

Thinking Out Loud... What's the Problem?

“Problem solving in medicine has been aptly, if somewhat cynically, described as ‘the process of making adequate decisions with inadequate information.’”

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About one year ago, a physician friend lent me a book with the admonition to read it because of its relevance to the vision that our company, Health Informatics, Inc., has pursued since 1986. The title of the book is *Medical Problem Solving: An Analysis of Clinical Reasoning*, by Arthur S. Elstein, Lee S. Shulman, and Sarah A. Sprafka. Interested, I cracked open its cover to peruse the index, its references at the back, and finally, the date of its publication, 1978. This book was written 25 years ago!

My decision was to set the book aside and read it in the future, when there would be more time to reflect. The future, however, came faster than anticipated because my friend asked whether or not the book was in my possession. My response was affirmative. He was relieved. He intended to use it as a source document during an upcoming seminar.

Naturally, my curiosity peaked. I set aside the book I was currently reading, *Digital Medicine: Implications for Healthcare Leaders*, by Jeff Goldsmith, published in 2003, and took up the former and discovered while reading it that this book was

more modern than its publication date indicated.

The authors of *Medical Problem Solving: An Analysis of Clinical Reasoning* state a number of observations, one being that a clinician begins to develop hypotheses about a patient's problem during the early stages of the clinical encounter, not after all the data are collected. Another observation is that, despite the complexity of the patient's problem, the number of hypotheses the clinician generally considers at any one time is most likely no more than five and seldom more than seven.

As such, several adaptive behaviors usually occur in order to retain a framework of reasonability. First, the working hypotheses may be general instead of specific, so that unrelated outlier hypotheses may be included. Second, hypotheses may be eliminated in order to maintain the current hypotheses as the working ones. Third, certain hypotheses may be given a higher priority than others in order to *justify* the working hypotheses. Fourth, “overinterpretation”—that is, ascribing information to a hypothesis when the information is, in fact, non-contributory yet

is seen as its confirmation—may take place to the detriment of establishing a valid working diagnosis.

Therefore, a question unavoidably emerges while reading these facts. If a hypothesis is based on incomplete and potentially erroneous information, then what is the real nature of clinical competence? How would we recognize it? How should we teach clinical competence? Is it a generalizable skill or is it specific to a person? A basic conclusion of the book is that clinical competence is the ability to *repeatedly* access the right information, that is, knowledge, from the clinician's memory bank when it is needed.²

Suddenly, the intervening years between the two publications that lay before me (1978 and 2003) were compressed into the present, especially when considering that the authors in 1978 wrote, “Most clinical problems...can be identified and resolved by the application of routinized means. The dramatic creative insight is rare, not commonplace.”³ Moreover, they wrote, “effective problem solving depends also upon long-term retrieval of relevant content from a well-organized store of long-term memories.”⁴

The Neural Structure of Information Technology

Let's jump ahead to today. In his book, *Digital Medicine: Implications for Healthcare Leaders*, Jeff Goldsmith paints a picture of modern healthcare predicated on information technology (IT). He regards IT as the neural structure upon which clinical competence is based. He sees a clinical information system as a **manager of medical knowledge** teaching clinicians about what is new in their field, ultimately adapting itself to meet a clinician's style of understanding information.

Because a clinical information system, that is, IT, can interactively gather facts about a patient and monitor compliance to treatment, Goldsmith believes it will also become an **active manager of patient care** and a monitor of clinical services to ensure patient safety. Through its rules engines, a clinical system will compare the physician or nursing orders to the patient's condition and automatically provide a "reality check" on the decisions that have been made.⁵ Ultimately, he believes that a clinical information system "will actively **shape the care process**" for the entire care team, including the patient and the clinician.⁶

Reading the Tea Leaves

Theories? Practical? When all is said and done, do these theories relate to the real-world challenges that confront the renal community today, namely:

- ♦ increasing case loads as the world's population ages and their renal problems begin to emerge;
- ♦ a shortfall of professional staff in pockets of the world, combined with increasing staff expenses and stagnant reimbursements;
- ♦ an unprecedented volume of new medical knowledge that feels more like an uncontrolled deluge than an orderly knowledge transfer to those who have a need to know;
- ♦ a demand from patients, employ-

ers, and payers for higher-quality patient outcomes?

Something has to change! Frustration travels both upstream and downstream. Dialysis facility administrators and managers of nephrology practices absorb the frustration of clinicians who try to keep up with the most current knowledge. Clinicians assimilate their patients' concerns about the quality of their care. Patients look to clinicians for wisdom. Everyone "reads the tea leaves in the cup" and hopefully they see therein a clinical information system that delivers real-time, organized, complete information, underwritten with a virtually unlimited pool of knowledge at the point of care each and every time without fail. If they do, they are seeing an indispensable clinical tool for valid hypothesis and correct diagnosis generation.

With this in mind, if we accept three premises—first, that retrieving appropriate information at the point of care contributes to correct diagnosis; second, that practicing the right information (correct procedures) promotes clinical competence; and third, that a clinical information system is the only tool that advances the aforementioned—then using IT to integrate the delivery of complete and correct information with knowledge checkpoints at the point of care is a step that our healthcare delivery system should responsibly take on behalf of the patients that it serves. In effect, doing so completes the gestalt of clinical care with information and makes it whole.

Taking this step can, in fact, become economically advantageous because of a recent trend among some payers and employers. That trend (at least in the U.S.) is to financially reward clinicians with higher reimbursements when they achieve higher-quality patient outcomes. When they do not achieve the benchmark outcomes, they receive little, if

any, reward (lower reimbursement) despite the hard work that they do.

With clinical leadership at its helm, IT can push the quality of patient care up a notch by closing the care gaps that occur in an analog world, by using real-time digital information from multiple sources to ultimately move "the process of making adequate decisions with inadequate information"¹ into the past and the generation of valid hypotheses, true to the problem, into the present.

In the final accounting, clinical care will drive medical reimbursement in full and will ultimately transform the medical reimbursement process into a clinical quality initiative bounded by the economics of care. My feeling is that the authors who wrote in 1978 and in 2003 may not think this is a problem.

References

1. Elstein SA, Shulman LS, Sprafka SA. *Medical Problem Solving: An Analysis of Clinical Reasoning*. Harvard University Press, 1978, p vii.
2. Ibid, pp vii-xi.
3. Ibid, p 302.
4. Ibid, p 292.
5. Goldsmith J. *Digital Medicine: Implications for Healthcare Leaders*. Health Administration Press, ACHE Management Series, 2003, pp 36-37.
6. Ibid, p 11. **D&T**