Systematic reviews & evidence syntheses

Searching for studies
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Housekeeping

- The presentation will be recorded and shared with participants
- Keep your microphone on mute until the question breaks
- Post questions and comments in the chat function
Plan for today

- Take you through the theory underpinning the search process
- From question formulation to documenting your search
- For practical help
  - Contact your outreach librarian
What is a systematic review? (1)

A systematic review attempts to identify, appraise and synthesize all the empirical evidence that meets pre-specified eligibility criteria to answer a specific research question.

https://www.cochranelibrary.com/about/about-cochrane-reviews
What is a systematic review? (2)

Researchers conducting systematic reviews use explicit, systematic methods that are selected with a view aimed at minimizing bias, to produce more reliable findings to inform decision making.

https://www.cochranelibrary.com/about/about-cochrane-reviews
<table>
<thead>
<tr>
<th>Systematic review</th>
<th>V</th>
<th>Literature review</th>
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<tbody>
<tr>
<td>1. Registered protocol</td>
<td>1. No protocol</td>
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<td>2. Focused question</td>
<td>2. General question</td>
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<tr>
<td>3. Full report of search strategy</td>
<td>3. Brief report of search keywords</td>
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<tr>
<td>4. Searches across multiple databases</td>
<td>4. Searches of 1 or 2 sources</td>
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<td>5. Includes grey literature</td>
<td>5. Includes known literature</td>
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<td>6. Pre-specified inclusion/exclusion criteria</td>
<td>6. No criteria for inclusion/exclusion</td>
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<tr>
<td>7. Risk of bias assessment</td>
<td>7. No quality assessment</td>
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Do you need to do a systematic review?

• Would a literature review with a systematic approach to searching be sufficient?

• If no, make sure you choose the right type of systematic review for your question?
Types of systematic review

• Systematic review of:
  • Intervention studies, diagnostic studies, prognostic studies, qualitative studies, economic evaluations, IPD...
• Mixed methods & realist reviews
• Rapid reviews
• Scoping reviews & systematic maps
• Systematic overviews
Common search methods

- Formulate a question
- Identify existing reviews
- Develop a search strategy
- Run the search across multiple databases
- Use additional search methods to identify unpublished “grey” literature
- Manage & screen results
- Document the search
Formulating a search question (1)

Search tools

- PICO =
- PICOS =
- PECO =
- PIRT =
- SPIDER =

Which ones do you know?
https://vevox.app/#/m/107777424
Formulating a search question (2)

- **PICO** = Population, intervention, control, outcome
- **PICOS** = Population, intervention, control, outcome, study type
- **PECO** = Population, exposure, control, outcome
- **PIRT** = Population, index test, reference test, target condition
- **SPIDER** = sample, phenomenon of interest, design, evaluation, research type
Formulating a search question (3)

Delayed antibiotic prescriptions for respiratory infections

- $P =$
- $I =$
- $C =$
- $O =$
Delayed antibiotic prescriptions for respiratory infections

- **P** = Respiratory infections
- **I** = Delayed antibiotic prescription
- **C** = Immediate or no prescription
- **O** = Symptom resolution, side effects, hospitalisations, costs...
Delayed antibiotic prescriptions for respiratory infections

- **P** = Respiratory infections
- **I** = Delayed antibiotic prescription
- **C** = Immediate or no prescription
- **O** = Symptom alleviation, side effects, costs...

Key search criteria in **BOLD**
Identifying existing reviews

• Ongoing reviews
  • PROSPERO
• Reviews published in journals
  • Search PubMed and limit to systematic reviews
• Reviews from regional or national health care organisations
  • TRIPdatabase
Developing a protocol

• Once you’ve decided to pursue your own systematic review, start a protocol
  • Helps with developing the search
  • Identifies what you need to do at each stage of the process
  • Makes the review easier to publish
Developing a search strategy

- Identify keywords
- Find subject headings
- Apply search filters [Hedges] for study type (if appropriate)
- Combine the search strings
- Weigh up whether to apply limits to your search...bias
Editing & finalising the search

• Test the search
  • Does it capture key papers?
  • Are there too many irrelevant papers?
• Share your search strategy with colleagues or a librarian
  • Ask for comments on coverage, relevance, accuracy...
• Review & finalise – iterative process
Final search

1. Exp Respiratory Tract Infections
2. (respiratory infection* or respiratory tract infection* or urti or lrti).mp.
3. (sinusitis or otitis media or tonsillitis or sore throat or common cold or influenza or bronchitis or pneumonia or chest infection*).ti,ab,kw.
4. Or/1-3
5. Exp Anti-Bacterial Agents/
6. (antibiotic* or anti-biotic*).ti,ab,kw.
7. 5 or 6
8. (delay* adj15 prescri*).ti,ab,kw.
9. 4 and 7 and 8
Searching across multiple databases (1)

- Choose which databases to search
- Adapt the search for each database – use Polyglot
- Export the results into reference management or review management software
Searching across multiple databases (2)

Where do you usually search for articles?

https://vevox.app/#/m/107777424
Searching across multiple databases (3)

- **ASSIA** – social care & social work
- **CAB Abstracts** – agriculture, environment & nutrition
- **Cochrane Library** – systematic reviews & trials
- **CINAHL** – nursing & allied health
- **Embase** – health & medicine
- **Global Health** – population health
- **Medline** – health & medicine
- **PEDRO** – physiotherapy
- **PsycINFO** – psychiatry & psychology
- **Science Citation Index** – science
- **Scopus** – multidisciplinary

[Database A-Z list via SOLO](#)
Searching for grey literature (1)

• Conference abstracts
• Theses
• Study protocols
• Preprints
• Official documents – reports, statistics, case studies...
• Organisational reports
Searching for grey literature (2)

- Forward & backward citation tracking
- Related articles linking
- Hand-searching conference reports & journals
- Searching trial registers
- Searching preprint archives
- Web searching
- Contacting authors, experts & organisations
Registering your protocol

• Once your search methods are finalised, finish & register your protocol
  • PROSPERO
  • Publish in a journal which accepts protocols
  • Preprint archive or open science repository
Managing your results

- Reference management software is essential
- Endnote, Mendeley, Refworks...
- De-duplicating results
- Screening
- Locating & storing PDFs
- Writing up your review
Review management software (1)

- A gold standard systematic review is conducted by a team:
  - Double screening
  - Double data extraction
  - Double quality assessment

- You can use a combination of reference management, ExCel, Word...

- Review management software makes this easier
Review management software (2)

• Things to consider:
  • Ease of use
  • Cost - Free, one off payment, subscription...
  • Compatibility with other software & devices
  • User support
• Examples of software:
  • Covidence, EPPI-Reviewer, Rayyan
Document your search – PRISMA-S

You need to record:

• Databases searched
• Search terms used
• Date of last search
• Additional search methods used
• Total number of references retrieved
• Number of duplicates excluded
• Number of references excluded at Title/Abstract and Full-text stage
• Final number included in analysis
Report you search

• Include a summary of the search methods in the body of your review
• Include the numbers in a flow chart
• Include a full copy of the exact search strategies for all databases in an appendix
WHEN WILL IT END?