



Medical Errors in EMS: A Contemporary Approach

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- Chance of error in a high stress situation (e.g. code, trauma in ED etc)

U.S. Causes of Death 2000

- 1. Heart disease 710,760
- HealthGrades Report (2004): 191,000 deaths/yr (estimated cost: \$6.3 billion/yr)
- 2. Chronic, low respiratory disease: 122,000
- 6. Diabetes: 69,301
- 8. Alzheimer's: 49,558
- IOM (2000): Medical error in US hospitals: 44,000-98,000 (estimated cost: \$17 - \$50 billion)
- 9. Motor vehicle accidents: 41,994

Oops!

- Accident
 - Unforeseen random occurrence producing an undesirable event
- Mistake
 - Unintended human act of omission or commission that does not achieve its intended goal.
- Medical error
 - Failure of a planned action to be completed as intended or the use of a wrong plan to achieve an aim. (IOM)
 - Perception is blame-oriented.
- Adverse event
 - Any harm caused by medical management
 - 2 victims: patient, provider/system

The journey is more important than the destination.

- The determination of error is not reliant on the outcome.

Human Error Rates

- 0.003
 - General error rate
 - E.g., reading a label, forgetting to take your cash card from the ATM
- 0.03
 - Error rate for simple arithmetic with simple self checking
- 0.1
 - Chance someone will fail to recognize your error when looking over your work
- 0.25

Fordyce J, et al. Errors in a Busy Emergency Department. *Ann Emerg Med.* 2003;42:324-333.

Methods: This is a prospective, observational study of reported errors at an academic emergency department (ED) with 100,000 annual visits. Trained personnel interviewed all ED staff with direct patient contact, during and at the end of every shift, by using standardized data sheets.

Results: One thousand nine hundred thirty-five ED patients registered during the 7-day study period in the summer of 2001. Four hundred error reports were generated, identifying 346 nonduplicative errors (18 per 100 registered patients; 95% confidence interval [CI] 15.9 to 20.0). Forty percent of errors were reported by nurses, 25% by providers, 19% by clerical staff, 13% by technicians and orderlies, and 3% multiple reporters. Errors reported for every 100 hours worked were similar for all groups (5.5; 95% CI 5.2 to 5.9). Errors were categorized as 22% diagnostic studies, 16% administrative procedures, 16% pharmacotherapy, 13% documentation, 12% communication, 11% environmental, and 9% other. Patients involved in errors were more likely to be older ($P<.0001$) and more likely to have higher visit level intensity ($P<.0001$) than registered ED patients. Ninety-eight percent of errors did not have a significant adverse outcome. Seven errors (0.36 per 100 registered patients; 95% CI 0.14 to 0.72) were associated with an adverse outcome.

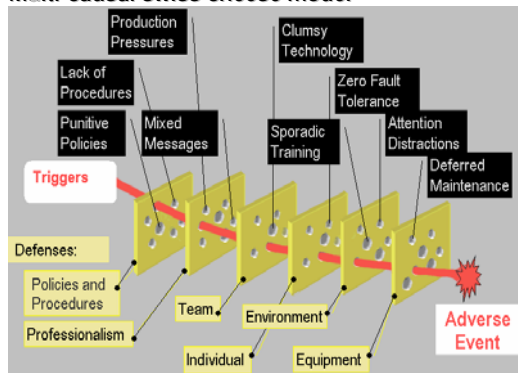
Conclusion: Reported errors occurred in almost every aspect of emergency care. Ninety-eight percent of errors in the ED do not result in adverse outcomes. System changes need to be implemented to reduce ED errors.

Paradigm Shift

- Nobody intends to make a mistake
- Good but fallible people
- Error risk increases at decision points
- System failures allow mistakes to reach the patient
- Improving the system reduces the impact
- "Don't make it so the right thing happens. Make it so the wrong thing can't happen."

It's usually the system!

Multi-causal swiss cheese model



- Focus on individuals
- Blaming individuals for forgetfulness, inattention, or carelessness, poor production
- Methods: poster campaigns, writing another procedure, disciplinary measures, threat of litigation, retraining, blaming and shaming
- Target: Individuals
- System Approach
 - Focus on the conditions and environment in which individuals work
 - Building fault tolerance in a system of work to reduce harm or mitigate its effects
 - Methods: creating better system
 - Targets: System (team, tasks, workplace, organization, physical environment)

Red Flag Checklist

- Task Management
 - Task saturation
 - Fixation/preoccupation
 - Failure to prioritize
 - Feeling rushed/pressured
 - Deviating from normal practice
 - Trying something new under pressure
- Self-Management
 - Boredom/fatigue
 - Personal problems
 - Physical/mental health
 - Workload/multi-tasking
 - Intuition
 - "Doesn't feel right"
 - "Something's wrong"
 - Attitude

Personal Accountability

- Then is there any personal accountability?
 - Yes. But...
 - Blame, cause, and fault are not the same
 - Intentionally unsafe acts are a separate issue
 - Individual accountability drives a shift in culture to one of safety
 - Discipline for failing to follow the process

Shift in Culture

- "You're either part of the problem or part of the solution."
- You are part of the system problem AND THEREFORE part of the system solution.
- "You can't change the human condition but you can change the conditions humans work in."

Approach to Healthcare Errors

- Personal Approach

Patient Safety

- Patient safety is the
 - identification and control of hazards that could cause harm to patients
 - prevention of harm or injury to patients
 - provision of a safe environment in which to practice.
- Is Patient safety a euphemism for medical error?
 - Not really - medical error is poorly defined and often a euphemism for blaming an individual
- "How can there be quality healthcare if it isn't safe?"

Reliability

- You don't shop for pilot when you fly
- You can shop for a surgeon
- Patients can shop for a hospital, but...
- 911 callers can't shop for an EMS crew
- How reliable are we??

Evidence of Hospital Reliability

- Retrospective studies (Brennan, et al, 1991)
 - 2-4% of hospitalizations
 - 10-40% including close calls
- Cross-sectional (Ely, et al 1995)
 - 50% with survey of Family Practice docs 2-20 years experience
- Prospective studies (Gopher, 1991; Andrews, 1999)
 - ICU observation: 1.7 events/patient/day
 - Internal Medicine rounds: 50% of all admitted patients with 1-10 events

What about EMS care?

- We train and practice CPR all the time. That

should be our most reliable procedure, right?

- Consider the results of CPR depicted in Aufderheide TP, Lurie KG. Death by hyperventilation: A common and life-threatening problem during cardiopulmonary resuscitation. *Crit Care Med* 2004; 32(9) [Suppl.]:S345–S351.

What is 99.9% reliability?

- 1 hour of unsafe drinking water every month
- 2 unsafe plane landings per day at O'Hare Airport in Chicago
- 16,000 pieces of mail lost every hour
- 22,000 checks deducted from the wrong bank account each hour
- 20,000 incorrect prescriptions every year
- 500 incorrect operations each week

Now, what do you think?

- The most seasoned airline pilot begins every routine, scheduled flight with a checklist.
- Given the unplanned and spontaneous nature of EMS, is that a greater reason to have a system or to be exempt from adhering to one?

Error Reduction Strategies

- ASA, NASA, nuclear plants, airline cockpit
- Reduce reliance on memory
- Improve information access
- Standardize tasks
- Reduce the number of hand-offs
- Error-proof processes

Why Processes Fail

- Variable input
- Complexity
- Inconsistency
- Tight coupling
- Tight time constraints
- Human intervention
- Hierarchical culture

Refining EMS Patient Safety

- Adopt team approach—lead don't command
- Encourage a safety culture like other high reliability organizations
- Clear, accessible KISS protocols, checklists
- Voluntary, non-punitive reporting

- Respect near-misses
- Disclose errors to patients
- Implement root cause analysis
- Simulate, practice, and spur rehearse

Initiatives in the hospital...

- JC: National Patient Safety Goals
- Report card
- Do not use abbreviations
- Medication reconciliation
- Handwashing
- Fall prevention
- Hand-off communication

Summary

- Accidents are obsolete.
- People make mistakes. Accept it.
- Encourage reporting near-misses and errors to expose vulnerabilities.
- Manage risk through adopting systems rather than managing people.
- Give rigorous attention and investment to analysis of errors and their cause.
- Teams solve problems better than individuals.
- Embrace efforts to reduce errors, even if inconvenient or unpleasant.

Resources



VA National Center for Patient Safety

<http://www.va.gov/ncps>



Agency for Healthcare Research & Quality

<http://www.ahrq.gov>



The Joint Commission

<http://www.jointcommission.org>