

EVIDENCE-BASED MEDICINE: WHAT DOES THE FUTURE HOLD?

Allen F. Shaughnessy¹

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The concepts of evidence-based medicine are coming up on their thirty-fourth anniversary, born in Canada with the publication of a series of articles in the Canadian Medical Association Journal called, *Clinical Epidemiology Rounds*.¹ Over this time, the ideas have slowly permeated their way into academia and are slowly diffusing into everyday clinical practice.

The process of evidence-based medicine consists of five steps: 1) defining the question; 2) find evidence; 3) critically appraise this evidence; 4) apply the evidence, making a decision regarding the initial question; and, 5) monitoring one's own practice.

This process makes sense. It is also difficult. Just realizing that one has a question – the start of the process – is not easy. Finding the evidence, especially with limited computer support, can stop the process before it starts. Critically appraising evidence is a slow, difficult process for which many of us are ill equipped to do. Even if we have the skills, the time it takes to evaluate original research makes this step impractical when an answer is needed during the care of patients.

Problems remain when the answer is obtained. If I do something based on this evidence, will my patient be better off as a result? There are many examples in medicine of when patients were inadvertently harmed because of interventions that seemed to make

sense but worsened clinical outcomes. One of the most infamous examples is the treating of asymptomatic premature ventricular contractions following a myocardial infarction, which resulted in an average increase in mortality.² Many other examples of “doing the wrong thing for the right reasons” exist in medicine's history.

In 1994, my colleague, David Slawson, MD, and I introduced the concept of information mastery.³ The concepts arose out of our frustration with the slow adoption of evidence-based practice. We realized that our colleagues were at once overwhelmed with information yet unable to find answers to their questions. They wanted an answer, not necessarily evidence. They wanted to know what to do? Rather than turning to the original research, they would turn to colleagues, experts, guidelines, or their own logical reasoning to find an answer. When time is of the essence, any answer is useful.

The second problem we identified with evidence-based medicine was that it focused mostly on examining the validity of the science of research and much less on the outcome that was studied. To address this issue, we coined the term “patient-oriented evidence that matters,” to signify outcomes of importance to patients and to differentiate these outcomes from the surrogate outcomes (which we call “disease-oriented evidence”). The asymptomatic premature ventricular contractions (PVCs) exam-

¹ PharmD, MMedEd; Professor of Family Medicine, Tufts University School of Medicine; Tufts University Family Medicine Residency at Cambridge Health Alliance; 195 Canal Street, Malden, MA 02176 USA 781-338-0507
Email: Allen.Shaughnessy@tufts.edu

ple occurred because of the failure to differentiate between disease-oriented evidence – suppression of PVCs – and the patient-oriented outcome of death.

Today's physicians need to know how to access information in the midst of seeing patients, usually using computer-based resources that summarize original research as recommendations or guidelines. They also need to know how to ask the right questions and evaluate information from all the non-computer-based resources they will still use.

To help physicians we have developed a series of online modules, accessible from any computer, which will help them learn, at their own pace, how to become “information masters” (Table). With explanations, examples, and self-assessments, busy physicians can become more adept at using information resources at the point of care and finding information that will result in true benefits to their patients. Further course description is available at <http://www.clinicalinformatics.com>

REFERENCES

1. [No author listed]. Department of clinical epidemiology and How to read clinical journal: 1. Why to read them and how to start reading them critically. *Can Med Assoc J* 1981; 124(5): 555-8.
2. Echt DS, Liebson PR, Mitchell LB, Peters RW, Obias-Manno D, Barker AH, et al. Mortality and morbidity in patients receiving encainide, flecainide, or placebo. The Cardiac Arrhythmia Suppression Trial. *N Engl J Med*. 1991 22; 325(8): 584-5. *N Engl J Med* 1991 Mar 21; 324(12): 781-8.
3. Slawson DC, Shaughnessy AF, Bennett JH. Becoming a medical information master: Feeling good about not knowing everything. *J Fam Pract* 1994; 38: 505-13.

TABLE: COURSE DESCRIPTION: “ENABLING BETTER DECISIONS THROUGH INFORMATION MASTERY”

Information Mastery Part I

- **The Starters**
 - EBMI: Evidence-Based Medicine: An Introduction
 - EBM2: Evidence-Based Medicine and Information Mastery: Why They Are Important
- **Making Treatment Choices**
 - PHARM1: *Evaluating New Medications: Understanding the Sales Process*
 - PHARM2: *Evaluating New Medications: Evaluating Information from the Pharmaceutical Industry*
- **Information Tools**
 - INFO1: *Finding Information To Answer Questions About Specific Patients*
 - INFO2: *An Exploration of Point of Care Information Tools*
 - INFO3: *Evaluating Foraging Tools for Keeping Up with New, Relevant and Valid Information*
- **Information Sources: Guidelines**
 - GUID1: *Evaluating Practice Guidelines: Threats to Validity*
 - GUID2: *When Guidelines Collide: Finding and Quickly Evaluating Relevant and Valid Guidelines*

Information Mastery, Part 2

- **Evaluating Studies about Diagnosis**
 - DIAG1: *Before the Treatment Choice: Pitfalls in the Diagnostic Process*
 - DIAG2: *Before the Treatment Choice: Understanding Bayes' Theorem and the Diagnostic Process*
 - DIAG3: *Evaluating Studies about a Diagnostic test: Threats to Validity*
 - DIAG4: *Evaluating Research about a Diagnostic Test: Quickly Evaluating a Research Article*
- **Finding useful information to assess prognosis (PROGI)**
- **Evaluating Studies about Therapy**
 - THER1: *Evaluating Research about a Therapy: Key Threats to Validity*
 - THER2: *Don't Panic: Understanding Statistics, the Language of Medicine*
 - THER3: *Evaluating Research about a Therapy Evaluating a Research Article*
- **Evaluating Other Sources of Information**
 - EXPI: *Evaluating Information From Experts*
 - REVI *Evaluating Review Articles: A Source of Expert Wisdom*
 - CME1: *Getting the Most Out of Lectures and Continuing Medical Education*
- **The Extras**
 - SOCI: *The Social Role of Evidence-Based Medicine*
 - JAZZ1: *Harmonizing EBM and Clinical Experience via “Clinical Jazz”*
 - CHANG1: *Creating Change: Practicing EBM in an Non-EBM World*
- **Competency Certification exam (EXAM)**

CONFLICT OF INTEREST

Allen F. Shaughnessy is the owner of “Clinical Information Sciences”. an online education program for evidence-based medicine

KMUJ web address: www.kmuj.kmu.edu.pk
 Email address: kmuj@kmu.edu.pk