HOW DID THAT HAPPEN?

THE ROLL OF QUALITY ENGINERRING IN EMS

Lieutenant Matt Child
Prince William County Fire and Rescue

Who am I?

- Originally from New Hampshire
- Started in EMS in 1987
- Moved to VA and entered into the fire services, got my paramedic certification, etc.…
- I am currently a Lieutenant in the EMS operations office, and I coordinate quality assurance issues.

Who am I?

QUESTION

- What is quality?
- How do you define quality?
- What does quality mean to you?

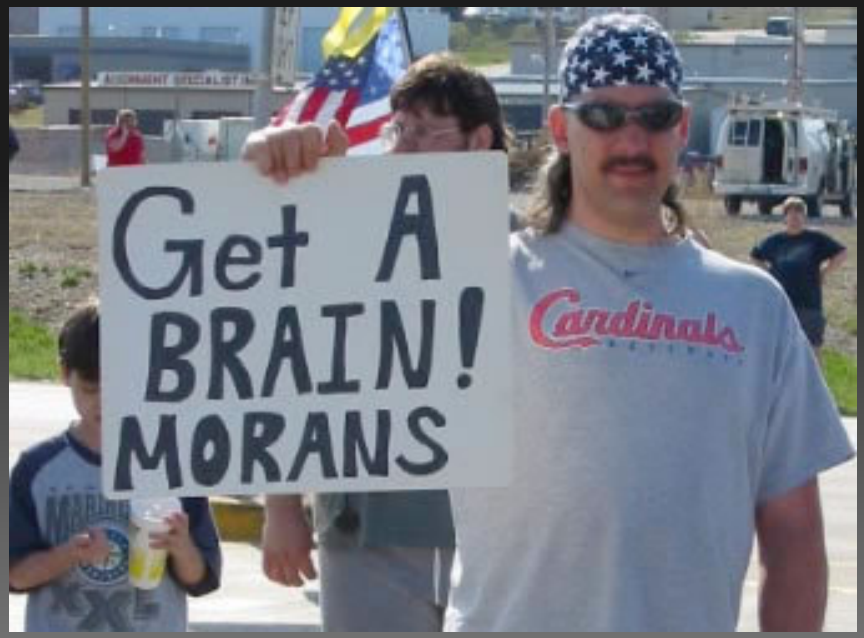
Today we are going to cover

- The difference between widgets and digits
- Task overload/task saturation
- High reliability organizations
- Memory reliance in high acuity situations
- Building preventative quality controls into your program
- Training for the known to prepare for the unknown

Widgets

- Industrial quality control
- Systems are engineered to ensure that all aspects of the widget manufacturing are to specification
- What does this mean?
- As much human factor is eliminated as possible

Digits



- Quality controls come in the form of policies, procedures, protocols, directives etc…
- Require complex judgments in high and low stress environments.
- They are loaded with latent or “Potential errors”
- What does this mean?

Widgets and digits

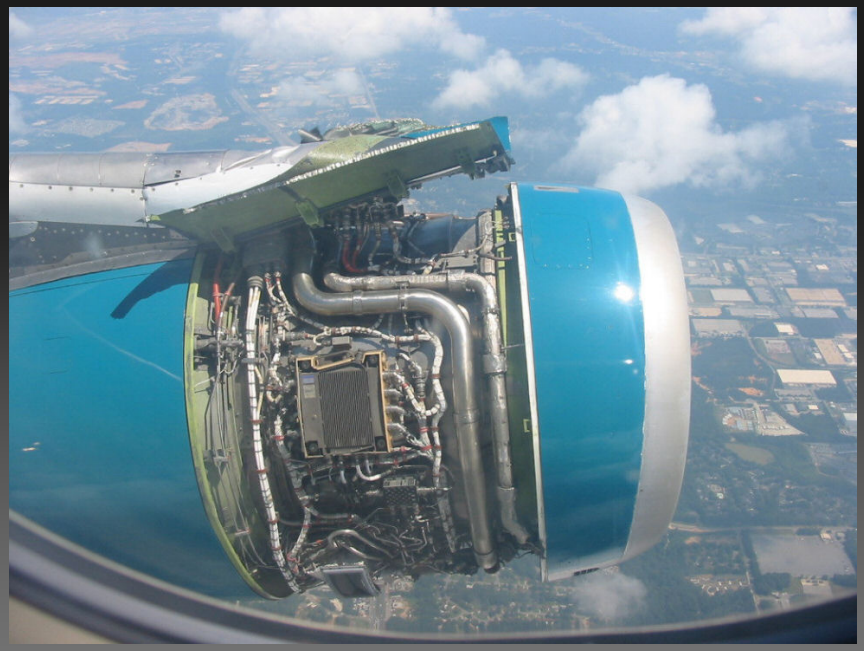
Latent error

An error waiting to occur

Consider your protocols

Do any of them set the stage for failure or mistakes?

Widgets and Digits



- Despite our best efforts there is a human factor “the digits”
- The problem is, by the time the mistake is found, the damage may already have been done.

Widgets and Digits

- This has huge implications in medicine
- By the time an error is detected very often it is too late… the damage is done.
- Jessica Santillan
- Conservatively over 100,000 people per year die as a result of medical errors

Widgets and Digits

- Most hospitals and medical facilities have multiple layers of quality checks in place to reduce the potential for errors.
- Through trial and experience as well as complex reviews called task inventories latent errors are identified and corrected.
- What is a task inventory?

Task overload/saturation

- What is task overload or saturation?
- Task overload or saturation occurs when the number tasks required exceeds the capacity or capability of the individual to complete with or without error.
- What does this mean?

Task overload/saturation

- What happens to performance when overload occurs during increasingly complex incidents?
- It degrades or falters.
- Mistakes can occur

Task overload/saturation

- Uh uh…
- Lets see was it
- Diazepam, lorazepam, or midazolam
- What the heck lets just give em all…

Task overload/saturation

Question

How many steps are involved in placing a Combitube or other similar device?

What steps are the most likely confuse providers and result in error?

What are the implications of errors?

How many have you the provider placed in the past 12 months?

How many have practiced it?

Task overload/saturation

- What can this lead to?
- Missed steps?
- Missed details on the emergency scene?
- Missed cues relating to the severity of the patients condition?
- Missed details in procedures or tasks?
- Short cuts!!!!!

High reliability organizations

- Organizations that are associated with high risk activities that pose imminent danger to those engaged in the activities, yet they remain inherently safe.

- Airline industry
- NASA
- Certain chemical manufacturing.
- The nuclear power industry
- Bomb testers

- Is healthcare a high reliability industry?

- Where does EMS fall along this continuum?

High reliability organizations

- How do these organizations achieve such high standards of safety in such dangerous activities?
- Consider how complex the systems are involved in running a nuclear power plant
- How many millions of miles are logged each day by the airline industry?
- How is this possible?

High Reliability organizations

- They invest vast amounts of time and energy into risk assessment and building quality controls into their programs.
- What does this mean?

Memory reliance in high acuity situations

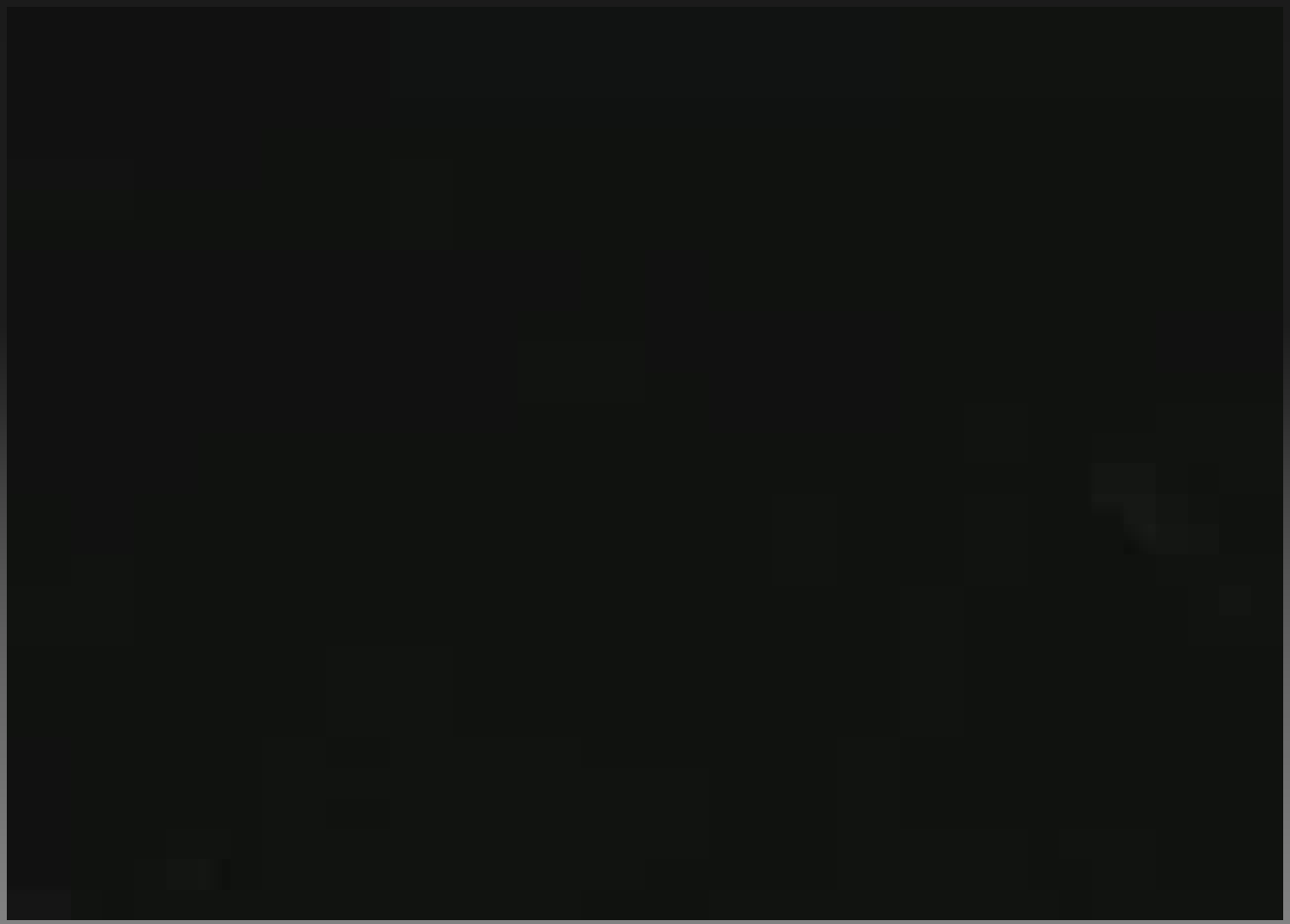
- There is a direct relationship between task complexity, task saturation/overload, and critical errors.
- High reliability organizations know this, and they design their operations to address these situations.

Memory reliance in high acuity situations

- The airline industry, NASA, and others like them, have pioneered operational crisis management. And they have it down to a science.

- Captain Chesley Sullinberger

Memory reliance in high acuity situations



Memory reliance in high acuity situations

- Did Captain Sullinberger have time to “think” about what he needed to do?
- How did he accomplish this extraordinary feat of flying skill?
- Training to mastery
- Training to mastery
- Training to mastery

Memory reliance in high acuity situations

- LA kids study
  - Pediatric cardiac arrest calls
  - The mandated use of Broslow tape
  - Decreased incidents of treatment errors

Memory reliance in high acuity situations

- There are volumes of studies in clinical journals that look at:
  - Physical performance under high stress loads
  - Decision making under high stress loads
  - Accuracy of critical task completion under high stress loads

Most conclude that in the absence of training; as complexity and acuity increases performance decreases.

Memory reliance in high acuity situations

- What does LA kids, and landing a virtually doomed airliner have in common?
- They are high risk low frequency events with no associated discretionary time.
- training was conducted that reduced the reliance on memory
- Procedures were practiced and drilled to mastery.

Memory reliance in high acuity situations

- Are these guys ready to handle anything that comes there way???
- Are you, your personnel, or your agency ready?
- What does all of this mumbo jumbo have to do with quality assurance?

Building preventative quality controls into your program

- Scalable
- Individual level
- Unit/crew level
- System level
- Region level

Building preventative quality controls into your program

Most importantly it is…

Proactive!!!!!

Building proactive quality controls into your program

- Step one is perform a risk assessment of your protocols, policies, and procedures.
- Starting at the individual level and working up.

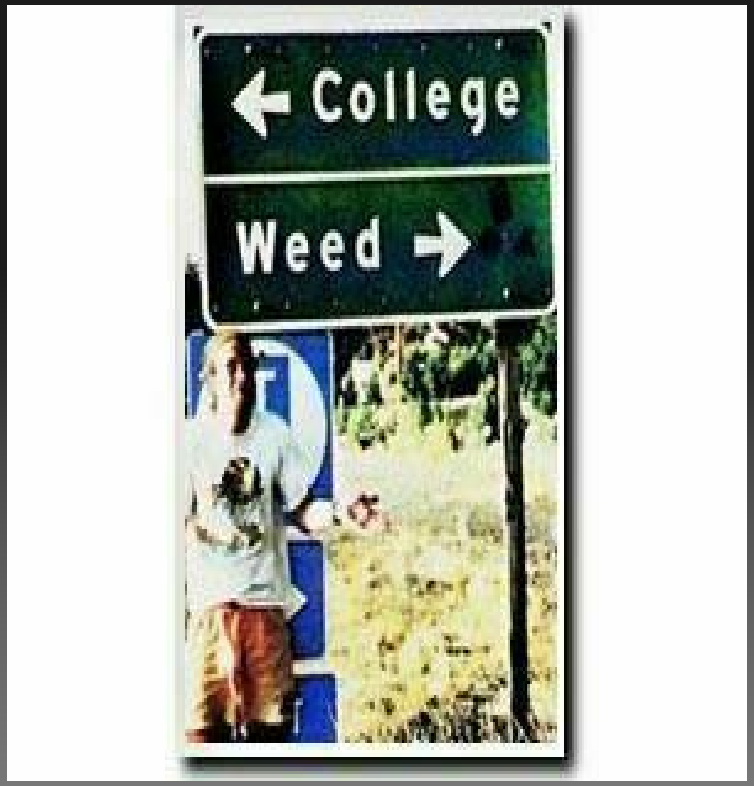
Building preventative quality controls into your program

- Step two compile the risk assessment and analyze the results
- Determine what protocols, policies, and procedures fall into each category.
- Those that fall into the high risk and low frequency categories are almost always associated with latent errors.

Building preventative quality controls into your program

Recall what high reliability organizations do to address these situations?

They look for latent or potential errors before they occur and correct them.



Training for the known to prepare for the unknown

- Take what you have learned from your risk assessment; regardless of your level or position and train…..
- Train…
- Train…
- Train…
- Why?
- Sullinberger

Training for the known to prepare for the unknown

- Extensive training reduces the reliance on memory, and allows more energy to be shifted to dealing with the unknowns that occur on every call.

So what have we learned today?

- The difference between widgets and digits
- Task overload/task saturation
- High reliability organizations
- Memory reliance in high acuity situations
- Building preventative quality controls into your program
- Training for the known to prepare for the unknown