Introduction to Root Cause Analysis (RCA)

Understanding the Causes of Events

HSAG Pressure Ulcer Collaborative
Learning Session 4
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Objectives

- Learn about how human factors, human errors, and communication issues relate to RCA principles.
- Be able to apply "just culture" when conducting an RCA.
- Understand RCA components.
- Obtain tools to assist your facility in conducting an RCA.

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RCA

A way of looking at unexpected events and outcomes to determine all of the underlying causes of the event and recommend changes that are likely to improve them.

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Why Event Investigation Is Difficult

- Natural reactions to failure
- Tendency to stop too soon
- False belief in a single reality
- "One Root Cause" Myth

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Reacting to Failure

Natural reactions to failure are:

- Retrospective—hindsight bias.
- Proximal—focus on the sharp end.
- Counterfactual—lay out what people could have done.
- Judgmental—determine what people should have done, the fundamental attribution error.

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Stopping too Soon

- Lack training in event investigation
  - We don't ask enough questions
  - Shallow understanding of the causes of events
- Lack resources and commitment to thorough investigations

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False Belief in a Single Reality

- People perceive events differently
- Common sense is an illusion
  - Unique senses
  - Unique knowledge
  - Unique conclusions

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The "One Root Cause" Myth

- There are multiple causes to accidents
- RCA is not about finding the *one* root cause
- Process failures and human factors (errors)

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New View of Human Error

- Human error is not the cause of events, it is a symptom of deeper troubles in the system.
- Human error is not the conclusion of an investigation, it is the beginning.
- Events are the result of multiple causes.

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Magnitude of the Problem

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Aviation and Health Care Parallels

- Aviation
  - Stressful working environment
  - Need for highly functioning teams
  - Accurate and precise communication
  - High costs associated with failure
- Health Care
  - Stressful working environment
  - Need for highly functioning teams
  - Accurate and precise communication
  - High costs associated with failure

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High Profile Accidents

The Tenerife collision took place on March 27, 1977, at 17:06:56, when two Boeing 747 airliners collided at Los Rodeos on the island of Tenerife, Canary Islands, Spain, killing 583 people. The accident has the highest number of fatalities (excluding ground fatalities) of any single accident in aviation history.

The aircraft involved were Pan American World Airways Flight 1736, under the command of Captain Victor Grubbs, and KLM Royal Dutch Airlines Flight 4805, under the command of Captain Jacob Veldhuyzen van Zanten. KLM 4805, taking off on the only runway of the airport, crashed into the Pan Am aircraft which was taxiing in the opposite direction on the same runway.

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Accident Findings

- No subordinate authority to stop the captain
- Crew members were hesitant to tell the captain something he did not want to hear
- Terminology was not consistent
- Multiple conversations at the same time made it difficult to hear

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The Institute of Medicine (IOM) Report

- 1999 *To Err is Human*
  - "at least 44,000 Americans die each year as a result of medical errors . . . results of the New York study suggest that number may be as high as 98,000"

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IOM's Proposed Solution

Health care organizations should:

- Define leadership responsibility.
- Identify and learn from errors.
- Set performance standards.
- Implement safety systems.

To Err is Human: Building a Safer Health System
Institute of Medicine

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Physician Reactions

Then:

"So what if the IOM report has the effect of exaggerating the magnitude of error in the public's mind? So what if it appears condescending?"

First Do No Harm –To Err is Human Effective Clinical Practice, Nov/Dec 2000

Now:

"If the error was apparent, 81 percent would disclose it; 50 percent said they would reveal less obvious mistakes. Overall, 56 percent of doctors chose responses that mentioned the event but not the error; 42 percent said they would fully disclose that the problem was the result of a mistake."

The Washington Post
When a Doc Will Tell
Sept. 12, 2006; Page HE03

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Physician Reactions *(continued)*

" . . . providers are fundamentally good people and that once we measure and recognize that we are not as good as we would like to be, our inherent professionalism will motivate us to change. Many outside observers of medicine are skeptical about that. They think that something more is needed to kick-start providers and hospitals into improvement—transparency, pay-for-performance, something more."

Dr. Robert Wachter interviewing Dr. Atul Gawande
AHRQ Podcast

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Barriers that Impact Safety

- Unclear organizational values
- Fear of punishment
- Lack of systematic analysis of mistakes
- Complexity of the work
- Inadequate teamwork

Nursing Economics May-June 2006
Vol.24/No.3 Pg. 143

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Safety Lessons

- Communication
- Adverse events
- Near misses
- Human factors
- Safety processes
- Distractions
- Accountability

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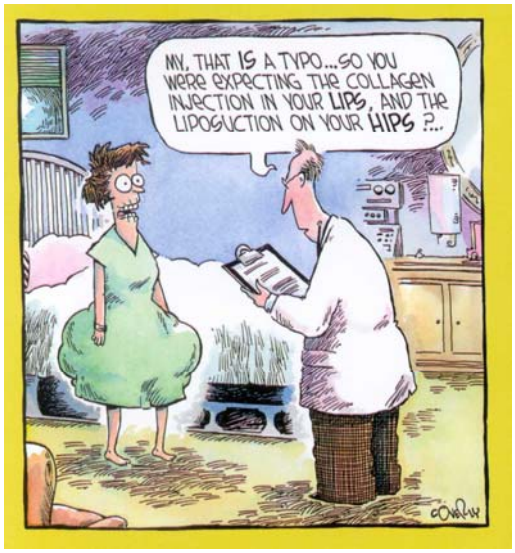
Communication



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Incidents Surrounding Communication

Ineffective communication is a root cause for nearly 66 percent of all sentinel events reported.

(JCAHO Root Causes and Percentages for Sentinel Events (All Categories)
January 1995−December 2005)

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Silence Kills

- Broken rules
- Mistakes
- Lack of support
- Incompetence
- Poor teamwork
- Disrespect
- Micromangement

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Event Accountability

"To promote a culture in which we learn from our mistakes, organizations must re-evaluate just how their disciplinary system fits into the equation. Disciplining employees in response to honest mistakes does little to improve overall system safety. Yet, mishaps accompanied by intoxication or malicious behavior presents an obvious and valid objection to today's call for blame-free error reporting systems."

David Marx, 2001

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Just Culture

- Console
- Coach
- Punish

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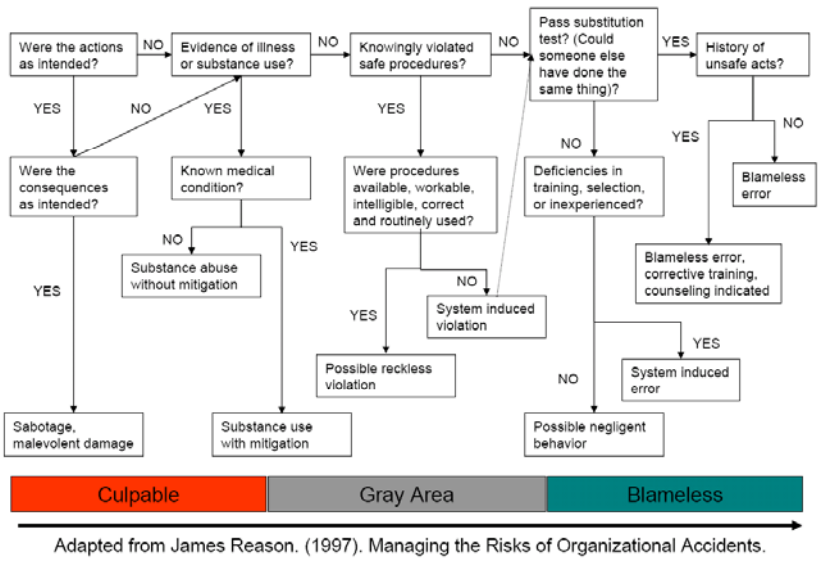

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Remedial Actions

- Strong
  - Create leadership involvement and action
  - Simplify the process
  - Standardize process and equipment
- Intermediate
  - Create checklist or other cognitive aid
  - Reduce distractions
- Weak
  - Training
  - New procedure
  - Additional study

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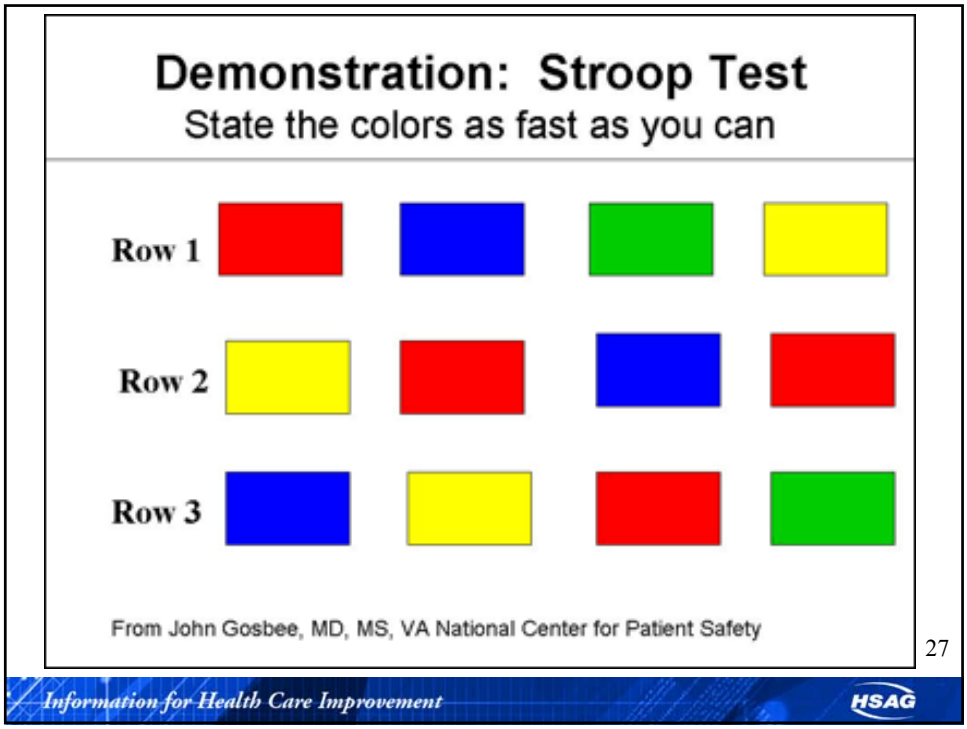
Demonstration: Stroop Test
State the colors as fast as you can
Row 1
Row 2
Row 3
From John Gosbee, MD, MS, VA National Center for Patient Safety
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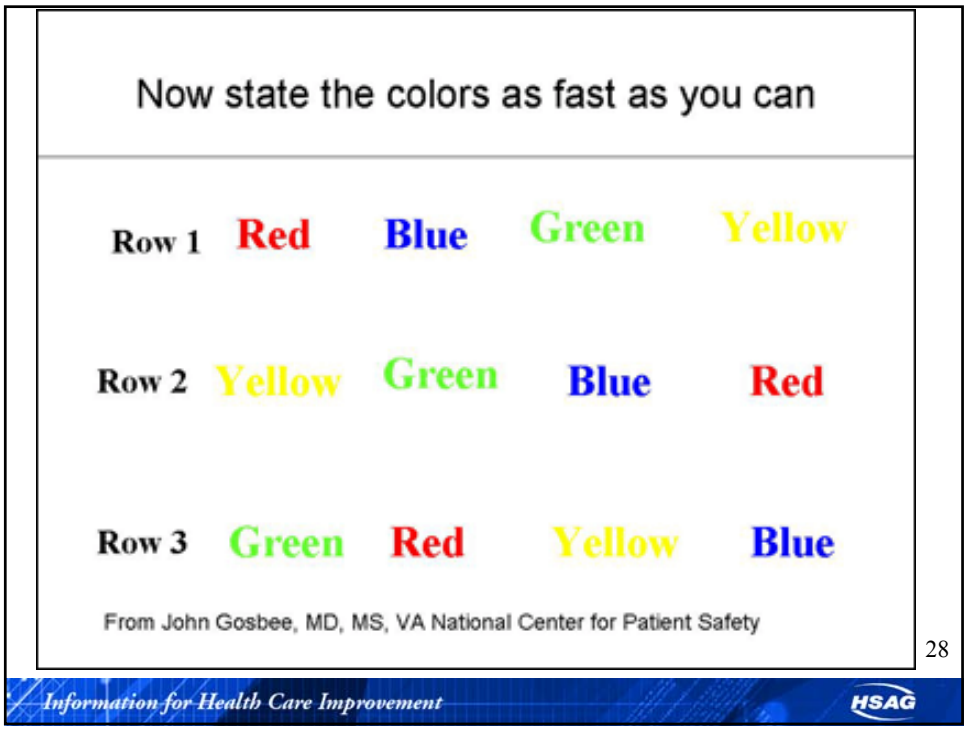
Now state the colors as fast as you can
Row 1 Red Blue Green Yellow
Row 2 Yellow Green Blue Red
Row 3 Green Red Yellow Blue
From John Gosbee, MD, MS, VA National Center for Patient Safety
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Again, state the colors as fast as you can

Row 1	Red	Blue	Green	Yellow
Row 2	Yellow	Green	Blue	Red
Row 3	Green	Red	Yellow	Blue

From John Gosbee, MD, MS, VA National Center for Patient Safety

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Human Factors and Heparin

- The fine against Cedars-Sinai comes two months after the state issued a 20-page report blaming the hospital for administering 1,000 times the intended dosage of heparin in November.
- The hospital has since apologized to the patients' families and said it has taken steps to provide more training to staff and review all policies and procedures involving high-risk medications.
- The **preventable error** occurred because a pharmacy technician stored the higher heparin doses in the wrong place and a nurse who administered the drug to the babies failed to verify the amount.

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Human Factors and Heparin *(continued)*

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Accountability: Human Error

Human error is a social label.

It may be characterized as follows: When there is general agreement that the individual should have done other than what they did, and in the course of that conduct inadvertently causes or could cause an undesirable outcome, the individual is labeled as having committed an error.

Human error is a term that we use to describe our everyday behavior.

David Marx, 2001

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Safety Processes

- Checklist
- Standardized
- Redundancy
- Simplification
- Forcing functions
- Interrupt-free zone
- Prompts and reminders

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Adverse Events

An event or omission arising during clinical care and causing physical and psychological injury to a patient

Cochrane Collaboration
Interventions to Increase Clinical Incident Reporting in Health Care, 2008

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Barriers to Adverse-Event Reporting

- Confusion about what constitutes an adverse event
- Additional work
- Fear of reprisals
- Loss of reputation
- Potential loss of employment
- Perceived lack of effectiveness

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Benefits of Reporting

- **Analysis** can lead to:
  - System process improvements.
  - Identification of risk-management concerns.
  - Detection of training concerns.
  - Proactive interventions.

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Successful Characteristics

- Safe, nonpunitive environment
- Simple to use
- Timely and valuable
- Inexpensive
- Incentives for voluntary reporting
- Open culture
- Sustained leadership support

Leape, 2002 37

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Lessons to be Learned

- Reward incident reporting
- Focus on identifying system issues
- Promote open communication
  - Feedback
  - Education
- Involve everyone
  - Nonjudgmental analysis

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Near Miss

A situation in which an event or omission or a sequence of events or omissions arising during clinical care fails to develop further—whether or not as the result of compensating actions—thus preventing injury to the patient.

Cochrane Collaboration
Interventions to Increase Clinical Incident Reporting in Health Care, 2008

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Benefits of Near Misses

- Greater frequency of reporting
- Decreased barriers to data collection
- Limited liability
- System improvements are identified

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Strategies for Near Misses

- Don't wait for a near miss to become a direct hit
- Be proactive with a solution
- Avoid blame behaviors
- Share, share, share

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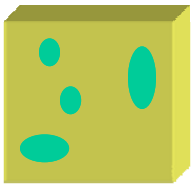
Root Causes

- A root cause is typically a finding related to a process or system that has potential for redesign to reduce risk.
  - Active failures are rarely root causes
  - Latent conditions over which we have control are often root causes



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Analysis for Root Cause

- Severity
  - Catastrophic
  - Major
  - Moderate
  - Minor
- Frequency
  - Frequent
  - Occasional
  - Uncommon
  - Remote

Safety Assessment Code
AHRQ/VA 43

Analysis Should Include

- How did the incident happen?
- What factors contributed to the incident—at what level?
- Were safety barriers surpassed?
- Were strategies for intervention identified prior to the event?

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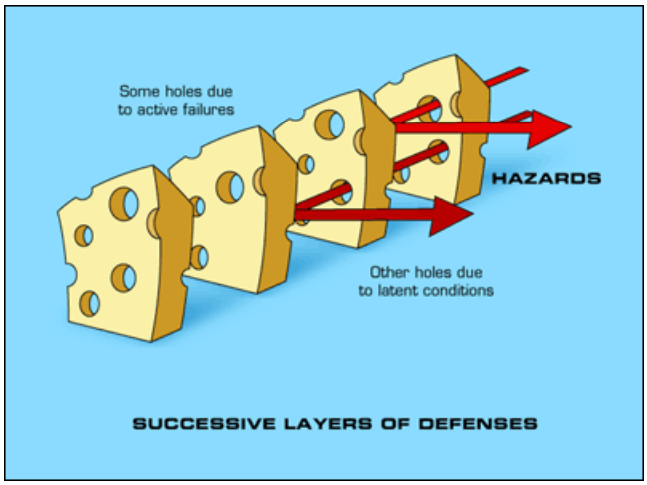

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Creating the Holes

Active Failures:

- Errors and violations (unsafe acts) committed at the "sharp end" of the system
- Have a direct and immediate impact on safety with potentially harmful effects

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Creating the Holes *(continued)*

Latent Conditions

- Present in all systems for long periods of time
- Increase likelihood of active failures

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"Latent conditions are present in all systems. They are an inevitable part of organizational life."

James Reason
Managing the Risks of Organizational Accidents

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"The point of a human error investigation is to understand why actions and assessments that are now controversial made sense to people at the time. You have to push on people's mistakes until they make sense—relentlessly."

—Sidney Dekker 49

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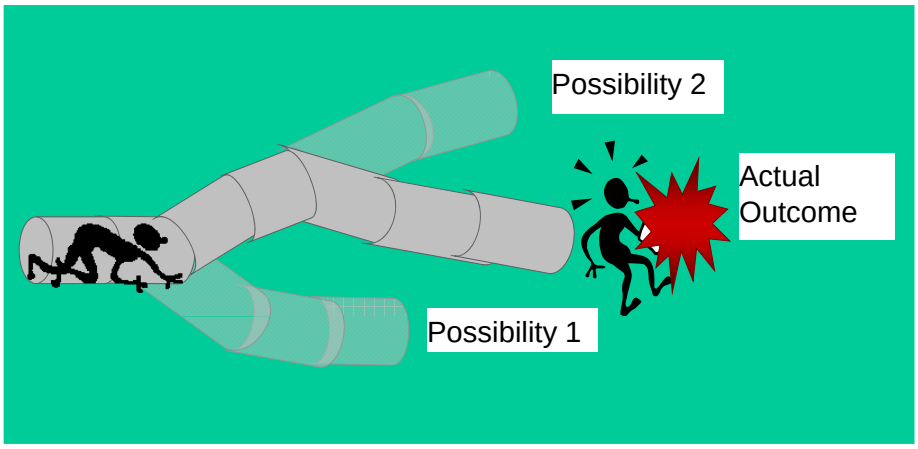
Getting Inside the Tunnel



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Outside the Tunnel	Inside the Tunnel
▪ Outcome determines culpability. ▪ "Look at this! It should have been so clear!" ▪ We judge people for what they did.	▪ Quality of decisions not determined by outcome. ▪ Realize evidence does not arrive as revelations ▪ Refrain from judging people for errors

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Lessons from the Tunnel

- We haven't fully understood an event if we don't see the actors' actions as *reasonable.*
- The point of a human error investigation is to understand why people did what they did, not to judge them for what they did not do.

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Summary

- New view of human error
- Events are the result of many causes
- Active failures and latent conditions create holes in our system's defenses
- Root causes are causes with potential for redesign to reduce risk
- Active failures are rarely root causes, latent conditions are often root causes
- Getting inside the tunnel will help us understand why events occur

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References

- Dekker, S. *The Field Guide to Human Error Investigations*. Burlington, VT: Ashgate, 2002.
- Gano DL. *Apollo Root Cause Analysis: A New Way of Thinking.* Yakima, WA: Apollonian Publications. 1999.
- JCAHO Sentinel Event Policy And Procedures: http://www.jcaho.org/accredited+organizations/hospitals/sentinel+events/se_pp.htm
- Reason J. *Managing the Risks of Organizational Accidents*. Brookfield, VT: Ashgate, 1997.
- Shapiro, MJ. X-ray Flip. Emergency Medicine Case Study and Commentary. *AHRQ Web M&M*, February 2004. Available at http://www.webmm.ahrq.gov/.

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Over 1 million drug-related injuries occur every year in health care settings. The Institute of Medicine estimates that at least a quarter of these injuries are preventable.

To find out how to prevent medication errors, go to *http://www.hsag.com/drugsafety/.*

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