Teaching Physicians to Make Informed Decisions in the Face of Uncertainty: Librarians and Informaticians on the Health Care Team

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Almost every statement of medical competencies includes the need for physicians to be able to make independent, informed decisions in the face of uncertainty. Supporting that position are often-quoted Institute of Medicine reports documenting the medical errors, iatrogenic damage, waste, and overtreatment that occur when physicians do not make informed decisions.

Today, more information is available than ever before, and medicine has become deeply complex. Most physicians would say they are proficient at using the Internet and bibliographic databases to find information to inform decisions, but there is significant evidence to the contrary. Research continues to show a disconnect between the information physicians need and the information they retrieve: Physicians have two questions for every three patients but use information retrieval systems fewer than nine times per month; most physician-conducted searches retrieve only 25% to 50% of relevant articles; doctors have difficulty reading and interpreting medical research; physicians may overgeneralize findings and may incorrectly apply those findings in clinical practice; adverse clinical outcomes have arisen from these difficulties in interpreting and applying research evidence; and, when physicians try to answer questions, they are almost as likely to make an incorrect conclusion as a correct conclusion.

Because physicians report there is too much information and it takes too long to search for the correct answer, they often “satisfice,” or take the fastest, easiest answer when faced with uncertainty. This is unfortunate, as Weightman and Williamson’s systematic review on the impact of library services on health outcomes indicated that when health care providers used professional library services, the result was improved general patient care, diagnosis, choice of tests, choice of therapy, and reduced stay. Clearly educating physicians in how to appropriately use information resources could lead to improved health outcomes.

Biomedical and health informatics does exactly that. The American Medical Informatics Association defines this discipline as the interdisciplinary scientific field that studies and pursues the effective uses of biomedical data, information and knowledge for scientific inquiry, problem solving, and decision making, motivated by efforts to improve human health.

It includes molecular and cellular biology (bioinformatics) as well as health at the individual level (clinical informatics) and at the populations level (public health informatics).

To improve health outcomes, physicians must first realize what they need to know, and then know how to find it, including how to efficiently employ complex biomedical databases, how to analyze the results, and how to synthesize the findings. They need to know the strengths and weaknesses of both Google and PubMed. They need to know how decision support tools work, and they need to be able to understand the important differences between evidence-based and consensus-based resources. These are only a few examples of the competencies that have been defined in biomedical and health informatics. To roughly paraphrase Edward Shortliffe, basic sciences, clinical sciences, and information sciences are all three needed to educate future physicians.

Many have written that the current medical education system engenders independence, self-confidence, and perfectionism. Quick and confident decision making has long been the goal, but most people can only consider five to seven sets of facts in making a decision. As medicine becomes more complex and information technologies transform decision making, physicians must learn not only how to apply new tools and technologies effectively but also new ways of decision making that foster multiple inputs, including team input. Reaching this goal will require informatics education integrated throughout the medical curriculum, faculty role models with searching minds who understand biomedical and health informatics, and continuing education to retrain those who were educated under older models.

Librarians have been envisioning this future since the 1970s, when clinical medical librarians joined health care teams that included students, residents, attending physicians, nurses, nutritionists, and others. In the 1980s, librarians embraced a vision for the future where all health information systems would be connected when at all possible, and they have been working toward that future ever since. In the 1990s, librarians took teaching roles in the evidence-based medicine curriculum. Now informaticians (those who understand both biomedical and the medical discipline) have again joined care teams. Librarians, informaticians, and medical educators must join together to make curriculum-integrated informatics education and training a reality.

References