

Safety in High Reliability Industries – What Healthcare Professionals can learn

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*Conflict of interest:
nothing to disclose*



***What can healthcare professionals
really learn from
High Reliability Industries?***



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Many say...

“Nothing”

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There are common challenges:

- Changing requirements
- Cost reduction pressure
- Resources / Staffing
- Increasing workload
- Risk of hurting someone



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But...

“In Healthcare we deal with people”

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Manufacturing...

***“that’s about products and
defects on an assembly line...
no two people are the same”***

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Nuclear Power...

***“those are machines,
we work on people not machines”***

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Aviation...

***“The pilots are safety focused
because their own life is at risk”***

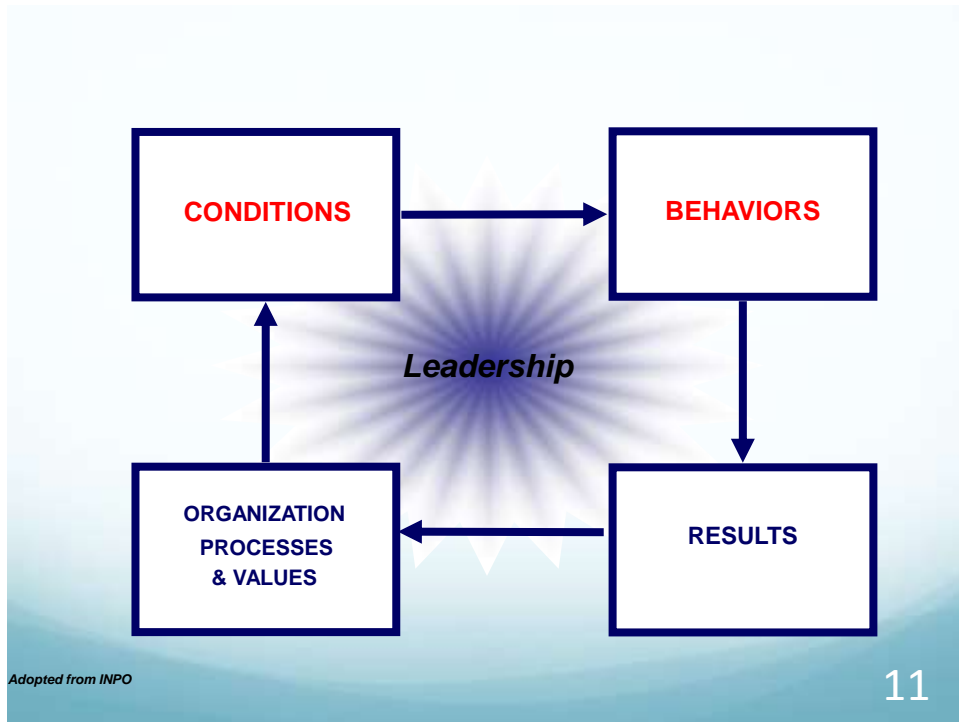
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The real learning opportunity does not depend on what we are working on, it's about how we respond to conditions that arise, such as:

- *missing or unexpected data,*
- *an observed error,*
- *conflicting information...*



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Research in the 1970s demonstrated that the majority of airplane crashes were caused by failures of **communication** among pilots and crew.

Today, root cause analysis of healthcare sentinel events also points to **communications**

High-Reliability Health Care: Getting There from Here
 Mark R. Chassin and Jerod M. Loeb
 The Milbank Quarterly, Vol. 91, No. 3, 2013 (pp. 459–490)

Root Cause Information for **Medication Error Events**
reviewed by The Joint Commission

2004 through 2014 Top 4 Root Causes:

1. Medication Use
2. Leadership
3. Human Factors
4. Communication



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Success is not the result of a checklist,
a barcode or a policy...
It is the behaviors and conditions
that these tools create



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Cross-Industry learning is all about duplicating the human behaviors and cultures that consistently produce the desired results:

**Zero defects,
Zero equipment failures,
Zero preventable deaths**

Same actions for each



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Cross-Industry Learning Opportunities

- Reduce workplace injuries.....Petrochemical
- Teamwork/Communications.....Aviation
- Continuous Improvement.....Manufacturing
- Training.....Military
- Safety Culture/Error reduction.....Nuclear Power



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Lesson #1

It's all about the people,

Human Behaviors create the outcomes



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What do we do?

Where do we start?



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Ensure understanding and buy-in on the
PRINCIPLES OF HUMAN PERFORMANCE

- 1) People are fallible, and even the best people make mistakes.**
- 2) Error-likely situations are predictable, manageable, and preventable.**
- 3) Individual behavior is influenced by organizational culture.**

From Institute of Nuclear Power Operations

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PRINCIPLES OF HUMAN PERFORMANCE

- 1) People are fallible, and even the best people make mistakes.**

Error is universal. No one is immune regardless of age, experience, or educational level.

It is human nature to be imprecise—to err. Consequently, error will happen.

No amount of counseling, training, or motivation can alter a person's fallibility.

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We are protecting us from ourselves



Source: Reason, *Managing the Risks of Organizational Accidents*, 1998, p.3.

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PRINCIPLES OF HUMAN PERFORMANCE

2) Error-likely situations are predictable, manageable, and preventable.

Despite the inevitability of human error in general, some errors are preventable.

*By changing the work **PROCESSES** to prevent, remove, or minimize the presence of conditions that provoke error (i.e. precursors), we can minimize the chance for error.*

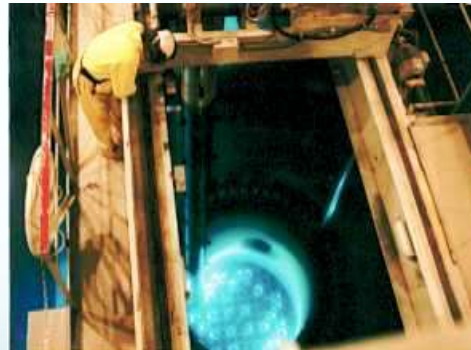
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Error Precursors

- ✓ Stress (work or home)
- ✓ Time Pressure/Rushing
- ✓ Multi-tasking
- ✓ Imprecise Communications
- ✓ Overconfidence
- ✓ First Time Performing Task
- ✓ Distraction/Interruption



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Error Reduction Tools

- ✓ Questioning attitude/STOP when unsure
- ✓ Pre-task brief /Time out
- ✓ Effective communications
- ✓ Self-checking
- ✓ Peer-checking
- ✓ Independent Verification
- ✓ Procedure use and adherence



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PRINCIPLES OF HUMAN PERFORMANCE

3) Individual behavior is influenced by organizational processes and values.

Organizations are goal-directed and, as such, their processes and values are developed to direct the behavior of the individuals in the organization.

*Work is achieved within the context of the organizational processes, **CULTURE**, and management planning and control systems.*

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*The concept of managing
Safety Culture comes from
the Nuclear Power Industry*



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CULTURE

Culture is to an organization what personality is to an individual.

It is an intangible facet that can be seen only through behaviors and espoused values.

It represents the collective behavior of the organization which adapts over time as members change.

Leaders and events shape the culture

New members quickly learn how to act to fit in with the culture
(i.e. what is socially acceptable)



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SAFETY CULTURE

An organization's societal norms regarding safety, defines its importance and influences behaviors.

The Safety Culture can cause people to make decisions to do things contrary to their policies, their training and sometimes even their better judgment.



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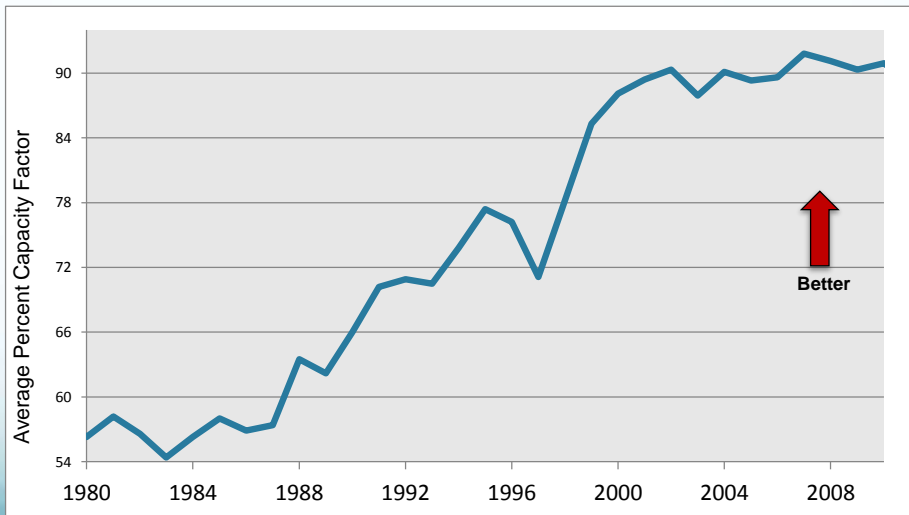
*Lesson #1
It's all about the people,
Human Behaviors create the outcomes*

**Lesson #2
The Culture creates behaviors**



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U.S. Nuclear Industry Performance



Source: NEI Energy Information Administration
 Updated: 3/12

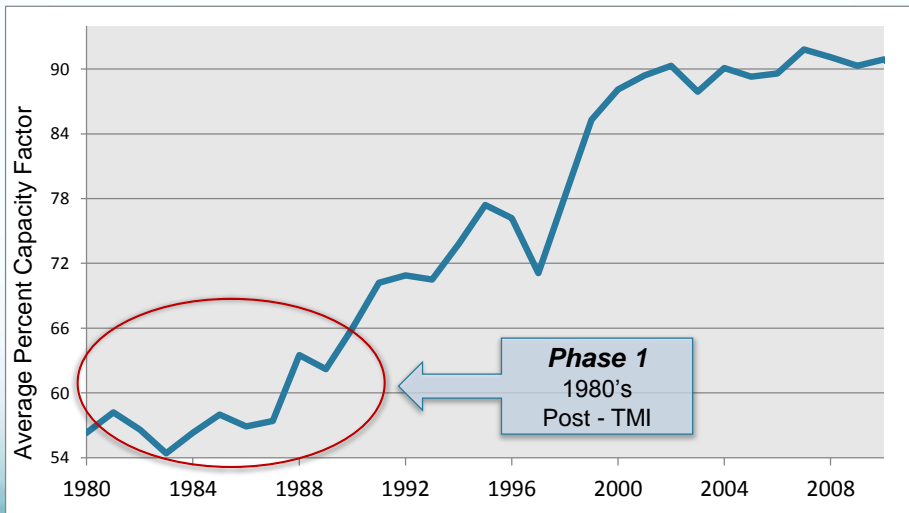
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Three Mile Island (TMI) Nuclear Power Plant

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U.S. Nuclear Industry Performance



Source: NEI Energy Information Administration
 Source: NEI
 Updated: 3/12

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Phase 1: 1980's - Post Three Mile Island years

First response - Denial

- Learning from Aviation and Military
- Checklists
- Bar codes, color codes
- Design Changes, new procedures

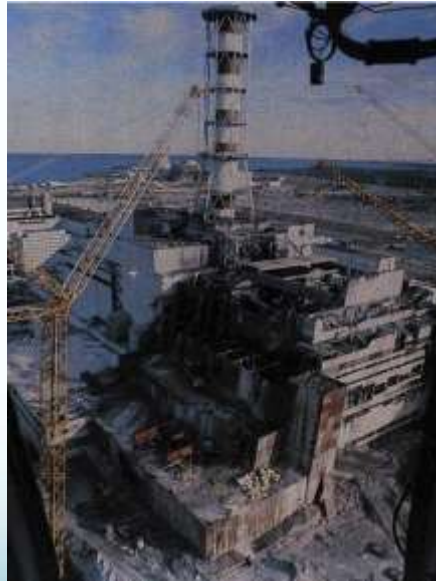
Overall - Improved (thru Process Improvement)



the Bergendahl Institute, LLC

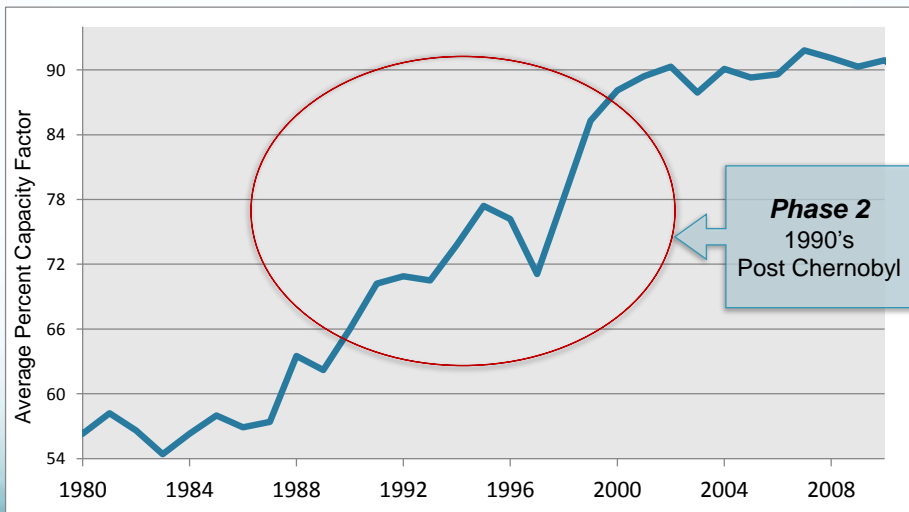
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Chernobyl Nuclear Plant



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U.S. Nuclear Industry Performance



Source: NEI Energy Information Administration
 Source: NEI
 Updated: 5/12

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Phase 2: 1990's - Post Chernobyl years

First response - Denial

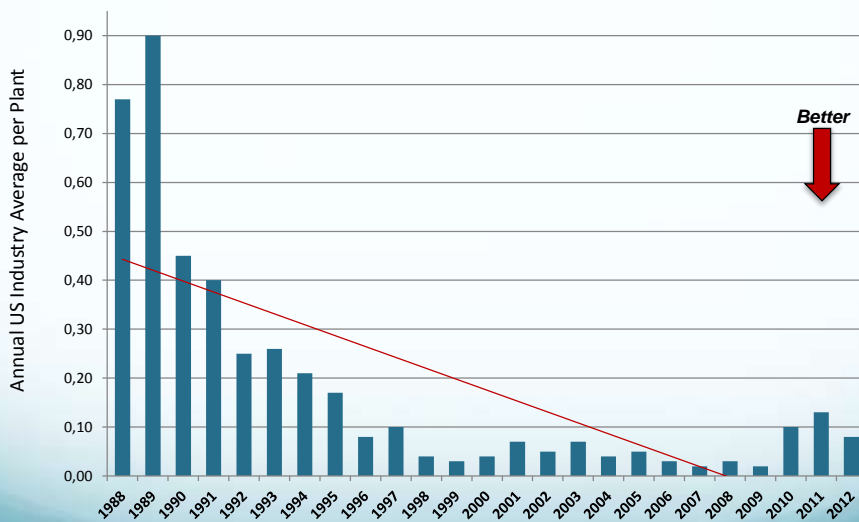
- Safety Culture
- Teamwork
- Leadership

Improved - through a focus on Culture and People



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NUCLEAR POWER Significant Events (USA)

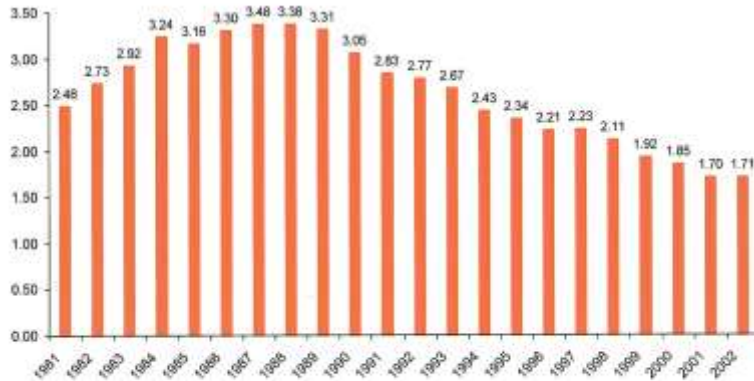


(Source: NEI Information Digest)

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Average US Nuclear Industry Production Costs (1981-2002)

(in 2002 cents per kilowatt-hour)



Source: RDNEUCG

NEI

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2000 Institute of Medicine (IOM) Report *To Err is Human: Building a Safer Healthcare System*

A defining moment for Healthcare

Starting the journey to High Reliability

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Healthcare: PHASE 1: 2000's - Post IOM Report

First response - Denial

Process orientated activities initiated

- Checklists/Barcodes
- Second checks/ Patient ID policies
- Labeling and Equipment Design



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Still opportunities to improve...

Wrong Site Surgery

Best estimate = 40 per week in US

High Reliability Healthcare: What's Holding Us Back?
Mark R. Chassin, MD, FACP, MPP, MPH
President, The Joint Commission
5th International High Reliability Organizing Workshop 2012

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Healthcare Today:

PHASE 2:

- ✓ *Emphasize Safety Culture*
- ✓ *People versus Process*



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“Our findings support the idea that a more positive patient safety culture is associated with fewer adverse events in hospitals.”

Mardon RE, Khanna K, Sorra J, Dyer N, Famolaro T.

Exploring relationships between hospital patient safety culture and adverse events.

J Patient Saf. 2010 Dec;6(4):226-32



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Tools for Strengthening Safety Culture

- Routine culture survey, detailed analysis & follow up
- Training on error precursors & error reduction tools
- Just culture (culpability model, substitution test, etc.)
- Low threshold “condition” reporting system
- Positive reinforcement of reporting and questioning



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BECKER'S **Infection Control & Clinical Quality**

The 4 Characteristics of a Strong Safety Culture

Howard W. Bergendahl
Becker's Hospital review
April 28, 2014

www.beckershospitalreview.com/quality/the-4-characteristics-of-a-strong-safety-culture.html



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In a strong safety culture, everyone on the care team;

- ...is empowered and willing to **Stop and question** if things don't seem right,
- ...is always **Aware of the risks** that can occur, not overly confident and they don't assume,
- ...is focused on continuously **Learning** from adverse outcomes/events which occur,
- ...works together as a **Team** to help each other minimize errors and avoid events



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Safety Culture **Warning Signs**

STOP and Question?

- ✓ Staff perceives meeting the schedule as the absolute highest priority
- ✓ Staff does not feel empowered to question someone of higher authority



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Safety Culture **Warning Signs**

AWARE and sensitive to risks?

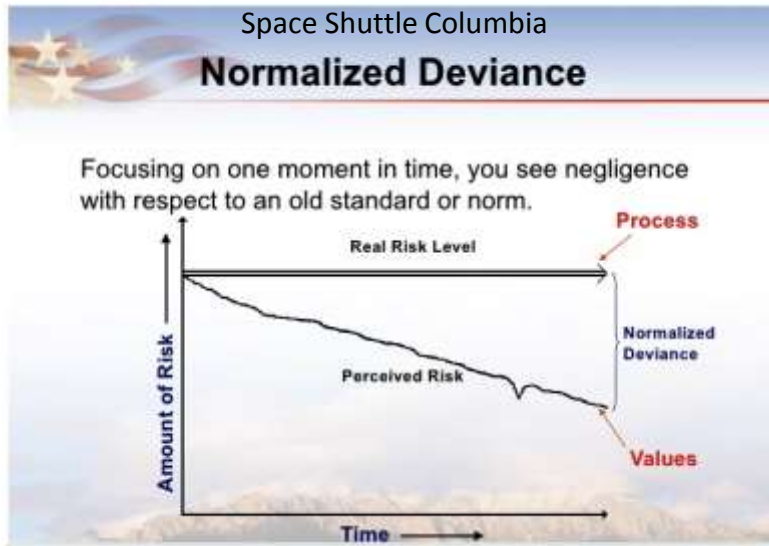
- ✓ Making assumptions that things are right
- ✓ Overconfidence and complacency



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From – Human Performance Improvement presented by Michael L. McIntosh ORNL
at American Chemical Society August 2010

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Safety Culture **Warning Signs**

LEARNING organization?

- ✓ Prevailing attitude is that someone must be accountable for events
- ✓ Decision is usually made not to spend time examining events that had no impact on patient



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Safety Culture **Warning Signs**

TEAMWORK

- ✓ Staff assumes that it is someone else's job to ensure details are correct
- ✓ Staff openly blames other work groups for adverse outcomes



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What should we expect in these areas?

Stop – Leadership actions which empower and encourage staff to ask questions.

Awareness – Ongoing education on risks and a “trust but verify environment”

Learning – Encouraging reporting of low level events, with feedback on actions

Teamwork – A team environment, asking others if they have all they need



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It's all about the people,
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*Lesson #2
The Culture creates behaviors*

Lesson #3
The Leadership actions create the culture



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High-Reliability Health Care: Getting There from Here

Mark R. Chassin and Jerod M. Loeb

*We explored three major changes that health care organizations would have to undertake in order **to make substantial progress toward high reliability:***

- (1) the **leadership's commitment** to the ultimate goal of zero patient harm,
- (2) the incorporation of... a **safety culture** throughout the organization, and
- (3) Widespread deployment of... **process improvement** tools

The Milbank Quarterly, Vol. 91, No. 3, 2013 (pp. 459–490)

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Leaders ensure High Reliability work is never done

The goal of **zero** also is important because one of the most salient characteristics of high-reliability organizations is that they are not satisfied with whatever their current level of safety might be.

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Tools to Demonstrate Leadership Commitment

- Mandatory safety rules / Hard-Stops
- Required report-outs on incident trend analysis
- Leadership oversight of event investigation and follow-up
- Department meetings with case studies and successes
- “Days since last harm event” or “Safe days” posted



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When Leaders create a strong safety culture you will routinely hear everyone asking these types of questions:

- What do you think?
- Are you sure?
- Did anyone check that?
- Is there anything else I should know?
- Do you understand?



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Lesson #1
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The Culture creates behaviors

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Nuclear Plant Control Room,
Hospital Operating Room,
Corporate Board Room,
Construction Site,
Pharmacy



People are People

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