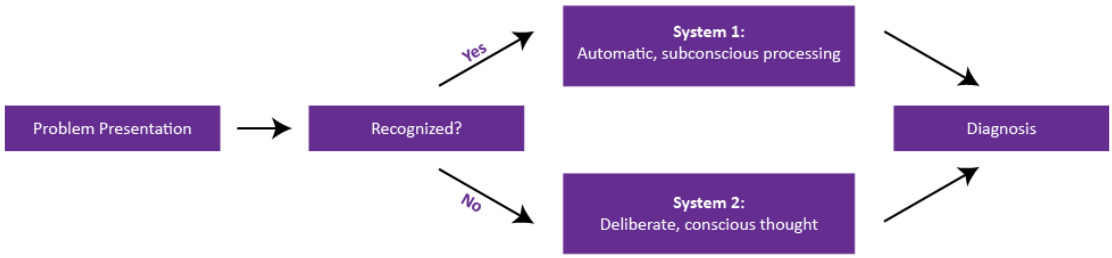
Missed Diagnosis: The Impact of Human Factors Research

Missed or delayed diagnosis is a recurring allegation in medical malpractice cases. Our ability to truly understand why this occurs may be helped by Human Factors research. The following is taken from the work and writing of Pat Croskerry, MD, PhD who recently conducted an educational workshop for several of Clarity's clients. Dr. Croskerry is a Professor in Emergency Medicine at Dalhousie University, Halifax, Nova Scotia, Canada and holds a cross-appointment in the Division of Medical Education as the Director of Critical Thinking.

Clinical decision making is a complex process. How we think determines how we make decisions, which in turn impacts all aspects of patient care. Our decisions are not just based on education and knowledge, but human nature also plays a major role. When making a decision, we use one of two modes of thinking, which are believed to have developed through evolution; there is the intuitive system or Type 1 process and the analytical system or Type 2 process.



The intuitive process is fast and autonomous; it allows you to make quick decisions with little effort. Psychologists report that we spend about 95% of our time in this mode. Think about your day, how often do you stop to analyze your actions? In the morning, you do not need to think critically about how to turn off your alarm clock. You probably roll over and hit the snooze button without a second thought. When it comes to making a decision regarding a patient's diagnosis, you have the same thought options: the quick intuitive process or the analytical process.

The analytical process is much safer and more reliable than the intuitive process, but it takes longer and is more resource intensive. The analytical process is typically used when we are presented with a new problem or situation. This is because our brain cannot jump straight to a conclusion, but it must process the information and investigate the situation before making a decision. It is easy to see then why we are attracted to the intuitive system; it is made up of shortcuts and patterns, which cuts down our processing time. For example, if you show medical students several images of a particular rash, after a while, they will be able to use shortcuts and recognize a rash on their own. The first time they see the rash, they use the analytical process to think about the situation, research it and then make a

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decision. After repeatedly viewing images of the same rash, though, the students will pick up on the pattern and store the information. The next time the student sees an image of the same rash, he/she jumps into the intuitive process to make his/her diagnosis. The student knows he/she has seen this before and does not need to think critically about the problem. The intuitive process may save us time and make life easier, but it is much more error prone. There might be that one time the medical student thinks he/she is viewing a rash, but it is in fact another medical condition with similar symptoms and features.

The systematic errors that we encounter are termed biases. There are over 100 cognitive biases and at least 20 affective biases, which is when our feelings influence our judgment. Bias is inherent to all people including healthcare professionals. Studies have shown that flaws in clinical thinking, rather than a lack of knowledge, are one of the reasons for diagnostic errors. Examples of cognitive bias include overconfidence, psych-out bias, playing the odds and attribution error. For instance, a psych-out error would be a bias against psychiatric patients and would cause an underestimation of the medical co-morbidities that may be present. The fact that the patient has a psychiatric diagnosis leads you down a path to treat only the psychiatric illness while ignoring the objective, medical signs the patient displays. This wrong pathway might actually lead you to not recognize or treat the true underlying problem, which can be classified as a missed or delayed diagnosis.

So, how do we combat bias and manage human factors that impact clinical decision making? Healthcare professionals need to work more on eliminating biases and thinking about each situation more critically. In order to become better decision makers, we can implement cognitive debiasing strategies. Changing the way we think is not easy and might take several approaches, including:

- Creating a favorable decision-making environment
- Using checklists, protocols, care maps, algorithms, etc.
- Thinking the opposite
- Slowing down
- Group collaboration in decision making
- The ultimate strategy - always asking the question, “What else might this be?”

The answer is not to order 30 unneeded tests to catch the one case out of 5,000 that might be different. It is a matter of balance and being more critical in our thought process. Currently, these types of debiasing strategies and human factors awareness are slowly being added to some medical school curricula. As we learn more about the impact of human factors in healthcare, we can adjust our teaching methods to ensure safer healthcare.

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