Six Strategies for Effective Searching

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Spring 2012

Objectives

- Be able to define what a database is
- Be able to describe the strategies for developing effective searches
Please note!

- This presentation shows you the concepts of searching
- Watch Searching Ovid Medline and Converting an Ovid Medline search to a PubMed Search to see the concepts in action

What is a database?

- “A database is a system intended to organize, store, and retrieve large amounts of data easily. It consists of an organized collection of data for one or more uses, typically in digital form.”
What is a database?

- Two parts to consider
  - Database
  - Interface
    - Front end or search engine

What is a database?

- Databases contain records
- Records contain fields
- Fields are defined by the database producer
  - Most fields are searchable
  - Searches can be directed to look in specific fields
What is a database?

- The **interface** defines how the db looks and the rules for searching the db
- That’s why PubMed looks different from Google which looks different from Ovid which looks different from EbscoHOST.....

### Six Strategies for Effective Searching

1. Conceptualize your search
2. Use the appropriate vocabulary
3. Combine terms & concepts using Boolean operators
4. Revise your search strategy
5. Search more than one database
6. Learn database search rules & peculiarities
Strategy #1
Conceptualize your search

- First and foremost—know what you want to research!
  - What are your aims?
  - Who is your population?
  - What types of studies do you want?
  - What range of years do you want?
    - Why?
  - What languages do you want to include?
  - What setting are you interested in?

Develop a conceptual search strategy based on your aims
- Three concepts generally work best
- Combine individual terms to create a single concept
- This lets you perform very broad *conceptual* searches
  - Combine concepts to *narrow results*
Sample aim:
- Examine factors in interventions that result in the reduction of the use of tobacco products, specifically cigarettes, among adult African Americans

Interventions
- Interventions or health promotion or health education or health knowledge acquisition

Tobacco
- Smoking or cigarettes or tobacco

African Americans
- African Americans or Blacks
Strategy #2
Use the appropriate vocabulary

- Each database has its own unique terminology
  - Also known as a “controlled vocabulary”
  - Search for controlled vocabulary terms within the database
- You can still search for keywords
  - Just make sure you do it correctly!

Common controlled vocabularies
- MeSH: Medical Subject Headings
  - Used by Medline & PubMed
- Thesaurus of Psychological Index Terms
  - Used by PsycINFO
- CINAHL Headings
  - Used by CINAHL
In Ovid, if you enter a single term, you will be taken to appropriate MeSH terms or PsycINFO terms, depending on the database you are searching.

- Ebsco CINAHL
  - Publication Type
  - Major Subjects
  - Minor Subjects
Strategy #3
Combine terms using Boolean

- To combine terms & concepts, use logical (i.e. Boolean) operators
  - AND, OR, and NOT

Concept #1: Health Interventions
In this search, terms that are related to **health interventions** are combined using **OR**.
Strategy #3
Combine terms using Boolean

- Use parentheses to ensure the correct order of operations
- What does this equation equal?
  - $4 + 3 \times 7 - 8$
  - What does this equation equal?
    - $(4 + 3) \times (7 - 8)$

Strategy #3
Combine terms using Boolean

- This search in any Ovid database:
  - Interventions or health promotion and Smoking or cigarettes and African Americans or Blacks
- Will return:
  - (((((Interventions or health promotion) and Smoking) or cigarettes) and African Americans) or Blacks)

Let’s diagram what that last search found:
1. Articles with ((Interventions or health promotion) and smoking) AND African Americans
2. Articles with Cigarettes and African Americans
3. All articles with the term Blacks
Strategy #3
Combine terms using Boolean

- Where do you think the parentheses should go?
- Interventions or health promotion and Smoking or cigarettes and African Americans or Blacks

Strategy #3
Combine terms using Boolean

- Did you figure it out?
- (Interventions or health promotion) and (Smoking or cigarettes) and (African Americans or Blacks)
This:
(Interventions or health promotion) and (Smoking or cigarettes) and (African Americans or Blacks)

Looks like this:

Interventions or health promotion

African Americans or Blacks

Smoking or cigarettes

The part where all 3 concepts converge is the part that gets returned in the search.

Strategy #4

Revise your search strategy

- Revising your search and performing multiple searches in the same db are the norm
- Use citations found in earlier searches to revise searches
Strategy #4
Revise your search strategy

- Examples:
  - Add title/abstract terms
    - Racial or race
  - Modify MeSH terms:
    - Ethnic Groups

No one database does it all

- Not even Google or Google Scholar
- Each db has strengths & weaknesses
- SRs especially require comprehensive searches in multiple dbs
Strategy #5
Search more than one db

- Consider regional databases
  - African Index Medicus
  - Eastern Mediterranean Index Medicus
  - LILACS--Latin America & Caribbean
  - IndMED
  - Index Medicus for South-East Asia Region
  - Panteleimon--Ukraine & Russian Federation
  - Wanfang Med Online (Chinese language; not available at SPH)
  - All but Wanfang can be found on Online Databases page

Strategy #5
Search more than one db

- Journal collections by region
  - African Journals Online (AJOL; partially free)
  - SciELO (South American scientific journals; free)
Strategy #5
Search more than one db

- Subject-specialty dbs
  - AGRICOLA: agriculture/nutrition
  - America: History & Life
  - CCInfoWeb: occupational health
  - CINAHL: nursing/allied health
  - Environment Abstracts
  - PAIS: public affairs, grey literature
  - PsycINFO: behavioral sciences

- Consider non-journal documents, i.e. grey literature
  - Dissertations, theses
  - Government/non-profit reports
    - Grey Literature Report
    - PAIS International
    - TRIP
  - Conference Proceedings
    - PsycExtra
Clinical trials registries
- Australian New Zealand Clinical Trials Registry
- CenterWatch Clinical Trials Listings (Thompson)
- Chinese Clinical Trial Register
- Clinical Trials (Cancer) (National Cancer Institute)
- ClinicalTrials.gov (National Institutes of Health)
- Cochrane Central Registry of Controlled Trials
- India Clinical Trials Registry

International Standard Randomised Controlled Trial Register search (ISRCTN (part of Springer Science+Business Media))
metaRegister of Controlled Trials Registry search (Current Controlled Trials (part of Springer Science+Business Media))
- NIH Reporter
- Trials Register of Promoting Health Interventions (TRoPHI) (EPPI-Centre)
- UK Clinical Trials
- WHO International Clinical Trials Registry Platform (World Health Organization)
Strategy #6
Learn db search rules & peculiarities

- Adjacency (proximity) searching
  - **Interface** function
  - Forces terms to be within certain number of words from each other
  - Not available in PubMed

Strategy #6
Learn db search rules & peculiarities

- Adjacency (proximity) searching
  - Ovid (Medline, PsycINFO)
    - Cancer **adj3** screening
  - Ebsco (CINAHL, Acad Srch Comp)
    - Cancer **n3** screening
      - Words in any order
    - Cancer **w3** screening
      - Words must be in the order entered
      - **Cancer screening** will be found; **screening for cancer** won’t
Strategy #6
Learn db search rules & peculiarities

- Search in specific fields
  - Fields are defined by database producer
- How to search defined by the interface
  - Ovid databases
    - Ovarian cancer.ti,ab.
  - PubMed
    - Ovarian cancer[tiab]
  - Ebsco databases
    - TI Ovarian cancer or AB Ovarian cancer

- Many databases also have special fields that utilize a different vocabulary or codes
Strategy #6
Learn db search rules & peculiarities

- Example from Ovid Medline
  - MeSH + subheadings
    - / eh [Ethnology]
    - / th [Therapy]
  - Publication type

- Ovid PsycINFO
  - Key Concepts
  - Classification code
  - Population Group
  - Methodology
Strategy #6
Learn db search rules & peculiarities

- Let’s get fancy: same search in 3 interfaces
  - ((Ovarian or ovaries) adj3 cancer*).ti,ab.  (OVID)
  - ((Ovarian[TIAB] OR ovaries[TIAB]) AND cancer*[TIAB])  (PUBMED)
  - TI ( (Ovarian n3 cancer*) or (ovaries n3 cancer*) ) or AB ( (Ovarian n3 cancer*) or (ovaries n3 cancer*) )  (EBSCO)
- Look at the differences in how the rules are applied depending on the interface

Why use *? The asterisk truncates terms. Any word beginning with cancer will be found: cancer, cancers, cancerous

Strategy #6
Learn db search rules & peculiarities

- List of fields is available: [http://tinyurl.com/db-search-fields](http://tinyurl.com/db-search-fields)
  - MS Excel workbook
  - In progress!
Strategy #6
Learn db search rules & peculiarities

- PubMed requires CAPITALIZED operators
  - “AND” not “and”; “OR” not “or”; “NOT” not “not”
- Search for phrases using “quotation marks”
  - Works in Google, too!

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Questions?
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