Translating evidence into clinical relevance seminar: Searching the literature

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Better research skills = efficient and effective practice = more time at the beach…
Objectives

- Understand how an answerable question informs the search for evidence
- Be familiar with sources of literature
- Understand the use of limits and filters to refine the search for high quality evidence

To answer background questions - review article
To answer clinical questions (foreground)
To write a literature review
To keep up-to-date
Literature search

- For comprehensive literature searching - be systematic in your approach.
- Develop a plan for your search (including the search terms you will use and the resources you will search).
- Keep records of the searches you carry out, set up saved searches and email alerts to track new publications:

<table>
<thead>
<tr>
<th>Date</th>
<th>Database</th>
<th>Search strategy</th>
<th>Number of results</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>10th Jan 2012 Scopus</td>
<td>1. handwashing OR &quot;hand washing&quot;</td>
<td>255 results (20 were relevant)</td>
<td>Exported to EndNote library. Need to place doc del request for article by Williams.</td>
<td></td>
</tr>
</tbody>
</table>

- Use reference management software to store and organise your references e.g. EndNote, Zotero

Systematic reviews

Search methods for identification of studies

We searched the Tobacco Addiction Review Group specialised register for trials, using the terms ('cytisine' or 'Tabex' or 'diancline' or 'varenicline' or 'nicotine receptor partial agonist') in the title or abstract, or as keywords. This register has been developed from electronic searching of MEDLINE, EMBASE, PsycINFO and Web of Science, together with handsearching of specialist journals, conference proceedings and reference lists of previous trials and overviews. The most recent search of the Register was in December 2011, and included reports of trials indexed in MEDLINE to update 20110826, EMBASE to 2011 week 33, PsycINFO to 20110822 and the Cochrane Central Register of Controlled trials to Issue 3, 2011. See the Tobacco Addiction Group Module for details of the search strategies for these databases. We also searched UK and US online clinical trials registers for ongoing and recently completed trials. Trials which may be candidates for inclusion (i.e. RCTs of smoking cessation interventions using a nicotine receptor partial agonist with a minimum follow-up of six months), and for which results are not yet available, are listed in the Characteristics of ongoing studies table.

We contacted the authors of ongoing studies of varenicline and cytisine where necessary.

The most recent searches were conducted in December 2011.

Cahill, K, Stead, LF & Lancaster, T 2012, 'Nicotine receptor partial agonists for smoking cessation', Cochrane Database of Systematic Reviews vol. 4, p. CD006103, doi:10.1002/14651858.CD006103.pub6
Figure 1. Flow of information through the different phases of a systematic review.

Analyse the question, plan the search

Results: Six elements with a strong consensus as to their importance in peer review were accurate translation of the research question into search concepts, correct choice of Boolean operators and of line numbers, adequate translation of the search strategy for each database, inclusion of relevant subject headings, and absence of spelling errors. Seven additional elements had partial support and are included in this guideline.

Abstract

Objective: Complex and highly sensitive electronic literature search strategies are required for systematic reviews; however, no guidelines exist for their peer review. Poor searches may fail to identify existing evidence because of inadequate recall/precision or increase the resource requirements of reviewers as a result of misleading reviews. Our objective was to create an annotated checklist for electronic search strategy peer review.

Study Design: A systematic review of the library and information retrieval literature for important elements in electronic search strategy peer review was conducted, along with a survey of individuals experienced in systematic review searching.

Results: Six elements with a strong consensus as to their importance in peer review were accurate translation of the research question into search concepts, correct choice of Boolean operators and of line numbers, adequate translation of the search strategy for each database, inclusion of relevant subject headings, and absence of spelling errors. Seven additional elements had partial support and are included in this guideline.

Conclusion: This evidence-based guideline facilitates the improvement of search quality through peer review, and thus the improvement in quality of systematic reviews. It is relevant for librarians/information specialists, journal editors, developers of knowledge translation tools, research organizations, and funding bodies. © 2009 Elsevier Inc. All rights reserved.

Keywords: Evidence-based practice; Information retrieval; Peer review; Practice guideline; Search strategies; Systematic review

ACTIVITY: Develop a strategy and search for information on your own topic

1. What is your question? (Pick a specific aspect of your topic)

2. What are the main search terms? Identify alternative spellings and synonyms. Combine your search terms (use or/and, quotes for phrases, * for different word endings)

   Concept 1
   OR
   OR
   AND

   Concept 2
   OR
   OR
   AND

   Concept 3
   OR
   OR

3. Consider which limits you want to use.
   - Year of publication
   - Type of publication
   - Age group
   - Language
   - Other limits...

4. Select a database(s) and carry out a search. Review the results and adjust your strategy as needed.

Where to search?
• Key medical databases
• Multidisciplinary databases: Google Scholar, Scopus, Web of Science
• Grey literature
• Trials http://www.anzctr.org.au/
• http://clinicaltrials.gov/
Search

- Keyword searching
- Subject searching
- Combined keyword and subject searching
- Citation searching
- Author searching

For more information…

Medicine Library Guide – Searching
http://guides.lib.monash.edu/content.php?pid=161626&sid=3732349

Higher Degrees by Research Library Guide – Finding and reviewing literature
http://guides.lib.monash.edu/content.php?pid=437199&sid=3933423

Tutorials

- Developing a Search Strategy
http://monash.edu/library/skills/resources/tutorials/searching/

- Smart Searching: Logical Steps to Building and Testing Your Literature Search (CareSearch Palliative Care Knowledge Network)
http://sites.google.com/site/smartsearchinglogical/home
Searching principles

- Combine synonyms with “OR”
  eg. high blood pressure OR hypertension

- Combine different concepts with “AND”
  eg. hypertension AND pregnancy

- Use quotes to search for phrases
  eg. “high blood pressure”

- Use truncation to find word variations
  eg. pregnan* will find pregnancy, pregnant

- Use limits eg. publication year, language

Proximity operators

- Use proximity symbols/operators to specify the closeness of one term to another

- Example: hand* ADJ3 wash* in OVID will retrieve all occurrences of these terms within three words of each other in any order

- It is more specific than - hand* AND wash* - yet broader than an exact phrase search such as “hand washing”

- Proximity operators vary in each database - see database search tips for details (First column: Boolean/Proximity Operators)
Research question: What is the quality of public health data regarding maternal welfare in developing countries?

Let’s look at one concept in this question – developing countries - and brainstorm for synonyms:

- Resource poor countries
- Resource poor settings
- Low income countries
- Third world nations
- Developing countries
- Under developed states
- Least developed nations
- Resource poor communities

This is how you can use proximity operators to capture all variations of these terms when doing a keyword search in OVID Medline:

(resource poor OR low income OR third world OR developing OR under developed OR least developed) ADJ3 (countr* OR setting* OR nation* OR state* OR communit*)

Subject heading searching

In some databases, the records are tagged with “subject headings”, which describe the content of the article

- Examples: Medline/PubMed, PsycInfo, CINAHL

- If you search for and find a relevant subject heading, this will link you to all of the articles in the database with that subject heading.

- One advantage of subject searching is that you can locate articles that use synonyms and alternative spellings (keyword vs subject heading searching)

- For more information, see the relevant box on the Medicine Library Guide
Medical Subject Headings (MeSH)

For more information about MeSH – see the Searching tab, then Subject heading searching on the Medicine Library Guide
http://guides.lib.mona.sh.edu/medicine

1st – Look at Scope to understand how the term is defined and used in Medline

2nd – Click Pregnancy in Adolescence to view the full list of subject headings – the MeSH ‘tree’
In the Tree, look for terms beneath Pregnancy in Adolescence. In this case there aren’t any narrower terms. When there are, consider selecting Explode as this will retrieve all records tagged with the broader term and the narrower terms, making your search more comprehensive.

For a comprehensive search, include all Subheadings (more specific aspects of the MeSH). Combine synonymous searches with OR.
PRESS guideline – Peer review of electronic search strategies –
Use this GRID in conjunction with the article for explanations

<table>
<thead>
<tr>
<th>PRESS Guideline</th>
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<tbody>
<tr>
<td>Tier 1 elements:</td>
</tr>
<tr>
<td>Conceptualisation</td>
</tr>
<tr>
<td>Logical operators</td>
</tr>
<tr>
<td>Spelling errors</td>
</tr>
<tr>
<td>Wrong line numbers</td>
</tr>
<tr>
<td>Translation of the search strategy to different databases and/or interfaces</td>
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<tr>
<td>Missed subject headings</td>
</tr>
<tr>
<td>Tier 2 elements</td>
</tr>
<tr>
<td>Free-text terms missing</td>
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<tr>
<td>Subject headings and free-text terms both used</td>
</tr>
<tr>
<td>Spelling variants and truncation</td>
</tr>
<tr>
<td>Irrelevant subject headings and irrelevant free-text terms</td>
</tr>
<tr>
<td>Limits</td>
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</tbody>
</table>


What’s wrong with this search? Use PRESS to assess searches.

Eve is 40 years old and has been overweight for most of her life. She has tried different diets to lose weight but nothing seems to work. She has heard about lap band surgery and has decided to ask you, her GP, whether she should have it. You do a Medline search to find out if lap band surgery is effective for weight loss. You want to identify the best available evidence to inform Eve of the benefits/risks of lap band surgery.
Searching principles – PubMed differs

- Combine synonyms with “OR”
  eg. high blood pressure OR hypertension

- Combine different concepts with “AND”
  eg. hypertension AND pregnancy

- Use quotes to search for phrases
  eg. “high blood pressure”

- Use truncation to find word variations
  eg. pregnan* will find pregnancy, pregnant

- Use limits eg. publication year, language

**Hint:** Do not use double quotes or truncation in PubMed

**Why?**

When you enter a key word in PubMed it automatically looks up the subject heading and searches on that too.

See Search details (on the right of the screen of your results page) for how this works.

If you truncate or use quotes for phrases you will turn off this automatic mapping function.

Too many results? Try…

- adding another search term. Combine with your original search result using AND
- using limits
- using more specific search terms

Not enough results? Try…

- removing limits eg. publication year
- using more general search terms
- removing one of the search terms
- a different database?
Clinical questions

- **Background**
  - who, what, when, where, why, how
  - about physiology, pathology, epidemiology, general management

  **Example:** What is varenicline?

- **Foreground**
  - specific questions about therapy, harm, diagnosis, prognosis

  **Example:** For adults who smoke is varenicline effective in achieving cessation?
Nicotine dependence

What is considered evidence and where can you find it?

**Systems**
- Computerised decision support
  - ACP journal club
  - DARE

**Summaries**
- Evidence based textbooks, evidence based clinical guidelines
  - Evidence based textbooks, evidence based clinical guidelines

**Synopses of Syntheses**
- Brief summaries of systematic reviews
  - Cochrane Database of Systematic Reviews
  - ACP journal club

**Syntheses**
- Systematic reviews
  - Ovid Medline
  - Pubmed
  - Embase

**Synopses of Studies**
- Brief summaries of individual studies
  - Best Practice
  - Dynamed
  - UpToDate

**Studies**
- Original journal articles including randomised controlled trials

Thank you – Questions?