The systematic search for studies
Basic Cochrane Review course 2012

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Searching for information

• Means searching for information in an article

• Characterise information by one or more concepts (PICO S)
  • disease: depression
  • study-design: cohort study

• Translate into search terms for the specific database

• Search with one or a combination of search terms
  • rare disease: satoyoshi syndrome: search term: satoyoshi
  • asthma AND occupation*
  • asthma AND occupation* AND mould
Exercise

• Which concepts can be found in the following request for information?

  • What is the best therapy for a teacher with voice problems?
Boolean Operators

- Use Boolean operators: AND OR NOT

- football OR hockey OR soccer

- Arthritis NOT letter

- Salmonella AND hamburger

- Salmonella AND (hamburger OR eggs)

- Salmonella AND hamburger OR eggs
How many results?

• **Sensitive:**
  • Finds all but at the cost of a lot of rubbish
  • High number needed to read

• **Specific:**
  • Finds little rubbish but not all that is available
  • Low number needed to read
Searching for studies

www.cochrane-handbook.org
Part 2: General methods for Cochrane reviews
Chapter 6: Searching for studies

reference:

Searching for studies - Key points (Lefebvre et al.)

• The Cochrane Central Register of Controlled Trials (CENTRAL), MEDLINE and EMBASE should be searched for all Cochrane reviews.

• Searches should seek high sensitivity, which may result in relatively low precision.

• Too many different search concepts should be avoided, but a wide variety of search terms should be combined with OR within each concept.
Search strategies - Structure of a search strategy

- a search strategy to identify studies for a Cochrane review will typically have three sets of terms:
  - **P**: terms to search for the health condition of interest, i.e. the population
  - **I**: terms to search for the intervention(s) evaluated
  - **S**: terms to search for the types of study design to be included (typically a ‘filter’ for randomized trials)
Sources to search

Bibliographic databases
• Medline/PubMed
• Embase
  • use text words and controlled vocabulary
• Cochrane Central Register of Controlled trials
• Subject-specific databases
  • BIOSIS
  • CINAHL
  • PsycINFO
  • etc.

• Citation Indexes
  • Science Citation Index
  • Social Sciences Citation Index
  • etc

• (dissertations and thesis databases
• grey literature databases
• Journals and other non-bibliographic database sources)
COSH databases

- [osh.cochrane.org](osh.cochrane.org)

- The COSH databases contain references (i.e. NOT full articles) to studies relating to the prevention and treatment of occupational or work-related diseases, injuries and disorders. (at present years 1992-2007)

- EBM studies (randomized controlled trials, controlled clinical trials, and interrupted time-series)

- Before-After studies (uncontrolled before-after measurement only)

- Systematic reviews
Medline / PubMed

• MEDLINE
  • over 20 million references to journal articles in life sciences with a concentration on biomedicine
  • indexed with NLM's Medical Subject Headings

• PubMed
  • free version of MEDLINE (also includes up-to-date citations not yet indexed for MEDLINE and some additional records)
  • time coverage: generally from 1949 to present

MeSH
Medical Subject Headings

• MeSH is the National Library of Medicine's controlled vocabulary thesaurus.
  • 25,186 descriptors in 2009 MeSH
  • hierarchy (MeSH Tree)
  • used for indexing and searching in Medline/PubMed
  • continually revised and updated

• MeSH Database
Search fields and field codes in PubMed

- All Fields [ALL]
- Author[AU]
- First Author Name [1AU]
- MeSH Term[MH]
- MeSH Major Topic[MAJR]
- MeSH Subheading[SH]
- Substance Name[NM]
- Publication Type[PT]
- Text Word[TW]
- Title[TI]
- Title/Abstract[TIAB]

**PubMed**

**MeSH Terms:**
- Adolescent
- Adult
- Aged
- Arousal/drug effects
- Caffeine/therapeutic use*
- Central Nervous System Stimulants/therapeutic use*
- Circadian Rhythm
- Cross-Over Studies
- Disorders of Excessive Somnolence/drug therapy*
- Disorders of Excessive Somnolence/etiology*
- Female
- Humans
- Laboratories
- Male
- Middle Aged
- Occupational Diseases/complications
- Psychomotor Performance/drug effects
- Reaction Time/drug effects
- Sleep*
- Sleep Disorders, Circadian Rhythm/complications*

**PubMed**

**Publication Types:**
- Randomized Controlled Trial
- Research Support, U.S. Gov't, P.H.S.

**Substances:**
- Central Nervous System Stimulants
- Caffeine

**Grant Support:**
- R01 OH03966/OH/NIOSH CDC HHS/United States
Search filters

• Designed to retrieve specific types of records

• A search filters website developed by the UK InterTASC Information Specialists Subgroup (ISSG)

• [www.york.ac.uk/inst/crd/intertasc](http://www.york.ac.uk/inst/crd/intertasc)

• Lists methodological search filters and provides critical appraisals of the various filters
The Cochrane Highly Sensitive Search Strategies for identifying randomized trials in MEDLINE
sensitivity-maximizing version (2008 revision) PubMed format


#2  animals [mh] NOT (humans [mh] AND animals [mh])

#3  (#1 NOT #2)
The Cochrane Highly Sensitive Search Strategies for identifying randomized trials in MEDLINE

sensitivity- and precision-maximizing version (2008 revision); PubMed format


#2 animals [mh] NOT (humans [mh] AND animals [mh])

#3 (#1 NOT #2)
where

- [pt] denotes a Publication Type term
- [tiab] denotes a word in the title or abstract
- [sh] denotes a subheading
- [mh] denotes a Medical Subject Heading (MeSH) term
- [ti] denotes a word in the title
- [1au] means first author
- [au] means author
Our search strategies

• The COSH most **sensitive** search strategy for occupational health intervention studies:


• The COSH most **specific** search strategy for occupational health intervention studies:

  (program*[tw] OR "prevention and control"[sh]) AND (occupational [tw] OR worker*[tw])

http://osh.cochrane.org/search-strategies
Exercise Searching

You are involved in a review on the effectiveness of repairing buildings that are affected by mould (mold) in decreasing respiratory symptoms. You start with looking for randomised controlled trials.

Exercise:

- Make the appropriate PICO S
- Translate into search terms
- Search PubMed with your search terms
- Make a list of RCTs that evaluated mould remediation in buildings for decreasing respiratory symptoms
Search Strategy Mould Review

- **Respiratory Symptoms and Diseases**
  - 1 exp Respiratory Tract Diseases/
  - 2 exp Respiratory Tract Infections/
  - 3 (respiratory adj3 (infection* or disease* or symptom*)).tw.
  - 4 Sick Building Syndrome/
  - 5 sick building syndrome.tw.
  - 6 exp Otitis Media/
  - 7 Common Cold/
  - 8 Influenza, Human/
  - 9 Asthma/
  - 10 exp Rhinitis/
  - 11 exp Sinusitis/ or exp Conjunctivitis/ or exp Eye Disease/microbiology
  - 12 Cough/
  - 13 (otitis media or wheez* or common cold* or influenza* or asthma* or rhinit* or sinusit* or conjunctivit* or eye symptom* or cough*).tw.
  - 14 or/1-13

- **Water damage or Mould**
  - 15 Humidity/
  - 16 exp Fungi/
  - 17 Water/
  - 18 Air Microbiology/
  - 19 Air Pollution, Indoor/
  - 20 (damp* or moistur* or humid* or mould* or mold* or condensation* or fungal* or fungi* or water vapour* or water vapor* or micro?organism* or spore*).tw.
  - 21 or/15-20

- **Reparation of Building**
  - 22 (repair* or renovat* or remediat* or rebuild* or reconstruct* or drain* or remov* or reparat* or reduc* or dehumidificat* or refurbis* or recapsul* or decontaminat* or dry or drying).tw.

- **Final combination of concepts**
  - 23 14 AND 21 AND 22
Results Mould Review


- Kercsman CM, et al. Reduction in asthma morbidity in children as a result of home remediation aimed at moisture sources. Environmental Health Perspectives 2006;114:1574-1580.