Diagnosing Diagnosis

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[Ann Emerg Med. 2014;64:586-587.]

Problems in diagnosis have gained increasing attention in discussions about the safety of care.[1] This attention is long overdue, but much like the general body of research on patient safety, its quality has been disappointing. It has been heavily dominated by physicians with little input from the cognitive sciences,[2] focusing mostly on potential interventions—checklists, mnemonics, ground rules, computerized decision support, or exhortations (essentially amounting to "be more Protestant")—aimed at overcoming the defects believed to exist in current practices.[3-8] What is missing, however, is foundational work aimed at understanding how clinicians in actual situations take a complex, tangled stream of phenomena and select some to create an understanding of them as a "problem."

It may not seem obvious to us as practitioners, but clinical problems seldom present themselves as givens, fully formed, like pebbles lying on a beach.[9] To construct a problem from a jumbled collection of circumstances, practitioners must make sense of an uncertain and disorganized set of conditions that initially make little sense[10]; they must turn *circumstances* into *situations*, "combinations of circumstances at a given moment in a particular context that are imbued with meaning and can serve as the foundation for actions and expectations."[11] Because cognitive activity consists of much more than consciously experienced thought, the foundational work needed to illuminate this sense-making capability is difficult; to a great extent, these processes are not directly accessible either to subjects or observers.

In this issue of *Annals*, Pelaccia et al[12] take a unique approach to this much-needed foundational work. They build on a half-century-long tradition of Francophone work ecology research[13] that has emphasized detailed phenomenological descriptions of work practices in naturalistic settings, and supplemented traditional cognitive incident interviews[14] by cueing from video recordings taken by head-mounted cameras to help physicians relive (rather than simply recount) the developing diagnostic framings during their patient encounters.

They report that most diagnostic hypotheses were generated in the first 5 minutes of the encounter, often before the patient was met. This suggests that sense-making begins not with conscious reasoning, but instead involves extensive, preconscious processing whose results are presented to the conscious mind for a bit of tweaking and a final blessing. Their work provides insight into the processes of clinical reasoning, using the term *reasoning* in a much broader sense than its typical connotation of denoting mental work of which we are aware—the clinicians in this study are "reasoning" their way toward an understanding in the same sense that we "reason" our way to work each morning; they are calling on preconscious mental resources over whose operations they hold little direct sway.

Their work also highlights some aspects of clinical expertise. The expert clinicians in this study arrived at diagnostic framings rapidly and effortlessly, with a facility that "belies the difficulty of the demands resolved and dilemmas balanced."[15] In addition, they held their final framings lightly, remaining aware of alternative framings until further investigations provided additional information.[16] Both these properties differ strongly from those of novices, whose clinical reasoning tends to be slow and laborious and who are reluctant to revisit initially settled impressions.[17]

On reflection, the power of this "preprocessing" faculty seems astounding. The remarkable datum that needs explanation is not what lies behind the occasional "failure of rendition" in clinical reasoning,[18] but rather how it could possibly work as well and as quickly as it does, given the virtually limitless problem space and the highly restricted set of levers available to practitioners.

Understanding how clinicians' minds work in actual settings dealing with actual problems under actual constraints lies at the heart of any effort to improve the safety, quality, or efficiency of care. This report[12] adds a bit to what we know about clinical reasoning, but its real value is in highlighting how much we do not yet know. It is an example of much-needed foundational work exploring the basic science of human performance in complex, unforgiving environments. Just as in many other areas of medicine, future success here lies less in the application of what we think we know now than in the careful, deliberate working out of what we do not yet know.[19]
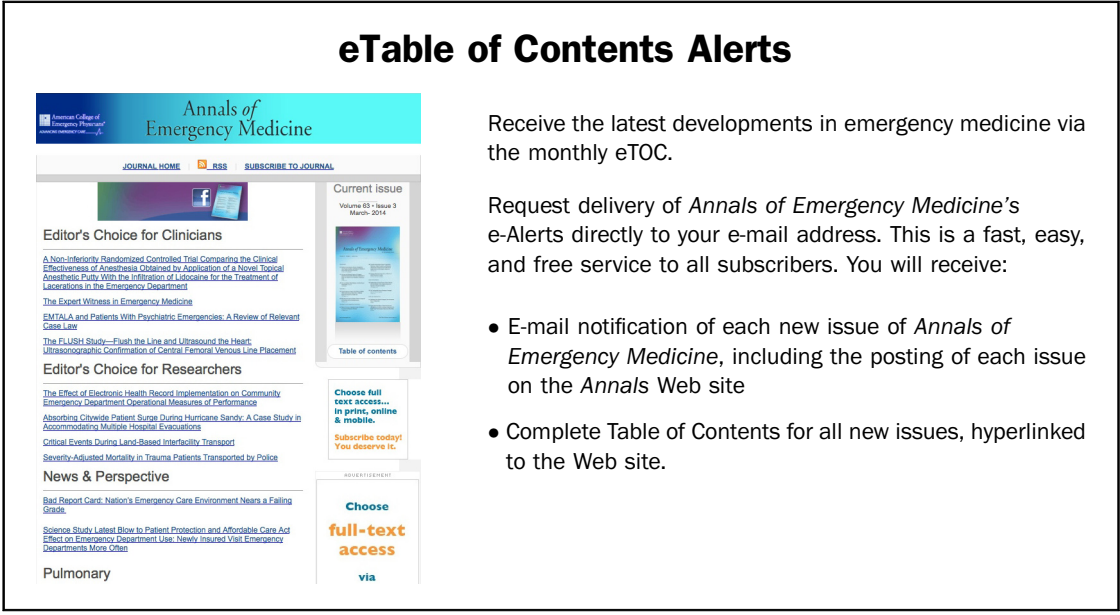
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