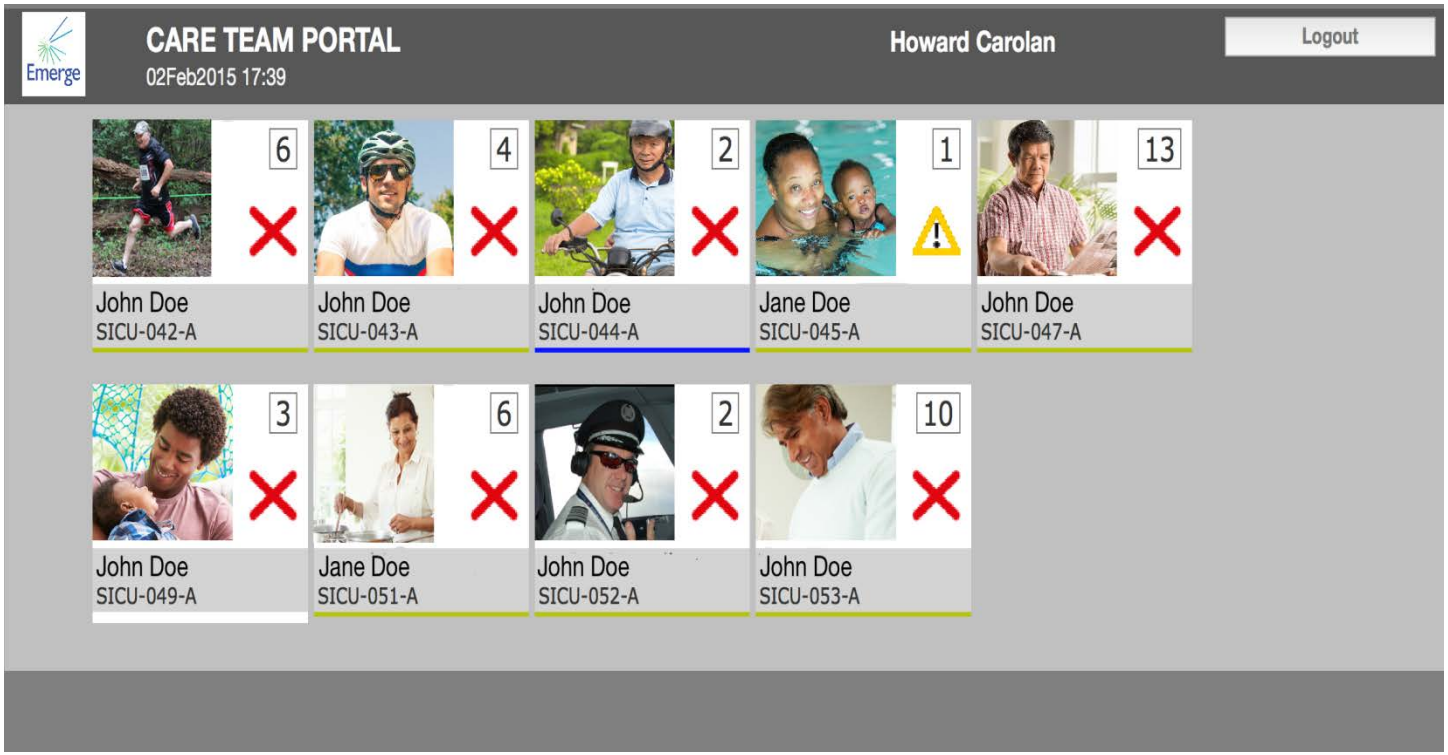
DVT-PE
Initial VTE risk stratification for all ICU patients
Computerized clinical decision support (CDS) tool to aid ordering of best-practice VTE prophylaxis
Ongoing risk re-stratification
Reminders when contraindications change to prompt addition of pharmacologic prophylaxis
Ultrasound screening of appropriate patients
Prevent missed prophylaxis doses
Optimal Mechanical Prophylaxis Use (Sequential Compression Device [SCD] and compression stockings [TEDS])

Ventilator Harm
Daily sedation vacation (SAT)
Daily spontaneous breathing trials (SBT)
Automated ventilator management
Lung Protective Ventilation for ALI
Low Volume Ventilation if not ALI

Acquired Physical Impairment
Early ambulation
Adjunctive physical therapy
Pharmacologic management
Prospective testing
Family engagement
Transition of care planning


Hyperspace - HCGH RESPIRATORY - PLY Training - JESSE F.
Home
Patient Lists
In Basket
Patient Station
My Reports
Revenue/Usage Report
Account Maintenance
OR Schedule
Print
Log Out
Islands,SevenPostQuinn
PLY TRAINING
Islands, SevenP...
Female, 18 y.o., 02/25/1997
MRN: HC0004...
CSN: 470084
Room and Bed: TRN HCGH ...
Attending: TREE, S
Admit Dx: ACL tear
Admit Dt: 02/27/15
Code: CPR - Full Code
Allergies: Penicillins
Research: None
Pref Language: En...
First Call: None
Patient Class: Hospital Outpatien...
Primary Ins.: None
Doc Flowsheets
Resize
Patient Summary
Chart Review
Results Review
Work List
MAR
Doc Flowsheets
Intake/Output
Notes
Patient Education
Care Plan
Manage Orders
Respiratory
More Activities
File
Add Rows
Add LDA
Cascade
Add Col
Insert Col
Show Device Data
Hide Comp'd
Last Filed
Reg Doc
Graph
Go to Date
Values By
Refresh
Legend
Link Lines
RT Assessment
Vent Doc
ABG
Pulse oximetry
NPPV
Vital Signs
Oxygen
RT CPT
RT Medication Treatment
RT Capnography
ABCDE Protoc
Vent Doc
Vent Information
Adjunct Airways Othe...
Mode and Initial Settings
SIMV/PRVC Settings
SIMV/VC Settings
Monitor/Measure SIMV/...
Monitor/Measure SIMV/VC
Alarms
Readiness to Extubate
Respiratory Assessment
Additional Respiratory A...
Check All
Uncheck All
Jump to where I left off
Mode:
Accordion
Expanded
View All
1m 5m 10m 15m 30m 1h 2h 4h 8h 24h
Based On: 0700
Reset
Now
Admission (Current)...
2/27/15
1500
1600
Adjunct Airways Other (Comment)
Non-surgical Airway Properties
Placement Date/Time: 02/27/15 1215 Airway Device: Other (Comment)
Secured at (cm)
Measured From
Lips
Secured Location
Right
Secured by
Cloth tape
Tube care
Low inte...
Site Assessment
No pres...
Mode and Initial Settings
Vent Mode
SIMV/P...
SIMV/PRVC Settings
SIMV/PRVC Target Tidal Volume (mL)
400
SIMV/PRVC Ventilator Set Rate
20
SIMV/PRVC FiO2 (%)
40
SIMV/PRVC PEEP (cm H2O)
5
SIMV/PRVC Pressure Support (cm
5
SIMV/PRVC Insp Time (sec)
SIMV/PRVC Set I:E ratio
SIMV/PRVC Insp Rise Time (%)
SIMV/PRVC Waveform
Square
SIMV/PRVC Trigger Sensitivity
Flow
SIMV/PRVC Tube Compensation
SIMV/PRVC Humidification
JESSE F.
Hospital Chart Completion Future/Standing Orders
4:29 PM
4:30 PM
2/27/2015

Emerge


Emerge
CARE TEAM PORTAL
02Feb2015 17:39
Howard Carolan
Logout
6
John Doe
SICU-042-A
4
John Doe
SICU-043-A
2
John Doe
SICU-044-A
1
Jane Doe
SICU-045-A
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John Doe
SICU-047-A
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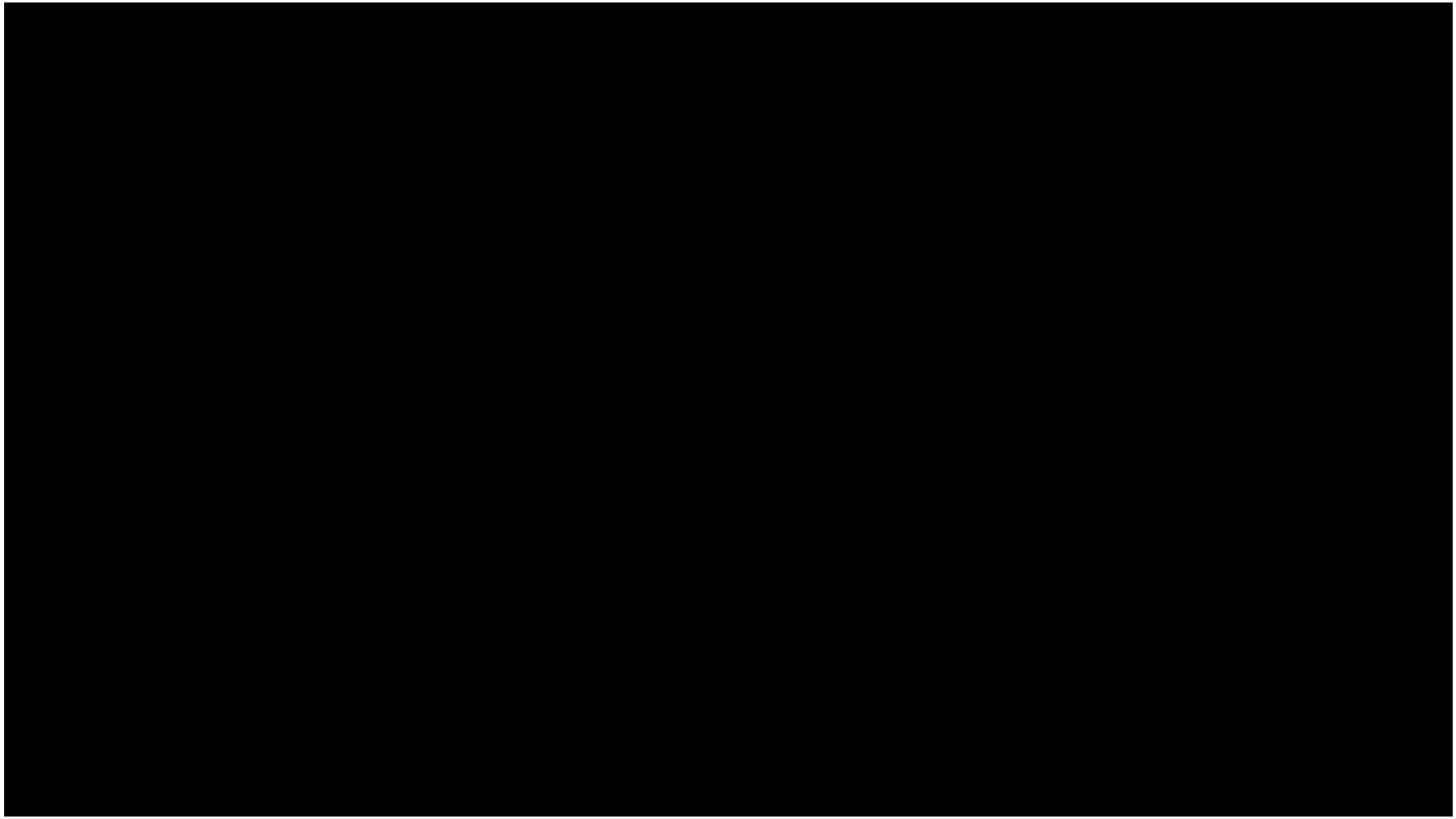


Questions for Discussion

- What narratives are you telling that are holding you back
  - Have you declared a goal of eliminating harms
  - Is quality a project or an integrated management system
- Does your quality governance structure function with the same rigor as finance
- Do you have trust building structures that support peer learning and accountability
- Do you have a common framework for organizing the work throughout your system
- Have you instilled a culture of respect, trust and learning
  - Would all your employees answer yes when asked if they are treated with respect, have necessary resources, and are recognized
  - Do all employees feel free to speak up and out
  - Does all employees feel have a hunger to learn and improve.

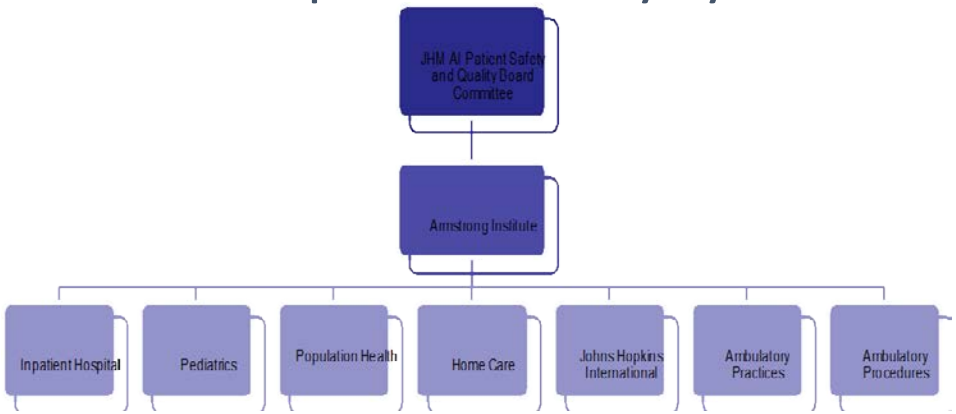
I will …

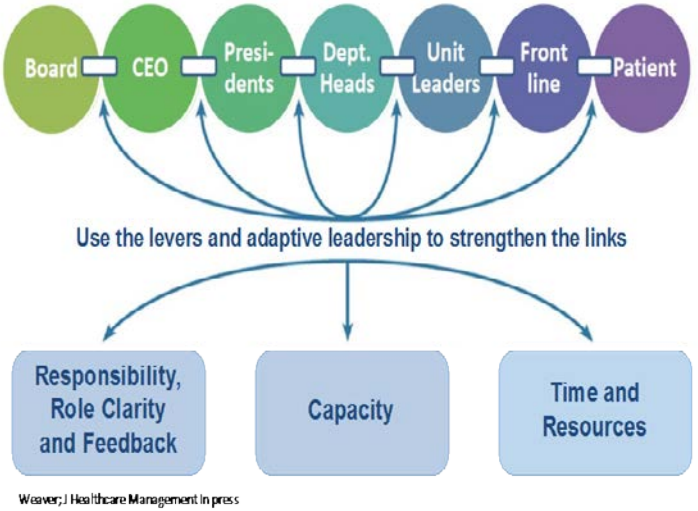
New Narrative: Harm is preventable

Slides for Reference

Element 1 –
Governance, Leadership and Accountability

- The Board shall ensure that management creates a structure and reporting system such that the Board has oversight for quality and safety of care everywhere that care is delivered within the health system
- To accomplish this comprehensive oversight, management shall map the delivery system from

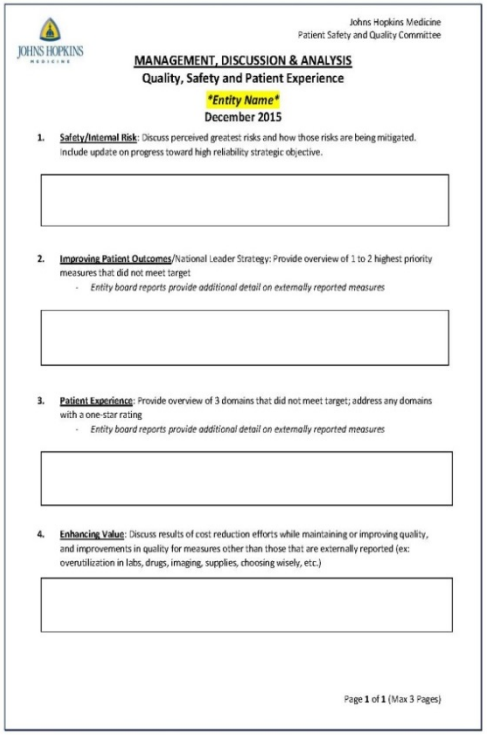




Element 1 –

Governance, Leadership and Accountability

- The Board shall ensure that a framework for reporting quality and safety of care mirrors the rigor and comprehensiveness of a consolidated financial statement



Johns Hopkins Medicine
Patient Safety and Quality Committee

MANAGEMENT, DISCUSSION & ANALYSIS
Quality, Safety and Patient Experience

Entity Name
December 2015

1. **Safety/Internal Risk**: Discuss perceived greatest risks and how those risks are being mitigated. Include update on progress toward high reliability strategic objective.

2. **Improving Patient Outcomes**/National Leader Strategy: Provide overview of 1 to 2 highest priority measures that did not meet target
   - *Entity board reports provide additional detail on externally reported measures*

3. **Patient Experience**: Provide overview of 3 domains that did not meet target; address any domains with a one-star rating
   - *Entity board reports provide additional detail on externally reported measures*

4. **Enhancing Value**: Discuss results of cost reduction efforts while maintaining or improving quality, and improvements in quality for measures other than those that are externally reported (ex: overutilization in labs, drugs, imaging, supplies, choosing wisely, etc.)

Page 1 of 1 (Max 3 Pages)

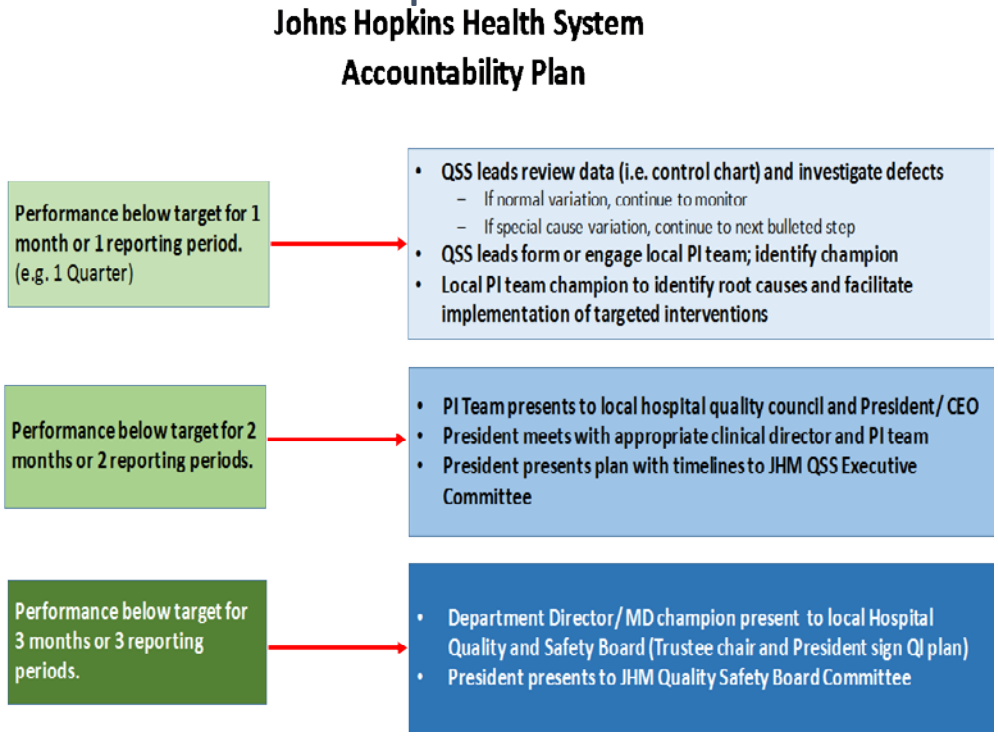
JHM Consolidated Quality and Safety Summary for Adult Inpatient
June 2016 Distribution

	Academic Divisions								Community Divisions							
	JHBMC				JHH				Howard Co.				Sibley				Suburban			
	Current Performance*	Performance Last Board*	Baseline	Revenue At Risk	Current Performance*	Performance Last Board*	Baseline	Revenue At Risk	Current Performance*	Performance Last Board*	Baseline	Revenue At Risk	Current Performance*	Performance Last Board*	Baseline	Revenue At Risk	Current Performance*	Performance Last Board*	Baseline	Revenue At Risk
Patient Experience																				
HCAHPS Overall Rating of Care (Percent Top Box)	66%	67%	69%	$	82%	82%	79%	$	67%	66%	67%	$	65%	66%	63%	$	73%	72%	69%	$
Preventable Harms																				
MHACs No. of Observed per 1000 Discharges	15.24	20.87	20.87	$	28.30	37.02	37.02	$	27.45	25.32	25.32	$	-	-	-	-	34.15	33.14	33.14	$
HACs[1] No. of Observed per 1000 Discharges	-	-	-	-	-	-	-	-	-	-	-	-			1.01	$	-	-	-	-
CLABSI SIR Publicly Reported	0.58	0.40	0.40	$	0.87	0.94	0.94	$	0.52	0.39	0.39	$	0.00	0.67	0.67	$	0.00	0.16	0.16	$
CAUTI SIR Publicly Reported	0.54	0.39	0.39	$	0.32	0.46	0.46	$	0.00	0.38	0.38	$	0.67	0.66	0.66	$	0.49	0.57	0.57	$
SSI SIR Publicly Reported	0.61	0.76	0.51	$	0.97	1.03	1.17	$	0.36	0.17	1.17	$	1.21	1.26	0.76	$	0.00	0.00	1.17	$
C. Difficile Lab ID SIR Facility-wide	0.85	0.88	0.88	$	1.22	1.18	1.18	$	1.12	0.86	0.86	$	0.53	0.55	0.55	$	1.45	1.58	1.58	$
MRSA bacteremia Lab ID SIR Facility-wide	3.40	2.28	2.28	$	1.11	1.18	1.18	$	0.84	0.26	0.26	$	0.00	0.48	0.48	$	0.00	1.25	1.25	$
Hand Hygiene Rate	83%	93%	93%		95%	90%	90%		92%	93%	93%		96%	95%	95%		98%	97%	97%	
Efficiency																				
Readmissions All inpatient populations	-8.10%	-7.76%	1.177	$	-6.22%	-5.64%	1.114	$	-1.15%	-1.19%	0.932	$	5.65%	5.89%	4.74%	$	-5.36%	-6.48%	0.876	$
ED Throughput Median hours for timeframe	10:06	6:53	6:53		13:04	11:10	11:10		8:33	8:09	8:09		5:03	5:02	5:02		5:44	5:49	5:49	
ED Boarding Time Median hours for timeframe	4:11	2:28	2:28		8:07	5:55	5:55		4:01	3:37	3:37		2:30	2:10	2:10		2:48	2:51	2:51	
ED Left Without Being Seen Average rate for timeframe	9.2%	9.2%	9.2%		4.6%	4.3%	4.3%		3.4%	5.1%	5.1%		0.2%	0.3%	0.3%		1.0%	0.7%	0.7%	

*Current and last Board performance colors reflective of strategic priority target scoring.
*Current data is not available.

Element 1 –
Governance, Leadership and Accountability

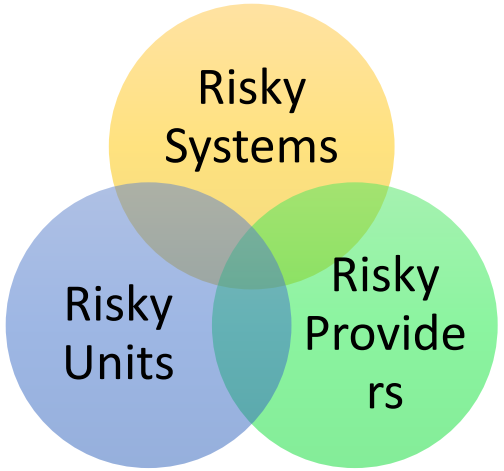
- The Board shall define an accountability system for quality and safety when any part of the organization misses quality goals or has an unacceptable level of risk



Element 2 – Systems Thinking, Risk Identification and Mitigation

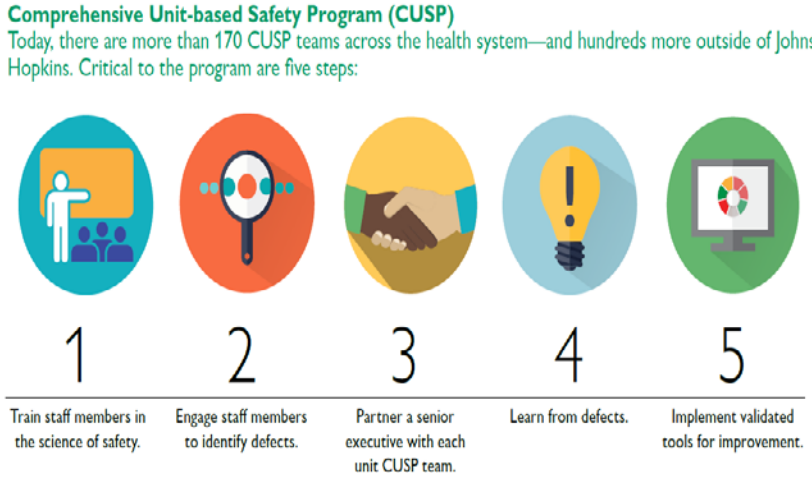
- Management shall seek to anticipate and prevent mishaps by standardizing work whenever possible
- Safety culture surveys, event reporting and ”near miss” data shall be continually utilized to inform and develop corrective and preventive actions

- Risk identification and mitigation shall be informed by triangulated evidence such as indicators of risky providers, units and systems

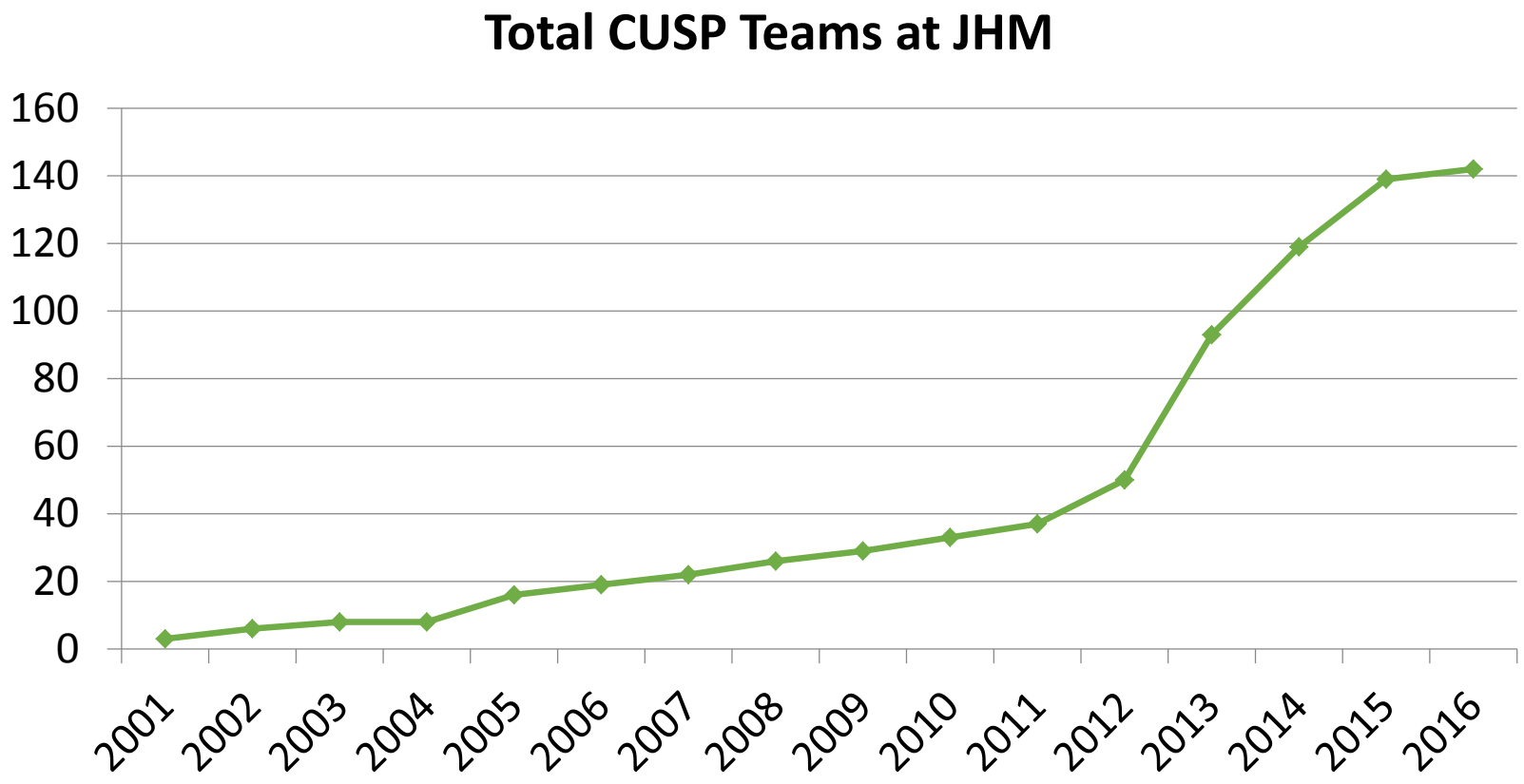


Element 2 – Systems Thinking, Risk Identification and Mitigation

- Management shall ensure that staff understand the upstream and downstream implications of their work, and partner effectively with colleagues in both directions
- Unit-based clinical teams shall be created to improve patient safety culture and provide frontline caregivers the tools and support to eliminate harm

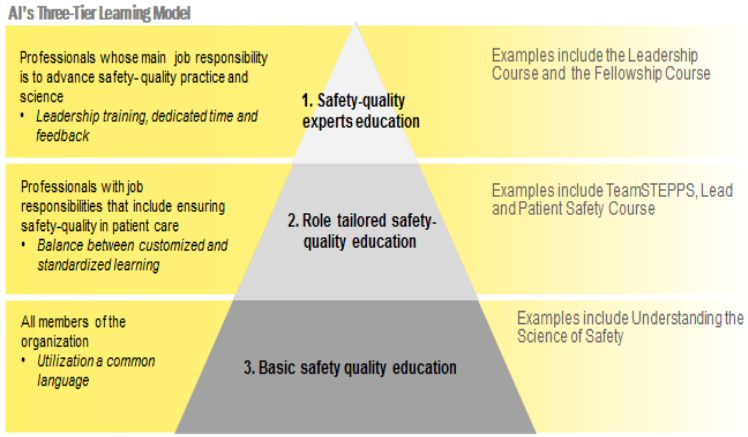


CUSP Growth


Total CUSP Teams at JHM
160
140
120
100
80
60
40
20
0
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016

Element 3 – Capacity and Infrastructure

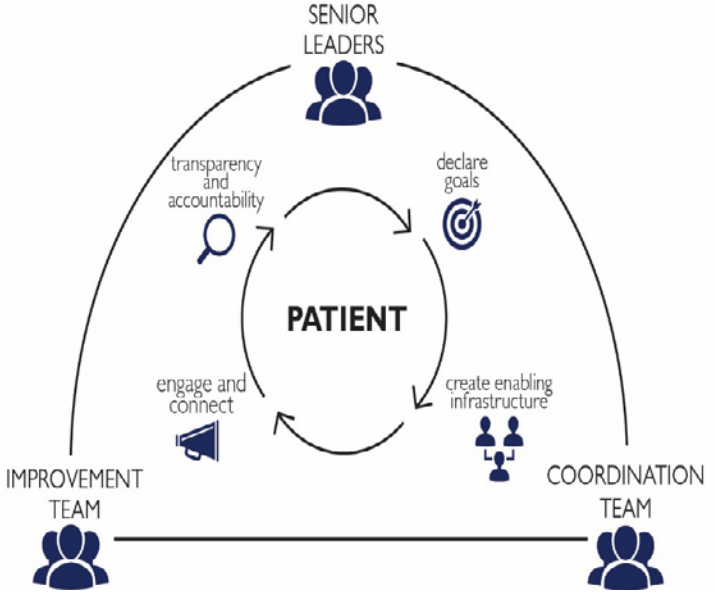
- Management shall create a fractal management structure for quality in which management defines the delivery system structure and ensures that every higher level of the organization creates a forum in which every lower level helps co-create the quality approach



- Management shall structure a learning model with quality and safety training targeted and tailored systematically for all staff including leadership
- Clinical staff shall demonstrate skills and competencies to prevent the common causes of preventable harm in their area

Element 4 –
Transparency, Communication and Teamwork

- Leadership shall establish a Patient and Family Advisory Council with representatives on key quality and safety committees
- Management shall empower all staff to speak up and stop hazardous conditions to prevent harm and share wisdom to improve patient outcomes and experience

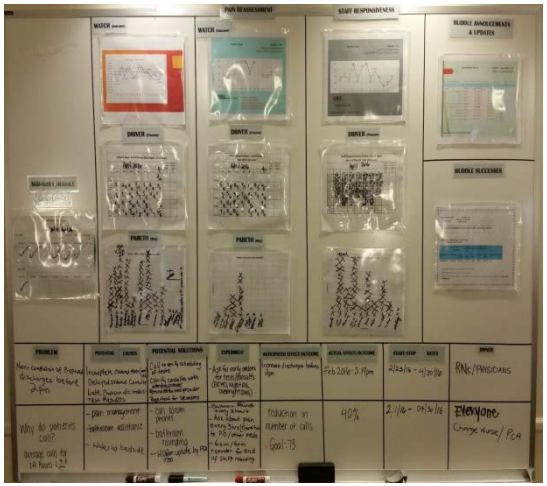


- Management shall address disruptive staff with no one “untouchable”
- Leadership shall enact a bundle of human resource practices to recruit, reward and retain staff that embrace the culture of safety and teamwork

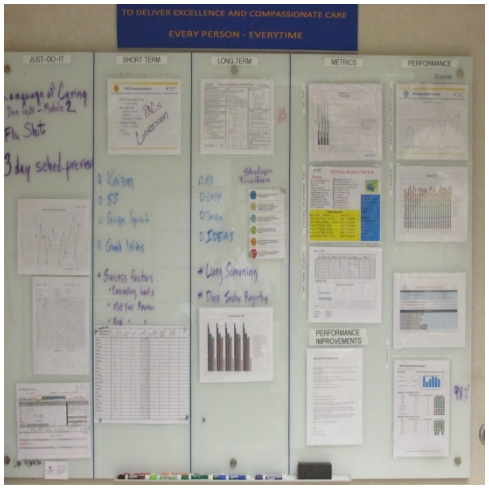
Element 4 –
Transparency, Communication and Teamwork

JHBMC True North Room

- Senior leaders shall declare and communicate goals
- Managers empower staff to speak up and stop hazardous conditions to prevent harm and share wisdom to improve patient outcomes and experience
- Lean Daily Management strategies shall be employed to support peer learning and accountability



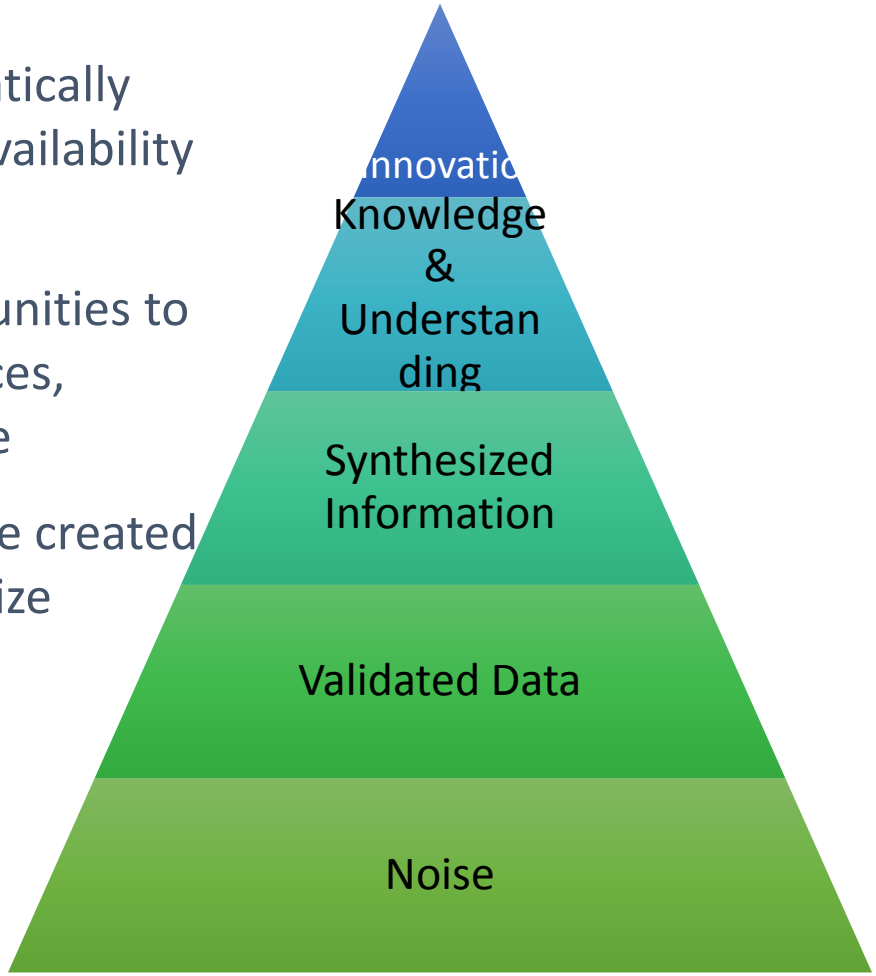
HCGH Observation Unit



Sibley Hospital CT

Element 5 –
Insight and Innovation

- Strategies shall be developed to systematically promote the realization, preservation, availability and application of new knowledge
- Management shall create clinical communities to integrate knowledge, standardize practices, promote innovation, efficiency and value
- An integrated analytics capability shall be created support improvement work and synthesize information from multiple sources to identify strengths and weaknesses



Examples of Habits for HRO

- Habits to anticipate and prevent mishaps through standard work
  - Observe work; get ground truth daily
  - Shadow another role
  - Ask daily, how will this and next patient be harmed
  - Leaders ask how will operational and financial decisions introduce risks
  - Leaders ask will all employees say they are are treated with respect by everyone, they have the resources and competencies they need and they are recognized
- Habits to recover from mishaps
  - Conduct daily rounds
  - Managers create structures to link up and down stream teams
  - Leaders create a culture of speaking up and speaking out
  - Leaders actively seek our new information especially bad news
  - Leaders address untouchables and disruptive behavior
  - All build in pause points in confusing situations
  - All use standard protocols for communicating (STICC

References; Patient Harm is Preventable not Inevitable

[1]Pronovost et al. Fifteen years after To Err is Human: a success story to learn from. BMJ Qual Saf 2016;25:396-399.
[2]Pronovost et al. An intervention to decrease catheter-related bloodstream infections in the ICU. NEJM 2006;355;2725-2732.
[3]Bion et al. 'Matching Michigan': a 2-year stepped interventional programme to minimize central venous catheter-blood stream infections in intensive care units in England. BMJ Qual Saf 2013;22:110-123.
[4]Palomar et al. Impact of a national multimodel intervention to prevent catheter-related bloodstream infection in the ICU: the Spanish experience. Crit Care Med 2013;41:2364-2372.
[5]Lipitz-Snyderman et al. Impact of a statewide intensive care unit quality improvement initiative on hospital mortality and length of stay: retrospective comparative analysis. BMJ 2011;342:d219.
[6]Dixon-Woods et al. Explaining Michigan: Developing an ex post theory of a quality improvement program. Milbank Q 2011;89:167-205.

References; Safety is an operating management system

Pronovost et al. The Armstrong Institute: An academic institute for patient safety and quality improvement, research, training, and practice. Acad Med 2015;90:1331-1339.

Pronovost et al. Sustaining reliability on accountability measures at The Johns Hopkins Hospital. Jt Comm J Qual Patient Saf 2016;42:51-60.

Pronovost et al. Creating a high-reliability health care system: improving performance on core processes of care at Johns Hopkins Medicine. Acad Med 2015;90:165-172.

Mathews et al. A model for the departmental quality management infrastructure within an academic health system. Acad Med 2016 Sep 6 epublication.

Pronovost et al. Demonstrating high reliability on accountability measures at the Johns Hopkins Hospital. Jt Comm J Qual Patient Saf 2013;39:531-544.

Safety is based on design of safe systems

Pronovost & Bo-Linn. Preventing patient harms through systems of care. JAMA 2012;308:769-770.

Pronovost et al. From heroism to safe design: leveraging technology. Anesthesiol 2014;120:526-529.

Romig et al. Developing a comprehensive model of intensive care unit processes: concept of operations. J Patient Saf 2015 Apr 23 epublication.

Mathews S & Pronovost. The need for systems integration in health care. JAMA 2011;305:934-935.