Systematic Reviews

How a Research Librarian can assist you

Research.Librarians@utas.edu.au

Research Week 2015

What we will look at …

• Where to find, useful UTAS Library resources
• Identifying sources to search
• Building systematic search strategies
• Tips for replicating searches to overcome the dilemma of database differences
• Documenting your search – how saving your searches can help
• Using Endnote to keep track of papers and assist you manage the process
• Where to get assistance
Systematic Review resources on ALL Health related Library subject guides

http://utas.libguides.com/medicine

Systematic review - what is it??

A systematic review attempts to collate all empirical evidence that fits prespecified eligibility criteria in order to answer a specific research question. It uses explicit systematic methods that are selected with a view to minimizing bias, thus providing more reliable findings than which conclusions can be drawn and decisions made (Avery 1992, Cochrane 1955).

(From Cochrane Handbook for Systematic Reviews of Interventions. Cochrane Book Series, Edited by Julian P.T. Higgins and Sally Green)

Systematic review - guidelines and protocols

Cochrane Reviews are systematic reviews of primary research in human health care and health policy, and are internationally recognised as the highest standard in evidence-based health care.

Stick to Cochrane when you do a tour around a systematic review, explaining the difference between systematic and non-systematic reviews, and the importance of keeping reviews up to date. This presentation requires action, not just paper.

ebooks you can borrow from UTAS Library

- **Systematic Reviews to Support Evidence-Based Medicine** - Coomarasamy, Jos Kleijnen, Carol Auyer, Regina Kre: Alisha S. Khon
  - ISBN: 9781185157943
  - Publication Date: 2011-09-25

- **Systematic Reviews to Answer Health Care Questions** - Heidi D. Nelson
  - Call Number: R 592. N45 2014
  - ISBN: 9781451107717
  - Publication Date: 2014-06-05

- **Systematic Reviews in Health Care: Meta-Analysis in Context** - Matthias Egger (Editor), George Darvay Smith (Editor), Douglas Altman (Editor)
  - ISBN: 9780470939348
  - Publication Date: 2008-04-15

- **How to Read a Paper** - Trisha Greenhalgh
  - ISBN: 9781118000256
  - Publication Date: 2014-04-07

- **Evidence-Based Clinical Practice in Nursing and Health Care** - Alan Pearson, John Field
  - ISBN: 9781118000256
  - Publication Date: 2014-04-07
Want to identify the need for a systematic review on your topic? Or just want to see what one looks like?

UTAS Library Databases A to Z
http://www.cochranelibrary.com/

http://www.crd.york.ac.uk/PROSPERO/

UTAS Library Databases A to Z
JBI Connect
http://www.campbellcollaboration.org/lib/

Stages in the Systematic Review process where Research Librarians can assist you...

Systematic Review Process

- Research Q
- Define eligibility
- Search for studies
- Study selection
- Collect data & appraise
- Analyze & present results
- Interpret results, Conclusions
- Complete structured report

identify
select
1. Sources for searching
- Bibliographic databases – Medline, CINAHL, Embase etc
- Grey literature - material not formally published in a book or journal
- Hand-searching - relevant journals
- Reference lists - of relevant, selected studies
- Personal communication - contacting authors of unpublished studies
- Citation databases – Scopus and Web of Science
Bibliographic Databases

For Cochrane Systematic Reviews most important sources generally are:

- CENTRAL (Cochrane Central Register of Controlled Trials - TRIALS tab in www.cochranelibrary.com/)
- Medline (UTAS Library Databases A to Z)
- Embase (UTAS Library Databases A to Z)
- Subject-specific databases

http://utas.libguides.com/medicine

http://utas.libguides.com/medicine
Bibliographic Databases – Cochrane Handbook

6.2.1 Bibliographic databases

6.2.1.1 Bibliographic databases - general introduction
6.2.1.2 The Cochrane Central Register of Controlled Trials (CENTRAL)
6.2.1.3 MEDLINE and EMBASE
6.2.1.4 National and regional databases
  
  Box 6.2.a: Examples of regional electronic bibliographic databases
6.2.1.5 Subject-specific databases
  
  Box 6.2.b: Examples of subject-specific electronic bibliographic databases
6.2.1.6 Citation indexes
6.2.1.7 Dissertations and theses databases
  
  Box 6.2.c: Examples of dissertations and theses databases
6.2.1.8 Grey literature databases

http://handbook.cochrane.org/chapter_6/6_2_1_bibliographic_databases.htm

Search methods  Explicit – Transparent – Replicable

We searched the Cochrane Central Register of Controlled Trials (2013, Issue 5), MEDLINE (1966 to May 2013), EMBASE (1980 to May 2013), CINAHL (1982 to May 2013), PsycINFO (1872 to May 2013) and PEDro to July 2010. We handsearched the Australian Journal of Physiotherapy (1954 to 2009) and reviewed the reference lists of included trials and other relevant reviews.

Selection criteria  Exhaustive (within limits)

Randomised or quasi-randomised trials of preoperative education (verbal, written or audiovisual) delivered by a health professional within six weeks of surgery to people undergoing hip or knee replacement compared with usual care.
2. Building search strategies

- Search fields (keywords, text words, …)
- Controlled vocabulary (MeSH headings, etc.)
- Boolean operators, phrase searching, wildcards, truncation, proximity operators
- Filters vs. limits
- Develop search terms
- Adapt search syntax for different databases
- Overall look of strategy
- Pilot search strategy and monitoring its development
2. Building search strategies

- Search fields (keywords, text words, …)
- **Controlled vocabulary** (MeSH headings, etc.)
- Boolean operators, phrase searching, wildcards, truncation, proximity operators
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### Controlled vocabulary

<table>
<thead>
<tr>
<th>Controlled vocabulary</th>
<th>PubMed</th>
<th>Medline (Ovid)</th>
<th>Web of Science</th>
<th>Scopus</th>
</tr>
</thead>
<tbody>
<tr>
<td>MeSH</td>
<td>MeSH</td>
<td>×</td>
<td></td>
<td>IndexTerms</td>
</tr>
</tbody>
</table>

### Embase | ProQuest | Cochrane | CINAHL

<table>
<thead>
<tr>
<th>Embase</th>
<th>ProQuest</th>
<th>Cochrane</th>
<th>CINAHL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emtree</td>
<td>various, e.g. MeSH, PsycINFO ProQuest</td>
<td>MeSH</td>
<td>CINAHL Headings</td>
</tr>
</tbody>
</table>

### MeSH in PubMed

- **Mycocardial Infarction**
  - **MeSH**
  - **Heart attack**
  - **Circulatory System**
  - **Coronary Circulation**

- **Restrict to MeSH Major Topic.**
- **Do not include MeSH terms found below this term in the MeSH hierarchy.**


"Mycocardial Infarction"[Mesh]

- **Restrict to MeSH Major Topic.**
- **Do not include MeSH terms found below this term in the MeSH hierarchy.**

"Mycocardial Infarction"[Majr]

- **Restrict to MeSH Major Topic.**
- **Do not include MeSH terms found below this term in the MeSH hierarchy.**

"Mycocardial Infarction"[Mesh:NoExp]

- **Restrict to MeSH Major Topic.**
- **Do not include MeSH terms found below this term in the MeSH hierarchy.**

"Mycocardial Infarction"[Majr:NoExp]

- **Restrict to MeSH Major Topic.**
- **Do not include MeSH terms found below this term in the MeSH hierarchy.**

"Mycocardial Infarction"[Mesh]
2. Building search strategies

- Search fields (keywords, text words, ...)
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Boolean operators: OR, AND, NOT

**OR**
- obesity
- overweight

**AND**
- obesity
- diabetes

**NOT**
- obesity
- diabetes

All databases support these Boolean operators

Phrase searching: “… …”

Phrase searching allows users to search for articles containing a phrase rather than containing a set of keywords in random order.

E.g. “heart attack”

<table>
<thead>
<tr>
<th>Database</th>
<th>PubMed</th>
<th>Medline (Ovid)</th>
<th>Web of Science</th>
<th>Scopus</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>“… …”</td>
<td>“… …”</td>
<td>“… …”</td>
<td>Exact phrase {… …}</td>
</tr>
<tr>
<td></td>
<td>No automatic mapping</td>
<td></td>
<td></td>
<td>Loose phrase “… …”</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Database</th>
<th>Embase</th>
<th>ProQuest</th>
<th>Cochrane</th>
<th>CINAHL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>“… …” or ‘… …’</td>
<td>“… …”</td>
<td>“… …”</td>
<td>“… …”</td>
</tr>
</tbody>
</table>

2/09/2015
Phrase searching: “… …”

Scopus

<table>
<thead>
<tr>
<th>Exact phrase searching</th>
<th>Loose/approximate phrase searching</th>
</tr>
</thead>
<tbody>
<tr>
<td>{heart attack}</td>
<td>“heart attack”</td>
</tr>
<tr>
<td>Finds</td>
<td>Finds</td>
</tr>
<tr>
<td>heart attack</td>
<td>heart attack</td>
</tr>
<tr>
<td></td>
<td>heart attacks</td>
</tr>
<tr>
<td></td>
<td>heart-attack</td>
</tr>
</tbody>
</table>

Wildcards/Truncation: * ? $ #

A wildcard character can be used to substitute for any other character or characters in a string

<table>
<thead>
<tr>
<th>PubMed</th>
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<th>Scopus</th>
</tr>
</thead>
<tbody>
<tr>
<td>*</td>
<td>* $ # ?</td>
<td>* $ ?</td>
<td>* ?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Embase</th>
<th>ProQuest</th>
<th>Cochrane</th>
<th>CINAHL</th>
</tr>
</thead>
</table>
Proximity operators:

Proximity operators enable you to define how closely you want your search terms to be found in relation to one another.

<table>
<thead>
<tr>
<th>PubMed</th>
<th>Medline (Ovid)</th>
<th>Web of Science</th>
<th>Scopus</th>
</tr>
</thead>
<tbody>
<tr>
<td>×</td>
<td>ADJn</td>
<td>NEAR/x</td>
<td>W/n within</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>PRE/n precedes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>by</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Embase</th>
<th>ProQuest</th>
<th>Cochrane</th>
<th>CINAHL</th>
</tr>
</thead>
<tbody>
<tr>
<td>NEAR/n</td>
<td>NEAR/n</td>
<td>NEAR/x</td>
<td>Nn</td>
</tr>
<tr>
<td>NEXT/n</td>
<td>or N/n</td>
<td>or P/n</td>
<td>near</td>
</tr>
<tr>
<td>same order</td>
<td>PRE/n</td>
<td>NEXT</td>
<td>Wn</td>
</tr>
<tr>
<td></td>
<td>or P/n</td>
<td></td>
<td>within</td>
</tr>
</tbody>
</table>

2. Building search strategies

- Search fields (keywords, text words, ...)
- Controlled vocabulary (MeSH headings, etc.)
- Boolean operators, phrase searching, wildcards, truncation, proximity operators
- Filters vs. limits
- Develop search terms
- Adapt search syntax for different databases
- Overall look of strategy
- Pilot search strategy and monitoring its development
Filters vs limits

Preference for using **limits** rather than filters:

- Include limits as part of search strategy (search string) in all databases
- Be sure of getting desired outcomes
- Clear documentation of search possible (transparency)

**Demonstration search strategy for MEDLINE (via Ovid), for the topic 'Tamoxifen for breast cancer'**

- randomized controlled trial pt.
- controlled clinical trial pt.
- 19 randomized controlled trial.pt.
- 20 controlled clinical trial.pt.
- 21 randomized ab.
- 22 placebo.ab.
- 23 clinical trials as topic.sh.
- 24 randomly.ab.
- 25 trial.ti.
- 26 19 or 20 or 21 or 22 or 23 or 24 or 25
- 27 18 and 26
- 28 exp animals/ not humans.sh.
- 29 27 not 28

2. Building search strategies

- Search fields (keywords, text words, …)
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Develop search terms

Ideas for brainstorming search terms:

- Initial literature scanning of core articles – author’s keywords
- Controlled vocabulary – MeSH, Emtree, CINAHL headings, ProQuest thesauri
- Synonyms – similar terms, drug brand names, abbreviations, plain language
- Speak to expert in field / supervisor
2. Building search strategies

- Search fields (keywords, text words, ...)
- Controlled vocabulary (MeSH headings, etc.)
- Boolean operators, phrase searching, wildcards, truncation, proximity operators
- Filters vs. limits
- Develop search terms
- **Adapt search syntax for different databases**
- Overall look of strategy
- Pilot search strategy and monitoring its development
Adapt search syntax for different databases

2. Building search strategies

- Search fields (keywords, text words, …)
- Controlled vocabulary (MeSH headings, etc.)
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- Develop search terms
- Adapt search syntax for different databases
- Overall look of strategy
- Pilot search strategy and monitoring its development
Overall look of search strategy

Appendix 3. CENTRAL search strategy

1. ARTHROPLASTY REPLACEMENT explode all trees (MeSH)
2. JOINT PROSTHESIS explode all trees (MeSH)
3. ((hip* near replac*) or (hip* near prosthe*) or (hip* near arthroplast*))
4. ((knee* near replac*) or (knee* near prosthe*) or (knee* near arthroplast*))
5. PATIENT EDUCATION as Topic explode all trees (MeSH)
6. PREOPERATIVE CARE explode all trees (MeSH)
7. (information or instruct* or educat* or advice* or support*)
8. (preoperativ* or pre-operativ*)
9. (#1 or #2 or #3 or #4)
10. (#5 or #6 or #7 or #8)
11. (#9 and #10)

2. Building search strategies

- Search fields (keywords, text words, …)
- Controlled vocabulary (MeSH headings, etc.)
- Boolean operators, phrase searching, wildcards, truncation, proximity operators
- Filters vs. limits
- Develop search terms
- Adapt search syntax for different databases
- Overall look of strategy
- Pilot search strategy and monitoring its development
Pilot search strategy

- Assistance with replicating search across databases
- Ensure capture ALL relevant studies but minimise irrelevant ones
- Identify potential issues

Search methods

We searched the Cochrane Central Register of Controlled Trials (2013, Issue 5), MEDLINE (1966 to May 2013), EMBASE (1980 to May 2013), CINAHL (1982 to May 2013), PsycINFO (1872 to May 2013) and PEDro to July 2010. We handsearched the Australian Journal of Physiotherapy (1954 to 2009) and reviewed the reference lists of included trials and other relevant reviews.

Selection criteria

Randomised or quasi-randomised trials of preoperative education (verbal, written or audiovisual) delivered by a health professional within six weeks of surgery to people undergoing hip or knee replacement compared with usual care.
Appendices

Appendix 1. MEDLINE search strategy

1. MATCH (Replacements, Replacements)
2. MATCH (Prosthesis
3. MATCH (Knee Replacement, Knee Replacement)
4. MATCH (Hip Replacement, Hip Replacement)
5. MATCH (Arthroplasty, Arthroplasty)
6. MATCH (Prostheses, Prostheses)
7. MATCH (Knee Replacement, Knee Replacement)
8. MATCH (Hip Replacement, Hip Replacement)
9. MATCH (Arthroplasty, Arthroplasty)
10. MATCH (Knee Replacement, Knee Replacement)

Appendix 4. CINAHL search strategy

1. MATCH (Arthroplasty, Arthroplasty)
2. MATCH (Knee Replacement, Knee Replacement)
3. MATCH (Hip Replacement, Hip Replacement)
4. MATCH (Arthroplasty, Arthroplasty)
5. MATCH (Knee Replacement, Knee Replacement)
6. MATCH (Hip Replacement, Hip Replacement)
7. MATCH (Arthroplasty, Arthroplasty)
8. MATCH (Knee Replacement, Knee Replacement)
9. MATCH (Hip Replacement, Hip Replacement)
10. MATCH (Arthroplasty, Arthroplasty)
11. MATCH (Knee Replacement, Knee Replacement)
12. MATCH (Hip Replacement, Hip Replacement)
13. MATCH (Arthroplasty, Arthroplasty)
14. MATCH (Knee Replacement, Knee Replacement)
15. MATCH (Hip Replacement, Hip Replacement)
16. MATCH (Arthroplasty, Arthroplasty)
17. MATCH (Knee Replacement, Knee Replacement)
18. MATCH (Hip Replacement, Hip Replacement)
19. MATCH (Arthroplasty, Arthroplasty)
20. MATCH (Knee Replacement, Knee Replacement)
21. MATCH (Hip Replacement, Hip Replacement)
22. MATCH (Arthroplasty, Arthroplasty)
23. MATCH (Knee Replacement, Knee Replacement)
24. MATCH (Hip Replacement, Hip Replacement)
Appendix 2. EMBASE search strategy

1. exp Anthropology, Replacement/
2. exp Joint Prosthesis/
3. (prosth$ or knee$) adj5 (anthropoplast$ or prosth$ or replac$)tw.
4. enr$ - 0
5. exp Preoperative Care/
6. exp Patient Education/
7. exp Postoperative Period/
8. Information or Instruct$ or Educat$ or advice or Support$mp.
9. (selected$ or repair$ or awaited$ or leaflet$ or pamphlet$ or booklet$)mp.
10. oti5-9
11. (random$ or placebo$)tab.
12. (surgical$ or divided$ or triple$ or treble$) and (blind$ or mask$)tab.
13. controlled clinical trial$tab.
14. RETRACTED ARTICLE/
15. ort$11-14
16. (animal$ not human$)ph.th.
17. 13 not 16
18. and/4, 10, 17

3. Documenting search strategies

- Search history / Save search
### Search History – Save Search (and set up alerts)

Register a personal account with the databases to save your searches and create alerts.

<table>
<thead>
<tr>
<th>PubMed</th>
<th>Medline (Ovid)</th>
<th>Web of Science</th>
<th>Scopus</th>
<th>Embase</th>
<th>ProQuest</th>
<th>Cochrane</th>
<th>CINAHL</th>
</tr>
</thead>
<tbody>
<tr>
<td>NCBI</td>
<td>Ovid</td>
<td>Thomson Reuters</td>
<td>Elsevier</td>
<td>Elsevier</td>
<td>ProQuest</td>
<td>Wiley Online Library</td>
<td>EBSCOhost</td>
</tr>
</tbody>
</table>

**Syntax**

**Number of results**
4. Storing and keeping track of papers

- EndNote

EndNote features can assist you to

- Store identified records
- Manage the screening and eligibility process
- Show a transparent process
- Document review process of eliminating bias
EndNote – Importing search results

Maximum number of exports per database

<table>
<thead>
<tr>
<th>Database</th>
<th>Maximum Exports</th>
</tr>
</thead>
<tbody>
<tr>
<td>PubMed</td>
<td>unlimited</td>
</tr>
<tr>
<td>Medline (Ovid)</td>
<td>2500</td>
</tr>
<tr>
<td>Web of Science</td>
<td>500*</td>
</tr>
<tr>
<td>Scopus</td>
<td>20,000</td>
</tr>
<tr>
<td>Embase</td>
<td>10,000</td>
</tr>
<tr>
<td>ProQuest</td>
<td>&gt;2000?</td>
</tr>
<tr>
<td>Cochrane</td>
<td>unlimited?</td>
</tr>
<tr>
<td>CINAHL</td>
<td>25,000</td>
</tr>
</tbody>
</table>

EndNote – Importing search results

- How to export all search results (>200) from PubMed into EndNote
EndNote – Importing search results

Organise your EndNote Library into groups to keep track of your references

EndNote – Creating Group Sets & Groups
EndNote – Bulk annotation of references

Example: Add the name of the database and the date you searched to all references in an EndNote Group as you go along.

1. **Highlight** the References in the Group
2. Go to … **Tools**
3. **Change/Move/Copy Fields**

EndNote – Eliminate duplicates
EndNote – Groups and Smart Groups

Use Endnote Group functions:

- Group for each database
- Group for Duplicates removed
- Group for each team member – Yes, No, Maybe
- Group for each exclusion criterion
- Other groups???
EndNote – Creating customised fields

Create custom records to add specific information about the record. This may be used to assist systematic reviewers to code references.

1. Go to Edit > Preferences > Reference Types
2. Click on Modify Reference Types

3. Select the Reference Type, scroll down to Custom fields and type the name of display fields.
4. Click on Apply to All Ref Types, then click OK.
EndNote – Display customised fields

1. Go to Edit > Preferences > Display Fields
2. Select the custom fields and type the display name under Heading.
3. Click on Apply and then OK.

EndNote – Other useful features

- Research Notes field – enter your own detailed notes
- Search your EndNote Library – search by keyword across whole library or using keywords
- Attach PDFs or if the reference has a DOI and URL find full text online
EndNote – Sharing EndNote Library

You can share your EndNote library with the Review team using EndNote Online.

1. Set up an EndNote Web account
2. Synchronise between EndNote Desktop Library and EndNote online
3. Share your online EndNote Library with others on your Review team
Contact a Research Librarian
Research.Librarians@utas.edu.au

Find out about our services

http://www.utas.edu.au/first-year/home/connect-via-lync