Introduction to Evidence-Based Medicine Resources

University of South Carolina School of Medicine Library

The purpose of this tutorial is to introduce you to evidence-based searching strategies and the Library’s key evidence-based medicine resources.
Learning Objectives

1. Generate search terms using the PICO format.

2. Access the Library’s Evidence-Based Medicine Resources web page.

3. Access a systematic review using the Cochrane Library.

4. Perform a search in Essential Evidence Plus.

5. Access a practice guideline using the National Guideline Clearinghouse.

6. Utilize the Clinical Queries and Systematic Reviews limits in Ovid MEDLINE.

7. Utilize the Clinical Queries and Systematic Reviews filters in PubMed.
What is Evidence-Based Medicine (EBM)?

The conscientious, explicit and judicious use of current best evidence in making decisions about the care of individual patients.


There are 5 Steps to Evidence-Based Medicine:

1. Defining the question that needs to be answered.
2. Collecting/finding evidence to answer the question.
3. Formal evaluation of the evidence gathered.
4. Making and doing the decision.
5. Evaluation of the whole process.
The first step in the EBM process is constructing a focused clinical question.

Breaking the clinical question down can help you generate search terms. You can use the acronym, **PICO**, to determine which question from a patient interaction you want to follow-up on.

**PICO stands for:**

- **P** = patient or problem
- **I** = intervention
- **C** = comparison intervention
- **O** = outcomes
The next four slides will suggest what to think about for each letter of **PICO**.

**P = Patient or Problem**

Include a description of the patient or the target disorder of interest. (age, sex, symptoms, etc.)
I = Intervention

The intervention may be a type of therapy, a diagnostic test, or a prognostic factor.

C = Comparison Intervention

This category is most relevant when looking at therapy questions.

The comparison intervention may be a placebo.
O = Outcomes

This category is used for the clinical outcome of interest to you and your patient.

Let’s work through an example of using the PICO format.
Sample Patient

In your out-patient clinic you see a 35-year-old, international businessman for a routine physical. He travels frequently for work, and he asks if there is anything he can take to relieve jet lag symptoms. He mentions that he found a website which suggests taking melatonin for jet lag.

The clinical question from this patient scenario could be:

Is melatonin effective for treating jet lag in adults?
Breaking the clinical question into PICO could look like this:

Patient = 35-year-old-male
Intervention = melatonin
Comparison = placebo
Outcome = reduce jet lag symptoms

After you have developed a focused clinical question, you want to think about the kind of question you have and the type of publication that would answer your question.

This information will help you formulate your search strategy.
Most clinical questions fall into one of four categories:

- Therapy
- Diagnosis
- Prognosis
- Etiology

This pie chart represents the four types of clinical questions and their prevalence in the literature. Most of the literature focuses on therapy topics. The least amount of information is available for prognosis topics.
The melatonin case study is a therapy question.

Let’s take a look at the types of publications that may help us answer our clinical question.

Hierarchy of Evidence

The next slide is the traditional hierarchy of evidence. It depicts the variety of studies present in the literature. Systematic reviews are at the top.

Systematic reviews are the best source of evidence because they analyze the results of many different trials focused on the same topic.
Hierarchy of Evidence

Keep this chart in mind when you are searching the literature. All evidence is not of equal value. Unfortunately, you will not always find a systematic review to answer your question. Systematic reviews usually focus on therapy topics.

The next slide provides more information on systematic reviews.
Characteristics of a Systematic Review

Comprehensive identification and synthesis of all relevant studies on a given topic

Based on clearly defined search of the literature

Explicit criteria are used to appraise the quality of the papers reviewed

Comprehensive list of all studies included, as well as excluded (with a justification for exclusion)

Findings are analyzed using validated methods, such as a meta-analysis

Searching Library resources that contain secondary studies is a good place to begin your search for evidence.
Secondary Studies

Secondary studies summarize or draw conclusions from original research. They may also be referred to as filtered resources.

Some examples of secondary studies are systematic reviews and practice guidelines.

Secondary Studies

They can save you time because someone has searched and summarized the information for you.

However, you still need to evaluate the content for bias, quality, and relevancy.
Secondary Studies

Some library resources that contain secondary studies are:

Cochrane Library
Essential Evidence Plus
National Guideline Clearinghouse

Primary Studies

Some example of primary studies, studies that report original research, are randomized controlled trials, cohort studies, and case reports. Primary studies may also be referred to as unfiltered resources.

Searching MEDLINE via Ovid or PubMed is a great way to identify primary studies.
To find information for the melatonin case study, we will start by searching library resources that contain secondary studies, such as the Cochrane Library.

The Cochrane Library includes fulltext systematic reviews, which address therapy topics and are high on the hierarchy of evidence.

The second step of the EBM process is collecting evidence to answer the clinical question.

Next, we’ll look at the Library’s Evidence-Based Medicine Resources page.