

CRITICAL APPRAISAL – FOREST VIEW

So far we've discussed how to format clinical questions and then how to find research to answer those questions. If you are fortunate enough to find a pre-appraised resource on your question, the process stops there. Read the answer and judge whether you can implement it to your patient.

However, if the article you found has not been critically appraised, simply accepting its conclusions at face value may not serve your patients well. Even peer-reviewed articles in prestigious journals may not pass close scrutiny by YOU. In this module we'll give you an overview of the process and then in the last several modules we'll get into some of the details for various types of study designs.

Objectives

At the end of this module, the resident will be able to:

- ? Describe the process of critical appraisal
- ? Will be able to select the appropriate EBP Worksheet for a given article
- ? Will be able to list the three most important aspects to consider for any article

Key Concept

When critically appraising a research study, the three main questions to ask are:

1. Is this study valid and free from bias?
2. What are the results?
3. Can I apply the results to my patient(s)?

Quicklinks

Evidence-Based Practice Overview: www.columbia.edu/~mvp19/phase6/phase6.htm

This is a website put together by one of us to collect in one place the links that are important for the process of critical appraisal. It includes links to all the worksheets in the module.

Type of Question

Link

UG: <http://www.cche.net/usersguides/main.asp>

Worksheets: <http://www.cebm.utoronto.ca/teach/materials/caworksheets.htm>

HARM	? User's Guide Chapter
	? Worksheet
PROGNOSIS	? User's Guide Chapter
	? Worksheet
DIAGNOSIS	? User's Guide Chapter
	? Worksheet
THERAPY	? User's Guide Chapter
	? Worksheet

4. Appraise articles found for quality and relevance

When you find an article you want to work out whether:

- it is a good article and you can use the results
- it is not a good article so you shouldn't use the results
- the article is OK but with some limitations and you should use the results with discretion

The process you use to determine if the research you have identified is accurate, reliable and relevant is called critical appraisal.

It would be nice if we could just take the article at face value, but unfortunately life is just not like that!

'Many papers published in medical journals have potentially serious methodological flaws'

Greenhalgh T, 1997. Getting your bearings (deciding what the paper is about).
BMJ 315: 243-6.

So what do you look for in appraising an article?

Excellent question.

There are three basic aspects to appraising an article

1. Is it worth looking at the results of this study?
2. What are the results?
3. Are the results relevant for my patients?

1. IS IT WORTH LOOKING AT THE RESULTS OF THIS STUDY?

On the next page you will see a table that lists the various types of studies and some of the key features that we look at to answer question 1 above.

Have a look at the table as a group -- do the various features make sense to you? Can you see why they would be important?

Appraisal Prompts for Different Study Designs

	Study Design				
	Systematic Review	RCT	Cohort	Case Control	Case Series
Subject selection	<ul style="list-style-type: none"> • Focused research question • Specified inclusion/exclusion criteria • Comprehensive search strategy documented 	<ul style="list-style-type: none"> • Specified inclusion/exclusion criteria • Adequate method of randomisation • Groups similar at baseline 	<ul style="list-style-type: none"> • Specified inclusion/exclusion criteria • Patient groups comparable except for exposure 	<ul style="list-style-type: none"> • Specified inclusion/exclusion criteria • Explicit definition of cases • Controls randomly selected from the source population • Comparable groups with respect to confounders 	<ul style="list-style-type: none"> • Specified inclusion/exclusion criteria • Explicit description of study subjects
Blinding	Not applicable	<ul style="list-style-type: none"> • Patients/investigators/ assessors • Concealment of allocation 	<ul style="list-style-type: none"> • Outcomes assessed blindly with respect to exposure 	<ul style="list-style-type: none"> • Outcomes assessed blindly with respect to disease status 	Not applicable
Follow-up	Not applicable	<ul style="list-style-type: none"> • Sufficient duration • Proportion lost to follow-up 	<ul style="list-style-type: none"> • Sufficient duration • Proportion lost to follow-up 	<ul style="list-style-type: none"> • Sufficient duration 	<ul style="list-style-type: none"> • Sufficient duration
Assessment of outcome/exposure/intervention	<ul style="list-style-type: none"> • Validity of included trials appraised • Homogeneity between studies assessed • Summary of main results presented • Strengths and limitations of included studies discussed 	<ul style="list-style-type: none"> • Assessed objectively and independently • Intention-to-treat analysis 	<ul style="list-style-type: none"> • Assessed objectively and independently • All selected subjects included in analysis 	<ul style="list-style-type: none"> • Assessed objectively and independently • All selected subjects included in analysis • Assessed same way for cases and controls 	<ul style="list-style-type: none"> • Assessed objectively and independently • All selected subjects included in analysis

MODULE 4:

2. WHAT ARE THE RESULTS?

Notice that this question only comes up after you have decided a study is valid. If the study has questions as to its validity, you may elect to discard the study (if others exist) or at least temper your enthusiasm for the results and the strength of the conclusions drawn.

A key principle of the EBP movement is to mandate that results be expressed in a fashion that is relevant to patients.

EXERCISE:

The best way to present the results of a study of diagnostic tests is using the *Likelihood Ratio*. What is this? Why is it better?

EXERCISE:

The best way to present the results of a study of a therapy is using the concept of *Number Needed to Treat*. What is this? Why is it better?

3. CAN I APPLY THE RESULTS TO MY PATIENT(S)?

The idea behind EBP is to take the best research available and apply it to the care of real patients. After you've assessed the validity of a piece of research evidence and determined its results, you still have to explicitly think about whether or not these results apply to the patient at hand.

This generally involves a careful comparison of your patient to the patients included in the study.

EXERCISE:

Sometimes, it appears that only a subgroup of the patients in the study actually benefited from the therapy or diagnostic test. What is the danger of these *subgroup analyses*?