

EDUCATIONAL DILEMMA:

Tom is a PGY3 EM resident caring for a 60-year-old male with a past medical history of kidney stones whose chief complaint is right flank pain. He hands the patient over in the middle of the night as the patient's pain has not settled, arranging for a CT KUB in the morning. The next day he is informed that his patient was found to have a leaking AAA on CT, and subsequently went to the OR for urgent repair. Tom is beside himself for missing a critical diagnosis. He contemplates why his clinical knowledge failed. Tom wonders if there are any educational strategies to limit diagnostic error.

Reference

Geoffrey R. Norman, PhD, Sandra D. Monterio, PhD, Jonathan Sherbino, MD, Jonathan S. Ilgen, MD, Hen G. Schmidt, PhD, and Silvia Mamede, MD, PhD: *The Causes of Errors in Clinical Reasoning: Cognitive Biases, Knowledge Deficits, and Dual Process Thinking*. *Academic Medicine*, Vol. 92, No.1/January 2017.

Why is this paper relevant to Emergency Medicine education?

Clinicians are susceptible to making diagnostic errors which can have serious consequences for patients. This article reviews the theories behind why errors are made and what strategies can assist in reducing them.

Level of Evidence / Level of Learning / Study Design & Setting

Integrative/Synthesis – Narrative Review

Funding Sources

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Synopsis

Clinical reasoning has been identified to be a combination of thinking fast (Type 1) and thinking slow (Type 2). Type 1 thinking relies on heuristics or mental shortcuts in recognizing patterns to efficiently come to a diagnosis. Type 2 thinking relies on a slower, energy consuming hypothetico-deductive reasoning. Preliminary

thoughts on the topic presumed that Type 1 thinking was responsible for most errors, and that awareness of different types of cognitive bias would reduce error.

The research shows that errors can occur in either system. There are three main categories of strategies to reduce cognitive error:

1. Slow down and employ Type 2 thinking. The literature suggests that simply slowing down does not improve accuracy.
2. Heuristic Based: Teach trainees about specific biases employed in Type 1 thinking. The literature would suggest that simply being aware of these biases (there are over 100 now) will reduce error. The evidence shows that awareness of biases do not reduce error, but rather experience plays a significant role.
3. Knowledge Based: Getting individuals to write out their rationale for making a diagnosis, then carefully considering alternatives is not just thinking slower or looking for biases; it explicitly taps into knowledge. This deliberate reflection appears to have some small effect on diagnostic accuracy in simulated cases. However, junior trainees lacked the knowledge for this strategy to be consistently effective and experienced clinicians often arrived at the diagnosis without reflection. Deliberate reflection also requires the clinician to recognize they are in a situation where they might make a mistake to utilize this strategy, which is understandably difficult.

BOTTOM LINE:

The sobering findings of this article suggest that beyond experience, there is no consistent technique to reduce diagnostic error and it is also uncertain as to how much diagnostic error can actually be reduced. The evidence at present would suggest, that it is a futile exercise for trainees to simply be aware of cognitive biases in making decisions or recommend that they 'think slower' as neither of these strategies will make them better diagnosticians. Further research targeting the development of a clinician's clinical reasoning strategies and methods for reducing cognitive error are warranted. If someone can figure out how to accelerate experience, maybe that will work!