Cochrane Training

Searching for studies

Trusted evidence.
Informed decisions.
Better health.

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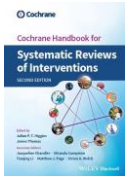
Steps of a Cochrane Review

1. define the question
2. plan eligibility criteria
3. plan methods
4. **search for studies**
5. apply eligibility criteria
6. collect data
7. assess studies for risk of bias
8. analyse and present results
9. interpret results and draw conclusions
10. improve and update review

Session outline

- **planning the search process**
- constructing a search strategy
- managing and reporting the search



see Chapter 4 of the Handbook

Cochrane Information Specialists (CIS)

- contact your Cochrane Group's CIS before you begin
- services vary, but the CIS may:
  - help plan your search
  - design or comment on your search strategies
  - run searches for you and send you the results
  - give advice about searching other sources
  - give advice about managing references
  - draft or comment on the search methods in the Review
- otherwise, consult a local health librarian

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A rigorous approach to searching

- systematic reviews require an extensive search - MEDLINE is not enough!
- a limited search may find an unrepresentative set of studies
  - incomplete results
  - selection bias
  - reduced generalisability
- balance sensitivity with efficiency

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Fishing for information

Fishing the River Nairn by Duncan Brown www.flickr.com/photos/cradlehall/3789625428/

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Fishing for information

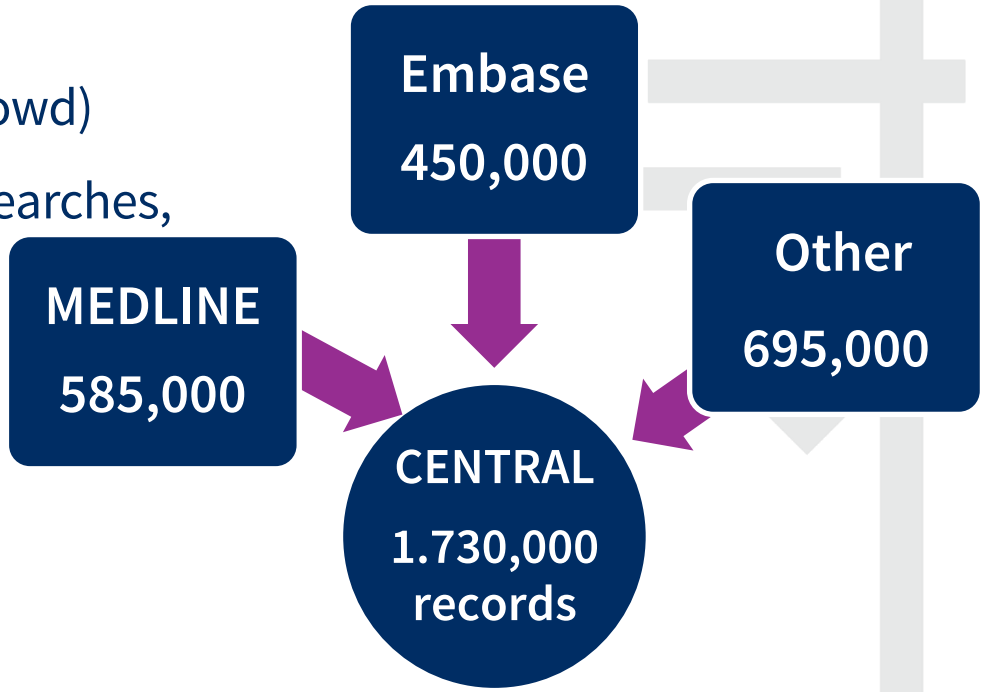
Research Ship Sonne In Auckland I (crop) by Ingolfson http://commons.wikimedia.org/wiki/File:Research_Ship_Sonne_In_Auckland_I_(crop).jpg

Sources to search: overview

- bibliographic databases
  - likely to identify the majority of your included studies
  - Cochrane Central Register of Controlled Trials (CENTRAL)
  - MEDLINE
  - Embase
  - Cochrane Specialised Registers
  - trials registers
  - add others if appropriate
- other sources
  - journals and other databases
  - unpublished and ongoing studies

Cochrane Central Register of Controlled Trials

- access via the Cochrane Library
- RCTs and quasi-RCTs
- includes MEDLINE and Embase records (including Cochrane Crowd)
- records from Cochrane Group searches, handsearching journals and conferences



Global screening challenges

The next Cochrane Crowd global challenge starts in

1	19	22	47
Days	Hours	Minutes	Seconds

Cochrane Crowd and COVID-19

Try Cochrane Crowd's NEW task: COVID Quest! Are you up for a new challenge? Help us find studies about COVID-19 for Cochrane's COVID-19 register. Head to your tasks page and you will see the new task there. There's a training module that will take you through what you

https://crowd.cochrane.org/

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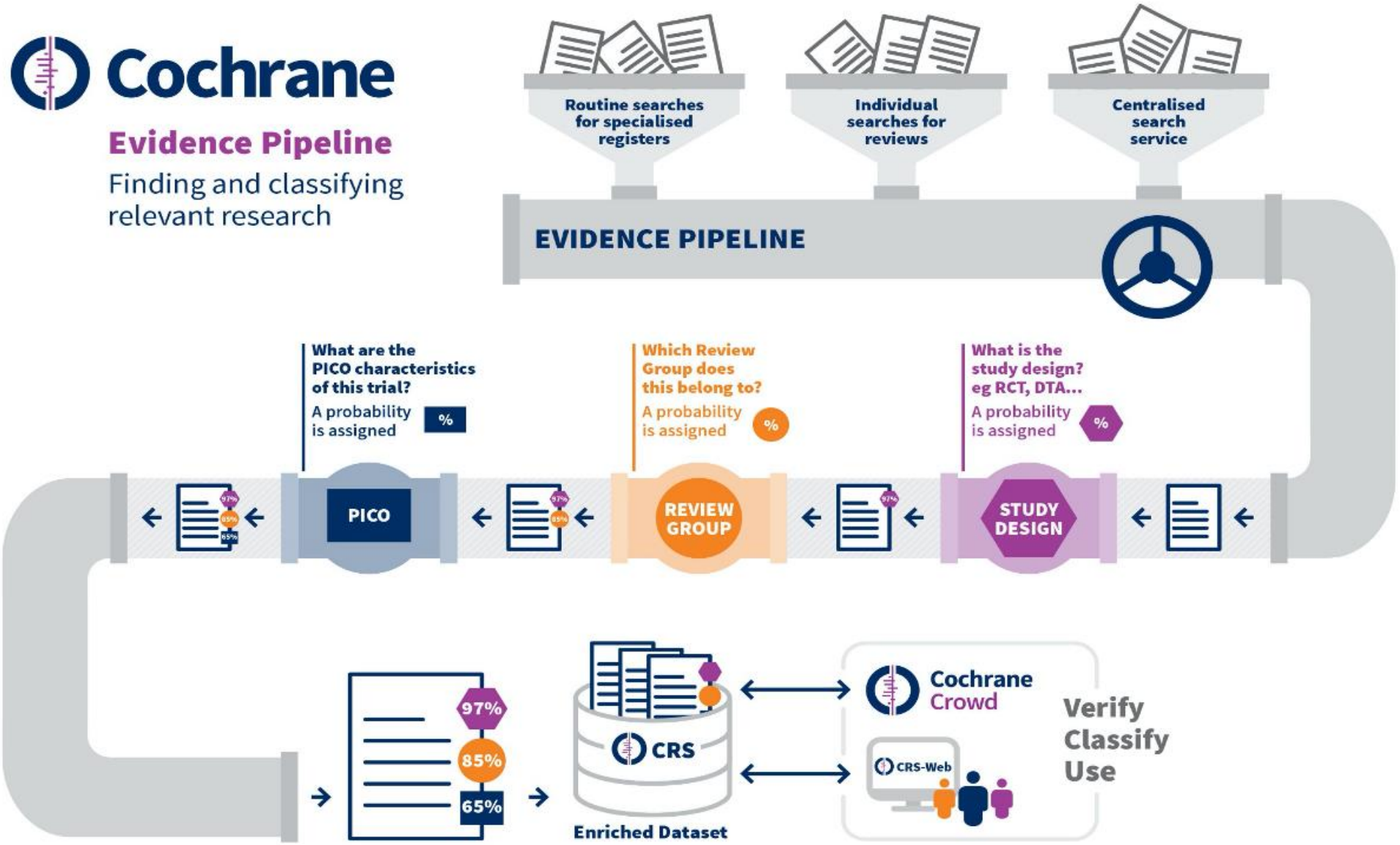
Evidence Pipeline

Finding and classifying relevant research



Searching CENTRAL for clinical trials

www.cochranelibrary.com

Searching for clinical trials

English English Sign In

Title Abstract Keyword HIV

Browse Advanced search

Cochrane Reviews Trials Clinical Answers About Help About Cochrane

Cochrane Reviews 274 | Cochrane Protocols 46 | Trials 25949 | Editorials 5 | Special Collections 2 | Clinical Answers 51 | More

274 Cochrane Reviews matching **HIV in Title Abstract Keyword**

Cochrane Database of Systematic Reviews
Issue 1 of 12, January 2021

Select all (274) Export selected citation(s) Show all previews

Order by Relevancy Results per page 25

Filter your results

Date

Publication date

The last 3 months 2
The last 6 months 5
The last 9 months 9
The last year 14
The last 2 years 34

Custom Range:

dd/mm/yyyy to dd/mm/yyyy

Apply Clear

Status

1 Treatment for HIV-associated cryptococcal meningitis
Mark W Tenforde, Adrienne E Shapiro, Benjamin Rouse, Joseph N Jarvis, Tianjing Li, Ingrid Eshun-Wilson, Nathan Ford
Intervention Review 25 July 2018 Open access
Show PICOs BETA Show preview

2 Antidepressants for depression in adults with HIV infection
Ingrid Eshun-Wilson, Nandi Siegfried, Dickens H Akena, Dan J Stein, Ekwaro A Obuku, John A Joska
Intervention Review 22 January 2018 Free access
Show PICOs BETA Show preview

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Searching for clinical trials - MeSH

www.cochranelibrary.com

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Searching MEDLINE and Embase

- avoid duplication!
- what's already included in CENTRAL?
  - MEDLINE: records indexed as RCTs and CCTs back to 1966, updated daily
  - Embase: RCTs and quasi-RCTs identified back to 1974, updated by Cochrane Crowd
- ask your CIS or health librarian for advice on additional searching
  - e.g. recent records not yet in CENTRAL, non-randomised studies, etc.

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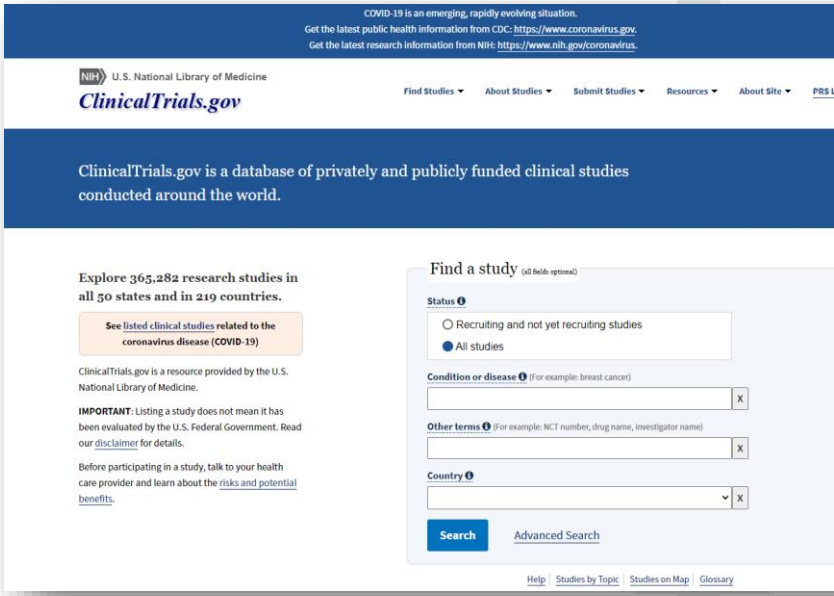
Other bibliographic databases

- national and regional databases
  - e.g. KoreaMed, LILACS
- subject specific databases
  - e.g. AMED, PsycINFO
- dissertation databases
  - e.g. Dissertations & Theses
- grey literature databases
  - e.g. OpenGrey, NTIS

Unpublished and ongoing studies

- very important to minimise bias
- trials registers
  - national and international
    - start with ClinicalTrials.gov, WHO ICTRP
  - subject-specific
  - pharmaceutical industry
  - regulatory agencies (e.g. FDA, EMA)
- contact colleagues, organisations, other known researchers



>365,000 studies (Jan 2021)

Identifying SRs

- SRs as a source of primary studies
- SRs provide context or rationale for your own review, and should be referred to in the Discussion
- can inform your search strategy
- Useful sources of SRs
  - Cochrane Library
  - PubMed
  - Epistemonikos
  - PROSPERO

Other sources

- consult your CIS or health librarian before proceeding
- conference abstracts and proceedings
- reviews and guidelines
  - e.g. DARE, National Guideline Clearinghouse (AHRQ)
- reference lists, citations and related articles
  - e.g. Science Citation Index, Scopus
- sources for specific study designs
  - e.g. adverse event reports, economic databases
- and possibly:
  - individual journals (**avoid duplication**)
  - search engines (e.g. Google Scholar, TRIP)
  - web searching (low efficiency)

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Session outline

- planning the search process
- **constructing a search strategy**
- managing and reporting the search

Constructing a search strategy

- don’t try this alone!
- consult your CIS or health librarian
- systematic reviews require complex, rigorous search strategies
- this session is an introduction to basic principles only

Structure of a search strategy

- based on your eligibility criteria
- start with the 2 or 3 most important concepts
- focus on those most likely to be found in title & abstract

P participants

I intervention

~~C comparison~~

~~O outcomes~~

S study design

Structure of a search strategy

- Example:
  Helmets for preventing head and facial injuries in cyclists

P cyclists

I helmets

S RCTs

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Turning concepts into search terms

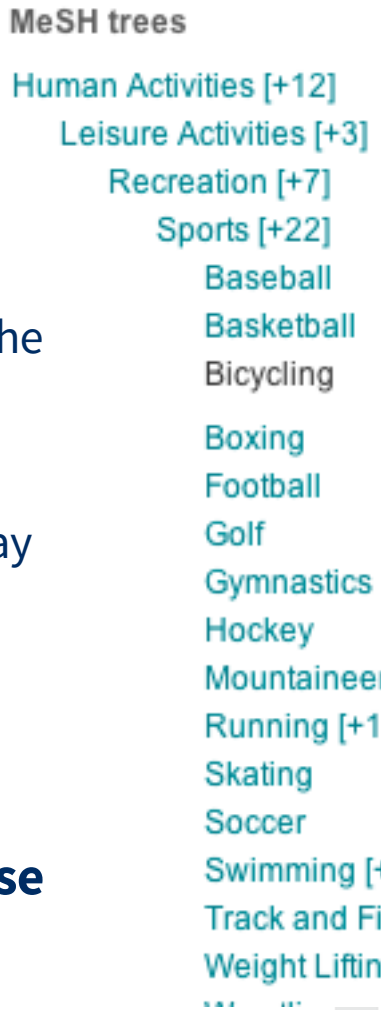
- aim for high **sensitivity**
  - express each concept in as many ways as possible
  - minimise the risk of missing a relevant study
  - will lead to lower precision – find a balance
- use both **text words** and **controlled vocabulary**
- preliminary searching may help test your strategy
- strategies must be translated for every database or interface

Text words

- words appearing in title and/or abstract of the record
- include synonyms, related terms, opposites, international terms, alternative spellings, plurals
  - e.g. brain injury, head injury, skull fracture
- truncation and wildcards – * $?
  - protect* = protects, protective, protection
  - **but beware**: car* = cars (but also carcinoma)
- proximity operators – NEAR, NEXT, ADJ
  - e.g. liver ADJ3 cancer = liver cancer, liver and bowel cancer
- syntax must be translated for each **interface**

Controlled vocabulary

- standardised subject terms assigned by indexers
  - e.g. Medline = MeSH, Embase = EMTREE
  - identifies relevant articles even if different terms are used for the same concept
  - 'explode' to include all narrower terms
  - caution – indexers may not be subject experts, and authors may not describe their study very well
- check the terms applied to relevant papers for ideas
- use database tools to map words to subject terms
- controlled vocabulary must be translated for each **database**



MeSH Tree for 'Bicycling' www.thecochranelibrary.com

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Study design filters

- a set of search terms to limit your results to specific study designs (e.g. RCTs)
- research has been done to identify the most sensitive and efficient search terms
- select according to:
  - database and interface to be searched
  - study designs needed for your review
- **do not use an RCT filter when searching CENTRAL**

Cochrane Highly Sensitive Search Strategy

Sensitivity-maximising version, MEDLINE (PubMed)
1. randomized controlled trial [pt]
2. controlled clinical trial [pt]
3. randomized [tiab]
4. placebo [tiab]
5. drug therapy [sh]
6. randomly [tiab]
7. trial [tiab]
8. groups [tiab]
9. #1 OR #2 OR #3 OR #4 OR #5 OR #6 OR #7 OR #8
10. animals [mh] NOT humans [mh]
11. #9 NOT #10

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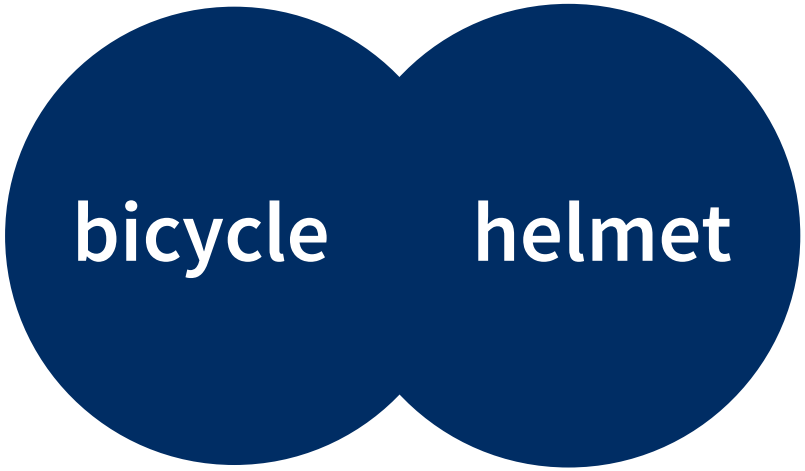
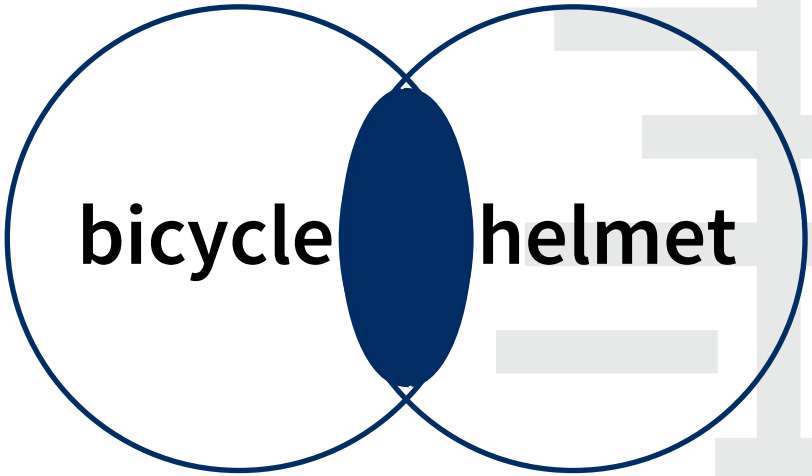
Boolean operators



OR – to expand search



AND – to narrow search

Bringing it all together

Population		Intervention		Study design
bicycl* OR cycling OR cyclist* OR Bicycling/	AND	helmet* OR Head Protective Devices/	AND	(see Cochrane HSSS)

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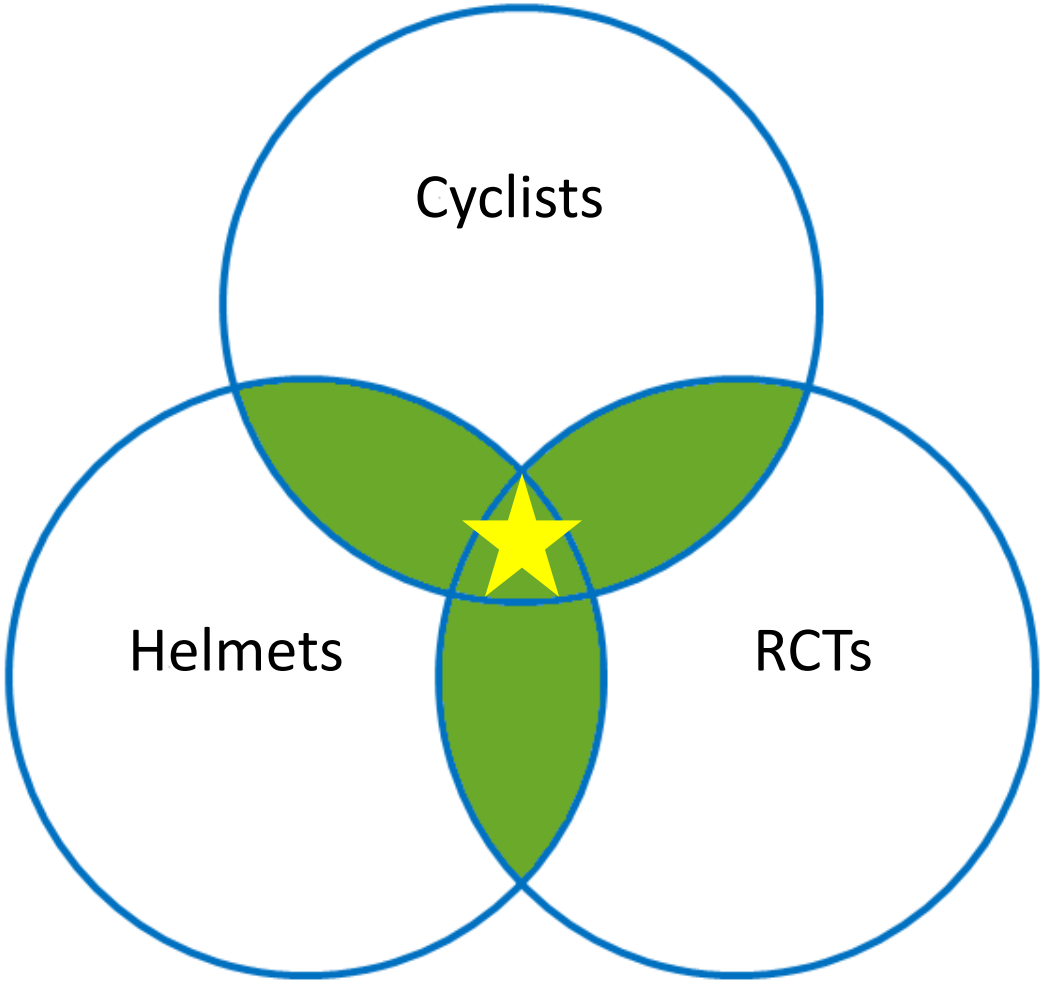
Bringing it all together



Sample CENTRAL strategy

Cycling

1. bicycl*:ti,ab
2. cycling:ti,ab
3. cyclist*:ti,ab
4. MeSH descriptor Bicycling, this term only
5. #1 or #2 or #3 or #4

Helmets

6. helmet*:ti,ab
7. MeSH descriptor Head Protective Devices, this term only
8. #6 or #7

9. #5 and #8

Sample PubMed strategy

Cycling

1. bicycl* [tiab]
2. cycling [tiab]
3. cyclist* [tiab]
4. bicycling [mesh: noexp]
5. #1 OR #2 OR #3 OR #4

Helmets

6. helmet* [tiab]
7. head protective devices [mesh: noexp]
8. #6 OR #7

RCTs

9. randomized controlled trial [pt]
10. controlled clinical trial [pt]
11. randomized [tiab]
12. placebo [tiab]
13. drug therapy [sh]
14. randomly [tiab]
15. trial [tiab]
16. groups [tiab]
17. #9 OR #10 OR #11 OR #12 OR #13 OR #14 OR #15 OR #16
18. animals [mh] NOT humans [mh]
19. #17 NOT #18
20. #5 AND #8 AND #19

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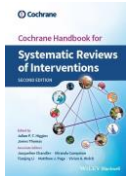
1. housing/
2. housing for the elderly/
3. public housing/
4. ((renovat$ or repair$) adj3 (home or homes or house or houses or housing)).ti,ab.
5. ((mite or mites or rat or rats or mouse or mice or cockroach$ or vermin or flea or fleas or infest$) adj3 (home or homes or house
or houses or housing)).ti,ab.
6. ((sanitation or sanitary) adj3 (home or homes or house or houses or housing)).ti,ab.
7. ((mold or mould or moldy or mouldy) adj3 (home or homes or house or houses or housing)).ti,ab.
8. ((damp$ or humid$) adj3 (home or homes or house or houses or housing)).ti,ab.
9. (heating adj3 (home or homes or house or houses or housing)).ti,ab.
10. ((retrofit$ or retro fit$) adj3 (home or homes or house or houses or housing)).ti,ab.
11. (ventilation adj3 (home or homes or house or houses or housing)).ti,ab.
12. (insulat$ adj3 (home or homes or house or houses or housing)).ti,ab.
13. (refurbish$ adj3 (home or homes or house or houses or housing)).ti,ab.
14. ((crowd$ or overcrowd$) adj3 (home or homes or house or houses or housing)).ti,ab.
15. (double glaz$ adj3 (home or homes or house or houses or housing)).ti,ab.
16. ((draft$ or draught$) adj3 (home or homes or house or houses or housing)).ti,ab.
17. (allergen$ adj3 (home or homes or house or houses or housing)).ti,ab.
18. Air Pollution, Indoor/
19. indoor air qualit$.ti,ab.
20. (towerblock$ or tower block$).ti,ab.
21. apartment$.ti,ab.
22. (bedsit$ or bed sit$).ti,ab.
23. (highrise$ or high rise$).ti,ab.
24. (multistor$ or multi stor$).ti,ab.
25. (bungalow$ or flats).ti,ab.
26. landlord$.ti,ab.
27. rehous$.ti,ab.
28. (homeowner$ or home owner$ or tenant$ or owner$ occup$).ti,ab.
29. dwellings.ti,ab.
30. squatter$.ti,ab.
31. or/1-30
32. (reduc$ or increas$ or decreas$ or evaluat$ or change$ or changing or intervention$ or grow$).ti,ab.
33. (improv$ or better or worse$ or effect$ or achieve$ or comfort or morale or harmful or impact$ or gain$).ti,ab.
34. 32 or 33
35. ((reduc$ or increas$ or decreas$ or evaluat$ or change$ or changing or intervention$ or grow$ or (improv$ or better or worse$
or effect$ or achieve$ or comfort or morale or harmful or impact$ or gain$)) adj3 housing).ti,ab.
36. 31 and 34
37. 35 or 36
38. homeless$.ti,ab.
39. exp homeless persons/
40. animal housing/
41. or/38-40
42. 37 not 41
43. exp research/
44. exp public policy/
45. exp evaluation studies/
46. exp epidemiologic study characteristics/
47. exp clinical trials/
48. (trial or trials or random$ or controlled or study or studies or intervention$).ti,ab.
49. (program or programs or programme or programmes or research or policy or policies).ti,ab.
50. quasi experimental.ti,ab.
51. longitudinal$.ti,ab.
52. prospective.ti,ab.
53. randomized controlled trial.pt.
54. clinical trial.pt.
55. or/43-54
56. 42 and 55
57. animal/
58. human/
59. 57 not (57 and 58)
60. 56 not 59

Medline search strategy from: Thomson H, Thomas S, Sellstrom E, Petticrew M. Housing improvements for health and associated socio-economic outcomes. *Cochrane Database of Systematic Reviews* 2013, Issue 2. Art. No.: CD008657. DOI: 10.1002/14651858.CD008657.pub2.

Limits and restrictions

- to avoid bias, do not limit by:
  - language - ask your CRG about translation
  - year - unless there is a clear point of change or availability
  - format - may be additional information about a study in letters, etc.



See Chapter 13 of the Handbook

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Session outline

- planning the search process
- constructing a search strategy
- **managing and reporting the search**

Managing your search results

- store results from each source
  - download all available fields for each record
  - use bibliographic or reference management software
    - e.g. EndNote, Mendeley, ProCite, Reference Manager, RefWorks, Zotero
    - ask your CIS for help with configuration files and import filters
    - additional fields can be used for notes, e.g. source, assessment
- collate and de-duplicate

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Documenting the search

- important to document everything
  - to report transparently what you've done in your review
  - to reproduce or update in future
- you need to document
  - **what** (database and interface)
  - **when** (date of search, date limits)
  - **how** (copy and paste exact strategies, limits, set numbers, number of results)
- keep copies of everything
  - save locally or on paper
  - don't rely on internet bookmarks or saved searches
  - save exported text files and reference management databases
- record non-database search activities

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Reporting the search in your review

- for your **protocol**
  - Methods: describe your planned sources and limits
  - you may also be asked to include at least one detailed (line by line) sample search strategy (e.g. CENTRAL)
- for your **review**
  - Dates – date of search
  - Abstract – sources, dates, limits
  - Methods – detailed description of sources, dates, limits
  - Results – number of results found
  - Figures – PRISMA flowchart
  - Appendix – all detailed (line by line) search strategies

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Updating your search

- writing a review can take some time
- you may need to update your search before completing the review
  - rerun search if more than 12 months old
  - screen for eligible studies and, if feasible, incorporate results
- a well-documented search will make this easier
- check for changes to databases and terms before searching (ask your Cochrane Information Specialist or health librarian)

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Take home message

- work closely with your Cochrane Information Specialist from the start
- plan a systematic search, balancing sensitivity and efficiency
- start with CENTRAL, your CRG's Specialised Register, MEDLINE and Embase, trials registers, then consider other appropriate sources
- think about the key concepts of your question, and how they might be described
- search strategy must be translated for every database and interface
- set up a system to manage your results and keep careful records

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References

- Lefebvre C, Glanville J, Briscoe S, Littlewood A, Marshall C, Metzendorf M-I, Noel-Storr A, Rader T, Shokraneh F, Thomas J, Wieland LS. Chapter 4: Searching for and selecting studies. In: Higgins JPT, Thomas J, Chandler J, Cumpston M, Li T, Page MJ, Welch VA (editors). *Cochrane Handbook for Systematic Reviews of Interventions* version 6.1 (updated September 2020). Cochrane, 2020. Available from www.training.cochrane.org/handbook.

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