Searching Skills for Systematic Reviews

October 13, 2015
Objectives

1. Describe the stages in a Systematic Review
2. Become aware of Guidelines for creating a Systematic Review
3. Develop a question suitable for your Systematic Review
4. Know which sources you need to use for your Systematic Review
5. Acquire skills to conduct a structured and replicable search strategy
6. Gain tips on how to manage the process
Today’s workshop is a beginning.....

Focus on 3 elements of the systematic review process:

1. Defining the question
2. Locating studies
   via licensed databases
   via other databases or information sources
3. Managing the process
"A Systematic Review attempts to **identify, appraise and synthesize** all the empirical evidence that meets **pre-specified eligibility criteria** to answer a given research question.

Researchers conducting Systematic Reviews use **explicit methods** aimed at **minimizing bias**, in order to produce more reliable findings that can be used to inform decision making."

Source: Cochrane Handbook for Systematic Reviews of Interventions: [http://handbook.cochrane.org](http://handbook.cochrane.org)
Systematic Review Process

Stage 1: Planning the Review
Step 1 – Forming a review panel
Step 2 – Mapping the field of study
Step 3 – Producing a review protocol

Stage 2: Identifying and evaluating studies
Step 4 – Conducting a systematic search
Step 5 – Evaluating studies

Stage 3: Extracting and synthesising data
Step 6 – Conducting data extraction
Step 7 – Conducting data synthesis

Stage 4: Reporting
Step 8 – Reporting the findings

Stage 5: Utilising the findings
Step 9 – Informing research
Step 10 – Informing practice
PRISMA
Preferred Reporting of Items for Systematic reviews and Meta Analyses

- Records identified through database searching (n = )
- Additional records identified through other sources (n = )
- Records after duplicates removed (n = )
- Records screened (n = )
- Records excluded (n = )
- Full-text articles assessed for eligibility (n = )
- Full-text articles excluded, with reasons (n = )
- Studies included in qualitative synthesis (n = )
- Studies included in quantitative synthesis (meta-analysis) (n = )
Resources for later reference

Search methodology

• [guides.library.ubc.ca/systematicreviews](http://guides.library.ubc.ca/systematicreviews)

Subject support

• [Subject librarians](http://subject.librarians) and [Research guides](http://research.guides)
Step 1: Defining the question

It’s important to formulate an answerable question because:

- You’re more likely to inform a decision based on the answer
- Clarify inclusion/exclusion parameters
- A well-defined question leads to a well-constructed, efficient yet comprehensive search
PICO framework

Patient / Problem / Population

Intervention / Item of interest

Comparison

Outcome

(Richardson et al., 1995)
Example

Would the use of commercial video game systems such as Xbox Kinect and Nintendo Wii improve balance outcomes and enjoyment in aged patients undergoing rehabilitation for stroke?
Example

P: aged patients undergoing rehabilitation for stroke
I: systems like Xbox Kinect or Nintendo Wii
C: traditional rehabilitation techniques
O: improved balance and enjoyment
Step 2: Is there a Systematic Review on your topic?

Activity

Go to PUBMED Clinical Queries
1. Use UBC Library Indexes and Databases
2. Go to Pubmed
3. Click on Clinical Queries
4. Type in 2 of your PICO search concepts
5. Check the Systematic Review column

Go to Google Scholar
1. Use UBC Library Indexes and Databases
2. Type allintitle: systematic review

Go to Prospero: http://www.crd.york.ac.uk/PROSPERO/
Finding existing systematic reviews

- Clinical queries in PubMed
- Cochrane Database of Systematic Reviews
- Prospero [http://www.crd.york.ac.uk/PROSPERO/](http://www.crd.york.ac.uk/PROSPERO/)
- Database search with publication type limit “Review”
- Google Scholar limit to “systematic review” in title via Advanced Search or allintitle: command
Step 3: Sources of studies: Gold Standard

A. Licensed Databases
B. Grey Literature
C. Hand searching
D. Reference chasing
E. Contact with Researchers

a. Medline, Embase, CINAHL etc.
b. Dissertations, conference proceedings, government reports etc.
c. Review contents pages of key journals in subject area
d. Follow up on reference lists and see who has cited important papers
e. Contact experts for background information on non-published research
Medline is a database
Pubmed is a database and an interface that searches Medline plus extra material
Medline and non-indexed material can also be searched using different interfaces (OvidSP, EBSCO)
Among the aged with stroke does exergaming improve balance?
TRANSPOSE

Search terms
# MeSH vs. Keywords

<table>
<thead>
<tr>
<th>MeSH/Subject Headings</th>
<th>Keywords</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Time delay: Established concepts (Diabetes, Heart Disease)</td>
<td>• Newer concepts (eHealth)</td>
</tr>
<tr>
<td>• Conservative Bias: Core biomedical concepts (diseases, drugs &amp; chemicals, anatomy)</td>
<td>• Boundary-crossing topics (psychosocial and humanities concepts)</td>
</tr>
<tr>
<td>• Traditional parts of medicine (Surgery, Immunology)</td>
<td>• New parts of medicine (Rehabilitative Sciences, Population and Public Health, etc.)</td>
</tr>
<tr>
<td></td>
<td>• New Articles (not yet indexed)*</td>
</tr>
<tr>
<td></td>
<td>• Errors in indexing</td>
</tr>
</tbody>
</table>

Generally you need to use a combination of MeSH and keywords
Tools for Keywords

Phrases: Find a specific phrase (more specific)
• “cultural deprivation”

Proximity: Find words within a X words of each other (more flexible, increases the number of results)
• needle ADJ2 exchange
• Proximity searching is not available in every interface, see help

Truncation: Find alternative word endings
• $ OR * in OvidSP databases will search for multiple word endings
• needle* – will search for needle or needles etc

Wildcards: Find alternative spellings (replaces 0 or 1 character)
• Colo?r
Combining

OR is mORE

Exercise/ OR Exercis*.mp

Articles with *either* the Exercise MeSH *OR* with “exercises” or “exercise” or “exercising” as a keyword

AND

Knee Osteoarthritis/ AND Exercise/

Articles with *both* the MeSH Knee Osteoarthritis *AND* the MeSH Exercise
Limits

- Population: Age, Gender, Ethnicity
- Publication: Language, Date, Type
- Always apply limits last
- Limits may exclude relevant articles, such as the newest studies. When doing systematic reviews speak to a librarian.
## Review: Search Process

1. Breakdown of question into component concepts (PICO)
2. Choice of terms/subject headings that find articles on each concept
3. Combing those terms/headings using BOOLEAN
4. Application of limits/filters to restrict to date, study design
5. Adaptation of search strategy to different databases (changes to syntax, subject headings)

Creating a search strategy is an iterative process that requires exploration and playing
Saving Search History

Save Medline search
Set up AutoAlert for new material

For Systematic reviews:
OvidSP is a good place to start as it allows you to EDIT your search during the initial iterative process
Adapt search for Embase
Adapt search logic for other databases in other interfaces
It’s important to search for unpublished literature to help overcome publication bias.

Sources and techniques for expanding your search beyond the published literature are linked from this page:

guides.library.ubc.ca/systematicreviewsearch - “Locating studies” tab
Activity: Other databases and grey literature

Locate one additional licensed database and one grey literature source for your topic, and do a search in each on your question.
Managing the process: reporting

- Cochrane Handbook - Chapter 6 *Searching for Studies*
- Centre for Reviews and Dissemination (CRD). *Guidance for Undertaking Reviews in Health care*
  - Appendix 2 for Search strategy examples
  - Appendix 3 for Documenting the search (Handout)
- PRISMA – Flow chart and checklist
Other tips for managing the process:

• Use a **table created in Word** to keep track of search terms and databases you’ve tried, and when.

• Most databases allow you to **save search history** and set up alerts for when studies matching your strategy are added to the database.

• Use **Refworks, EndNote**, or other citation management software to store, organize, and deduplicate results.