Teaching Patient Safety

2013

Answer Key

Email NCPS GME
PSCurric@va.gov

Thank you for being willing to mentor/guide/teach at the workshop. This has been cited as one of the strengths of the GME workshops. If you hear comments or questions that suggest improvements to the workshop, please talk or write to Vince or Linda.

Thanks!

Please return this book to:

Your name

Your Phone Number or Email

New Patient Safety Listserv for Teachers

There is now a listserv dedicated to discussion of topics related to teaching patient safety to medical students and residents. If you are interested in subscribing to the listserv, address email to: ListServ@www.listserv.va.gov and paste "SUBscribe MDTeachPtSafety-L@www.ListServ.va.gov" in the main body of the email message (without quotes).

Alternatively, you can notify PSCurric@va.gov with a request to add your email address to the list.

To send a message to the group address your email to:
MDTeachPtSafety-L@www.ListServ.va.gov

There are currently >150 physician-teachers from various programs in the US subscribed to this listserv.

We're hoping to keep discussions going, interest other teachers, and pull in resources such as ACGME as needed.

----------To discontinue subscription----------
Anytime that you decide you would rather not participate, send an email message to ListServ@www.listserv.va.gov with this message, "SIGNOFF MDTEACHPATSAFETY-L". Alternatively, you can notify PSCurric@va.gov with any request to modify or discontinue your subscription.

Wednesday, January 23, 2013

Time	Topic
800 - 830	Introductions
830 - 930	Patient Safety Basics
930 - 945	Break
945 - 1115	Human Factors Engineering
1115 - 1245	Lunch break
1245 - 145	Teamwork & Communication
145 - 230	Dramatic Simulation: Doc U Drama
230 - 245	Break
245 - 500	Establishing Trust; Just Culture; Leadership; Second Victim; Encouraging reporting & RCA participation.

Thursday, January 24, 2013

800 - 830	Reprise of yesterday, and what to expect today
830 - 930	Safe handoffs
930 - 945	Break
945 - 1200	Breakout Sessions: Simulation; Mistake-Proofing
1200 - 130	Lunch break
130 - 230	Causation Theory & Diagramming
230 - 330	Patient Safety M&M
330 - 345	Break
345 - 500	Assessing learners & programs; safely reporting and RCA participation; teaching plan development; integrating into existing curriculum

Patient Safety Curriculum Workshop

Residency (GME) Patient Safety Curriculum: Developing Faculty Leaders and Pioneers

Purpose: Develop faculty leadership at all VA facilities where medical residents train in order to pursue the objectives of the VA patient safety curriculum.

Outcome Objectives: At the conclusion participants will be able to:

1. Demonstrate the skill of engaging residents to learn about patient safety so that residents take an active role in safety activities, and can, in turn, teach other residents and students;
2. Identify communication failures as a direct contributor to adverse outcomes; and evaluate poor – good teamwork and communication skills using validated observational tools.
3. Identify lessons learned and best methods from several VA's and universities where patient safety curriculum has been pilot tested with residents and students;
4. Identify key laws, guidelines, and standards that might serve as leverage to initiate patient safety curriculum (e.g., ACGME core competencies: ICS, PBLI, SBP);
5. Apply opportunities for patient safety quick start and integrating into existing curriculum.
6. Formulate knowledge of key patient safety principles and tools, such as root cause analysis, human factors engineering, and high reliability organizations

Personal learning objectives:

Background and Overview

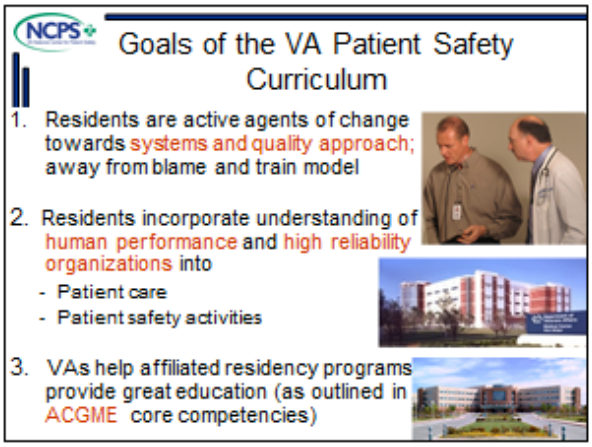
1) What do you think has worked the best for teaching patient safety?

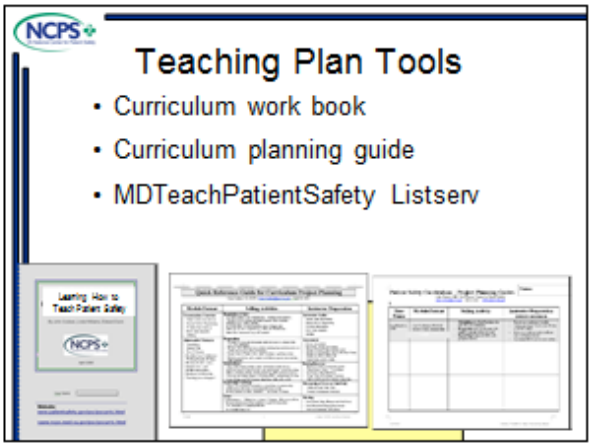
2) Why did it work?

3) Did you have to convince anyone, and how did you do it?

Incorporate your ideas into your planning document

4) What patient safety teaching session or approach has failed (if any) and why?





2 Patient Safety – Introduction

Patient Safety
Introduction

James H. Quillen VA Medical Center
East Tennessee State University Quillen College of Medicine

Douglas E. Paull, MD, FACS, FCCP
Linda Williams, RN, MSI
VA National Center for Patient Safety
PSCurric@med.va.gov www.patientsafety.gov

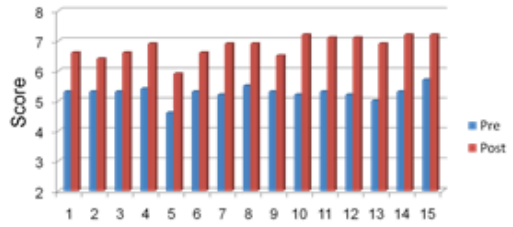
Patient Safety Curriculum for Residents
Why It Is Important?

- Residents perform **patient care services**.
- Residents can enhance "physician" contribution to **adverse event** and "near miss" **reporting** that can help with organizational learning.
- Residents serve on Root Cause Analysis (RCA) teams.
- Patient safety education including *Systems-Based Practice* (SBP), *Practice-Based Learning* (PBL), and *Interpersonal and Communication Skills* (ICS) required by the ACGME.
  - ACGME Milestone Project
- Residents represent the **future** of healthcare.
  - Institute of Medicine –Crossing the Quality Chasm

Patient Safety Curriculum for Residents
Why It Is Important?
Patient Care Services

• Valuable clinical services – On call duties – Timely prescriptions – Patient admissions	→	Patient Safety Vulnerability – Fatigue – Medication errors – Hand offs
• Employees with a contract.	→	VA Safety Policies
• Perform procedures outside the presence of an Attending.	→	"Time Outs".
• Medical malpractice liability.	→	Held to same "standard of care."

Feedback
Clinical Teamwork Scale



Clinical Teamwork Scale Item #
(See Methods for Description)

$P < 0.05$, unpaired, two-tailed, Student t test, pre vs post, for all 15 pre vs. post comparisons, N = 100 observations

Patient Safety Overview
Objectives

- Define patient safety and illustrate its scope.
- Summarize the epidemiology of adverse events in healthcare.
- Construct a foundation for understanding the systems approach to patient safety.
- Explain the role of close calls.
- Contrast current healthcare to high reliability organizations.
- Design systems to prevent, eliminate, and/or reduce adverse events and hazards.

Handout
Homework

Kohn, L.T., Corrigan, J.M. & Donaldson, M.S. (2000). *To Err Is Human: Building a Safer Health System.* Washington DC: National Academy Press

Exercise
Part I

Form a group with several of your neighbors. Take 5-10 minutes and describe a storyboard as to what happened to this young patient. Describe at least one medical error that occurred in any one of the scenes shown above. Write your storyboard and medical error notes in the box below.

No special mentoring/guiding here except to make the point that each storyboard will be different – each is based upon personal experience.

What is patient safety?

- Patient safety is the identification and control of hazards/vulnerabilities that could cause harm to patients.
- Patient safety is the prevention of harm or injury to patients.

VHA National Center for Patient Safety

Patient Safety Competencies

- Contribute to a culture of patient safety.
- Work in teams for patient safety.
- Communicate effectively for patient safety.
- Manage safety risks.
- Optimize human and environmental factors.
- Recognize, respond to, and disclose adverse events.

Canadian Patient Safety Institute

Hmmm . . .

- ***What do you call the following?***
  - Stellate ganglion block on the wrong side.
  - Wrong dose of anti-depressant medication administered
  - Diagnosis is "too late" to save patient with meningitis.
  - You almost go into the wrong room to do a thoracentesis.

- ***Hold judgment, but consider . . .***
  - Incidence and prevalence vary widely in literature.
  - Our focus is reducing harm to the patient.

Adverse Event

"An injury related to medical management, in contrast to complications of disease. Medical management includes all aspects of care, including diagnosis and treatment, failure to diagnose or treat, and the systems and equipment used to deliver care. Adverse events may be preventable (error) or non-preventable"

WHO (2005). WHO draft guidelines for adverse event reporting and learning systems. Retrieved from http://www.who.int/patientsafety/events/05/Reporting_Guidelines.pdf

Error

- **Failure of a planned action** to be completed as intended (execution) or the **use of a wrong plan** to achieve an aim (planning).
- **Active errors** – frontline providers at the "sharp" end of healthcare.
- **Latent errors** – poorly designed equipment or processes, inadequately structured organizations, "blunt" end.
- **Normalization of deviance**.

Kohn, L.T. et al. (2000). *To err is human. Building a safer healthcare system.* Institute of Medicine. Washington, DC: National Academy Press.

Patient Safety Epidemiology

- How many adverse events?
- How many close calls?
- Inpatient vs. outpatient?
- Very dependent on definitions and methodology

Patient Safety Quick Start

NOTE: You can use this exercise to introduce patient safety topics to residents and medical students:

What is your definition of *error*?

Error:

See next page for VA NCPS definition.

The VA definition of Adverse Events may be helpful to consider:
"Adverse events are untoward incidents, therapeutic misadventures, iatrogenic injuries or other adverse occurrences directly associated with care or services provided within the jurisdiction of a medical center, outpatient clinic or other facility. Adverse events may result from acts of commission or omission (e.g., administration of the wrong medication, failure to make a timely diagnosis or institute the appropriate therapeutic intervention, adverse reactions or negative outcomes of treatment, etc.).

Does your facility/hospital/clinic have a *no-fault* reporting system? Describe how it works. If it is *not* no-fault what type do you have? How does it work?

Type of Reporting System

How Reporting System Works – *or is supposed to work*:

We will return to this page later.

….for later discussion.

Patient Safety Introduction

From the data about adverse events in healthcare….

What data do you find most surprising?

Surprising!

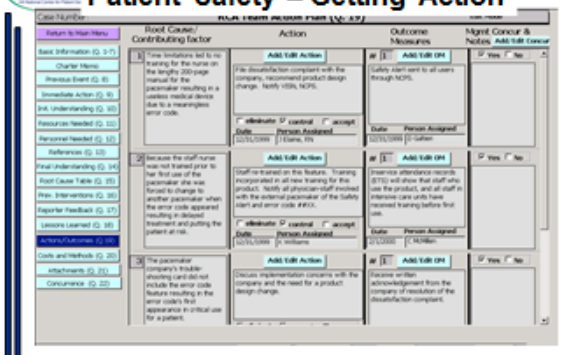
What would you consider useful in introducing patient safety topics to residents and medical students?

Potentially useful

?

Useful in teaching….

Patient Safety – Getting Action



Baglan, J.P. et al. (2002). The Veterans Affairs root cause analysis system in action. *Jt Comm J Qual Improve, 28*, 531-545.

Action Assessment

- **Characteristics of Actions**
  - Temporary vs. Permanent
  - Procedural vs. Physical
- **Action Evaluation**
  - Process
  - Outcome

De Vries EN et al. Implementation and effectiveness of a time-out procedure. International Forum on Quality and Safety in Healthcare, Berlin, March 19, 2009.

High-Reliability Organizations (HROs)

- "Mindfulness"
  - Safety is everyone's business
  - Constant concern for failure
  - Deferring to expertise not rank
  - Flattening of the hierarchy

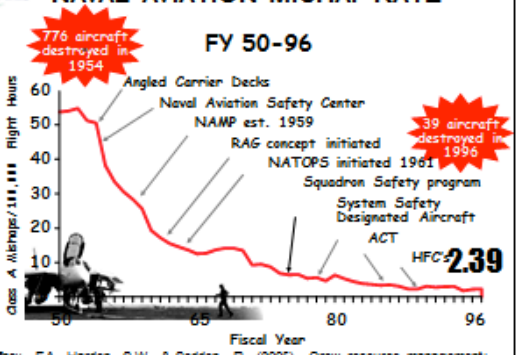
- Patient Safety Initiatives
  - Just and fair culture
  - Leadership walk rounds
  - Medical team training

Frankel, A.S., Leonard, M.W., & Denham, C.R. (2006). Fair and just culture, team behavior, and leadership engagement: The tools to achieve high reliability. *Health Services Research, 41*, 1690-1709.

TWA Flight # 514, Dec. 1, 1974

- Communication
- Reporting
- "Near misses"

NAVAL AVIATION MISHAP RATE



Gaffney, F.A., Harden, S.W., & Seddon, R. (2005). Crew resource management: The flight plan for lasting change in patient safety. Marblehead, MA: HCPro, Inc.

Patient Safety Challenges

Obstacle	More Productive Approach
• Errors viewed as failings which deserve blame – Shame, blame and re-train approach – Corrective actions focus on individual (s)	• Human error – People do not come to work to hurt someone or make a mistake
• No blood, no foul – Ignore "near misses", "close calls" – Is experience the best teacher?	• Systems issues – Much greater than individual fault • Common vulnerabilities – Fixed for everyone

Exercise
Part II

Re-assemble into your previous group. With the additional information regarding patient safety and the systems-approach to human error, discuss one or more contributing factors or root causes to the medical errors you described in Part I. Write the medical error(s) and the contributing factors in the box below.

Each storyboard will be different – based on the writer's experiences.

3 Human Factors Engineering

HFE and patient safety

- Human factors engineering is to patient safety as microbiology is to infection control
- HFE concepts = physiology and anatomy
- HFE tools = diagnostic testing

- Understand how human factors engineering (HFE) is a useful problem-solving approach for patient safety.
- Introduce how demonstration of HFE principles helps
  - Flip learner's brains around 180 degrees.
  - At the same time teach safety content.
- Demonstrate how HFE helps improve analysis and development of lasting remedies (diagnosis and treatment of system ills).

What is Human Factors Engineering?

- Designing systems devices, software, and tools to fit human capabilities and limitations
- Using established methods to gather unique information about:
  - Hidden **needs** of the end-user
  - **Unexpected** interactions between the system and the end-user
- Taking advantage of knowledge bases about human-system interaction

Ex: reciprocating syringe

Darrell suspected someone had once again slipped him a spoon with the concave side reversed.

Human Factors Engineering:

The study of
human capabilities & limitations
and
the application of that knowledge
to the **design of systems**

Goal: to reduce errors and inefficiencies

➔ optimize human performance

Human Factors Model

Psychomotor
- Hand
- Feet

Senses
- Vision
- Hearing

INTERFACE

Input Devices
- Buttons
- Foot pedal

Output
- CRT
- Sound

HFE and Device Literature Explosion (Most of these since 2003)

- Observation and/or Human Factors Conceptual Analysis
  - Cardiac surgery
  - General surgery
  - Interventional radiology
  - Chest Tube insertion (focus on universal precautions)
  - Central Venous Catheter (Central Line) insertion
- Usability Testing
  - Infusion (IV) Pumps
  - Automated Defibrillators (AEDs)
  - Dry powder inhalers
  - Home glucometers
  - Epinephrine auto-injectors
  - Medication label layout

HFE and Device Literature Explosion (cont.)

- Heuristic (Expert) Evaluation
  - IV Pumps
  - Cardiovascular monitoring devices
  - Home care information technology
  - CHF standard order sets
  - Telemedicine systems
- Ergonomics (work area - physical analysis)
  - Neonatal Intensive Care
  - Hand hygiene tools (sinks, dispensers)

Good HFE Design Distilled

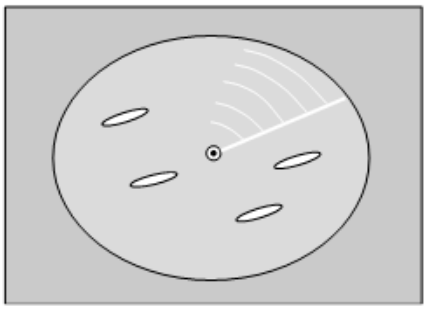
- Make it easy to do the right thing
- Make it difficult or impossible to do what may cause inadvertent harm to a patient
- Always reveal status – make it transparent, that is, make it really easy to know precisely what is happpening.

Good HFE Design Distilled

- Support the things that humans do well
- Make up for the things that humans don't do particularly well

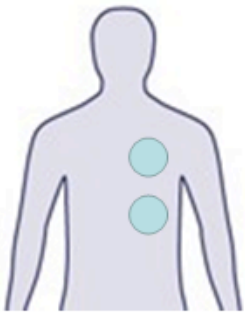
Ex: lighted tweezers

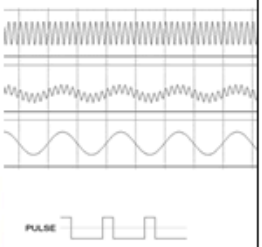
Case Study: Detect and classify underwater



Arrigan JM, Shao DM. Proceedings of the 13th conference on simulation. Vol 1. 1981

Tactile Monitoring Device





-Tom Ferris, PhD in HFE

Safety in Healthcare

Dispelling Magic and Illusion

With thanks to John Gosbee, MD, MS and Magicians, Illusionists, and Neuroscientists

Magic & Illusion

- NCPS
  - Williams LC (2005). Changing systems the hands-on way: The VA National Center for Patient Safety's museum. *Maryland Medicine*. 6(4):16-18.
  - Williams LC, Baglan JP (2010). Teaching clinicians to demand safe healthcare delivery systems. Duffy Vincent G. (Ed), *Advances In Human Factors and Ergonomics In Healthcare*. CRC Press, Taylor & Francis Group. June, 2010. p19-25.
- Magicians, Illusionists, and Neuroscientists
  - Macknik SL, King M, Randi J, Robbins A, Teller, Thompson J, Martinez-Conde S (2008). Attention and awareness in stage magic: Turning tricks into research. *Nature Reviews Neuroscience*. Nov 9:871-879.

Magic and Illusion

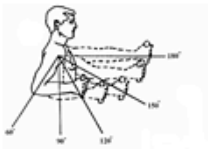
- Williams LC (2010). Using magic to throw light on tricky healthcare systems. *Human Factors & Ergonomics in Manufacturing and Industry*.
- "The illusions that occur in healthcare are inadvertent, certainly unintended, and unfortunately accepted as an aspect of practice with which clinicians have to cope."
- "...and yet the clinician is seen as responsible when the illusion results in unexpected harm to a patient."

Who is the Human in Human Factors Engineering?

Darrell suspected that someone had once again slipped him a spoon with the concave side reversed.

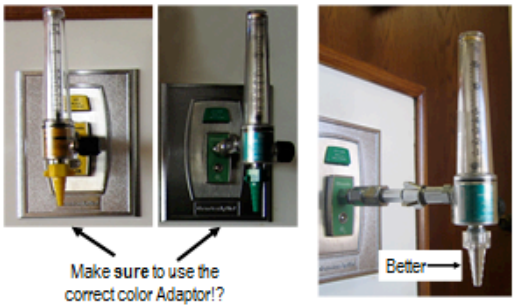
- Optimal v. normal
- Stressed
- What is your story?

Testing you-the-human



For the next set of examples, you are your own test subject....

Weaker vs. Stronger Remedy



Expert use, meaning, and the alphabet

Itiel Dror, PhD - cognitive neuroscientist (Harvard); currently with an academic appointment at University College London

Itiel Dror, PhD - cognitive neuroscientist (Harvard); currently with an academic appointment at University College London

Can you think of other uses of color use that put patients at risk because we humans are vulnerable to the Stroop Effect?

We rely on color coding more often than is safe:

- Color coded wrist-bands
- Compressed gas
- Dedicated use for insulin administration (orange)
- Needle gauge

The use of color is valuable because we as humans are sensitive to color differences – but the information should never be delivered by color alone.
The use of color is risky if/when it reinforces as correct an incorrect decision or choic.

J. Ridley Stroop (1935) Studies of Interference in Serial Verbal Reactions. *Journal of Experimental Psychology*, vol 18, 643-662

Add to the data at http://faculty.washington.edu/chudler/words.html#seffect

Are there instances you've observed when experienced residents use communication shortcuts with medical students or less experienced residents – making a difficult task seem easier than it really is? (As in the "name the months of the year" challenge.)

"Hook the oxygen up to the green adapter."
"Telemetry is off" taken to mean that it has been discontinued.

Magic & Illusion

- Magicians, Illusionists, and Neuroscientists
  - Macknik SL, King M, Randi J, Robbins A, Teller, Thompson J, Martinez-Conde S (2008). Attention and awareness in stage magic: Turning tricks into research. *Nature Reviews Neuroscience*. Nov 9:871-879.

Magic and Illusion

"The illusions that occur in healthcare are inadvertent, certainly unintended, and unfortunately accepted as an aspect of practice with which clinicians have to cope."

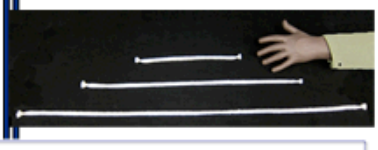
"…and yet the clinician is seen as responsible when the illusion results in unexpected harm to a patient."

- Williams, 2012.

Add water to…dry seal, dry suction, express, oasis, ocean???

Wrong choice = worsening pneumothorax.

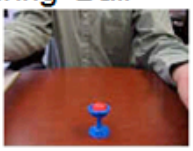
Different … but so similar



Illusion: They are Different but Seem Alike

Generic	Proprietary	Indication	Company
Fosphenytoin	Cerebyx	Anticonvulsant	A
Celecoxib	Celebrex	Non-Steroidal Anti-Inflammatory	B & X
Citalopram Hydrobromide	Celexa	Antidepressant	C

The Chalice and the Disappearing Ball



A radiology tech repeated pushes a button in the face of uncertainty. Without tactile or other perceptible feedback as to its state or the state of the machine, the button invites repeated efforts.

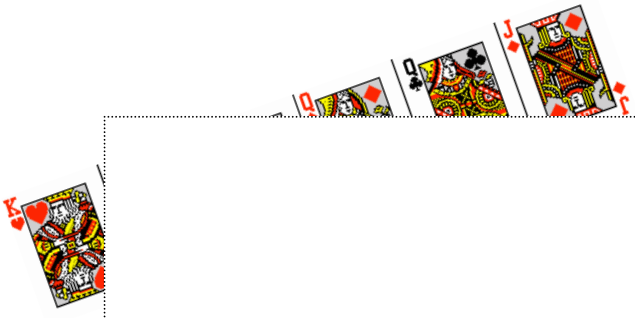
The machine delivered successive doses of damaging radiation.

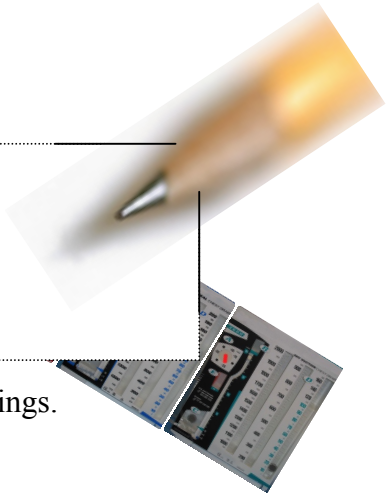
Steven Casey. *Set Phasers on Stun*. 1993.

Laparoscopic Visual Illusion

- "The videotapes of operations literally show the operators deliberately, intentionally cutting the common bile duct, believing that they were cutting the cystic duct. The surgeons believe what they see. But the appearance…on the screen is deceiving…. The clarity at the moment of injury was a delusion."
  - Cook, Richard (2003). Seeing is believing. *Annals of Surgery*. 237:4:472-473

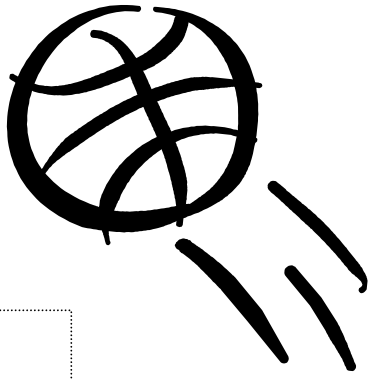
Can you think of other instances of illusion or trickiness?



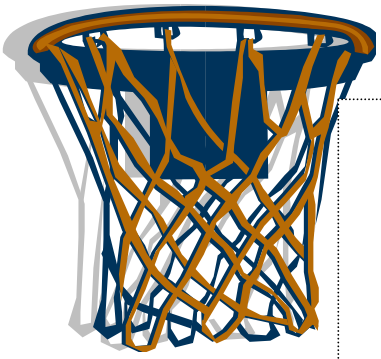


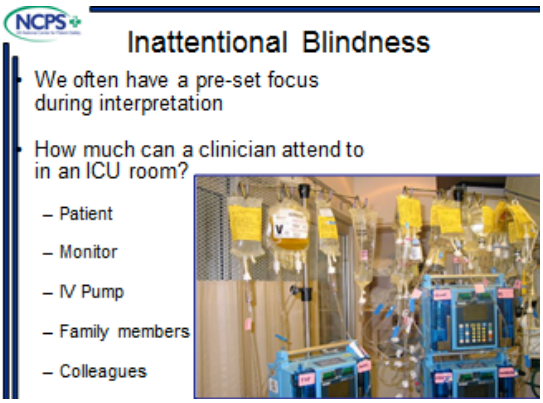
Remember – the best state is complete awareness of the true status of things.

Number of **passes** made between basketball players wearing **white T-shirts** = _____.



What patient safety lessons come to mind after seeing the basketball *count-the-passes* exercise?



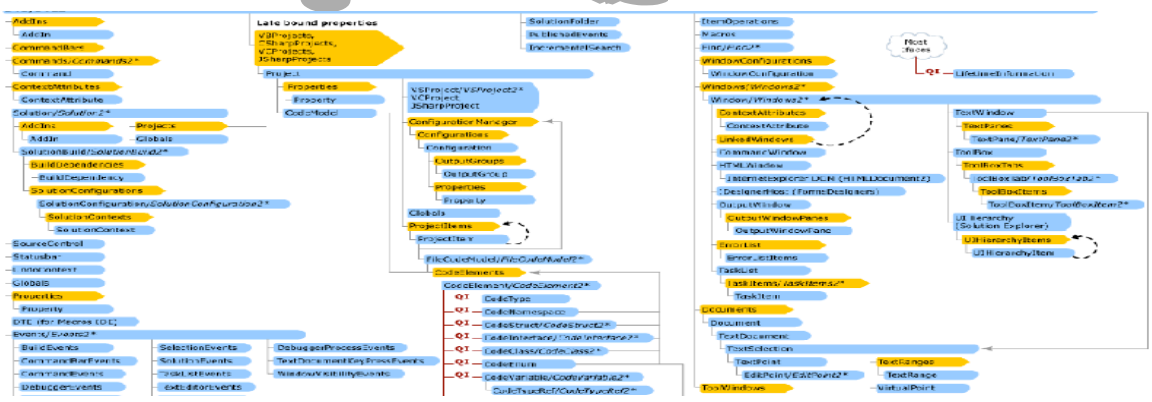


Why is automation considered an ***intermediate*** rather than ***strong*** level patient safety intervention? Consider the potential adverse outcomes when automation surprise and inattentional blindness coincide.

← Hint

Intermediate because it may introduce other unexpected complications. Consider what would be required for it to become ***stronger***. Prior to CPOE (Computerized Physician Order Entry), KCl (potassium chloride) orders passed through multiple humans and were often corrected in the process. Automation allowed the order to pass from physician to pharmacy and then on to the patient without as many human reviewers. Fatalities resulted.

The illustration suggests that the actions of the automaton are determined by its programming – programming done by humans who may not have been able to anticipate every interaction with the user and the environment.



Core Concepts of HFE

- Learned intuition
  - Assumptions & Metaphors
  - We can never recall not having known it...and, we cannot imagine someone else does not know it
- Normalization of Complexity
  - Encouraged, if not rewarded

The Normalization of Complexity

- Healthcare workers compensate for complex, unclear workplaces and devices
  - Unclear or absent information and cues
  - Mastery of the complex becomes a normal strategy, without regard to reasonableness or necessity of complexity

Usability Test Part I

- Groups of 3-4
- One Test Director
- 1-2 observers/scribes
- One person testing the device

"This is confusing."
"Can't find it...."
"D@^#%!"
"I give up."

Only one voice heard at a time: Director *or* Tester

Director: "It is a test of the *device*, not you."

Director: "Please *speak* your thoughts."

Usability Testing:
There are 3 scripts that follow this page: Match the script to the device that your group is given. Read the scenario (either the person testing the device or the test director reads the scenario). The person testing the device will attempt to accomplish each of the tasks. Only one voice should be heard at any time: either the person testing the device who is *thinking out loud* or the test director reminding that person to *think out loud*. The rest are observers/scribes.

After the usability testing is complete, the whole group will identify problematic design issues. Involve everyone in the group in re-design to address the issues you've identified. (There is note page in this book following the usability testing scripts.)

Structured Usability Testing Exercise – Juice Pouch

Your insulin-dependent diabetic great uncle is visiting. The meal is ordered, but you aren't sure how long it will be until it arrives at your table. He is not as alert as usual. You assist him with a finger stick and get a glucose reading of 50.

Another dinner guest carries juice pouches for her son. You promise the whining child that you will replace the juice pouch later.

Instructions for ***user - tester***:

Based on the above scenario, please attempt the following tasks. (*This is a test of the product – not a test of your skill.)*

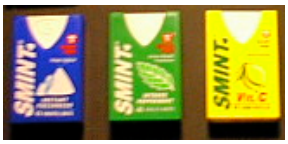
Task 1 - Remove the straw from its wrapping;

Task 2 - Insert the straw into pouch so that the juice can be drawn from the pouch.

Task 3 – Find nutritional information, specifically – information about the sugar content for treating your uncle's hypoglycemia.

Task 4 – Check the expiration date.

Structured Usability Testing Exercise –
Smints or Pez



You are entertaining visitors from the ACGME at a nice Italian restaurant. After lunch, you want to offer a mint to alter your breath in a positive way. Being a generous host, you also offer a mint to each of your guests.

Instructions for ***user - tester***:

Based on the above scenario, please attempt the following tasks. (*This is a test of the product – not a test of your skill.)*

Task 1 - Open the package.

Task 2 - Find the nutritional information; read aloud the serving size and amount and type of sweetener.

Task 3 – Check expiration date.

Task 4 – Dispense a candy to each person at the table without having handled the candy.

Structured Usability Testing Exercise – Moist Wipes

You are on a lake in a boat with your niece and have just finished a day of bluegill fishing.

You are putting away tackle, stowing the remaining worms, and beginning to think about getting out the sandwiches.

Instructions for **user tester**:

Based on the above scenario, please attempt the following tasks. (*This is a test of the product – not a test of your skill.)*

Task 1 - Open the package.

Task 2 - Remove one wipe.

Task 3 – Reseal (close) package.

Task 4 – Look for Information on the outside of package about:

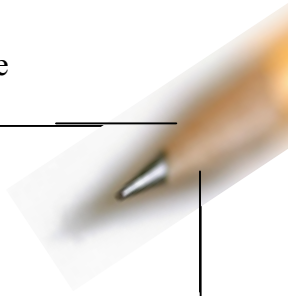
- **disposal**
- **alcohol content.**

Human Factors Engineering – Usability Testing

Findings from usability exercise

HFE Design Issues:	Re-design Ideas:

Do you recall working with medical devices with similar design issues? What is the similarity?



Human Factors Engineering Checklist

PSCurric@va.gov VA National Center for Patient Safety www.patientsafety.gov

1) General Human Factors Impressions

- What is the device "saying" to you?
- Where is the front? The top? How do you know?
- Is it obvious what the device is at a glance?

2) Feedback and Visibility of System Status

- When you try to do things, how do you know you are successful?
- Can you tell what you need to do next?
- Do you know what the device is doing at any given moment?
- If you are distracted, can you tell immediately where you've left off?
- If you handed the device to someone, does it take them long to figure out where you've left off and what the device is doing?

3) Consistent Model or Metaphor

- Does this device look like another device or tool you have used before (e.g., ATM machines, calculators); and is that fact helpful?
- Does it act and work the way similar "models" do?

4) Functionality of Controls

- Is it obvious what each button or switch will do?
- Do they work the same in different circumstances?
- Do you know what you have done when you press the button?
- Do some buttons/switches look too similar to others?
- Are they grouped/located in a logical manner?
- Are some controls more critical than others? If so, how are they differentiated from other controls?

5) Displayed Messages

- Is the message display big enough?
- Can you understand the displayed messages?
- Is it ambiguous?
- Is the language simple and natural?
- Is the information useful? Do you need more information?
- Is it displayed long enough for it to be useful?

6) Recognition and Recovery from Errors

- Are the error messages understandable?
- Can you tell if you've made an error?
- Can you tell what the error is?
- Do you know how to fix it?
- Are there any helpful cues (e.g., messages) to help you figure it out?

7) Minimizing User Memory Load

- Is it obvious how you operate the device?
- Are there any non-intuitive "features" that you've had to figure out?
- Do you have to ask someone or refer to a manual to figure out any aspect of the device?
- Does the device provide cues to help you understand how to use it?

8) Readable and understandable labels and warnings

- Are you able to easily see all the important warnings and labels?
- Are they legible? Too small or big? Located in a spot you might miss until it's too late?
- Is the language on the label/warning understandable?
- Do you need technical knowledge in order to understand it?

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Usability Testing Part II

- Design a test
- Trade places with someone in another group to do a usability test
- How easy to get the concept of designing usability testing?
- How is this different from heuristic evaluation?
- How different from a like-ability test.

Human Factors Engineering – Usability Testing

FAC DEV Questions

Where could you fit some or all of this into your program?

What do you think you would have to do to prepare to use this material?
Were you successful in designing a usability test?

What is your experience with healthcare information technology?

What do you tell residents about the various computing systems that they will encounter in their rotations?

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Why?

- Primary pathologist delayed, then forgot to read slides since he thought secondary pathologist would do so
- Secondary pathologist did not take the reading as seriously, since his/her reading was not going to be the reading of record.

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Patient Safety Resources

- AHRQ – Web M&M
- NPSF – www.NPSF.org
- ISMP – www.ISMP.org
- HFES – www.HFES.org
- SSIH – http://ssih.org

Agency for Healthcare Research & Quality
National Patient Safety Foundation
Institute for Safe Medication Practice
Human Factors & Ergonomics Society – Healthcare Task Group
Society for Simulation in Healthcare

NCPS

FDA's MAUDE Database

Exercise
Part III

For the scenes in the story-board above, identify structural issues in the environment, in the design of devices or architecture. Identify situations where healthcare providers were working without a clear view of the true status of things. Are there places where the two combine? (Tricky or faulty design contributes to a murky picture of status.)

Faculty Development Questions

Was there a lesson that you learned in this session? Is it something you'd use in teaching residents?

Most important point:

Other lessons learned:

What elements of human factors engineering could you teach next week?

4 Teamwork and communication

Patient Safety Workshop
Teamwork and Communication

Douglas E. Paull, MD, FACS, FCCP
VA National Center for Patient Safety
PSCurric@med.va.gov www.patientsafety.gov

Communication

http://www.youtube.com/watch?feature=player_detailpage&v=3rTsvb2ef5k

www.youtube.com/watch?feature=player_detailpage&v=3rTsvb2ef5k

Learning Objectives

- Recognize communication failure as a leading cause of adverse events in healthcare.
- Summarize the data supporting medical team training as a solution to this patient safety vulnerability.
- Demonstrate *Crew Resource Management* communication techniques and tools.
- Contrast "good" and "poor" teamwork and communication skills utilizing validated observational tools.

Handout
Homework

Musson, D.M. & Helmreich, R.L. (2004). Team training and resource management in health care: Current issues and future directions. *Harvard Health Policy Review, 5*, 25-35.

Improving the 21st Century Health Care System

- Safe
- Effective
- Patient-centered
- Timely
- Efficient
- Equitable

Institute of Medicine, 2001

Teamwork and Communication

Most Frequently Identified Root Causes of Sentinel Events Reviewed by The Joint Commission by Year

The majority of events have multiple root causes

2008 (N=927)		2009 (N=936)		January-Third Quarter 2010 (N=664)	
Assessment	528	Assessment	580	Assessment	325
Care Planning	93	Care Planning	131	Care Planning	80
Communication	584	Communication	590	Communication	412
Continuum of Care	111	Continuum of Care	94	Continuum of Care	60
Human Factors	519	Human Factors	599	Human Factors	385
Information Management	241	Information Management	243	Information Management	139
Leadership	584	Leadership	636	Leadership	432
Medication Use	93	Medication Use	84	Operative Care	86
Operative Care	130	Operative Care	131	No Root Cause	60
Physical Environment	213	Physical Environment	234	Physical Environment	186

http://www.jointcommission.org/assets/1/18/SE_RootCauses_2004_3Q2010.pdf

www.jointcommission.org/assets/1/18/SE_RootCauses_2004_3Q2010.pdf

Why do a Briefing?

- Establish a platform for common understanding
  - Gives people permission to be frank & honest
  - Gets everyone on the same page
- Provides a structure for collaborative planning
- Creates a **shared mental model**

Pre-Procedure Briefing

- **Entire Team**
  - Physician, Dentist
  - Nurse
  - Resident, PA, others
  - Patient
- Guided by **checklist**
- Bedside prior to procedure
- Does not replace usual planning

VETERANS HEALTH ADMINISTRATION

Pre-Procedure Checklist

✓ Read and Verify Checklist, Local Facilities Decide When Checklist Completed.

- ☐ **Patient Name**[1-4]
- ☐ **Social Security #, Birthdate, or Other VA-Approved Identifier**[1]
- ☐ **Names & Roles of Team Members**[2]
- ☐ **Procedure**[1-4]
- ☐ **Procedure Site**[1-4]
  - ☐ Marked or on Wristband
- ☐ **Laterality/Side**[1-4]
- ☐ **Known Allergy**[2]
  - ☐ No
  - ☐ Yes
- ☐ **Sedation**[2]
  - ☐ Difficult Airway, Aspiration Risk?
    - ☐ No
    - ☐ Yes
    - ☐ If Yes, Equipment & Assistance Available
    - ☐ Safety Check Completed
    - ☐ Pulse Oximetry
- ☐ **Instruments & Special Equipment**[2-4]
  - ☐ N/A
  - ☐ Yes
- ☐ **Implant (s)** [1,4]
  - ☐ N/A
  - ☐ Yes
  - ☐ If Yes, Specifics
- ☐ **Risk of Blood Loss**[2,4]
  - ☐ No
  - ☐ Yes, and adequate IV access and fluids planned, and blood availability confirmed
  - ☐ If Yes,
    - ☐ Type & Screen

    OR
    - ☐ Type & Cross
- ☐ **Prophylactic Antibiotics Given Within 60 Minutes of Procedure**[2-4]
  - ☐ Yes
  - ☐ N/A
- ☐ **DVT Prophylaxis**[4]
  - ☐ Yes
  - ☐ N/A
- ☐ **Pertinent Lab Results**
- ☐ **Anticipated Critical Events**[2]
  - ☐ Surgeon
  - ☐ Anesthesia
  - ☐ Nursing

STOP

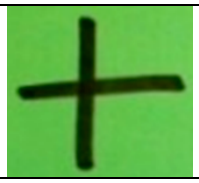
TIME OUT!

- ☐ **Name of Patient & SS# or birthdate**
- ☐ **Procedure to be performed**
- ☐ **Position**
- ☐ **Consent form checked (patient, procedure, site/side, reason)**
- ☐ **Check that surgical site marked (and visible after draping) and/or wristband confirmed**
- ☐ **Implant to be used (if applicable)**
- ☐ **Two members confirm imaging studies available, correct, properly labeled, presented**
  - ☐ **Yes**
  - ☐ **N/A**

*This checklist contains the elements of the WHO checklist and also includes a sampling of the majority of elements as suggested by teams from the VHA. The WHO Surgical Safety Checklist is available at http://www.safesurg.org/uploads/1/0/9/0/1090835/sssl_checklist_finaljun08.pdf

[1]VHA Policy/Directive, [2]WHO Checklist, [3]Joint Commission, [4]Medical Team Training

Checklist is available at
http://www.safesurg.org/uploads/1/0/9/0/1090835/sssl_checklist_finaljun08.pdf

	
+ indicates the things that went well.	Delta indicates the things that need to change.

5 Dramatic Simulation

Outline of This Session

- Doc-U-Drama featuring performances by….
- Educational Rationale for Doc-U-Drama
- Applying HFE & causation principles to a dramatic simulation exercise

Learning Objectives

- Application of patient safety diagnostic skills
- Application of patient safety problem solving skills
- ACGME
  - ICS
  - PBLI
- Experience patient safety improvement without pain

Why Use Dramatic Simulation?

- Our medical education system produces highly autonomous, hard-working residents who are inherently refractory to learning about systems theory
- The goal of Doc-U-Drama is brain flip - to ask a new question
- The goal is to reveal the normalization of complexity that is typical in medicine – similar to using magic to reveal the unintentional illusions of devices

Encourage actors to volunteer.

The Case of the Sticky Eyeball

The Sliding Scale

Discussion – Identify Patient Safety Issues

- Sticky Eyeball
- Sliding Scale (if time)

www.patientsafety.gov/curriculum/TeachingMethods/Doc_U_Drama_Exercise/index.html

See workbook page

Dramatic simulation

- Scripts dramatize real adverse events
- Performed by learners
- Followed by discussion
  - Usually starts with trying to assign blame then moves to recognition of complexity

6 Mentoring Residents: Leadership; establishing trust; bringing about a just culture; taking care of the second victim; encouraging reporting and RCA participation

NCPS

Leadership
Learning Objectives

- **Compare and contrast** transformational and transactional leadership styles.
- **Explain** the concept of '**mindfulness**' as it applies to patient safety **leadership**.
- **Summarize** actions leaders can take to improve patient safety in their organization
- **Produce** examples of "Abilene's Paradox" from your own experience in healthcare

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NCPS

Leadership Styles

- **Transactional**
  - Exchange between leader and follower
  - Both parties receive something of value
    - Follower (bonus, salary increase)
    - Leader (greater productivity, compliance with standard)
- **Transformational**
  - Deeply held personal value system
  - Unite followers and change their goals and beliefs
  - Raises level of human conduct

Office of Quality

Humphreys, J.H. & Einstein, W.O. (2003). Nothing new under the sun: Transformational leadership from a historical perspective. *Management Decision, 41*, 85-95.

NCPS

Transformational Leadership
Four Behaviors

- Charisma (idealized influence) = Envision
  - Vision, sense of purpose, pride, confidence, trust
- Inspiration (inspirational motivation)
  - Communication of high expectations
  - Symbolic language
  - Expressing important purposes in simple ways
- Intellectual stimulation (of followers) = Empower
  - Logical thinking
  - Problem-solving
- Individual consideration = Empathy
  - Mentors
  - Coaching
  - Personal attention

Office of Quality

Humphreys, J.H. & Einstein, W.O. (2003). Nothing new under the sun: Transformational leadership from a historical perspective. *Management Decision, 41*, 85-95.

Choi, J. (2006). A motivational theory of charismatic leadership: Envisioning, empathy, and empowerment. *Journal of Leadership and Organizational Studies, 12*, 24-43.

NCPS

Transformational Leadership

In a sense we have come to our nation's capital to cash a check. When the architects of our republic wrote the magnificent words of the Constitution and the Declaration of Independence, they were signing a promissory note to which every American was to fall heir. This note was a promise that all men would be guaranteed the inalienable rights of life, liberty, and the pursuit of happiness.

Office of Quality

ABC News (1963). Martin Luther King Jr's I Have a Dream Speech. Retrieved from: http://abcnews.go.com/Politics/martin-luther-kings-speech-dream-full-version/story?id=4399251

NCPS

Leadership
Virtues

- **Hope**
  - Goal directed behavior
  - Commitment to continuous improvement
- **Pride**
  - Desire "to do good and be excellent in the work"
- **Passion**
  - "If you don't love what you do, you can't lead others at it"

Office of Quality

Helland, M.R. & Winston, B.E. (2005). Towards a deeper understanding of hope and leadership. *J Leadership Organizational Studies, 12*, 42-54.

NCPS

Mindfulness for Leaders

- Reflection and self-awareness
- Acknowledge strong feelings and beliefs as well as utilizing evidence-based guidelines in making difficult decisions and solving problems
- Involves both explicit knowledge (e.g. guidelines) and knowledge, skills, and values from experience. Clinical judgment as both science and art.
- Recognize own bias and limitations, act with principle and compassion
- Natural curiosity, open-mindedness, connectedness
- Better able to deal with uncertainty or the unexpected
- See things how they really are

Office of Quality

Epstein, R.M. (1999). Mindful practice. *JAMA, 282*, 833-839.

Case Overview

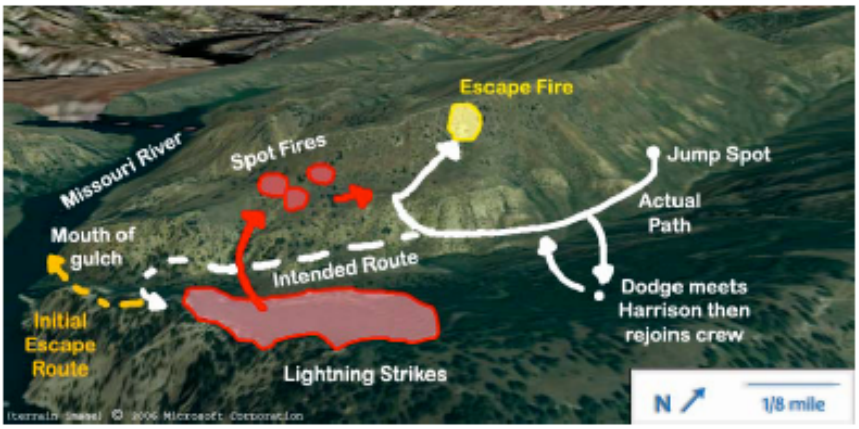
- Fifteen men land on the ground to fight a dangerous fire. Three come out alive (Dodge because he was smart and the other 2 because they got lucky). The rest died for not following Dodge's lead.
- Dodge was a man of few words.
- Firefighters knew each other through a three-week summer training, but had never worked together on an assignment.
- Team was assigned based on "rested-ness."
- All the men were volunteers.
- Men in the 1940's were trained to follow their commander's lead.
- Wagner Dodge was the oldest (33) and had the most fire-fighting experience (9 years) of the 15 men.
- The radio was destroyed in the jump and one of the men forgot the map.
- It was an extremely dangerous and difficult situation.
- Dodge could never have anticipated the special events that were going to take place.

- The scene on the ground was impossible to fully assess from the air.
- Soldier mentality existed. They followed his instructions up to the point of jumping in the circle of fire.
- Dodge did not panic. He was able to think clearly.
- None were sleep deprived.
- They were aware of the missing gear before they landed.
- The men were confident they could tackle this task, even after they landed.
- The men could see Dodge motioning to them to jump in.
- All could have survived if they had followed him.
- Time was saved by sending the men ahead while he ran back for the lunches
- Time was saved by dropping gear to escape.
- The concept of a fire circle was Dodge's own ingenuity conceived in the moment.

Ramos, B. (2010). Mann Gulch case study. Wagner Dodge: A leader not followed.

Timeline

2:30 PM 4:10 PM	Boarded Plane Hit the Ground (rest and food)	50 minutes
5:00 PM	Underway | Dodge approached fire line and told men to wait in center of path. He left them and scouted alone. Dodge meets the reconnaissance person. Dodge finds that the fire is worse than originally assessed from the air. Instructs men to head for mouth of gorge without him as he returns to get forgotten food. Men divide into two groups (500 ft. apart) unsure of where each other are.	40 minutes
5:40 PM	Dodge catches up to the men. Leads them to point 4. Is more alarmed but says nothing.	5 minutes
5:45 PM	Dodge reverses course again, but says nothing. They run. Within minutes, Dodge passed information along line to drop equipment and move fast. Forest gave way to high grass which burns more quickly. Dodge knows it's just a matter of minutes before they'll be overtaken.	11 minutes
5:56 PM	Dodge lights backfire, motions for others to join. Sallee and Rumsey find safety in rockslide. Fire overtakes other firefighters.	Total: 1hr 46m



Fire leapfrogged to the north rim of the gulch, cutting off both the primary attack plan and escape route.

Exercise

In the Heat of the Moment

Situation

Dodge lit the fire ring and is motioning for the team to follow him.

Team 1: Dodge

You should follow me because…

Team 2: Firefighters

We're not going to follow you because…

(Dodge) Feedback

Other groups have concluded:

- I have the most experience.
- I'm the leader & you were trained to follow the leader.
- I'm confident and calm (not panicking like you).
- I used good judgment in saving time by letting you run ahead while I fetched the lunches and telling you to drop gear.
- I'm willing to do the hard stuff (run back to get the lunches, run ahead to scope out the stuff).
- I regrouped you after you broke up.
- It was too loud too communicate in words, so I communicated through action.
- I was quick to adapt the plan as things were changing quickly.
- I could have abandoned you to save myself, but didn't.

Ramos, S. (2010). Mann Gulch case study. Wagner Dodge: A leader not followed. Retrieved from: http://www.slideshare.net/bscollfd/mann-gulch-case-study-4792799

(Firefighters) Feedback

Other groups have concluded:

- We can't trust you because you have no credibility with us:
  - You abandoned us then you tell us to drop our gear.
  - You had no idea how bad this was, look how calm you've been.
  - You chose a bad place to land, now we're trapped.
  - You don't have a plan. First you tell us to go forward, then around, now retreat.
  - You're only thinking of yourself, you don't even know our names after training with us for three weeks.

Ramos, S. (2010). Mann Gulch case study. Wagner Dodge: A leader not followed. Retrieved from: http://www.slideshare.net/bscollfd/mann-gulch-case-study-4792799

Exercise

Hindsight

Situation

Dodge sits in front of a review board who was assessing the situation of what happened that day.

Teams 1 & 2

What lessons were learned?

Ramos, S. (2010). Mann Gulch case study. Wagner Dodge: A leader not followed. Retrieved from: http://www.slideshare.net/bscollfd/mann-gulch-case-study-4792799

Lessons Learned

- Overconfidence can cloud your judgment (left radio/map).
- Power of delegation vs. stamina (send others for the food).
- If you have made several bad decisions, be prepared to have your leadership challenged.
- A culmination of small errors can create a disaster.
- ALWAYS lead from the front.
- Solicit other's feedback - foster two-way communication - don't act unilaterally – many opinions produce better results than one.
- Once crisis and panic takeover, communication becomes even more difficult.
- The least experienced panic first. Mentor newcomers early on.
- Anticipate future problems and develop action plans TODAY.

Ramos, S. (2010). Mann Gulch case study. Wagner Dodge: A leader not followed. Retrieved from: http://www.slideshare.net/bscollfd/mann-gulch-case-study-4792799

Lessons Learned

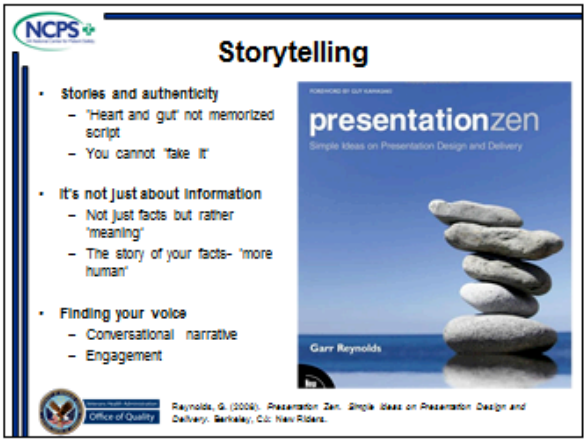
- If you want your team to trust you, build credibility with them by:
  - Communicating your plans.
  - Offering predictions.
  - Describing options.
  - Sounding warnings.
  - Providing explanations.
  - Being Prepared.
- Teach you team to be critical and strategic thinkers on their own by sharing your experiences/stories/wisdom.
- Establish an ally in advance who will follow you through thick & thin. (Having two in the circle make you look less crazy, allowing others to follow.)

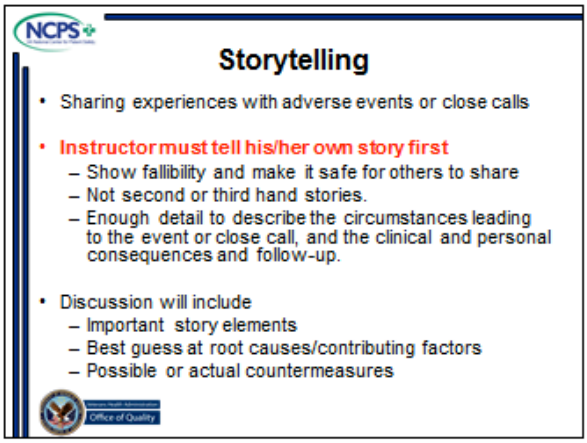
Ramos, S. (2010). Mann Gulch case study. Wagner Dodge: A leader not followed. Retrieved from: http://www.slideshare.net/bscollfd/mann-gulch-case-study-4792799

Food for Thought

- Why should anyone follow you?
- How do you really know what type of leader you are?
- Under what conditions is Leadership most vital?
- Be prepared to have your leadership questioned.
- What Lessons from Mann Gulch Case can you apply to your daily work as a Leaders?
- You finally learn your lessons, and then you die.

Ramos, S. (2010). Mann Gulch case study. Wagner Dodge: A leader not followed. Retrieved from: http://www.slideshare.net/bscollfd/mann-gulch-case-study-4792799





Storytelling

Exercise

Turn to your neighbor and tell a brief story of your direct involvement in an adverse event or near miss

Listen to your neighbor tell his/her story

See next page for problem-solving space….

What happened? Why did it happen? What might prevent it happening again – or – would prevent harm to the patient?

Why did it happen? (Root Causes/Contributing Factors)	Actions/Interventions to Prevent Harm to Patient
If needed, guide conversations away from personal blame & guilt – there are always contributing factors and most often root causes in the system.	

Encourage each duo to make notes as they listen to the story of the other – notes about system issues and potential fixes.

Disclosure
Principles

- **Medical care must be safe**
  - Learning organizations
  - Self-reflection and continuous improvement
  - "When things go wrong"
    - Intensify commitment and care for patient harmed
    - Change systems to prevent future error
- **Medical care must be patient-centered**
  - Support the patient and maintain a healing relationship
  - Patients and families are entitled to know the details of incidents and their implications
  - Communication
  - Eliminate adversarial relationship that a secretive, liability-focused approach fosters

Massachusetts Coalition for the Prevention of Medical Errors (2006). When things go wrong: Responding to adverse events. Retrieved from: http://mapcpsinn.org/resource.aspx?resourceID=9474

Disclosure
Duty

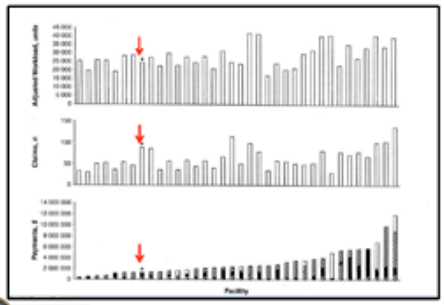
- **Ethics**
  - Respecting patient autonomy
  - Maintaining a promise
  - Ensuring patient trust
- **Professional Standards**
  - AMA Code of Ethics
  - The Joint Commission
- **Organizational Mission and Values**
- **Legal Support**
  - Pennsylvania Medical Care Availability and Reduction of Error Act, enacted in March 2002

Cantor, M.D., Barach, R, Derse, A., Makian, C.W., Wiedy, G.G., Fox, E. (2002). Disclosing adverse events to patients. *Jr Comm J Qual Patient Safe, 31*, 2-12.

Disclosure
Bright Spots

Shapiro, E. (2009). Disclosing medical errors: Best practices from the "leading edge." Retrieved from: http://www.nhoadem.ojcas.org/downloads/Disclosing%20Medical%20Errors.pdf

Disclosure
Challenging Myths



Kraman, S.S. & Hamm, G. (1999). Risk management: Extreme honesty may be the best policy. *Ann Int Med, 131*, 963-967.

Disclosure
Three Types

- **Clinical disclosure** of adverse event
- **Institutional disclosure** of adverse event
- **Large scale disclosure** of adverse events

VHA Directive 2008-002. Disclosure of adverse events. Retrieved from: http://www.va.gov/vhapublications/ViewPublication.asp?pid=1749

Disclosure
When

- Disclosure is called for whenever an adverse event has a known effect on the patient that was not discussed in advance as a known risk.
- Disclosure is called for any time an adverse event necessitates a change in the patient's care.
- Disclosure is called for when the adverse event potentially poses a significant risk to the patient's future health even if the likelihood of that risk is extremely small.
- Disclosure is called for whenever the adverse event involves providing a treatment or procedure without the patient's consent.

Cantor, M.D., Barach, R, Derse, A., Makian, C.W., Wiedy, G.G., Fox, E. (2002). Disclosing adverse events to patients. *Jr Comm J Qual Patient Safe, 31*, 2-12.

Disclosure

- Schedule the discussion as soon as possible after the event. Pick a quiet place.
- Ask the patient whether he or she would like to include additional friends or family members in the discussion.
- Have a second person from the hospital sit in on the meeting (e.g., a nurse or risk manager).
- Sit down and lean into the patient and/or family. Pay attention to your own body language. Be empathetic.
- Provide a warning: "*We have some bad news.*"
- Admit the error and apologize. Say, "*I'm sorry.*"
- Discuss the adverse event, what went wrong with the system (but do not speculate), and what changes will occur to limit the likelihood something similar could happen in the future using clear, nondefensive, simple language. Do not blame others.
- Invite and answer all questions as honestly as possible.
- Above all else **listen** to the patient.

Looking back to page **10** of this workbook (the question about *Reporting Systems*), what modifications to your current reporting system need to be made in order for **you** to trust it sufficiently to encourage use by your residents?

Resident Supervision & Mentoring
(Faculty Development questions)

Scenario: You've delivered convincing statements to residents about the importance of reporting. "By not reporting, you choose not to let systems learn." One of your best residents reports an adverse event. The resident's faculty-mentor insists that the details become part of the resident's permanent record. Assume that this was **not** an *intentionally unsafe act* – and that the goal is to promote reporting in order to learn from adverse events.

Formulate arguments or *talking points* to persuade your faculty colleague. Make the case for NOT making this part of the resident's permanent record.

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See next page for answer key for this exercise.

How will you turn it into a discussion of disclosure?

Answer Key for Swift and Long Term Trust

Assignment: *Formulate arguments or talking points to persuade your faculty colleague. Make the case for NOT making this part of the resident's permanent record.*

Potential strategies for arguments:

1.) Get your colleague to tell his/her own story – tell yours

2.) List things that could be learned from the events, cite literature about the results of resident involvement, for example:

> *Kevin G.M. Volpp, M.D., Ph.D., and David Grande, M.D.* Residents' Suggestions for Reducing Errors in Teaching Hospitals. Volume 348:851-855 February 27, 2003 Number 9
>
> Orlander, J. et al. The Morbidity and Mortality Conference: The Delicate Nature of Learning from Error, Acad. Med. 2002;77:1001-1006.

3.) When a human makes a mistake, will punishment delivered by the shame and blame police result in future error free behavior? "To err is human." Humans making mistakes are simply expressing normal human behavior. The more important question is: what can be done to reduce the probability of an undesirable event happening again?

4.) Cite aviation reporting history – and what happened when New Zealand revealed pilot identification (reporting stopped). This story highlights the critical importance of trust in predicting an individual's willingness to report.

5.) Reporting involves taking a personal **risk**. Therefore the resident deserves protection from punitive measures.

6.) Is it fair?

7.) Will documenting the resident's role violate confidentiality and protections built in for patient safety activities; what will it accomplish?

8.) Have disclosure requirements been covered without need for this punitive step?

9.) What punitive experiences have you experienced that were unfair & should be spared current and future residents?

10.) Cite David Marx's *just culture* and Rules of Causation

11) If this event becomes a permanent part of the resident's personal record of employment, what is the likelihood that this resident will report future adverse events or close calls?

7 Safe handoffs

Learning Objectives

- Recognize communication failure as a leading cause of adverse events in healthcare.
- Rationalize [Explain] why the increased number of hand-offs due to duty hour restrictions may not contribute to *increased* patient safety vulnerability.
- Demonstrate *portfolio management* for a patient cohort.
- Contribute to the definition of *standardized handoff* in a way that preserves flexibility for customization.

No easy solutions or shortcuts

No *silver bullet* for safe patient hand-offs

"I have a microwave fireplace.
You can lay down in front of the fire all night in eight minutes."
- Steven Wright

Coming up

- A few definitions
- Old & new models for teaching hand offs
- Why isn't it as bad as we expected?
- What makes it so hard to teach?
- Why bother learning to teach new strategies?
- A chance to practice (a teaching method).

Hand off / sign out

- *Handoff* – poorly defined in published literature.
- *Goal of handoff/handover* – Continuity of care across a transfer of responsibility for patient care.

"…Improve the effectiveness of actions taken by the receiving party."
-Cohen

Primary Objective

The hand off will provide accurate information about a [patient]'s care, treatment, and services; current condition; and any recent or anticipated changes.

Why so difficult to teach/learn?

Healthcare systems are complex, interconnected, event-driven, time-pressured, and resource-constrained with the potential for high consequences for system failure.

The work is distributed across multiple people in dedicated roles with specialized knowledge and expertise.

Exercise – Part V

Review your storyboard Part I and IV.
How did hand-offs/transitions in care contribute to the bad outcome?

Three Phases

I. Preparation

Assure access to information for new team.

Synthesis; rational organization based on patient history and current status.

II. Transfer of responsibility

- Shared cognition
- Joint problem solving
- Cross covering teams are no longer babysitting, but take over decision-making.

III. Immediate Impact

New team is ready for urgent contingencies:
What patients
What actions

Prioritized and rationalized

Ideal model

- Concise
- Problem-based
- Sickest patients first
- Up-to-date
- Accurate
- Reliable
- Active sign-in
- "Star rating" – Helms

Resources

- Computer generated info to minimize rewriting.
- Quiet space.
- Interruption / distraction-free zone.
- Easy access to EHR.

Resident recomendations

1. Name and demographics
2. Star-rating field
3. Chronic diagnoses
4. Important medications visually connected to diagnosis / therapeutic intent
5. Inpatient procedures (date performed)
6. Active important problems (most critical and acute listed first)
7. Anticipated events
8. To do list

Early Warning Signs Score							
Score	**3**	**2**	**1**	**0**	**1**	**2**	**3**
Heart rate (bpm)		<40	40 – 50	51 – 100	101 – 110	111 – 129	≥ 130
Systolic Blood Pressure (mm/Hg)	≤ 70	71 – 80	81 – 100	101 – 159	160 – 199	200 – 220	>220
Respiratory Rate (breaths/min)		< 8	8 – 9	10 – 14	18 – 20	21 – 29	≥ 30
Temperature (°F)		< 95.0	95.0 – 96.8	96.9 – 100.4	100.5 – 101.3	≥101.4	
Consciousness	**U**	**P**	**V**	**A**	**Agitated or Confusion**	**New onset of agitation or confusion**	
U=Unresponsive/No reaction **P**=Response to Pain **V**=Response to voice **A**=Alert							
If you are uneasy with the patient's condition: Add 1 point							
Urinary production < 75ml during last 4 hours: Add 1 point							
Oxygen Saturation < 90% despite therapy: Add 3 points							
Patient scores 4 points or higher → Activate CAT team Patient scores 6 points or higher →Activate the CAT team & Call physician							
Green = 0-1 Stable		Yellow = 2-3 Stay Alert to Changes		Orange = 4-5 Activate CAT Team		Red = ≥ 6 Activate CAT & Call Physician	

10 *Van Eaton et al* *Surgery July 2004*

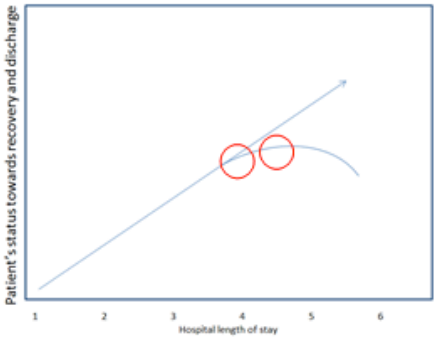
Rounding 1.1 — Labs and vital signs current as of 11/27/2003 12:30:01 PM

ICU	5E	Day-Diagnosis	Day-Procedure	Day-Abx	Medications	Allergies	Signout/Plans
501	Testpatient, Alpha U5555551 53 M HORVATH, KAREN D Full Code Jane Intern	9-Obstructing colon CA HTN IDDM Periph neuropathy	4-Return to OR, washout 8-Exlap, ptl colectomy, colostomy, Hartman pouch Path: AdenoCA	8-Cipro 8-Flagyl DVT: SQ Heparin bid	Metoprolol 5mgIVq8 TPN	PCN rash to foam tape	Wean peep as pressure tolerates volume rather t metoprolol for S
	T36.4/36.3 p 72 BP 142/84 sat 99 r 16 O2 40%	In 2499 Amino Acid-1274 Crystalloid (includes dri=1015 Lipids=210	Out 2300/500 Urine=2300/500	5.77->3.75 / 9.9 / 29->29 / 50 (11/27)	139 / 4.2 / 104 / 28 / 16 / 1.1->1.0 / 125 (11/2 cs: 120->135->118 ABG: 7.40/38/128/27		

Floor	4NE	Day-Diagnosis	Day-Procedure	Day-Abx	Medications	Allergies	Signout/Plans
4203	Testpatient, Beta U5555552 53 F HORVATH, KAREN D DNAR/intubate ok R2	9-Perfed DU Cerebral palsy CRF	7-Exlap, graham patch, gtube, jtube	8-Cefotetan DVT: Teds/SCDs	Zantac IVq8 glutamine PFT ativan/mso4	NKDA	"aspiration risk" still third spacin no cardiac troul check with rena Next HD: 8/11
	T37.8/36.5 p 69 BP 129/77 sat 96 r 16 O2 2L	In 10278 Blood=900 Colloid=6000 Crystalloid (includes dri=3378	Out 6320/300 EBL-2=1500/ Jackson-Pratt-3=140/40 Jackson-Pratt-4=80/200 Urine=4600/60	5.77->3.75 / 9.9 / 29->29 / 50 (11/27)	139 / 4.2 / 104 / 28 / 1.1->1.0 / 125 (11/		

Fig 3. Part of an sample printed rounding list report. Vital signs and laboratory values are imported from the hospital's electronic clinical information system.

HFES 2009 Workshop



Summary

- Educating residents to perform effective handoffs
  - Promotes patient safety
  - Maintains continuity of care
  - Enhances professionalism through teamwork.
  - Like fixing an engine while it's running.
  - It is a "sweet spot"

References

- Helms et al (2004) Analysis and improvement of sign-out practice. *JGIM* 2011. 287-91.
- Wohlauer, Max V. Arora, Vineet M. Horwitz, Leora I. Bass, Ellen J. Mahar, Sean E. Philibert, Ingrid. Handoff Education and Assessment for Residents (HEAR) Computer Supported Cooperative Workgroup. Academic Medicine. 87(4):411-8, 2012 Apr.
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- Solet DJ, Norvell JM, Rutan GH, Frankel RM (2005) **Lost in translation**: challenges and opportunities in physician-to-physician communication during patient handoffs. *Acad Med* Dec;80(12):1094-9.
- Leora I. Horwitz; Harlan M Krumholz, Michael L. Green, Stephen J Huot (2006). Transfers of patient care between house staff on internal medicine wards: A national survey. Arch Intern Med Vol 166, June 12, 2006.
- Myers, JS et al (2011). Resident handoffs: Appreciating them as a critical competency. *JGIM* 27(3): 270-2.
- Gibson SC et al (2010). Communication, communication, communication: The art of the handoff. *Annals of Emerg Med* 55(2): 181-3.

8 Mistake Proofing

[Breakout session]

"Be More Careful" is Not Effective

- "Training and motivation work best when the physical part of the system is well-designed. If you train people to use poorly designed systems, they'll be OK for awhile. Eventually, they'll go back to what they're used to or what's easy, instead of what's safe."

Chappell, L. 1999. The Pokayoke Solution. *Automotive News Insights*, (August 2): 24l.
LaBar, G. 1999. Can Ergonomics Cure 'Human Error'? *Occupational Hazards* 59(4): 49-51.

VA-CASE

"Be More Careful" is Not Effective

- "You're not going to become world class through just training, you have to improve the system so that the easy way to do a job is also the safe, right way. The potential for human error can be dramatically reduced."

Chappell, L. 1999. The Pokayoke Solution. *Automotive News Insights*, (August 2): 24l.
LaBar, G. 1999. Can Ergonomics Cure 'Human Error'? *Occupational Hazards* 59(4): 49-51.

VA-CASE

References

- John Grout's Mistake-Proofing page: http://www.mistakeproofing.com
- Error Proofing Techniques: http://elsmar.com/Error_proofing/sld001.htm
- Six Sigma: http://www.isixsigma.com/tt/poka_yoke/
- ASQ: http://www.asq.org/learn-about-quality/processanalysis-tools/overview/mistake-proofing.html

VA-CASE

9 Key Patient Safety Analysis Tools

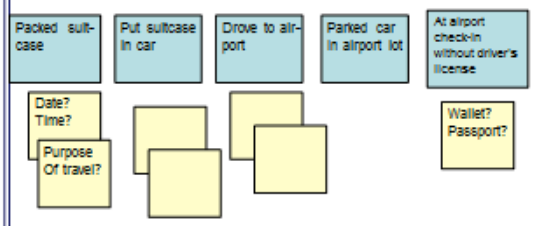
Learning Objectives

- Hands-on experience with HFE diagnostic methods.
- Ability to demonstrate chronological analysis *and* apply causation theory in two different but complementary methods.
- Observe the connection between accurate diagnosis and effective problem-solving.

Key tools

0. (Chronological event diagramming.)
   Humans do this very well.
1. Cause and effect diagramming
   We are hard-wired not to do this well.
2. Rules of Causation

Flow Diagram



Two Key Tools for Patient Safety Problem Solving

1. Cause and Effect Diagram
2. Five Rules (Principles) of Causation
   - Woodcock article about novices vs. experts doing RCAs
     Only the use of tools showed statistically and meaningful difference in data gathering and decisions

Woodcock, et al. Using simulated investigations for accident investigation studies. *Applied Ergonomics* 36 (2005)

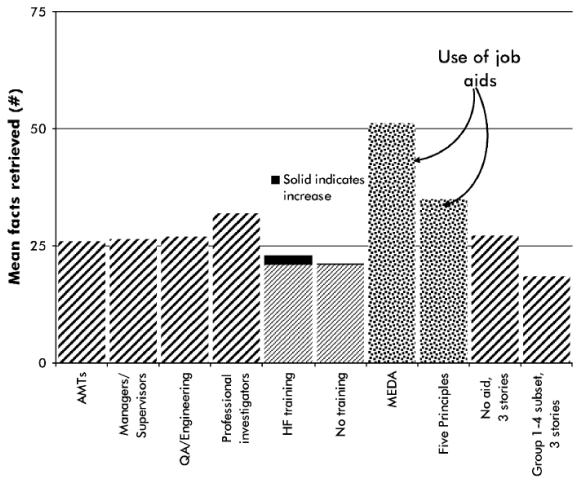


Fig. 1. Study 2, mean number of facts retrieved, by group.

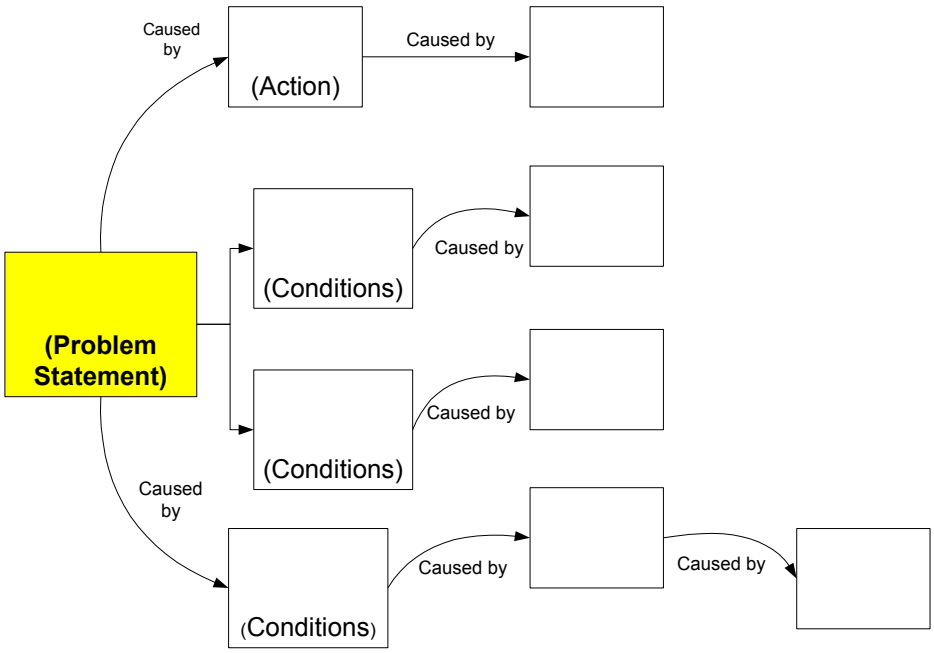
Why Cause and Effect Diagram?

1. It works in real-life RCA teams
   - Fosters analysis within time constraints
   - Directly maps to writing of root cause statement
2. Cited as crucial tool
   - Sidney Dekker commentary online
     www.bd.com/bdid/pdfs/Laboratory_Errors_Patient_Safety_vol2iss2.pdf
   - Sidney Dekker
     Field Guide to Human Error Investigation

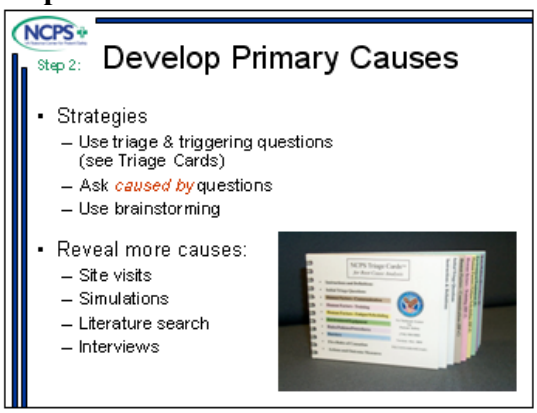
Cause and Effect Diagramming

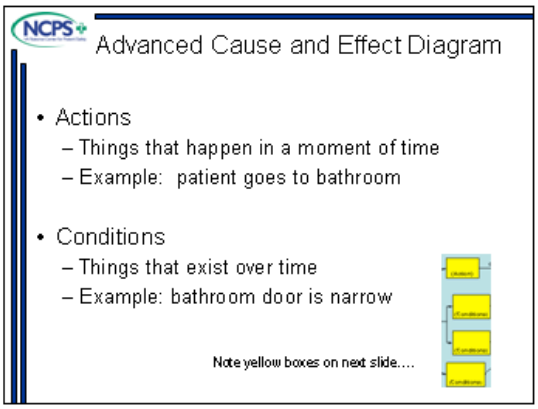
Step 1:

Problem statement

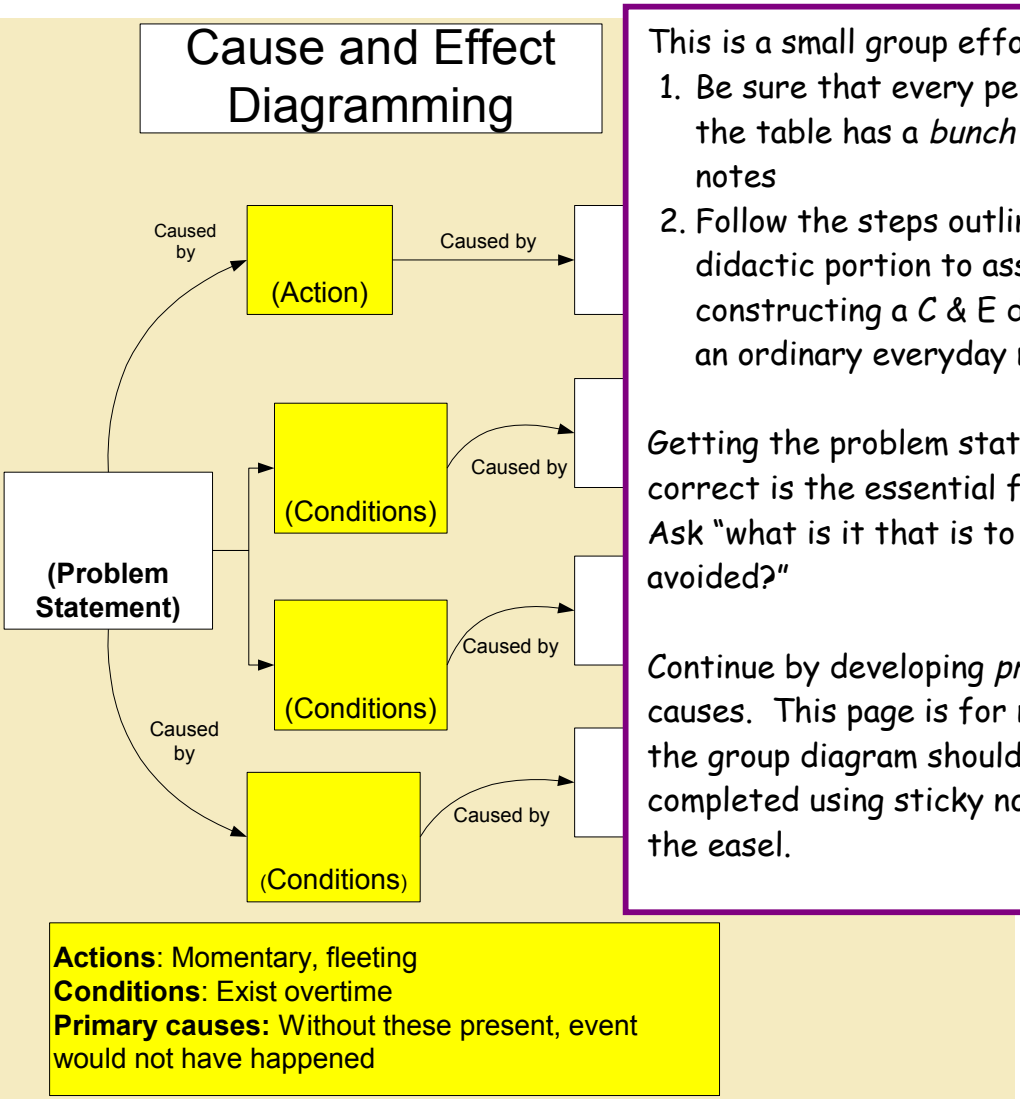


Step 2:





Step 2:
Develop primary causes.



This is a small group effort –

1. Be sure that every person at the table has a *bunch* of sticky notes
2. Follow the steps outlined in the didactic portion to assist in constructing a C & E diagram of an ordinary everyday mishap.

Getting the problem statement correct is the essential first step. Ask "what is it that is to be avoided?"

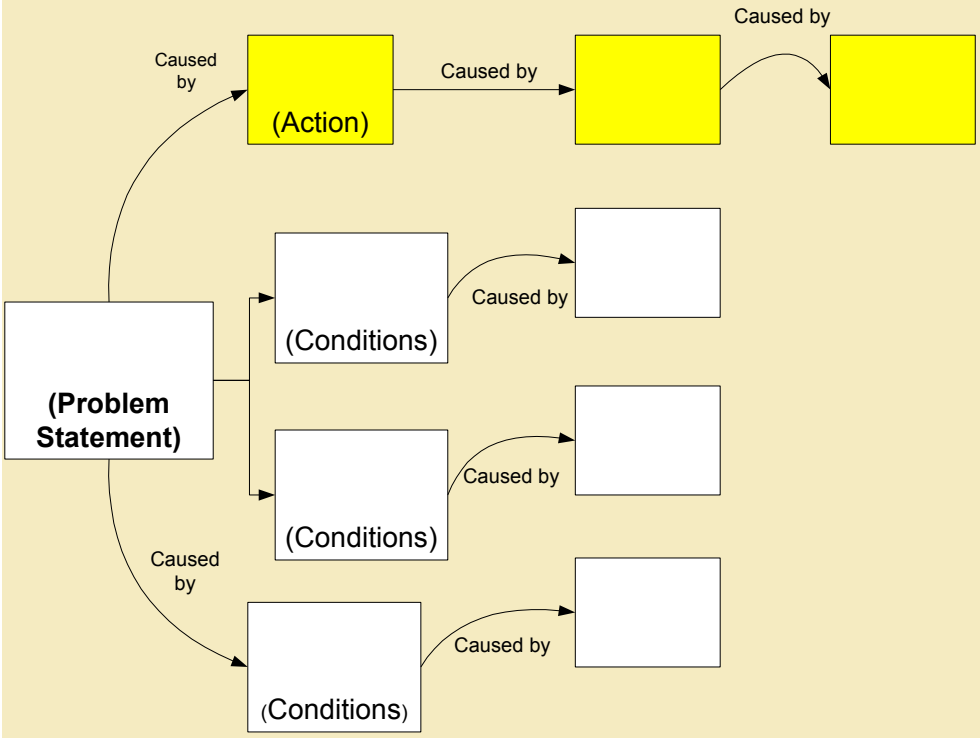
Continue by developing *primary* causes. This page is for notes – the group diagram should be completed using sticky notes on the easel.

Step 3:

Complete Causal Chain

- Develop actions or conditions for each chain/branch
  - Expect interrelationships, question marks
- Continue to review notes from site visits, simulations, references, etc
- Apply 5 rules of causation to prevent stopping too early (we will cover this next)

Cause and Effect Diagramming



Actions: Momentary, fleeting
Conditions: Exist overtime
Primary causes: Without these present, event would not have happened

Step 4:

Causal Statements

- For a full Root Cause Analysis
  - Translate diagram into causal statements
  - Each branch ~ one causal statement
- If 5 rules were used to develop the diagram
  - Little effort will be needed

Example

- From the RCA exercise on curriculum website.
- Nurse practitioner inadvertently misplaces TE feeding catheter in esophagus.
- Many ideas/paths can be found in the instructors guide for this case.
- Push for design issues, since RCA teams (real or trainees) will go to policy first.

RCA: TE Catheter

www.patientsafety.gov

Summary of the Event

G.S. is a 66 year old man who had major neck surgery for cancer and has to be fed via a special tracheal-esophogeal tube in his neck. He entered the Extended Care Therapy Center (ECTC) for prostate surgery on October 20th. He had his hollow tube replaced by a "keep-open" tube (Robnel catheter) by the Ear-Nose-Throat (ENT physician). He then was asked to eat a soft mechanical diet by mouth. Two days later, he was NPO (no food by mouth) and had a TURP (Trans Urethral Resection of the Prostate) surgery under general anesthesia. One day later, he returned to the ECTC and was placed back on the soft mechanical diet.

After 8 days on this diet, he was not eating or drinking much at the ECTC. He was also undergoing several days of radiation therapy for his neck cancer. On November 1st, the nurse practitioner (NP) at the ECTC replaced the feeding tube through the TE stoma (hole in the neck). ENT physician was not called, and the NP followed the instructions found in the packaging. The instructions did not call for confirmation of placement by X-ray.

Before the RN covering this patient was to connect liquid food to the catheter, she called the physician on call for confirmation of change of diet and route. A chest X-ray was ordered and found the tube to be only part of the way in (stopped at the mid esophagus). The tube was advanced to the stomach before any feeding through the tube was started.

Other Important Data

1) Patient was cared for on 11/1/01 with full physical exam, increased IV fluid rate, and cautionary antibiotics
2) Many procedures at the ECTC were done by nurse practitioners in order to meet needs of the many patients in a timely basis
3) The feeding tube set was new, due to a change in purchasing contract that month
4) This nurse practitioner had missed the in-service training for the new feeding tube set
5) The patient was Do-Not-Resuscitate (DNR)
6) There were few resources at the ECTC to encourage or assist patients if they had difficulty eating or drinking by mouth
7) Event has occurred before. Corrective actions included more training of personnel involved, new procedures for feeding those with tubes, and new tubing sets

This example is included to illustrate the complexity of C-E diagramming – it isn't related to any of our case studies.