

# Searching for systematic reviews

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# Session outline

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- Introduction
- Identifying search concepts
- Selecting databases
- Building term lists
- Limiting searches

# Introduction

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- Some prior knowledge of searching bibliographic databases is assumed
- Searching for systematic reviews is complex and can be time consuming
  - Information Scientists and Subject/College Librarians are invaluable and essential for complex reviews
  - Needs time to allow for development and changes, may require more than one search
- Creating and using of a set of key papers to identify key words and indexing words/concepts (pearl growing)
- Systematic review search should be thorough, objective and reproducible and identify as many relevant studies as possible

# Systematic review search process

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## 1. Establish preliminary scope

- Identify **concepts** for the review – possibly from PICO
- Establish concepts to be used for **searching**
- Establish list of approx. 10 **key papers**
- Identify which **databases** to search, test to see which hold key papers

## 2. Develop term lists

- Develop **term lists** for each concepts including **free text** and **controlled vocabulary** terms
- **Comment/discuss with review team** on term list, re-draft as necessary

- **3. Test strategy**
- Run **trial searches**, testing against key papers
- Comment on trial search results, re-draft as necessary
  
- **4. Run final search**
- **Final searches** run
- Search results combined and **de-duplicated**
- **Search history** written up- details of search terms used for each database to ensure transparency & replicability

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# Identifying search concepts

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- Using PICOCS
- In complex intervention there may be several concepts of interest
- Concepts may be employed at the search stage or sifting stage
- Some concepts more suitable for searching than others
- Avoid using too many concepts at the search stage
- Avoid using methods terms/concepts

## Using PICOCS

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- Population: e.g. Children, women, but may not be useful to use terms
- Intervention: may be specific programme name e.g.
- Comparison: not always useful unless you have a clear inclusion criteria around a specific comparison group, be careful that this doesn't contradict any other aspect of the search strategy, e.g. Women compared to men
- Outcomes: asthma, income etc
- Context: LMIC, US, schools
- Outcomes: health, economic, income
- Study design: Searching for study designs is not straightforward...



# Methods filters

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- Methods filters are available for RCTs (randomised controlled trials)
- It is unlikely that you will only be including RCTs
- The lack of standardisation of study design terminology means it is not useful to include study design terms in a search- if you do you may miss important studies
- NOT recommended for reviews which include non-randomised studies

# Searching for social/complex interventions

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- Search terms may need to include broad concepts to ensure that relevant studies are identified and methods filters should not be used
- Compared with clinical reviews of RCTs of specific drug (e.g. Aspirin) it is likely that searches will need to be a lot more sensitive to avoid excluding relevant studies
  - E.g Review of housing improvements we could not exclude animal studies easily as relevant studies may refer to rat infestation, so many studies identified were of housing conditions for laboratory rats etc
- This means you will end up with large numbers of studies to screen, e.g. 20,000
  - This is good practice for this type of review
  - And sounds like more work than it is

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# Sources to search

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- “Own files”
- Bibliographic databases
- Reference lists of key papers
- Forward citations (Wok and Scopus)
- Suggestions by advisory group and/or experts in the field
- Hand searching selected journals

# Selecting databases

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- Access by institution
- Open access databases
- Google and Google scholar (not repeatable or transparent)
  
- Systematic Review databases
- Medline & Embase
- Social Science databases
  
- Conference literature
- Other grey literature

# Systematic Review Databases

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- **The Cochrane Library** - Evidence Based medicine reviews databases
- **Campbell collaboration** - Social, behavioural and educational arenas
- **DARE (CRD)** - Database of Abstracts of Reviews of Effects

# Biomedical databases

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- **Medline** - Medicine, including dentistry and nursing - 19 million references - 2,000-4,000 completed references are added each day
- **Embase** - Human medicine and related biomedical research
- **PsycINFO** - Psychological literature
- **CINAHL** - Cumulative Index to Nursing & Allied Health

# Social Science databases

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- **ASSIA - Applied Social Science Index** – health, social services, psychology, sociology, economics, politics, and education
- **International Bibliography of the Social Sciences (IBSS)** anthropology, economics, politics and sociology
- **SocINDEX** – sociology
- **Sociological Abstracts** - sociology and social and behavioural sciences



# Social and community health

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- **Social Care Online** – UK - open access - social care and social work
- **Social Services Abstracts** - social work, social welfare, social policy and community development
- **Social Policy and Practice** - social policy, public health, social services, and mental and community health

# Broad brush databases

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- Broad topic coverage of high impact journals, no controlled vocabulary
- **Scopus** - science, technology, medicine, social sciences, arts and humanities
- **Web of Knowledge (WoK)** – science, social science, arts and humanities

## Subject specific databases

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Can be particularly fruitful for SRs – examples include

- **ERIC** - US education database
- **Econlit** – from American Economic Association
- **Lilacs** - scientific and medical journals from Latin American and Caribbean
- **JOLIS**- serving the finance and economics organisations, the World Bank Group and IMF
- **ELDIS**- Institute of Development studies
- **3ie**- impact evaluations conducted in low-and middle-income countries.

### ***LMIC databases link***

(<http://epocoslo.cochrane.org/sites/epocoslo.cochrane.org/files/uploads/LMIC%20Databases%20August%202013.pdf>)

# Grey literature

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- Grey literature is ‘unpublished’ and covers non journal and non book
  - Includes: conference proceedings, internal reports, working papers, theses
- Approx 10% of studies referenced in Cochrane Reviews come from Grey Literature
- Databases of grey literature
  - **COPAC** – UK - union catalogue
  - **Proceedings First** – conferences, congresses
  - **Open Grey** – European – reports, conferences, dissertations
  - **EThOS** – UK – British Library – theses
  - **NTIS** (National Technical Information Service) – US - government-funded scientific, technical, engineering, and business related information

# Research registers

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- **ClinicalTrials.gov** - US National Library of Medicine (NLM) at the National Institutes of Health (NIH)
- **metaRegister of Controlled Clinical Trials** (mRCT) - ongoing and some completed RCTs in all areas of healthcare throughout the world
- **UK Clinical Research Network Study Portfolio** – UK - NIHR funded research

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# Building term lists

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- For a comprehensive search both free text and controlled vocabulary terms are needed
- Compile free text terms imaginatively
- Use a wide variety of free text terms
- Issues to consider for free text
  - UK and US spelling
  - Plural and singular forms
  - Homonyms – one word with two meanings
  - Synonyms – two words with same meaning

# Controlled vocabularies

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- A controlled vocabulary (which may also be known as a thesaurus), is a controlled set of terms used by a bibliographic database to describe concepts in a document
- The aims of using a controlled vocabulary are various including;
  - harmonising between plurals and singular e.g. child and children
  - harmonising spelling between American and English e.g. labor and labour
  - Controlling for synonyms – two or more words with same meaning e.g. train and railway
  - Controlling for homonyms – one word with two meanings e.g. lead (guide) and lead (metal)



# Thesauri

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- There are thesauri for different subject areas, and different databases use different thesauri
- Searching using thesaurus terms speeds up searching and makes it more efficient and effective

## **MeSH: Controlled vocabulary developed by National Library of Medicine (US)**

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- Used in Pubmed and Medline
- Can be browsed online
- Hierarchical nature is explicit
- Updated annually
- ‘Scope Note’ gives a definition – useful for pinning down concepts

# National Library of Medicine - Medical Subject Headings

2013 MeSH

## MeSH Descriptor Data

[Return to Entry Page](#)

Standard View. [Go to Concept View](#); [Go to Expanded Concept View](#)

<b>MeSH Heading</b>	Housing
<b>Tree Number</b>	<a href="#">N01.224.791.400</a>
<b>Tree Number</b>	<a href="#">N06.230.150.360</a>
<b>Tree Number</b>	<a href="#">N06.850.505.400.800.400</a>
<b>Annotation</b>	for persons; for animals use <a href="#">HOUSING, ANIMAL</a>
<b>Scope Note</b>	Living facilities for humans.
<b>Entry Term</b>	Family-Patient Lodging
<b>Entry Term</b>	Patient-Family Lodging
<b>Allowable Qualifiers</b>	<a href="#">CL</a> <a href="#">EC</a> <a href="#">ES</a> <a href="#">HI</a> <a href="#">LJ</a> <a href="#">SN</a> <a href="#">ST</a> <a href="#">TD</a>
<b>Date of Entry</b>	19990101
<b>Unique ID</b>	D006798

## MeSH Tree Structures

[Population Characteristics \[N01\]](#)

[Demography \[N01.224\]](#)

[Residence Characteristics \[N01.224.791\]](#)

[Catchment Area \(Health\) \[N01.224.791.200\]](#)

▶ [Housing \[N01.224.791.400\]](#)

[Housing for the Elderly \[N01.224.791.400.410\]](#)

[Public Housing \[N01.224.791.400.650\]](#)

[Independent Living \[N01.224.791.550\]](#)

# Example search on the subject of women and work

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- The concept of women could be described by the terms; women, woman, lady, ladies, girls, female, female human, womankind, etc.
- The concept of work could be described by the terms; work, employment, labour, labor (US spelling), jobs, physical exertion, toil, livelihood, etc.
- A search on 'women and jobs' will bring up very different results from one on 'women and labour' (employment or childbirth)
- Consulting the thesaurus used in a database will indicate which terms to use, so for MEDLINE consulting MeSH the search terms which should be used are 'women' and 'employment'

# Search techniques

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- Specific field searching
  - Title, abstract
  - Rarely able to search text of paper/article as these are not included on the databases
- Truncation: use of wild cards, e.g. hous\$
  - Symbol varies by database
- Boolean Operators
  - AND – narrows search
  - OR – widens search
  - NOT – narrows search – be very wary as a record may well discuss both the concept of interest and the one to be excluded
- Phrase searching
- Proximity searching
- Specific document type search
- Controlled vocabulary

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# Limiting searches

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- Date
- Language
- Filters/hedges – best ones are for RCTs
- Study type

# Conclusions

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- Searching for systematic reviews is complex and can be time consuming
- A 'simple' systematic review search may not be comprehensive and miss key evidence
- For a comprehensive search consult an information scientist or subject librarian



# Key references

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Booth, A, Papaioannopu, D and Sutton, A *Systematic approaches to a successful literature review* Sage. 2012

*CRD Systematic Reviews: CRD's guidance for undertaking reviews in health care* 2009 Available from <http://www.york.ac.uk/inst/crd/SysRev/!SSL!/WebHelp/SysRev3.htm>

Higgins JPT, Green S (editors). *Cochrane Handbook for Systematic Reviews of Interventions Version 5.1.0* [updated March 2011]. The Cochrane Collaboration, 2011. Available from [www.cochrane-handbook.org](http://www.cochrane-handbook.org).

MeSH vocabulary browser <http://www.nlm.nih.gov/mesh/>

Petticrew M, Roberts H. *Systematic reviews in the social sciences: a practical guide*. Malden, MA: Blackwell Publishing. 2006

Sources to search <http://sourcestosearch.wordpress.com/>