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 unless invited to speak

• Post questions and comments in the chat function

• When we get to a question slide, use hand up icon to raise a question
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>Literature review</th>
<th>V</th>
<th>Systematic review</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. No protocol</td>
<td>1. Registered protocol</td>
<td></td>
</tr>
<tr>
<td>2. General question</td>
<td>2. Focused question</td>
<td></td>
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<tr>
<td>3. Brief report of search keywords</td>
<td>3. Full report of search strategy</td>
<td></td>
</tr>
<tr>
<td>4. Searches of 1 or 2 sources</td>
<td>4. Searches across multiple databases</td>
<td></td>
</tr>
<tr>
<td>5. Includes known literature</td>
<td>5. Includes grey literature</td>
<td></td>
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<tr>
<td>6. No criteria for inclusion/exclusion</td>
<td>6. Pre-specified inclusion/exclusion criteria</td>
<td></td>
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<tr>
<td>7. No quality assessment</td>
<td>7. Risk of bias 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 =
- SPIDER =
Formulating a search question (2)

- **PICO** = Population, intervention, control, outcome
- **PICOS** = Population, intervention, control, outcome, study type
- **PECO** = Population, exposure, control, outcome
- **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, NICE Evidence Search
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. (upper respiratory tract infection* or urti).mp.
3. exp Otitis Media/
4. exp Pharyngitis/
5. exp Tonsillitis/
6. exp Bronchitis/
7. exp Sinusitis/
8. (sinusitis or otitis media or tonsillitis or common cold or bronchitis or sore throat*).mp.
9. or/1-8
10. exp Anti-Bacterial Agents/
11. antibiotic*.mp.
12. 10 or 11
13. (delay* adj15 prescri*).mp.
14. 9 and 12 and 13
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)

- **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
Questions (4)
Registering your protocol

- Once your search methods are finalised, finish & register your protocol
  - PROSPERO
  - Publish in a journal which accepts protocols
  - Preprint archives
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)

• Are you going to double screen or single screen?
• How are you going to do the data extraction / analysis?
• Can you use a combination of reference management, Excel, Word...?
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
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
• Final number of references screened
Report you search

Include a summary of the search methods in the body of your review

Include a full copy of the exact search strategies for all databases (Appendix)
WHEN
WILL IT
END?