Introduction to Root Cause Analysis:

Understanding the Causes of Events

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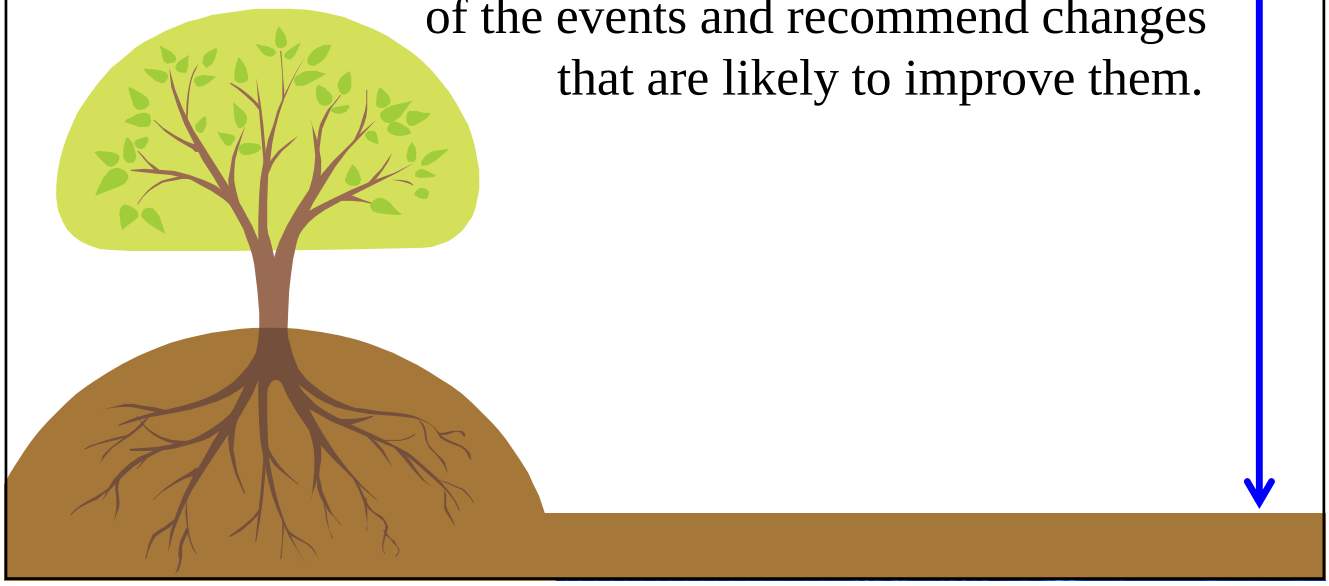
Objectives

- Discuss how human factors impact causes of events.
- Learn of two root cause analysis (RCA) methodologies to assist with the implementation of the Quality Assurance & Performance Improvement (QAPI) initiative.
- Conduct an actual RCA using the "5-Whys" method.

Root Cause Analysis (RCA)

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




Why is Event Investigation Difficult?
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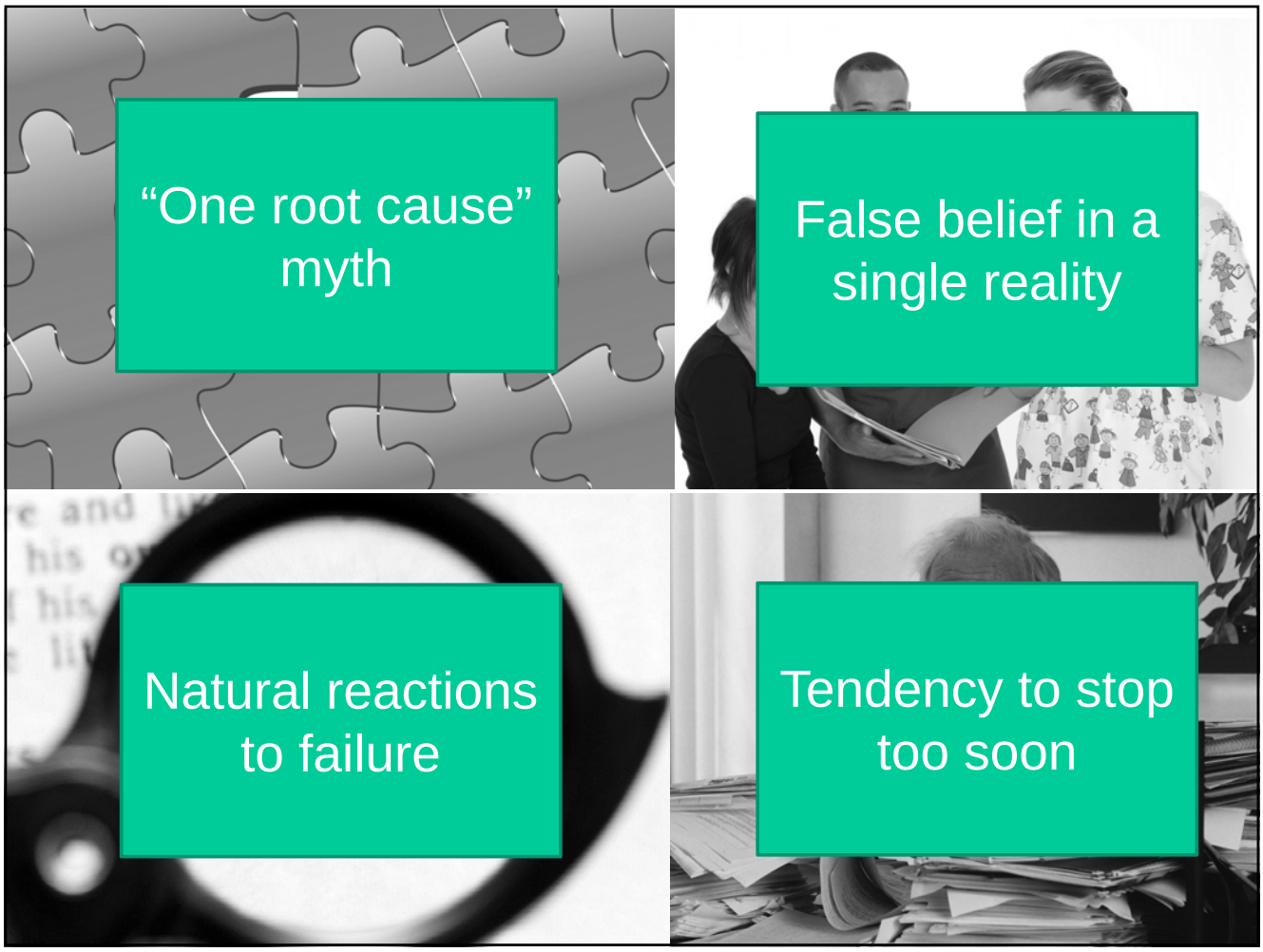

"One root cause" myth
False belief in a single reality
Natural reactions to failure
Tendency to stop too soon

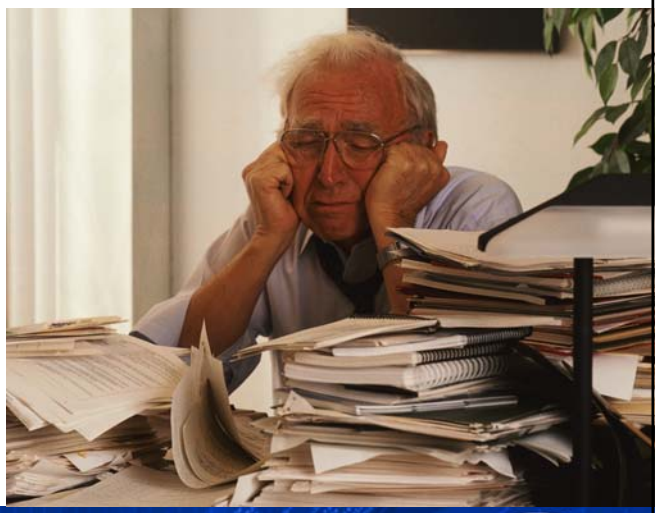
Reacting to Failure

Natural reactions to failure are:

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

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 conduct thorough investigations

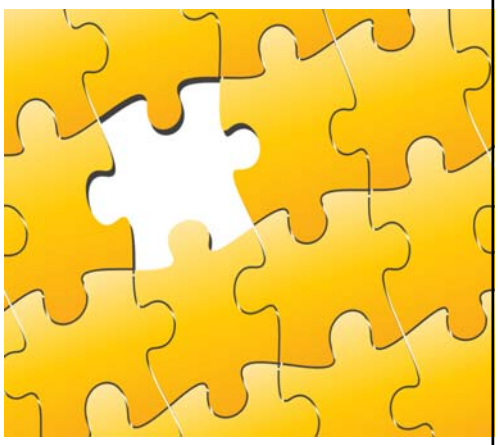


False Belief in Single Reality

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

The "One Root Cause" Myth

- There are multiple causes to accidents.
- Root Cause Analysis is not about finding the *one* root cause.
- It is necessary to consider process failures and human factors (errors).



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.

Magnitude of the Problem

U.S. Marine Corps photograph by Cpl.M.M. Bravo

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Aviation and Healthcare Parallels

- Stressful working environment
- Need for highly-functioning teams
- Accurate and precise communication
- High costs associated with failure
- Mistakes may cause death

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 had the highest number of fatalities (excluding ground fatalities) of any single accident in aviation history.

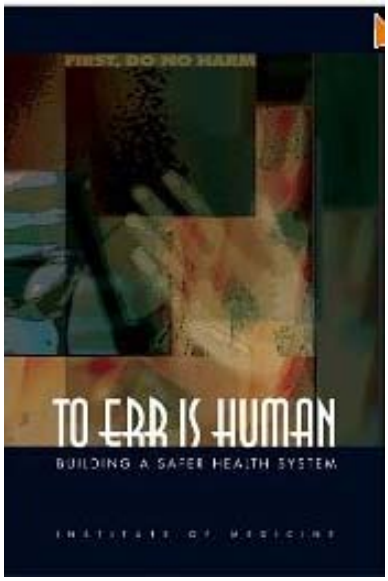
The aircrafts involved were Pan American World Airways Flight 1736, under the command of Captain Victor Grubbs, and KLM Royal Dutch Airlines Flight 4805, under the command of Captain Jacob Veldhuyzen van Zanten. KLM 4805, taking off on the only runway of the airport, crashed into the Pan Am aircraft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

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

The Institute of Medicine (IoM) Report

- *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."



IoM's Proposed Solution

Healthcare 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

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

" …providers are fundamentally good people and 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

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

Successful Characteristics

- Safe, non-punitive environment
- Simple to use
- Timely and valuable
- Inexpensive
- Incentives for voluntary reporting
- Culture of openness
- Sustained leadership support

Leape, 2002

Lessons to be Learned

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

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

Benefits of Near Misses

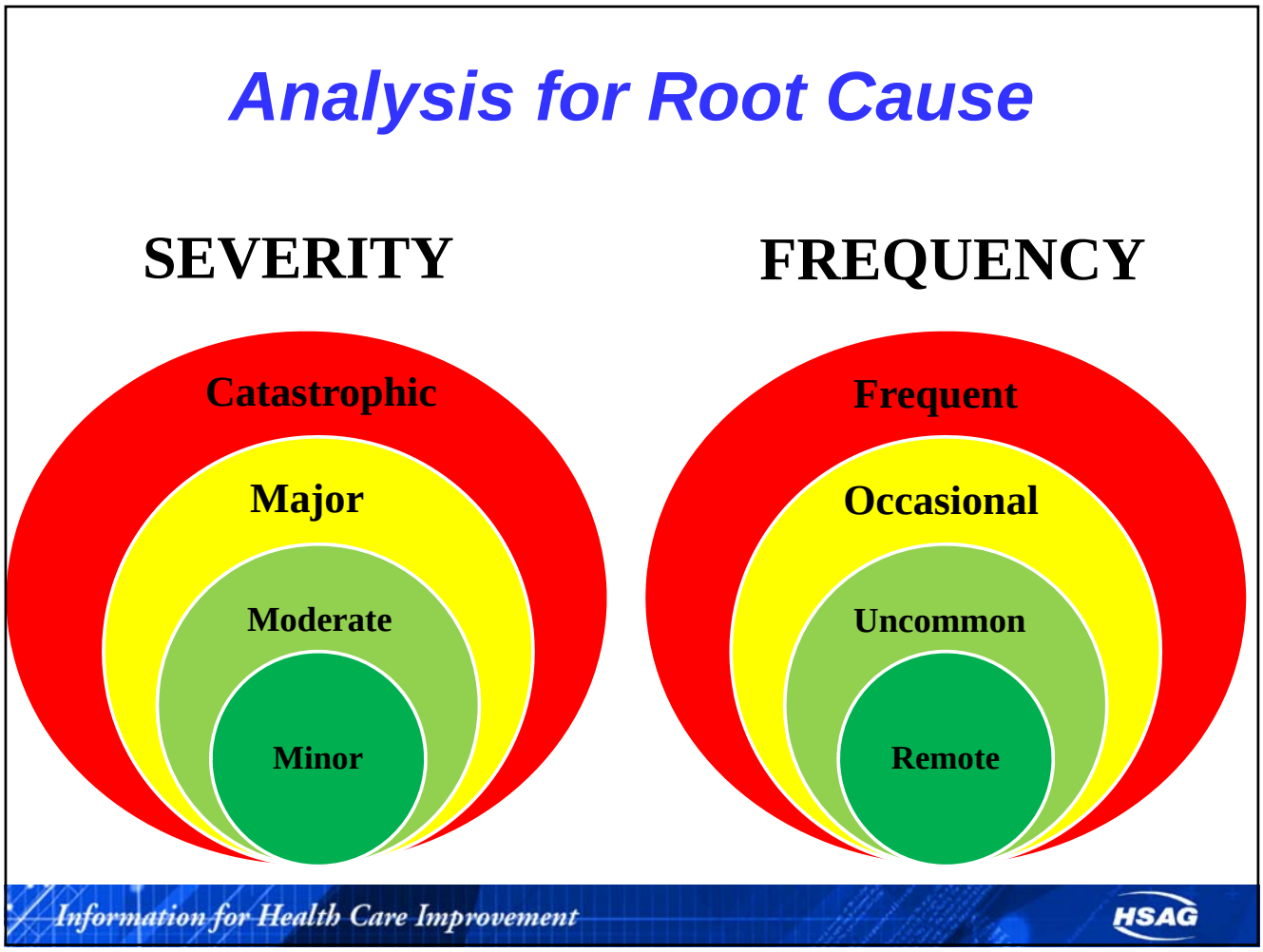
- Greater frequency of reporting
- Decreased barriers to data collection
- Limited liability
- System improvements are identified

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.

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.


Analysis for Root Cause
SEVERITY
FREQUENCY
Catastrophic
Major
Moderate
Minor
Frequent
Occasional
Uncommon
Remote
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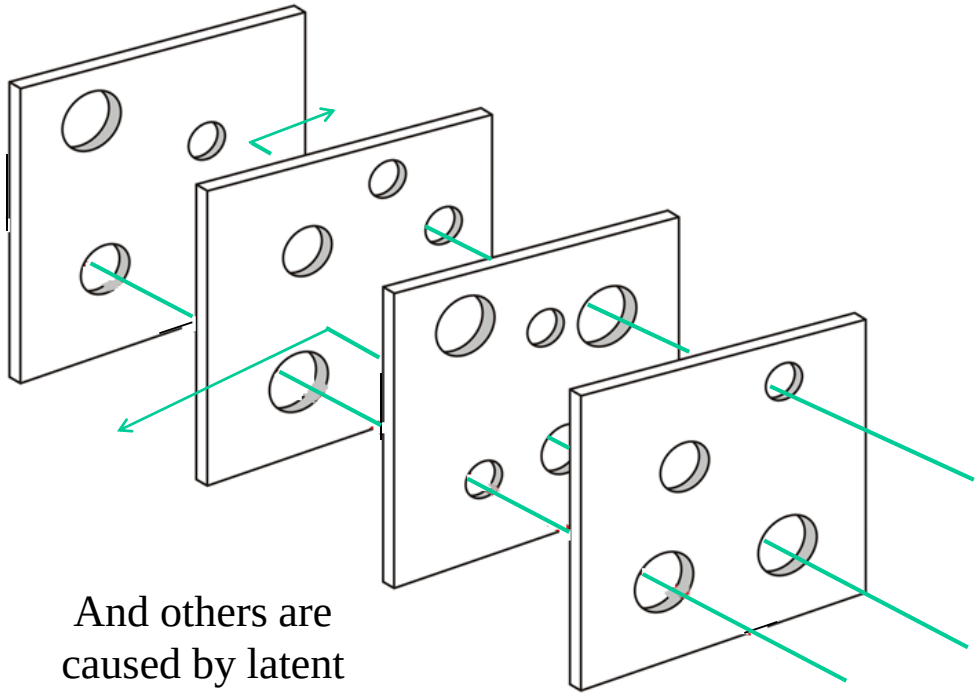
Analysis Should Include

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

Successive Layers of Defense

Some holes are caused by active failures.



And others are caused by latent conditions.

Image adapted from Wikimedia creative commons. Author: Davidmack.

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Creating the Holes

Active failures:

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

Latent conditions:

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

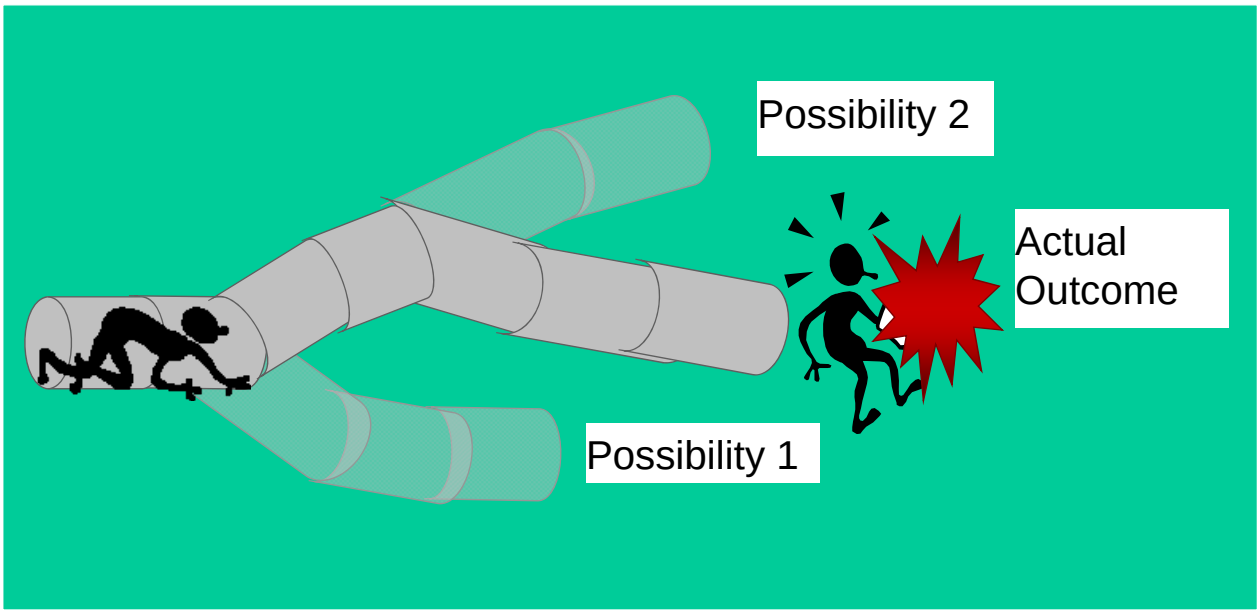
"Latent conditions are present in all systems. They are an inevitable part of organizational life."

—James Reason
Managing the Risks of Organizational Accidents

"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

Getting Inside the Tunnel



Screen Beans® http://www.bitbetter.com/

Outside the Tunnel

- Outcome determines culpability.
- "Look at this! It should have been so clear!"
- We judge people for what they did.

Inside the Tunnel

- Quality of decisions are not determined by outcome.
- Realize evidence does not arrive as revelations.
- Refrain from judging people for errors.

Lessons from the Tunnel

- We have not fully understood an event if we do not 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.

QAPI RCA Examples

QAPI

Quality Assurance & Performance Improvement

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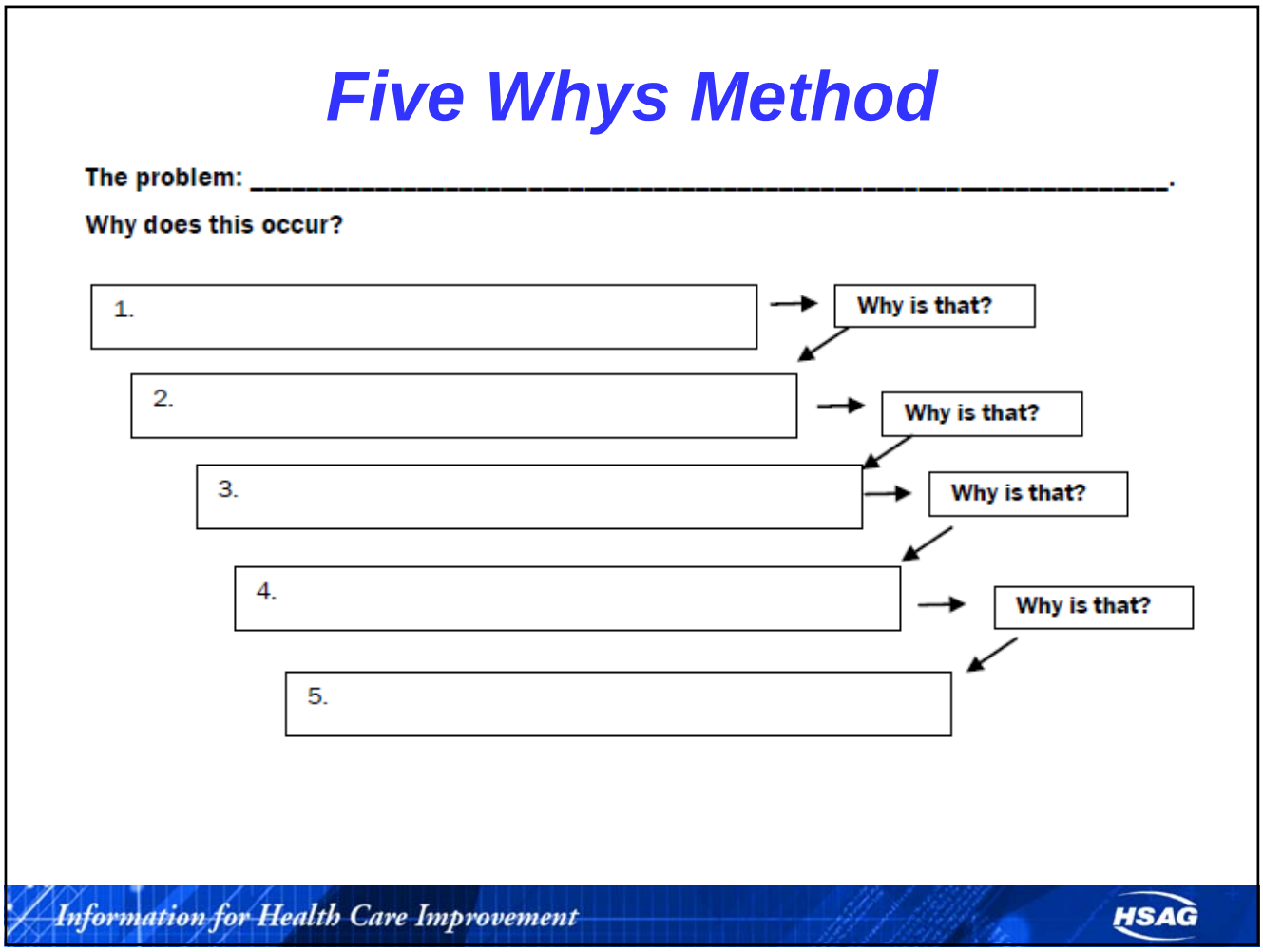
Five Whys Method
The problem: _____.
Why does this occur?
1.
Why is that?
2.
Why is that?
3.
Why is that?
4.
Why is that?
5.
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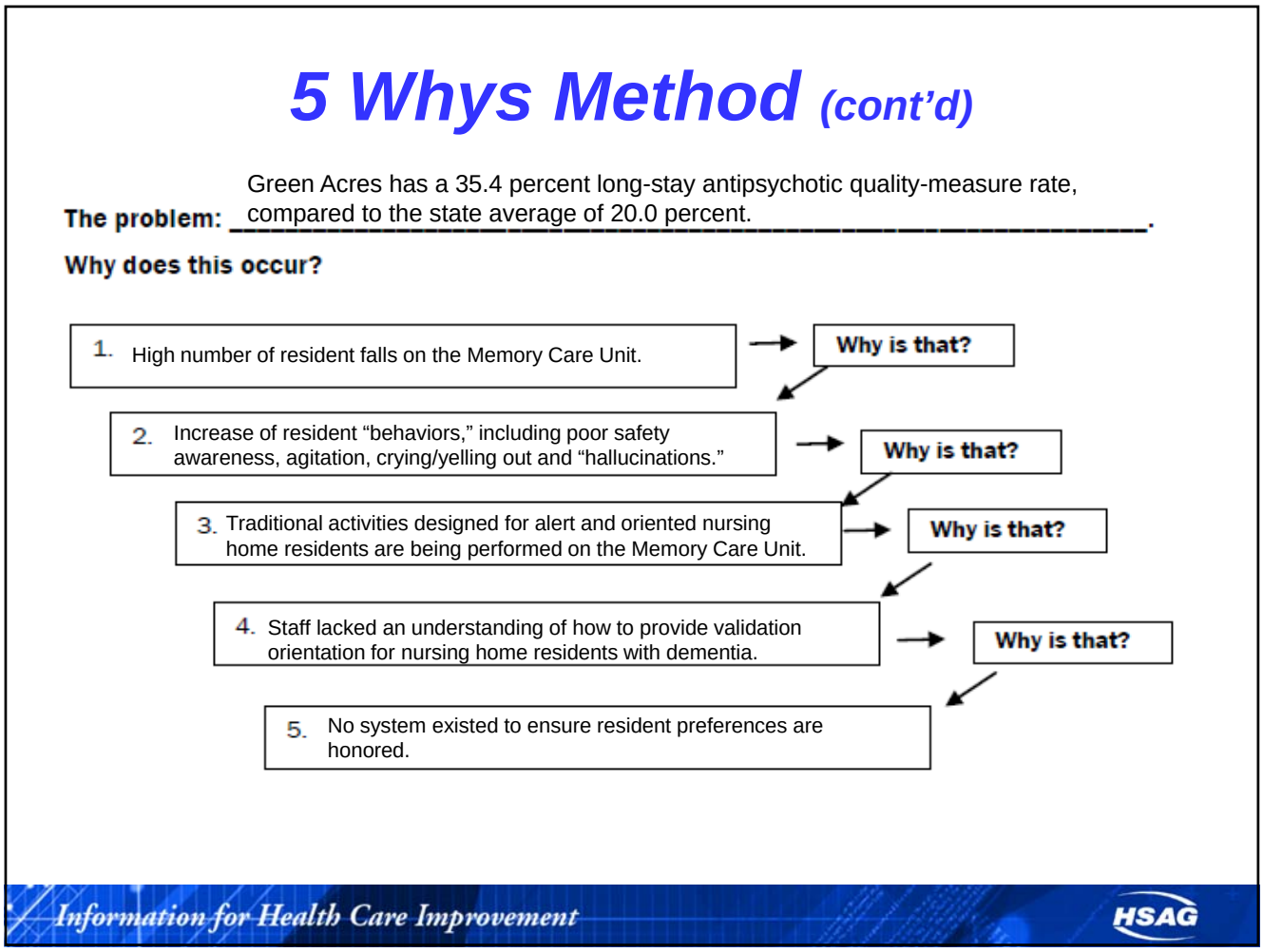
5 Whys Method (cont'd)
The problem: Green Acres has a 35.4 percent long-stay antipsychotic quality-measure rate, compared to the state average of 20.0 percent.
Why does this occur?
1. High number of resident falls on the Memory Care Unit.
Why is that?
2. Increase of resident "behaviors," including poor safety awareness, agitation, crying/yelling out and "hallucinations."
Why is that?
3. Traditional activities designed for alert and oriented nursing home residents are being performed on the Memory Care Unit.
Why is that?
4. Staff lacked an understanding of how to provide validation orientation for nursing home residents with dementia.
Why is that?
5. No system existed to ensure resident preferences are honored.
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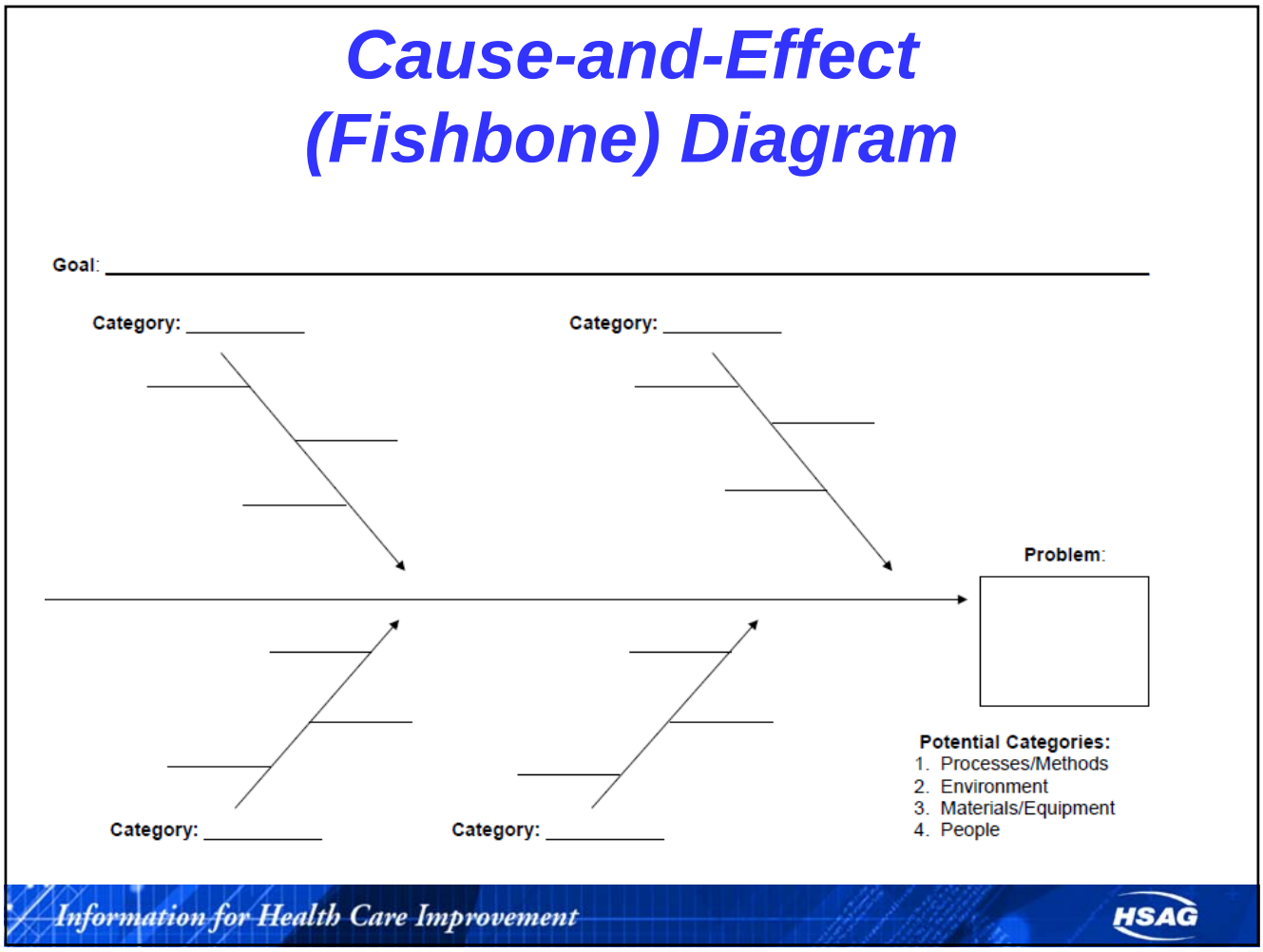
Cause-and-Effect
(Fishbone) Diagram
Goal:
Category:
Category:
Problem:
Category:
Category:
Potential Categories:
1. Processes/Methods
2. Environment
3. Materials/Equipment
4. People
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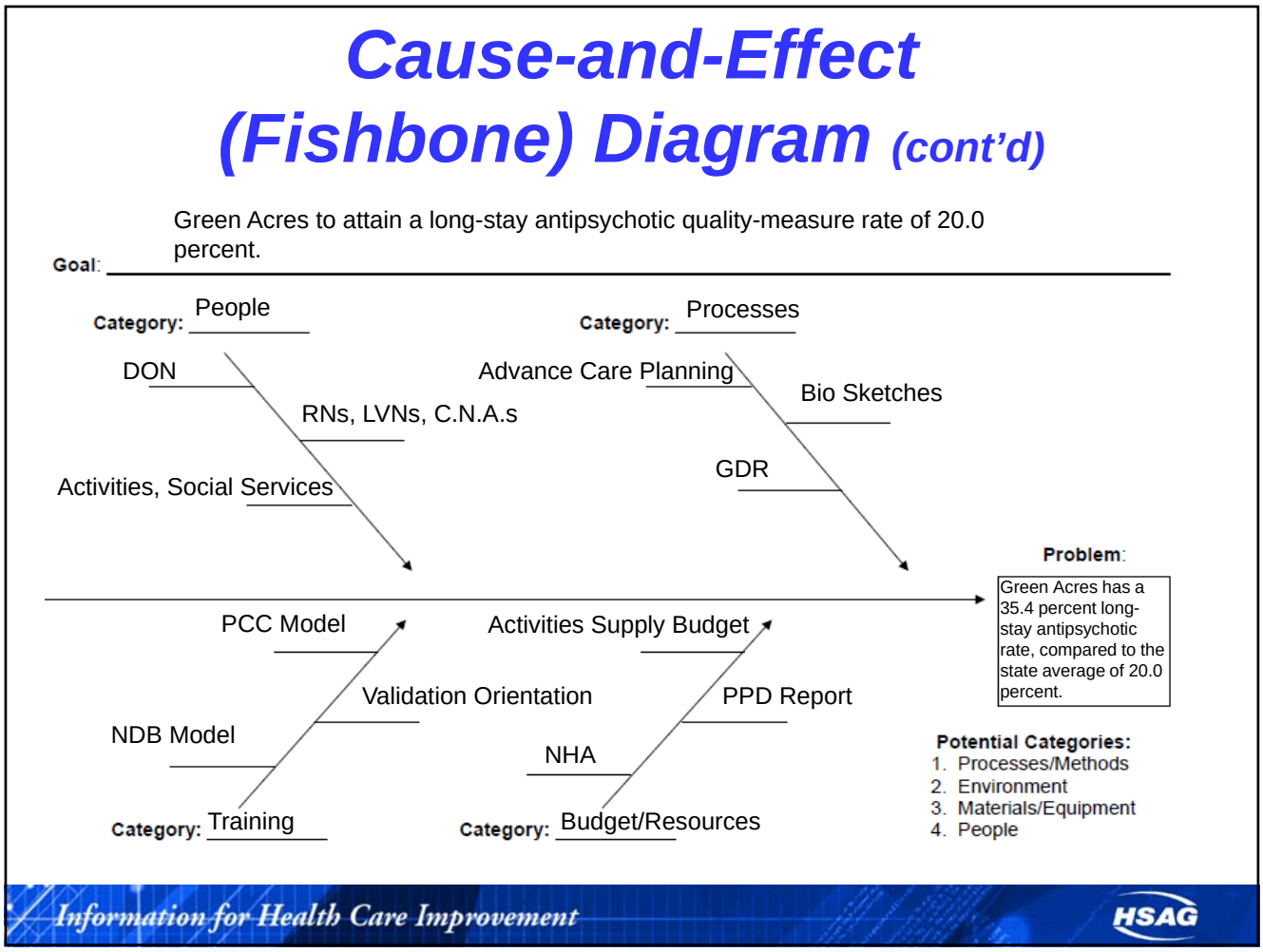
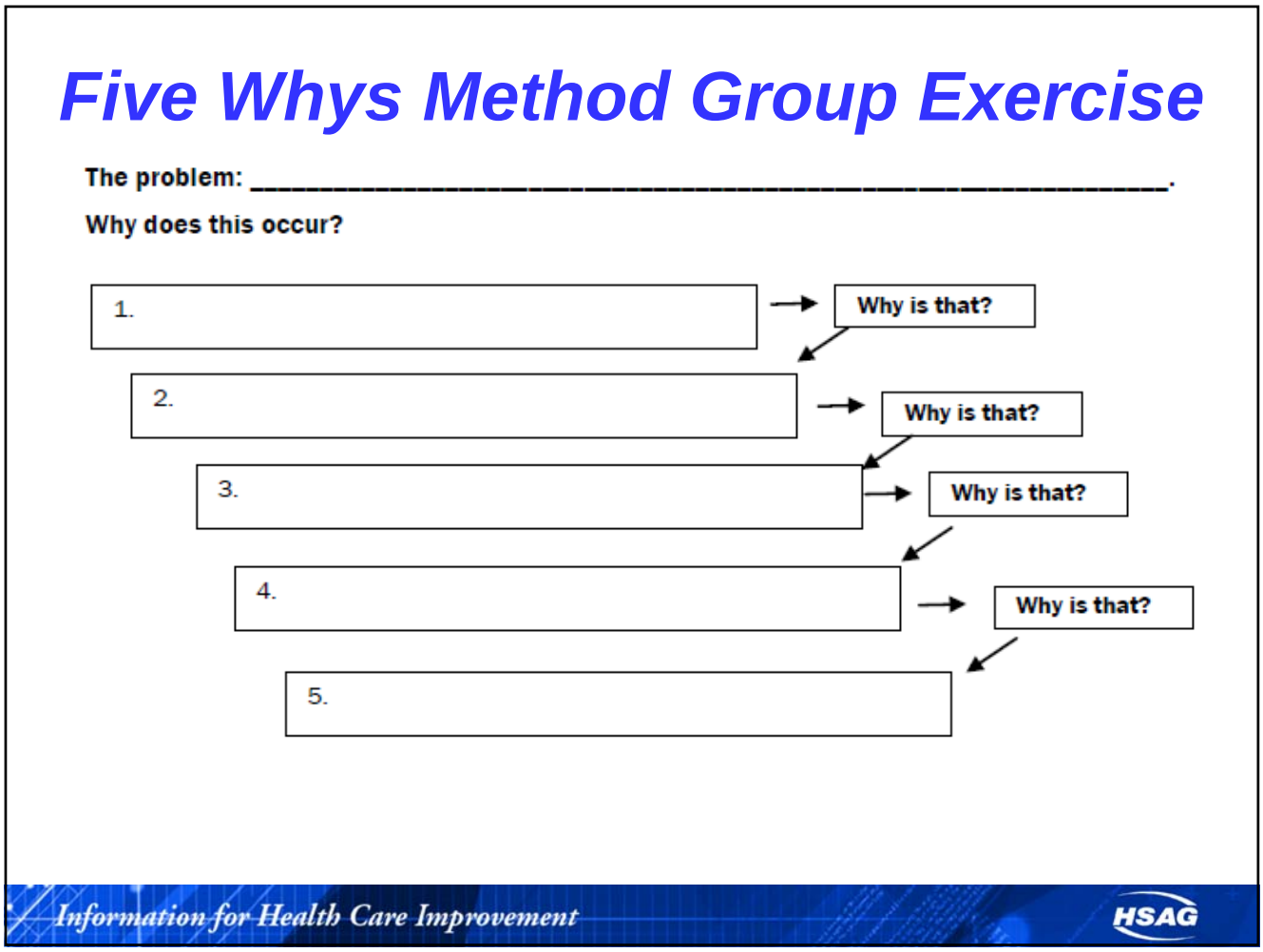
Cause-and-Effect (Fishbone) Diagram *(cont'd)*




Five Whys Method Group Exercise
The problem: _____.
Why does this occur?
1.
Why is that?
2.
Why is that?
3.
Why is that?
4.
Why is that?
5.
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Summary

- Adopt a 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.

Summary *(cont'd)*

…and get ready for QAPI by starting to use the "5-Whys" and fishbone diagram models when conducting RCA!


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