Irish College of GPs

2026

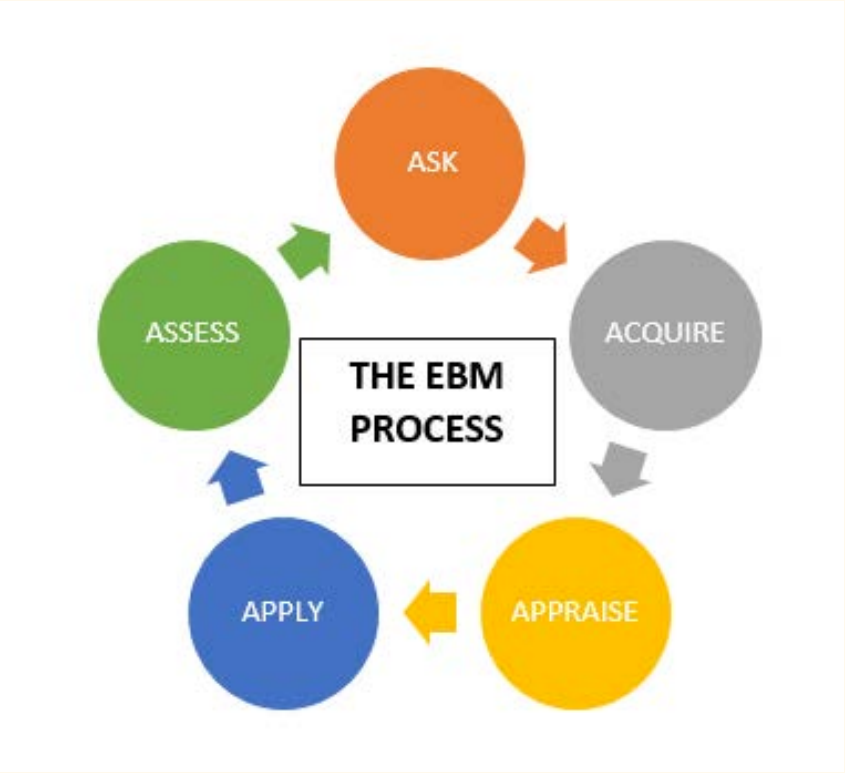
UNDERSTANDING EVIDENCE-BASED MEDICINE

LIBRARY & INFORMATION SERVICE

Evidence-Based Medicine (EBM) is essentially using reputable sources that summarise the evidence and make it accessible at the point of care.

WHAT IS EBM?

In the EBM 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.



STEP 1. ASK PATIENT-CENTRED, FOCUSED CLINICAL QUESTIONS

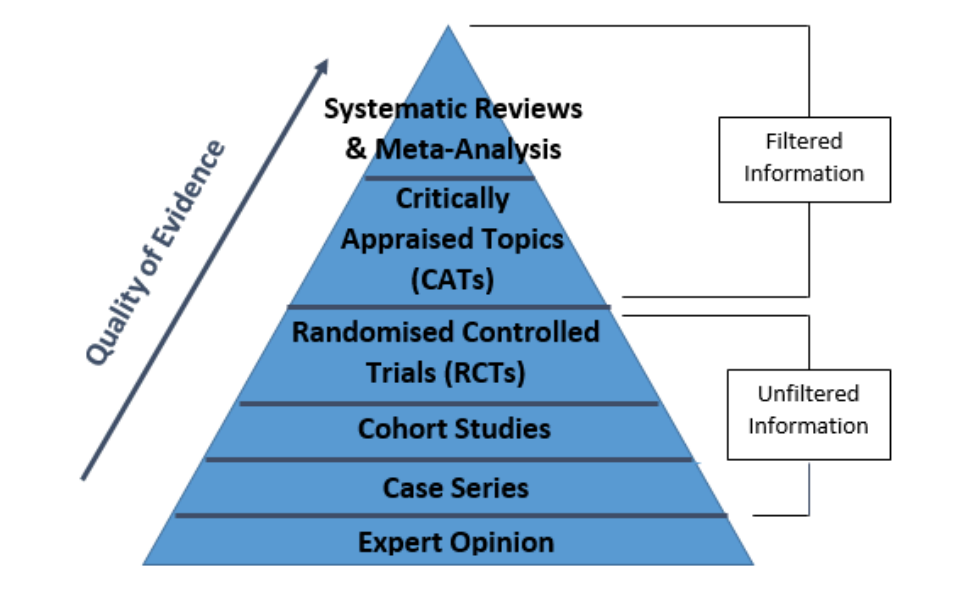
EBM always starts with the patient - a clinical problem or question arises from the care of the patient. Phrasing this into a well-formed question makes it easier to determine and combine the appropriate terms to answer your questions and translate these into a search database. There are two main types 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. Consider using the **PICO worksheet** to answer specific questions.

STEP 2. ACQUIRE EVIDENCE TO ANSWER THE QUESTIONS

There are many EBM resources/tools available to help you find the evidence you need to answer clinical questions quickly and easily at the point of care whether that is using guidelines or clinical support tools. Guidelines give recommendations based on the best available evidence and usually offer the best evidence for a busy GP during a consultation.

STEP 3. APPRAISE THE EVIDENCE

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]. It is important to look at the study design which will provide an indication of the quality of the evidence.



Consider the Study Design

Here the study designs are summarised in order of quality from highest to lowest as illustrated above by the ***Hierarchy of Evidence pyramid***:

 Systematic reviews & Meta-analysis are associated with the strongest level of evidence available. **Systematic reviews** 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. A **meta-analysis** is the use of statistical methods to summarize the results of these studies.

 Critically Appraised Topics (CATs) provide a quick and succinct assessment of what is known (and not known) in the scientific literature about an intervention or practical issue by using a systematic methodology to search and critically appraise primary studies.

 Randomized Controlled Trials (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.

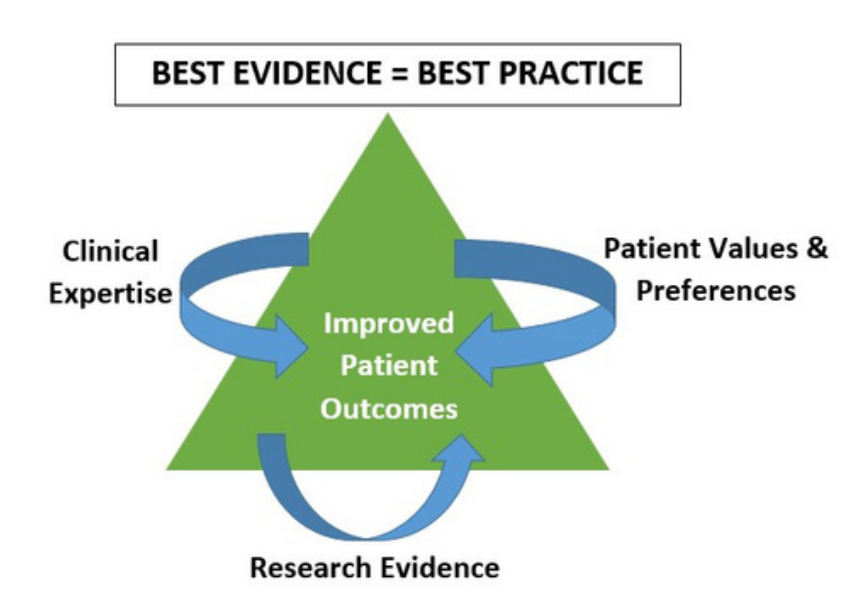
 Case Series are an analysis of series of people with the disease (there is no comparison group in case series).

 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.

Consider the Type of Question

The type of question is important and can help lead you to the best study design. For ***questions of treatment/therapy***, it is best to use randomized controlled trials (RCTs) or systematic review of RCTs. 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.

Remember it is best to use Systematic Reviews or Meta-analysis where available.



QUESTION TYPES

Treatment/Therapy: Questions about the effectiveness of interventions in improving outcomes in sick patients / patients suffering from some condition. These are the most frequently asked. Among the many treatments offered by clinicians are medications, surgical procedures, exercise, and counselling about lifestyles changes.

Prevention: Questions about the effectiveness of an intervention or exposure in preventing morbidity and mortality. Similar to treatment questions. When assessing preventive measures, it is particularly important to evaluate potential harms as well as benefits.

Diagnosis: Questions about the ability of a test or procedure to differentiate between those with and without a condition or disease.

Prognosis: Questions about the probable cause of a patient's disease or the likelihood that he or she will develop an illness.

Etiology/Harm: Questions about the harmful effect of an intervention or exposure on a patient.

STEP 4. APPLY THE EVIDENCE

If you have found evidence that is valid, significant and generalisable from the study population to your patient, you must decide whether and how to apply the findings to your patient's care.

STEP 5. ASSESS THE OUTCOMES

After an evidence-based practice change has been implemented, the final step in the EBP cycle involves assessing outcomes, disseminating results and making further changes to practice as necessary or as prompted by new evidence.