

An Online Research Methods Course for Pediatric Emergency Medicine

Module 2: Searching the Literature

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Introduction

The next step in the research process after deciding on a research question is to set the question into context. We learned in the last section that good research questions are:

- Feasible
- Important
- Novel
- Ethical
- Relevant

A tangible expression of this process of setting a research question is the creation of a "Background" section for a grant or manuscript. The background section demonstrates to the reader that you have a grasp of where your question fits into the greater context of the particular knowledge domain.

Activities

- Online tour of selected features of PubMed and Ovid
- Downloading of a demonstration version of either PubMed or EndNote bibliographic software
- Writing and submission of the *Background* section of your scholarly project. In this module, we list a sample format and supply examples of well-written Background sections

Literature Searching

We will not write a great deal about literature searching but rather will point you towards existing resources. Remember however, that proper literature searching techniques will save you a great deal of time AND will improve your research abilities. Spend the time required to learn how to do it properly now. Trainees (and faculty for that matter) are biased towards OVER-estimating their literature searching abilities.

You are strongly urged to attend your library's workshops – a comprehensive listing is available at: <http://www.library.ubc.ca/home/instruct/welcome.html> or visit the library in person to find out more.

ACTIVITY #1:

- a. Do an online tutorial on literature searching (60 min)
- b. Find a systematic review relevant to your research question (15 min)
- c. Independently construct a literature search on the SAME research question as addressed by the systematic review in b. (30 min)
- d. Compare b. and c. and report the results (15 min)

Details:

Do either one of the tutorials below using the OVID or PUBMED interfaces to MEDLINE.

OVID: <http://www.mclibrary.duke.edu/training/ovid>

PUBMED: http://www.nlm.nih.gov/bsd/pubmed_tutorial/m1001.html

Clinical highlites of Pubmed: <http://www.columbia.edu/~mvp19/cc.htm>

These tutorials are excellent background information – every researcher should do them at least once. Your choice of OVID or PubMed as your interface of choice is a matter of preference. One important advantage of PubMed is that it is freely available to all without a need for a subscription. It also has several compelling features including the ability to store searches.

Now, take your question and find a systematic review that is relevant to it. For example, if your proposed research question was...

Does Magnesium sulfate improve clinical outcomes for the treatment of acute asthma in children?

...then there is a Cochrane Systematic Review entitled

Intravenous magnesium sulfate treatment for acute asthma in the emergency department: a systematic review of the literature.
Ann Emerg Med. 2000 Sep;36(3):181-90.
PMID: 10969218 [PubMed - indexed for MEDLINE]

If your research question is novel, you likely will not find a systematic review on *exactly* your question. That's OK (good, in fact) but try to find a review that will be useful for the background of your question.

The systematic review will generally report it's literature search strategy. For the above example on Magnesium, here is the literature search strategy reported in the Cochrane Database:

COCHRANE SUMMARY OF LITERATURE SEARCH
FOR ACETAMINOPHEN IN FEVER:

The Cochrane Airways Review Group asthma register was searched using the following terms:
Asthma OR Wheez* AND Emerg* OR acute OR status AND Discharge OR admi* OR hospit* Mag* OR magnesium sulfate OR MS.

Note the use of wildcards (*).

For the ACTIVITY, do not peek at the literature search description in your systematic review but instead use your skills to search a database on the SAME question (ie probably not your research question developed in module 1).

Remember, it is generally helpful to include search terms that address the:

- P – Population
- I -- Intervention
- C – Comparison Intervention
- O – Outcome
- S – Study design (e.g. RCT)

Save your search strategy into a Word file.

Now have a look at the search strategy detailed in the Cochrane review. Cut and paste their strategy into your word document.

At the bottom of the document, comment on the comparison between your literature search and "theirs". How was yours similar to theirs? How was it different?

Finally, print out the entire document and take it to your hospital or university librarian. Discuss the finer points of the search with them. This learning interchange is highly recommended. Who knows, he might be cute.

ACTIVITY #2 – Bibliographic Databases Online Tutorials

The process of searching the literature is exhaustive and exhausting!! Certain tools can help with the task, especially if you will be doing this over many years. A tremendous advance has been the advent of bibliographic software. There are two main products on the marketplace used by biomedical researchers: Reference Manager and EndNote. Each works fine. Most research groupings have standardized on one or the other – ask around your department.

Each of the software packages has an online tutorial. To complete the tutorial, you can either download a demonstration version of the Bibliographic Software or use a computer that has Reference Manager or EndNote installed on it. Note that Reference Manager does not have a MAC version while EndNote does.

Endnote tutorial: <http://www.endnote.com/training/>

Reference Manage Tutorial: <http://www.referencemanager.com/training/>

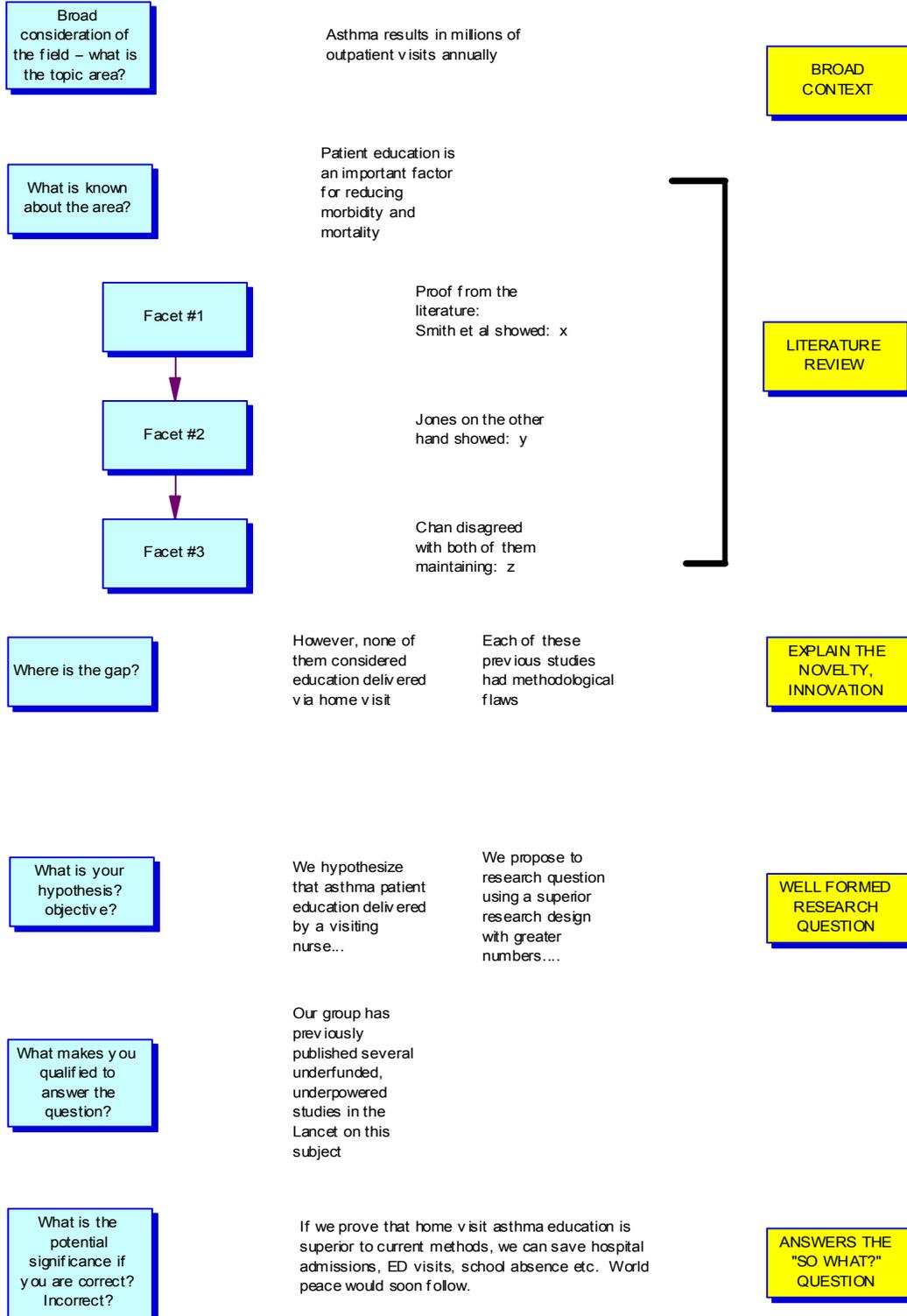
There is a newer type of Bibliographic software that is entirely web-based: <http://www.refworks.com/tutorial/> You can try that out as well.

ACTIVITY #3 – Now to create an actual Background Section

All of this literature searching and organizing is all to a purpose – to flesh out your research question. In this section you will create a background section for your research question.

The figure below shows a generic outline for a background section. The categories are far from fixed but will give you an idea of it the task.

GENERIC OUTLINE OF A BACKGROUND SECTION



Before you begin writing your own background section, have a look at some examples. Note that reading published manuscripts is misleading because the process of putting a research question into context is split between a very general *introduction* section and a *discussion* section that is tightly focused on the findings of that particular section. In grants, the background section, is geared towards showing why your question is important, with a discussion of the implications, positive or negative.

Examples of good background sections from funded trials:

Authors	Question	Comments
Plint et al	Do steroids work in children with bronchiolitis?	A CIHR funded RCT of steroids AND/OR racemic epinephrine in bronchiolitis (factorial design)
Osmond et al	What factors predict a positive head CT in children with minor head injury?	A CIHR funded prospective cohort trial
O'Donnell et al	What are the attitudes of B.C. physicians towards Evidence-based practice?	A Vancouver-Foundation funded survey of B.C. physicians.
Pusic et al	Which of two different types of computer teaching of cervical spine x-ray interpretation improve test scores for medical students?	A CIHR-ACMC funded educational trial (RCT).

Now go ahead and write your own background section. If you've already completed Module 1, use the file in which you wrote your research question, and now fill in the background section. It should be roughly two pages in length – use the template in the figure as a guide.

Have your Training Director read it and supply comments. The signed off Background section should be placed in your Portfolio Binder.

Quicklinks

PubMed Tutorial: http://www.nlm.nih.gov/bsd/pubmed_tutorial/m1001.html

Ovid Tutorial:

http://www.ovid.com/site/help/ovid_tutorials.jsp?top=28&mid=30&bottom=60

EndNote Download: <http://www.endnote.com/ndemo.asp>

EndNote Tutorial: : : <http://www.endnote.com/training/>

Reference Manager Download: <http://www.refman.com/rmdemo.asp>

Reference Manager Tutorial: <http://www.referencemanager.com/training/>

Refworks Tutorial: <http://www.refworks.com/tutorial/>

Task Checklist

Discuss with your program director how many of these are required for you to get "credit" for this module. Remember that you'll learn more by doing – actually producing these files will ensure the doing...

1. File #1 should contain the following:
 - a. A literature search done by you, without aid, on a topic that has a systematic review in either the Campbell or Cochrane Collaboration Databases.
 - b. The literature search strategy from the corresponding Collaboration review
 - c. Your comments on how you did compared with the systematic review
2. File #2 should be a formatted Reference Manager or Endnote database on the topic of your scholarly work
3. File #3 is a 1-2 page Background section for your scholarly work