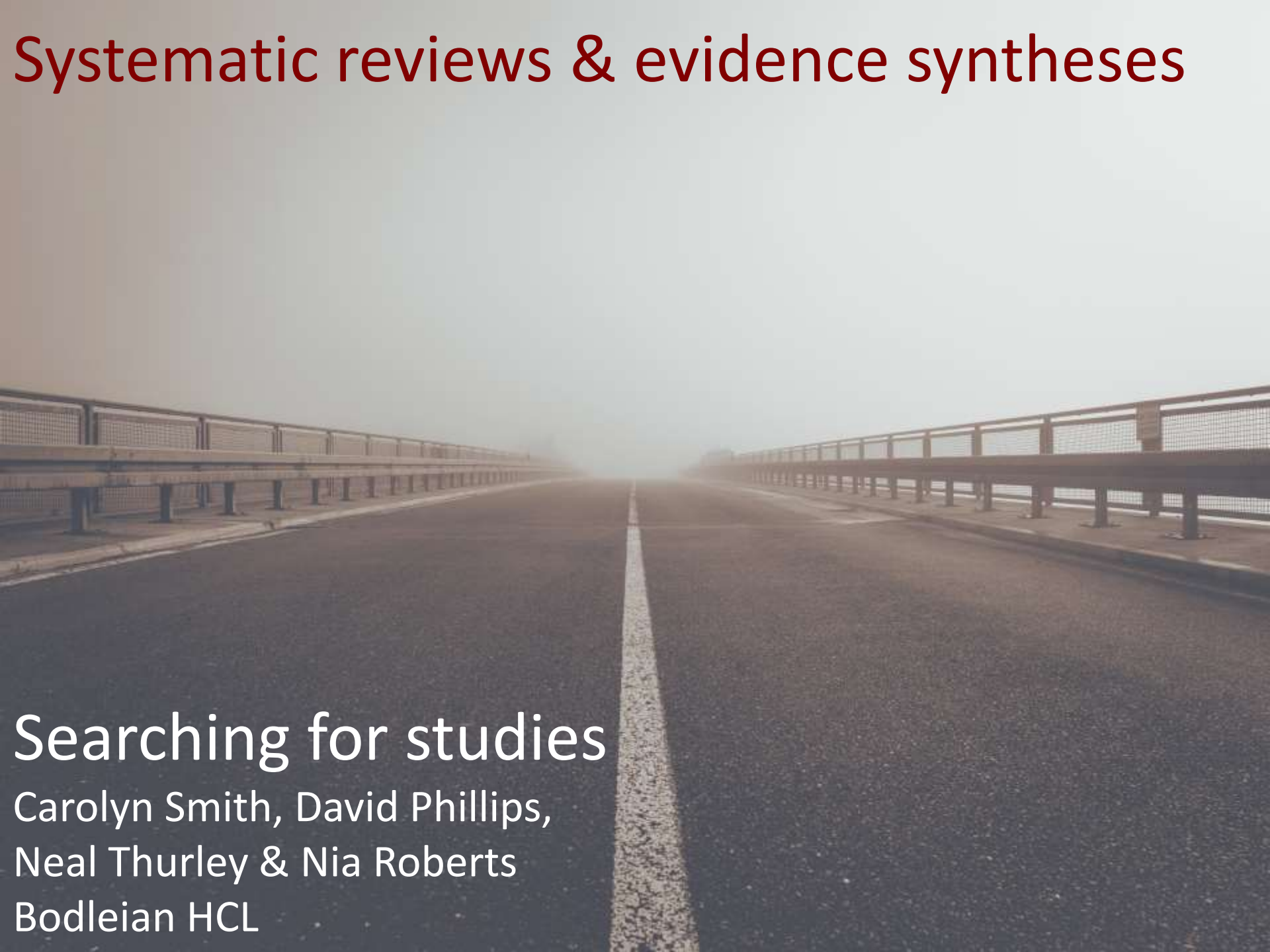
Systematic reviews & evidence syntheses



Searching for studies

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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

Systematic review V Literature review

1. Registered protocol
2. Focused question
3. Full report of search strategy
4. Searches across multiple databases
5. Includes grey literature
6. Pre-specified inclusion/exclusion criteria
7. Risk of bias assessment

1. No protocol
2. General question
3. Brief report of search keywords
4. Searches of 1 or 2 sources
5. Includes known literature
6. No criteria for inclusion/exclusion
7. No quality assessment

Do you need to do a systematic review?

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

- Make sure you choose the Right 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
- Living reviews
- 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- Use additional search methods to identify unpublished “grey” literature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)

- 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 (2)

Delayed antibiotic prescriptions for respiratory infections

- P =
- I =
- C =
- O =

Formulating a search question (3)

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…

Formulating a search question (4)

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 – PRISMA-P

- 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

Registering a protocol

Where to deposit you protocol?

- PROSPERO
- Publish in a journal which accepts protocols
- Preprint archive (e.g. medRxiv) or open science repository (e.g. OSF)

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 - abbreviated

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 (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

Managing your results

- Reference management software is essential
  - Endnote, Refworks, Zotero…
- 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

Document you search - summary

- 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

The end