



SAVING LIVES - REDUCING RISK

From The Editor

It is Fall, which means that soon several thousand emergency practitioners will head off to Boston for the ACEP Scientific Assembly. I am giving several talks at the meeting, but there is one that I am particularly excited about. There is a lecture given each year

called the Mill's Lecture, which traditionally provides emergency physicians with a topic that the College feels is extremely important to the practice of emergency medicine. This year they chose a lecture I recommended

called "How Physicians Think: The Cognitive Autopsy." If you are going to the Assembly, please stop by for the Mill's Lecture. For those of you who are not attending this year, I thought I would provide a short overview of this fascinating topic. It is a subject that gets to the heart of improving patient safety and reducing medical errors and medical malpractice suits ■



If you plan on attending the ACEP Scientific Assembly, please stop by and see us.

Visit us at ACEP - Booth # 801

How Physicians Think: The Cognitive Autopsy

In the world of improving patient safety and reducing medical errors, there are a number of important considerations. First, it is important to create and be aware of the profile of various types of adverse patient outcomes. For example, in the area of 'failure to diagnose' meningitis in children, the cases

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fall into six fairly distinct areas; a good example is the failure to recognize a newborn's exposure to maternal pathogens.



Next, it is important to measure clinical and documentation performance. A few years ago, TSG published a study of over 170,000 high-risk patients with over 2.5 million individual risk, safety, and quality indicators.

The study clearly demonstrates areas of strength and weakness in practitioners' clinical practice and documentation. It is simply not possible to change behavior unless we measure behavior. This is a critical part of performance improvement.

We found, for example, that approximately 10% of patients in the study had a very abnormal vital sign, and that 16% of those patients were sent home without a single repeat of the very abnormal vital sign. Sixteen percent is simply unacceptable and is undoubtedly related to patient morbidity and mortality. ED systems must address this issue.

These are both important pieces to the puzzle of patient safety and medical error reduction. Of equal or greater importance

is simply **How Physicians Think**. What goes on in the mind of an emergency practitioner during a typical emergency department shift?

You May Not Be In Control!

Over the last 20 years, there has been an ongoing critical analysis of this important topic, and the results may surprise you. **You may not have complete control over your own decision-making!**

Whenever possible, medical practitioners make decisions based on strong medical evidence; that is, decisions based upon clear evidence or proof in the medical literature. For example, 10 years ago, when lytics were in common use for ST elevation MIs, the literature overwhelmingly established the utility of the administration of a lytic agent in the appropriate cases; the decision to administer was an easy one. The decision to remove a C-collar is often an easy one



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TSG Upcoming Lectures

ACEP Scientific Assembly

- 1** **Documentation: The Good, The Bad And The Ugly**
Tues., Oct. 6 @ 8:00 am
- 2** **Taking The Stand - Real Medical Malpractice Cases**
Tues., Oct. 6 @ 12:30 p.m.
- 3** **The James D. Mills, Jr. Memorial Lecture - How Physicians Think: The Cognitive Autopsy**
Weds., Oct. 7 @ 12:30 p.m.
- 4** **Keeping Yourself Out Of Hot Water: ACEP's Standard Of Care**
Weds., Oct. 7 @ 5:00 p.m.

ASHRM Conference

- 1** **Medical Malpractice Moot Court**
Fri., Oct. 23 @ 1:15 p.m.

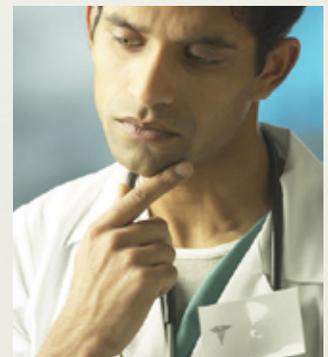
Physicians' Reciprocal Insurers Annual Risk Mgmt. Conference

- 1** **Patient Safety And Risk Reduction: A New Paradigm**
Tues., Nov. 17

based on the NEXUS study. The decision to discharge a patient is also easy based upon an appropriate application of the Well's DVT criteria.

These are easy 'front-of-mind' decisions. The literature is clear; the work has been done for the medical world. The probabilities have been established. You don't have to cognitively dig very deep to make a decision. Evaluate the patient, apply the criteria, and make a decision. For the purpose of this discussion, consider these decisions 'front-of-mind' or front stage. These are easy, non-stressful decisions.

But the evidence does not apply to every decision an emergency practitioner has to make. In fact, most decision-making does not have a solid basis in the literature. Without that solid evidentiary basis, how do emergency physicians make decisions? And consider the incredible number of decisions an emergency practitioner makes in a single shift. It's mind-boggling. The decision-making density of an emergency department shift has no parallel in the practice of medicine.

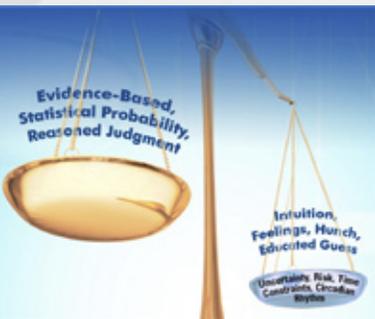


Now consider that patients arrive on foot and by ambulance in fits and starts; that physicians work ten, twelve, or even 24-hour

shifts; that working night shifts is difficult and impairs circadian rhythm. Add to these the system problems of throughput and the demands of intensive care patients in hallways. The bottom line is that emergency practitioners make many hundreds of decisions in a single shift, and at times have no control over how quickly they must be made.

Decision-Making During Times Of Stress And Uncertainty

How does the human brain work under these circumstances? Expert analysis of decision-making at times of risk and uncertainty indicates that humans tend to



base such decisions on rules of thumb, past experience, intuition, and the best educated guess. **And fortunately, that usually works!** But there are some

serious pitfalls in this process, and it is absolutely key that emergency practitioners understand them.

This subject area is called metacognition. It is thinking about thinking. In other words, it is not thinking about how to take care of a patient; it is thinking about thinking about how to take care of a patient. It would be

interesting to determine how many of the 30,000 practicing emergency medicine full-time equivalents out there ever had a medical school course on metacognition or decision-making.

An Israeli psychologist named Daniel Kahneman won a Nobel Prize in economics in 2002 for his work on decision-making during times of risk and uncertainty. His work is fascinating and has a direct application in the practice of emergency medicine. His work indicates that during times of risk and uncertainty, humans tend to make decisions based on past experience, intuition, and best guess. The key to his work was describing that these decisions are subject to certain biases.



Emergency practitioners' experience and intuition take them a long way toward the right answer in most cases. If it walks like a duck and quacks like a duck, it probably is a duck. Even if there is no body of literature on the subject and it's not an evidenced-based decision, you will be right most of the time. If it is right lower quadrant pain and there is rebound tenderness, you will be right most of the time calling that appendicitis.

BUT, Dr. Kahneman found that this type of decision-making is subject to certain negative biases or predispositions to respond. He described the negative bias of "anchoring,"



which he defined as making a decision with inadequate information (i.e., the anchor), which prematurely stops the decision-making process. This analysis of bias and the human predisposition to respond in a certain way is known as heuristics.

The Cognitive Autopsy: Case # 1

Let's apply this concept to a recent and unfortunate medical incident. A 49-year-old male presented to an emergency department. He told the triage nurse he developed neck and arm pain after snow blowing and that he had a history of cervical stenosis. The triage nurse documented "neck injury" and posted that chief complaint on the tracking board.

The patient told the same story to the primary nurse; but he also mentioned that he developed chest pain while snow blowing, he had a recent MRI of the neck, he had seen an internist within the last week for the problem, and he had an upcoming appointment with a neurologist.

He told the same story to the emergency physician, including the pain in the neck, arm and chest. In his deposition, the emergency physician testified that he had seen the tracking board chief complaint and had read the triage note. He had also read the primary nurse's note regarding the cervical MRI and the neurology appointment. He considered that the patient had already seen an internist who had scheduled a neurology appointment.



Stroke Courses

Stroke program coordinators may want to utilize TSG's library of Medical Error & Risk Reduction courses to satisfy JCAHO's stroke center certification requirements.

- Atrial Fibrillation & Stroke
- Pharmacology for Stroke Care
- Stroke Part 1
- Stroke Part 2
- Stroke Literature Review: Acute Stroke Management – The Case for Thrombolysis



Stroke Courses, cont.

- Subarachnoid Hemorrhage
- Thrombolysis
- Transient Ischemic Attack
- Use of Stroke Scales and Assessing Thrombolytic Eligibility
- Warfarin Complications – Case 1 Studies
- Warfarin Complications
- Case 14: Subarachnoid Hemorrhage
- Case 16: Stroke Case Studies Part 1
- Case 17: Transient Ischemic Attack Case Studies Part 1



Therefore, as the physician walked in to see the patient, he was thinking “neck problem.” Although he elicited the history of “chest pain while snow blowing,” he had become anchored on the pre-existing neck pathology and had determined that this was an exacerbation of that condition. Several negative biases were at play here; the two most obvious are:

1. **Anchoring.** The physician anchored on the cervical problem. Although there was critical additional information, he had prematurely closed his thought process. In fact, he did not order an ECG or any diagnostics or cardiac markers.
2. **Triage Cueing.** This is the tendency for earlier impressions to influence the decision maker’s thought process. The triage nurse cued the physician on the tracking board and in her notes. The primary nurse did the same in her notes. Interestingly, the outcome of the recent visit to the internist also cued the emergency physician. Those cues were lurking out there to impact subsequent decision-making.

There are other interesting aspects of the case and other interesting cognitive predispositions to respond to; these two are the

most apparent. The patient went home and died that evening while having dinner with his wife. The outcome for this patient was tragic, and the physician group determined a mistake was made and settled the case.

The Cognitive Autopsy: Case # 2

Another tragic case, but an outstanding example of triage cueing, is a case that involved a patient who returned to an ED for a laceration re-evaluation. The patient had been in a motor vehicle accident and had contusions, abrasions, and a laceration on the anterior aspect of the right leg.



The patient had been immobile at home and returned for a laceration re-check 2 days after the initial visit. The triage nurse put a “Laceration Re-Check” template on the chart. The physician picked up the chart and was cued by the “Laceration Re-Check” label on the template; he checked the laceration, and only the laceration.

He did not look at the large swollen calf on the backside of the leg. The patient died that evening from a pulmonary embolism.

The practitioners involved in both cases are board certified, experienced practitioners. Despite trying very hard to stand in both physicians’ shoes at the point and time the care was provided, it is difficult to ascertain how these mistakes could have occurred.



What was the impairment in decision-making? Why did this happen?

This area of analysis is called heuristics. Heuristics are simple, efficient rules hard-coded by evolution or experience; they propose to explain how people make decisions, come to judgments, and solve problems when facing complex problems or have incomplete information. They are rules of thumb, educated guesses, intuitive judgments, or common sense. Heuristics are cognitive decision-making shortcuts, strategies for problem solving. **They work well in most situations, but beware of the negative bias that may impair judgment or decision-making and lead to a medical error.**

Authorities in the study of heuristics believe that this flawed thought process involves a predisposition toward thinking based upon both nature and nurture. That is, both evolutionary and environmental aspects of thought are involved in decision-making at times of uncertainty and risk. The practitioner may not be completely in control of this thought process.

In the 'missed MI' case above, the patient essentially communicated that he was having a neck problem; both the triage nurse and primary nurse communicated "neck problem." Furthermore, an internist had

seen the patient within the last week and communicated "neck problem" by referring the patient to a neurologist. There was no 'front stage' probability analysis available, no department order set, no NEXUS snow blowing criteria, no evidence-based guidance. This highly-accomplished, experienced, residency trained, and board certified physician let his subconscious or 'back stage' take over; his decision-making was based upon intuition and experience. He was influenced by a negative bias, a failed heuristic, trapped by the **anchoring predisposition to respond.**



There are several other heuristics of particular interest to emergency medicine. The list is long, so only a few are included here. For a more complete review, do a web search for "Dr. Pat Croskerry." Dr. Croskerry is a Canadian emergency physician who has done some tremendous work in this area. You will discover several fascinating articles describing heuristics and what Dr. Croskerry calls CDRs or the Cognitive Disposition to Respond.

Confirmation Bias: This is the tendency to be influenced by confirming evidence that supports a hypothesis. In the first case

above, the emergency physician used the prior visit to the internist to help confirm his hypothesis that this presentation was not an acute coronary syndrome. He used the presence of cervical stenosis on a prior MRI to confirm that this presentation was related to cervical pathology. Once again, this bias leads to premature closure of the diagnostic thought process.



Ascertainment Bias: This bias occurs when the practitioner's decision-making is pre-shaped by expectations; for example, the expectation that young women don't have acute coronary artery disease or that a 19-year-old male could not have a dissection, even with the information that all the males in the patient's family have had a thoracic aortic dissection.

Failed heuristics, or negative biases, are lurking in the mental back stage and absolutely impact medical decision-making. As uncertainty, risk, and decision-making intensity increase, practitioners necessarily spend more time in the back stage and are more

prone to errors related to failed heuristics or negative biases.

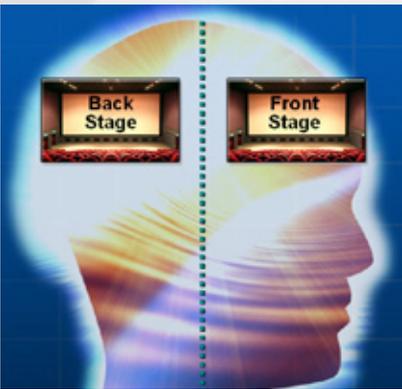
The key to improving patient safety and medical error reduction is metacognition. Think about thinking. It is possible to recognize and remove a negative bias, or to de-bias. A great example is the consideration of a differential diagnosis before arriving at a diagnostic conclusion. That is, don't close your mind to diagnostic considerations until reviewing a list of possibilities. In addition, consider the following:

- Conduct or attend a metacognition program.
- In peer review or in review of cases involving adverse patient outcomes, conduct a **cognitive autopsy**. Determine whether a failed heuristic or a negative bias adversely impacted decision-making.
- Create system solutions. Utilize evidence-based order sets and protocols. Build them into the emergency department information flow. Make them immediately available. Keep thinking front-of-mind and away from the need for rules of thumb, intuition and the best educated guess.
- Optimize environmental factors such as shift length and the number of patients seen per hour.
- Reduce decision-making density.



Conclusion

Recognize that the decision-making spectrum is dynamic and always changing to match the moment-to-moment situation in the ED. The emergency practitioner often loses that front stage,



front-of-mind ability to apply statistical analysis and probability theory. Negative bias

or failed heuristics in the back stage can impair decision-making. Cognitive predispositions to respond are often found at the root of medical errors and patient injury.

Metacognition can play a major role in the proactive approach to patient safety and medical error reduction. Thinking about thinking about how to take care of patients can lead to de-biasing and fixing flawed heuristics.

Recognize and avoid the powerful negative biases such as anchoring, premature closure, confirmation, and ascertainment bias. Develop de-biasing strategies. Address this important topic as a group; review the range of failed heuristics and negative biases. Build this

subject into the emergency department patient safety and medical error reduction program ■

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