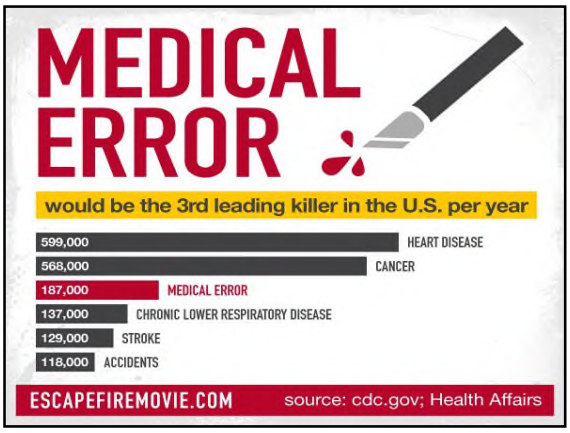
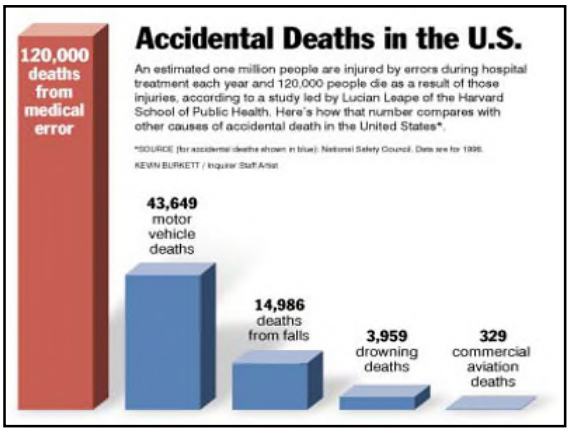
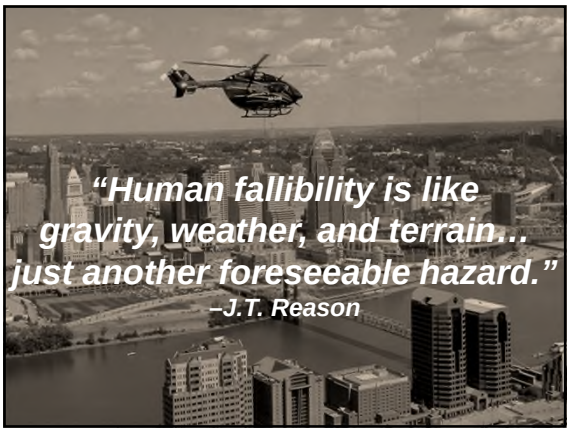

"How did this happen?"
Medical Errors in EMS
Ryan Gerecht, MD, CMTE
Tacoma Fire Department
FIRE
TACOMA
DEPT.


MEDICAL
ERRORS
250,000
FATAL
ERRORS
IN 2013
Source: Johns Hopkins University
TACOMA


MEDICAL
ERROR
would be the 3rd leading killer in the U.S. per year
599,000 HEART DISEASE
568,000 CANCER
187,000 MEDICAL ERROR
137,000 CHRONIC LOWER RESPIRATORY DISEASE
129,000 STROKE
118,000 ACCIDENTS
ESCAPEFIREMOVIE.COM
source: cdc.gov; Health Affairs


Accidental Deaths in the U.S.
An estimated one million people are injured by errors during hospital treatment each year and 120,000 people die as a result of those injuries, according to a study led by Lucian Leape of the Harvard School of Public Health. Here's how that number compares with other causes of accidental death in the United States*.
*SOURCE (for accidental deaths shown in blue): National Safety Council. Data are for 1998.
KEVIN BURKETT / Inquirer Staff Artist
120,000 deaths from medical error
43,649 motor vehicle deaths
14,986 deaths from falls
3,959 drowning deaths
329 commercial aviation deaths


MEDIC ONE
Fire Department
TACOMA FIRE DEPARTMENT
"Few tools have as great a potential to cause harm as the laryngoscope, syringe, & the ink pen…"


"Human fallibility is like gravity, weather, and terrain… just another foreseeable hazard."
–J.T. Reason

OBJECTIVES

- ✓ What are they?
- ✓ Who does them?
- ✓ Where do they occur?
- ✓ When do they occur?
- ✓ Why do they occur?
- ✓ Cases
- ✓ Solutions

"… it is virtually impossible for one mistake to kill a patient in the highly mechanized & backstopped world of a modern medicine. A cascade of unthinkable things must happen,

meaning catastrophic errors are rarely a failure of a single person, and almost always a failure of a system."

-Lisa Belkin
From How Can We Save the Next Victim?
NY Times Magazine, June 1997

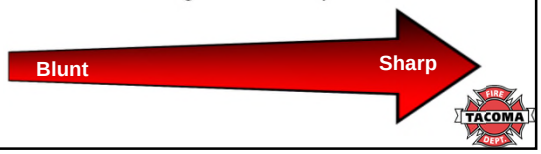
Why is this important?

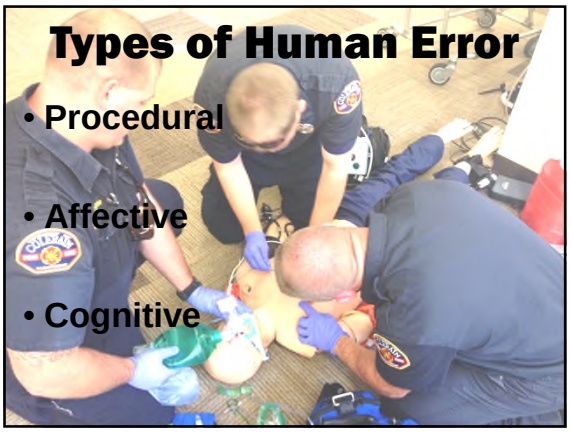
1) Patient care and safety
2) Patient satisfaction
3) Health care professional satisfaction

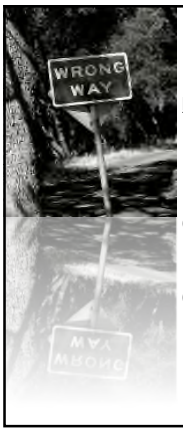
4) Financial ($17-29 billion/yr in hospitals nationwide)
5) Trust in the healthcare system & your organization

Types of Human Error

- **Active:** "the sharp end"
- **Latent:** "the blunt end"
  - Often concealed & thus frequently unnoticed
  - Have the capacity to cause many types of active errors
  - More menacing because they lie dormant







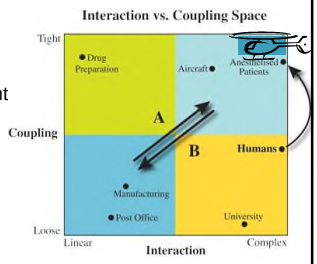
Who makes errors?…

Innate human limitations of mind & body

- Limitations in memory capacity
- Limited ability to handle multiple competing demands
- Weakened mental abilities including decision making during fear & fatigue
- Influence from group dynamics & culture

When does it occur?

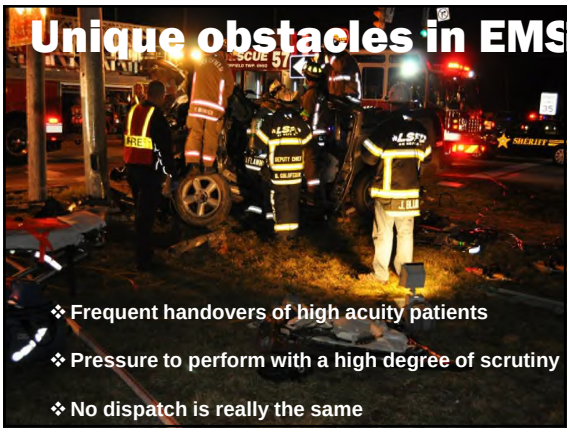
- **Complex systems**
  - Vehicles
  - Multiple personnel
  - Patient care equipment
  - Patients' physiology
- **Tightly coupled**
  - Time-dependent process
  - Invariant sequences

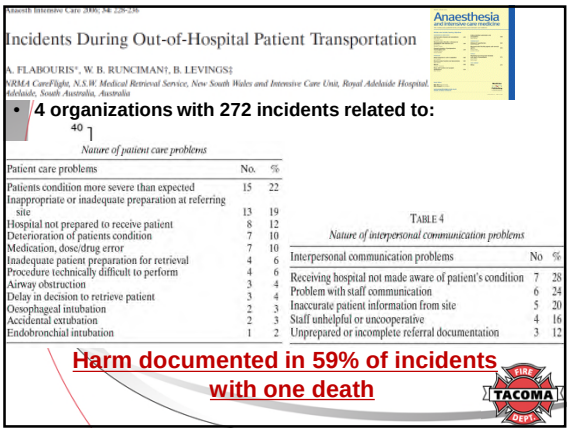


"Highly Complex, Tightly Coupled"

Unique obstacles in EMS

- Dynamic & potentially dangerous environment
- Fast paced… where speed is perceived as excellence
- Limited resources, personnel, & time
- Reliance on inferred indications…
- Actions have immediate consequences with little recovery time to stop sequential errors





Anaesth Intensive Care 2006; 34: 228-236

Anaesthesia and Intensive Care Medicine

Incidents During Out-of-Hospital Patient Transportation

A. FLABOURIS*, W. B. RUNCIMAN†, B. LEVINGS‡

NRMA CareFlight, N.S.W. Medical Retrieval Service, New South Wales and Intensive Care Unit, Royal Adelaide Hospital, Adelaide, South Australia, Australia

- 4 organizations with 272 incidents related to:

40]

Nature of patient care problems

Patient care problems	No.	%
Patients condition more severe than expected	15	22
Inappropriate or inadequate preparation at referring site	13	19
Hospital not prepared to receive patient	8	12
Deterioration of patients condition	7	10
Medication, dose/drug error	7	10
Inadequate patient preparation for retrieval	4	6
Procedure technically difficult to perform	4	6
Airway obstruction	3	4
Delay in decision to retrieve patient	3	4
Oesophageal intubation	2	3
Accidental extubation	2	3
Endobronchial intubation	1	2

TABLE 4

Nature of interpersonal communication problems

Interpersonal communication problems	No	%
Receiving hospital not made aware of patient's condition	7	28
Problem with staff communication	6	24
Inaccurate patient information from site	5	20
Staff unhelpful or uncooperative	4	16
Unprepared or incomplete referral documentation	3	12

Harm documented in 59% of incidents with one death

FIRE TACOMA DEPT.

Critical Intensive Care 2000; 34: 228-236

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Contributing factors were:

- System-based in 54%
- Human-based in 42%

Contributing factors:

- Haste (7.5%)
- Equipment mishap (7.2%)
- Equipment missing (5.5%)
- Failure to check (5.8%)
- Pressure to proceed (5.2)

TABLE 7
Human based contributing factors

Human based contributing factors	Total	% of all contributing factors
Violation/Rule based (18.8%)		
* Failure to check equipment	21	5.8
* Failure to follow policy/protocol	14	3.9
* Took a short cut	9	2.5
* Failure to apply basic patient care	8	2.2
* Failure to act on available information	8	2.2
* Took a risk	7	1.9
* Failure to attend as required	1	0.3
Skill based (15%)		
* Haste	27	7.5
* Distraction	9	2.5
* Inattention	9	2.5
* Fatigue	8	2.2
* Stress	1	0.3
Knowledge based (9.1%)		
* Unfamiliarity equipment/environment	11	3
* Inadequate/wrong knowledge	10	2.8
* Inexperience/inadequate training	5	1.4
* Technical problem with procedure	4	1.1
* Error of diagnosis	3	0.8

MEDICATION DOSING ERRORS IN PEDIATRIC PATIENTS TREATED BY EMERGENCY MEDICAL SERVICES

John D. Hoyle, Jr., MD, Alan T. Davis, PhD, Kevin K. Putman, EMT-P, Jeff A. Trytko, MS, William D. Fales, MD

2012

- Retrospective look at 8 EMS agencies from 2004-2006
- **Children < 11 years old**
- **Error defied as > 20% deviation from the weight appropriate dose determined by prehospital record**
- Examined 6 medications
  - Albuterol
  - Dextrose
  - Epinephrine
  - Atropine
  - Benadryl
  - Narcan

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2012

- 230 children underwent 360 medication administrations

TABLE 3. Incorrect Medication Doses, Overdoses, and Underdoses

Drug	No. Incorrect Doses/Total Doses	% Incorrect Doses (95% CI)	No. Overdoses	Overdose Mean Error (% ± SD)	No. Underdoses	Underdose Mean Error (% ± SD)
Albuterol	55/236	23.3% (18.4, 29.1)	1	200*	54	48.4 ± 8.8
Atropine	20/41	48.8% (34.3, 63.5)	8	407 ± 277	12	46.8 ± 15.0
Dextrose	2/4	50.0% (15.0, 85.0)	1	200*	1	62.5*
Diphenhydramine	7/13	53.8% (29.1, 76.8)	4	190.8 ± 45.3	3	53.3 ± 16.3
Epinephrine (1:1,000)	28/43	65.1% (50.2, 77.6)	6	655 ± 418	22	29.9 ± 22.4
Intravenous/intraosseus	13/25	52.0% (33.5, 70.0)	4	808 ± 428	9	35.5 ± 27.4
Endotracheal	14/14	100.0% (78.5, 100.0)	2	200, 500*	12	22.8 ± 14.7
Intramuscular	1/4	25.0% (4.6, 69.9)	0	—	1	65.2*
Epinephrine (1:10,000)	12/21	57.1% (36.5, 75.5)	2	167, 500*	10	13.8 ± 5.3
Intravenous/intraosseus	11/20	55.0% (34.2, 74.2)	1	167*	10	13.8 ± 5.3
Endotracheal	1/1	100.0% (20.7, 100.0)	1	500*	0	—
Naloxone	1/2	50.0% (9.5, 90.5)	0	—	1	25.0*

*Actual values; the mean and standard deviation were not calculated because of small sample size.
SD = standard deviation.

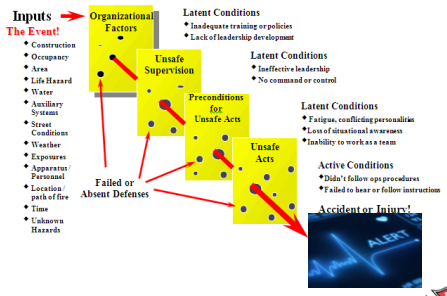
*****Dosing errors occurred in 34.7%*****

Why do they occur?

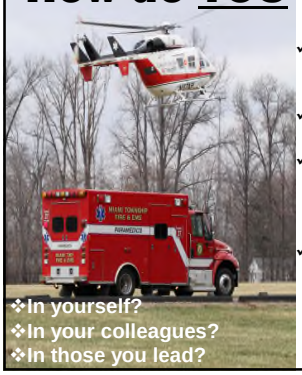
❖ Depends on how you look at it…

	Modern "System"
Main Focus:	Errors are consequences rather than causes. "Symptoms of a bigger disease"
Cause:	Upstream systemic factors
Foundation:	Recurrent error traps & organizational processes
Counter Measures:	We cannot change the human, we can only change the environment
Conclusion:	Important issue is not who made the error but how & why defenses failed

Swiss Cheese Model



How do YOU view error?



❖In yourself?
❖In your colleagues?
❖In those you lead?

✓ Person approach dominates medicine

✓ *"Myth of Infallibility"*

✓ Blaming individuals is more emotionally satisfying then targeting systems

✓ Uncoupling a persons unsafe acts from institutional responsibility is potentially desirable…

CASES

"What is striking about many accidents is that people were doing exactly the sorts of things they would usually be doing the things that usually lead to success & safety…

Accidents are seldom preceded by bizarre behavior."

-Sidney Dekker
The field Guide to Human Error Investigations (2002)

Fixation Errors

(anchoring)

Persistent failure to revise a diagnosis or plan in the face of evidence that suggest revision is necessary…

- ✓ ***"This and only this"***
- ✓ ***"Everything but this"***
- ✓ ***"Everything's okay"***

❖Affects all of us… even the wise and experienced

"First come, best preferred"

Cognitive Errors

- **"Errors in how we think"**
- We should strive to understand why we have certain dispositions to respond in particular situations
- **Pat Croskerry, MD, PhD**
- ***"Most important strategy is to familiarize clinicians with various types of biases…"***

- **Search satisfying:** calling off the search for further abnormalities after achieving satisfaction from finding the first abnormality
- **Premature closure:** when a dx is accepted before fully verified and other potential dx are not considered
- **Diagnostic momentum:** "following the crowd"
- **Overconfidence Bias:** over-reliance on the opinions of the expert that came before (officer, supervisor, etc.)

A Few Examples

- Aggregate bias
- **Anchoring**
- Ascertainment bias
- **Availability**
- Base-rate neglect
- **Commission bias**
- **Confirmation bias**
- Diagnosis momentum
- Feedback sanction
- Framing effect
- Gamblers fallacy
- Gender bias
- **Multiple alternative bias**
- **Omission bias**
- Order effects
- Overconfidence bias
- Playing the odds
- **Premature closure**
- Psych-out errors
- **Search satisfying**
- Triage cueing
- Unpacking principle
- Vertical line failure
- Visceral bias

Croskerry P. The importance of Cognitive Errors in diagnosis and Strategies to Minimize them. Acad. Med. 2003;78:775-780

Debiasing Strategies

Strategy	Mechanism/Action
Develop insight/ awareness	Provide detailed descriptions and thorough characterizations of known cognitive biases, together with multiple clinical examples illustrating their adverse effects on decision-making and diagnosis formulation.
Consider alternatives	Establish forced consideration of alternative possibilities e.g., the generation and working through of a differential diagnosis. Encourage routinely asking the question: What else might this be?
Metacognition	Train for a reflective approach to problem solving: stepping back from the immediate problem to examine and reflect on the thinking process.
Decrease reliance on memory	Improve the accuracy of judgments through cognitive aids: mnemonics, clinical practice guidelines, algorithms, hand-held computers.
Specific training	Identify specific flaws and biases in thinking and provide directed training to overcome them: e.g., instruction in fundamental rules of probability, distinguishing correlation from causation, basic Bayesian probability theory.

Croskerry P.
Acad. Med. 2003;78:775-780

Heuristics

"Unconscious 'mental shortcut' or 'rule of thumb' that allows humans to process a large amount of information in a short amount of time."

- Annissimov M.

- We learn to ignore info that is not needed & to process only info that is vital at the moment
- Simplifies decisions
- Flourishes in uncertainty

Benefits of Heuristics

- Allows us to minimize mental effort
- Saves incredible time for the busy clinician
- Aides in rapid triage & treatment
- Leads to optimal resource utilization

" Heuristics are indispensable in medicine & clinicians, must often make quick judgments about how to treat a patient on the basis of a few, potentially serious symptoms.

- Dr. Croskerry

In other words…

Because of **past experience & training** specific clusters of signs & symptoms trigger a **"mental shortcut"** that leads to a potential diagnosis

*****A form of pattern recognition that is intuitive*****

*****Accuracy is dependent on the experience*****

Metacognition

Ability to stand apart from your own thinking in order to be aware of your own preferred heuristics & thinking biases

- ***"thinking about thinking"***
- ***"hallmark of human intelligence"***

- **Allows us to ask…**

"What will I do differently next time?"

Metacognition

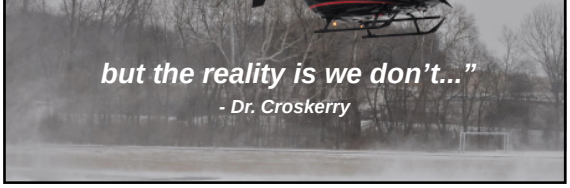
Two Stage Process

1. Develop awareness of the cognitive demands in a particular situation
2. Able to specify a particular strategy for improving the decision making

A couple of tips…

- Summarize the patient in a single sentence
- Then ask yourself a few of these questions…

1. **What was my first impression?**
2. What information was I looking for?
3. **How confident am I?**
4. Could I be **missing an alternative diagnosis?**
5. Significant **advantages or disadvantages of treatment?**
6. **If I was less busy, or tired would I do the same?**
7. **Clues to errors:** disparities, repeat run, patient not improving



Communication Failures

- **"Communication problems in transport medicine are numerous & a leading cause for breakdown in patient care…"**- To Err is Human: 1999

Root cause in over 70% of sentinel events reported to JACO
Of these… 75% are associated with a patient's death

- Studies document communication failure as cause for medical errors in all aspects of transport from dispatch to treatment

Communication load

Short Term Memory

Communication Failures

- **"Read-Back" Process**
  - ✓ Active participation
  - ✓ Built in redundancy for clarity
  - ✓ Closed loop communication

IMPORTANT

- Ideal for efficient communication between fatigued or overwhelmed participants
- Should **NOT BE** used for all communication
- Should **BE** used in specific operational contexts
  1) Critical phase of operations
  2) Exchange of vital information

When things get really bad?

- **Traditional "Hint and Hope model"**
  - Founded in hierarchy
  - Perpetuates lack of a common mental model
- **Appropriate Assertion**
  Stop and Listen…
  we may have a problem
- **CUS Program**
  - ✓ *"I am concerned…"*
  - ✓ *"I am uncomfortable…"*
  - ✓ *"This is unsafe…"*

Case 3 - Intubation

Near Miss

- An act that could have caused harm but was prevented through a planned or unplanned recovery

- ✓ **Do you recognize these events in your own clinical care?**
- ✓ **Do you acknowledge these events in your colleagues?**
- ✓ **Do you formally report these events?**

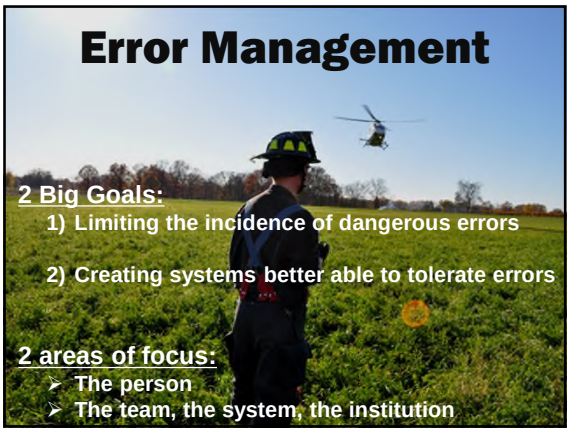
Normalization of Deviance

- A **gradual shift** in thought during which a nonstandard or **unacceptable change** in behavior or standards **becomes acceptable** to us

- ✓ Have **YOU** done this?
- ✓ Have you ever seen this in your **colleagues**?
- ✓ What do you do about it?


Case 4- The Drop


Understand one thing…
We even make errors when looking at errors…
➢Outcome Bias
➢Hindsight Bias


Error Management
2 Big Goals:
1) Limiting the incidence of dangerous errors
2) Creating systems better able to tolerate errors
2 areas of focus:
➢ The person
➢ The team, the system, the institution

Error Management

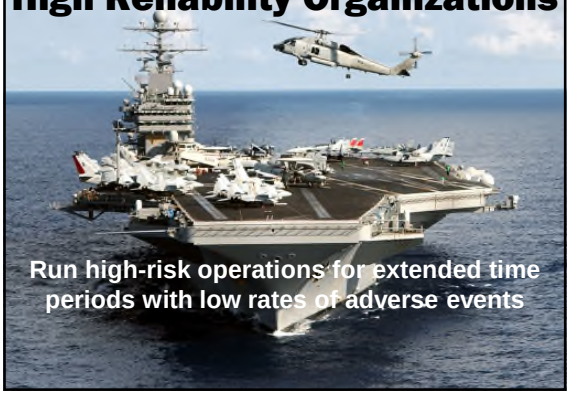
The "Anti-personnel" approach has major problems

✓People do NOT intend to commit errors

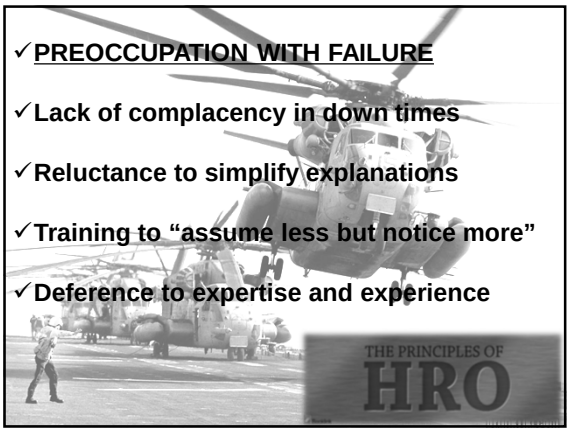
✓Psychological precursors of an error are the least manageable links in the chain of events leading to error

✓Accidents rarely occur as the result of single unsafe acts

High Reliability Organizations



Run high-risk operations for extended time periods with low rates of adverse events



✓**PREOCCUPATION WITH FAILURE**

✓**Lack of complacency in down times**

✓**Reluctance to simplify explanations**

✓**Training to "assume less but notice more"**

✓**Deference to expertise and experience**

Solution

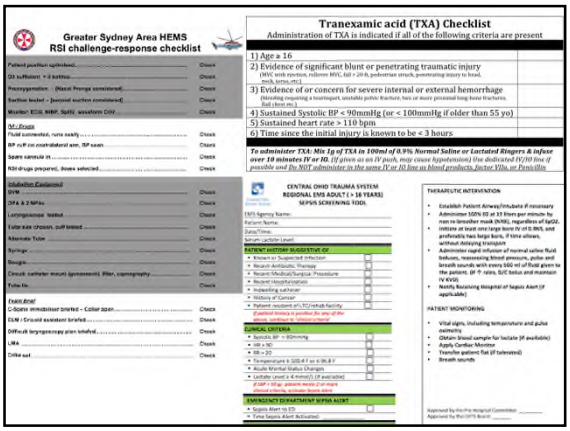
- Treat medical errors like any other disease
  - Educate yourself on the disease
  - History & examination
  - Get diagnostic "tests"
  - Form a differential dx
  - Make a diagnosis
  - Provide treatment

Treatment

- ✓ Deal with latent factors & organizational culture
- ✓ Provide formal training on the nature of error & the limitations of human performance
- ✓ Develop error reducing processes
  - Read Backs
  - Time Outs
  - Check lists
  - Reduce Distractions
- ✓ Make error management a focus of recurrent training & data collection

June 2014

Shaughn Maxwell, EMT-P



Greater Sydney Area HEMS
RSI challenge-response checklist

Tranexamic acid (TXA) Checklist
Administration of TXA is indicated if all of the following criteria are present

1) Age ≥ 16	
2) Evidence of significant blunt or penetrating traumatic injury (MVC with ejection, rollover MVC, fall > 20 ft, pedestrian struck, penetrating injury to head, neck, torso, etc.)	
3) Evidence of or concern for severe internal or external hemorrhage (bleeding requiring a tourniquet, unstable pelvic fracture, two or more proximal long bone fractures, flail chest, etc.)	
4) Sustained Systolic BP < 90mmHg (or < 100mmHg if older than 55 yo)	
5) Sustained heart rate > 110 bpm	
6) Time since the initial injury is known to be < 3 hours	

To administer TXA: Mix 1g of TXA in 100ml of 0.9% Normal Saline or Lactated Ringers & infuse over 10 minutes IV or IO. *(If given as an IV push, may cause hypotension) Use dedicated IV/IO line if possible and Do NOT administer in the same IV or IO line as blood products, factor VIIa, or Penicillin*

CENTRAL OHIO TRAUMA SYSTEM
REGIONAL EMS ADULT (> 18 YEARS)
SEPSIS SCREENING TOOL

EMTS Agency Name:
Patient Name:
Date/Time:
Serum Lactate Level:

PATIENT HISTORY SUGGESTIVE OF
- Known or Suspected Infection
- Recent Antibiotic Therapy
- Recent Medical/Surgical Procedure
- Recent Hospitalization
- Indwelling catheter
- History of Cancer
- Patient resident of LTC/rehab facility

If patient history is positive for any of the above, continue to clinical criteria

CLINICAL CRITERIA
- Systolic BP < 90mmHg
- HR > 90
- RR > 20
- Temperature ≥ 101.4 F or ≤ 96.8 F
- Acute Mental Status Changes
- Lactate Level ≥ 4 mmol/L (if available)

If SBP < 90 sp, patient meets 2 or more clinical criteria, activate Sepsis Alert

EMERGENCY DEPARTMENT SEPSIS ALERT
- Sepsis Alert to ED
- Time Sepsis Alert Activated

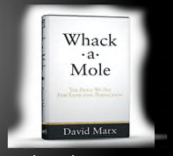
THERAPEUTIC INTERVENTION
- Establish Patent Airway/Intubate if necessary
- Administer 100% O2 at 15 liters per minute by non re-breather mask (NRM), regardless of SpO2.
- Initiate at least one large bore IV of 0.9NS, and preferably two large bore, if time allows, without delaying transport
- Administer rapid infusion of normal saline fluid boluses, reassessing blood pressure, pulse and breath sounds with every 500 ml of fluid given to the patient. (IF ↑ rales, D/C bolus and maintain IV KVO)
- Notify Receiving Hospital of Sepsis Alert (if applicable)

PATIENT MONITORING
- Vital signs, including temperature and pulse oximetry
- Obtain blood sample for lactate (if available)
- Apply Cardiac Monitor
- Transfer patient flat (if tolerated)
- Breath sounds

Approved by the Pre-Hospital Committee _____
Approved by the EMS Board _____

Just Culture

- Founded in the belief that errors are caused by a complex array of factors including failures of systems as well as human factors.
- Well **accepted in healthcare & aviation**
- Embodies fairness & accountability.
- Encourages individuals to report mistakes so that the precursors to errors can be better understood to fix the system



Just Culture

Human Error
Inadvertently completing the wrong action

At-Risk Behavior
Choosing to behave in a way that increases risk where risk is not recognized or is mistakenly believed to be justified

Reckless Behavior
Choosing to consciously disregard a substantial & unjustifiable risk

Console Human Error

Coach at-risk behavior

Punish reckless behavior

… Regardless of Outcome

It is when…

- 2001 TJC requires disclosure of "unanticipated outcomes"
- No national guidelines for the identification, reporting, & disclosure of medical errors in the transport environment
- Regardless, patients expect openness & disclosure, should an error occur

Reporting MUST occur…

E.V.E.N.T.
EMS Voluntary Event Notification Tool

✓ Receiving ED physician
✓ Immediate Supervisor
✓ Your Medical Director

The patient & family

How this occurs should vary by agency policy, local culture, and clinical situation

Disclosure for Patients

- Supports truth-telling, patient safety, & trust
- Consistent with patient preference…even when errors are small & the harm is minor
- Patients seek acknowledgement of the pain & suffering that was caused by the error
- Patients want reassurance that future errors will be prevented

Lu DW, Guenther E, Wesley AK, Gallagher TH. Disclosure of Harmful Medical Errors in Out-of-Hospital Care. *Ann Emerg Med.* 2013;61:215-221

Disclosure for Providers

- Beware of the "disclosure gap" and its causes
- Clinicians experience significant emotional distress & isolation after errors occur
- Disclosure helps reduce burnout
- The transport environment is often difficult for large institutions to understand

Lu DW, Guenther E, Wesley AK, Gallagher TH. Disclosure of Harmful Medical Errors in Out-of-Hospital Care. *Ann Emerg Med.* 2013;61:215-221

The Future…

- Training dedicated to understanding the causes of medical errors
- Confidential databases for reporting medical errors
- Research on minimizing error producing conditions
- Collaboration with industry to design equipment that is up to the task
- Policies guiding the disclosure of medical errors
- Publish our challenges & successes

Conclusions

- Error is part of the human condition but bad outcomes due to error don't have to be…
- Faulty systems call forth error behavior in even the most skilled and experienced clinician
- With adequate leadership, attention, & resources, improvements can be made to these systems.
- Different types of errors require different methods of risk management

Conclusions

- The psychological factors involved in error are the last & least manageable links in the chain of error
- People do not act in isolation. Behavior is shaped by circumstances
- It may be part of human nature to err, but it is also part of human nature to create solutions, find better alternatives, & meet the challenges ahead….

"All men make mistakes,
but a good man yields when he knows his course is wrong, & repairs the evil.
The only crime is pride."

Sophocles, Antigone"

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Myths about Errors

- Bad people make errors
- It is easier to change people than situations
- The errors of highly trained professionals are rare
- Nothing good comes from errors
- Practice makes perfect
- Errors are random & highly variable
- The errors of highly trained professionals are usually sufficient to cause bad outcomes

Slips, Lapses & Mistakes

Errors

- Execution failures: slips, lapses, trips & fumbles
- Planning/problem solving failures: mistakes

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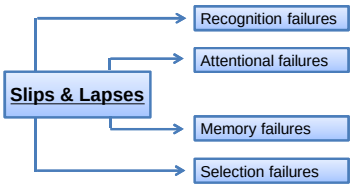
Slipses & Lapses



Examples of Slips

- ✓ **Sequence Error**
- ✓ **Description Error**
- ✓ **Mode of Error**

❖ **Most commonly occur during some routine task in familiar surroundings**

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Mistakes

✓ **Rule Based:** Preprogrammed solutions

1) Misapplication of a good rule
2) Application of a bad rule
3) Non-application of a good rule

✓ **Knowledge Based:** No preprogrammed solutions

- Occur in novel situations
- Solution to a problem must be worked out on the spot
- Inaccurate or incomplete "mental mode"

Errors versus Violations

Violations are deviations from safe operating practices or rules.

Violations are different than errors

Errors	Violations
Informational Problems (forgetting, inattention)	Motivational problems (low moral, lack of concern etc)
Explained by what goes on in the mind of an individual	Occur in a regulated social context
Reduced by improving the delivery of information	Require motivational and organizational solutions

Reason J. Understanding adverse events: human factors. *Quality in Health Care* 1995;4:80-89

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Our environment…

full of risk & uncertainty

- ***"Jack of all trades"*** expected to be good at everything
- Make multiple critical decisions ***rapidly & simultaneously***
- Perceived to be an ***action-oriented profession*** with procedures being the most important skill set…
- Reality is that the majority of our time is spent ***engaged in cognitive behavior***

Errors versus Violations

Table 1 Summary of error producing conditions ranked in order of known effect (after Williams[12])

Condition	*Risk factor*
Unfamiliarity with the task	(×17)
Time shortage	(×11)
Poor signal:noise ratio	(×10)
Poor human system interface	(×8)
Designer user mismatch	(×8)
Irreversibility of errors	(×8)
Information overload	(×6)
Negative transfer between tasks	(×5)
Misperception of risk	(×4)
Poor feedback from system	(×4)
Inexperience – not lack of training	(×3)
Poor instructions or procedures	(×3)
Inadequate checking	(×3)
Educational mismatch of person with task	(×2)
Disturbed sleep patterns	(×1·6)
Hostile environment	(×1·2)
Monotony and boredom	(×1·1)

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- **Factors that promote violations are less well understood then conditions producing errors**

Table 2 Violation producing conditions, unranked

Conditions
Manifest lack of organisational safety culture
Conflict between management and staff
Poor morale
Poor supervision and checking
Group norms condoning violations
Misperception of hazards
Perceived lack of management care and concern
Little elan or pride in work
Culture that encourages taking risks
Beliefs that bad outcomes will not happen
Low self esteem
Learned helplessness
Perceived licence to bend rules
Ambiguous or apparently meaningless rules
Rules inapplicable due to local conditions
Inadequate tools and equipment
Inadequate training
Time pressure
Professional attitudes hostile to procedures

Emergency Medical Services Provider Perceptions of the Nature of Adverse Events and Near-misses in Out-of-hospital Care: An Ethnographic View

Rollin J. Fairbanks, MD, MS, EMT-P, Crista N. Crittenden, MPH, Kevin G. O'Gara, MD, Matthew A. Wilson, MD, Elliot C. Pennington, BA, Nancy P. Chin, PhD, Manish N. Shah, MD, MPH

- Complex study design using focus groups, interviews, & event reporting.
- Examined adverse events, near-misses, and errors
- **61 events from an EMS region serving an urban, suburban, and rural population of 795,000**

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Table 3
Characteristics of the Near-miss and Adverse Event Data

Characteristic	n	%
Type of event (n = 61)		
Near-miss	27	44
Adverse event	34	56
Age (years) of patient involved in event (n = 61)		
<19 years	14	23
≥19 years	34	56
Age unknown	13	21
Classification of event (n = 61)		
Clinical judgment	33	54
Skill performance	13	21
Medication event	9	15
Destination choice	3	5
Other	3	5
Reported to authority (n = 21)*		
Physician	9	43
Supervisor	10	48
Never reported	4	19
Disclosed to patient	0	0

*Questions regarding the reporting of events were only asked to participants for 21 of the events. Two events were reported to two authorities. No event was reported to patients themselves.

*"Backboard everyone to **save your ass.**"*

***"Training is not the same** all over"*

*"With all the different pieces of equipment, **half know & half don't"***

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Table 4
Eighteen Basic Themes Sorted Into Five Analytic Domains

Basic Theme	Analytic Domain
Response to QA and feedback	Error reporting and responses to reporting
Lack of proactive reporting	
Blame and punishment perceived as important for resolution	
Need for nonpunitive reporting system	
Bad outcome or adverse event	
Poor understanding of definitions of errors and near-misses	
Equipment compatibility across agencies and facilities	Lack of standardization
Environmental differences	
Lack of adherence to protocols	
Perceptions of pediatric patient care	Pediatrics
Interrelationships: respect, antagonisms, adversarial	Interrelationships
Politics	
Bravado and fear of failure	
Reluctance to tell on colleagues	
Errors of other EMS providers	Blame
Focus on non-EMS errors	
Common stories/myths	General themes
Type of error: management/procedure	

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- A culture of **"blame and shame"** was evident
- Weak or **confusing protocols**
- Unrealistic expectations = **perceived errors**
- Inadequate training and experience with **pediatrics**

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*"ALS delayed due to **local politics**…"*

*" When you ask for an attending.. You get an **attitude**."*

*"A good paramedic wouldn't need to pull out a **cheat sheet***

"Next time why don't you call me to the scene to do your intubations for you?"

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*"Adverse events & near-misses were common among EMS providers who participated in this study **but the culture discourages sharing of this information.***

*Participants attributed many events to system issues & to **inadequacies of other provider groups."***