



## EM CASES SUMMARY

Prepared by Dr. Anton Helman, Jan 2015

### Episode 75 – Decision Making in EM Part 2: Cognitive Debiasing, Situational Awareness & Preferred Error

*Drs. Walter Himmel, Chris Hicks & David Dushenski*

While knowledge acquisition is vital to developing your clinical skills as an EM provider, using that knowledge effectively requires a whole other set of skills. In this EM Cases episode on Decision Making in EM Part 2 we explore some of the concepts introduced in [Episode 11 on Cognitive Decision Making](#) like *cognitive debiasing strategies*, and some of the concepts introduced in [Episode 62 Diagnostic Decision Making Part 1](#) like *risk tolerance*, with the goal of helping you gain insight into how we think and when to take action so you can ultimately take better care of your patients.

#### Questions to Consider

1. How do expert clinicians blend Type 1 and Type 2 thinking to make decisions?

2. How do expert clinicians use their mistakes and reflect on their experience to improve their decision making skills?
3. How can we mitigate the detrimental effects of *affective bias*, high *decision density* and *decision fatigue* that are so abundant in the ED?
4. How can we use *mental rehearsal* to not only improve our procedural skills but also our team-based resuscitation skills? How can we improve our *situational awareness* to make our clinical assessments more robust?
5. How can anticipatory guidance improve the care of your non-critical patients as well as the flow of a resuscitation?
6. How can understanding the concept of *preferred error* help us make critical time-sensitive decisions?

#### Type 1 & Type 2 Cognitive Decision Making Systems & The Nature of Expertise

*“The definition of experience is the capacity to make more and more mistakes with increasing confidence” - Walter Himmel*

- **Type 1: The Intuitive/Reflexive System** involves automatic decision making based on pattern recognition. It's fast and requires little effort.
- **Type 2: The Analytical/Problem-Solving System** is more critical and logical. It involves stepping back and thinking more carefully about the patient's presentation. It involves estimating pretest probabilities, continuous self-questioning, and considering alternative diagnoses.

The traditional view of this model is that while reasoning will invariably try to default to the Type 1 intuitive/reflexive approach, the most economical and fastest mode, the key to successful decision making is to step back and think analytically when you realize that there are subtle inconsistencies that arise.

The current view of this model is that it's not a matter of whether Type 2 is better than Type 1 but rather, how expert decision makers blend these two systems. Experts use their experience and past errors/mistakes to *reflect* on their knowledge and their biases and develop *heuristics* (cognitive short-cuts) and cognitive forcing strategies that allow them to use their Type 1 system for rapid decision making rather than having to slow down using their Type 2 system.

## The Nature of Expertise

*"Experts tackle problems that increase their expertise, whereas non-experts tend to tackle problems for which they do not have to extend themselves." - Carl Bereiter*  
Expertise comes about, not only through the acquisition of knowledge and gaining experience, but by *using* the knowledge they've acquired wisely. How does do we *use* knowledge wisely?

1. *Reflect* on your experience – learn from your mistakes by

- following up on all but your trivial cases within a few days
- developing your own personal heuristics based on on your experience
- consider dictating your chart which forces you to reflect on your assessment and plan

- before signing off the chart ensure that it has *internal congruence* – look for disconfirming evidence before you decide on a disposition

AND

2. Understand your personal cognitive biases and your particular system's biases
3. Employ cognitive debiasing strategies based on 1 and 2  
\* note that only using your experience without reflection can result in excessive confidence and insecurity which may lead to more errors

## Cognitive Biases Discussed in this Episode

- **Anchoring bias** – locking on to a diagnosis early in the assessment and failing to adjust to new information
- **Diagnosis momentum** – accepting a previous diagnosis without considering the differential diagnosis adequately
- **Confirmation bias** – looking for evidence to support a pre-conceived opinion, rather than looking for disconfirming information
- **Premature closure** – once you have found one diagnosis (eg: a fracture on an x-ray) you stop to searching for others (eg: the second fracture on the x-ray)

## Cognitive De-biasing Strategies: Cognitive Forcing Strategies & Heuristics

"Perception is not a passive process. Perception is an active one" -  
Walter Himmel

In order to identify and help mitigate some of these negative cognitive biases it is not enough to identify them. We must employ cognitive de-biasing strategies.

Cognitive Forcing strategies can be general such as "*rule out the most deadly diagnosis*" or they can be related to your own experience based on reflection on previous mistakes.

### Examples of Cognitive Forcing Strategies

**Missing trifascicular block on ECG** - for any ECG that shows a right bundle branch block (RBBB), if the axis is pointing left then search for the findings of trifascicular block

**Missing a Maisonneuve fracture** - For any ankle injury, examine the proximal fibula for tenderness to assess for a Maisonneuve fracture

## Strategies to Mitigate Affective Bias & Decision Fatigue

1. **Overlapping shift start times** where next doc arrives an hour before the next doc finishes

2. **Casino shifts** - preserves the anchor period (2am-6am when it is the most important for your circadian rhythm to get some sleep in order to adjust properly) and is associated with more total sleep, reduced sleep debt, shorter recovery time, reduced cognitive impairment, improved work performance and improved career longevity
3. **Mutual support of colleagues** working at the same time and having 2 or more physicians at each resuscitation, and 'calling a friend' – asking for an opinion on a case from your colleague, especially when you are at or near the end of your shift and suffering from decision fatigue

## Decision Decision Density and Anticipatory Guidance in Resuscitation Management

Human cognition has its limits. There is good evidence to suggest that our brains are not designed to function well during critical events in which multiple points of potentially unrelated information need to be processed rapidly.

In critical and stressful situations we tend to 'tunnel down' on the task at hand and become less receptive to extraneous information that may be important. Our ability to take in this information is reduced even more when we feel high degrees of stress.

As explained below, a high performance team in which tasks and decision making responsibilities are divided up in a *team huddle*, having 2 doctors rather than one at every resuscitation, improving

your *situational awareness*, and *stress inoculation training* can mitigate the problem of high decision density in stressful situations by *cognitive unloading* and managing the negative influence of stress effectively.

## Mental Rehearsal & Anticipatory Guidance

Practicing or visualizing procedures 'in your head' (psychophysical rehearsal) before you do them has been shown to improve performance and success of procedural tasks. There is also some evidence to suggest that it may improve team performance in team-based trauma resuscitation.

### The Team Huddle

Take a few minutes when you get the call from EMS about a patient who will soon be arriving in your ED to do a team huddle: predict the potential diagnoses, delegate roles, expectations and responsibilities, think about *logistics* in your hospital, anticipate which procedures might be necessary and set up the appropriate gear for them.

*For a discussion on anticipating logistics over strategy in resuscitation go to [this podcast at EMCrit](#)*

### Anticipatory Guidance

There is a powerful effect of stating the obvious (e.g. "this patient is in septic shock and they will get worse unless we do x, y and z")

Anticipatory guidance and team communication is important not only in resuscitation but in all ED patient encounters. Consider discussing with the nurse and the rest of your team what you think the most likely diagnosis is, what you're worried about, what your management plan is and what you think the disposition might be, rather than only filling out orders for the nurses. This allows everyone to 'be on the same page' and may improve efficiency as well as decrease medical error.

## Situational Awareness Checklist

*(adapted from 'Situational Awareness and Patient Safety - A Short Primer' from The Royal College of Physicians and Surgeons of Canada website)*

### 1. Get Information

- Scan and search: be proactive - look for it in your environment or solicit it from your team.
- Remain watchful: expect the unexpected
- Communicate: openly talk about your thoughts on the situation with your team, the patient and their family

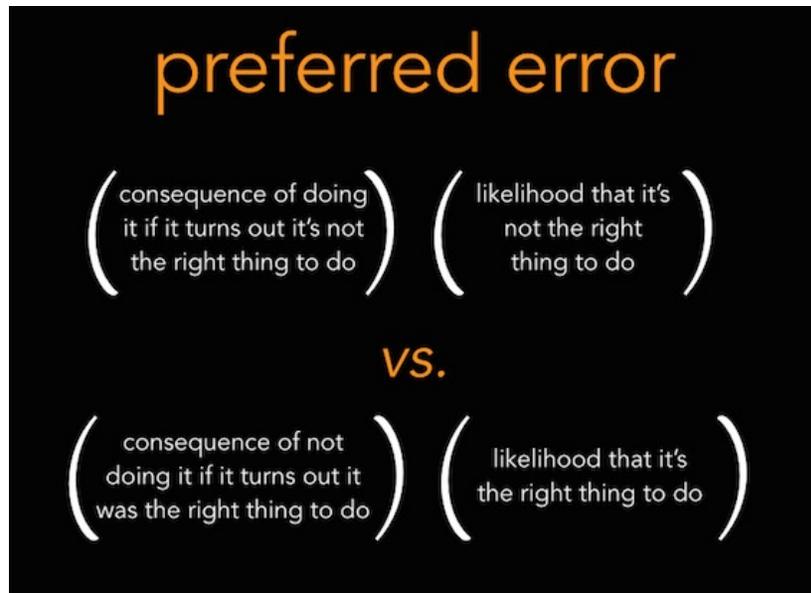
### 2. Understand the information

- Compare: Compare the information to what you know and what you expected
- Critique: Think critically about the information - check information integrity (accuracy, completeness, source, and relevance)

### 3. Think Ahead

- Extrapolate and project: beyond the “now”: How will the situation unfold if the current conditions persist? Persist for how long?
- Ask “what if?”: Consider various outcomes and contingencies and communicate those possibilities to others

## To Act or Not to Act – That is the Question: Preferred Error & Resilience



*From emupdates by Reuben Strayer*

Preferred error describes balancing the risks of action vs inaction based on the potential positive vs negative outcome of either. It begs you to consider the consequences of being wrong on both

sides of the decision, and determine which course of action **fails better**. Factoring in how likely you are to be wrong is important in weighing the potential outcomes.

*For a detailed explanation of the concept of preferred error visit [emupdates](#)*

## Building Resilience & Stress Inoculation Training

**3 steps to Resilience** (adapted from the *Harvard Business Review*)

1. Have an **accurate understanding** of the situation that you're facing
2. **Give it meaning** or purpose
3. **Be prepared** to do what ever it takes regardless of the outcome, success or failure

## Stress Inoculation Training

The goal of *Stress Inoculation Training* is to limit the impact of acute stress on performance.

*Stress Inoculation Training* promotes stress resilience by desensitizing the person to the negative behavioural and physiologic effects of acute stress in a simulated environment. A step-wise process involves increasingly stressful situations in a

simulation training environment. During the debriefing period of the simulation the triggers of stress are identified and understood. Then, strategies to minimize the physiologic and behavioural consequences of stress are rehearsed so that the person is better prepared for similarly stressful situations.

### *Quote of the Month*

*"The value of experience is not in seeing much,  
but is in seeing wisely" -William Osler*

### References

Bereiter, C. Scardamalia, M. Surpassing ourselves: An inquiry into the nature and implications of expertise. Open Court Publishing Company. 1993, 77-120.

Chanmugam, A. Avoiding Common Errors in the Emergency Department, Chapter 78: Understand decision-making fatigue and how it influences your clinical judgement, 2010.

Crosskerry, P. The Importance of Cognitive Errors in Diagnosis and Strategies to Minimize Them. Academic Med. August 2003, 1-6.  
Crosskerry, P et al. Patient Safety in Emergency Medicine. Lippincott Williams & Wilkins, 2009.

Lorello GR, Hicks CM, Ahmed SA, Unger Z, Chandra D, Hayter MA. Mental practice: a simple tool to enhance team-based trauma resuscitation. CJEM. 2015:1-7.

Petrosoniak A, Hicks CM. Beyond crisis resource management: new frontiers in human factors training for acute care medicine. Curr Opin Anaesthesiol. 2013;26(6):699-706.

Parush A, et al. Situational Awareness and Patient Safety. The Royal College of Physicians and Surgeons of Canada. 2011. [Link](#)

Scott Weingart. EMCrit Podcast 49 – The Mind of a Resus Doc: Logistics over Strategy. [Link](#)

Reuben Strayer. The Preferred Error. Emergency Medicine Updates. June 11th, 2014. [Link](#)