Understanding Evidence-Based Medicine (EBM)

WHAT IS EBM?

In the early 1990s, David Sackett & his colleagues at McMaster University, Ontario, Canada coined the term “evidence-based medicine” to mean the integration of best research evidence with clinical expertise and patient values. In the evidence-based medicine process, a physician asks a clinical question, searches the medical literature to find the best available evidence, evaluates the answers found by critical appraisal and applies the information to the patient sitting in front of you.

Source: http://laikaspoetnik.wordpress.com/tag/ebm

LEARN MORE

Information Skills Module

Centre for Evidence Based Medicine (CEBM)
www.cebm.net

EBM: an oral history
ebm.jamanetwork.com/

Evidence Based Behavioural Practice (EBBP)
www.ebbp.org/
EBM is essentially using reputable sources that summarize the evidence and make it accessible at the point of care.

**CLINICAL QUESTIONS VERSUS RESEARCH QUESTIONS**

**Clinical Questions**—Arise during patient care & require fast answers. We recommend you to use guidelines and clinical support tools.

**Research Questions**—Involve systematic investigation of a subject which requires more time to conduct a comprehensive literature review. We recommend you use reference databases and check more than one source.

**ASK ANSWERABLE CLINICAL QUESTIONS**

EBM always starts with the patient - a clinical problem or question arises from the care of the patient. Phrasing this into a well-formed question makes it easier to determine and combine the appropriate terms to answer your questions and translate these into a search database. There are two main types of questions – **General questions** relate to the basic knowledge about the disease [the what, how, when, which, etc.] or the more **Specific questions** related to patient management.

For specific questions, we suggest using the **PICO** acronym:

<table>
<thead>
<tr>
<th><strong>Patient</strong></th>
<th>Disease or condition</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Intervention</strong></td>
<td>A drug or test – what is the management strategy, diagnostic test or exposure you are interested in?</td>
</tr>
<tr>
<td><strong>Comparison</strong></td>
<td>The alternative i.e. another drug, placebo or test – is there a control or alternative management strategy, diagnostic test or exposure?</td>
</tr>
<tr>
<td><strong>Outcome</strong></td>
<td>What are the patient-relevant consequences of the intervention?</td>
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This is about knowing where to look for the answers to your clinical questions. The first step is becoming familiar with the resources available and selecting the one that best suits your needs.

For the busy GP the most appropriate place to start is to check if there are Clinical Guidelines available on the topic e.g. from the ICGP, NICE, SIGN or another professional body. Guidelines give recommendations based on the best available evidence and usually offer the best evidence for a busy GP during a consultation. Evidence-based guidelines grade the relevance and validity of the recommendations and the quality of the research they are based on. All of the ICGP Quick Reference Guides use EBM.

There are many EBM resources/tools available to help you quickly find the evidence you need. These allow health professionals to use current evidence to answer clinical questions quickly and easily at the point of care.

<table>
<thead>
<tr>
<th>Source</th>
<th>Suitable for use by</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>GUIDELINES</td>
<td>Busy GP during a consultation</td>
<td>ICGP or other professional bodies; NICE; SIGN; TRIP</td>
</tr>
<tr>
<td>CLINICAL SUPPORT TOOLS</td>
<td>Busy GP during a consultation</td>
<td>Clinical Knowledge Summaries (CKS)/PRODIGY; BMJ Best Practice; BMJ Clinical Evidence; UpToDate; Dynamed</td>
</tr>
<tr>
<td>SYSTEMATIC REVIEWS</td>
<td>GP researching a specific topic or GP author writing or updating a clinical guideline</td>
<td>Cochrane; DARE; CENTRAL; PROSPERO; Joanna Briggs Institute</td>
</tr>
<tr>
<td>PRIMARY RESEARCH</td>
<td>For the GP author/researcher who wishes to undertake further research on a topic</td>
<td>PubMed; GoogleScholar; EMBASE; CINAHL; PsycINFO</td>
</tr>
<tr>
<td>GENERAL INTERNET SEARCH OR CONSULT WITH LOCAL SPECIALIST/ COLLEAGUE</td>
<td>If you are still looking for answers</td>
<td>Google; Yahoo</td>
</tr>
</tbody>
</table>
CRITICAL READING

READER - an aid to critical reading for GP’s by applying the following steps to assess the literature - relevance, education, applicability, discrimination, evaluation, reaction.

APPRAISAL CHECKLISTS

At the outset always ask yourself
1) Does this study help answer my clinical question?
2) Are the patients that are included similar to my patient?

CASP (Critical Appraisal Skills Programme)
www.casp-uk.net/

AGREE
www.agreetrust.org/

CONSORT
www.consort-statement.org

CEBM – CATmaker
www.cebm.net/?o=1040

ESSENTIAL READING

ICGP QRG Communicating Risk to Patients
www.icgp.ie/QRGCommRisk

NMIC Bulletin—How to Read a Clinical Paper

APPRAISE THE EVIDENCE

An important part of EBM is to appraise the evidence and don’t believe everything you read. Critical appraisal is the process of carefully and systematically examining research to judge its trustworthiness, and its value and relevance in a particular context. Appraise the evidence for its closeness to the truth [validity], size of effect [impact] and usefulness to your clinical practice [applicability]. Critical reading - the ability to appraise and evaluate the quality of an academic or professional article, generally a research paper – is an important skill in primary care. All general practitioners need a basic level of research literacy in order to read, interpret and apply available evidence in day-to-day practice. It is important to look at the study design which will provide an indication of the quality of the evidence.

The type of question is important and can help lead you to the best study design. Consider the clinical process relating to taking care of the patient – diagnosing the condition by carrying out tests and then providing the right treatment. For each of these issues, specific types of information is required. This information may be obtained from different types of research. Each type of research requires specific study designs. For questions of diagnosis, it is best to use cross-sectional, diagnostic test studies or systematic review of diagnostic studies. For questions of prognosis, it is best to use observational studies, cohort studies or case control studies or systematic review of observational studies. For questions of treatment/therapy, it is best to use randomized controlled trials (RCTs) or systematic review of RCTs.
STUDY DESIGNS

Here we will look at some popular study designs in order of quality from highest to lowest that can be illustrated by the Levels of Evidence pyramid as seen on the previous page:

* **Systematic reviews** are associated with the strongest level of evidence available. They usually focus on a clinical topic and answer a specific question via a literature review that tries to identify, appraise, select and synthesize all high-quality research evidence relevant to that question.

* **Meta-analysis** summarizes the results of several studies in a single weighted estimate, in which more weight is given to results of studies with more events and sometimes to studies of higher quality.

* **Randomized Controlled Trials or RCTs** are trials in which participants are randomly assigned to two or more groups: at least one (known as the experimental group) receive an intervention that is being tested and another (known as the comparison or control group) receive an alternative treatment or placebo. This design allows assessment of the relative effects of interventions.

* **Cohort Studies** are an non-experimental study design that follows a group of people (known as a cohort), and then looks at how events differ among people within the group. A study that examines a cohort, which differs in respect to exposure to some suspected risk factor (e.g. smoking), is useful for trying to ascertain whether exposure is likely to cause specified events (e.g. lung cancer). Prospective cohort studies (which track participants forward in time) are more reliable than retrospective cohort studies.

* **Case Series** are an analysis of series of people with the disease (there is no comparison group in case series).

* **Expert opinion** is the lowest level of acceptable evidence but in the absence of research evidence may be the best guide available but you must be cautious of individual personal bias.
REFERENCES


Weinfeld, J. and Finkelstein, K. **How to answer your clinical questions more efficiently.** *Fam Pract Manag* July/August 2005.

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Access to high-quality, evidence-based information

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[www.icgp.ie/library](http://www.icgp.ie/library)