Overview

- Brief background
- Why talk about high reliability and HRO’s?
- High reliability principles and safety culture
- Healthcare applications
- The promise of reliability as a chassis to improve multiple dimensions of performance
Sentara Healthcare

- 12 hospitals; 2,727 beds; 3,799 physicians on staff
- 12 long term care/assisted living centers
- 4 Medical Groups (~900 providers)
- 440,000 member health plan
- $4.3B total operating revenues
- 28,000+ members of the team
- AA/Aa2 bond ratings
- Sentara eCare: HIMSS Analytics Stage 7 and HIMSS Davies Award
- AHA Quest for Quality Award 2004, John M. Eisenberg Award 2005

HPI – A Reliability Company

*Methods based on science and facts*
- Science of human error and event prevention
- Practical experience in high-reliability industries including nuclear power and aviation

*Experienced-based mentoring*
- Over 680 hospitals across 68 health systems
- Includes LTC, medical groups, ambulatory care, homecare
- Safety and Reliability Collaboratives including 118 hospitals
Reliability: The probability that a system, structure, component, process or person will successfully perform the intended function(s).

Adapted from the Institute of Medicine: Crossing the Quality Chasm: Six Aims for Improvement

Two Patient Stories

Sebastian Ferrero – Medication Error
Hortense Osborne- Sepsis
High reliability organizations (HROs) “operate under very trying conditions all the time and yet manage to have fewer than their fair share of accidents.”

*Managing the Unexpected* (Weick & Sutcliffe)

\[
\text{Risk} = \text{Probability} \times \text{Consequence}
\]

Nuclear Powered Submarines

- 6,200 cumulative years of nuclear reactor operations involving 526 nuclear reactor cores
- 127 million miles submerged (265 round trips to moon)
- Zero radiological/reactor incidents over 50 years
- Operated by 20 year olds
Significant Events at US Nuclear Plants

Significant Events per Plant
Annual Industry Average, Fiscal Year 1988-2011

Significant Events are those events that the NRC staff identifies for the Performance Indicator Program as meeting one or more of the following criteria:

- A Yellow or Red Reactor Oversight Process (ROP) finding or performance indicator
- An event with a Conditional Core Damage Probability (CCDP) or increase in core damage probability (ACDP) of 1x10^-6 or higher
- An Abnormal Occurrence as defined by Management Directive 8.1, "Abnormal Occurrence Reporting Procedure"
- An event rated two or higher on the International Nuclear Event Scale

US Nuclear Industrial Safety Accident Rate

U.S. Nuclear Industrial Safety Accident Rate
One-Year Industry Values
US Nuclear Capacity Factors

Sustained Reliability and Productivity

U.S. Nuclear Capacity Factor, Percent

Journey to Reliability – Process + People

Optimized Outcomes

Human Factors Integration
- Intuitive design
- Obvious to do the right thing
- Impossible to do the wrong thing

Reliability Culture
- Core values & vertical integration
- Behavior expectations for all
- Hire for fit
- Fair, just, and 200% accountability

Process Design
- Evidence-based best practice
- Focus & Simplify
- Tactical improvements (e.g., process bundles)
High Reliability Organizations

HROs “operate under very trying conditions all the time and yet manage to have fewer than their fair share of accidents.”

3 Principles of Anticipation

“Stay Out of Trouble”
Sensitivity to Operations
Preoccupation with Failure
Reluctance to Simplify

2 Principles of Containment

“Get Out of Trouble”
Commitment to Resilience
Deference to Expertise

High Reliability in Healthcare

- Three changes needed for healthcare organizations to become highly reliable:
  - Leadership commitment to the goal of high reliability
  - Culture that supports high reliability must be implemented
  - Robust process improvement tools must be used

  Chassin and Loeb; Health Affairs April 2011

  - An appreciation of human performance in complex, adaptive systems
March 22, 1966

“The measure of success is not whether you have a tough problem to deal with, but whether it is the same problem you had last year.”

*John Foster Dulles*

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5 Principles of Human Performance

1. Everyone makes errors...even experienced, professional people.

2. We work in high-risk situations that increase the chance we will make an error.

3. We can avoid most errors by practicing low-risk behaviors.

4. Culture affects how we behave, and our behaviors determine outcomes.

5. Most near-misses and significant events are due to system or process problems.

*Based on Excellence in Human Performance, Institute for Nuclear Power Operations, 1997*
What is Culture?

Culture
The shared values and beliefs of individuals in a group or organization

<table>
<thead>
<tr>
<th>Culture</th>
<th>Shared Values &amp; Beliefs</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Our Behaviors</td>
</tr>
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<td></td>
<td>Outcomes</td>
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</tbody>
</table>
Fair and Just Culture: The Balance

Learning from errors and events
- Reporting errors and events
- Analyzing events
- Correcting root causes
- Sharing lessons learned

Managing performance violations
- Responding to errors and events
- Assessing and managing culpability

<table>
<thead>
<tr>
<th>Leadership Safety Values and Actions</th>
<th>Problem Identification and Resolution</th>
<th>Personal Accountability</th>
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<tbody>
<tr>
<td>Leaders demonstrate a commitment to safety in their decisions and behaviors.</td>
<td>Issues potentially impacting safety are promptly identified, fully evaluated, and promptly addressed and corrected commensurate with their significance.</td>
<td>All individuals take personal responsibility for safety.</td>
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<table>
<thead>
<tr>
<th>Work Processes</th>
<th>Continuous Learning</th>
<th>Environment for Raising Concerns</th>
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<tbody>
<tr>
<td>The process of planning and controlling work activities is implemented so that safety is maintained.</td>
<td>Opportunities to learn about ways to ensure safety are sought out and implemented.</td>
<td>A safety conscious work environment is maintained where personnel feel free to raise safety concerns without fear of retaliation, intimidation, harassment or discrimination.</td>
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<tr>
<th>Effective Safety Communications</th>
<th>Respectful Work Environment</th>
<th>Questioning Attitude</th>
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<tbody>
<tr>
<td>Communications maintain a focus on safety.</td>
<td>Trust and respect permeate the organization.</td>
<td>Individuals avoid complacency and continually challenge existing conditions and activities in order to identify discrepancies that might result in error or inappropriate action.</td>
</tr>
</tbody>
</table>

Source: U.S. Nuclear Regulatory Commission, Safety Culture Trait Talk, Issue 1, March 2014
Culture Change: It’s Different Work

From *The Dilemma of Foundation Leadership*, by Ronald Heifetz

Disequilibrium

Productive Range of Distress

Equilibrium

Technical Problem and Solution

Adaptive Problem and Solution

East Coast Health System
January 2008 to March 2014

88% reduction as a system
- 3 hospitals with sustained zero for over 365 days
- 1 hospital with sustained zero for 1,023 days
### Sentara Serious Safety Event Rate

80% SSER Reduction  
74% Reduction in Claims Frequency  
Significant reductions in VAP, CLABSI, CA-UTI, Falls, others

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#### Common Cause Analysis Data 2012-2013

<table>
<thead>
<tr>
<th>“How” Data</th>
<th>“Why” Data</th>
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</thead>
<tbody>
<tr>
<td><strong>People Causes</strong></td>
<td><strong>Systems Causes</strong></td>
</tr>
<tr>
<td>Knowledge &amp; Skill</td>
<td>Structure (job design)</td>
</tr>
<tr>
<td>Attention on task</td>
<td>Culture (people &amp; people interaction)</td>
</tr>
<tr>
<td>Information processing</td>
<td>Process</td>
</tr>
<tr>
<td>Critical Thinking</td>
<td>Policy &amp; Protocol</td>
</tr>
<tr>
<td>Non-Compliance</td>
<td>Technology &amp; Environment</td>
</tr>
<tr>
<td>Normalized Deviance</td>
<td>Acts coded for system cause</td>
</tr>
<tr>
<td>Acts coded for human error</td>
<td><strong>Culture Preventable = 76.1</strong></td>
</tr>
</tbody>
</table>

Comparison based on 4,204 inappropriate acts from 84 sites in HPI CCA Database
Actions to Create a Safety Culture

Organization’s Values & Beliefs

1. Elevate safety – NO HARM – as the core value that is reflected in the words and actions of leaders, medical staff, and employees.

2. Adopt behaviors for error prevention a “people bundle” for all (leaders, staff, and medical staff) and engrain the behaviors as individual and team work habits.

Individual & Team Behaviors

3. Adopt a Daily Operating System for Leaders for (1) reinforcing and building accountability for performance expectations and (2) detecting system problems and correcting causes.

Leader Behaviors

Our Outcomes in SAFETY as well as in quality, satisfaction, and financial performance

Safety as an Explicit Core Value

“There is no priority higher than patient safety. If there is a conflict between safe practice and speed, efficiency or volume, then safety wins – hands down.”

James M. Anderson
Past President & CEO
Cincinnati Children’s Hospital Medical Center

"Safety is not a priority at Alcoa, it is a precondition."

Paul O’Neill
Former ALCOA CEO, US Treasury Secretary

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Culture Embedding Mechanisms
From Organizational Culture & Leadership, by Edgar Schein

Primary Embedding Mechanisms
• What leaders pay attention to, measure, and control on a regular basis
• How leaders react to critical incidents and organizational crises
• Observed criteria by which leaders allocate scarce resources
• Deliberate role modeling, teaching, and coaching
• Observed criteria by which leaders allocate rewards and status
• Observed criteria by which leaders recruit, select, promote, retire, and excommunicate organizational members

Secondary Articulation & Reinforcement Mechanisms
• Organizational design and structure
• Organizational systems and procedures
• Organizational rites and rituals
• Design of physical space, facades, and buildings
• Stories, legends, and myths about people and events
• Formal statements of organizational philosophy, values, and creed

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3 Roles of Leaders:

1. Setting Safety as a Core Value
2. Build accountability
   • Round To Influence
   • 5:1 Feedback
   • Fair & Just Response
   • Red Rules
3. Find problems and fix causes
   • Daily Safety Check-In
   • Top 10 List
   • Action Plans
   • Work group

HRO’s give leaders structure
Benefits of Daily Check-In
a house-wide safety huddle

Leadership Awareness
- For the senior leader: awareness of what’s happening at the front line by staying in touch with your people
- For operational leaders: awareness of “what’s going on” in other areas and cross-department impact

Problem Identification & Resolution
- Early notification of issues
- Breaking down silos – all directors to pool ideas and resources in solving problems and potential problems

Accountability for Safety
- “Talking about perfect care has become easier” – more aggressive in leadership for Zero events
- Dialogue about how we are at risk, how we can reduce our risk, and how we can support each other

Non-Technical Skills

Non-technical skills describe how people interact with technology, environment, and other people. These skills are similar across a wide range of job functions. These skills include attention, information processing, and cognition.

Generic non-technical skills:
- Situational awareness
- Teamwork
- Decision-making
- Communication
- Managing stress
- Coping with fatigue
- Leadership
How Do Serious Safety Events Occur?

Sentara Error Prevention Toolbox

1. Pay Attention to Detail
   - STAR (Stop/Think/Act/Review)

2. Communicate Clearly
   - Repeat Backs & Read Backs
   - Clarifying Questions
   - Phonetic & Numeric Clarifications
   - SBAR

3. Have a Questioning Attitude
   - Validate & Verification

4. Handoff Effectively
   - 5P’s (Patient/Project, Plan, Purpose, Problems, Precautions)

5. Never Leave Your Wingman
   - Peer Checking
   - Peer Coaching
Another View…

“Under pressure, you do not rise to the occasion; rather you sink to your level of training.”

Sign on the wall at the former Naval Fighter Weapons School (aka Top Gun) at NAS Miramar, San Diego
Closing Thoughts…

1. There is a gap between the level of reliability our patients receive in their care and what it could be.

2. Safety is a science. Ultra-high levels of safety can be achieved by employing high reliability principles.

3. We improve reliability and safety by the right mix of process, people, and system design.

4. High reliability principles provide a chassis for improving multiple dimensions of performance.

5. It will take everyone: Board, senior leaders, operational leaders, staff and physicians.
Thank you

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