

# Root Cause Analyses and Actions (RCA<sup>2</sup>)

*Middle East Forum on Quality and Safety in Healthcare*



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# Nothing to Disclose

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The faculty today have no relevant financial or nonfinancial relationship(s) within the services described, reviewed, evaluated, or compared in this presentation.



# Learning Objectives

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At the conclusion of this session, participants will be able to:

- Identify the current state of root cause analysis (RCA), and why improvements are essential
- Describe the methodology and processes associated with RCA<sup>2</sup>
- Utilize tools that are used in the RCA<sup>2</sup> process
- List approaches for evaluating the success of RCA<sup>2</sup>



# Agenda

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1:00 pm	Brief Introduction
1:15 pm	Current State of Event Review
1:40 pm	Safety Science & Human Factors Engineering
2:15 pm	Team Composition & Interviewing
3:00 pm	Break
3:30 pm	Risk-Based Prioritization & Strength of Actions
4:15 pm	Measurement, Feedback, and Engaging Leadership
4:45 pm	Table Discussion: Taking the Work Forward
5:25 pm	Closing



# The Current State of Event Review and the RCA<sup>2</sup> Process



# Importance of Patient Safety

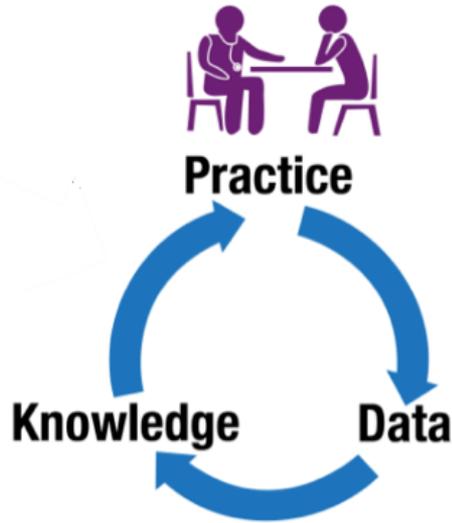
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- Patient safety is a serious global public health issue
- Despite progress, preventable harm remains unacceptably frequent
  - Significant mortality and morbidity
  - Quality of life implications
  - Adversely affects patients in every care setting



# Learning Health Systems

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- Learning health systems **systematically** create and gather evidence
- Learning health systems **apply** the most promising evidence to **improve care**

# Characteristics of Learning Systems

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## Learning Health Systems—

- Have leaders who are committed to a culture of continuous learning and improvement.
- Systematically gather and apply evidence in real-time to guide care.
- Employ IT methods to share new evidence with clinicians to improve decision-making.
- Promote the inclusion of patients as vital members of the learning team.
- Capture and analyze data and care experiences to improve care.
- Continually assess outcomes refine processes and training to create a feedback cycle for learning and improvement.



# Root Cause Analysis

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- Structured method to analyze serious adverse events
- Uses a systems approach to identify underlying causes and prevent future harm
- Ultimate goal of preventing future harm by eliminating latent errors underlying adverse events



# RCA: The Current State

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- Same patient safety problems recur
- Root Cause Analysis has been used with highly variable success due to:
  - Lack of standardized approach
  - Failure to identify system level causes
  - Superficial solutions/countermeasures
  - Poor implementation of solutions
  - Lack of follow-up



# Why RCA<sup>2</sup>? Why Now?

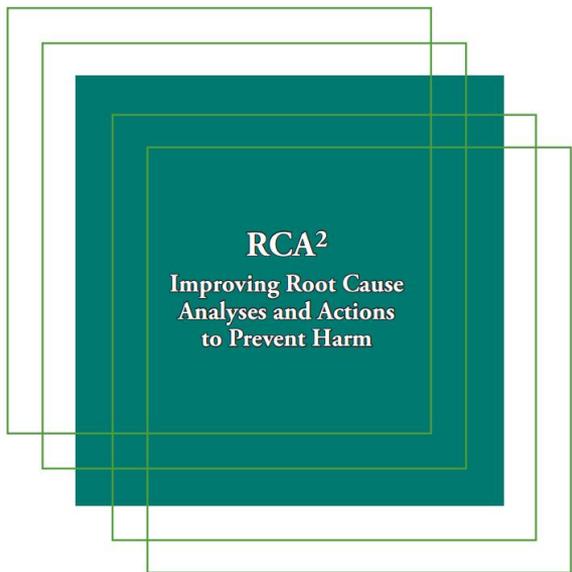
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- RCA has been advocated for > 15 years with highly variable success
- Need to get real, sustainable improvement for our patients and our workforce
- New approach needed
- **Root Cause Analyses and ACTIONS (RCA<sup>2</sup>)**



# *RCA<sup>2</sup>: Improving Root Cause Analyses and Actions to Prevent Harm*

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**Download the full PDF report at:**

<http://www.ihi.org/resources/Pages/Tools/RCA2-Improving-Root-Cause-Analyses-and-Actions-to-Prevent-Harm.aspx>

Generously funded by  
The Doctors Company Foundation



# The RCA<sup>2</sup> Initiative

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**Standardize Process**

**Risk-based rather than severity-based**

**Systems-based approach**

**Goal is real ACTION & Improvement**

**Sustainable results**



# Key Elements of RCA<sup>2</sup>

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- Risk-based prioritization
- Non-punitive
- Timing & team membership
- Determination of:
  - What happened?
  - Why it happened?
  - What actions to prevent future occurrence?
- Formulation and implementation of stronger actions
- Follow-up and measurement
- Sustainment



# Risk-Based Prioritization

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- Why risk-based?
- How?
  - Severity vs. Likelihood (probability)
  - Importance of close calls
  - Actual vs. Potential harm



# Non-Punitive Approach

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- Why?
- Transparent Criteria
- Concepts of blameworthiness and just culture



# RCA<sup>2</sup> Timeline: First Steps

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- Established RCA<sup>2</sup> team or mechanism to convene quickly
  - Rapid appropriate response
  - Be prepared!
- **The patient is the first priority**
- Make the environment safe
- Preserve evidence



# RCA<sup>2</sup> Timeline: Overview

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- RCA<sup>2</sup> team needs to be appropriately resourced – commitment to RCA<sup>2</sup> process
- Review process should begin within 72 hours
- Review process completed in 30-45 days
- Recommend scheduled weekly meeting holds – team members “on call” during this time



# RCA<sup>2</sup> Timeline: Be Prepared

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Don't forget that:

- The RCA<sup>2</sup> process takes **more than one** meeting
- Meetings may take 1.5 – 2 hours
- Requires team member work between meetings



# RCA<sup>2</sup> Team Overview

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- The RCA<sup>2</sup> team is defined as those individuals who see the RCA<sup>2</sup> process through from beginning to end
- Team should be limited to 4 to 6 individuals
- Work of the team will be augmented by myriad of other individuals (e.g. patients and families, staff, subject matter experts)



# Strong Actions

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- Actions are the most important step of the RCA<sup>2</sup> process
- Actions aim to:
  - Prevent recurrences
  - Reduce risk of recurrence
- Focus on strength of actions using the action hierarchy



# Follow-up and Measurement

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- Each action requires at least one measure and an individual in charge of collecting and tracking that measure
  - Process measures
  - Outcome measures
- Follow-up on results of the RCA<sup>2</sup> process should be provided to:
  - Leadership, including C-Suite and Board
  - Patients and families
  - Impacted and effected staff



# Celebrate & Sustain

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- Celebrate wins!
  - Implemented and effective actions
  - Measured improvements
- Focus on “maintaining the gain”



# Safety Science & Human Factors Engineering



# Goal

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*Think Differently....*

To view safety and risk  
through the lens of safety  
science



# Sub-Goals

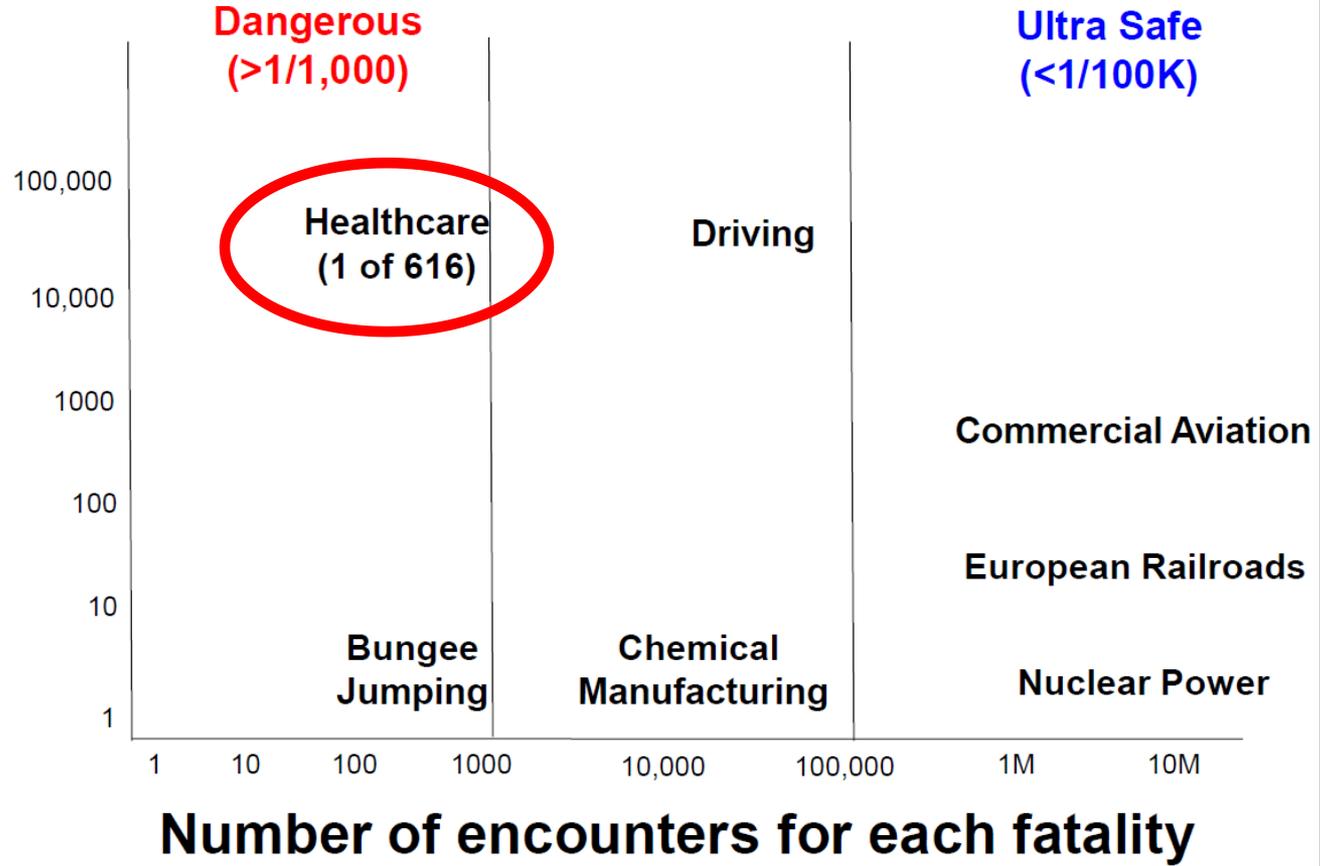
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- How do we really get safer? Systems Approach
- Tell MedStar's 8-year Transition Story
- Results: Show the impact
- Side Stories (sub sub goals)
  - Safety Science
  - Leadership
  - Mentorship
  - Career Success



Chart Credit: Modified from L. Leape

Total lives lost per year



# The Problem

IOM Report in 2000

- Govt: 50% less error in 5 years
- Funding, Regs, High Focus

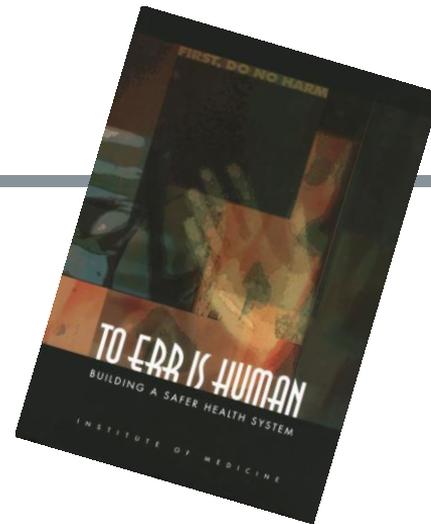
19 Years later....

## MINIMAL CHANGE

**WHY? → Focus still on individual performance**

**→ Reactive (vs proactive)**

**→ Solutions inconsistent with safety science**



Leape LL, Berwick DM. Five years after To Err Is Human: what have we learned? JAMA. May 18 2005;293(19)  
Wachter RM. The end of the beginning: Patient Safety Five Years After 'To Err Is Human'. Health Aff. 2004(11)  
Wachter RM. Patient Safety At Ten: Unmistakable Progress, Troubling Gaps. Health Aff. 2010 (29:1)  
Landrigan, Parry, et al. Temporal Trends in Rates of Patient Harm Resulting from Medical Care. NEJM 363(22): 2010  
Shekelle, Pronovost, et al. Advancing the science of patient safety. Ann Int Med 154(10): 2011  
Longo, Hewett, Ge, Schubert. The long road to patient safety: a status report on patient safety systems. JAMA, 294(22): 2005.

# “Systems Approach”

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Is the goal: “Eliminate Human Error?”

→ NO

## Human Error cannot be eliminated

- Futile goal; misdirects resources/focus
- Causes culture of blame and secrecy
  - “name, blame, shame, and train” mentality

**It is about reducing HARM**



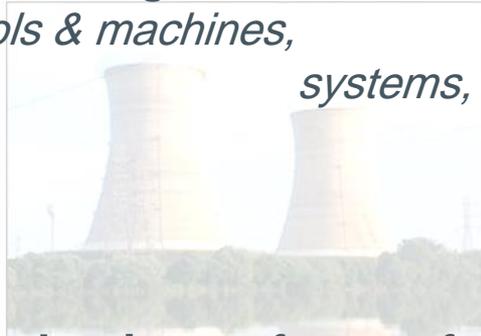
# Human Factors Engineering

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...discovers and applies scientific data about human  
*behavior & cognition,*  
*abilities & limitations,*  
*physical traits,*  
*and other characteristics*



...to the design of  
*tools & machines,*  
*systems,*



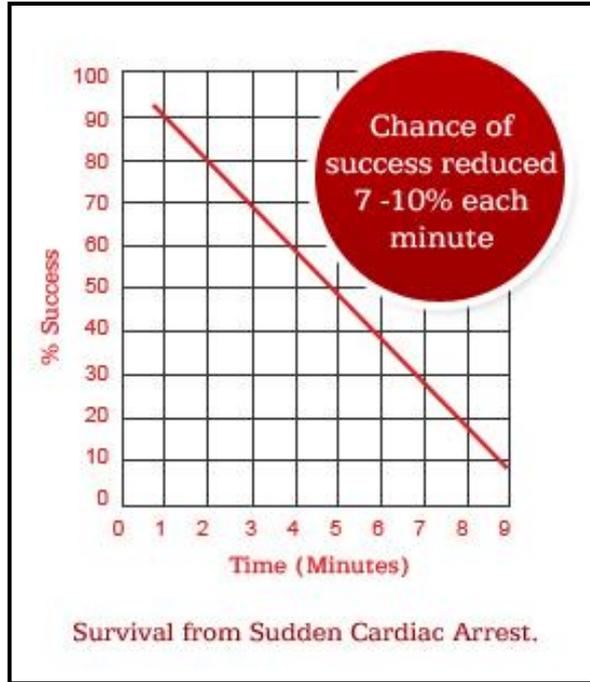
*environments,*  
*processes,*  
*and jobs*



for **productive, safe, comfortable, and effective** human

# Defibrillation Case

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**Knowledge-Based**  
Improvisation in unfamiliar environments  
No routines or rules available to help handle

**Rule-Based**  
Protocolized behavior  
Process, Procedure

**Skill-Based**  
Automated Routines  
Require little conscious attention

**Conscious**

**TRIAL & ERROR**

1. MISAPPLY GOOD RULE
2. NOT APPLY GOOD RULE
3. APPLY BAD RULE

**SLIPS & LAPSES**

**Automatic**



Knowledge-Based

Improvisation in unfamiliar environments  
No routines or rules available to help manage

Conscious

TRIAL & ERROR

# “Skills-Based Error”

## = Slips and Lapses

Rule-Based

Protocols, Procedures

1. MISAPPLY GOOD RULE  
2. NOT APPLY GOOD RULE  
3. APPLY BAD RULE

## = Automatic Mode Errors

# → HUGE OPPORTUNITY ←

Skill-Based

Automated Routines  
Require little conscious attention

SLIPS & LAPSES

Automatic



# Slips and Lapses: Common

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Policies

Dis

TO ERR IS HUMAN

BUILDING A SAFER HEALTH SYSTEM

ing,

nce,

mindfulness”



# Defibrillator Case History

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First: Trend found in EMS Reporting system

Then: Simulation study (Denmark)

- 72 physicians
- 5 of 192 defib attempts – Turned it off
  - Measurable delay in shock
- Devices turn off even if charged and ready

*Hoyer, Christensen, et al. Annals of Emergency Medicine 2008; 52(5): 512-514.*



# Human Factors Engineering

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“We don’t redesign humans; We redesign the system within which humans work”



# Defibrillator Case #2

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- 32 year old healthy man, young kids, 1<sup>o</sup> income
- Presents to ED with sustained SVT & chest pain
- Primary interventions unsuccessful
- Synchronized shock @50j → **refractory**
- Try again @ 100j → **VF Arrest**
- 45m resuscitation attempt → **patient dies**
- **Investigation reveals that MD failed to put device in SYNC mode for second shock**



# Defibrillator Usability Study

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- Fourteen expert participants
- Four tasks: 2 routine, 2 emergent
- Two defibrillator models
- SimMan™ patient simulator
- *50% of participants inadvertently delivered an unsynchronized countershock for SVT*
  - **71% of participants never aware**

➤Fairbanks RJ, Caplan SH, et al. Usability Study of Two Common Defibrillators Reveals Hazards. *Annals of Emergency Medicine* Oct 2007; 50(4): 424-432.  
[See also associated editorial: Karsh and Scanlon, Oct 2007; 50(4): 433-435]



# Response #1

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“Physician should have taken time to ask ED staff for an operator’s manual for the defibrillator and read it after he arrived in the ED to perform a cardioversion”

*Fairbanks RJ and Wears RL. Hazards With Medical Devices: the Role of Design.  
Annals of Emergency Medicine Nov 2008; 52(5): 519-521.*



# Complex Adaptive Systems: *work as done –vs- work as imagined*

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How managers believe work is being done (rules)



GAP



Every-day work: How work IS being done

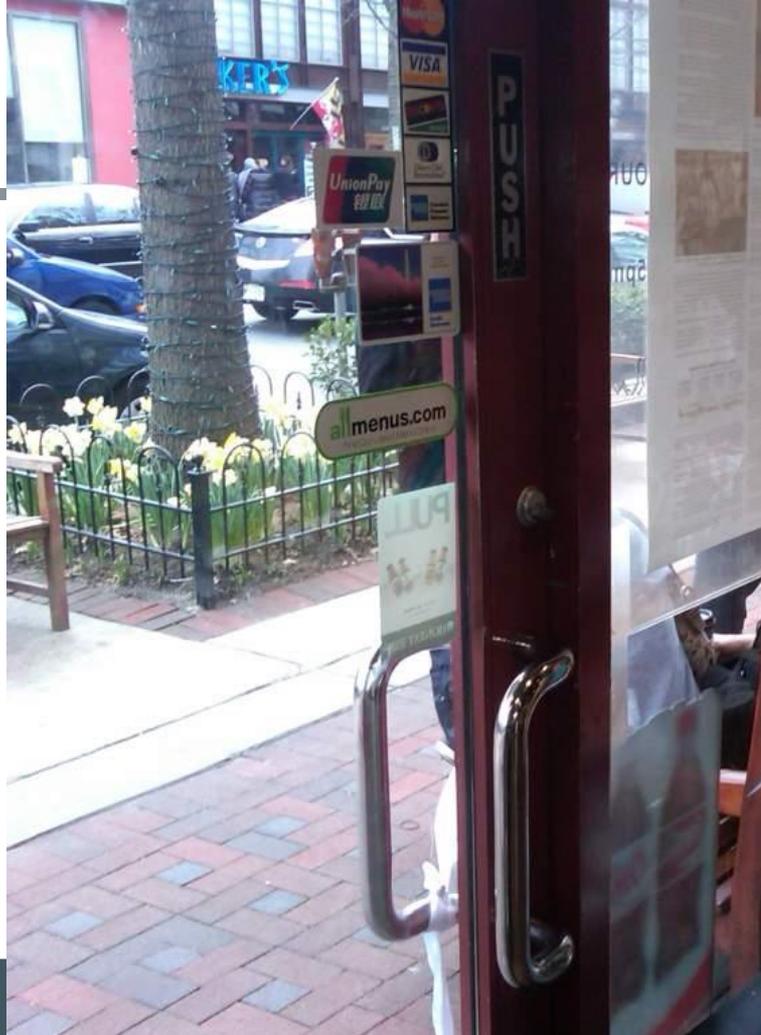


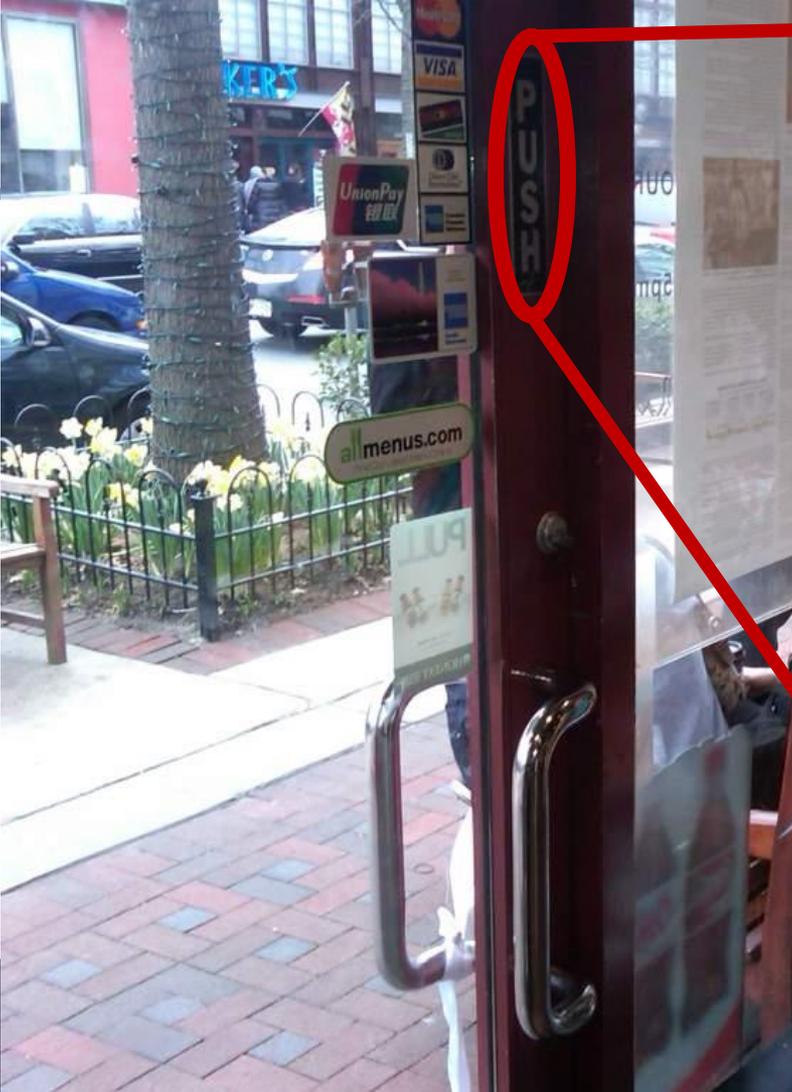
## Response #2

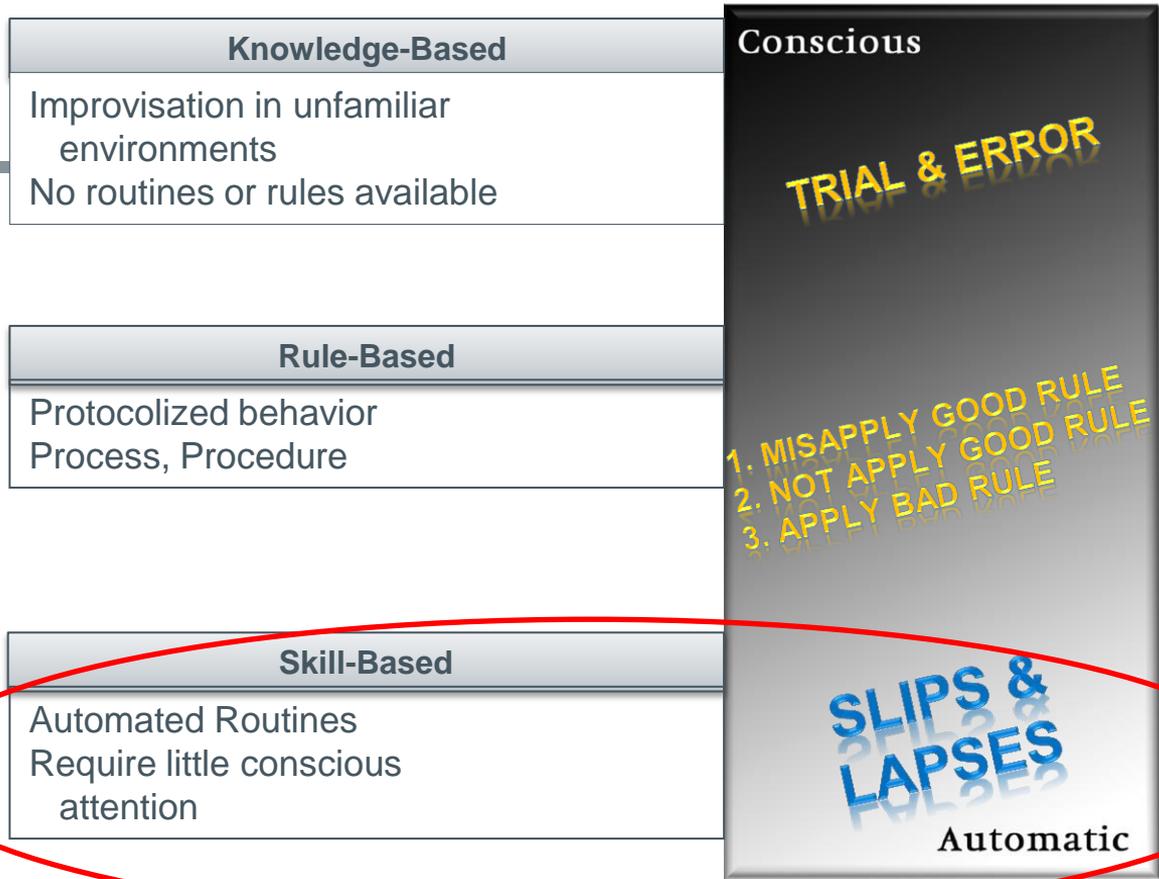
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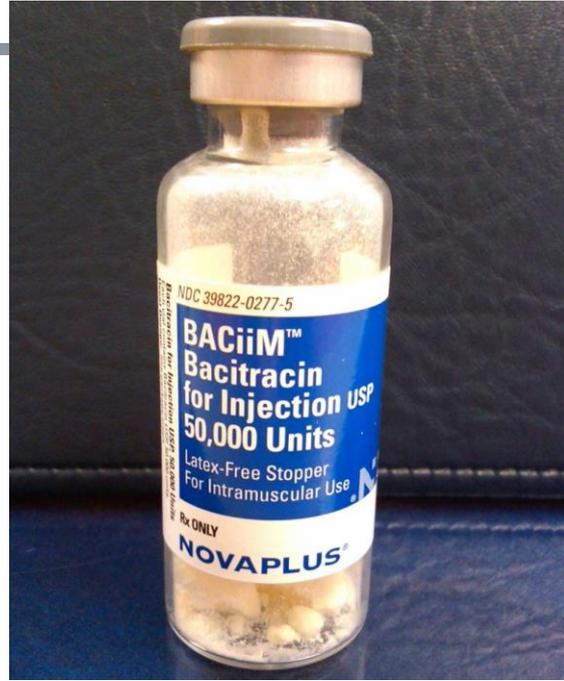
“the preventative or corrective action is provided in the device labeling”













# Safety Attitudes

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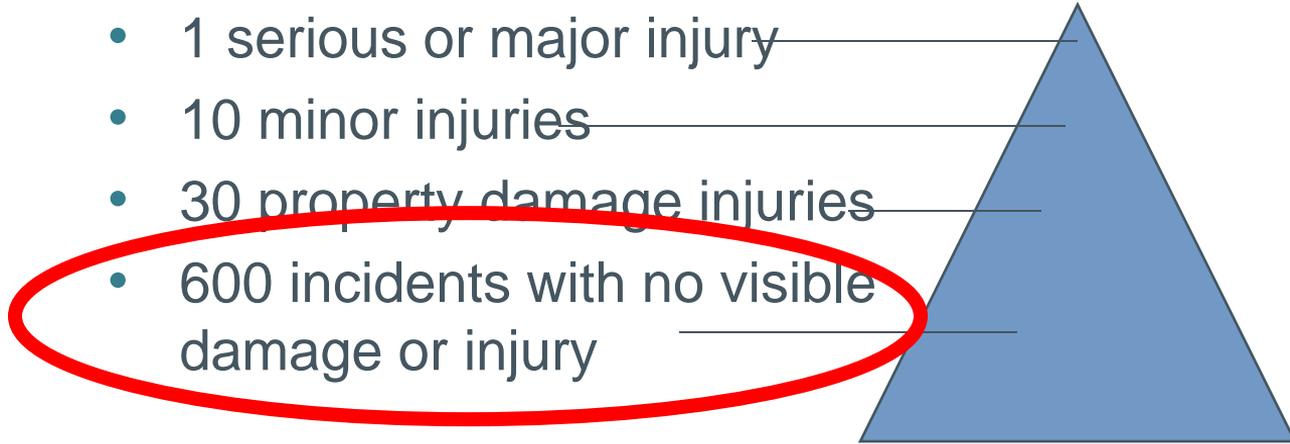
“The single greatest impediment to error prevention in the medical industry is that we punish people for making mistakes.”



# Why is a culture of safety so important?

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- 1 serious or major injury
- 10 minor injuries
- 30 property damage injuries
- 600 incidents with no visible damage or injury



*Bird, 1969*

1,753,498 accidents from 297 companies, 21 different industries

# US Airways Non-Reprisal Policy

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*“US Airways will not initiate disciplinary proceedings against any employee who discloses an incident or occurrence involving flight safety...”*



# Driven by our Values:

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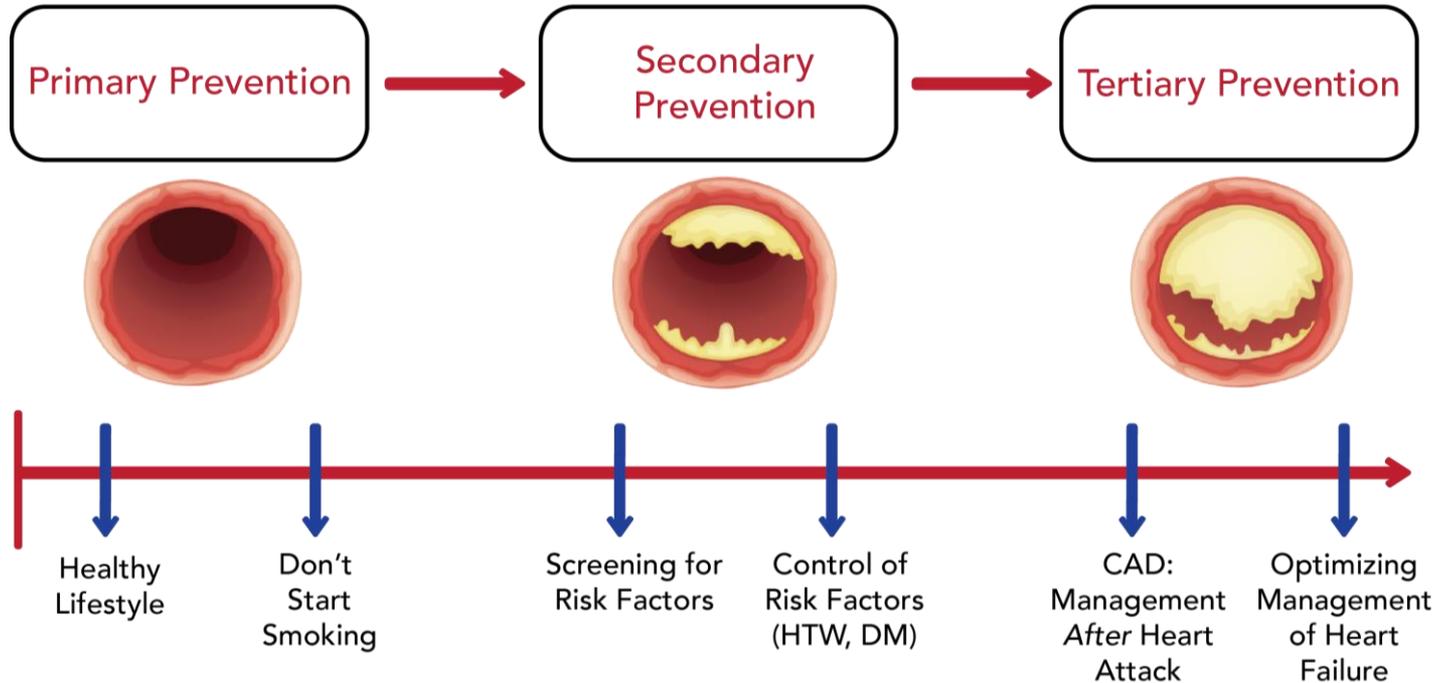
“This is about doing the right thing” for the patient and family”

*“Let me make it clear. We will not become one of the highest quality and safety organizations in the US without investment. While we will not see an ROI in this quarter or this year’s annual financial report, in the long run there will be a ROI and it will pay off in many ways.”*

--Executive VP and CFO, MedStar Health  
(at Senior Managers Meeting, 2012)



# Heart Disease Analogy



# MedStar Health's Integrated Patient Safety Transformational Model (PST)<sup>TM</sup>



# Operationalize PST:

**Primary**

Proactive

Reactive

Primary  
Prevention

1. People
  - Selection
  - Training
  - Expectations
2. Safety Culture
3. Clinical Excellence
4. Patient Satisfaction
5. Process Design
6. Standard Work
7. Device Selection
8. Built Design

ACCOUNTABILITY?

Leadership  
&  
Frontline



# Operationalize PST: Secondary

Proactive

Proactive

Reactive

Secondary  
Prevention

1. Event & Error Reports
2. Risk Mgt / Claims Data
3. Peer Review, OPPE
4. Patient Complaints
5. SSE/Near Miss Review
6. Good Catch Program
7. EMR Analytics
8. NRC Picker comments
9. Google/Zocdoc/etc
10. Follow-Up Calls
11. Associate Engagement Survey

12. Survey on Patient Safety

ACCOUNTABILITY?

Leadership



# Operationalize PST: Tertiary

Proactive

Proactive

Safety  
Event

Reactive

Tertiary  
Prevention

Leadership

## Event Response (Candor)

1. Early Notifications
2. Early Review/Go Team (RCA<sup>2</sup>)
3. Care for Pt & Family
  - Optimize Care
  - Communication & Transparency
  - Disclosure & Apology
  - Bill Hold & Reconciliation
4. Care for Caregiver
5. Impact Change: System-focused

# Safety Team Structure

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# Serious Unanticipated Outcomes



# Safety Metrics

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1. SSE Count
2. SUO Count

TOTAL'S REPORT	
CONTACTS -	239
SSE - YES -	41
SSE- No	115
SSE - UNDETERMINED	42

3. SSE Severity
4. Notification Lag
5. Associate Safety Metrics



# Team Composition and Effective Interviewing



# Role of the RCA<sup>2</sup> Team

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**Discover what happened, why it happened, and what can be done to prevent it from happening again**

The RCA<sup>2</sup> team will:

- Attend all meetings
- Conduct research and interviews
- Identify root causes and contributing factors
- Determine final content, findings, and recommendations
- Produce final RCA<sup>2</sup> report



# Why Limit Team Members?

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A small core RCA<sup>2</sup> team is recommended because larger review teams may:

- Use more person-hours to complete the review
- Increase the difficulty of scheduling team meetings
- Add inertia that reduces the nimbleness of the RCA<sup>2</sup> process



# RCA<sup>2</sup> Team: Who is included?

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- Team leader who is familiar with the RCA<sup>2</sup> process
- Subject matter expert
- Someone *not* familiar with event (“fresh eyes”)
- Front line staff member
- Patient/family representative

*Note: Ideally, one team member will meet more than one team experience requirement*



# Roles on the RCA<sup>2</sup> Team

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- Team Leader
  - Experienced in RCA<sup>2</sup> process
  - Ensures team follows RCA<sup>2</sup> process and work is on schedule
  - Skilled at problem solving and effective communicator
- Recorder to document team's findings during all meetings



# All team members...

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- Should have a basic understanding of human factors
- Should have basic training in the RCA<sup>2</sup> process
- Should have time allocated to the work of event review

*The goal is to create an environment of completely transparent, comfortable, open communication.*



# RCA<sup>2</sup> Team: Who is *not* included?

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- Managers and supervisors who oversee the area or department where the event occurred
- Staff who were directly involved in the event
- Patients and family members who were directly involved in the event
- *However, it is usually critical that all of these groups are interviewed, for key information*



# Why not involved individuals?

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- Perceived conflicts of interest
- Guilt can create insistence on corrective measures above and beyond what is prudent
- Involved individual may steer team away from their role in the event and/or activities that contributed to event
- Can be difficult for other team members to ask difficult questions and have frank discussions
- The goal is to truly understand the nature of the work
  - Implications of hierarchy



# How to engage involved individuals

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- Individuals involved in the event should be interviewed in a safe space (Session 4)
- Individuals should be asked to recommend solutions and to provide input on solutions recommended by the core RCA<sup>2</sup> team
- Individuals should be provided counseling and support, as needed



# RCA<sup>2</sup> Team Tips and Tricks

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- Schedule standing RCA<sup>2</sup> team meetings that occur every month
- Request that each department identify at least one or two staff to be “on call” each week to serve on a review team, as needed
- Ensure RCA<sup>2</sup> team members have allocated time and resources to participate in event reviews
- Consider rotating RCA<sup>2</sup> team membership to permit all staff to have opportunity to learn about and participate in the event review process



# RCA<sup>2</sup> Team Membership Review

Figure 1. RCA<sup>2</sup> Team Membership\* and Involvement

<i>NOTE: An individual may serve in multiple capacities</i>	Team Member?	Interview?
Subject matter expert(s) on the event or close call process being evaluated	Yes	Yes, if not on the team
Individual(s) not familiar with (naïve to) the event or close call process	Yes	No
Leader who is well versed in the RCA <sup>2</sup> process	Yes	No
Staff directly involved in the event	No	Yes
Front line staff working in the area/process	Yes	Yes
Patient involved in the event	No	Yes**
Family of patient involved in the event	No	Yes**
Patient representative	Yes	Yes
<p><i>*Strongly consider including facility engineering, biomedical engineering, information technology, or pharmacy staff on an RCA<sup>2</sup> team, as individuals in these disciplines tend to think in terms of systems and often have system-based mindsets. Including medical residents on a team when they are available is also suggested.</i></p> <p><i>** This might not be needed for some close calls or events that are far removed from the bedside (e.g., an incorrect reagent that is used in the lab).</i></p>		



# Remember:

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*“Serving on a review team should not be ‘additional work as assigned.’ Serving on an RCA<sup>2</sup> team is ‘real work’ and it should be prioritized, acknowledged, and treated as such.”*



# Patient and Family Engagement in the RCA<sup>2</sup> Process

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- Patients and families are among most important witnesses for many adverse events
- If able and willing, patients and family members **should be interviewed** as part of the RCA<sup>2</sup> process (Session 4)
- Interviewing the patient/family provides a more complete understanding of circumstances surrounding the event



# Concerns to Consider

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- Ability and willingness of involved patient/family to be interviewed and patient/family representative to participate in RCA<sup>2</sup> team
- Psychological concerns for patient
- Legal concerns of organization



# Interviewing: The Purpose

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- **Discover information about what happened and why that will lead to identification of system issues and effective, sustainable actions**
- Gain expertise required for the review not already represented by those on the RCA<sup>2</sup> team
- Gain a more complete understanding of the event
- Engage individuals involved in the event
- Engage patients and family members who were involved in the event



# The Fundamental Question

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The fundamental question of this process is not “where did people go wrong?” but **“why did their action make sense to them at the time?”**



# Interviewing Best Practices: Staff

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- Interviews should be conducted in person, one-on-one if possible, in a setting that is comfortable and safe for the interviewee
- Supervisors should be alerted of the interview, but should *not* be present during the interview
- Explain that the interview is being conducted to identify and implement system-level corrective actions and prevent future occurrence
- Request permission to take notes and explain what those notes will be used for



# Interviewing Best Practices: Patients

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- Patients should be allowed to have family members present during their interview
- Conduct the interview in a location that is comfortable and acceptable to the patient
- Limit the RCA<sup>2</sup> team members conducting the interview to one or two individuals
- Express to the patient/family that you are sorry the event occurred and are working to identify system-level solutions so the event does not happen again
- Request permission to take notes and explain what those notes will be used for



# Interviewing Techniques

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- Start with broad, open-ended questions and then narrow them down to specific clarifying questions, as needed
- Use active listening and reflect what is being said
- Keep an open body posture, good eye contact, and nod appropriately
- Demonstrate empathy and patience
- Thank the interviewee at the conclusion of the process and provide your contact information and resources available for support



# Remember:

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- Interviewing requires advance preparation and thought by the RCA<sup>2</sup> team
- Interviewing is a skill!
  - Be a good listener
  - Individual interviews, one-on-one
  - Time for empathy and compassion
  - Understand why actions made sense at the time



# Break

*Please return at 3:30pm*



## Risk-Based Prioritization and Creating Stronger Actions



# Why Risk-Based Prioritization?

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*“As resources necessary to identify, analyze, and remediate hazards are not unlimited, it is essential that an explicit, risk-based prioritization system be utilized so that an organization can credibly and efficiently determine what hazards should be addressed first.”*



# Understanding Selection Criteria

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- Risk-based selection criteria should incorporate both the outcome severity (both actual and potential) *and* the probability of occurrence
- Risk-based selection criteria can and should be developed to meet the requirements of applicable accrediting and regulatory bodies
- An efficient way of selecting events based on this criteria is through development of a risk matrix



# The SAC Matrix

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- Safety Assessment Code (SAC) is **used to determine whether or not an RCA must be conducted**, based on the severity (or reasonable “worst case” scenario) of a specific incident and its probability of occurrence
- The SAC Matrix is a **tool for combining severity and probability**
- SAC matrices may vary by organization; the first step is designing the right matrix for your organization



## Excerpt from VA National Center for Patient Safety THE SAFETY ASSESSMENT CODE (SAC) MATRIX

Reproduced from the Department of Veterans Affairs, Veterans Health Administration, *VHA Patient Safety Improvement Handbook 1050.1, May 23, 2008 (public domain).*

The Severity Categories and the Probability Categories that are used to develop the Safety Assessment Codes (SACs) for adverse events and close calls are presented in the following and are followed by information on the SAC Matrix.

### 1. SEVERITY CATEGORIES

- a) Key factors for the severity categories are extent of injury, length of stay, level of care required for remedy, and actual or estimated physical plant costs. These four categories apply to actual adverse events and potential events (close calls). For **actual adverse events**, assign severity based on the patient's actual condition.
- b) If the event is a **close call**, assign severity based on a reasonable "worst case" systems level scenario. *NOTE: For example, if you entered a patient's room before they were able to complete a lethal suicide attempt, the event is catastrophic because the reasonable "worst case" is suicide.*

Catastrophic	Major
<p><b><u>Patients with Actual or Potential:</u></b> Death or major permanent loss of function (sensory, motor, physiologic, or intellectual) <b>not related to the natural course of the patient's illness or underlying condition</b> (i.e., acts of commission or omission). This includes outcomes that are a direct result of injuries sustained in a fall; or associated with an unauthorized departure from an around-the-clock treatment setting; or the result of an assault or other crime. Any of the adverse events defined by the Joint Commission as reviewable "Sentinel Events" should also be considered in this category.</p> <p><b><u>Visitors:</u></b> A death; or hospitalization of three or more visitors <b><u>Staff:</u></b> A death or hospitalization of three or more staff</p>	<p><b><u>Patients with Actual or Potential:</u></b> Permanent <b>lessening</b> of bodily functioning (sensory, motor, physiologic, or intellectual) <b>not related to the natural course of the patient's illness or underlying conditions</b> (i.e., acts of commission or omission or any of the following: a) disfigurement b) surgical intervention required c) increased length of stay for three or more patients d) increased level of care for three or more patients</p> <p><b><u>Visitors:</u></b> Hospitalization of one or two visitors <b><u>Staff:</u></b> Hospitalization of one or two staff or three or more staff experiencing lost time or restricted duty injuries or illnesses <b><u>Equipment or facility:</u></b> Damage equal to or more than \$100,000</p>
Moderate	Minor
<p><b><u>Patients with Actual or Potential:</u></b> Increased length of stay or increased level of care for one or two patients</p> <p><b><u>Visitors:</u></b> Evaluation <b>and</b> treatment for one or two visitors (less than hospitalization) <b><u>Staff:</u></b> Medical expenses, lost time or restricted duty injuries or illness for one or two staff <b><u>Equipment or facility:</u></b> Damage of more than \$10,000, but less than \$100,000</p>	<p><b><u>Patients with Actual or Potential:</u></b> No injury, nor increased length of stay nor increased level of care</p> <p><b><u>Visitors:</u></b> Evaluated and no treatment required or refused treatment <b><u>Staff:</u></b> First aid treatment only with no lost time, nor restricted duty injuries nor illnesses <b><u>Equipment or Facility:</u></b> Damage less than \$10,000 or loss of any utility without adverse patient outcome (e.g., power, natural gas, electricity, water, etc.)</p>



# Using Risk-Based Prioritization: Example 1

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The nursing staff was providing the patient with routine a.m. care. This consisted of showering the patient in the shower room on the ward. The patient was seated in a chair being washed when he **slid off the chair and hit his face, hip, and shoulder**. The patient was examined by the doctor at 7:55 a.m. and transferred to the acute evaluation unit (AEU) for further evaluation. The AEU physician ordered x-rays. **No fractures noted**. The patient was returned to the ward where **neuro checks were initiated as per policy and reported as normal**.



# Let's Vote

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How would you score Example 1 using risk-based prioritization and the SAC matrix?

Severity and Probability	Catastrophic	Major	Moderate	Minor
Frequent	3	3	2	1
Occasional	3	2	1	1
Uncommon	3	2	1	1
Remote	3	2	1	1



# Using Risk-Based Prioritization: Example 1

## Severity Determination

- Actual Severity Score: MINOR
- Potential Severity Score: CATASTROPHIC

## Probability Determination

- Probability Score: OCCASIONAL

Severity and Probability	Catastrophic	Major	Moderate	Minor
Frequent	3	3	2	1
Occasional	3	2	1	1
Uncommon	3	2	1	1
Remote	3	2	1	1

**SAC Score = 3, therefore an RCA<sup>2</sup> review would be conducted.**



## Using Risk-Based Prioritization: Example 2

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An employee working in Food and Nutrition Service was loading large cans of vegetables into a flow-through rack in the dry goods storage area. A can slipped and fell, hitting the employee on the toe. **The employee sustained broken bones and was on medical leave for 5 days before returning to work in a light/limited duty position.**



# Let's Vote

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How would you score Example 2 using risk-based prioritization and the SAC matrix?

Severity and Probability	Catastrophic	Major	Moderate	Minor
Frequent	3	3	2	1
Occasional	3	2	1	1
Uncommon	3	2	1	1
Remote	3	2	1	1



# Using Risk-Based Prioritization: Example 2

## Severity Determination

- Actual Severity Score: MODERATE
- Potential Severity Score: MAJOR

## Probability Determination

- Probability Score: OCCASIONAL

Severity and Probability	Catastrophic	Major	Moderate	Minor
Frequent	3	3	2	1
Occasional	3	2	1	1
Uncommon	3	2	1	1
Remote	3	2	1	1

**SAC Score = 2, therefore an RCA<sup>2</sup> review is not mandated.**



# Using RCA<sup>2</sup> on Close Calls

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- Close calls occur between 10 and 300 times more frequently than the actual harm events they are often precursors for
- Close calls (near misses, good catches) should be prioritized using the risk matrix by determining:
  - Plausible outcome or consequence of the event
  - Likelihood/probability of occurrence



# Using RCA<sup>2</sup> on Close Calls: Example 3<sup>94</sup>

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YXZ monitor did not trigger an alarm in the Surgical ICU. The problem was observed by the nurses while they cared for a DNR patient who developed cardiac arrhythmias, but the monitor failed to trigger the alarm. Since the patient had a DNR order he was not resuscitated.

## Notes:

- Actual outcome of this event was the death of the patient
- The patient's death was not the result of the failure of the alarm to announce the cardiac abnormalities because the nurses witnessed the cardiac arrhythmias
- There was an appropriate decision made not to resuscitate based on the DNR order



# Let's Vote

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How would you score Example 3 using risk-based prioritization and the SAC matrix?

Severity and Probability	Catastrophic	Major	Moderate	Minor
Frequent	3	3	2	1
Occasional	3	2	1	1
Uncommon	3	2	1	1
Remote	3	2	1	1



# Using RCA<sup>2</sup> on Close Calls: Example 3<sup>96</sup>

## Severity Determination

- Actual Severity Score: NOT APPLICABLE
- Potential Severity Score: CATASTROPIC

## Probability Determination

- Probability Score: UNCOMMON

Severity and Probability	Catastrophic	Major	Moderate	Minor
Frequent	3	3	2	1
Occasional	3	2	1	1
Uncommon	3	2	1	1
Remote	3	2	1	1

**SAC Score = 3, therefore an RCA<sup>2</sup> review would be conducted.**



# Actions

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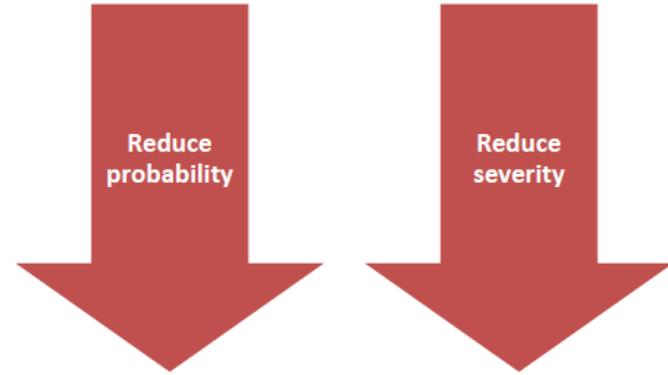
***“The most important step in the RCA<sup>2</sup> process is the identification and implementation of actions to eliminate or control system hazards or vulnerabilities that have been identified in the contributing factor statements”***



# Actions: The Most Important Step

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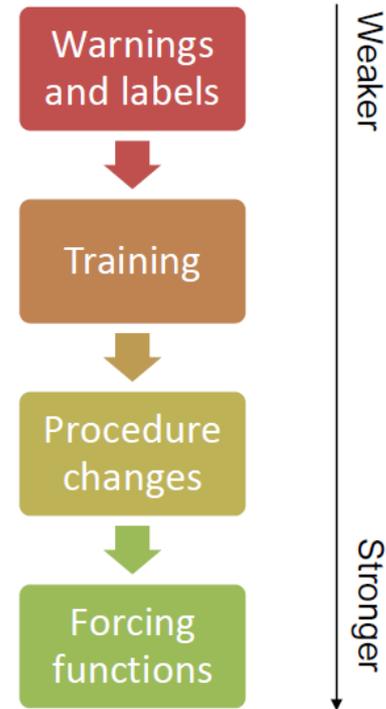
- Aim of each action:
  - Prevent recurrence
  - Reduce risk of recurrence



- Ensure each action is coupled to a cause
- Use action hierarchy

# Action Hierarchy

- Focus on the strength of each action
- Action hierarchy is based on human factors and system safety
- There is not one right action, but may be several necessary
- Teams should identify at least one stronger or intermediate action for each RCA<sup>2</sup> review



# Stronger Actions

	Action Category	Example
<b>Stronger Actions</b>  (these tasks require less reliance on humans to remember to perform the task correctly)	Architectural/physical plant changes	Replace revolving doors at the main patient entrance into the building with powered sliding or swinging doors to reduce patient falls.
	New devices with usability testing	Perform heuristic tests of outpatient blood glucose meters and test strips and select the most appropriate for the patient population being served.
	Engineering control (forcing function)	Eliminate the use of universal adaptors and peripheral devices for medical equipment and use tubing/fittings that can only be connected the correct way (e.g., IV tubing and connectors that cannot physically be connected to sequential compression devices or SCDs).
	Simplify process	Remove unnecessary steps in a process.
	Standardize on equipment or process	Standardize on the make and model of medication pumps used throughout the institution. Use bar coding for medication administration.
	Tangible involvement by leadership	Participate in unit patient safety evaluations and interact with staff; support the RCA <sup>2</sup> process; purchase needed equipment; ensure staffing and workload are balanced.



# Intermediate Actions

	Action Category	Example
<b>Intermediate Actions</b>	Redundancy	Use two RNs to independently calculate high-risk medication dosages.
	Increase in staffing/decrease in workload	Make float staff available to assist when workloads peak during the day.
	Software enhancements, modifications	Use computer alerts for drug-drug interactions.
	Eliminate/reduce distractions	Provide quiet rooms for programming PCA pumps; remove distractions for nurses when programming medication pumps.
	Education using simulation-based training, with periodic refresher sessions and observations	Conduct patient handoffs in a simulation lab/environment, with after action critiques and debriefing.
	Checklist/cognitive aids	Use pre-induction and pre-incision checklists in operating rooms. Use a checklist when reprocessing flexible fiber optic endoscopes.
	Eliminate look- and sound-alikes	Do not store look-alikes next to one another in the unit medication room.
	Standardized communication tools	Use read-back for all critical lab values. Use read-back or repeat-back for all verbal medication orders. Use a standardized patient handoff format.
	Enhanced documentation, communication	Highlight medication name and dose on IV bags.



# Weaker Actions

	Action Category	Example
<b>Weaker Actions</b> (these tasks require more reliance on humans to remember to perform the task correctly)	Double checks	One person calculates dosage, another person reviews their calculation.
	Warnings	Add audible alarms or caution labels.
	New procedure/ memorandum/policy	Remember to check IV sites every 2 hours.
	Training	Demonstrate correct usage of hard-to-use medical equipment.

Action Hierarchy levels and categories based are based on *Root Cause Analysis Tools*, VA National Center for Patient Safety, [http://www.patientsafety.va.gov/docs/joe/rca\\_tools\\_2\\_15.pdf](http://www.patientsafety.va.gov/docs/joe/rca_tools_2_15.pdf).

Examples are provided here.



# Developing Strong Actions: Example 1

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The nursing staff was providing the patient with routine a.m. care. This consisted of showering the patient in the shower room on the ward. The patient was seated in a chair being washed when he **slid off the chair and hit his face, hip, and shoulder**. The patient was examined by the doctor at 7:55 a.m. and transferred to the acute evaluation unit (AEU) for further evaluation. The AEU physician ordered x-rays. **No fractures noted**. The patient was returned to the ward where **neuro checks were initiated as per policy and reported as normal**.



# Let's Vote

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How would you rank each of these actions (strong, intermediate, or weak) recommended by the RCA<sup>2</sup> team for Example 1:

- Retrain nursing staff on the required procedure for showering patients
- Identify patients at risk for falling and have additional staff help with showering
- Implement use of a shower chair with secure straps that prevent sliding



# Developing Strong Actions: Example 2 <sup>105</sup>

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An inpatient with pneumonia has an abnormal finding on chest xray with recommended repeat chest xray in 3 months. She is released home, and her primary care doctor is not aware of the chest xray result. She returns in 1 year with advanced lung cancer.



# Let's Vote

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How would you rank each of these actions (strong, intermediate, or weak) recommended by the RCA<sup>2</sup> team for Example 1:

- Update a policy on appropriate test result communication
- Ensure the patient understands the need for follow-up
- Automatically include test results that require follow-up in the discharge documentation that goes to the primary care doctor



# Measurement, Feedback, and Engaging Leadership



# Measuring Corrective Actions

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- Each action identified by the review team requires at least one measure
- Measures should be determined and communicated by the RCA<sup>2</sup> team
- One person must be assigned to implementation of corrective action and measurement of corrective action (*not* a committee or group)
- Two main types: process and outcome



# Outcome Measures

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Outcome measures:

- Defined as the measurement of **administrative or clinical outcomes**
- Determine if an action was effective

## Patient Falls Example:

There will be 25% fewer falls in the 3<sup>rd</sup> quarter, when compared to the 1<sup>st</sup> quarter of the calendar year.



# Process Measures

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Process measures:

- Defined as the measurement of **compliance with specific steps in a process** that lead to a particular outcome measures
- Determine if an action was implemented

## Patient Falls Example:

85% of staff will be complaint with the established patient rounding process within 4 weeks of training and implementation.



# Measurement Best Practices

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- Measures **must** address the causal statement
- Measures do not need to be complicated
- Action steps and measures should be:
  - Straight forward
  - Clearly communicated
  - Clearly understood
- Best to have a combination of both process and outcome measures



# Responsibility

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- Accountability is key in both action and measurement
- Be sure that all parties know:
  - What will be measured
  - What compliance level is expected
  - By whom it will be measured
  - By when it will be measured



# Example

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**Action:** Beta testing of a new technology to improve staff use of alcohol-based hand gel before and after each patient encounter.

**Process measure:** observe 100 staff-patient interaction over a 7-day period with an expected compliance rate of 95%.

**Outcome measure:** 20% reduction in hospital-acquired infections transmitted by staff-patient contact.



# Providing Feedback

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- Feedback on results of the RCA<sup>2</sup> process should be provided to:
  - Leadership, including C-Suite and Board
  - Patients and families
  - Impacted and effected staff
- All should be given opportunity to comment on whether proposed action items make sense to them
- Feedback on action effectiveness should be provided when available



# Benefits of Closing the Loop

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- Healing for impacted patients/families and staff
- Learning shared across the organization
- Transparency and feedback helps to build a culture of safety
- Encourages reporting as staff see improvements and results



# Leadership and Board Support

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- Successful RCA<sup>2</sup> process requires support from all levels of the organization, including C-Suite and board
- Leaders should be educated about the RCA<sup>2</sup> process, particularly how to identify ineffective reviews
- Leaders are responsible for determining applicability of findings on a broader scale across the organization or beyond and taking action
- Visible and tangible involvement of leaders and the board demonstrates the importance of the RCA<sup>2</sup> process



# Engaging Leadership

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- Each action recommended by the RCA<sup>2</sup> review team should be approved or disapproved by the CEO or another appropriate member of top management
  - Reason for any actions that are disapproved should be provided to RCA<sup>2</sup> team
- RCA<sup>2</sup> results on significant events, as defined by the organization, should be presented to the board of directors for their review and comment



# Warning Signs of Ineffective RCAs

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- There are no contributing factors identified, or the contributing factors lack supporting data or information.
- One or more individuals are identified as causing the event; causal factors point to human error or blame
- No stronger or intermediate strength actions are listed
- Causal statements do not comply with the Five Rules of Causation
- No corrective actions are identified or corrective actions do not appear to address system vulnerabilities identified
- Action follow-up is assigned to a group or committee
- The event review took longer than 45 days
- There is little confidence that implementing and sustaining corrective action will reduce the risk of future occurrence



# Group Discussion

## Taking the Work Forward



# Breakout Instructions

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- Please select someone at your table to fill the following roles:
  - Time keeper
  - Recorder
  - Reporter
- Spend 20 minutes discussing the questions on the following slide with your table
- Volunteers will be asked to share discussion highlights following group conversations



# Questions to Consider

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- What did you hear in today's presentation that was particularly interesting?
- What will you implement tomorrow?
- What might be the challenges you face in implementation?



# Thank You!

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Questions?

