"Oops, I Did It Again!" Root Cause Analysis in EMS

By Matthew R. Streger, Esq.
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OOPS, I DID IT AGAIN

- This lecture has nothing to do with Britney Spears!

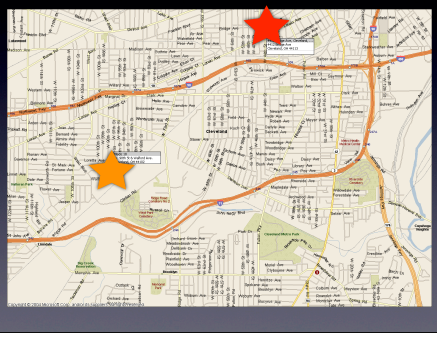
Introduction

- Matthew R. Streger, Esq.
  - Law Offices of David S. Barmak, Esq.
  - Princeton, New Jersey
- Objectives
- History of this Lecture

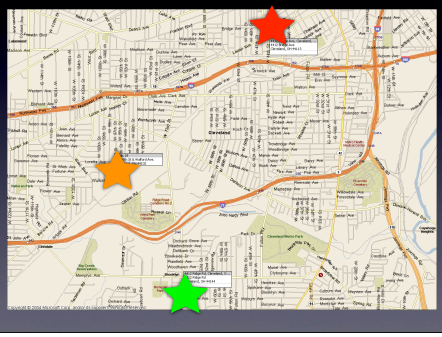
How This Lecture Came to Be

- Cleveland, Ohio – a long time ago
- Saturday morning – Medic 18 dispatched to 4412 Bridge Ave., Cleveland – Cardiac Arrest

4412 Bridge Ave., Cleveland



4412 Ridge Rd., Cleveland



What Do You Do?

- Punishment? – BIG ISSUE
- Re-Education?
- Prevention?
- Chalk it up to "human error"?
- TWO ISSUES
  - Preventing failures from occurring
  - Changing failure culture

Objectives

- Do not be afraid of failure!
  - You ARE going to fail eventually
  - "I have not failed. I've just found 10,000 ways that won't work." Thomas Edison
- Understand RCFA – Root Cause Failure Analysis
- Introduction to basic concepts
- Introduction to analysis procedures
- PREVENTING AND PUNISHING

What is Failure?

- "Mishaps are like knives, that either serve us or cut us, as we grasp them by the blade or by the handle."
  - James Russell Lowell
- "Experience is simply the name we give our mistakes."
  - Oscar Wilde
- "Only those who dare to fail greatly can succeed greatly."
  - Robert F. Kennedy
- "Those who do not learn from history are doomed to repeat it."
  - George Santayana

Scenarios

- **Real World** – Challenger and Columbia
- **Near-Misses** – Continental landing on taxiway at Newark Liberty 28 Oct 06
  - See Also Tenerife 27 Mar 77 for consequences (583 dead)
- **EMS** – dropped call, extended response time, missed esophageal intubation

Swiss Cheese

- Mechanisms always in place to prevent failure – and they are always porous
- Secondary mechanisms implemented to eliminate holes
- Sometimes the holes line up
- Goal is to eliminate as many holes as possible –

Examples

- HUMAN ERROR
- Landed on wrong runway
- Because lined up on wrong runway
- Because operating VFR
- Because pilot chose to operate VFR
- Because no policy controlled
- HUMAN, MANAGEMENT ERRORS

SYSTEM ERROR

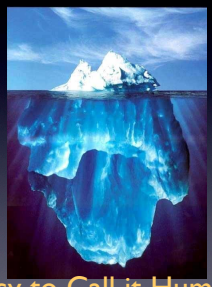
- Landed on wrong runway
- Because lined up on wrong runway
- Because VFR failed
- Because circuit shorted
- Because pin on chip bent
- Because installed incorrectly

HUMAN, QA, SYSTEM ERRORS

EMS Example

- Drove to wrong address
- Because heard wrong address
- Because of background noise in the ambulance? Or because read-back failed?
- Or because of failure in policy to require ROAD vs. AVENUE?
- HUMAN, MANAGEMENT, SYSTEM ERROR
- SWISS CHEESE!

Iceberg, Right Ahead!



It's Easy to Call it Human Error

The ROOT Cause

- "Every great mistake has a halfway moment, a split second when it can be recalled and perhaps remedied."

—Pearl S. Buck

- The action, deficiency or decision which, if corrected, eliminated or avoided will eliminate the undesirable condition
  - If not, it's not a ROOT CAUSE

The PROXIMATE Cause

- The event that occurred immediately before the failure
- Chain leads from proximate cause to root cause
  - Root causes are always organizational
  - They cause or enable the proximate causes

History of RCA

- Aerospace and Manufacturing Industries
  - Aviation – cockpit resource management
  - Manufacturing – failure mode effects analysis (FMEA)
- Medical Industry – Medical Errors
  - JCAHO incorporation
  - Not really in EMS
    - Medical errors, operational errors

Failure is NOT Bad!

- Failure = Pain
  - Conditioned to avoid
  - Blame, punishment, humiliation
  - So we avoid and HIDE failures!
- Value in Learning
  - Embrace failures – Prevent future occurrences
  - Oscar Wilde – "Experience is simply the name we give our mistakes."

Top Down vs. Bottom Up

- Bottom Down Looks More Desirable
  - Prevent problems before they manifest
  - Attack the root, kill the weed
- NEED to Change the Culture First
  - People are conditioned to HIDE failure
  - Must start with Top Down
  - Change the culture – more manageable scope

Acute vs. Chronic

- Organizations always investigate acute failures
  - Not always with a good process
- Organizations rarely investigate chronic failures
  - Repetitive substandard conditions
- As you might guess, they are often linked

Acute - Initial Steps

- Develop a core group
- Identify failure
- Failure investigative processes
- Create a timeline
- Create a why tree
- Reach conclusions - STOP

Core Group

- 3 People
  - Manageable scope
  - No ties – 2 to 1 or 3 to 0
  - Enables division of labor
- Organizational Leadership Support

Identify Target

- Define Failure
  - Acute failures are usually fairly easy to spot
  - Investigative scope often harder to handle
- Look at Frequency vs. Impact
- Ultimately, it's the Organizational Leader Who Decides!

Failure Investigation

- FREEZE THE EVIDENCE!
  - What happened, not WHY yet
- People
  - Not databases
- Positions
- Paper
- Parts

Create Timeline

- Take the 4 P's and sequence the events
- As close to real time as possible
- Create flowchart with data points
  - Time
  - People
  - Positions
  - Parts
  - Paper

Why Tree

- TOP BLOCK – last domino that fell
- TOP ROW – all the dominos that could have possibly hit it
- WHAT dominos exist
- WHY each event occurred

Why Tree

- If too many dominos, do an either / or choice with the top 2 options
- Examine each component individually, asking why each time
- Continually recheck your facts AND your logic

End-Game

- When do you stop asking why?
  - Root cause found – ALL organizational factors
  - Problem not correctible
    - Human error? Retraining? Punishment?
  - Insufficient data to continue investigation

Obstacles

- Leadership buy-in
- Attitudes
  - We've always done it this way
  - We punish failure
- Corporate culture is the biggest obstacle
  - Because all root causes are organizational

Watch Your Language

- External considerations
  - "Failure" still has negative connotation
  - Be aware of the words you use, especially if external sources are going to have access to your data
  - Freedom of Information – Public Records
  - Self-Critical Analysis Privilege

Chronic - Steps

- Same basic processes
- Often different people do the analysis
  - Focus on one thing at a time
- Keep a narrow scope – easy to get distracted
- Harder to preserve evidence – more time usually elapsed

Future Considerations

- Start Charting Near Misses
  - Goal is avoiding failure in the first place
- Bottom Up Failure Analysis
  - Decentralized incident analysis for acute failures

Conclusions

- Insanity – doing the same thing over and over and expecting a different result
- Preventing failure in the first place
  - Minimizing failures and impacts
- Changing failure culture
  - Punishment, hiding failures
- LEARNING FROM FAILURES

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