Getting the Searches off to a good start: Scoping the Literature and Devising a Search Strategy

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There is more to life than a systematic review......

- Critical Review
- Integrative Review
- Literature Review
- Mapping Review
- Meta-analysis
- Mixed methods review
- Overview
- Scoping Review
- Qualitative evidence synthesis
- State of the art review
- Conceptual review

Booth 2009

Finding the evidence

- SRs seek to find and assess as much relevant evidence as possible to obtain detailed picture of effects
- To minimise effects of bias
- Demonstrate reviewers’ efforts to reduce bias
  - describe how we searched and where we searched
  - show that as many potentially relevant studies as possible have been considered
  - explain clearly why studies have been excluded from a review
  - To allow readers to assess how much evidence we may have missed

Information retrieval seeks to minimise bias

- Publication bias
  - Much research is never published
  - Positive results are more likely to be published
    - published trials are generally larger and may show an overall greater treatment effect than trials not published in journals
  - Language bias
    - positive results more likely to be published in English language publications
BIAS...

- Geographical coverage bias of journals and databases we tend to use in the developed world
- Lead times to publication: Publication gaps and indexing gaps
- Not all research is published in journals
- Not all research published in journals is indexed on major databases
- Suggests methods to reduce bias impact in systematic reviews:
  - literature searching
  - locating unpublished studies

BIAS...

- Not all research that we know is indexed on databases can be easily retrieved by the specific search strategy we develop
- research is not always described in the same way by authors
- research can often be poorly reported
- research is not always indexed in databases consistently, or in the way that we would find most useful

Deep or wide?

- Savole et al (2000) estimated that 29.2% of items in their review were uncovered by:
  - searching the web
  - handsearching
  - scanning reference lists
  - personal communication
  - searching specialised databases and web sites.
  - Wallace et al.
- 11 of 65 trials (17%) in end stage renal disease reviews were found by searching beyond major databases.

- Long lead times before publication:
  - publication gaps after conference presentation
      - Only 8.1% of a set of conference papers achieved publication within 12 months, 40% within 5 years
      - trials with positive results are published sooner than other trials
      - indexing lag – between publication and recording in databases

Stages of the Review

- Setting the Review Question
- Scoping the literature
- Setting the Inclusion and Exclusion Criteria
- Formulating the search strategy
- Writing the protocol
- Literature Search
- Selecting and critically appraising the included studies
- Data extraction
- Synthesising the studies

Setting the scope of the question

- “Fuzzy questions tend to get fuzzy answers”
- Use a framework (PICO or PICOC) for guidance
- Try to avoid scope creep
- Try to avoid scope shrink
Getting Started
- Check if there is an existing Systematic Review
- Search Cochrane
- Search Medline using your topic AND systematic.tw
- Search Google and Google Scholar
- Search SCOPUS www.scopus.com
- Search TRIP www.tripdatabase.com
- Try Pubmed Reminer
- Footnote chasing and citation chasing

PICO
- Patient
- Intervention (or Exposure)
- Comparator
- Outcomes
- Limits
- Study design

Turning PICO into a search
- Clinical and cost effectiveness of ace inhibitors for the treatment of hypertension
  - P people with hypertension
  - I ace inhibitors
  - C comparator treatments
  - O reduction in hypertension

Drop a concept
- Population
- Intervention/Exposure
- And use Inclusion/Exclusion criteria to filter results

How to construct a search
- Think of alternatives
  - Hypertension, Hypertensive, raised blood pressure, high blood pressure etc
- Ace inhibitors, captopril, enalapril, etc
- Find a similar review and look at search strategy
- Find a relevant citation and check how it has been indexed
- Think of study design, e.g. RCT’s, controlled clinical trials,
- Search and Test
- Search, Test and Modify

Finding RCT’s
- Cochrane Central Register of Controlled Trials (CENTRAL)
  - Part of Cochrane Library and includes records from Medline, Embase, conference proceedings, handsearched journals.
- Search databases such as Medline, Embase, Cinahl and Psychinfo using a RCT filter
**Finding Qualitative Studies**

- Ethnography
- Qualitative
- Grounded Theory
- Thematic analysis
- Content analysis
- Observational Methods
- Field notes
- Participant observation
- Narratives
- Field studies
- Focus groups or Focus notes

**Finding Grey Literature**

- Dissertations and theses  CINAHL
- Conferences  Web of Science
- Open sigle  Google and Google scholar, Menderley, Blogs, Tweets and other social media sites

**Hand searching specific journals**


"Handsearching still has a valuable role to play in identifying reports of randomized trials for inclusion in systematic reviews of health care interventions, particularly in identifying trials reported as abstracts, letters and those published in languages other than English, together with all reports published in journals not indexed in electronic databases."

**Managing results**

- Loads tagged records quickly into a database
- Manages the references to papers being considered for inclusion in the review
- Allows deduplication
- Allows standardised coding of records using picklists or groups
- Use to record progress, decisions, inter library loan status
- Makes producing the final report more straightforward because manages the references and reformats references for different publications
- Can be searched
- Use to share references

**Software**

- Endnote/Endnote Web
- Reference Manager
- Refworks
- Mendeley
- Zotero
- All have pros and cons
- Investing in online or other training is good practice – to understand the basics quickly

**Documenting the Process**

Systematic reviews require good documentation for transparency

- How was the search undertaken?
- Do search terms and the way they are combined capture the review topic?
- Were key relevant databases searched and was there an attempt to identify grey or unpublished literature?
- Prisma flow diagram
- Map appear briefly in review methods
- More detail can be provided in appendix or on a website
Writing up the search methodology

• List all databases searched;
• Note the dates of the last search for each database AND the period searched;
• Note any language or publication status restrictions;
• List grey literature sources;
• List individuals or organizations contacted;
• List any journals and conference proceedings specifically hand searched for the review;
• List any other sources searched (e.g. reference lists, the internet);
• Level of detail may be curtailed if full information is provided in appendix/internet site e.g.
• STARLITE (Sampling strategy, type of study, approaches, range of years, limits, inclusion and exclusions, terms used, electronic sources used.)

Top Tips

• Keep notes of searches and results;
• Scope and Re-Scope;
• Test and Re-Test- gold standard;
• Avoid ‘scope creep’ (Booth 2011);
• Accept the ‘point of diminishing returns’;
• Searching is never fully transparent, nor reproducible but make it as rigorous as you can;
• Be creative. Remember that there is evidence that Medline will find 80% of the references and that you can go wild finding the other 20%!
• Know when to STOP searching and get on with the real task in hand: Data extraction and Data synthesis.

Triple Plus Protocol (Booth 2012)

Triple: Three key subject databases

Plus
• Follow up of references (and verify in MEDLINE)
• Specialist databases for certain types of literature (e.g. CCTR for Trials; CINAHL, PsycINFO or Index to Theses for theses)

Plus
• Supplementary searching (Related Articles, Citation searching, Web searching etc)

Additional Resources

CRD guidance
http://www.york.ac.uk/inst/crd/index_guidance.htm

Cochrane Handbook
http://www.cochrane.org/training/cochrane-handbook

Systematic reviews to support evidence-based medicine: how to review and apply findings of healthcare research / Khalid Khan

(EASE)