

Addressing Challenges In Patient Safety: Implementing Systems- Based Approaches

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Overview

- Definitions
- The Problem
- Historical Perspective
- Cultural Factors
- Systems-Based Approach
- Prioritization/Risk
- Causes and Actions
- Implementation Challenges
- Conclusions



Definitions

- Quality – The extent to which a service or product produces a desired outcome(s).
- Safety – Prevention or moderation of hazard induced harm.
- Hazard – A circumstance or agent that can lead to harm, damage, or loss.
- Risk – The chance of a specific event occurring. Measured in terms of consequences and likelihood.



What Is A System?

- A collection of elements whose operation is interdependent.
- Systems obey rules that cannot be understood by breaking them into parts, and stop functioning (or malfunction) when an element is removed or altered significantly.
- Systems provide a coherent and unified way of viewing, interpreting and of organizing our thoughts about the world.



IOM Goals

- Safe
- Timely
- Efficient
- Effective
- Equitable
- Patient-Centered



Patient Safety - The Problem

- Not New
- 1964 - Schimmel (Ann. Int. Med.)
- 1981 - Steel (NEJM)
- 1995 - Family Practice MDs (JFamPrct)
- 11/99 - IOM Report
 - Deaths due to Preventable Adverse Events greater than MVA, Breast Cancer, or AIDS



Medicare – Adverse Events 2010

- 13.5% Adverse Events (Serious Events)
- 13.5% Temporary Harm
- 1.5% die (15,000/month = >150,000/yr)



Institute of Medicine (Sept. 2012)

BEST CARE AT LOWER COST

The Path to Continuously Learning
Health Care in America

INSTITUTE OF MEDICINE
OF THE NATIONAL ACADEMIES

- Bottomline – The Problem Still Exists**
- \$750 Billion wasted
 - Implement Best Clinical Knowledge More Rapidly
 - Digital Infrastructure
 - Clinical Decision Support
 - Align Incentives
 - Patient Centered
 - Care Continuity
 - Optimize Operations

Where Healthcare Was/Is

- Cottage Industry Mentality
- Virtually Total Reliance on:
 - Professional/Individual Responsibility
 - Individual Perfection
 - Train and Blame
- Little Understanding of Systems Relative to People and Processes
 - Ignorance vs Arrogance

Culturally Different!!!!



Typical Approach

- New Policies, Regulations, Reporting Systems, Training
- Good First Step But.....
 - Lack of Systems Insight
 - Superficial Solutions (?Answers)
 - Inadequate Follow-Up
 - Lost Opportunity



Typical Missing Features

- Clear Understanding of Goal



Typical Missing Features

- Clear Understanding of Goal
- Preventive Approach
- Field Understanding & Buy-In
- Systems Approach
- Sustainability
- Trust/Culture of Safety



Safety System Design

- High Reliability Organizations
- Role of Reporting
 - Learning or Accountability



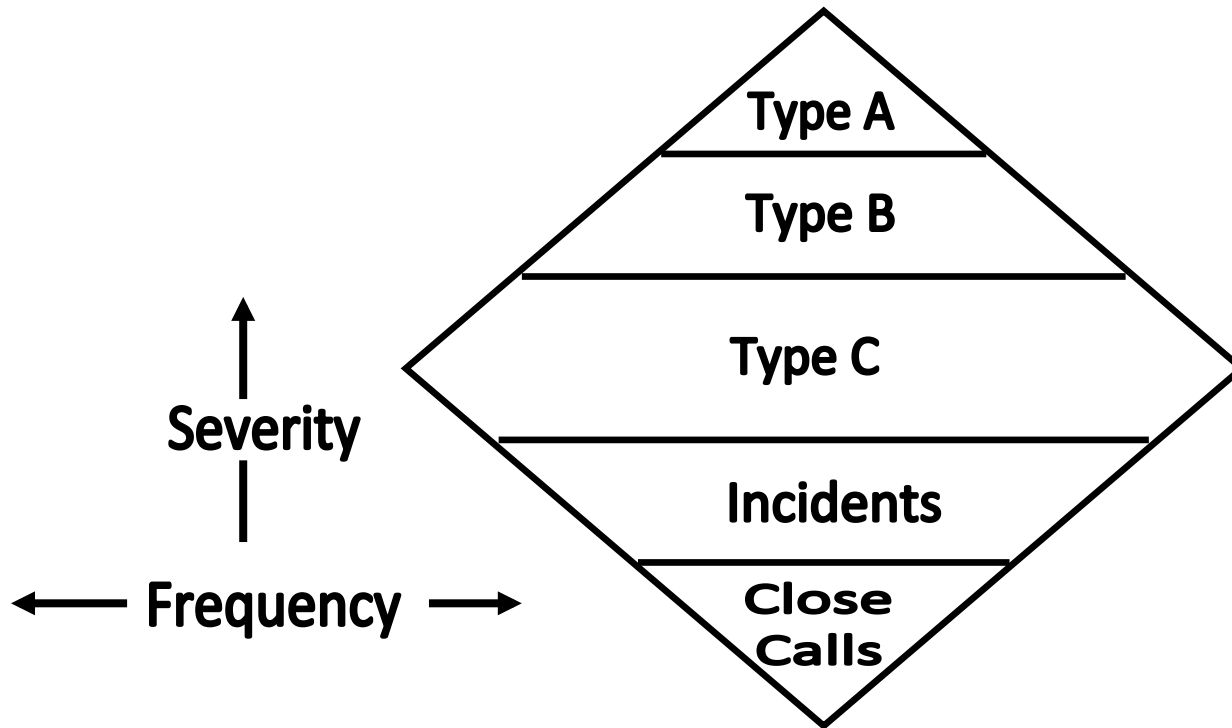
Safety System Design

- High Reliability Organizations
- Role of Reporting
 - Learning or Accountability
- Systems-Based Solutions
 - Patient Centered – DUH!!!!
- Importance of Close Calls



Patient Safety System Design

THE "MISHAP DIAMOND"

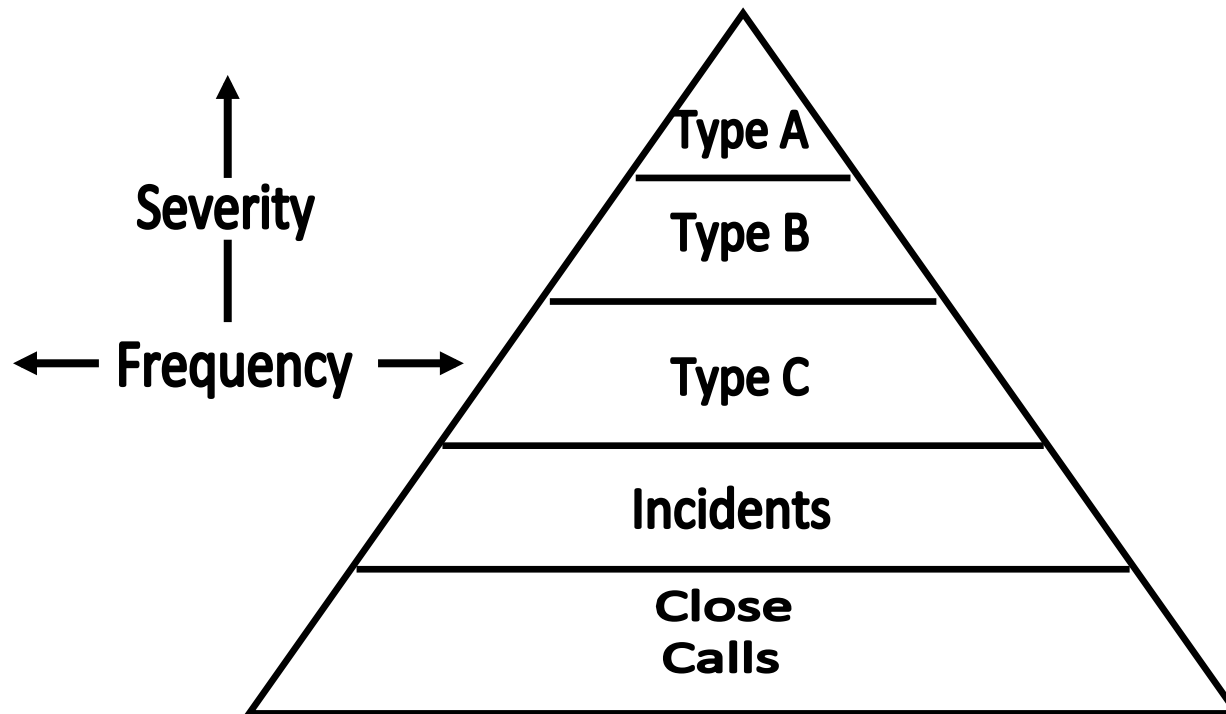


Weak Program Model



Patient Safety System Design

THE "MISHAP PYRAMID"



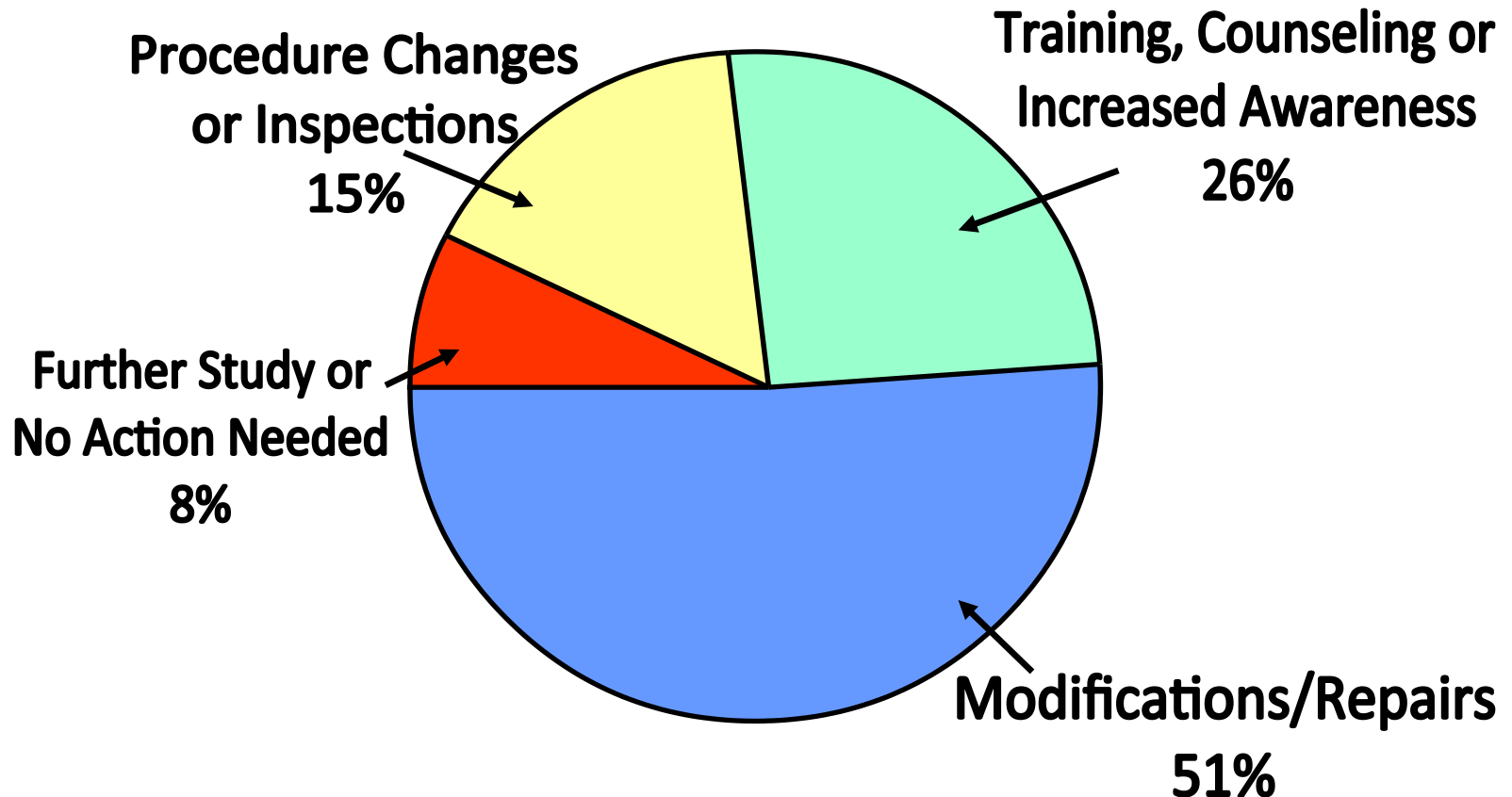
Strong Program Model



Patient Safety System Design

NASA Experience

Corrective Actions from Close Call Reports



Guiding Principles For Patient Safety System

- *Learning, Not Accountability System*
- Reporting System Characteristics
 - Non-punitive - Confidential and De-identified
- Importance of Close Call
- Reports Should Emphasize Narratives
- Interdisciplinary Review Teams
- About Identifying Vulnerabilities **NOT** Statistics
- Prompt Feedback



Safety & Human Error: Challenges

- Healthcare Views Errors as Failings Which Deserve Blame - Fault
- Train and Blame Mentality vs Systems-Based
- Blind Adherence To Rules
- Corrective Actions Focusing on Individual
- No Blood No Foul Philosophy

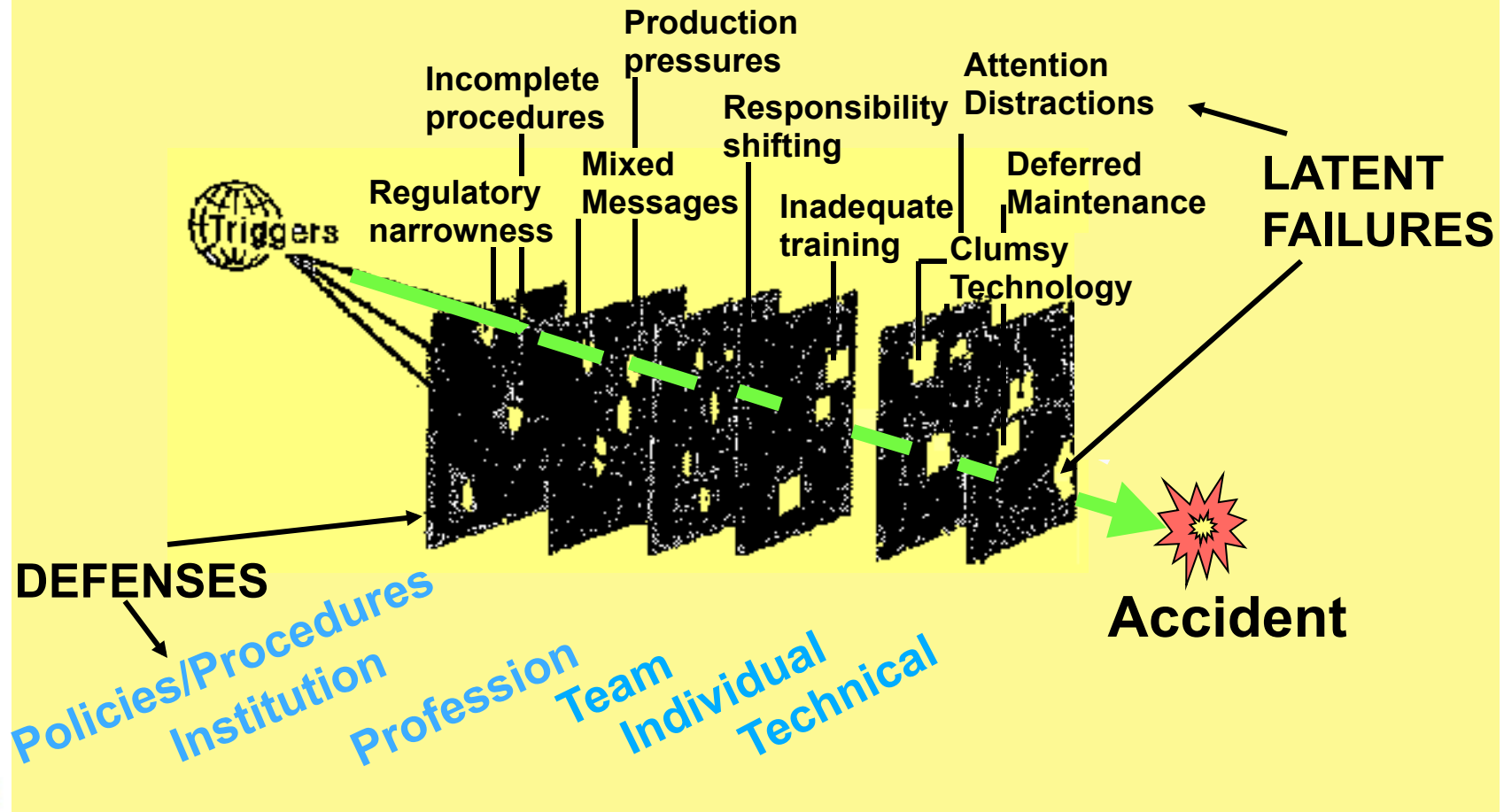


Safety & Human Error: Cornerstones

- People Don't Come to Work to Hurt Someone or Make a Mistake
- Must Keep Asking "Why?"

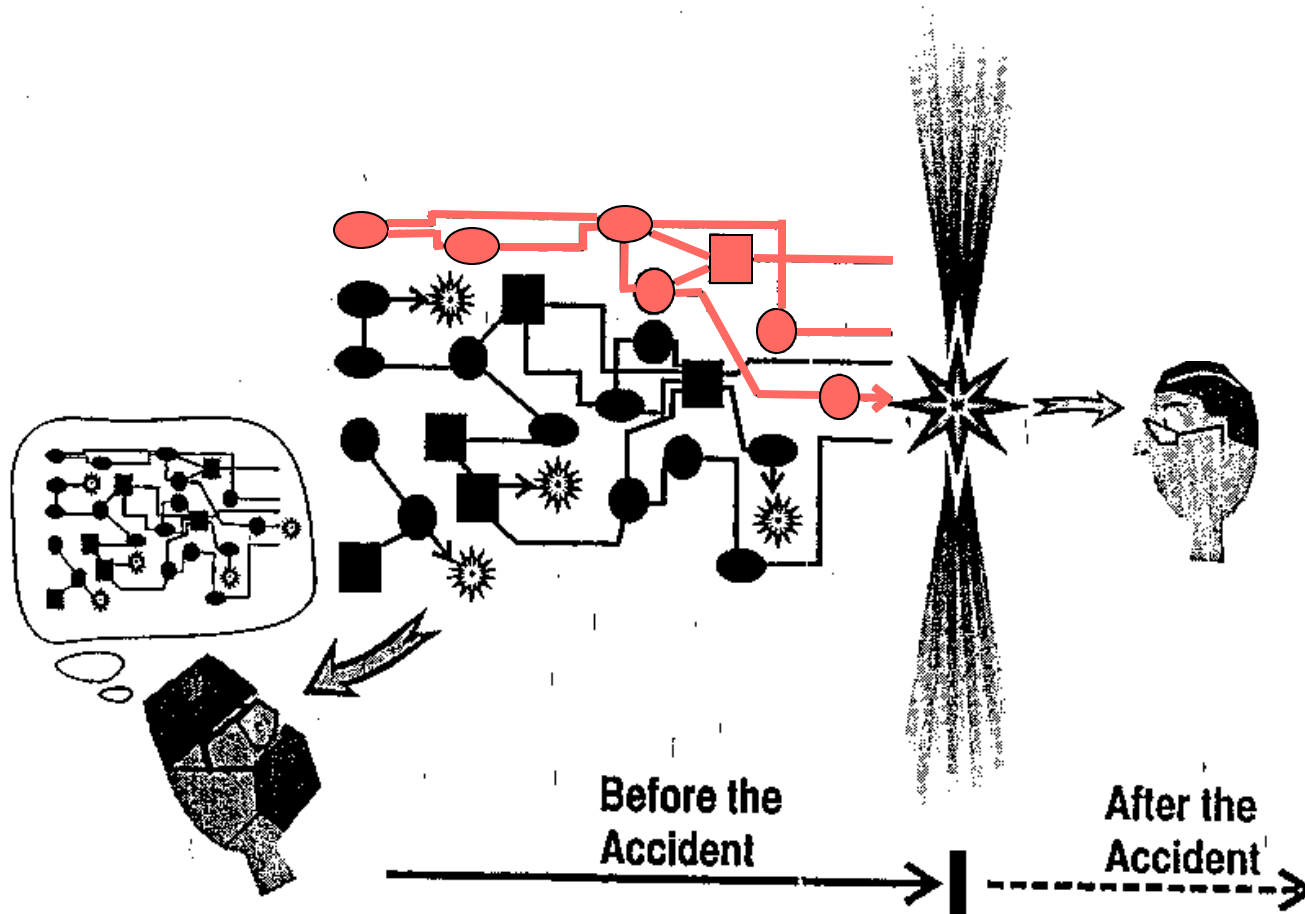


Safety – Human Error



Safety – Human Error

Hindsight Bias



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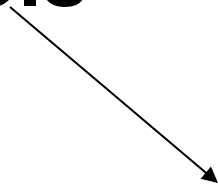
Patient Safety - Strategy

- Invite People to Play
 - Problem Recognition
 - Remove Barriers (Punitive, Difficulty, Black Hole Effect)
 - Learning **NOT** Accountability System
- Importance of Close Call
- ***Blameworthy Definition***
- Training (Middle thru Top Management)
Leadership At All Levels
- Human Factors Approach
 - Tools That Guide Behavior

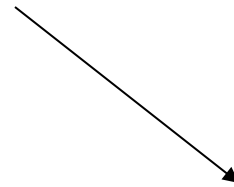


Changing Culture

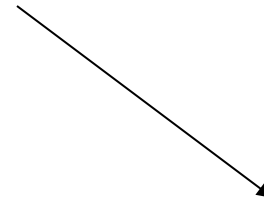
Tools



Behavior



Attitude



CULTURE!!!



Prioritize

- Risk Based
 - Severity
 - Probability
- Must Make Sense
 - Business Processes
 - Regulatory Environment



Causation/Actions: Who vs. What & Why

- Who
 - ‘Whose Fault Is This?’
 - Actions focused on correcting individual
 - ‘Corrects’ only after problem occurs
 - Limited scope of action and generalizability
- What & Why
 - Actions focus on systems level causation
 - Widespread applicability
 - Stronger preventive strategy



Systematic

- Cause and Effect
- Human Error Must Have Preceding Cause
- Failure to Follow Procedure By Itself Is **NOT** a Root Cause
- Negative Descriptors Aren' t Actionable
- Failure To Act Is **Not** A Cause Without Pre-existing Requirement To Act
- Why,Why,Why



Human Factors Engineering and “Actions”

- **Warnings and labels** (watch out!)
- **Training** (don't do that)
- **Procedure changes** (work around that)
- **Interlock, lock-in, lock-out**, etc (let me design it so you can not do that – forcing functions)
- **Is there one right action???**

Weaker



Stronger



Action Assessment

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



Communication - The Problem

- Reliability In Healthcare Is Poor
 - Not Individually Acknowledged
- Basic Problems Are Same World Over
 - Property of Being Human
- Organizationally Ignored Compared To Other High Hazard Industries



Communication

- Communication Identified As Principal Factor
>70% Of RCAs
- Medical Team Training (MTT) Developed To Improve Results
 - Crew Resource Management Principles **AND**
 - Briefings and De-Briefings



Root Cause Analyses (RCA) Database*

- ~70% to 80% of RCAs cited **COMMUNICATION FAILURE** as, at least one of the root causes/contributing factors for an adverse event or close call report.

*SPOT Database:

VA National Center for Patient Safety, April, 2008

Completed RCAs, Number = 8661.



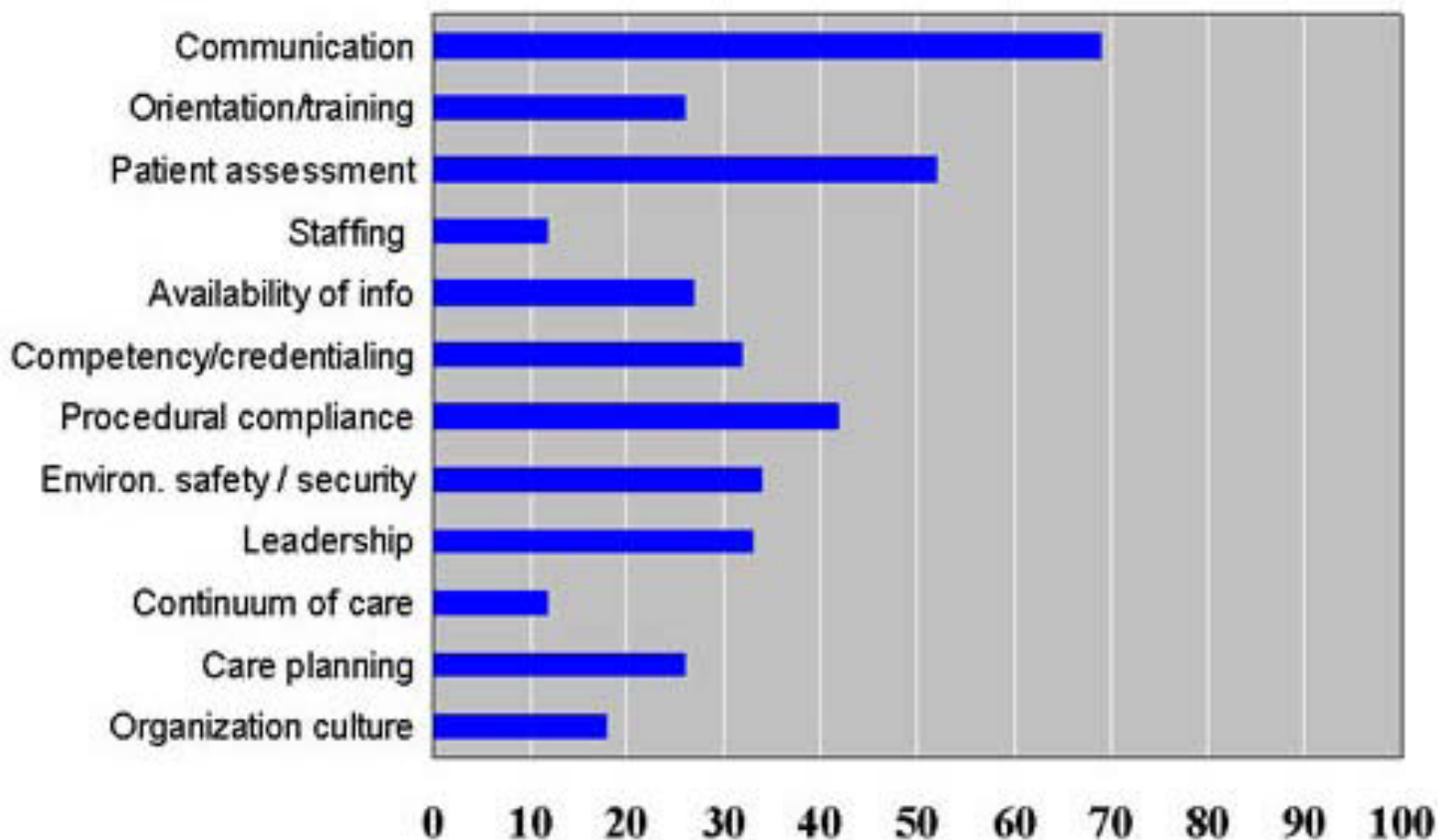


Joint Commission

on Accreditation of Healthcare Organizations

Root Causes of Sentinel Events

(All categories; 2005)



Teamwork



Characteristics of a Powerful Team



Challenge

- Medical Personnel, Particularly Physicians Have Been Rewarded Throughout Training for Individual Achievement. Highly Competitive
- Healthcare System Traditionally Financially Rewards Individual Activity/Service Delivered, Not Outcome
- Teamwork Not Traditionally Valued, Taught, or Rewarded



Aviation Safety & Crew Resource Management (CRM)



Crew Resource Management (CRM)*

- **Origin:** 1979-80 NASA workshops examining the role of human error in airline crashes
 - Research into aviation accidents in 1970s
- **Definition:** “Using all available sources – information, equipment, and people – to achieve safe and efficient operations.”
- **Focus:** safety, efficiency, and morale of humans working together
- **LOFT:** “Line Oriented Flight Training”
 - Work in flight simulators and measurement of airline crew performance
- **Briefings and Debriefings**

* Musson D, Helmreich RL. Team training and resource management in health care: Current issues and future directions. *Harvard Health Policy Review*. 2004; 5(1): 25-35.



CRM Training*

- **Required by FAA** and worldwide – “the way of doing business”
- Aircrew **performance measured** by materials, organization, individual, and group variables
- Expanded aviation training from technical focus to **human factors** dimensions – stress, fatigue, communication, shared awareness, and teamwork
- **Outcomes:** efficiency, safety, customer satisfaction
- Airline **crew surveys:** CRM relevant, useful, and effective in changing attitudes and behavior to improve safety
- CRM accepted by industry on **face validity**

* Musson D, Helmreich RL. Team training and resource management in health care: Current issues and future directions. *Harvard Health Policy Review*. 2004; 5(1): 25-35.



Communication

- **Definition:** The exchange of thoughts, messages, or information.*
- A dynamic process between people:
 - Sender (talks/writes/signals) & Receiver (listens/reads/signals)
 - Roles alternate back & forth
 - Verbal vs. non-verbal
- Feedback:
 - Sending a message is not sufficient
 - Was it received...understood?



* *The American Heritage Dictionary, 4th edition, Houghton Mifflin Company (2001): 179.*

Communication Skills

In medical school and nursing school, the focus is on successful communication with the patient.



Successful Communication

- Many communication improvements focus on improving accuracy and availability of **content**, e.g. CPOE, CPRS, “Hand-Off” templates
- Poor communication results from **context**. Context is vulnerable to culture, gender, education, experience, time pressure, stress, mood, etc.



Collaboration & Teamwork in ICU = Lower Morbidity & Mortality + Increased RN Retention

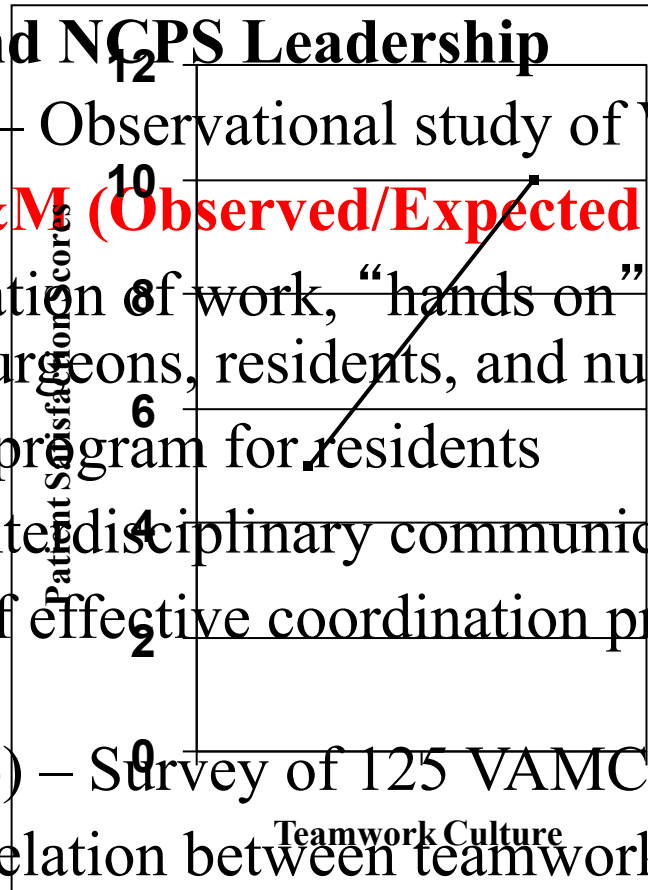
Evidence from ICUs

- Knaus – 5030 ICU pts in 13 hospitals
 - M&M risk improved with collaboration
- Baggs – 286 consecutive Med ICU pts transferred
 - M&M risk decreased from 16% to 5%
- Shortell – 17440 pts from 42 ICU
 - Teamwork across disciplines improved outcomes & RN retention
- Pronovost – Daily briefings in ICU with RNs and Residents
 - Improved quality of care



Impact of Team Training?

- VA Facility and NCPS Leadership
- Young (1991) – Observational study of VAMCs
 - **Lower M&M (Observed/Expected ratios)**
 - Standardization of work, “hands on” supervision of attending surgeons, residents, and nurses
 - Mentoring program for residents
 - Effective interdisciplinary communication
 - Larger % of effective coordination practices among providers
- Meterko (2004) – Survey of 125 VAMCs
 - Strong correlation between teamwork culture and **patient satisfaction**



(Teamwork Culture = Prevalent collaboration across disciplines.)



Culture of Safety

- “Learns” from adverse events
- People report things
- Non punitive
- Flatten hierarchies – promotes teamwork and open feedback (CRM)
- Safety examined retrospectively and prospectively
- Intensive training of personnel and teams
- Systems thinking
- Build fault tolerance into the system

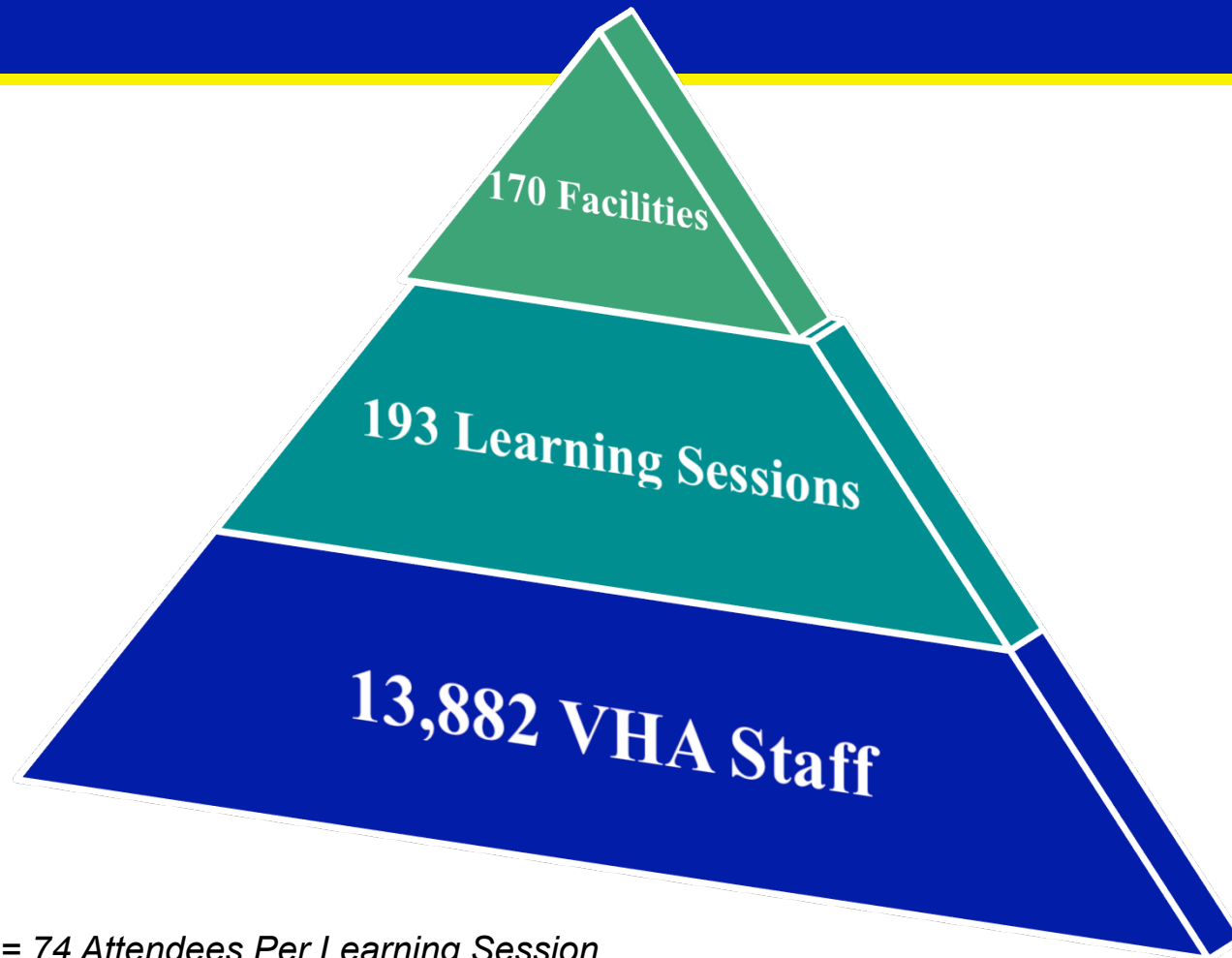


Fault Tolerance

Fault tolerant system - system can experience errors but still functions successfully....
Zero error is NOT realistic.



VHA NCPS Medical Team Training Program 2005 -2010



Mean = 74 Attendees Per Learning Session

Largest One Day Session = 208 (Baltimore, MD Jan 14, 2010)

Largest Facility Attendance = 356 (Dallas, TX December 9-11, 2008)



Briefings

Dialogue among principals using concise, relevant information to promote clear and effective communication

- Real time
- Face-to-face
- All team members present
- All team members participate



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**



Supporting Long Term Memory

- Checklists
 - Put knowledge in the world vs. in the head
 - Recognition is better than recall
 - ***Tool*** to Guide and Improve Communication
- Checklist Philosophy
 - “Read and Verify” checklists
 - “Read and Do” checklists



Figure 4.
Medication Administration Checklist for
Focused Protocol

1. Verify all assigned patients MAR forms with MD orders.
2. DO NOT engage in conversation not pertaining to medication delivery.
3. DO NOT allow interruptions or distractions while administering medications.
 - a. Hold your hand up and verbalize the need for no interruptions or distractions.
 - b. Other staff members "field" phone calls and interruptions for nurse.
4. Patient Identification.....
5. Prioritize tasks.....
6. Correct Side.....
7. Obtain medication and verify with MAR.....
8. Catheter Size.....
9. Look at items being read.....
10. Equipment.....
11. Use 7 rights.....
12. a. Right drug, right patient, right dose, right time, right route, right reason, right documentation.
13. Administer medications to only one patient at a time.
 - a. Right patient
14. Tourniquet.....
15. Take MAR and unit-dose packets to bedside.
 - a. Verify patient's armband name and MD name with exact spelling on MAR.
 - b. Ask patient to state name.
16. Sharps.....
17. Read medication name aloud to patient while opening unit-dose packet.
18. Documentation.....
19. Correctly document medications given.
20. Continue with second patient, etc.

IV Insertion Checklist

Before Insertion

After Insertion

Figure 5.
Medication Administration Checklist for
Medsafe-Focused Protocol with Vest

1. Verify all assigned patients MAR forms with MD orders.
2. Place Medsafe vest on self.
3. DO NOT engage in conversation not pertaining to medication delivery.
4. DO NOT allow interruptions or distractions while administering medications.
 - a. State, "Medsafe protocol is being followed at present."
 - b. Other staff members "field" phone calls and interruptions for Medsafe nurse.
5. Prioritize tasks.
6. Obtain medication and verify with MAR.
7. Look at items being read.
8. Use 7 rights.
 - a. Right drug, right patient, right dose, right time, right route, right reason, right documentation
9. Administer medications to only one patient at a time.
 - a. Right patient.
10. Take MAR and unit-dose packets to bedside.
 - a. Verify patient's armband name and MD name with exact spelling on MAR.
 - b. Ask patient to state name.
11. Read medication name aloud to patient while opening unit-dose packet.
12. Correctly document medications given.
13. Continue with second patient, etc.

CONFIRMED

CONFIRMED

CONFIRMED

AT BEDSIDE

BRIEFED

REMOVED

FLUSHED

SET (with fluids)

DISPOSED

LABELED

COMPLETE

Pre-Op Briefing

- **Entire Surgical Team**
 - Attending surgeon
 - Anesthesiologist/CRNA
 - Circulator
 - Scrub nurse/tech
 - Resident, PA, perfusionist, others
- Guided by **checklist** guide (specialty specific)
- **OR suite** prior to anesthetic induction
- Does not replace pre-op planning
- Complements the TIMEOUT



Asking the right question

- “Any questions?”

VS

- “What is your biggest concern for today?”



Checklist-Driven Preoperative Briefing

VETERANS HEALTH ADMINISTRATION

Preoperative Briefing Guide for Use in the Operating Room

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

- ☐ Patient Name^{1,4}
- ☐ Social Security #, Birthdate, or Other VA-Approved Identifier¹
- ☐ Names & Roles of Team Members²
- ☐ Procedure^{1,4}
- ☐ Surgical Site^{1,4}
 - ☐ Marked or on Wristband
- ☐ Laterality/Side^{1,4}
- ☐ Known Allergy²
 - ☐ No
 - ☐ Yes
- ☐ Anesthesia²
 - ☐ 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

- ☐ Pertinent Lab Results
- ☐ Risk of >500 ml 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 Incision^{2,4}
 - ☐ Yes
 - ☐ N/A
- ☐ DVT Prophylaxis⁴
 - ☐ Yes
 - ☐ N/A
- ☐ Anticipated Critical Events²
 - ☐ Surgeon
 - ☐ Anesthesia
 - ☐ Nursing
- ☐ Postop Disposition & Bed Availability⁴



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

Use Chain of Command

STEP BACK



4 Step Assertive Tool

1. Get Attention
2. State Concern ('Feel The Pinch')
"I'm uncomfortable with..."
"I'm concerned about..."
3. Offer Solution
4. Pose Question

TAKE ACTION

3 W's

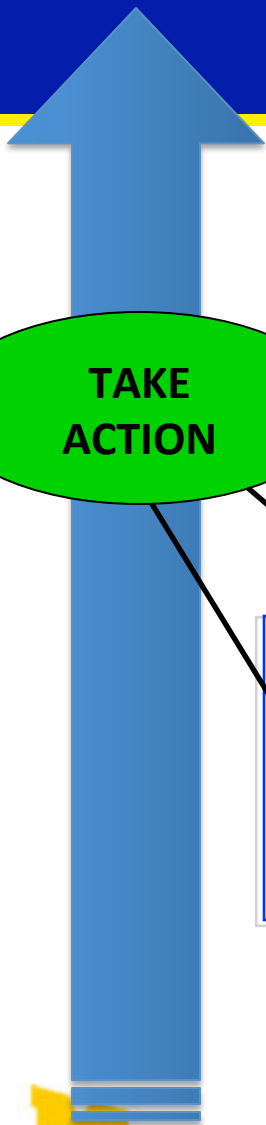
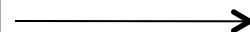
1. What I see
2. What I'm concerned about
3. What I want

OR

SBAR

1. Specific
2. Direct
3. Concise

Avoid Hint and Hope



Post-Op Debriefing

- **Entire Surgical Team**
 - Attending surgeon
 - Anesthesiologist/CRNA
 - Circulator
 - Scrub nurse/tech
 - Resident, PA, perfusionist, others
- Guided by **checklist** (specialty specific)
- What went well? What did not go well? What did we learn? **What can we do to improve our processes?**
- **Timing** – when patient is stable **before** attending leaves (update prior to patient leaving OR)
- Method to track debrief items and follow-up



Post-Op Debriefing

- What it is NOT:
 - Chance to whine about people
 - Chance to collect statistics for statistics sake
- What it IS:
 - Tool to identify problems that impact patient care
 - Tool to solve problems as a team



VETERANS HEALTH ADMINISTRATION
Postoperative Briefing Guide for Use in the Operating Room*
 ✓ Provide Comments as Appropriate

Surgeon	1 Unsatisfactory	2 Satisfactory	3 Excellent
----------------	----------------------------	--------------------------	-----------------------

Comments:

Anesthesiologist/CRNA	1 Unsatisfactory	2 Satisfactory	3 Excellent
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Comments:

Nurse (s)	1 Unsatisfactory	2 Satisfactory	3 Excellent
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Comments:

☐ **Areas for Improvement/Safety Issues/Action Items**

<input type="checkbox"/> Instruments, Sponge, Needle Count Correct² <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> If No, Explain	<input type="checkbox"/> Delays⁴ <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> If Yes, Specify <input type="checkbox"/> Name of Procedure Recorded²	<input type="checkbox"/> Equipment Issues^{2,4} <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> If Yes, Specify <input type="checkbox"/> Specimen Labeled Properly²
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☐ **Concerns for Postoperative Course [Surgeon, Anesthesiologist/CRNA, Nurse (s)]**

☐ **Comments**

*This checklist contains the elements of the WHO checklist and also includes a sampling of the majority of elements as suggested by frontline OR teams from the VHA. The WHO



Followership

- Engaged and active in decision making
- Critical thinkers
- Assume ownership and responsibility for team decisions
- Provide honest, timely feedback
- “Speak up” regardless of situation or rank
- Assertive but Respectful



Situational Awareness

Definition: The **continuous perception of self and team** in relation to the dynamic environment and the **ability to make adjustments.**

The one most important aid in maintaining Situational Awareness is a common understanding of the briefed plan.

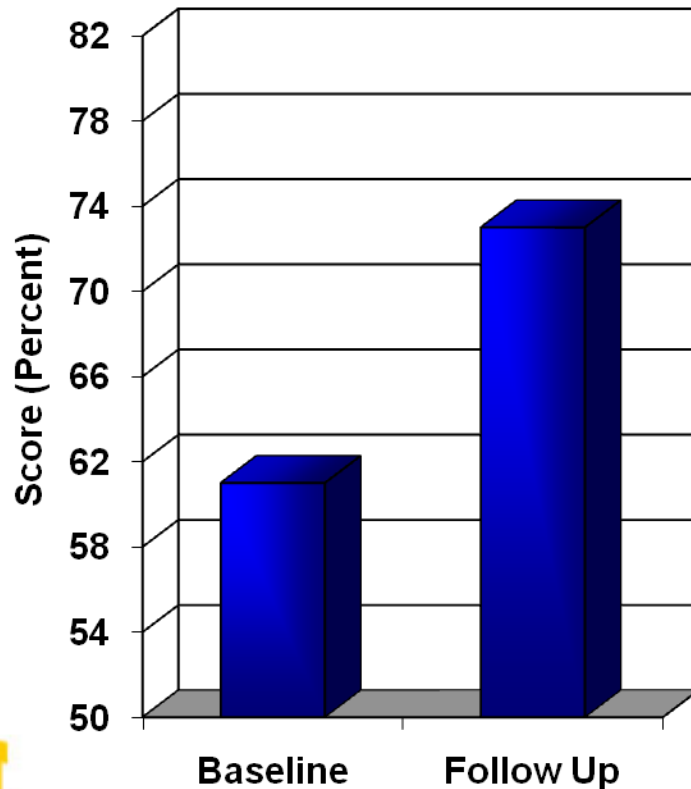


Medical Team Training

Safety Attitudes Questionnaire

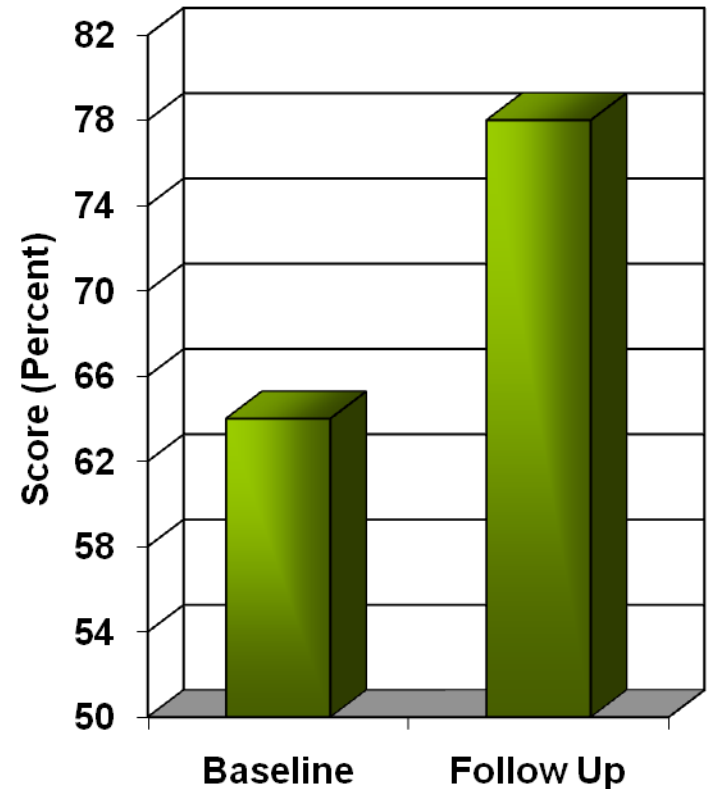
Teamwork Domain *

In this clinical area, it is easy to speak up.



Safety Domain *

I would feel safe being a patient here.

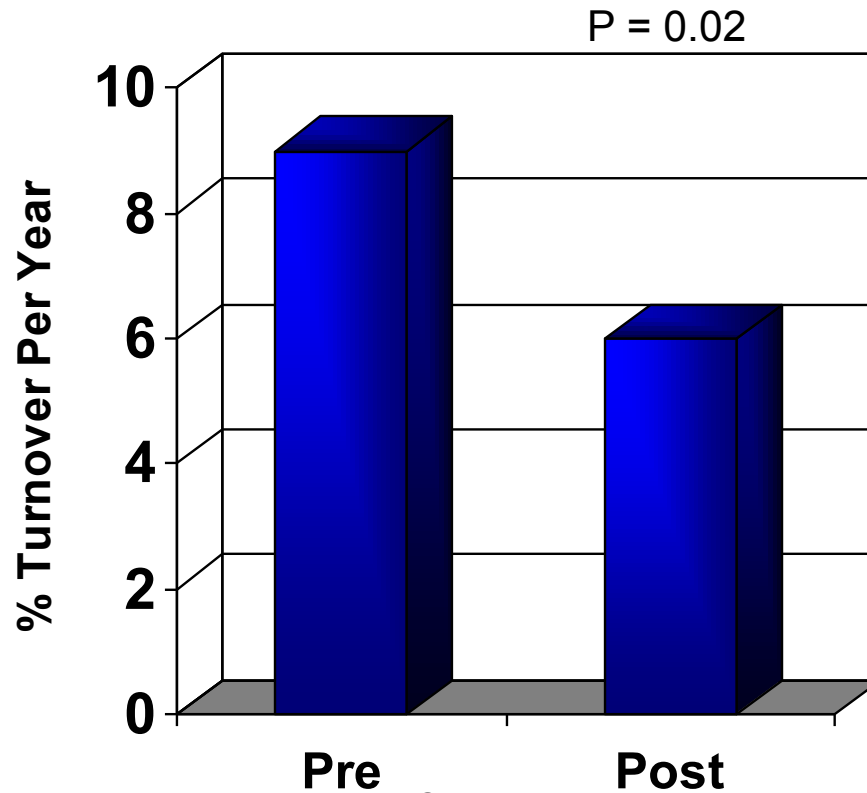


$P < 0.05$ paired, Students t-test

N = 3138 Questionnaires

Nursing Turnover

Operating Room



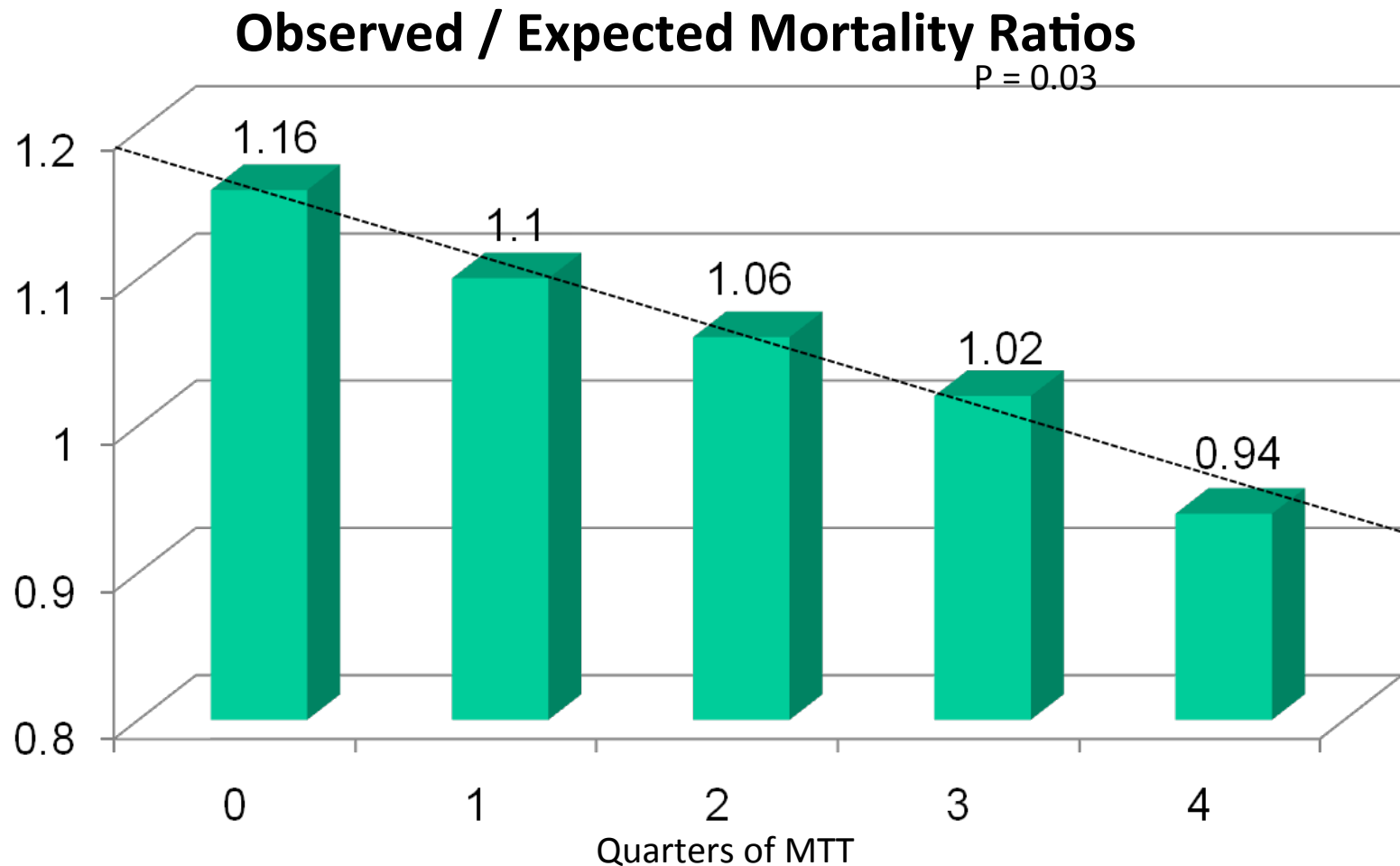
45 Operating Rooms and 35 Intensive Care Units

Pre = 12 Months Prior to Learning Session

Post = 12 Months Following Learning Session



Outcomes – Morbidity / Mortality



August 19, 2009 MTT Preliminary Report : N = 99 facilities.



MTT – Facility Level Impact

- 67% High Impact on OR Staff
- 73% High Impact on OR Patients
- 69% of OR Teams Improved Teamwork
- 66% of OR Teams Report Improved Efficiency
 - Eqpt Util (61%), Starts (35%), Duration (19%)
- Safety Attitudes Questionnaire (SAQ)
 - Significant Improvement ($p < 0.001$):
 - Working Conditions, Perception of Mgmt, Job Satisfaction, Safety Climate, & Teamwork



Association Between Implementation of a Medical Team Training Program and Surgical Mortality

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ADVERSE EVENTS RELATED TO surgery continue to occur despite the best efforts of clinicians.¹ Teamwork and effective communication are known determinates of surgical safety.²⁻⁶ Previous efforts at demonstrating the efficacy of patient safety initiatives have been limited because of the inability to study a control group.⁷ For example, the use of the World Health Organization Safe Surgery checklist has been evaluated, but its overall efficacy remains uncertain because no control group was studied to clearly demonstrate this instrument's effectiveness.⁸

The Veterans Health Administration (VHA) is the largest national integrated health care system in the United States, with 153 hospitals, 130 of which provide surgical services. The

Context There is insufficient information about the effectiveness of medical team training on surgical outcomes. The Veterans Health Administration (VHA) implemented a formalized medical team training program for operating room personnel on a national level.

Objective To determine whether an association existed between the VHA Medical Team Training program and surgical outcomes.

Design, Setting, and Participants A retrospective health services study with a contemporaneous control group was conducted. Outcome data were obtained from the VHA Surgical Quality Improvement Program (VASQIP) and from structured interviews in fiscal years 2006 to 2008. The analysis included 182 409 sampled procedures from 108 VHA facilities that provided care to veterans. The VHA's nationwide training program required briefings and debriefings in the operating room and included checklists as an integral part of this process. The training included 2 months of preparation, a 1-day conference, and 1 year of quarterly coaching interviews.

Main Outcome Measure The rate of change in the mortality rate 1 year after facilities enrolled in the training program compared with the year before and with non-training sites.

Results The 74 facilities in the training program experienced an 18% reduction in annual mortality (rate ratio [RR], 0.82; 95% confidence interval [CI], 0.76-0.91; $P=.01$) compared with a 7% decrease among the 34 facilities that had not yet undergone training (RR, 0.93; 95% CI, 0.80-1.06; $P=.59$). The risk-adjusted mortality rates at baseline were 17 per 1000 procedures per year for the trained facilities and 15 per 1000 procedures per year for the nontrained facilities. At the end of the study, the rates were 14 per 1000 procedures per year for both groups. Propensity matching of the trained and nontrained groups demonstrated that the decline in the risk-adjusted surgical mortality rate was about 50% greater in the training group (RR, 1.49; 95% CI, 1.10-2.07; $P=.01$) than in the nontraining group. A dose-response relationship for additional quarters of the training program was also demonstrated: for every quarter of the training program, a reduction of 0.5 deaths per 1000 procedures occurred (95% CI, 0.2-1.0; $P=.001$).

Conclusion Participation in the VHA Medical Team Training program was associated with lower surgical mortality.

JAMA. 2010;304(15):1693-1700

www.jama.com

Neily et al. Assoc. Between MTT and Surg Mortality. JAMA. 2010;304(15):1693-1700.



Association Between Implementation of a Medical Team Training Program and Surgical Morbidity

Yinong Young-Xu, ScD, MA, MS; Julia Neily, RN, MS, MPH; Peter D. Mills, PhD, MS; Brian T. Carney, MD; Priscilla West, MPH; David H. Berger, MD, MHCM; Lisa M. Mazzia, MD; Douglas E. Paull, MD; James P. Bagian, MD

Objective: To determine whether there is an association between the Veterans Health Administration Medical Team Training (MTT) program and surgical morbidity.

Design, Setting, and Participants: A retrospective health services study was conducted with a contemporaneous control group. Outcome data were obtained from the Veterans Health Administration Surgical Quality Improvement Program. The analysis included aggregated measures representing 119 383 sampled procedures from 74 Veterans Health Administration facilities that provide care to veterans.

Main Outcome Measures: The primary outcome measure was the rate of change in annual surgical morbidity rate 1 year after facilities enrolled in the MTT program as compared with 1 year before and compared with the non-MTT program sites.

Results: Facilities in the MTT program ($n=42$) had a significant decrease of 17% in observed annual surgical morbidity rate (rate ratio, 0.83; 95% CI, 0.79-0.88; $P=.01$). Facilities not trained ($n=32$) had an insignificant decrease of 6% in observed morbidity (rate ratio, 0.94; 95% CI, 0.86-1.05; $P=.11$). After adjusting for surgical risk, we found a decrease of 15% in morbidity rate for facilities in the MTT program and a decrease of 10% for those not yet in the program. The risk-adjusted annual surgical morbidity rate declined in both groups, and the decline was 20% steeper in the MTT program group ($P=.001$) after propensity-score matching. The steeper decline in annual surgical morbidity rates was also observed in specific morbidity outcomes, such as surgical infection.

Conclusion: The Veterans Health Administration MTT program is associated with decreased surgical morbidity.

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ONLINE FIRST

Incorrect Surgical Procedures Within and Outside of the Operating Room

A Follow-up Report

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Objective: To describe incorrect surgical procedures reported from mid-2006 to 2009 from Veterans Health Administration medical centers and build on previously reported events from 2001 to mid-2006.

Design: Retrospective database review.

Setting: Veterans Health Administration medical centers.

Interventions: The Veterans Health Administration implemented Medical Team Training and continues to support their directive for ensuring correct surgery to improve surgical patient safety.

Main Outcome Measures: The categories were incorrect procedure types (wrong patient, side, site, procedure, or implant), major or minor surgery, in or out of the operating room (OR), adverse event or close call, specialty, and harm.

Results: Our review produced 237 reports (101 adverse events, 136 close calls) and found decreased harm

compared with the previous report. The rate of reported adverse events decreased from 3.21 to 2.4 per month ($P = .02$). Reported close calls increased from 1.97 to 3.24 per month ($P \leq .001$). Adverse events were evenly split between OR (50) and non-OR (51). When in-OR events were examined as a rate, Neurosurgery had 1.56 and Ophthalmology had 1.06 reported adverse events per 10 000 cases. The most common root cause for adverse events was a lack of standardization of clinical processes (18%).

Conclusions: The rate of reported adverse events and harm decreased, while reported close calls increased. Despite improvements, we aim to achieve further gains. Current plans and actions include sharing lessons learned from root cause analyses, policy changes based on root cause analysis review, and additional focused Medical Team Training as needed.

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DECREASING THE INCIDENCE of wrong-site surgery and invasive procedures is a challenge both in and outside of the operating room (OR).¹ Wrong-site surgery is the reviewable sentinel event most frequently reported to the Joint Commission's National Patient Safety Program.

events.¹ This study provides a follow-up report and an update on recent system-wide interventions.

OBJECTIVE

We analyzed surgical adverse events and close calls reported in the VHA system to

MTT Impact

- N=108 Institutions; 74 MTT, 34 Control
- MTT 50% greater decrease in mortality & morbidity than Control
- Dose-response –
 - 0.5 deaths/1000 procedures less per quarter
 $p=0.001$
 - 0.6 deaths/1000 procedures per increase in
briefing/debriefing $p=0.001$
- 70% Reduction in reported OR related harm



What Have We Learned?

- Actions needed well before entering the OR
 - Timeout period is too late in many cases
 - Systems-based approaches beyond individual
- Involvement of all disciplines
- Structured communication that drives discussion
 - Briefings & debriefings, **Medical Team Training** essential



In Perspective - Goethe

“Knowing is not enough; we must apply.
Willing is not enough; we must do.”



Implementation



Steps In OR

Status Quo

- Pre-Induction
- Pre-Incision
- Sign Out

MTT

- Pre-Induction
- Pre-Incision
- Post-Op Debrief
- Sign Out



OR Policy Changed to Require Attending Surgeon in OR

6. During the Pre-Induction of Anesthesia discussion or the Pre-Incision Time Out discussion the Attending Surgeon (i.e., the surgical faculty listed first on the scheduling sheet) must be present to facilitate a discussion with the surgical team. This discussion will address potential problems that may be encountered during the surgery and plans to address them (e.g., the need for additional fluids including blood). These discussions must also solicit concerns from the team so they can be addressed. The goal of these activities is to promote open communication between team members and increase patient safety. This requirement may be waived in the case of an emergency where delaying the start of the procedure would adversely impact patient care. In such cases the reason for waiving these requirements will be documented in the patient's chart.



Trust But Verify!!



Observational Data



Conclusions

- Need To Continue Improvement on Teamwork and Safety Climate in the OR and PACU
 - MTT is beginning to address some of these issues
 - Post-MTT data has shown some improvement
- Recent Data show that people more likely to be “on the on same page”
- MTT process (Debriefing) is highlighting issues that need and are getting attention
 - Must put system in place to deal with inputs
- MTT Is An Ongoing Process – Requires Leadership



Sustainable Systems Approach

- Problem Identification
- Clear Goal Definition
- Involvement Of All Sectors
- Identify Systems Influences
- Identify Systems Controls
- Identify Constraints
- ***Critique – Go To Worst Critics Early On***
- Pilot – Volunteers First Then Others
- Evaluate



Who's On The Team?

- Clinicians
- Administrative
- Other Staff
- Users
- Patients
- Personnel with Systems Background
 - Operations Research Management
 - Human Factors Ergonomics



Essential Elements For Sustainable Improvement

- Appropriate Goal Identification & Selection
- Transparent Prioritization
- Identification of Real Causes
- System-based Countermeasures That Address Underlying Causes
- Stronger Actions That Are Explicit
- Measurement of Actions
 - Process & Outcome
 - Feedback/Transparency
- Top Leadership Involvement/Visibility



Closing Thoughts

- It's Everyone's Job
- Not About Errors!!!
- Counting reports is not the objective, identifying Vulnerabilities is
 - Hope they increase
 - **Analysis, Action, & Feedback are the key**
- Prevention NOT Punishment
- Cultural change is the key – takes time
- ***Safety is the Foundation Upon which Quality is Built***

