The Internet provides a quick and easy method of measuring a term’s place in a broad range of literature. A quick (entirely unscientific) search on PubMed for the term “evidence-based medicine (EBM),” limited to the calendar year 2004, retrieved more than 3500 citations. When the same search was restricted to the year 1995, only 70 references were retrieved—making for a 50-fold increase in Medline citations in fewer than 10 years. A current Google search of the same term brings up more than 23 million related links, highlighting how this term has spread beyond technical and clinical usage to be absorbed into the vernacular. EBM has joined the mainstream and is now popular, well recognized, and—arguably—overused.

Every medical course, Web site, grand rounds, and textbook now claims to be evidence based. Only a handful, however, truly are.

Given this surge in popularity, it becomes increasingly important to step back and develop a clear, practical working definition of the term. What does “EBM” mean now? How has its meaning shifted over the years? What might it look like over the next 10 years?

As with many cultural shifts, in order to see the future of EBM we must look to its recent past. There are many definitions of EBM, but one of the earliest and most widely used was put forth in 1992 by the Evidence-Based Medicine Working Group based out of McMaster University: “The conscientious, explicit, and judicious application of the current best available evidence in the care of patients. The practice of evidence based medicine means integrating individual clinical expertise with the best available external clinical evidence from systematic research.”

The Group also identified 4 basic steps to practicing evidence-based medicine:

1. Develop a specific answerable and searchable question
2. Retrieve the literature in an efficient and comprehensive way
3. Critically appraise the literature
4. Apply the results of that literature to the care of the patient.

The fundamental role of EBM was to fill a perceived gap between the medical literature and the everyday care of the patient—that is, to bring high-quality evidence to the patient and physician in order to inform the clinical decision-making process. Although tremendous progress has been made, this gap still remains and the process of integrating high-quality evidence into everyday practice has yet to be achieved.

In its “youth,” EBM devoted much of its focus to the third step: critical appraisal. A solid foundation for critical appraisal in the context of EBM was provided by 2 well-known series of articles; the first, a “Readers Guide” was published in the Canadian Medical Associations Journal in 1981 and the second, “The User’s Guide to the Medical Literature,” was published in JAMA from 1992 through 2000. These 2 series as well as Dave Sackett et al’s text on EBM established the basic infrastructure and foundation for critical appraisal of any form of published literature on treatment, diagnosis, prognosis, etc. The JAMA series took EBM into more complex territories, further exploring interpretation of results, applicability to patient care, and finally, the interplay of evidence with patient values and preferences. Within this strong framework, all 4 aspects of EBM have flourished.

Around the time that the concept of EBM was being worked out, 2 important resources were developing and evolving. The first was the Internet, bringing unprecedented access to resources that were previously available mostly to academia—such as current, full-text journals in even the most technical of disciplines and specialties. It is
doubtful that EBM could have taken off without broad-based access to the Internet, and it probably is not a coincidence that EBM did not take off before this access was available.

The second key development was the emergence of a process and a basis for filtering resources. In the context of EBM, filtering uniformly applies the concepts of critical appraisal to published literature, filters out literature that meets the standards of EBM, and makes those articles available in a concise and clinically relevant manner. This invaluable tool was pioneered by Brian Haynes and his staff at ACP Journal Club and Best Evidence. Since that time, the Internet has provided fertile ground for easy access to the exponential growth of filtered resources. Internet access at clinical sites, along with the gradual placement of all relevant medical literature online, has brought the first 2 steps of EBM closer to the clinical encounter.

Theoretically, a patient could be seen, a question developed, and the literature retrieved—all in the clinical setting. However, though the pieces are all there, it is highly unlikely that the average busy clinician is actually performing these steps. One of our misconceptions regarding the actual practice of EBM was not fully realizing that while the 4 steps are an important conceptual framework and effective teaching strategy, the reality is that physicians in practice rarely have the time or the willingness to actually perform these steps. Physicians adopt new treatments or interventions when the culture they are practicing in makes it safe to do so. As Guyatt points out in his editorial on this issue, “filtered resources may be readily available but they are not at all sufficient to produce evidence based care on their own. Habit, local practice patterns, and marketing can easily overwhelm a practitioner and be a stronger determinant of practice patterns.” Physicians are more likely to change clinical behavior based on a conversation with a respected colleague around a chart rack than reviewing a new online publication.

The evolution of the Internet and of filtered resources has brought great opportunity, but also challenges to those of us involved in teaching evidence-based medicine. As schools struggled with how to integrate EBM into their curricula and libraries acquired and integrated EBM filters as part of their online resources, it became clear that not all residents in training and physicians in practice would have the desire or the time to become experts at EBM and execute all 4 steps. In response to this emerging limitation, we began to see distinctions between evidence-based practitioners and evidence-based users.5

Well trained evidence-based practitioners are what is needed to offer checks and balances to this new information system, especially as government agencies and for-profit companies are pressured to use questionable “evidence” as a tool to reduce costs and not as a way to enhance quality. EBM users need a smaller skill set—a more reasonable goal for a majority of trainees and physicians already in practice. However, this model does not remove the need for all trainees to have significant exposure and training in evidence-based practice.

Even more dramatic is another impact on the future of EBM—the imminent leap in healthcare information technology over the next 5 to 10 years. Driven by several powerful forces, all aspects of healthcare clearly are on the fast track to becoming fully electronic. This will open the door to closer integration of EBM into healthcare information systems.6 In the near future, the vast majority of hospitals and physician practices will have electronic medical records, full-text journals online, filtered resources, and up-to-date guidelines and reminder systems.

Medicare will continue to play a major role in bringing together evidence, patient care, and health systems. Medicare recently began monitoring inpatient treatment at medical centers in certain key clinical areas, such as the management of heart failure and pneumonia. The government has carefully selected clinical areas in which there are clear foundations of evidence and little debate regarding appropriate management. As Medicare and other agencies broaden their scope in this and similar efforts, debates regarding the quality and interpretation of evidence will surely erupt. Physicians will need the appropriate level of training to participate in these discussions and to lead them.

The future and foundation of EBM, while directly linked to the evolution of technology, ultimately remain focused on training physicians in the 4 basic steps. There will be a continued need for extensive training of residents, students, and future educators in all aspects of EBM. With institutions developing their own expertise, much of this training may occur locally, but the need for training and level of expertise will only increase. Perhaps in some instances different goals and expectations for learners should be set, distinguishing between the EBM user and the EBM practitioner. How we train the EBM users of the future has yet to be fully worked out and evidenced-based practitioners will have to be creative in order to discover how, when, and where to train EBM users. The best-case scenario for the future will have well trained EBM users working within a healthcare information system that weaves evidence into the fabric of the healthcare delivery system.

There is, however, much work to be done before we can fully realize this future. If successful, we will come a long way toward providing the best possible care to our patients. I would reemphasize one of the fundamental principals of EBM: evidence alone is only a part of the clinical decision;
patient values and preferences, costs of care, harm, and inconvenience all play equally important parts in the clinical decision-making process.

References