
CHALLENGES TO USING EVIDENCE-BASED MEDICINE IN DAILY CLINICAL PRACTICE

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Physicians predictably face difficulties when they try to apply evidence-based medicine (EBM) in actual clinical practice, and they may not be able to answer all questions about patient care using the EBM model. This article discusses 6 barriers that physicians may encounter as they attempt to use an evidence-based approach to patient care.

Lack of Time

Declining reimbursement for physician services in recent years has caused physicians to feel increasing pressure to see more patients and to work longer hours. Subsequently, physicians have fewer hours during their normal routines to devote to ongoing self-education regarding patient care. Traditionally, physicians have made decisions based primarily on local traditions, personal experience from their training and practice years, and a knowledge of the underlying pathophysiology of the disease in question [1]; practitioners needing more information have referred to textbooks and local experts [2–4]. Although this approach may be relatively time-efficient, it may not lead to the best patient care decisions. Given the rapid expansion of medical knowledge, information learned during medical school or residency can quickly become obsolete [5,6]. Textbook revisions are too slow to keep up with changes in information [3,7], and advice offered by a local expert may not be applicable to patient populations other than those of the expert [8].

In an evidence-based model of medical decision making, physicians who need additional information pose answerable clinical questions that guide searches for appropriate research literature. During a single day of seeing patients, a primary care physician (PCP) can generate as many as 8 important clinical questions [9], the answers to which could prompt that physician to alter his or her management of patients [10].

Several recent and successful curricular efforts in this area [11–13] suggest that physicians can learn the skills

needed to practice EBM effectively. However, surveys by Sackett [10] suggest that the average practicing physician now spends less than 1 hour per week reading information pertaining to the care of his or her patients. Therefore, even physicians who understand the evidence-based model and know how to critically assess journal articles may not be able to answer many of their patient care questions. Learning to use new technology and sources of information that make practicing EBM more feasible is a potential solution for busy physicians.

Lack of Access to Information

Physicians who have access to newer sources of information and computer technology can answer patient care questions much more quickly than physicians who rely on traditional information sources. (See *Appendix on page 28 for a list of useful resources.*) The following scenario illustrates how information technology may be used in a patient care setting.

A 36-year-old woman presents to Dr. Smith, her PCP, complaining of muscle dysfunction on the right side of her face that began suddenly the previous day. The patient has no significant past medical history. Upon physical examination, Dr. Smith finds drooping of the right eyebrow and flattening of the nasolabial fold and discovers that the patient cannot close her right eye voluntarily. The patient's neurologic examination is otherwise normal. She has no risk factors for HIV or Lyme disease. Dr. Smith makes a diagnosis of Bell's palsy (ie, peripheral facial nerve neuropathy).

Dr. Smith does not know whether patients with Bell's palsy benefit from treatment, so she decides to seek evidence to answer the question. Rather than wait until office hours are over to do a MEDLINE search at the library, Dr. Smith accesses the *Best Evidence* CD-ROM on her desktop computer while the patient is waiting. She quickly finds a summary of a meta-analysis showing that the average spontaneous recovery rate from Bell's palsy is only 68% and that a course of oral corticosteroids increases the rate of complete restoration of facial nerve function. According to the

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meta-analysis, 11 patients would need to be treated with steroid therapy for 1 additional patient to recover completely (number needed to treat [NNT] = 11) [14]. Based on these results, Dr. Smith starts her patient on a 10-day course of prednisone.

Although Dr. Smith was able to easily find appropriate evidence in this scenario, many patient care questions cannot be answered rapidly by consulting evidence-based abstract publications or the Internet and require a more time-consuming MEDLINE search and inspection of journal articles. Physicians associated with a university, teaching hospital, or major medical library may have access to a wide selection of journal articles from their medical library's electronic journal catalog. For the many physicians without such an association, however, there is currently no reasonably priced service that provides rapid Internet access to a large, relatively comprehensive database of full-text original research journals. These physicians will find that they must do extra work to retrieve the studies necessary to answer their patient care questions. In addition to having access to such resources, many physicians are beginning to receive more formal training in EBM skills in medical school, residency, and during their clinical practice years.

Lack of Evidence

The EBM paradigm requires that physicians base clinical decisions on evidence from well-designed clinical research. Although many common medical practices are based on solid research evidence (eg, use of angiotensin-converting enzyme inhibitors to reduce mortality and hospitalizations in congestive heart failure [15], use of antibiotics to eradicate *Helicobacter pylori* in patients with duodenal or gastric ulcers [16]), high-quality studies are not yet available for many clinical questions. For example, it is unclear whether solid evidence exists to support the use of α -interferon to decrease the rate of hepatoma or mortality in hepatitis C or whether evidence supports the use of long-acting calcium channel blockers to reduce stroke or mortality in hypertension. Other questions may never be answered definitively with large-scale randomized controlled trials, such as whether the Papanicolaou smear reduces mortality from cervical cancer [17].

When no high-quality evidence is available, physicians are forced to use less reliable information sources, such as textbooks, local expert opinion, or their own best judgment based on personal experience and knowledge of pathophysiology, in deciding a course of action along with the patient [10]. As high-quality patient-oriented clinical research becomes available,

practitioners of EBM will be able to rely less frequently on traditional approaches and more regularly on research evidence to guide patient care decisions.

Integrating Patient Values in Decision Making

Incorporating patients' preferences and values into decisions about diagnostic tests, therapy, or other aspects of patient care is integral to EBM methods [10, 18, 19]. This aspect of practicing EBM, however, has not yet been clearly elucidated, and its definition may vary according to practitioner. For example, one physician may try to use previous knowledge or direct questioning of a patient to understand the patient's approach to his or her medical care (ie, is it an aggressive and proactive approach or a "wait and see" attitude?). Another physician may directly explain the results of research to the patient and then guide the patient in making an individual care decision about whether to accept the test or therapy, based on the patient's values and preferences. To illustrate this process, consider the following clinical example.

A 58-year-old man with a history of hypertension presents to his PCP and is diagnosed with hypercholesterolemia (total cholesterol, 260 mg/dL; low-density lipoprotein cholesterol, 170 mg/dL). The patient attempts dietary therapy for 6 months, without significant improvement of his cholesterol level. Based on the results of a large trial of a 3-hydroxy-3-methylglutaryl coenzyme A (HMG CoA) reductase inhibitor in subjects similar to this patient [20], the PCP discusses with the patient starting one of these drugs. The PCP explains that after taking the medication for approximately 5 years, 1 of 42 patients will avoid a heart attack or cardiovascular death that would have occurred without the medication (NNT = 42). Based on this information, the patient's personal philosophy about health, and his general interest in avoiding taking medications, the patient declines the medication and chooses to continue working on lowering his cholesterol level through dietary modifications.

Obviously, this is a simple scenario. In actual clinical practice, complex issues and research results may not be so easily explainable (eg, prostate-specific antigen testing to screen for prostate cancer). In addition, physicians can influence their patients' decisions by consciously or subconsciously imposing their own values during discussions of trial results. Patients may also have difficulty understanding research results presented by a physician, or they may not be able to articulate their values and

preferences in a way that will aid in determining whether a certain intervention is appropriate for them.

The best methods for integrating patient values and preferences into evidence-based decision making are currently unclear. Research is needed in this area to determine which communication techniques will most efficiently and without bias produce the best patient satisfaction, compliance, and outcomes.

Organizational Barriers

Physicians who attempt to apply the results of clinical research to actual patient care may encounter institutional and organizational constraints that make the implementation of research evidence impractical for and unattractive to both themselves and their patients. In the following scenario, a patient encounter is complicated by an organizational system that hinders a physician from implementing research evidence in patient care.

A 75-year-old man with a history of hypertension and stable chronic renal insufficiency of at least 5 years duration (serum creatinine = 2.1 mg/dL) presents to his PCP. To delay the progression of his renal insufficiency, the PCP recommends that the patient begin a low-protein diet, based on a recent meta-analysis [21]. However, the renal medicine section at the PCP's hospital employs the only on-site dietician qualified to administer the diet. Because patients can only be referred to the dietician directly by a nephrologist, the PCP first refers the patient to a nephrologist. However, the nephrologist requires that patients schedule an office consultation before she will refer them for dietary counseling. During that office visit, the nephrologist orders a series of tests and requests that the patient return for a follow-up visit. The patient receives his dietary counseling from the dietician during the initial nephrology visit. The results of the tests requested by the nephrologist are negative, except for a renal ultrasound that shows small kidneys (consistent with chronic hypertensive renal disease).

In this scenario, the PCP's organization required that his patient undergo an extra physician visit and extra testing and, possibly, incur additional costs. Because counseling for a low-protein diet is extremely time-consuming [22], it would not have been feasible for the busy PCP to conduct and supervise the intervention on his own. If the PCP chooses to implement this research evidence in the care of future patients, he will likely face these organizational barriers again and will need to decide whether the diet's benefits outweigh

the extra effort required. This is only one example of how institutional and organizational structures can hinder the application of quality research evidence in actual patient care. Many other examples could be given, but no simple solutions can be offered. Overcoming these obstacles requires an understanding of the organization's processes and potential for change.

Financial Barriers

One cannot discuss challenges to practicing EBM without mentioning the economic realities of the current medical system in the United States. Because many diagnostic tests and therapies that have been shown to be effective and important by quality clinical research are also very expensive, they are unavailable to many patients who lack medical insurance. In addition, medical insurance companies use coverage limitations such as annual caps on pharmacy and total benefits to contain costs, and patients who have exceeded such limits may be unable to afford additional medications recommended by their physicians.

Many effective medications, such as the new cyclooxygenase-2 (COX-2) inhibitors celecoxib and rofecoxib, also require preapproval by health plans that may deny coverage unless patients meet certain criteria (eg, failure to respond to less expensive medications), and some effective therapies are not covered at all. For example, sustained-release bupropion has been shown to be effective in smoking cessation in several well-designed studies [23,24]. However, most health plans will not pay for this medication, and some patients may not be able to afford the out-of-pocket expenses incurred by taking the drug.

To overcome coverage denials or obtain approval for uncovered treatment, physicians can appeal to their patients' health plans, or they can become involved on a larger scale by serving on quality advisory committees, which oversee the development of practice guidelines and the approval of medical coverage for new tests or therapies. Community physicians who sit on these committees can influence health plans to provide coverage for therapies and tests supported by high-quality clinical research [personal communication, Thomas McCarter, MD, Medical Director, Quality Resource Management, Tenet Healthcare, August 1999].

Conclusion

Although EBM is an appealing model for delivering the best possible care to patients, practitioners currently face barriers to using this approach in "real time." In the future, more clinical research will be available to physicians to answer patient care questions. Advances in information

technology will allow physicians to access comprehensive databases of high-quality evidence on powerful handheld computers, making it easier for busy office physicians to practice EBM at the point of care. An early version of such a database is already available [25].

At present, practicing EBM requires extra effort on the part of the busy clinician. However, by acknowledging these barriers and doing the extra work necessary up front, physicians will learn they can often use high-quality clinical research to answer their clinical questions and improve the overall care provided to their patients.

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