Evaluating the evidence through the literature

There are five steps in evidence-based practice (EBP) research, this handout gives guidance for through steps 1-3 of the process.

1. **Ask** answerable questions, i.e. formulating questions so that you can examine the medical literature and hopefully find an answer-- use the **PICOT tool**, which helps to break down the query into parts.
2. **Search of the literature** for the evidence that supports or challenges your question;
3. **Critically appraise** your results;
4. Decide what **action** to take from your findings and **apply** to practice;
5. **Evaluate** your new or amended practice.

**Step 1: Ask a question in the form of PICOT**

**PICOT stands for:**

**P:** Population/Patient/Problem: Use age, gender, ethnicity, with a certain disorder. Why is this a problem? Who does it affect? Why?

**I:** Intervention or Variable of Interest: Treatment, exposure to a disease, risk behavior, prognostic factor.

**C:** Comparison: Could be an alternative treatment, placebo or "business as usual" as in no disease, absence of risk factor.

**O:** Outcome: Risk of disease, accuracy of a diagnosis, rate of occurrence of adverse outcome, improvement of symptoms.

**T:** Time: The time it takes to demonstrate an outcome (e.g. the time it takes for the intervention to achieve an outcome or how long participants are observed).

**Note:** Not every question will have a Comparison or Time component.

**Example:** In patients with acute bronchitis (P) do antibiotics (I) reduce sputum production, cough or days off (O) faster than giving no treatment (C)?

**Step 2: Search the Literature**

**What is a literature review?**

- It is a balanced overview of the literature in a specific topic.
- Identifies areas where there seems to be gaps in the knowledge and tells what is already known about the topic.
• Provides needed background information and gives prevailing theories or hypotheses and how they fit into your own thesis.
• Evaluates the quality and quantity of published research.

How do I conduct a literature review?

1. Learn how to use databases

   The Regis University Library gives you access to a wide variety of databases. The primary databases used for EBP are Medline/Pubmed, CINAHL and Cochrane. Your Librarians are always available to guide you.

2. The references at the end of articles are a wealth of information for additional research. These references will serve as a springboard to some very helpful articles. You will find seminal articles (usually ones other people cite often), classic articles (older ground breaking articles) and you will start seeing the names of certain authors who may turn out to be experts in the field. See [http://libguides.regis.edu/nursing](http://libguides.regis.edu/nursing).

3. What else counts as written evidence?

   Scope and Standards of Practice: Many organizations have their own. Such as, [AACN Standards for Acute Care Nurses](http://www.aacn.org)

   Agency for Healthcare Research and Quality, [link on EBP page](http://www.ahrq.gov)

   [Healthy People 2020](http://www.healthypeople.gov)

   [National Guidelines Clearinghouse](http://www.nationalguidelines clearinghouse.gov)

   [link on EBP page](http://www.guideline.gov)

Step 3: Critical appraisal of the literature

Critical appraisal is an important element of EBP. It is the step whereby you evaluate evidence for its validity (or bias), usefulness and relevance in clinical practice through scrutiny of the literature. During this process you will find a variety of study types and designs.

How do I decide if a study’s literature review is credible?

• Are most of the references recent to the publication date (< 5 years old?)
• Do the authors cite mainly primary sources? Remember secondary sources are somebody else's take on the quality and study outcomes.
• Is there a synthesis of knowledge? In other words do they avoid a "litany of saints" (just listing a bunch of references)?
• Are areas about the topic that are well understood discussed?
• Are consistencies and inconsistencies in study results explained?
• Do the authors identify gaps in the current knowledge about the topic?
• How much confidence do you have in the findings? Would you use this article in your literature review.

How are research articles organized?

Usually there is a specific order to the way the sections of research articles are presented. This is true for both qualitative and quantitative studies. Here is a general guide to what you can expect.

**Quantitative Study articles:** generate numerical data or data that can be converted into numbers. Examples of quantitative studies:

- Case report
- Case series
- Case control study
- Cohort study
- Randomized Controlled Trial
- Systematic Review
- Meta-analysis

**The Abstract:** brief overview of the study including a few of the results.

**Introduction:** background (problem and significance), literature review, gaps in our understanding, theoretical framework (not often) and purpose/hypothesis/research question (which is usually right before the methods section).

**Methods:** Gives you the particulars of this study. Who: participants (research subjects). Where: the study was conducted (may use vague terms like: urban, Midwestern hospitals). What: the intervention(s)/control, How: procedure (how study was conducted), method/design (e.g. comparative study). Instruments: how they measured the data. Data analysis: statistical tests.

**Results:** the study findings (objectively report the findings)

**Discussion:** explanation of findings and limitations of the study (validity and reliability). Usually has a conclusion section: What this study contributed and what it didn’t contribute. “More research is needed....”

**References:** are they current to the publication date? Are there studies or authors that appear repetitively in different articles? Review the references for articles that will help advance your understanding of the phenomenon!

**Qualitative study:** explore and understand people’s beliefs, experiences, attitudes, behavior and interactions. They generate non-numerical data. Examples of qualitative studies:

- Document
- Passive observation
- Participant observation
- In depth interview
- Focus group

**Abstract:** brief overview of the study including a few of the findings.

**Introduction:** Background (problem and significance), lit review (though usually done
while study is conducted and not much before, gaps in our understanding, conceptual framework (remember inductive reasoning or an understanding of the philosophical underpinnings), purpose/research question (usually right before the methods section). **Methods:** participants or informants and how they were chosen, research design or instrument used (such as grounded theory) and why it is used. **Findings/results:** usually themes that were developed. **Discussion:** the researchers put the findings into context, discuss philosophical implications and discuss the limitations of the study. **References:** are they current to the publication date? Are there studies or authors that appear repetitively in different articles? Review the references for articles that will help advance your understanding of the phenomenon!

**How do I evaluate an article?**

These general questions will help you to get started in your appraisal of the literature that you captured in your database search.

**Why** is this significant (so what?)

**Who** wrote it, affiliation, peer-reviewed?

**Purpose** of this study: What gap are the researchers trying to fill is it important?

**Who** was studied (participants, was sample size large enough to be significant)?

**How** were they studied (methods/research design)?

Is it **quality** research? (were subjects randomized, double blind, etc)?

**What** were the findings? (are the results valid, do outcomes make sense)

**Different studies may require additional questions to be asked:**

**Systematic Review**

- Is it a well focused question?
- Is the literature search thorough?
- Does it include validated studies?
- Is the study reproducible?

**Therapy Studies**

- Were patients randomized?
- Was group allocation concealed?
- Are there similar baseline characteristics?
- Was the study blinded, and to what extent?
- Was follow-up complete?
- Was there an intention-to-treat?

**Diagnosis Studies**

- Any diagnostic uncertainty?
- Was there an independent, blind comparison with a reference (‘gold’) standard?
- Did each patient receive both tests?

**Prognosis**

- Was the sample of patients well-defined?
- Did patients have a similar prognosis?
- Was follow-up complete?

**Harm/Etiology**

- Are the comparison groups similar?.
- Are the outcomes and exposures measured the same for both groups?
- Was follow-up complete?

**When is enough, enough?**

- That is a tough question. We are all afraid we will miss the quintessential article that will answer all of our questions. It often doesn't exist, so relax. If you do the follow the steps above you will have established a reliable system.
- Be organized! It's really frustrating when you know you have copied a great article and now you can't find it.
- Use the database tools in EBSCO or other databases to save your work, or use a bibliographic management software like Zotero.
- And #1, when you are stuck or frustrated, Ask a Librarian or your instructor for guidance!