BY ART PAPIER, M.D.'88

Remembering Larry Weed, M.D.

A MEETING AT A BROWN BAG LUNCH CHANGED A PHYSICIAN'S LIFE

If you ask internists older than 70 how the Problem-Oriented Medical Record (POMR) and SOAP (Subjective, Objective, Assessment, and Plan) note format came to be, they can likely tell you how, when, and who promoted the idea. If you ask a medical student, resident, or young physician today, they will likely say, "That was invented?" and then admit they do not have a clue. In fact, very few physicians today understand why the SOAP format and Problem List were invented and how they are an architecture to guide thinking and care.

Before the late 1960s, paper records were not only illegible, but they had no organization and no common format or structure. **Lawrence Weed, M.D.**, realized that a record organized around patient problems could guide diagnostic and critical thinking. He traveled across the United States evangelizing for a universal structure to medical records, and in doing so, he changed medicine.

So with deep sadness, I mourn the passing of Weed, the father of the POMR, the SOAP note and Problem-Knowledge Couplers. He was also a father, a spouse to the late wonderful Laura Weed, and my friend.

Weed was slightly ahead of his time. From 1969 to 1981, while professor of medicine at the University of Vermont, Weed led a multimillion-dollar federally funded research project, the computerized Problem-Oriented Medical Information System (PROMIS). In thinking now about the idea of implementing an electronic health record in the 1970s, it is hard to grasp not only how forward-thinking Weed was, but also the courage he must have had.

After leaving PROMIS, he founded a medical software company, Problem-Knowledge Couplers (PKC). Until the age of 93 and even just a month ago, he soldiered on, tirelessly advocating for a completely different approach to medical education, medical care, organizing medical knowledge, and patient engagement.

This article originally appeared online on medpagetoday.com *in June, the week after Dr. Larry Weed's death. An obituary for Dr. Weed appears on page 34.*

Above: Screenshots from a video of Lawrence Weed, M.D., delivering a grand rounds lecture in 1971.

BROWN BAG

The 8 x 11 sign on our lecture room door said, "Brown Bag Lunch Series: Speaker Lawrence Weed, M.D." It was 1984, I was a first-year medical student at the University of Vermont, and atypically, I had a lunch in a bag. As a result of his lecture, I went on to have two medical educations between 1984 and 1988: one at the medical school, and the other two miles away in the cramped attic office of the newly founded, three-employee PKC Corp.

I had two lives and lived in a perpetual state of cognitive dissonance. During the day, go to class, read, study, and take exams. Evenings and weekends, read more medical textbooks, probe Index Medicus, and input medical literature knowledge into the PKC "Knowledge Net," all while listening to Weed critique my training at the medical school just down the road.

Tom Sawyer never had anyone painting fences as quickly as Larry Weed had me painting with him. As a first-year medical student, I had no context or experience to reflect on the importance of the development of the POMR and SOAP, and what it took to transform the medical record from an unstructured, ad hoc mess to an aid for medical thinking.

However, in this small attic office, I was introduced to the problem of cognitive biases in medical decision-making and the limitation of the human mind in handling complexity. I began to appreciate that individual practitioners could not possibly store every single diagnosis in their heads and — just as important — it was impossible to know all the right questions to ask for each potential complaint the patient might have.

I was experiencing something completely different from medical school, conversations ranging beyond medicine to history to philosophy to educational psychology to art, music, and more. Quotes from Shakespeare, Bacon, Whitehead, and Dewey would roll off his tongue, followed by a joke. You might describe the genius brain as a parallel processor, having multiple gears spinning at once. It is hard to describe the sheer volume of ideas and the speed with which Weed's brain worked. These were not gears, but massive flywheels of knowledge and thought constantly purring along in his head. You would be immediately transfixed by his enormous personality, his passion for ideas, and the rapid and humorous flow of his thinking.

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— LAWRENCE WEED, M.D.

View a video of Dr. Weed presenting Grand Rounds in 1971. Go to: **www.med.uvm.edu/vtmedicine**

Beyond my awe of Weed's intellect, early on I appreciated his humility and emphasis on what made a physician. He evaluated students and residents on how they investigated and solved the patients' problems and not by how many facts they could regurgitate (although he seemed to have them all in his brain).

DISCONNECTED FACTS

He not only insisted on an excellent — and completely documented — medical history, a thorough and complete physical exam, an analytical differential diagnosis, and cautious therapeutic recommendations, he commanded

it. I was a medical student; I knew close to nothing. He was sharing the big picture; he knew what was important, and it was the patient and the care you delivered.

This towering, insistent voice hammered away that the medical schools had it all wrong by using board scores for evaluating students and rewarding their ability to memorize disconnected facts. "This is a pretense of knowledge," he would say. "You wouldn't get on the plane if the pilot was memorizing the route and had no instruments in the cockpit, so why are they training you and encouraging doctors to practice solely by memory?"

Weed understood that more and more students were going into specialties, not because they were chasing a larger paycheck, but because they wanted to feel mastery. In the 60s and 70s and earlier, the best and brightest in medical school were attracted to competitive residencies in internal medicine and primary care, which is no longer the norm. Weed realized that the sheer volume of medical knowledge, and the over-reliance on the brain for clinical thinking in general medicine, would shift students into specialties.

It is difficult to feel mastery when medicine is no longer like flying an open-air biplane, but more like flying a 747. The challenge of primary care and emergency medicine, where patients present with an enormous range of undiagnosed complaints and physicians jump to premature conclusions or make other cognitive mistakes, is a fundamental problem Weed was trying to solve.

'TOLERATE THE AMBIGUITY'

Weed predicted and created the idea of using evidence at the point of care by building the evidence into tools designed around patient problems. He did not believe clinicians could memorize and keep up to date on all the randomized controlled trials and store all the literature in their heads. He railed against arrogance and certainty in medicine. He repeatedly instructed me to "tolerate the ambiguity" inherent in clinical decision-making and to be able to say to a patient "we are not sure yet." He had this beautiful tapestry in his head of how to organize information and rethink medical knowledge so it could empower patients. He was designing and writing about patient empowerment decades ago.

He also believed medical schools are deeply flawed, and that students should not be rewarded for a "core of knowledge," e.g., high board scores, but rather a "core of behavior." He insisted we need to measure students on performance-based metrics. Foremost, he wanted to see our students (and physicians) be exceptionally thorough, precise, and caring with their patients, use tools to guide history and assessment, be analytical, and have logical competence. The mention of patients today receiving full body CT scans in some emergency departments before the history and physical exam depressed him.

Larry did not believe that physicians would lead the effort to fix the problems of medical care delivery. He was sympathetic to how overworked, in debt, and overwhelmed many physicians are, particularly those in primary care. However, he was optimistic about the role of the patient, and the possibility of an open source medical knowledge repository designed to improve decisions in the home and at the point of care.

He strongly recommended that the National Library of Medicine spearhead an effort to organize clinical knowledge beginning with patient inputs. He had a comprehensive vision of a new universal medical knowledge system, a repository of information leading to purposefully designed tools for patients and physicians. The envisioned open source system would have measurable inputs and outputs and would have feedback loops to improve the data and learn from the population.

Weed felt the focus of the great majority of health information technology tools were fragmented and misdirected, and too frequently about the commerce of medicine, rather than improving care for people. He would frequently caution, "If you misstate the problem, you cannot fix the problem."

The near feverish media attention on what is new and amazing in medicine, such as genomics, biomics, proteomics, and precision medicine — without attention to all the error, resultant harm, and inconsistent performance in clinical medicine — drew his constant ire. The focus on electronic health records as financial optimization tools discouraged him, as it does many of us. He would use more colorful terms and his great wit to characterize the poor outcomes we have in the United States for the $3 trillion we spend annually on healthcare. He never stopped trying to advocate for fundamental change. His sense of humor, intellect, drive and purpose were a force of nature. I am glad I had lunch in a bag that day.

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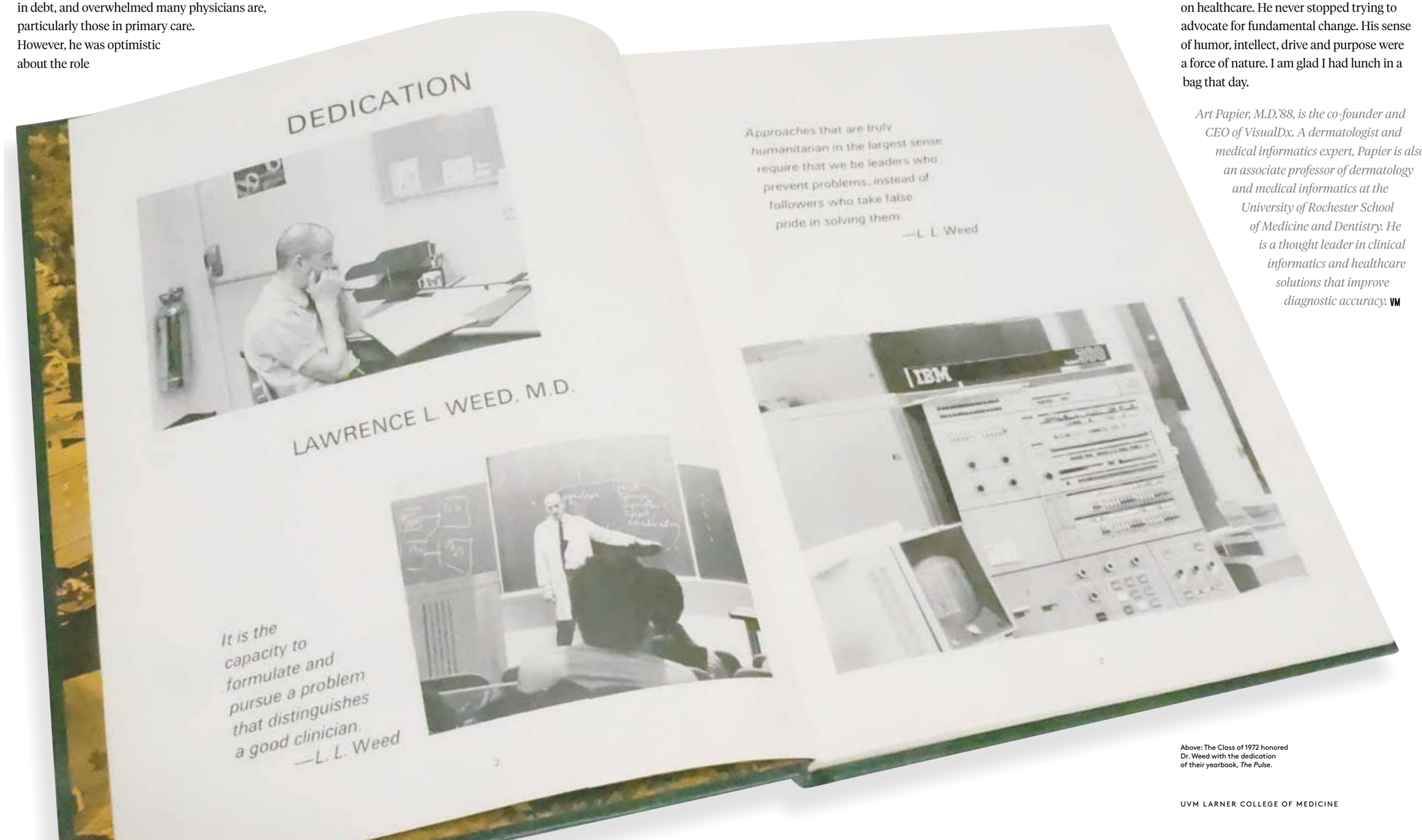

Above: The Class of 1972 honored Dr. Weed with the dedication of their yearbook, *The Pulse*.