Systems based practice

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Methodist

BCM
Baylor College of Medicine

UTMB
The University of Texas Medical Branch

University of Iowa Health Care

The University of Texas MD Anderson Cancer Center

Cornell University
Joan and Sanford I. Weill Medical College

I have no relevant financial interest in the contents of this talk

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- Dr. Lee is a member of the Residency Review Committee (RRC) for Ophthalmology
- ACGME Ophthalmology Milestones Working Group
- Examiner/prop writer for the American Board of Ophthalmology (ABO) & OKAP test writing committee
- Residency Education Committee (REC) for the American Academy of Ophthalmology (AAO)
- Association of University Professors of Ophthalmology (AUPO) Fellowship Compliance Committee
- The views expressed here **do not reflect** those of RRC, ACGME, OKAP, ABO, REC, AAO, or AUPO

Start with a philosophical question…
Why are you here… ….?

THE FOLLOWING **PREVIEW** HAS BEEN REVIEWED FOR

ALL AUDIENCES

These talks contain information of a graphic nature and some material may be inappropriate for unengaged learners.You will be asked to make a behavior change at the end. Viewer discretion is advised.

PG-13	PROJECT MANAGERS STRONGLY CAUTIONED
Some Material May Be Inappropriate for ClOs Under 13	
INTENSE METHODOLOGY MATERIAL, SCENES OF VIOLENCE	

Women in audience close your eyes….Men: What do you see (keep it to yourself for now)?

OK, now men cover your eyes. Women: What do you see (keep to yourself for now)?

What did you see?

Men? Women?

How much would you bet that the other person is wrong?

How strongly would you argue the point?

Remember this the next time you get in a fight with…..

Objectives

- Define systems based practice (SBP)
- Describe your system(s) of care
- Encourage you to commit to using systems based practice & learning
- End with a practical real world recommendation

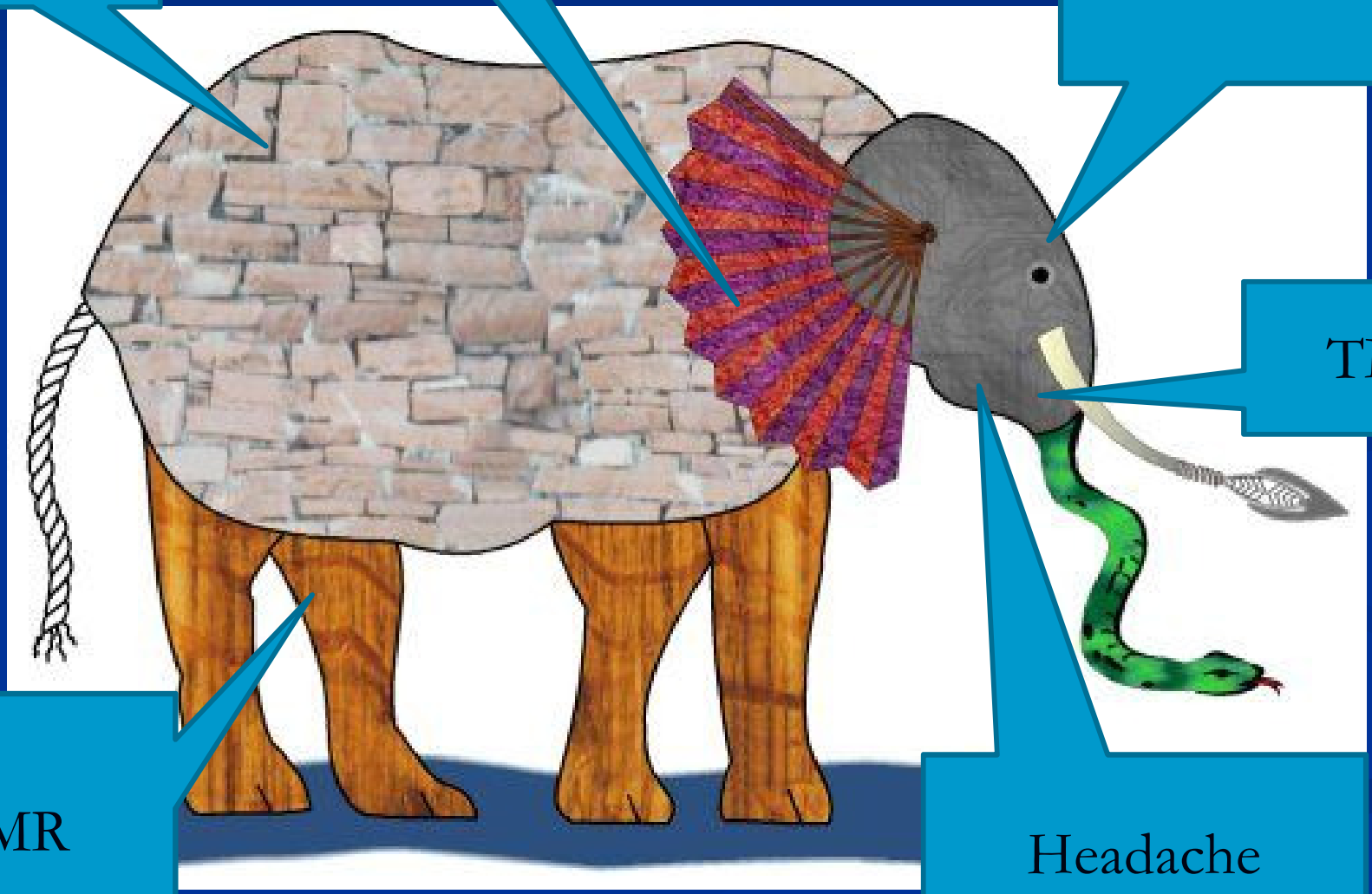
Defining Systems based competency: ACGME perspective

- **Systems-Based Practice**
  - Awareness of and responsiveness to larger context & system of health care
  - Ability to effectively call on system resources to provide care that optimal
  - i.e., Work within the health care system

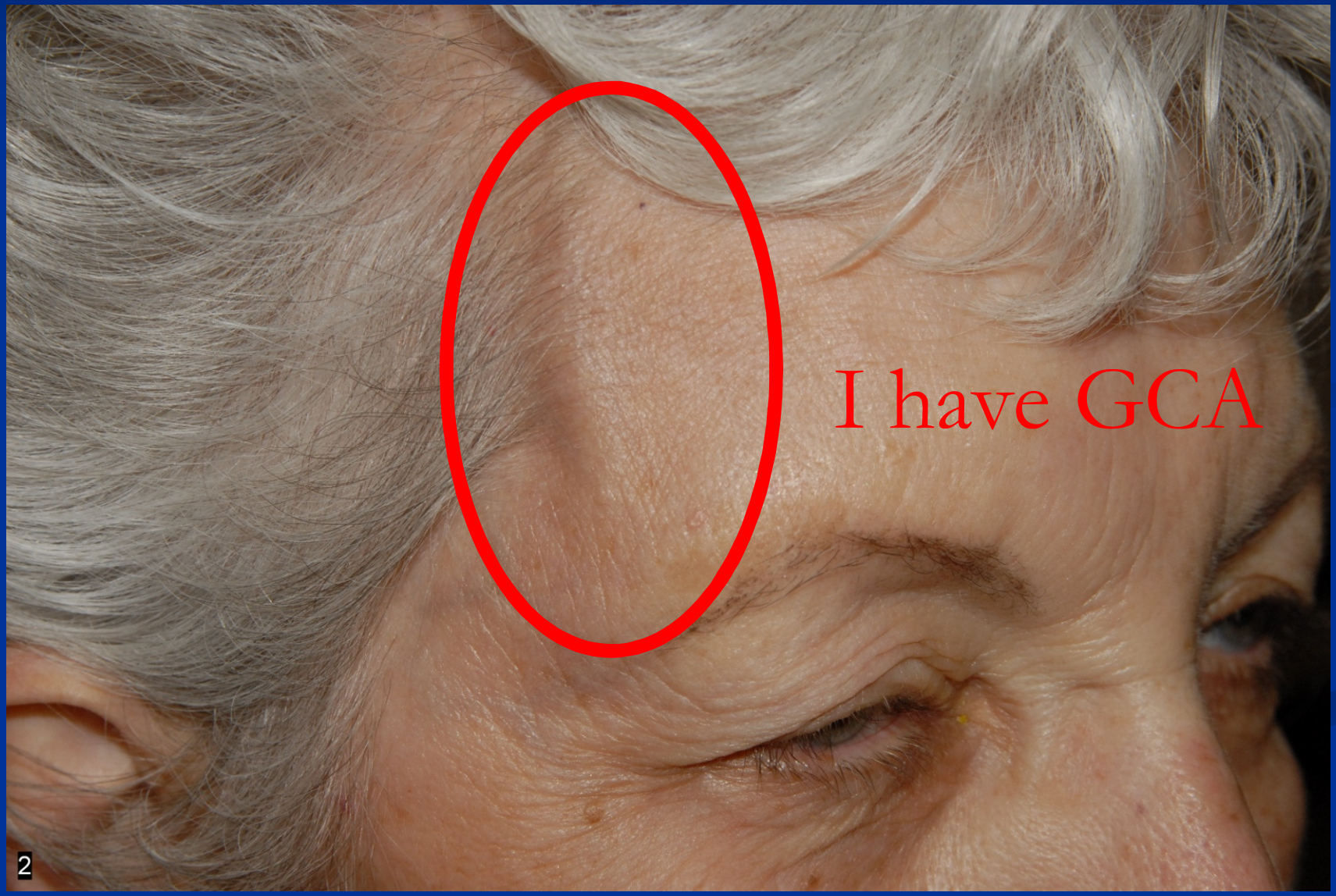
Systems based care

- Micro-system of care (your clinic, your office, the O.R.)
- Small macro-system (your hospital, your state)
- Large macro-system (Medicare, US health care system, Pay for Performance)

Which part of system are you on?



The artery on the side of my head hurts



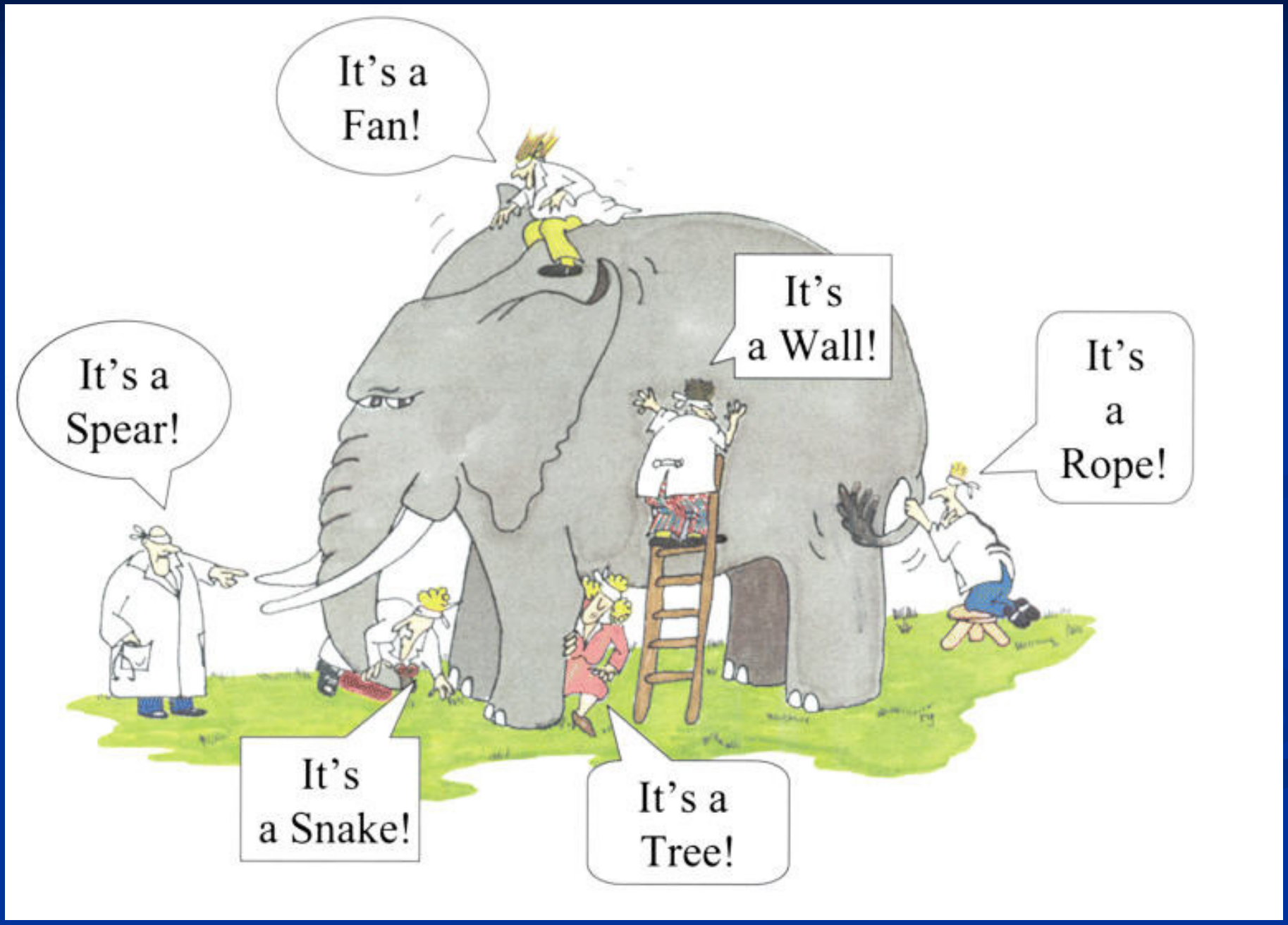
Initial symptoms in GCA (n = 100)

Symptom or complaint	Presenting symptom	Finding at diagnosis
Headache	32	68
Polymyalgia rheumatica	25	39
Fever	15	42
Visual symptoms without loss of vision	7	30
Weakness, malaise, fatigue	5	40
Tenderness over arteries	5	27
Myalgias	4	30
Weight loss, anorexia	2	50
Jaw claudication	2	45
Permanent loss of vision	1	14
Tongue claudication	1	6
Sore throat	1	9
Vasculitis on angiogram	1	NA
Stiffness of hands and wrists	1	NA
Decreased temporal artery pulse	NA	46
Erythematous, nodular, swollen arteries	NA	23
Central nervous system abnormalities	NA	15
Synovitis	NA	NA
Dysphagia	NA	15
Limb claudication	NA	NA

PMR
FUO
TVL

Adapted with permission from Hunder GG. Temporal arteritis and polymyalgia rheumatica. In: Kelley WN, et al. Textbook of rheumatology. 4th ed. Philadelphia: Saunders, 1993:103-12.

Why do we still miss GCA?



The elephant in the room

How many systems can you find?

- Resident
- Hospital
- Nurses
- Technici
- Teamwo
- Pharmac
- Referrin

Systems based practice = patient safety

It takes a village…

Parking attendant
Registration
Emergency room
Nurse
Technician
Resident or fellow
Lab
Radiology
Referring doctor
Social worker
PATIENT

Systems-based practice =team work

When I was a resident….

- Our busy operating room in ophthalmology
- Cataract surgery day
- Two patients Mary Smith (not real names)
- Mary K. Smith
- Mary L. Smith
- Wrong intraocular lens in BOTH patients

Maria Garcia is a super common name at Ben Taub Hospital

- HCHD patients database: 3,428,925
- ≥ 2 pts same last & first names: 249,213
- >4 share same last & first names: 76,354
- > 2 same last & first name & dob: 69,807
- Maria Garcias: 2,488
- Maria Garcias with same date of birth: 231

Challenge question

- What should we do with our next Maria Garza patient?
- What is your system for avoiding wrong patient, wrong name, same name, wrong medication, wrong site surgery……????

United flight 232

- United flight 232 Denver to Chicago
- July 19, 1989
- Captain Al Haynes: 30,000 hour pilot
- First Officer Records & Engineer Dvorak
- Eight flight attendants
- 285 passengers on board DC-10

Uh Oh

- Somewhere over Iowa
- Fan broke apart, lost #2 engine
- No hydraulics
- Plane can not fly without hydraulics
- Sioux City had an open runway
- Capt. Haynes kept his cool
- Capt. Haynes formed a team

Team building

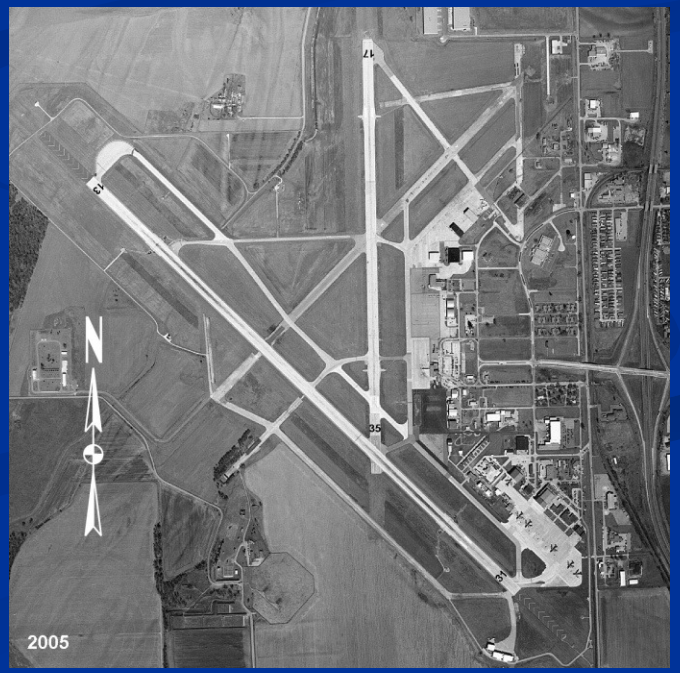
- Passenger on board: Dennis Fitch, a United training & check pilot
- 3,000 hours on DC-10
- They could only turn right
- They had no controls
- They used the engine thrust to steer
- This had been done once before in Japan (Fitch had studied it)

Capt Fitch meet Capt Haynes

- Transcript of meeting of Captains in cockpit
- Haynes: “My name's Al Haynes”
- Fitch: “Hi, Al. Denny Fitch”
- Haynes: “How do you do, Denny?”
- Fitch: “I'll tell you what. We'll have a beer when this is all done”
- Haynes: “Well, I don't drink, but I'll sure as hell have one.”

Transcript for the approach

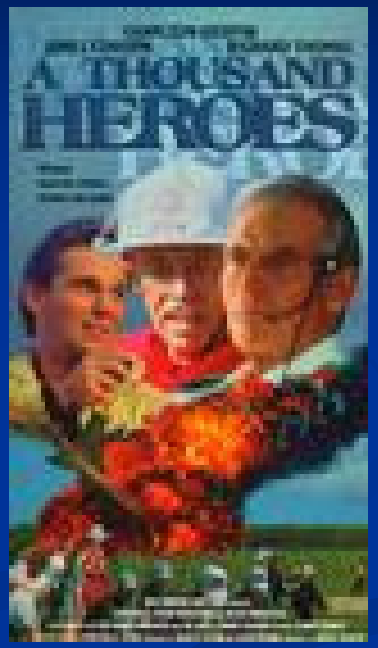
- Sioux City Approach: United two thirty-two … You're cleared to land on any runway..
- Haynes: [Laughter] Roger. [Laughter] You want to be particular and make it a runway, huh?



Initially pointed to Des Moines then Sioux City, Iowa

The plane crash landed but landed

- 111 died
- But 185 survived
- Including Captain Haynes



After the accident…

- 57 flight crews could not replicate the landing in the simulator

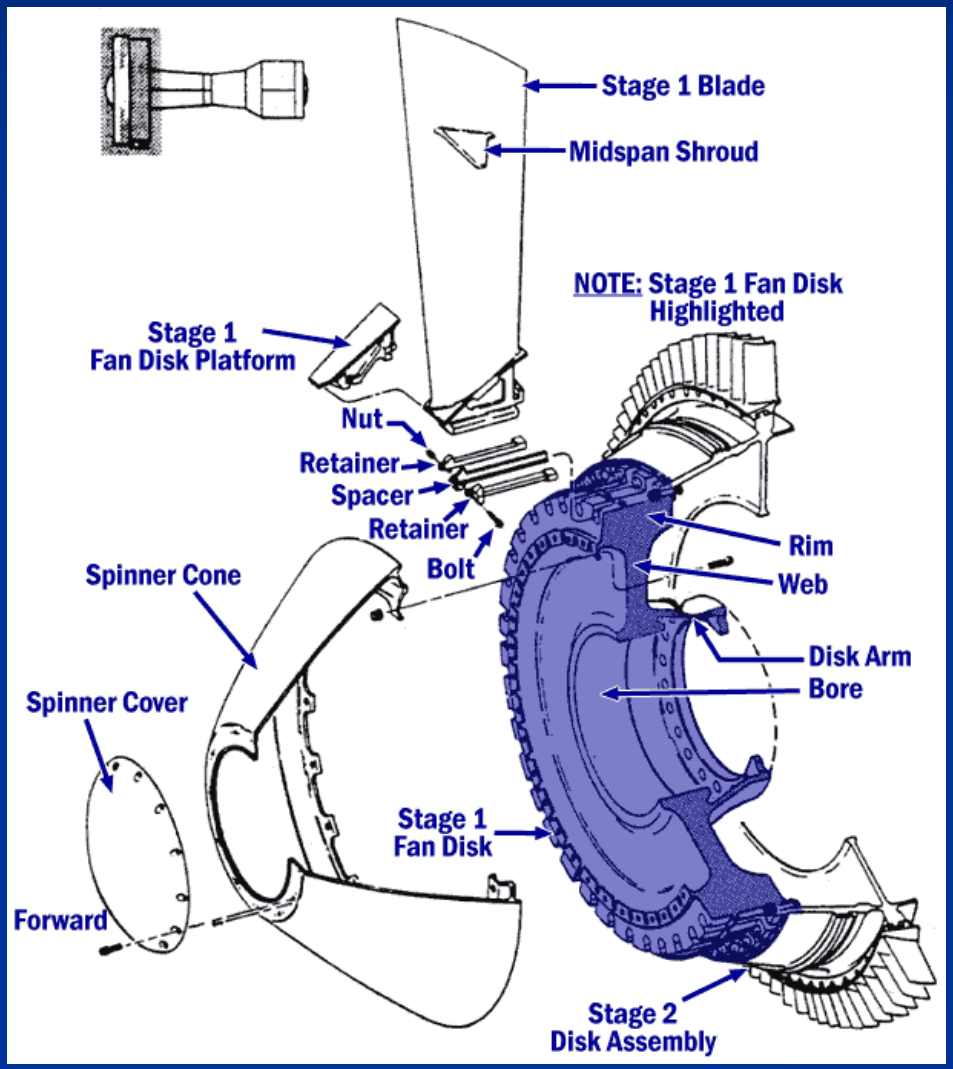
Challenge question: What should we do now?

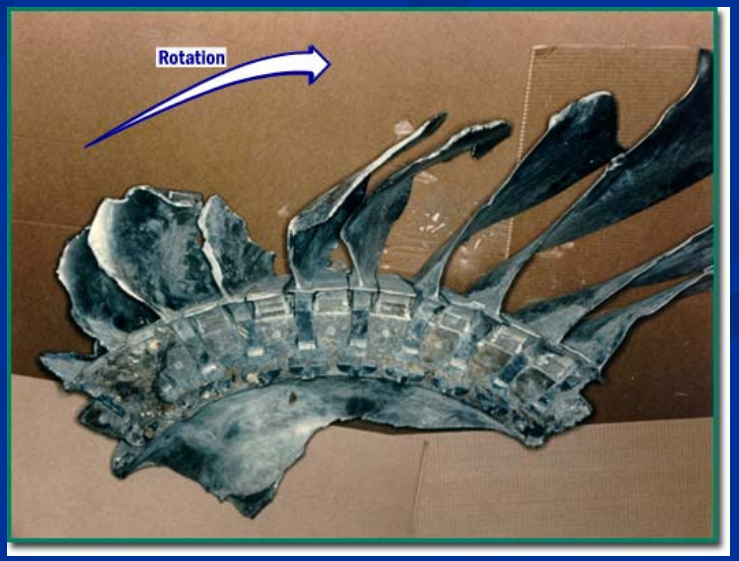
1. Congratulate Captain Haynes
2. Make a charitable donation in his name
3. Avoid flying
4. Perform a root cause analysis

Root cause analysis

- Fracture of fan disk
- Failure of maintenance process to detect crack
- Metal 'inclusion' in disk
- Defect traced back to metal processing plant
- Defect in elimination of gaseous anomalies during purifying of (molten) titanium disk ingot
- Newer batches used a 'triple vacuum' process to eliminate these impurities.

The fan failed



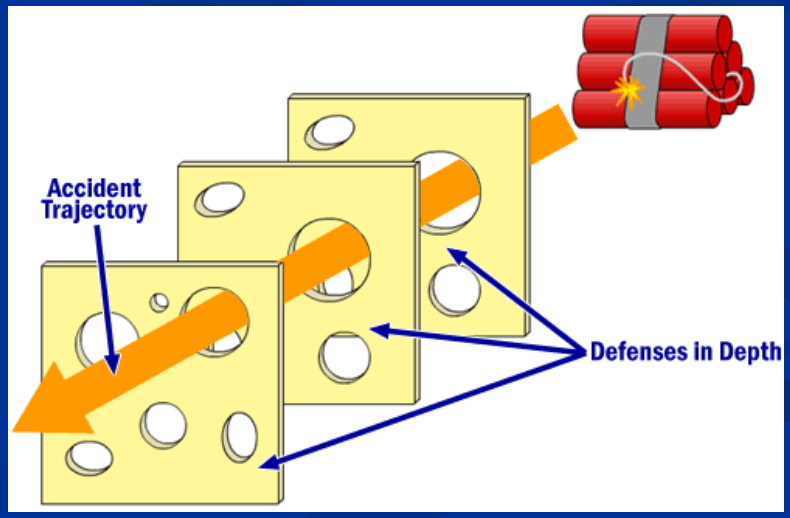


Fan reconstructed

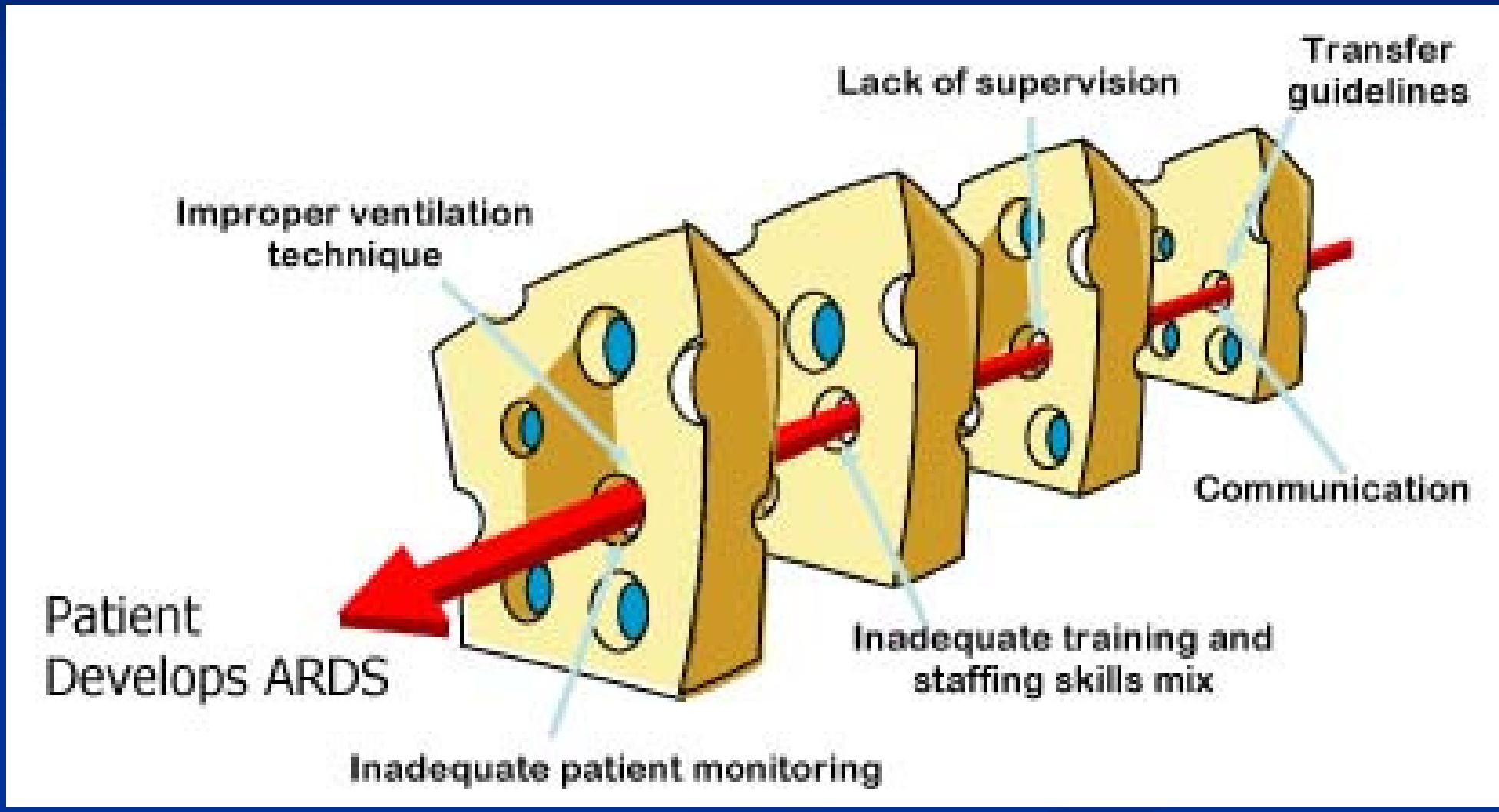
Examples: Quality Assurance

- Systems based care
- Patient safety
- Reduce medical errors
- Reduce medication errors
- Eliminate wrong site surgery

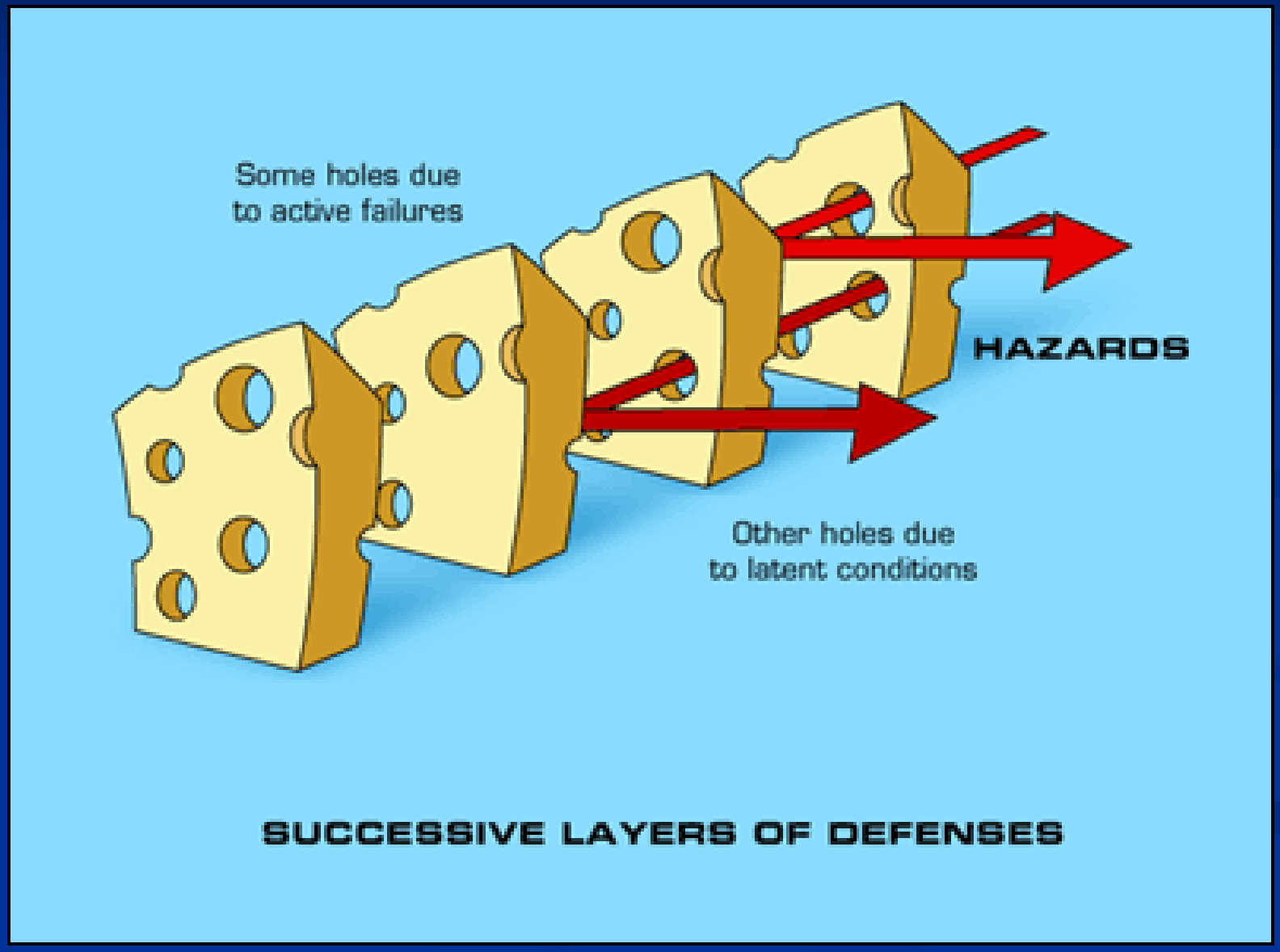
- Competency Tools
- Near miss analysis
- Root cause analysis
- Resident porfolio projects
- Self-reflection exercises



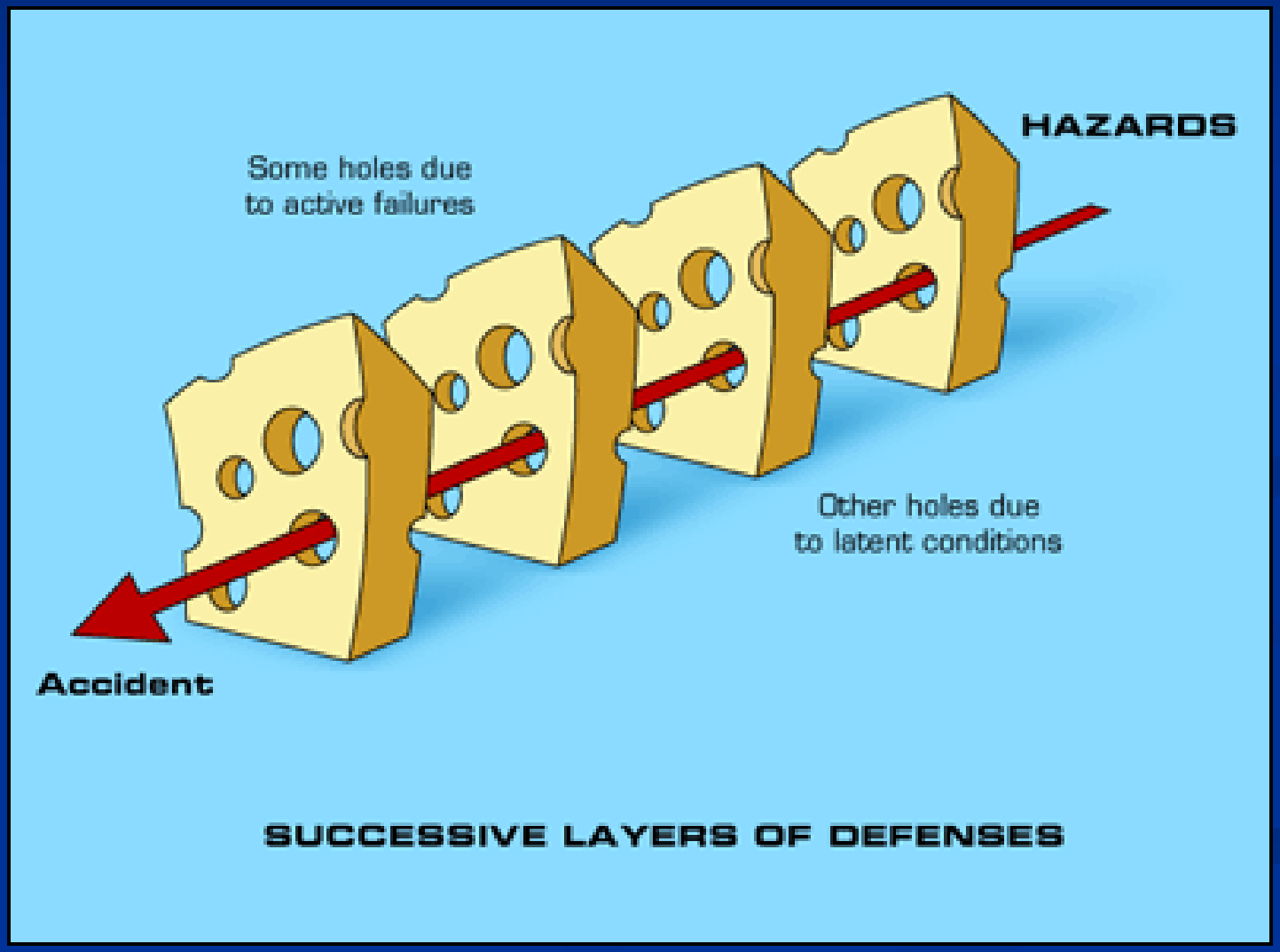
Reason's Swiss cheese



Active failures vs. latent conditions



Alignment of the holes leads to outcome of error



Culture change: Don't blame the last slice of cheese

No formal Visual fields at night

Middle of night ER visit

Radiology Order form

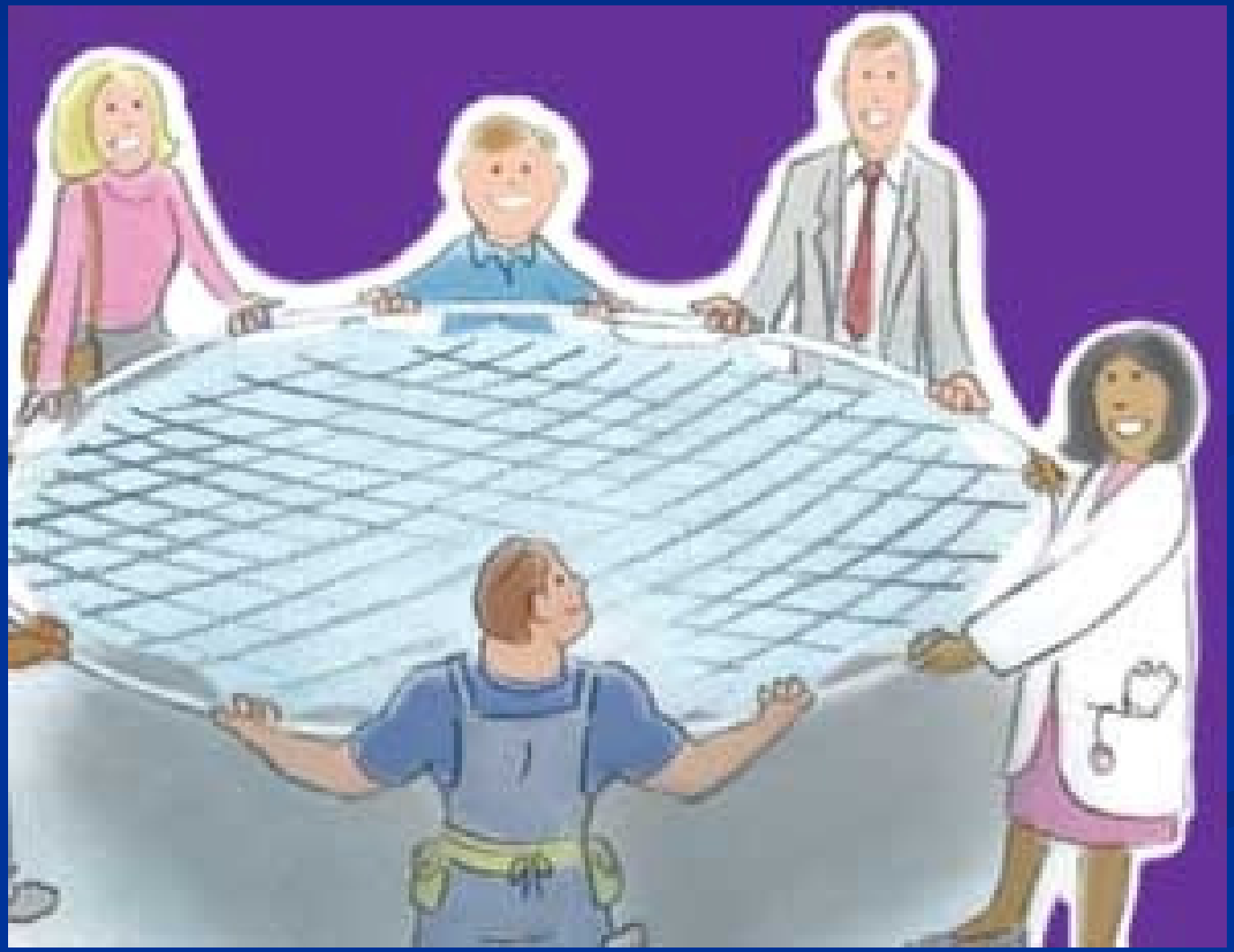
Discuss with radiology

Look at films Resident Faculty

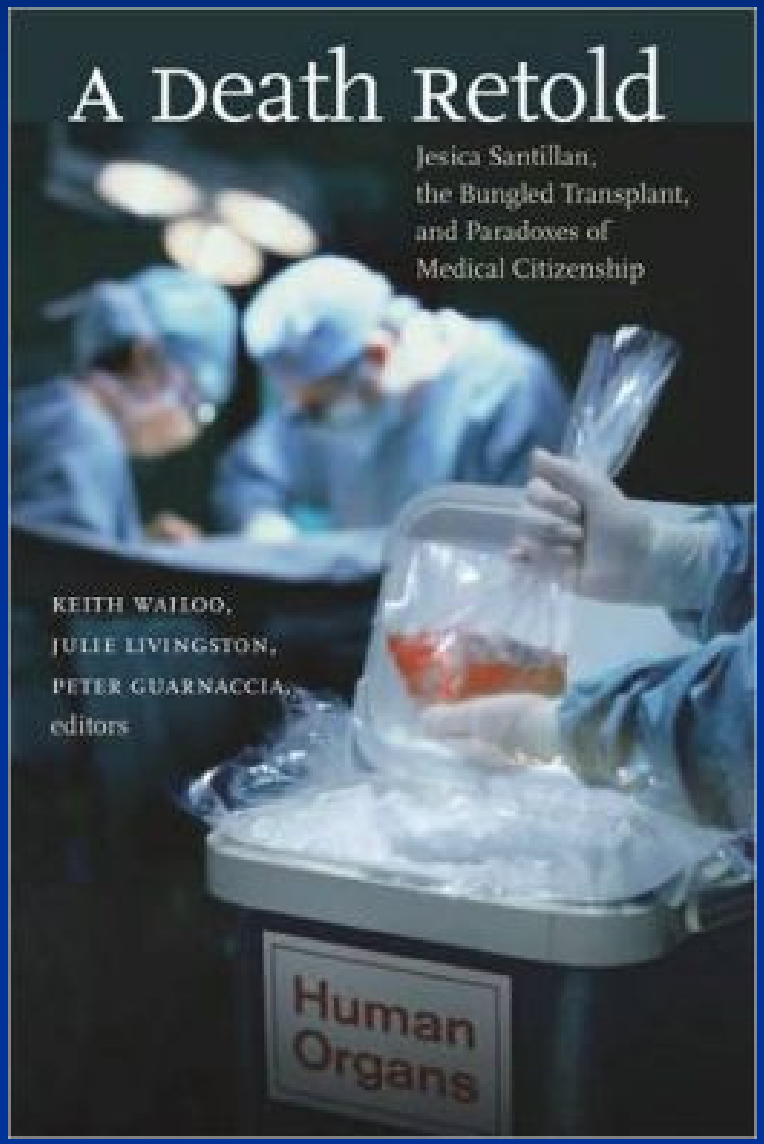
Stroke patient Discharged with "normal CT"

Radiology resident

We are all responsible for patient safety



Jesica Santillan



Jesica Santillan's story

- Congenital restrictive cardiomyopathy
- Transplant was her only hope of survival
- Father was a truck driver near Guadalajara, Mexico (illegal immigrants to USA)
- North Carolina businessman adopted her cause

Feb 6, 2003

- Carolina Donor Services (CDS) offers transplantable heart to Duke (middle of night)
- First potential recipient was not ready for transplant
- Doctors asked if organs might be available for Jesica
- Organ procurement coordinator offers to check this and call back, and when they did….
- Doctors assumed that CDS wouldn't have called back and released the organs unless they were a match
- This was a wrong assumption

The rest of the story…

- Organs brought to Duke (Known Type A)
- Following implantation of organs (approximately 10:00 p.m.), surgical team received a call from Duke's Clinical Transplant Immunology Laboratory reporting organs were incompatible with Jesica's blood type (Type O)
- Despite aggressive treatment & a second transplant, Jesica died

Multiple holes in the Swiss Cheese

- Organ Procurement didn't ask if matched
- Harvesting surgeon knew Type was A but assumed it was a match
- Dr. Jaggers knew patient was Type O but assumed donor was a match
- 12 doctors came into contact with this chart but none noticed the mismatch

It isn't about bad hospitals

- 2001: Johns Hopkins All 2,400 federally financed experiments shut down because Ellen Roche died after inhaling hexamethonium in an asthma experiment
- 1995 Memorial Sloan-Kettering: chief neurosurgeon operated on wrong side
- 1994 Dana Farber Cancer Ctr: Overdose of chemotherapy for breast cancer

Human errors in the ICU

- Crit Care Med 1995;23:294-300. Donchin et al.
- 4 months observation time
- Average of 178 activities per patient per day
- Estimated 1.7 errors per patient per day
- Severe or potentially detrimental error occurred on average twice a day
- Physicians and nurses were about equal contributors to the number of errors

Translation: Not good enough

- ICU function = 99% level of proficiency
- A 99.9% proficiency rating
  - 2 unsafe landings at O'Hare airport everyday
  - 16,000 pieces of lost mail every hour
  - 32,000 bank checks directed from the wrong bank account every hour
- Error in Medicine, JAMA, 272:1851,1994.

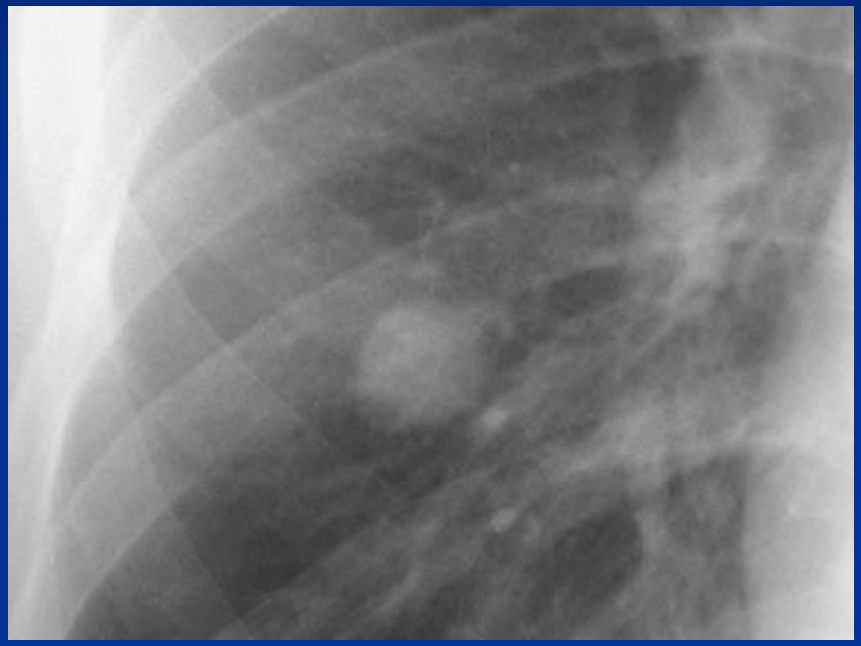
A true story of my own….

- 65 y/o WM with optic neuropathy
- MRI, labs, chest x-ray ordered
- Scheduled follow up in 3 weeks
- Patient did not return for follow up
- MRI reviewed and normal on report
- Labs in electronic record report (IPR) negative

3 months later…

- Chest x-ray report appears in my electronic mailbox (months later): "Right upper lung nodule"
- Patient had moved to New Jersey
- Old number & address were disconnected
- No forwarding number or address in EMR

Now what….



Name the system errors

- Resident ordering study did not get chest xray to review at rounds
- Faculty did not review x ray (did not know it existed!)
- Electronic reporting did not put report in in box
- Radiologist did not call
- Three month delay was not flagged

The rest of the story…

- Found patient's brother in Iowa
- Called patient in New Jersey
- Disclosed situation by phone
- Called patient's new primary doctor in NJ
- Repeat chest film showed…..No change, benign nodule
- Whew!....

System improvements

- Work rounds list
- Letter to no shows
- Look up dictation for no shows
- Radiology instructed to call for lung nodules
- IPR back log flags

What is your system for tracking labs and radiographs? When you have a sentinel event do you do a root cause analysis?

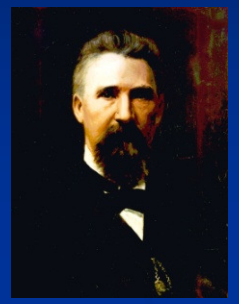
"Every system is perfectly designed to achieve the results it does."

Don Berwick: Institute for Health Care Improvement

The story of Patrick

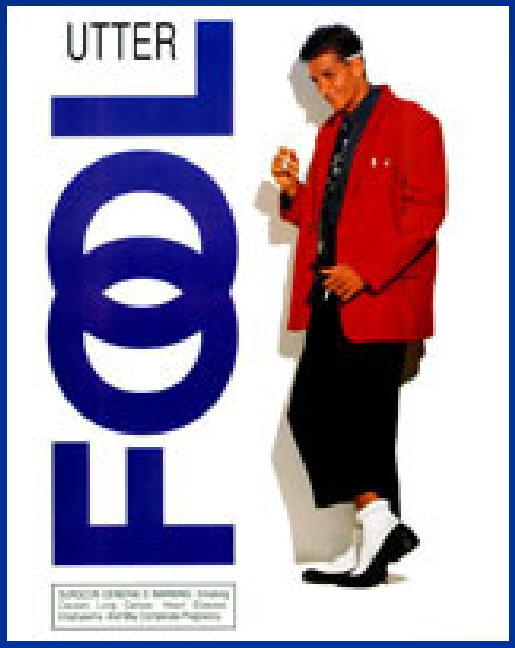
- Patrick Reynolds is an anti-smoking advocate
- Foundation for a smoke free America
- Patrick's father died from smoking related COPD
- Patrick's brother died from smoking related COPD
- Patrick's aunt died from stomach cancer
- Patrick's grandfather died of pancreatic cancer
- All were tobacco users
- That's not the interesting part

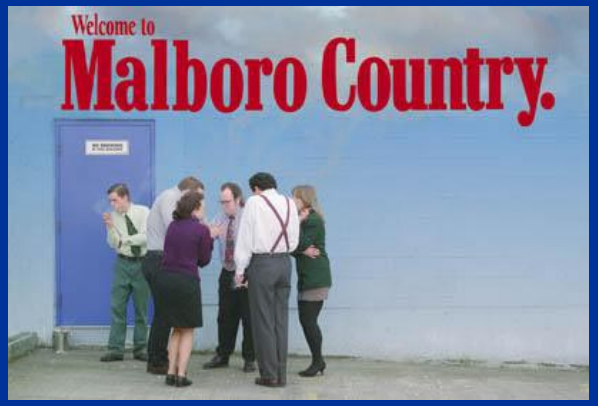
Patrick is antismoking because….

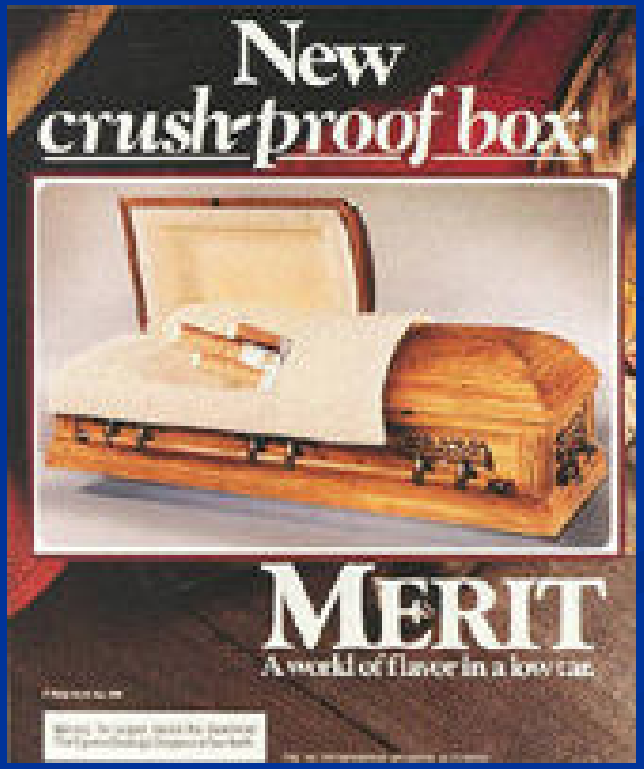


- Patrick's brother was R.J. Reynolds III
- Patrick's father was R.J. Reynolds, Jr.
- Patrick's grandfather was R.J. Reynolds
- Reynold's (Camel, Kool, Doral, Winston, Salem)
- 2 billion smokers worldwide
- 200 million will die from tobacco related illnesses

Smoking is bad for you, Patrick wants you to know this and he knows from experience





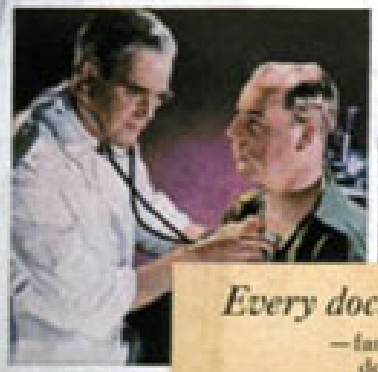


Evidence shows MD telling them to quit DOES make a difference

- 1972-2003: 39 different trials on effects of doctors telling 31,000 people to quit smoking
- Being hounded to quit smoking by their doctor made people almost twice as likely to quit!
- Extra 2.5% of tobacco addicts did quit
- What is our system for smoking cessation in the eye clinic?

Smoking related eye disease

- Cataract
- Age related macular degeneration
- Diabetic retinopathy
- Ischemic optic neuropathy
- Thyroid ophthalmopathy



Every doctor in private practice was asked:

—family physicians, surgeons, specialists...
doctors in every branch of medicine—

"What cigarette do you smoke?"

According to a recent Nationwide survey:

More Doctors Smoke Camels

than any other cigarette!

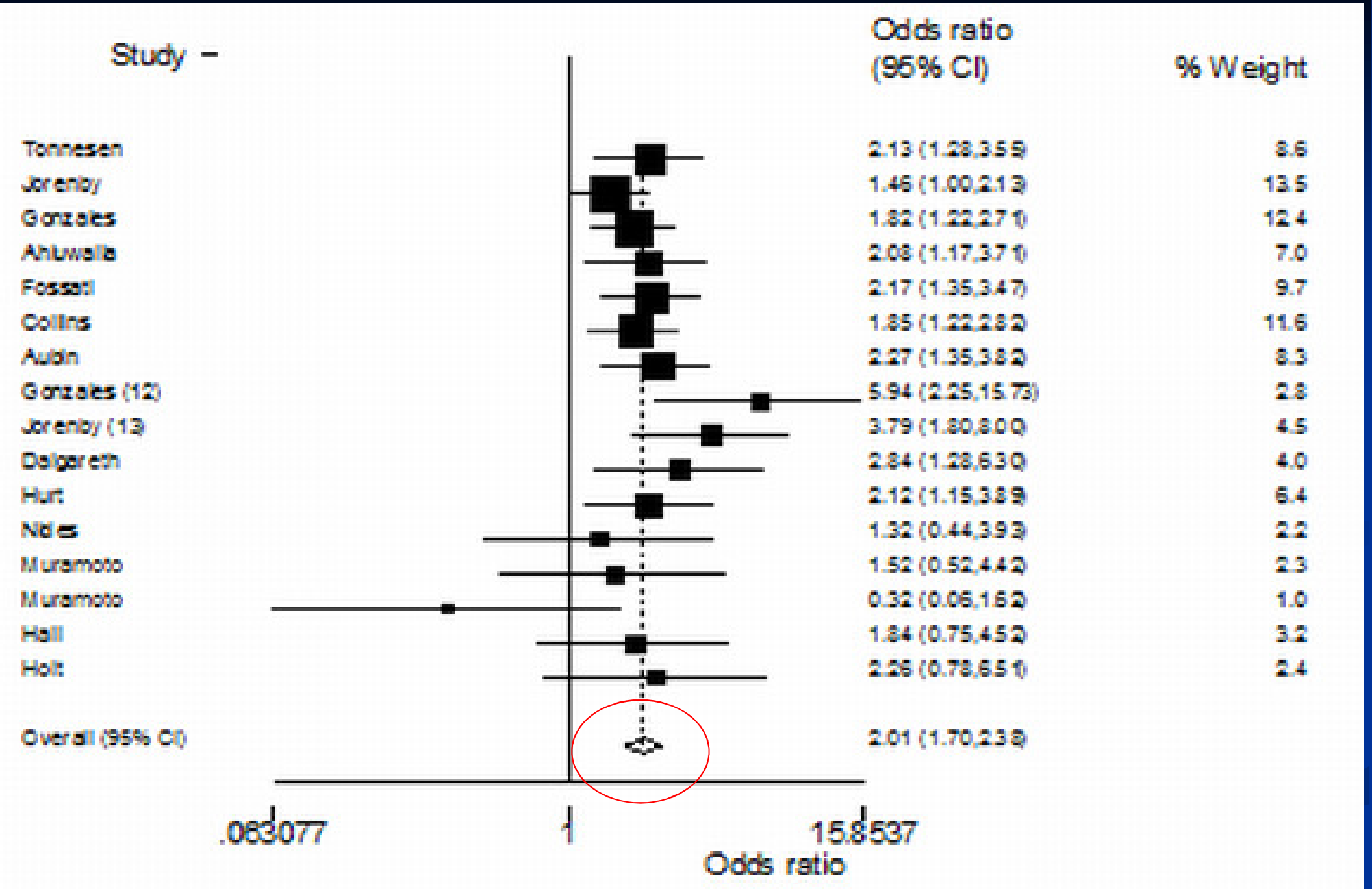
Not a guess, not just a trend...but an *actual fact* based on the statements of doctors themselves to 3 nationally known independent research organizations.

Yes, your doctor was asked... along with thousands and thousands of other doctors from Maine to California.

And they've named their choice—the brand that more *doctors named as the one they smoke is Camels!* Three nationally known independent research organizations found this to be a fact.

Nothing unusual about it. Doctors smoke for pleasure just like the rest of us. They appreciate, just as you, a mildness that's cool and easy on the throat. They too enjoy the full, rich flavor of expertly blended costlier tobaccos. And they named Camels ... more of them named Camels than any other brand. Next time you buy cigarettes, try Camels.

The "T-Zone"—T for taste and T for throat—is your own laboratory, your proving ground, for any cigarette. For only your taste and your throat can decide which cigarette tastes best to you ... and how it affects your throat. On the basis of the experience of many, many millions of smokers, we believe Camels will suit your "T-Zone" to a "T."



Smoking cessation and interventions do work

The challenge question: What is your system based practice for smoking cessation?

Teamwork training

- MedTeams (Department of Defense)
- 43% of errors in ER = teamwork coordination
- 79% deemed preventable
- Emergency Team Coordination Course (ETCC)
- 67% increase in error averting behavior after ETCC & 58% reduction in observable errors

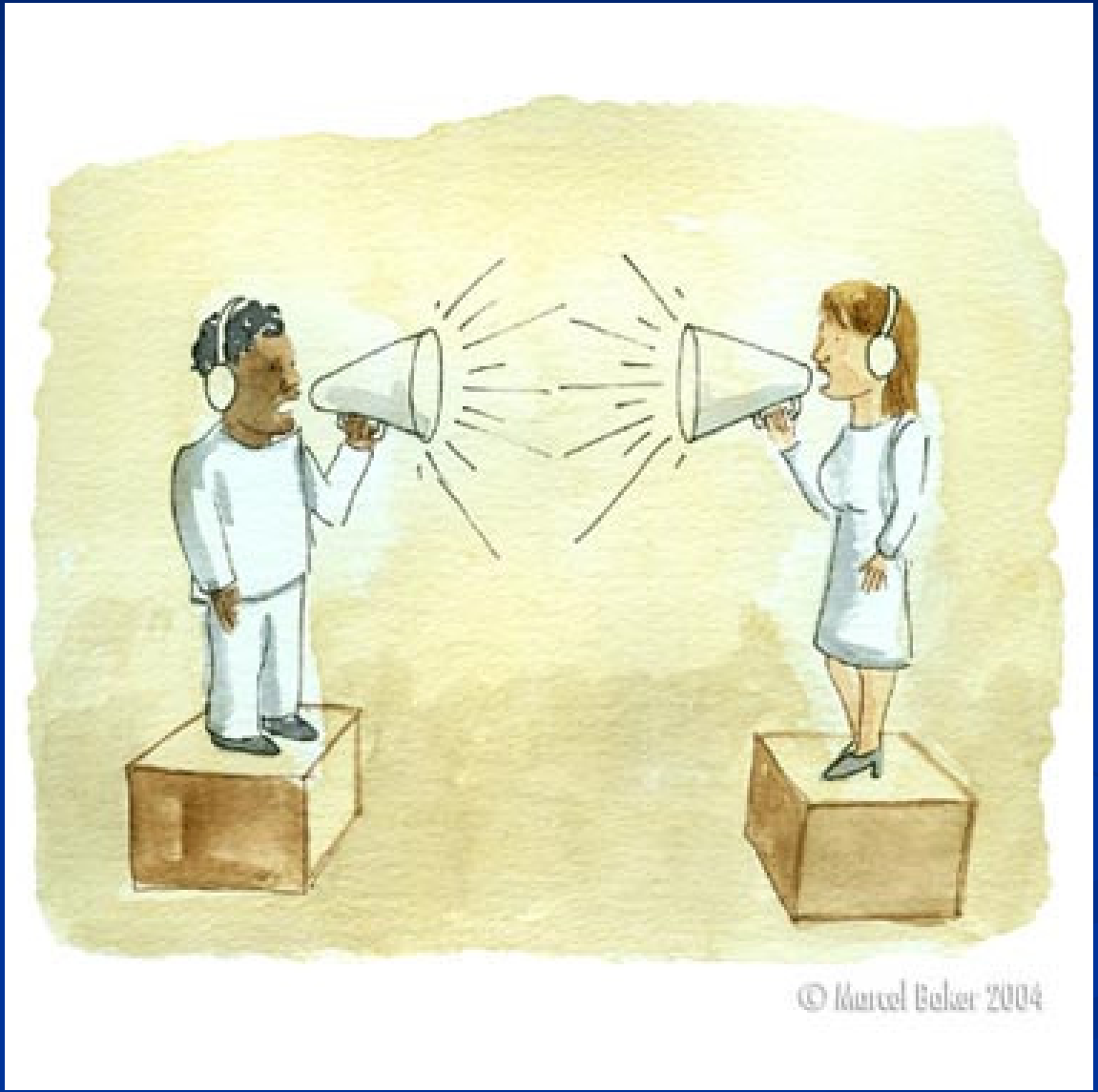
- Risser et al. Ann Emerg Med 1999;34:373.
- Morey et al. Health Serv Res 2002;37:1553.

Creating a culture of safety

- Old paradigm
- Culture of blame
  - Name
  - Blame
  - Shame
- Barriers to disclosure
- Last person in line = cause

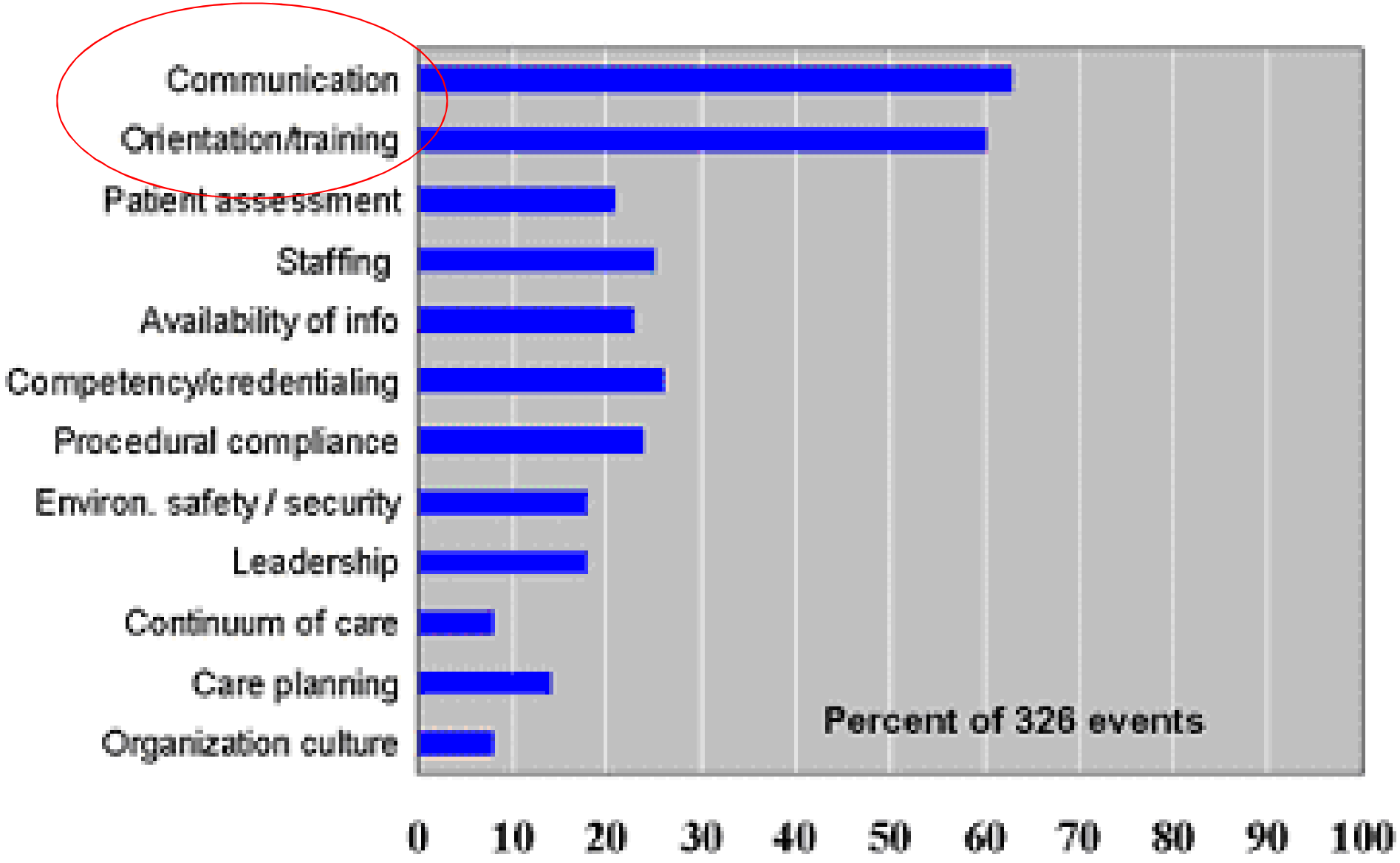
- New paradigm
- Culture of safety
  - No names
  - No blame
  - No shame
- No barriers to disclosure of error
- Root cause analysis
- Systems improvement

Not communicating

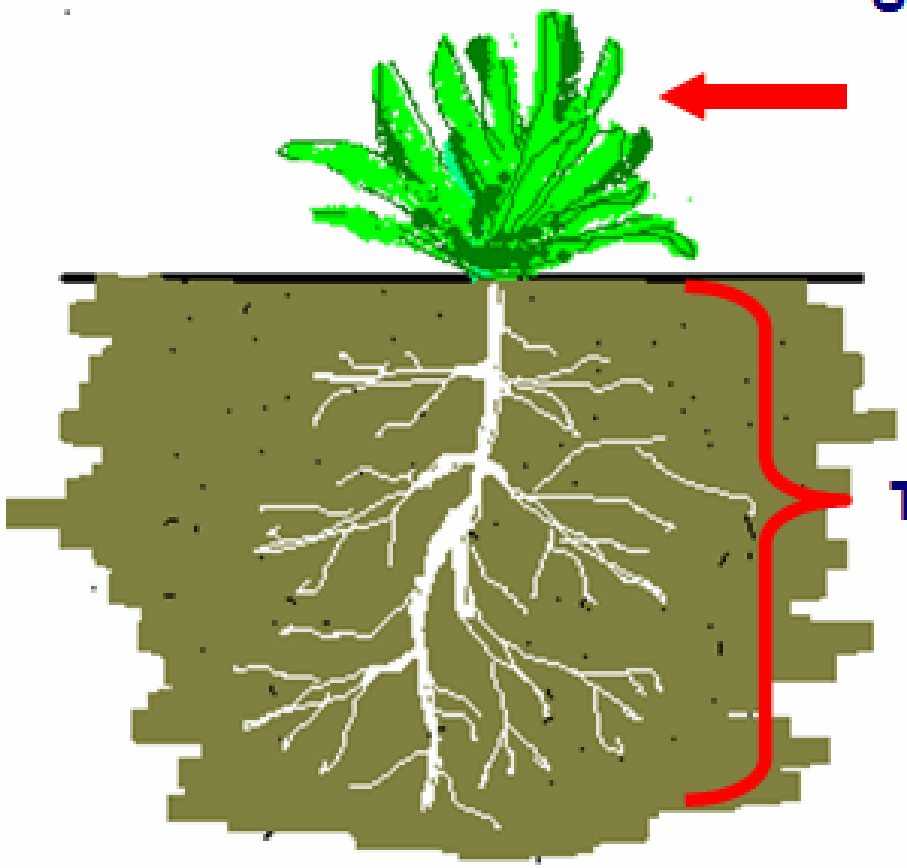


Root Causes of Medication Errors

(1995-2004)



Root Cause Analysis Basics



Symptom of the problem.

"The Weed"

Above the surface
(obvious)

The <u>Underlying Causes</u>

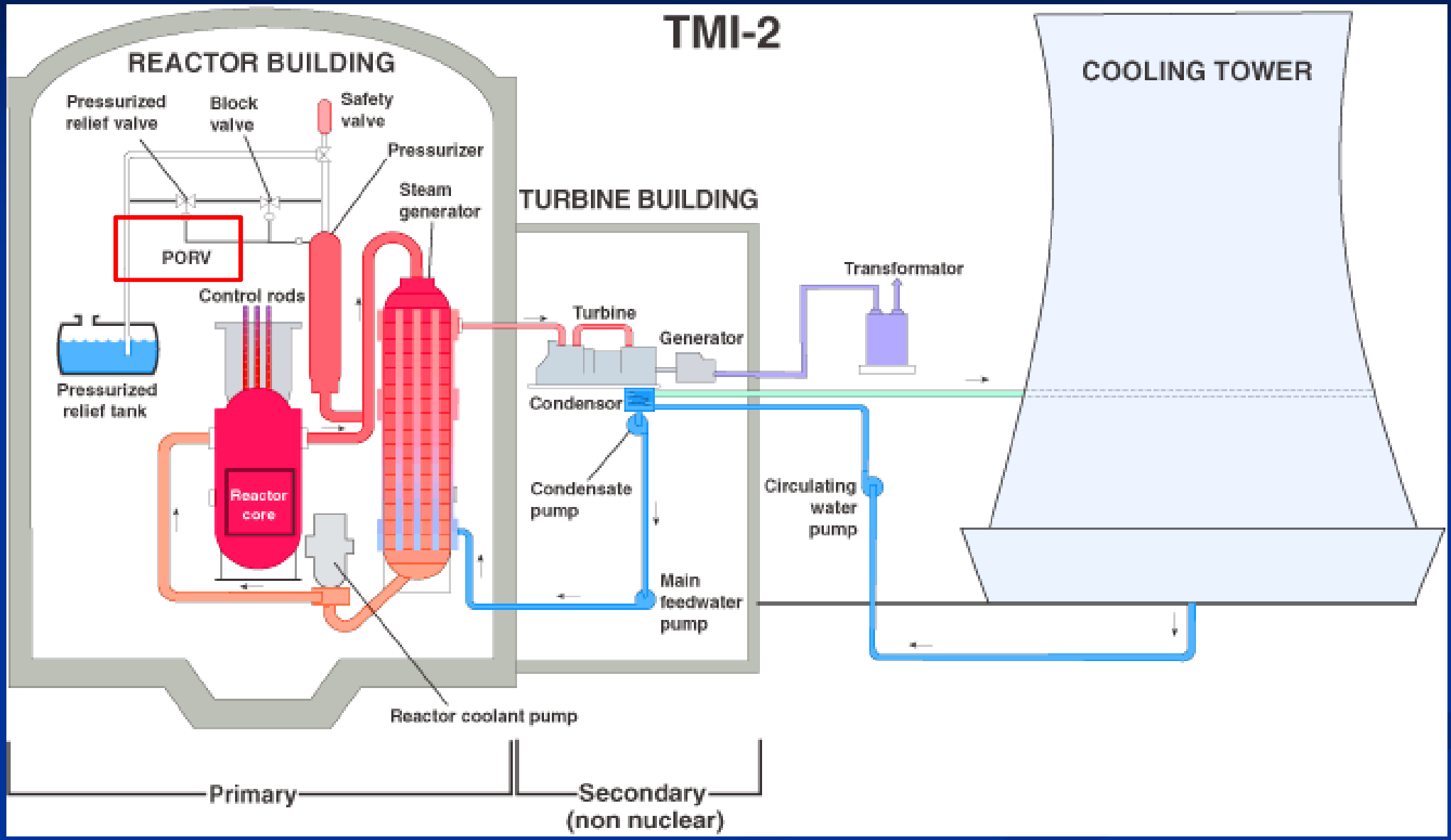
"The Root"

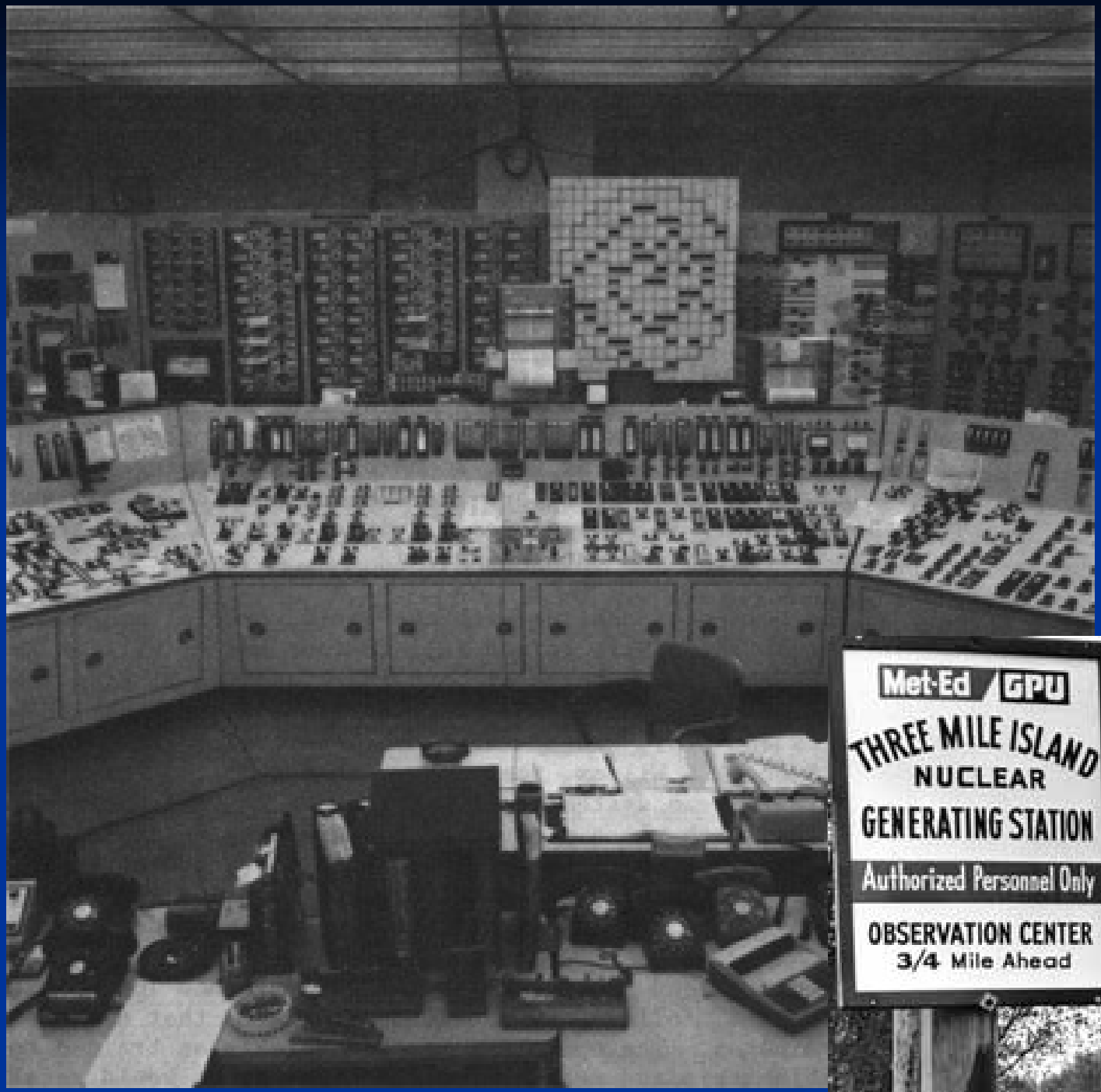
Below the surface

(not obvious)

The word root, in root cause analysis, refers to the underlying causes, not the one cause.

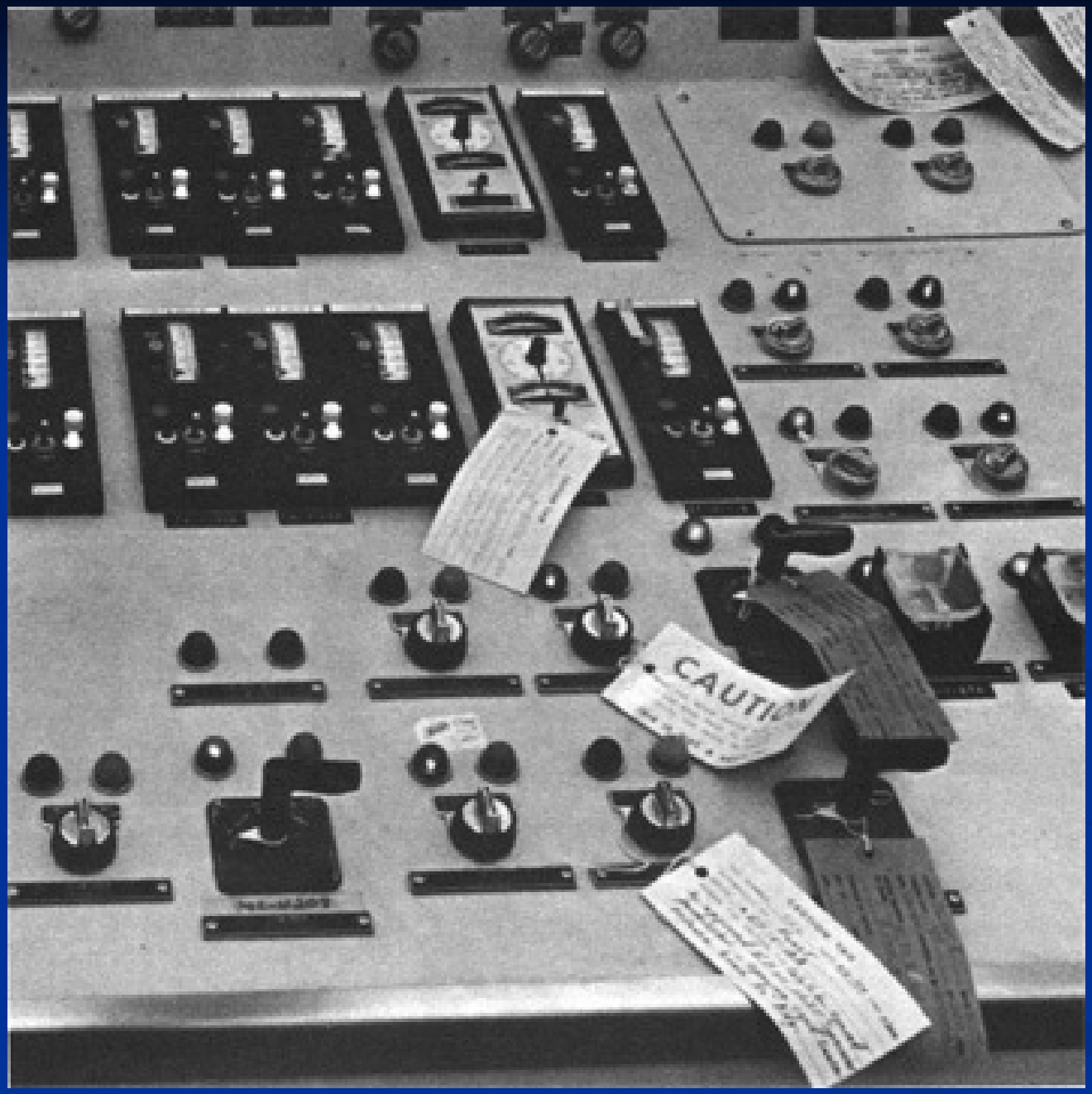
Root cause?


TMI-2
REACTOR BUILDING
Pressurized relief valve
Block valve
Safety valve
Pressurizer
Steam generator
PORV
Control rods
Pressurized relief tank
Reactor core
Reactor coolant pump
TURBINE BUILDING
Turbine
Generator
Transformator
Condensor
Condensate pump
Main feedwater pump
Circulating water pump
COOLING TOWER
Primary
Secondary (non nuclear)



Complexity
TMI
Too much
information

Does TMI remind you of anywhere?



Transitions
Broken dials
Maintenance
Misreading signs

Milestones Focus on transitions

11. Transitions patients effectively within and across health delivery systems. (SBP4)				
Critical deficiencies			Ready for unsupervised practice	Aspirational
Disregards need for communication at time of transition Does not respond to requests of caregivers in other delivery systems	Inconsistently utilizes available resources to coordinate and ensure safe and effective patient care within and across delivery systems Written and verbal care plans during times of transition are incomplete or absent Inefficient transitions of care lead to unnecessary expense or risk to a patient (e.g., duplication of tests, readmission)	Recognizes the importance of communication during times of transition Communication with future caregivers is present but with lapses in pertinent or timely information	Appropriately utilizes available resources to coordinate care and ensures safe and effective patient care within and across delivery systems Proactively communicates with past and future caregivers to ensure continuity of care	Coordinates care within and across health delivery systems to optimize patient safety, increase efficiency, and ensure high quality patient outcomes Anticipates needs of patient, caregivers, and future care providers, and takes appropriate steps to address those needs Role models and teaches effective transitions of care
☐	☐	☐	☐	☐
Comments:				

Annals of Internal Medicine | IDEAS AND OPINIONS

The Internal Medicine Reporting Milestones and the Next Accreditation System

Kelly J. Caverzagie, MD; William F. Iobst, MD; Eva M. Aagaard, MD; Sarah Hood, MS; Davoren A. Chick, MD; Gregory C. Kane, MD; Timothy P. Brigham, PhD; Susan R. Swing, PhD; Lauren B. Meade, MD; Hasan Bazari, MD; Roger W. Bush, MD; Lynne M. Kirk, MD; Michael L. Green, MD; Kevin T. Hinchey, MD; and Cynthia D. Smith, MD

Milestones & PDSA cycles (QA)

Table. **Example of Curricular Milestones for Systems-Based Practice***

Understand unique roles and services provided by local health delivery systems
Manage and coordinate care and care transitions across multiple delivery systems, including ambulatory, subacute, acute, rehabilitation, and skilled nursing
Negotiate patient-centered care among multiple care providers

* Data from reference 4.

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Practical advice
Resident Quality Improvement Project Checklist for compliance

- All residents participate (not just one)
- Scheduled (not ad hoc) & protected time
- Structured not random, meetings & discussion
- Faculty supervision, oversight, mentorship
- Written documentation in portfolio
- Background, Methods, Results, Outcome (PDSA)
- Linkage to downstream improvement in patient safety, quality, or cost reducation

Summary: Systems based practice

- ACGME: SBP Awareness of & responsiveness to larger context & system of health care & Ability to effectively call on system resources to provide care that is optimal
- SBP in real world as teamwork, multidisciplinary care, patient safety
- Describe your own micro- and macrosystem(s)
- Challenge you to use SBP for yourself, your teaching, your patients, and your learners (PDSA cycle, QA project, root cause analysis)

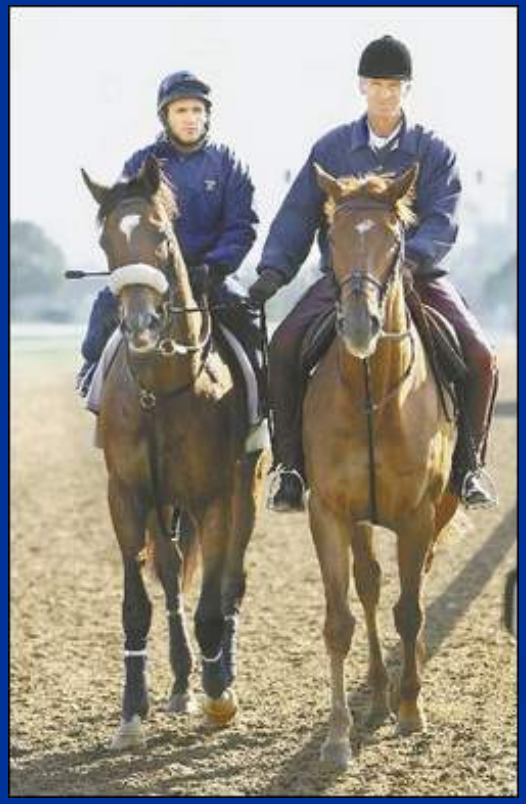
The rest of the story: United 232…why are we doing this?

Mike Matz was on United 232

- He pulled three young children and a baby from the wreckage (ages 14, 12, 9—unaccompanied minors)
- He stayed & played cards with the kids at the Sioux City airport, keeping them calm
- He tracked down children's grandmother to tell her they were safe

Mike Matz is a horse trainer

- 132nd Kentucky Derby
- Barbaro was winner, Mike was the trainer



In the Grandstand…

- Two brothers & their sister were in grandstand at Churchill Downs cheering just a little bit louder (thanks to Captain Haynes & Mike & SBP)

Who will be clapping a little bit louder in your grandstand because of your adoption of SBP improvement?


ONE PERSON
CAN MAKE A
DIFFERENCE,
AND EVERYONE
SHOULD TRY
-JOHN F. KENNEDY-

Thank you for your time & attention