Professionalism in Medical Informatics


Preface to a Special Issue on Professionalism in Informatics

Edward H. Shortliffe, MD, PhD
Associate Dean for Information Resources and Technology
Professor of Medicine and of Computer Science
Stanford University School of Medicine
Stanford, CA 94305-5479

Phone: 415/725-3385
Fax: 415/725-7944
Email: ehs@smi.stanford.edu
http://www-smi.stanford.edu/people/ehs

In late 1995, Methods of Information in Medicine published an article by Heathfield and Wyatt which dealt with the emergence and definition of professionalism in medical informatics (1). The paper was presented as a thoughtful "proposal for debate" which went to the core of our introspection about the nature of medical informatics as a discipline and the role and stature of individuals who choose to contribute to medicine by devoting themselves to its precepts and goals. Discussion and debate did not stop with the several editorial commentaries that were published in the same issue of the journal (by Giuse and Miller, Protti, Nohr and Andreassen, Scherrer, and Haux) but continued in laboratories around the world and in the hallways at scientific meetings. The journal published yet another response (by Musen and Barnett) and a further analysis by Heathfield and Wyatt earlier this year (2).

Medical informatics is no longer a nascent field, young though it may be. It is accordingly healthy for those who work in the area to step back and examine the nature of their activities, the links to other fields (which are many, and diverse, given the inherently multidisciplinary nature of medical informatics), and the impact on health care that their efforts are demonstrating and are likely to demonstrate in the future.

This issue of the journal adds to the ongoing discussion through a remarkable analysis by the Editor-in-Chief, Jan van Bemmel (3). His paper, entitled Medical informatics: Art or science?, takes a detailed look at the issues that define both the scientific and artistic characteristics of the field. He ultimately concludes, in response to his own question, that the field clearly has both artistic and scientific components, adhering to the scientific method when its investigations are optimally performed and melding technology with notions from psychology, sociology, economics, and cognitive science when the best applications are built and implemented in clinical settings.

The editors have once again invited several leaders in medical informatics to respond to the issues raised in Dr. van Bemmel's article, and we are pleased to present them in this issue as well. They reflect precisely the kind of healthy introspection that is natural and appropriate at this stage in the evolution of our young discipline.

Yet such introspection is not new. I first encountered serious questions regarding the science in medical informatics when, in the
early 1980s, I was petitioning to begin a formal graduate degree program at our university. The 18-month process of discussion and persuasion that led to the program's eventual approval required that I and my colleagues wrestle with precisely the issues that continue to stimulate discussion among medical informatics professionals. We later summarized the process and arguments in an article describing the initiation of our training program (4). I also remember encountering serious questions (and condescending attitudes) from fellow academicians who worked at our medical school in more traditional fields of research. Somehow medical informatics did not seem to be "real science" to them, and this forced me to consider how best to create and promote a research and training program in informatics so that it would gain credibility and peer respect. I wrote an article on this subject for an IMIA workshop held in Chamonix, focusing in particular on the medical informatics literature and the difficulties that we have in writing scientific articles that follow the traditional organization of medical research papers (5).

There is little doubt that the quest for academic respect and clear criteria for promotion has generated much of the introspection among informatics researchers. They also seek to establish a better understanding among institutional decision makers regarding the resource commitments necessary to provide high-quality education in informatics, and to carry out advanced research. Comparisons with computer science departments and engineering schools are often made, with recognition that no engineering school dean would fail to understand the role of advanced technology and infrastructure in supporting their school's academic mission, but that medical school leaders are often slower to make similar resource commitments in medical informatics. Yet computer science itself has had its critics when topics of scientific method and scholarly presentations have been addressed. I am reminded of the comments by Dr. William Yamamoto at a workshop in the mid-1980s when he noted that even computer science has felt it necessary to include the word "science" in its name and added, "Calling a field a science will blunt its impact."

Readers are encouraged to add to this discussion as their own thoughts are provoked while reading the papers that follow. In addition, I would encourage people to think carefully about the implications of this set of articles for medical informatics training. Education has not been a major point of discussion in these pieces (although it was the motivation for an editorial commentary by Musen and Barnett in response to the earlier Heathfield and Wyatt article (6)). Can we agree on the core issues that define a curriculum in our field? Is participation in the development of effective clinical information systems sufficient to call oneself a medical informatics professional (most observers would say not)? How do we weigh the tradeoffs between apprenticeship training opportunities and those that are more oriented to formal degree programs? Are the resulting differences "academic" or do the more formally trained individuals have skills that are especially important and valuable in the applied setting as well? Homer Warner addressed this question explicitly in the inaugural ACMI Distinguished Lecture in San Francisco in 1988 (7) when, in discussing the increasing breadth of the field, he noted: "We expect students to cross these lines. We need departments that will properly expose the students to each of these disciplines before the label 'medical informatics' is put on them at graduation." The obvious implication is that training organizations cannot be focused on single areas of activity. How then does one institution develop the breadth necessary to provide diverse training opportunities to support professionalism and both the art and the science?

Closely related to these issues is the traditional debate about the suitable split between applied and basic work in academic informatics settings—roughly comparable to asking whether medical informatics should
be a basic science department or a clinical department. Can clinical departments do research of the same quality as basic science departments? At many institutions the basic scientists who do molecular biology research, for example, question the quality and productivity of similar research being done by individuals in clinical departments. If, as I suspect, there is no simple answer to such questions, what is the range of variation in informatics training and organizational styles that we should encourage across institutions? How do we make sure that students who train in academic units can still provide value in industry or in other applied settings? What are the required skills sets for those who want to work in other than academic settings? What is the value to such people of the breadth and basic skill set that an academically oriented training program might provide?

It is important to note that, while we become introspective about such matters, many other medical research fields are suffering in the current job marketplace. We should acknowledge that medical informatics graduates do have jobs to go to, both in industry and academia, and that demand is growing rather than decreasing. Society appears to have discovered that, regardless of whether our field is an art or science, they need medical informatics expertise in their companies, hospitals, clinics, and medical schools (8). They also appear to be realizing that the special skills acquired by training in medical informatics, rather than in computer science, can greatly enhance the ability of an individual to contribute in the complex settings of modern medical practice.

We hope you will enjoy the discussion that follows and will contribute to its further unfolding. It is clear that more dialog is needed, with a goal to define commonalities and core agreements while recognizing and accepting valid differences. There are great strengths that lie in the recognition of complementary philosophies and approaches. But let us not retreat from a commitment to use a scientific approach in defining the core issues in our field, in creating and refining general methodologies, and in abstracting concepts that allow the best efforts of inventive people to be broadly applied while avoiding the reinvention of methods that are doomed to fail.

References: