Making Evidence-Based Practice a Reality

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INTRODUCTION

Busy doctors need answers, and quickly. Ely and colleagues observed that primary care clinicians generate approximately 3 questions every 10 patient visits. Additionally, the body of medical literature is growing exponentially. To keep up with primary care literature, it would be necessary to review 7287 articles per month, which would take approximately 29 hours per day.

In 1992, the Journal of the American Medical Association introduced a formula for applying evidence-based medicine (EBM) in User’s Guide to the Medical Literature. With this method, a physician develops a clinical question from a patient encounter, performs a literature search, selects relevant articles, and critically appraises them to find the answer. Although rigorous, this approach is too cumbersome to use during a busy clinical day. Instead of critically appraising primary literature, most physicians seek information that has been pre-appraised—critically analyzed and summarized by someone else. In the Ely study, physicians attempted to answer only 40% of the 1101 questions they generated, spent less than 2 minutes looking, and did formal literature searches for only 2 questions. Physicians need to have a method for finding answers at the point-of-care.

BACKGROUND

It is helpful to view the full body of medical information as a pyramidal hierarchy of relevance (Figure 1). The “bottom” of this pyramid is usually MEDLINE, although there is a considerable amount of unpublished, international, and other research that MEDLINE excludes. In contrast to the unorganized but information-dense foundation, systematic reviews at the top of the pyramid are rigorously distilled. Though limited in breadth by the presence (or absence) of primary literature, these highly relevant resources offer the most rigorous evidence to support medical care. Between these 2 extremes are secondary resources that sift and summarize the primary literature with a varying degree of quality. Pre-appraised information has become much easier for clinicians to find and use, and this information provides 2 critical services: a surveillance system to alert physicians of new medical information, and a retrieval system to find that information at a later date. Elsewhere in this issue, Hooper-Lane highlights several of these secondary information resources, including InfoRetriever, ACP Journal Club and Best Evidence, DynaMed and Clinical Evidence (p 18).

An ideal clinical answer addresses the particular question exactly with the most rigorous methods and takes minimal effort to find and implement. In their Information Mastery curriculum, Slawson and Shaughnessy summarized this strategy with a “Usefulness Equation”:

\[
\text{Usefulness of medical information} = \frac{\text{Relevance} \times \text{Validity}}{\text{Work}}
\]

Highly relevant medical information focuses on interventions that affect outcomes that patients care the most about. Will patients live longer, healthier lives? Instead of just lowering cholesterol, will this medication prevent heart attack and death? POEMs, Patient Oriented Evidence that Matters, is an example of this type of information. Highly valid information results from rigorous methods. For primary literature, this refers to scientific research methodology. For pre-appraised resources, clinician consumers must be aware of the authors’ system for surveying and summarizing the literature. Good secondary resources explicitly list their criteria for selecting relevant information and critically appraising this information. Finally, highly-useful information requires the least amount of work to find.
PUTTING EVIDENCE INTO PRACTICE

A variety of patient-oriented questions arise during a clinic day. To maximize efficiency, physicians need a strategy to ask questions and find answers. Key elements to an answer strategy include: “Know Where to Look,” “Exam Room Access,” “Keep it Relevant,” and “Remember the Patient.”

Know Where to Look
A quality resource systematically reviews original research, updates regularly, and lists the level of evidence for any recommendations. The summaries should be relevant to your practice and concisely organized to search easily while seeing patients. Most electronic resources offer a trial period, which physicians should take advantage of. Find 1 or 2 resources that best meet your needs, and get to know them well. Secondary resources are most useful for common clinical questions. For rare conditions (e.g. management of a patient with pneumocephalus), you will need to search a textbook or MEDLINE. Be patient—as you learn a resource’s organization and search strategies, finding answers becomes much faster.

Exam Room Access
Most current information is available in electronic format, through the internet, a desktop computer or a handheld computer. Each clinician should determine which resource is the most efficient in his or her practice based on information needs, technological resources, and personal preference (Table 1). Consider those with organization that supports the way you think about medical information. If you have an electronic health record in your clinic, you will have ready access to the internet. If you do not have access in patient rooms, consider using a handheld computer to find information. Many resources also have links to patient education materials that can easily be printed and given to the patient (Table 1).

Keep it Relevant
Be selective about what you read. Focus on information that addresses clinical information relevant to your practice. Read the article or review if it addresses patient-oriented outcomes (e.g. morbidity, mortality, quality of life) and, if valid, will change your current practice.

Remember the Patient
The key to evidence-based practice is integrating clinical expertise and best evidence with your patient’s values. For example, if your patient with daily headaches is afraid of needles, acupuncture will not be an option regardless of its proven effectiveness.

To better understand how these skills complement practice, consider the following example of using EBM resources to keep up-to-date, access relevant literature, and facilitate decision-making during a busy clinic day.

Before your first patient, you receive an automated e-mail about a study showing that knee taping reduces pain in osteoarthritis. You make a mental note, knowing you can find that information quickly when needed, and delete the e-mail.

You see a 45-year-old woman who has discontinued several medications for migraine prophylaxis because of side effects. She is looking for a “natural” remedy. With a 60-second search on your handheld computer, you find a critically appraised review of an article from *Neurology* demonstrating the efficacy of oral riboflavin for headache prophylaxis with minimal side effects. You
review the findings of the study with the patient, and she agrees to try riboflavin 400mg daily.7

Your next patient is a 42-year-old man for a physical exam. He has concerns about having a heart attack. You enter results from last week’s fasting lipid profile, normal blood pressure, and non-smoking status into your handheld computer and calculate his 1% risk of developing coronary heart disease over the next 10 years.8 In 30 seconds you have reassured him and can continue with his exam. (Note: For these examples, I used the handheld version of InfoRetriever. However, there are other products that provide similar services.)

CONCLUSION
Busy clinicians can manage information and develop an evidence-based practice. Use a 2-part system that surveys new relevant medical information and retrieves it when you need it. Choose 1 or 2 electronic resources that are organized in the way you approach medicine. Take the time to learn how to quickly search those resources. Invest in technology that will allow you to access information while seeing patients. Focus on answering the common clinical questions that you and your patients care about.

Table 1. Options to Access EBM Resources

<table>
<thead>
<tr>
<th>Resource Access</th>
<th>Benefits</th>
<th>Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internet</td>
<td>Most current information; Available from any computer</td>
<td>Requires fast internet connection</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Requires adequate RAM memory</td>
</tr>
<tr>
<td>Desktop Computer</td>
<td>Performs quick searches without internet access</td>
<td>Requires regular updates</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Requires adequate RAM memory</td>
</tr>
<tr>
<td>Handheld Computer</td>
<td>Portable, small</td>
<td>Requires regular battery recharging</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Requires regular updates</td>
</tr>
<tr>
<td></td>
<td></td>
<td>May need extra memory</td>
</tr>
</tbody>
</table>

REFERENCES

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