Systematic Searching
Systematic Reviews

Tomas Allen

Training Course in Sexual and Reproductive Health Research
Geneva 2010
Systematic Searching for Systematic Reviews

- Where to Begin
- Which Resources to use
- How to Create a strategy
- How to be Comprehensive
- How to be Extensive
- Test the strategy
- Documenting the search
What this course is not!
Systematic Review vs. Systematic Searching

- Deciding on the Question
- Determination of the Quality of studies
- Analysis of selected studies
- Reporting of the results
- Publishing and dissemination of the results (beyond documenting the search process)
Cochrane Collaborating Groups.

- Conducts systematic reviews.
- Extensive resources (human and financial)
- In-depth searching
- Broad searching (language/global)

http://www.cochrane.org
The Cochrane Library contains high-quality, independent evidence to inform healthcare decision-making. It includes reliable evidence from Cochrane and other systematic reviews, clinical trials, and more. Cochrane reviews bring you the combined results of the world’s best medical research studies, and are recognized as the gold standard in evidence-based health care.

http://www.thecochranelibrary.org
WHO makes the news

World Health Organization slammed by medical journal

The Lancet finds WHO neglects evidence in making health guidelines

By AP

LONDON — When developing "evidence-based" guidelines, the World Health Organization routinely forgets one key ingredient: evidence. That's the verdict from a study published in The Lancet online Tuesday.

The medical journal's criticism of WHO could shock many in the global health community, as one of WHO's main jobs is to produce guidelines on everything from fighting the spread of bird flu and malaria control to enacting anti-tobacco legislation.

"This is a pretty seismic event," Lancet editor Dr. Richard Horton, who was not involved in the research for the article. "It undermines the very purpose of WHO."
Findings: Systematic reviews and concise summaries of findings are rarely used for developing recommendations.

Panel 2: Comments by directors

“I would have liked to have had more evidence to base recommendations on. We should have conducted a literature search.”
On January 11, 2000, the HQ cabinet recommended that all WHO guidelines should be **evidence-based**. An EIP-led intercluster initiative developed this document as the recommended approach to development of WHO guidelines. At the same time, a self assessment checklist was also produced to ensure a consistent level of quality in the guidelines. Cluster note 2002/39, dated December 3, 2002, endorsed the recommended process and at the same time, mandated HTP to develop a database of guidelines which met all the criteria in the self-assessment checklist.
WHO Guidelines Review Committee

WORLD HEALTH ORGANIZATION

Information Note 16/2007 (The French version will follow)

Subject: Establishment of a WHO Guidelines Review Committee

Distribution: All Staff

Date: 09 May 2007

In response to concerns about the quality of WHO guidelines, and following up on recommendations by The Advisory Committee on Health Research (ACHR) and resolution EB120.R15 of the 120th Session of the Executive Board, this note announces the establishment of a WHO Guidelines Review Committee (GRC). The GRC will develop and implement standards and procedures for guideline development that ensure that WHO guidelines are consistent with internationally accepted best practice, including appropriate use of evidence.
Level of Evidence

- Textbooks
- Individual Research Studies
- Critically Appraised Research Studies
- Summaries of the Evidence
What are the levels of Evidence?

- I–1 Systematic review of several double-blind randomised control trials.
- I–2 One or more large double-blind randomised control trials.
- II–1 One or more well-conducted cohort studies.
- II–2 One or more well-conducted case-control studies.
- II–3 A dramatic uncontrolled experiment.
- III Expert committee sitting in review; peer leader opinion.
- IV Personal experience.
Time Factor

Start Here...

Reference Books: Overview or historical context of topic; Considered tertiary sources

Books: In-depth information about a topic; may be primary or secondary sources; published 2-5 years after completion of research

Journal Articles: Results of current research; considered primary sources; may appear as early as 6 months after research is completed

Conference Proceedings: Dissemination of ideas and initial findings among scholars, researchers or practitioners
Clarity in the Question
The Question must be Clear

- The researcher must have the question clearly defined so that the researcher can explain this to the searcher.

- The Searcher needs to translate the question into a systematic search method.

- There is always a negotiation between the researcher and the searcher.
Circle Concepts
Boolean

- AIDS
- Preventive measures
- Low Income Countries
Cochrane Handbook for Systematic Reviews of Interventions

http://www.cochrane.org/resources/handbook/

The Cochrane Collaboration
The reliable source of evidence in health care

Cochrane Handbook for Systematic Reviews of Interventions

The Cochrane Handbook for Systematic Reviews of Interventions is the official document that describes in detail the process of preparing and maintaining Cochrane systematic reviews on the effects of healthcare interventions. The current version of the Handbook is 5.0.0 (available in full in browseable format only). A Glossary is available to accompany the Handbook. The current version of the Glossary is 4.2.5.

A short summary of some of the main changes in Handbook version 5 is available as a PDF: What’s New?

See Section 2 Chapter 6
Antiretrovirals for reducing the risk of mother-to-child transmission of HIV infection

J Volmink, NL Siegfried, L van der Merwe, P Brocklehurst

Antiretrovirals for reducing the risk of mother-to-child transmission of HIV infection

This record should be cited as: Volmink J, Siegfried NL, van der Merwe L, Brocklehurst P. Antiretrovirals for reducing the risk of mother-to-child transmission of HIV infection. Cochrane Database of Systematic Reviews 2007, Issue 1. Art. No.:CD003310. DOI: 10.1002/14651858.CD003310.pub2.

Abstract

Background
Antiretroviral drugs (ARV) reduce viral replication and can reduce mother-to-child transmission of HIV either by viral load in pregnant women or through post-exposure prophylaxis in their newborns. In rich countries, highly active antiretroviral therapy (HAART) has reduced the vertical transmission rates to around 1-2%, but HAART is not...
Determine Resources to Search

The Cochrane Library

- Plain language summary
- Background
- Objectives
- Criteria for considering studies for this review
- Search methods for identifying studies
- Methods of the review
- Description of studies
- Methodological quality
- Results
- Discussion
- Authors' conclusions
- Potential conflict of interest
- Acknowledgements
- Characteristics of included studies

following electronic databases:

1. **Medline (1966 to date)** via **PubMed** on 17 February 2004 and updated on 31 January 2005 and again on 9 February 2006, using the strategy documented in **Table 01**.

   The searches conducted in 2005 and 2006 yielded 265 records in total of which we selected 29 for full article retrieval. A search in 2004 yielded 276 records but no record was kept of the number of full articles retrieved for that search.

2. **EMBASE (2000 to date)** on 5 April 2004 and updated again on 31 January 2005 and 9 February 2006 using the PUBMED strategy modified for EMBASE documented in **Table 02**.

   The searches conducted in 2005 and 2006 yielded 39 records in total of which we selected 15 for full article retrieval. A search in 2004 yielded 116 records but no record was kept of the number of full articles retrieved.

3. **AIDSsearch (1995 to date)** on 31 January 2005 and again on 9 February 2006. The database includes coverage of:

   - Conference on Retroviruses and Opportunistic Infections (1986-2004)
Use Cochrane for Search Strategy

Table 01. Search strategy for MEDLINE

<table>
<thead>
<tr>
<th>Number</th>
<th>Search terms</th>
</tr>
</thead>
<tbody>
<tr>
<td>#2</td>
<td>Antiretroviral Therapy, Highly Active[MeSH] OR Anti-Retroviral Agents[MeSH] OR Antiviral Agents[MeSH:NoExp] OR ((anti) AND (hiv[tw])) OR antiretroviral*[tw] OR ((anti) AND (retroviral*[tw])) OR HAART[tw] OR ((anti) AND (acquired immunodeficiency[tw])) OR ((anti) AND (acquired immunodeficiency[tw])) OR ((anti) AND (acquired immuno-deficiency[tw])) OR ((anti) AND (acquired immune-deficiency [tw])) OR ((anti) AND (acquired immun*) AND (deficiency[tw])) OR NEVIRAPINE OR</td>
</tr>
</tbody>
</table>
Fishing in the Right place
How the Beginner sees the Search Process
Systematic Searcher Point of View

1. Define Question
2. Select information Resources
3. Formulate query
4. Perform Search
5. Evaluate results
   - Satisfactory?
     - Yes: Record strategy & Capture Results
     - No: Return to Select information Resources

Record strategy & Capture Results
Where does one begin?

- Determine which information resources would best respond to the information you are seeking.
- What is well established about your research?
- What is new and breakthrough about your research?
- Different resources for different types of questions
Major steps to identifying research

1. Electronic databases
2. Print indexes
3. Hand searching
4. Checking reference lists
5. Identifying unpublished studies
6. Personal communication
Systematic Searching
Library Expertise

- Facilitates access to fee charging databases
- Individual search strategies for each database and each interface
- Multilingual searching
- Determine the most effective search strategy
- Expertise in obtaining "grey literature & obscure documents"
- Time efficiency due to searching on a regular basis
- Understanding "glitches" in database searching
- Manipulation of data for import/export in bibliographic management software
- Overlap and duplication of references.
Fishing for a few good articles
Fishing Trip - How to find studies?

- Very quick search on one electronic database (PubMed) and find a couple of relevant articles.

- Try to find every study that’s ever been done addressing your review’s question.
Spear fishing Technique

- Searching for the easy ones
- 1) Key word searching in PubMed using the most relevant keywords
- 2) Using references from a review article on the subject.
- 3) Subject expert provides a list of references.
Spear Fishing Searching

Problems:

– Few studies:

  • *Publication bias*: studies with dramatic results are much easier to find
  • Less information
  • Limited precision
  • Restricted conclusion
Trawling the Sea – Finding all Studies
Trawling the Sea – Finding Every Possible Study

Problems:

- Finding every study
  - Not easy and might not be possible
  - Many studies are never published
  - Published, but not indexed
  - Too much effort is needed
Search should be:

- Be sensitive
  - look in a number of different places - not single
  - Minimize bias
    - Think about finding studies that aren’t in the major sources like PubMed/MEDLINE.
  - Be efficient
    - start looking in the place you expect to have the highest yield.
Where to search?

- Studies have shown that only 30 - 80% of all known published RCTs were identifiable using MEDLINE (depending on the area or specific question)… Dickersin 1994

- According to Ulrich's Periodical Directory, there are over 20,000 active health / medical journals.

- So MEDLINE, is generally not considered adequate for a systematic review.
PubMed/ Medline
http://pubmed.gov

- By US National Library of Medicine
- **Type of Database:** Bibliographic
- Over 18,000,000 citations of both clinical and preclinical studies.
- Complementary database known as PreMEDLINE includes citations and abstracts for studies that have been published recently but not yet indexed.
- **Subject Coverage:** All Specialties of Medicine
- 60% of References contain Abstracts
EMBASE (Classic)

- Type of Database: Bibliographic
- Numbers of Journals: 3500
- Bias: European in focus
- Thesaurus: Uses own thesaurus
- Subject Coverage: Strong on Pharmaceutical and Clinical Medicine
- Materials Indexed: Letters, Editorials, Research Articles from 1974 or 1981 onwards (depending on method of access)
- Overlap with MEDLINE estimated at between 25 and 40%. The EMBASE version at [http://www.embase.com](http://www.embase.com) contains all citations from MEDLINE and EMBASE (classic) combined.
- 75% of References contain Abstracts
Other databases

- Besides Medline and EMBASE
- Some other bibliographic and full text databases that are available
- Needs a librarian or those familiar with the searches needed for systematic reviews
Databases

WHOLIS

WHOLIS is the World Health Organization library database available on the web. WHOLIS indexes all WHO publications from 1948 onwards and articles from WHO-produced journals and technical documents from 1985 to the present. An on-site card catalogue provides access to the pre-1986 technical documents. It contains bibliographic information with subject headings and, for some records, abstracts. For some records, full text links are available. An online tutorial and guidance in using WHOLIS is available.

:: Access WHOLIS
:: WHOLIS online tutorial
:: More instruction information

WHO Regional Databases

Regional health and medical databases are compiled to complement the internationally known medical indexes such as MEDLINE from the US National Library of Medicine. Although most of the significant medical periodicals published in developed countries are indexed in the MEDLINE database and similar tools, there is still a considerable amount of important and valuable medical and health documentation from countries outside the major industrialized areas which is not included. This material therefore receives less global visibility inspite of its often higher relevance for other developing countries.

The Regional medical indexes, published by or under the auspices of WHO Regional Offices give access to bibliographical information about the health material published locally. They thus add a further dimension to the retrieval of information from developed country-oriented databases.

:: Africa
:: Eastern Mediterranean
:: Latin America and Caribbean
:: South-East Asia
Developing Country Health Databases
http://www.who.int/library/databases/en/

- Africa
  http://indexmedicus.afro.who.int/
- Latin America and the Caribbean
  http://bases.bvs.br/
- South-East Asia
  http://www.hellis.org
- Eastern Mediterranean
  http://www.emro.who.int/HIS/VHSL/
- Western Pacific
  http://wprim.wpro.who.int/iah/I/index.htm
Selecting a Research Tool
Databases Versus Online Catalogues

- Scholarly "bibliographic" databases are the best tools for identifying journal articles.
- Scholarly databases can also be used to identify: Chapters in books, Books, Conference papers or Dissertations
- Remember that identifying and obtaining materials are often two different processes, and not everything found in the databases will be a "full text" document. In fact, don't be surprised if you see only abstracts for the most part.
- Online library catalogs can also be used to identify journals (but not the articles), books (but not the chapters), and dissertations. Library catalogues usually only tell you only whether a particular library owns the item, where in the library it is located, and whether it is available for loan.
- Note the above is changing for example WHOLIS is also full text.
Improving online access to medical information for low-income countries.

Aronson B.


MeSH Terms:
- Computer User Training/economics
- Developing Countries*
- Health Services Accessibility
- Income
- Information Services
- International Cooperation
- Internet*
- Publishing/economics*

PMID: 14999107 [PubMed - indexed for MEDLINE]
record 1 of 1 for search periodical title "new england Journal of medicine"

New England Journal of Medicine

ISSN: 0028-4793
Title: New England Journal of Medicine.
Abbreviated title: N Engl J Med
Publication info: Boston, Mass. : Massachusetts Medical Society.
Library holdings: 1947-, no.236-.
Subject: Medicine - periodicals.
Latest issues: HQ--VOL 356 NO 8 FEB 22, 2007; VOL 356 NO 7 FEB 15, 2007; VOL 356 NO 6 FEB 8, 2007;
OPACs – access to Grey Literature

Search Results

words or phrase "aids and prevention and who" search found 1370 titles.

Pages << 1 2 3 4 ...10 ...20 ...30 ...40 ...50 ...60 ...69 >>

#1 WC 503.4?
Details
UNAIDS.

Keep
No copies available in any library.

#2 Please see full Catalog record
Details
Scale up of HIV-related prevention, diagnosis, care and treatment for infants and children [electronic resource]: a programming framework (in press)
World Health Organization.

Keep
1 copy available at HQ in READING-RM
Creating a search strategy with a librarian
Use Cochrane for Search Methodology

following electronic databases:


   The searches conducted in 2005 and 2006 yielded 265 records in total of which we selected 29 for full article retrieval search in 2004 yielded 276 records but no record was kept of the number of full articles retrieved for that search.

2. EMBASE (2000 to date) on 5 April 2004 and updated again on 31 January 2005 and 9 February 2006 using the PUBMED strategy modified for EMBASE documented in Table 02.

   The searches conducted in 2005 and 2006 yielded 39 records in total of which we selected 15 for full article retrieval search in 2004 yielded 116 records but no record was kept of the number of full articles retrieved.

3. AIDSearch (1995 to date) on 31 January 2005 and again on 9 February 2006. The database includes coverage of following conferences:
   - Conference on Retroviruses and Opportunistic Infections (1986-2004)
Search Strategy

● Before launching into complex searching, do a few test runs or a little fishing trip.

● This will help you to identify databases and also key terms.
Developing a search strategy

- Balance between comprehensiveness and precision when developing a search strategy is necessary.
- Increasing the comprehensiveness of a search entails reducing its precision and retrieving more non-relevant articles.
Finding Pregnancy related terms


Mascola MA, Schellpfeffer MA, Kruse TK, Conway AE, Kvale KM, Katcher ML.

Bureau of Community Health Promotion, Division of Public Health, Department of Health and Family Service, Madison, WI 53701-2659, USA.

BACKGROUND: Although the risk of dying during childbirth or from complications afterward has been greatly reduced during the past 100 years, the current rate of approximately 1 death in 10,000 live births is still too high. The goal of the US Department of Health and Human Services is to reduce this rate by more than half by the year 2010. OBJECTIVE: To present Wisconsin data regarding pregnancy-associated deaths and pregnancy-related deaths. METHODS: Cases in which a woman had died during pregnancy or within 1 year of the end of her pregnancy were identified, and case-specific data were collected. The Wisconsin Maternal Mortality Review Team then conducted systematic reviews of the information, summarized issues related to maternal mortality, considered the relationship to pregnancy and factors of avoidability, and made recommendations to improve maternal health and survival. Finally, pregnancy-associated and pregnancy-related mortality ratios were calculated. RESULTS: From 1998 through 2001, 23 Wisconsin women died as a result of their pregnancy or from complications up to a year later. This gives a Wisconsin pregnancy-related mortality ratio of 8.4 per 100,000 live births. This ratio was higher in African American women and in women who smoked. The primary cause of death was embolic disease. Almost half of the pregnancy-related deaths (48%) occurred during the postpartum period and nearly one-quarter (22%) were avoidable. CONCLUSIONS: The disparity in pregnancy-related mortality ratios among ethnic groups and the finding of avoidable deaths are areas that should be targeted by health care providers and public health workers. Six areas on which to focus include the following: addressing racial disparities, assuring the performance of autopsies, lifestyle changes related to obesity and smoking, and management of embolic and cardiovascular disease, as well as postpartum hemorrhage.
Finding all the terms to describe your search

Specific food intake, fat and fiber intake, and behavioral correlates of BMI among overweight and obese members of a managed care organization.

Linde JA, Utter J, Jeffery RW, Sherwood NE, Pronk NP, Boyle RG.

Division of Epidemiology and Community Health, School of Public Health, University of Minnesota, Minneapolis, MN, USA. linde@epi.umn.edu.

ABSTRACT: BACKGROUND: The study examined correlates of body mass index (BMI) in overweight and obese members of a managed care organization seeking treatment for obesity. It assessed intake of specific foods, dietary fat or fiber, and behaviors attempted to control weight. METHODS: Participants were 508 men and 1293 women who were > 18 years and had a self-reported BMI > 27.0. This paper reports analyses of baseline and 24-month follow-up data from a randomized weight-loss trial. Cross-sectional and prospective relationships between BMI and behaviors were examined with regression analyses controlling for age and education. RESULTS: At baseline, hamburger and beef consumption were associated with higher BMI for men; for women, hamburger, fried chicken, hot dog, bacon or sausage, egg, French fry, and overall fat consumption were associated with higher BMI, while eating high fiber cereal, fruit, and overall fiber intake were associated with lower BMI. Virtually all forms of weight control behavior were reported more often in heavier people. Subscribing to exercise magazines, however, was associated with lower BMI. Decreased fat intake and increased fruit/vegetable/fiber intake over the course of the study were associated with reductions in BMI at 24 months. CONCLUSION: The same behaviors that differentiate individuals with different body weight in the general population also differentiate between individuals of different body weight at the high end of the weight distribution. Educational efforts aimed at preventing weight gain and reducing obesity might benefit from focusing on specific foods known to be associated empirically with body weight and weight change over time.

PMID: 17125525 [PubMed - in process]
Using only Title Selection


Comment on:

Fishing for more effective incentives.

Smith T, Gibbs M, Smith D.

PMID: 19150827 [PubMed - indexed for MEDLINE]

Related Articles

- Can catch shares prevent fisheries collapse? [Science. 2C]
- Diverse fisheries require diverse solutions. [Science. 2C]
- Ecology. Privatization prevents collapse of fish stocks, global analysis shows. [Science. 2C]
- Review Current problems in the management of marine fisheries. [Science. 2C]
Fishing for more effective incentives.

Smith T, Gibbs M, Smith D.

MeSH Terms:
- Animals
- Ecosystem
- Fisheries*economics
- Fisheries*methods
- Fishes*
- Humans
- Motivation*
No Abstract! What is this article about?

A chorus of disapproval.

[No authors listed]

PMID: 18668050 [PubMed - indexed for MEDLINE]
How to maximize your selection

Citation = MeSH are visible
* = Major Focus or Main Idea

WHO Library & Information Networks for Knowledge

http://www.cochrane.org/reviews/en/ab001288.html


http://ajrccm.atsjournals.org/cgi/reprint/164/9/1618

http://www.sciencedirect.com/science?ob=ArticleURL&udi=B6WWS-4PKG5TR-1&user=3824252&rdoc=1&fmt=&_orig=search&_sort=d&view=c&acct=C000055308&version=1&urlVersion=0&userid=3824252&md5=b8235375a6b1e9040e4d725fad399d84

http://www.chestjournal.org/cgi/reprint/117/5/1345

http://www3.interscience.wiley.com/cgi-bin/fulltext/118624839/PDFSTART
Was that tuna or tuner?
Where words have double meanings

The method of delivery of nutrition and physical activity information may play a role in eliciting behavior changes in adolescents.

Casazza K, Ciccarezzi M.

Florida International University, College of Health and Urban Affairs, Department of Dietetics and Nutrition, HLS 450, University Park, Miami, Florida 33199, USA. krista1313@msn.com

OBJECTIVES: Motivating adolescents to adopt proper nutrition and physical activity behaviors is important in this nation's fight to prevent obesity and chronic diseases. This study was conducted to determine which health education delivery method would elicit a greater behavior change. METHOD: The intervention was conducted in three schools (control, computer-based, and traditional education). RESULTS: Students who received the computer-based intervention showed increased knowledge (p<0.001), physical activity (p=0.001), self-efficacy (p<0.001), and social support (p<0.001), and decreased meals skipped (p<0.001). CONCLUSION: The computer-based group showed more positive behavior changes. However, future programs may be enhanced by including group discussion and individual feedback.
Text word searching problem

You search on “developing countries.” and find the following article. Looks interesting?

Community hospitals--the place of local service provision in a modernising NHS: an integrative thematic literature review.

Reading the article abstract you find:

“We included papers of any study design focussing on hospitals in which care was led principally by general practitioners or nurses. Papers from developing countries were excluded.”
Why is MeSH important to my searching.

Group activity – MeSH vs Free Text
Using MeSH in PubMed

The MeSH database

- Major Topic Headings and Explode
- Using MeSH terms
- Geographic regions
Why/What MeSH

What is MeSH?

MeSH is the acronym for "Medical Subject Headings." MeSH is the authority list of the vocabulary terms used for subject analysis of biomedical literature at NLM. MeSH vocabulary is used for indexing journal articles for MEDLINE and is also used for cataloging books and audiovisuals.

The MeSH controlled vocabulary is a distinctive feature of MEDLINE. It imposes uniformity and consistency to the indexing of biomedical literature. MeSH terms are arranged in a hierarchical categorized manner called MeSH Tree Structures and are updated annually.
Definitions are not always clear.

- Indigenous is one powerful word. In many ways, the definition within the Facebook group introduction is sufficient: "indigenous people know who they are".

Terminology changes across borders

- San
- First Nations People
- Native Americans
- Amaraya/Quechua
- Indigenous population
- Maori
- Sami
- Aboriginals
Terminology changes over time

1: **Henderson J.**

Humanity by design. Industrial designer Patricia Moore’s products focus on the rehabilitation needs of elders and of the "differently-abled".

  - PMID: 10172110 [PubMed - indexed for MEDLINE]

2: **Blatt B.**

Public policy and the education of children with special needs.

  - PMID: 4258637 [PubMed - indexed for MEDLINE]

3: **Nikaitani J.**

Raising children with special needs.

  - PMID: 18458184 [PubMed - indexed for MEDLINE]

4: **Griffin VM.**

Medical rehabilitation: challenges in managing health information of the specially challenged.

  - PMID: 10128918 [PubMed - indexed for MEDLINE]
Terminology is politically charged

- Third World ↔ First World
- Developing Countries ↔ Developed Countries
- Majority Countries ↔ Minority Countries
- South ↔ North
- Everyone Else ↔ Western World
Welcome to the PubMed Homepage. Part 3 of the tutorial will look at MeSH or Medical Subject Headings. To access the MeSH Database, click on the link on the left-hand side of the PubMed home page.
MeSH is the controlled vocabulary for indexing articles for MEDLINE/PubMed. MeSH terminology provides a consistent way to retrieve information that may use different terminology for the same concepts.

- Use the MeSH database to find MeSH Terms and build a search strategy.

MeSH database tutorials:
- Searching with the MeSH Database
- Combining MeSH Terms
- Applying Subcategories

NB. Articles in PubMed that are not on MEDLINE have no MeSH Terms assigned to their records.
The **Developing Countries** MeSH term was introduced in 1971 and is defined by the NLM, and not by the UNDP or World Bank.
Boolean Search

A \quad B

\text{AND}

A \quad B

\text{OR}

A \quad B

\text{NOT}
AND – Both concepts present

AIDS

Low Income Countries

AND= Finds results that contain both keywords.
OR – Similar concepts EITHER/OR

Low Resource Settings

Low income countries

OR = Finds results that contain either keyword
Recall – Number of articles found
Search 1 very few articles

1. "HIV Infections/prevention and control" [Major]

2. "HIV infections/prevention and control" [MeSH]

3. HIV infections [MeSH] AND "prevention and control" [Subheading]

4. (HIV infection* OR HIV infections [MeSH] ) AND (prevention OR control OR "prevention and control" [Subheading])

5. (AIDS OR HIV OR HIV infections [MeSH] ) AND ((Prevent* AND control*) OR ("prevention and control" [Subheading]))
Precision – Articles found that are relevant to the study question.

1. "HIV Infections/prevention and control"[Majr]
2. "HIV infections/prevention and control"[MeSH]
3. HIV infections[MeSH] AND "prevention and control"[Subheading]
4. (HIV infection* OR HIV infections[MeSH]) AND (prevention OR control OR "prevention and control"[Subheading])
5. (AIDS OR HIV OR HIV infections[MeSH]) AND ((Prevent* AND control*) OR ("prevention and control"[Subheading]))
The balance

Too much (not relevant to the study question)
Too little (missing important studies to the study question)

- **In Precision,** relevant articles but what do we miss

  
  Prevention of mother-to-child transmission of HTV infection: Ukraine experience to date.
  PMID: 16476684 [PubMed - indexed for MEDLINE]

- **In Recall,** what do we get that is NOT relevant

  18. Lange DE, Mutschelknauss R.
  
  [Aids for prevention of periodontal diseases]
  PMID: 4533812 [PubMed - indexed for MEDLINE]
Spear Fishing

1. Perform a keyword search on your topic (example: AIDS and Low Income Countries).

2. Find a relevant result

3. Change the Display pull-down in the gray area above the item to Citation.

4. Click on a relevant term from MeSH Terms list to search on it.
Where’s the MeSH Database?

Two Options

Drop Down Menu and select MeSH
Click on the MeSH Database in the Menu
Searching HIV finds 201 possible MeSH

1: HIV Seropositivity
Development of neutralizing antibodies in individuals who have been exposed to the human immunodeficiency virus (HIV/H III/LAV).
Year introduced: 1988

2: HIV
Human immunodeficiency virus. A non-taxonomic and historical term referring to any of two species, specifically HIV-1 and HIV-2. Prior to 1985, this was called human T-lymphotropic virus type III/lymphadenopathy-associated virus (HTLV-III/LAV) 1986-1990, it was an official species called HIV. Since 1991, HIV was no longer considered an official species name; the species were designated HIV-1 and HIV-2. Year introduced: 1988
Which MeSH to Select?

- Go to the MeSH Database
- Type a term in the search box
- Click [Go] or hit ENTER on your keyboard

Click on the hyperlinked term.

Then...
Attach subheadings to your MeSH term

Click in the checkboxes in front of subheadings for aspects of the topic you’re interested in. Add many—or none!

The hyperlink **Subheadings** shows definitions of these terms

[MeSH term]

+ Specific!
Each subheading attaches directly to its subject term.

It’s as if you were searching the phrase “prevention and control of HIV infections.”

Results from searching the term/subheading *HIV Infections/prevention and control* should be more relevant than if you had combined the separate terms *HIV AND Prevention and control*. 
A record in Citation Display format will have asterisks to show which topics are of major importance in the article. MeSH terms without asterisks represent topics covered in the article but not its main focus.

Those highlighted in Green (economics concept) are minor.
To limit results to articles in which your concept is a central idea or major focus:

1. Go to MeSH Database
2. Type in your term. Click GO/hit ENTER.
3. Click on the *most appropriate* MeSH term.
4. Click in the “Restrict to Major Topic headings” checkbox directly beneath the subheadings list, as shown below.

- [ ] HIV Infections
  Includes the spectrum of human immunodeficiency virus infections that range from asymptomatic seropositivity, complex (ARC), to acquired immunodeficiency syndrome (AIDS).
  Year introduced: 1990

*Subheadings:* This list includes those paired at least once with this heading in MEDLINE and may not reflect currently allowable combinations.

- blood
- cerebrospinal fluid
- chemically induced
- classification
- complications
- congenital
- diagnosis
- drug therapy
- economics
- embryology
- enzymology
- epidemiology
- ethology
- etiology
- genetics
- immunology
- metabolism
- microbiology
- mortality
- nursing
- parasitology
- pathology
- physiotherapy
- psychology
- radiography
- radionuclide imaging
- radiotherapy
- rehabilitation
- surgery
- ultrasonography
- urine
- veterinary
- virology

- Restrict Search to Major Topic headings only.
There is a MeSH term for Developing Countries.
1. Type in term
2. Click [Go] or hit ENTER on keyboard
3. Scan list for best term. Click on Links at its right.

The Developing Countries MeSH term was introduced in 1971 and is defined by the NLM, and not by the UNDP or World Bank.
The results of the *Developing Countries*[Mesh] search is 47671 articles (07 2007).
Developing Countries

Countries in the process of change directed toward economic growth, that is, an increase in income. The process of economic growth involves better utilization of natural and human resources, social, political, and economic structures. Year introduced: 1971

Subheadings: This list includes those paired at least once with this heading in MEDLINE and may not reflect current rules for allowable combinations.

The Developing Countries MeSH term was introduced in 1971 and is defined by the NLM, and not by the UNDP or World Bank.
In this example, we can see the Entry Terms that will map to the Developing Countries MeSH Term.
To Explode or not Explode?

- If making selections (e.g., Subheadings, etc.), use the Send to option.
- Select PubMed under the Links menu to retrieve all records for the selected MeSH terms.
- Select NLM MeSH Browser under the Links menu for additional options.

**1. Africa**

**Subheadings:** This list includes those paired at least once with this heading in MEDLINE and may not reflect current rules: allowable combinations.

- [ ] epidemiology
- [ ] ethnology

- Restrict Search to Major Topic headings only.
- [ ] Do Not Explode this term (i.e., do not include MeSH terms found below this term in the MeSH tree).
To Explode or Not to Explode?

PubMed **automatically** explodes MeSH terms.

To “unexplode”¹, click in the checkbox immediately beneath the checkbox for Major MeSH.

¹search only for articles on the general topic or those that discuss **multiple specific topics**

**Exploding** means searching for both a term and all more specific terms under it in the MeSH “tree” of terms.
Africa (as a continent) [MeSH:NOEXP]
Africa and every country [MeSH]

**Subheadings:** This list includes those paired at least once with this heading in MEDLINE and may not reflect current rules allowable combinations.

- [ ] epidemiology
- [ ] ethology

- [ ] Restrict Search to Major Topic headings only.
- [x] Do Not Explode this term (i.e., do not include MeSH terms found below this term in the MeSH tree).
Articles that address the issues of preventive measures of AIDS in low income countries?

Concept 1
Use OR to combine alternative terms and synonyms

AIDS

Concept 2
Use OR to combine alternative terms and synonyms

Low Income Countries

AND
AND = Finds results that contain both keywords.
OR = Finds results that contain either keyword

- Low Resource Settings
- Low income countries
Articles that address the issues of prevention of AIDS in developing countries??

Concept 1

Use OR to combine alternative terms and synonyms

“HIV infections” [MeSH]

OR

“HIV infection*”

OR

“AIDS”

AND

Concept 2

Use OR to combine alternative terms and synonyms

“Developing countries” [MeSH]

OR

“Africa ” [MeSH:NOExp]

OR

“low income countries”
Truncation

- You can use truncation with key words (not with MeSH)
- So to find "HIV infections" or "HIV infection", type
  - "HIV infection*" which will find both! Or "HIV infect*
  - But be careful…. Preven* =
Use WORD to build strategy

Type in the keywords you would like to include, put phrases in “quotation marks” and truncate where appropriate.
Checking the DETAILS tab

- "Developing Countries"[Mesh] OR "Africa"[Mesh] OR “low income countries” OR “low income country” OR “low resource setting*” OR “LMIC” (in PubMed)


Problem with truncating: “low income countr*”
Is “aids”[ALL Fields] retrieving too many irrelevant citations?

Query Translation:

The basic search

- Pregnancy Terms
- Obesity Terms
Finding Pregnancy related terms


Mascola MA, Schellpfeffer MA, Kruse TK, Conway AE, Kvale KM, Katcher ML.

Bureau of Community Health Promotion, Division of Public Health, Department of Health and Family Service, Madison, WI 53701-2659, USA.

BACKGROUND: Although the risk of dying during childbirth or from complications afterward has been greatly reduced during the past 100 years, the current rate of approximately 1 death in 10,000 live births is still too high. The goal of the US Department of Health and Human Services is to reduce this rate by more than half by the year 2010. OBJECTIVE: To present Wisconsin data regarding pregnancy-associated deaths and pregnancy-related deaths. METHODS: Cases in which a woman had died during pregnancy or within 1 year of the end of her pregnancy were identified, and case-specific data were collected. The Wisconsin Maternal Mortality Review Team then conducted systematic reviews of the information, summarized issues related to maternal mortality, considered the relationship to pregnancy and factors of avoidability, and made recommendations to improve maternal health and survival. Finally, pregnancy-associated and pregnancy-related mortality ratios were calculated. RESULTS: From 1998 through 2001, 23 Wisconsin women died as a result of their pregnancy or from complications up to a year later. This gives a Wisconsin pregnancy-related mortality ratio of 8.4 per 100,000 live births. This ratio was higher in African American women and in women who smoked. The primary cause of death was embolic disease. Almost half of the pregnancy-related deaths (48%) occurred during the postpartum period and nearly one-quarter (22%) were avoidable. CONCLUSIONS: The disparity in pregnancy-related mortality ratios among ethnic groups and the finding of avoidable deaths are areas that should be targeted by health care providers and public health workers. Six areas on which to focus include the following: addressing racial disparities, assuring the performance of autopsies, lifestyle changes related to obesity and smoking, and management of embolic and cardiovascular disease, as well as postpartum hemorrhage.
Finding all the terms to describe your search

Specific food intake, fat and fiber intake, and behavioral correlates of BMI among overweight and obese members of a managed care organization.

Linde JA, Utter J, Jeffery RW, Sherwood NE, Pronk NP, Boyle RG.

Division of Epidemiology and Community Health, School of Public Health, University of Minnesota, Minneapolis, MN, USA. linde@epi.umn.edu.

ABSTRACT: BACKGROUND: The study examined correlates of body mass index (BMI) in overweight and obese members of a managed care organization seeking treatment for obesity. It assessed intake of specific foods, dietary fat or fiber, and behaviors attempted to control weight. METHODS: Participants were 508 men and 1293 women who were > 18 years and had a self-reported BMI > 27.0. This paper reports analyses of baseline and 24-month follow-up data from a randomized weight-loss trial. Cross-sectional and prospective relationships between BMI and behaviors were examined with regression analyses controlling for age and education. RESULTS: At baseline, hamburger and beef consumption were associated with higher BMI for men; for women, hamburger, fried chicken, hot dog, bacon or sausage, egg, French fry, and overall fat consumption were associated with higher BMI, while eating high fiber cereal, fruit, and overall fiber intake were associated with lower BMI. Virtually all forms of weight control behavior were reported more often in heavier people. Subscribing to exercise magazines, however, was associated with lower BMI. Decreased fat intake and increased fruit/vegetable/fiber intake over the course of the study were associated with reductions in BMI at 24 months. CONCLUSION: The same behaviors that differentiate individuals with different body weight in the general population also differentiate between individuals of different body weight at the high end of the weight distribution. Educational efforts aimed at preventing weight gain and reducing obesity might benefit from focusing on specific foods known to be associated empirically with body weight and weight change over time.

PMID: 17125525 [PubMed - in process]
Is it okay to be fat if you're fit? Research suggests that physical activity may cancel out some of the bad effects of being overweight or obese.

[No authors listed]

PMID: 16526111 [PubMed - indexed for MEDLINE]
How to maximize your selection

Citation = MeSH are visible

MeSH Terms:
- Body Composition
- Exercise/physiology
- Female
- Follow-Up Studies
- Humans
- Male
- Obesity/complications*
- Obesity/mortality
- Overweight/physiology
- Physical Fitness/physiology*
Where words have double meanings

The method of delivery of nutrition and physical activity information may play a role in eliciting behavior changes in adolescents.

Casazza K, Cicazzo M.

Florida International University, College of Health and Urban Affairs, Department of Dietetics and Nutrition, HLS 450, University Park, Miami, Florida 33199, USA. krista1313@msn.com

OBJECTIVES: Motivating adolescents to adopt proper nutrition and physical activity behaviors is important in this nation’s fight to prevent obesity and chronic diseases. This study was conducted to determine which health education delivery method would elicit a greater behavior change. METHOD: The intervention was conducted in three schools (control, computer-based, and traditional education). RESULTS: Students who received the computer-based intervention showed increased knowledge (p<0.001), physical activity (p=0.001), self-efficacy (p<0.001), and social support (p<0.001), and decreased meals skipped (p<0.001). CONCLUSION: The computer-based group showed more positive behavior changes. However, future programs may be enhanced by including group discussion and individual feedback.
"Overweight"[Mesh] OR "Body Mass Index"[Mesh] OR "obesity"[All Fields] OR "obese"[All Fields]) OR "overweight"[All Fields]) OR BMI[All Fields] OR ....

How to Create a TEST set

Change Display to MEDLINE

17302638 [PMID] OR

Rates of caesarean section: analysis of global, regional and national estimates.

Rates of caesarean section are of concern in both developed and developing countries. We set out to estimate the proportion of births by caesarean
Create Search String by 12345 [PMID] OR 123457 [PMID] OR etc

Save the Search String in My NCBI
Testing the Search Strategy
Do the results measure up?
Test your Search Strategy

- Create the search strategy
- Run in the database such as PubMed
- Check to see if all previous identified studies / articles that are relevant to your question have been found using your search strategy.
- If any articles/studies are not found, examine the studies missed by the search strategy to see what MeSH, keywords or other terms could be used.
How to Test


- Search strategy **Obesity AND Pregnancy** in PubMed

- Jensen (2005) article not found

- (Identified articles) NOT (Search strategy articles) = 0  Good Search

- (Identified articles) NOT (Search strategy articles) = <0  Not Good Search
Gestational weight gain and pregnancy outcomes in 481 obese glucose-tolerant women

Jensen DM, Ovesen P, Beck-Nielsen H, Mølsted-Pedersen

Pregnancy term found, but obese in this case has used the MeSH term "Weight Gain"

MeSH Terms:
- Adult
- Appetite
- Birth Weight
- Blood Glucose/metabolism*
- Body Mass Index
- Female
- Food Preferences
- Glucose Tolerance Test
- Humans
- Infant, Newborn
- Pregnancy/blood*
- Reference Values
- Smoking
- Weight Gain*
Finding other MeSH using \[\text{[Title]} \text{ NOT } \text{[MeSH]}\] option

- **Step 1**
  - Pregnancy [title] AND Obesity [title]

- **Step 2**
  - Pregnancy [MeSH] AND Obesity [MeSH]

- **Step 3**
  - Step 1 NOT Step 2
Boolean Search

A \quad \text{AND} \quad B

A \quad \text{OR} \quad B

A \quad \text{NOT} \quad B
Medical care and pregnancy outcome after gastric bypass surgery for obesity.

Rand CS, Macgregor AM

Publication Types:
- Letter

MeSH Terms:
- Communication
- Female
- Gastric Bypass*
- Humans
- Infant, Low
- Infant, New
- Obstetrics*
- Pregnancy
- Pregnancy Outcome*
- Smoking/adverse effects

Surgical procedure in which the STOMACH is transected high on the body. The resulting small part of the SMALL INTESTINE by an end-to-side SURGICAL ANASTOMOSIS, depend surface being bypasses. This procedure is used frequently in the treatment of MORBID OBESITY.
Obesity [MeSH] OR
Overweight [MeSH]
Overweight [All Fields]
Body Mass Index
BMI [All Fields]
Obese [All Fields]
And other terms....

Pregnancy [MeSH] OR
Maternal Health Services [MeSH] OR
Childbirth [All Fields] OR
Postpartum period [MeSH]
Childbirth [All Fields] OR
Pregnancy* [All Fields]
and other terms....
Plot our your search strategy

Search Planning Form

Use this form to identify/clarify the key concepts and the scope of your research topic.
For each section, refer to the guidance notes on the following page for further explanation.

Name: ________________________________

Date search started: ________________ Date search completed: ________________

1. Your Research Topic

2. Consider how the following four categories apply to your research topic

<table>
<thead>
<tr>
<th>Patient/Population and/or Problem</th>
<th>Intervention</th>
<th>Comparison/Control (if applicable)</th>
<th>Outcomes (or Effects)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Alternative Words


WHO Library & Information Networks for Knowledge
Different Databases
Different Search Strategies
Social and behavioral determinants of consistent condom use among female commercial sex workers in Ghana.

Adu-Oppong A, Grimes RM, Ross MW, Rissel J, Kessie G

Georgia Southern University, Jian-Ping Hsu College of Public Health in Statesboro, GA 30460-8015, USA.
aaduoppong@georgasouthern.edu

This study investigated the social and behavioral predictors of consistent condom use among female commercial sex workers (FCSWs) in Ghana. Four hundred fifty street commercial sex workers were interviewed in Accra, Kumasi and Techiman. The level of condom education was very low (14%), however consistent condom use (all the time) with clients was relatively high (49.6%). Two hundred seventy-seven of the participants did not use condoms all the time.

MeSH Terms:
- Adolescent
- Adult
- Condoms/utilization*
- Data Collection
- Female
- Ghana
- Humans
- Prostitution*
- Social Behavior*

PMID: 17411418 [PubMed - indexed for MEDLINE]
Peer Reviewed

Title: Social and behavioral determinants of consistent condom use among female commercial sex workers in Ghana.

Author: Adu-Oppong A, Grimes RM, Ross MW, Rissel J, Kessie G


Abstract: This study investigated the social and behavioral predictors of consistent condom use among female commercial sex work in Ghana. Four hundred fifty street commercial sex workers were interviewed in Accra, Kumasi and Techiman. The level of condom every low (14%); however consistent condom use (all the time) with clients was relatively high (49.6%). Two-hundred seventy-seven of participants did not use condoms all the time. (author’s)

Language: English

Keywords:
GHANA | SUMMARY REPORT | INTERVIEWS | SEX WORKERS | CONDOM USE | EDUCATIONAL STATUS | BEHAVIOR | RELIGION FACTORS | Developing Countries | Africa, Western Africa, Sub-Saharan Africa | Data Collection | Research Methodology | Behavior | Risk Reduction Behavior | Socioeconomic Status | Socioeconomic Factors | Economic Factors | Sociocultural Factors | Population Characteristics | Demographic Factors | Population

Document Number: 313352
Social and behavioral determinants of consistent condom use among female workers in Ghana
AIDS Education and Prevention 2007 19:2 (160-172)

Go to CrossRef for the full text

This study investigated the social and behavioral predictors of consistent condom use among female workers (FCSWs) in Ghana. Four hundred fifty street commercial sex workers were interviewed in Accra Techiman. The level of condom education was very low (14%); however consistent condom use (all clients was relatively high (49.6%). Two hundred seventy-seven of the participants did not use condoms at all.

2007 The Guilford Press.

Associated Links

Other works by authors of this record

EMTREE drug index terms

EMTREE medical index terms
Where this term is the major focus: condom, sexual behavior
Where this term is mentioned: Ghana, adult, article, controlled study, female worker, female, human study, medical education, social aspect
Social and behavioral determinants of consistent condom use among female commercial sex workers in Ghana

Author(s): Adu-Oppong A (Adu-Oppong, Ahmed), Grimes RM (Grimes, Richard M.), Ross MW (Ross, Michael W.), Risser J (Risser, Jan), Kessie G (Kessie, Gladstone)

Source: AIDS EDUCATION AND PREVENTION Volume: 19 Issue: 2 Pages: 160-172 Published: 2007

Abstract: This study investigated the social and behavioral predictors of consistent condom use among female commercial sex workers (FCSWs) in Ghana. Four hundred fifty street commercial sex workers were interviewed in Accra, Kumasi and Techiman. The level of condom education was very low (14%); however consistent condom use (all the time) with clients was relatively high (49.5%). Two hundred seventy-seven of the participants did not use condoms all the time.

Document Type: Article

Language: English

KeyWords Plus: HIV-INFECTION; PREGNANT-WOMEN; LATEX CONDOM; RISK; PREVALENCE; TRANSMISSION; PREDICTORS; TANZANIA; DECLINE; SPREAD

Addresses: Adu-Oppong, A (reprint author), Georgia So Univ, Jiann Ping Hsu Coll Publ Hlth, POB 8015, Statesboro, GA 30460 USA
Georgia So Univ, Jiann Ping Hsu Coll Publ Hlth, Statesboro, GA 30460 USA
Univ Texas, Hlth Sci Ctr, Sch Publ Hlth, Houston, TX USA
Minist Healthy, Holy Family Hosp, Brong Ahafo, Ghana

E-mail Addresses: aaduoppong@georgiasouthern.edu
Social and behavioral determinants of consistent condom use among female commercial sex workers

Adu-Oppong, A. Grimes, R. M. Ross, M. W. Risser, J. Kessie, G.
aaduoppong@georgiasouthern.edu; Jiann-Ping Hsu College of Public Health, Georgia Southern University, P.O. Box 8015, Statesboro, GA 30460-8015, USA.
Know your Database Syntax
Syntax of Searching
All Medline different Interfaces

- PubMed – Medline
  - Ghana AND Condom AND utilization

- OVID – Medline
  exp ghana/ and condom/ut

- BIREME - Medline
  Ghana condom
The last few remaining sources
Unpublished, Grey Literature & Hand searching
Electronic Databases are not the only way to identify studies

1. Electronic databases
2. Checking reference lists
3. Print indexes
4. Hand searching
5. Identifying unpublished studies
6. Personal communication
Cutting to the Bone
Checking References Lists
Checking reference lists

Following up references from one article to another

Looking for previous reviews of the topic and checking their reference lists

Efficient means of identifying studies for possible inclusion in a review

Reference lists should never be used as a sole approach to identifying reports for a review (because of publication bias)
Web of Knowledge –
Title: The real contribution of the major risk factors to the coronary epidemics - Time to end the "only 50%" myth

Author(s): Magnus P, Beaglehole R, Rodgers A, Bennett S

Source: ARCHIVES OF INTERNAL MEDICINE 161 (22): 2557-2560 DEC 10 2001

Document Type: Editorial Material

Language: English

Cited References: 35  Times Cited: 36
HAND SEARCHING

Definition:

Hand searching involves a manual page-by-page examination of the entire contents of a journal issue to identify all eligible reports of trials.
Need for handsearching

1. Not all trial reports are included on electronic bibliographic databases

   For example: Conference proceedings are important to handsearch because individual conference. These abstracts are not included on MEDLINE and are not usually included in other databases.

2. Even when they are included, they may not be indexed with terms that allow them to be easily identified as trials
Why the need for hand searching

- Journals not indexed in databases or in print indexes
- Journals are not well indexed
  - Studies have shown that RCTs are not always properly indexed as RCTs, obvious concepts are missed in the indexing, lack of abstracts and title may not reflect clearly the topic of the article
- Journals ceased to be indexed or various other reasons
- Time delays in indexing of journals.
Find the date of entry into **PubMed**

Entry date in PubMed Publication Date

EDAT - 2003/12/09 05:00

MHDA - 2003/12/20 05:00

PST - ppublish

Identifying unpublished studies

What Is Grey Literature?

Literature that is not widely published

- Dissertations
- Theses
- Government reports
- Ongoing studies
- etc…
Clinical Trial sites

- WHO International Clinical Trials Registry
  - http://www.who.int/trialsearch/

- TrialsCentral
  - www.trialscentral.org

- Current Controlled Trials
  - www.controlled-trials.com

- clinicaltrials.gov (by NLM)
  - www.clinicaltrials.gov
Welcome

- The Search Portal is a website that enables users to search a central database that contains the trial registration data sets provided by Primary Registers.
- When a user finds a trial on the Search Portal that they are interested in, they can learn more about the trial by clicking on a link that will take them to the relevant record in the source register.
- New users are advised to read the Search Tips before commencing their search.
- The Search Portal is not a clinical trials register.
- No attempt is made to identify and tag trials that may have been registered on more than one register.

Data Sources

- Australian New Zealand Clinical Trials Registry, last data file imported on 8 April 2008
- ClinicalTrials.gov, last data file imported on 8 April 2008
- ISRCTN, last data file imported on 8 April 2008

Copyright - World Health Organization
By NLM

Provides regularly updated information about federally and privately supported clinical research in human volunteers.

*ClinicalTrials.gov* gives you information about a trial's purpose, who may participate, locations, and phone numbers for more details

[www.clinicaltrials.gov](http://www.clinicaltrials.gov)
ClinicalTrials.gov provides regularly updated information about federally and privately supported clinical research in human volunteers. ClinicalTrials.gov gives you information about a trial's purpose, who may participate, locations, and phone numbers for more details. Before searching, you may want to learn more about clinical trials.

Search Clinical Trials

Example: heart attack, Los Angeles

Search by Specific Information

Focused Search - search by disease, location, treatment, sponsor...

Browse

Browse by Condition - studies listed by disease or condition
Browse by Sponsor - studies listed by funding organization

Resource Information

Understanding Clinical Trials - information explaining and describing clinical trials
What's New - studies in the news
MEDLINEplus - authoritative consumer health information
Genetics Home Reference - consumer information about genes and genetic conditions
NIH Health Information - research supported by the National Institutes of Health

U.S. National Library of Medicine, Contact NLM Customer Service
National Institutes of Health, Department of Health & Human Services
Copyright, Privacy, Accessibility, Freedom of Information Act
OpenSIGLE combines the resources of major European information and document supply centres who joined in an association known as EAGLE: European Association for Grey Literature Exploitation.

Each centre was responsible for collecting grey literature produced in its own country and for providing details of it.
Grey Literature

http://www.driver-community.eu/

About DRIVER

DRIVER is a multi-phase effort whose vision and primary objective is to establish a cohesive, pan-European infrastructure of Digital Repositories, offering sophisticated functionality services to both researchers and the general public. It sets out to build an advanced infrastructure for the future knowledge of the European Research Area. Aimed to be complimentary to GEANT2, the successful infrastructure for computing resources, data storage and data transport, DRIVER will deliver content resources, i.e. any form of scientific output, including scientific/technical reports, working papers, pre-prints, articles and original research data. The vision is to establish the successful interoperability of both data networks and knowledge repositories as integral parts of the E-infrastructure for research and education in Europe.

With the end of the first stage of DRIVER in November 2007, a testbed system was delivered which produced a portal with Open Access content from over 70 repositories while it focussed on the infrastructure aspect, i.e., open, clearly defined interfaces to the content network, which allow any qualified service-provider to build services on top of it.

The present stage of the project, DRIVER-II, aims to introduce key innovations compared to the original DRIVER project while building on its results. The main novelties envisioned are:
Google Casting
Identifying studies using Internet Search Engines
Strategic Searching of the Internet

- Search Internet using
  - Key researchers / authors with a few select terms.
  - Search titles of journal articles in quotation marks
  - Search key stakeholders names with a few select terms
  - Search in-depth the websites of the key stakeholders
  - ** Do not rely only on the web site search engine.
    - Use the equivalent to WHO's Health Topics, Look for publications database such as WHOLIS
Remember use " marks around phrases, remove other punctuation such ´ £ ? , ; : etc
What is covered? How do we know what is covered?

- At present, limited subset of scholarly literature.
- It is large, but it’s only a small fraction of what’s available.

What journals and databases are covered? How far back? Can not browse journals

- Beta version – growing and has a great potential
- See examples in next few slides

- Mixture of Humanities and Social Sciences covered but mainly science and technology
Some conclusions about Google Scholar

- Google Scholar is a Beta version
- Improvement and better features are expected
- Quick and easy to search
- Useful research tool
- Depending on your information need, select your resource
- Valuable supplement but certainly not a substitute
- More important than ever that researchers know how to search effectively and think critically
Let's go fishing..

- Please provide feedback on this course to
- allent@who.int
- Please say what you found useful, not useful, what was clear or not clear and any other suggestions.
- Thanks
Identifying unpublished studies

Sources:
- Colleagues
- Web sites
- Informal channels of communication
- Formal letters
  - sending a list of relevant articles asking if they know of any additional studies (published or unpublished) that might be relevant
  - send the same letter to other experts or others with an interest in the area
Personal communication

To know of studies you haven’t yet found:

- Reviewers send a list of the studies they have found to the authors of those studies, asking if they are aware of any other relevant studies.

- Or write to the manufacturers of relevant drugs or devices and ask if they are aware of any other studies.
Documenting the Search Process
An example from a Journal Article

http://www.biomedcentral.com/content/pdf/1472-6963-10-65.pdf
Methods
Search strategy
The following electronic databases were searched between April and July 2008: MEDLINE, Embase, Cochrane Library, CINAHL, King’s Fund Database, IDEAS Database, and EconLit. For practical reasons such as time and financial constraints, the search was limited to publications published between January 2003 and December 2008.

Results
Eighty-five studies were included in the review, with the characteristics of the 85 included studies, including setting, sample size, study description, study focus, and primary care dimension(s).

Additional file 1: Search strategy. The strategy used in the MEDLINE search, which was adapted for use in the other databases. Click here for file [http://www.biomedcentral.com/content/supplementary/1472-6963-10-65-1.pdf]

Additional file 2: Characteristics of included studies. This table shows the characteristics of the 85 included studies, including setting, sample size, study description, study focus, and primary care dimension(s). This search strategy was an efficient method for covering the extensive primary care literature area. An advantage of this method was that it led to an overview of key primary care study results that went beyond the 5 year time restriction. Stage 2 was an open search (due to a lack of reviews) on (primary) health system performance measurement and accountability. The search strategy included a combination of text words and Medical Subject Headings (MeSH) terms relating to these domains.
Reporting of Search Strategy based on

Meta-analysis of observational studies in epidemiology: a proposal for reporting
http://jama.ama-assn.org/cgi/reprint/283/15/2008

- Qualifications of searchers
- Search strategy
- Effort to include all available studies
- Search Software
- Use of Hand Searching
- List of Citations found
- Method of addressing non-English studies
- Handling of unpublished literature
- Description of any contact with authors.
Keeping track of the References
Keeping track of identified studies

- You may find several reports of the same study.
- You may find the same report of a study in several databases.
Keeping track of identified studies

So we need:

- Some way of *keeping track of the references* we’ve looked at.
- Some way of *grouping together all the reports* of a single study.
- Also we might like to *keep a record of where you found each study* , so that you can report how useful different sources were.
Keeping track of identified studies

Some people use reference management software to do all this

- Reference Manager
- EndNote EndNoteWeb (http://www.myendnoteweb.com)
- ProCite

- Others are also available (Open Source) See the site BIBLIOPHILE
  http://bibliophile.sourceforge.net/projects.php

- One example is
  • WIKINDX – http://wikindx.sourceforge.net/index2.html

- See following for overview
EndNote Web

- A web-based tool that provides users with online storage for their references and the ability to format bibliographies in their word processor

- Compliments use of PC based Reference Manager, EndNote or Procite

- Access based on our subscription to Web of Knowledge
Import for PubMed

1. Select MEDLINE as the display format.
2. Choose the options for Show, Sort by, and File.
3. Download the file.
4. Choose to open or save the file.
Sign-Up Registration

- [http://www.myendnoteweb.com](http://www.myendnoteweb.com)
  - Quick Links – Login
  - New to EndNote Web? [Sign Up](http://www.myendnoteweb.com/EndNoteWeb/1.1/release/EndNoteWeb.html?func=showRegister&) for an account
Import references from hundreds of online bibliographic databases and organize a library of references in many languages.
Checklist

The Literature Search Process: Protocols for Researchers

Developed by the Thames Valley Literature Search Standards Group* on behalf of the Thames Valley Health Libraries Network

Version: 1.0  Issue date: July 2005  Review date: July 2006

Introduction

This document has been developed by health librarians in close partnership with the Thames Valley Research & Development Network. Its aim is to support healthcare researchers in carrying out effective literature searches according to an agreed set of recommendations. This will help ensure that research is not duplicated and that literature searches retrieve the best available evidence.

This document provides guidance for the following key steps:
- planning a literature search
- identifying key sources of information
- guidance in carrying out an effective literature search
- documenting the search process

Structured guidance and a checklist column are provided for each section so that researchers can quickly...
**Plot our your search strategy**

**Search Planning Form**

Use this form to identify/clarify the key concepts and the scope of your research topic. For each section, refer to the guidance notes on the following page for further explanation.

Name: ____________________________________________

Date search started: ________________ Date search completed: ________________

1. Your Research Topic

2. Consider how the following four categories apply to your research topic

<table>
<thead>
<tr>
<th>Patient/Population and/or Problem</th>
<th>Intervention</th>
<th>Comparison/Control (if applicable)</th>
<th>Outcomes (or Effects)</th>
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</table>

Alternative Words

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WHO Library & Information Networks for Knowledge
Keep track of where you have searched

<table>
<thead>
<tr>
<th>Guidance notes</th>
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</thead>
<tbody>
<tr>
<td>The resource checklist is divided into 3 levels: core, recommended and additional. Alongside each resource, tick the appropriate column: searched, not applicable (N/A) or unavailable.</td>
</tr>
<tr>
<td><strong>Level 1 – core resources</strong></td>
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<tr>
<td>Effective searches across these sources will help ensure that your literature search covers a significant proportion of published research.</td>
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<tr>
<td>Consider how retrospective the search needs to be, e.g. from the time when a drug was introduced; also consider whether the coverage of your source is sufficiently retrospective and/or up-to-date.</td>
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<tr>
<td>These resources should be searched as a minimum requirement unless they are not appropriate to your research topic. If there are time constraints, section a) minimum core resources should be given priority.</td>
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<tr>
<td>How far you proceed beyond Level 1 will depend on:</td>
</tr>
<tr>
<td>- The subject of your research</td>
</tr>
<tr>
<td>- The type of studies you need to locate (e.g. RCTs)</td>
</tr>
<tr>
<td>- The time available</td>
</tr>
<tr>
<td>- Availability of sources</td>
</tr>
<tr>
<td>- How essential it is to ensure your research is not duplicating research elsewhere</td>
</tr>
<tr>
<td>* Resources marked with a * are not available through the NHS core content collection or freely available on the Internet but may be accessible through a University Library or by payment of a fee.</td>
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<td>See next page for continued guidance notes.</td>
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<table>
<thead>
<tr>
<th>LEVEL 1: CORE RESOURCES</th>
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<tbody>
<tr>
<td>a) Minimum core resources:</td>
</tr>
<tr>
<td>- Cochrane Library</td>
</tr>
<tr>
<td>- Centre for Reviews and Dissemination (CRD) website for latest updates to CRD databases</td>
</tr>
<tr>
<td>- MEDLINE &amp; PREMEDLINE OR PubMed</td>
</tr>
<tr>
<td>- EMBASE</td>
</tr>
<tr>
<td>- Subject specialist databases appropriate to research topic, (contact your librarian with advice on identifying others) e.g.</td>
</tr>
<tr>
<td>a) Allied &amp; Complementary Medicine (AMED)</td>
</tr>
<tr>
<td>b) Applied Social Sciences Index &amp; Abstracts (ASSIA)*</td>
</tr>
<tr>
<td>c) British Nursing Index (BNI)</td>
</tr>
<tr>
<td>d) CareData</td>
</tr>
<tr>
<td>e) Cumulative Index to Nursing &amp; Allied Health Literature (CINAHL)</td>
</tr>
<tr>
<td>f) DH-DATA</td>
</tr>
<tr>
<td>g) King’s Fund</td>
</tr>
<tr>
<td>h) PsycINFO</td>
</tr>
<tr>
<td>i) BIOSIS*</td>
</tr>
<tr>
<td>j) Campbell Collaboration’s Social, Psychological, Educational &amp; Criminological Trials Register (C2-SPECTR)</td>
</tr>
<tr>
<td>k) ChildData *</td>
</tr>
<tr>
<td>l) Education Resources Information Center (ERIC)</td>
</tr>
<tr>
<td>- National Research Register &amp; Research Findings electronic Register (ReFeR)</td>
</tr>
<tr>
<td>- metaRegister of Controlled Trials (mRCT)</td>
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<tr>
<td>- National Library of Medicine ClinicalTrials.gov</td>
</tr>
<tr>
<td>- Guidelines sites e.g. National Institute for Health and Clinical Excellence (NICE)</td>
</tr>
<tr>
<td>- Websites of relevant associations, societies, centres of excellence, royal colleges &amp; government bodies</td>
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</tbody>
</table>
Stavudine, lamivudine and nevirapine combination therapy for treatment of HIV infection and AIDS in adults

● The regimen of nevirapine, stavudine and lamivudine is widely used as first-line therapy, and is recommended as such by the World Health Organization for so-called low-resource countries (in other words, for poor countries).

● Objectives

● To examine the efficacy of the stavudine, lamivudine and nevirapine regimen for the treatment of HIV infection and AIDS in adults.
How Can we Improve on this Strategy?

Searching Medline and Using PubMed Interface

Step 1

"stavudine" OR "lamivudine" OR "nevirapine"

Step 2

"hiv" OR "hiv infect" OR "hiv-1" OR "hiv-2" OR "Acquired immunodeficiency syndrome"

Combine Step 1 and 2
As found in Cochrane Review

- #1 STAVUDINE
- #2 LAMIVUDINE
- #3 NEVIRAPINE
- #4 #1 OR #2 OR #3
- #5 HIV
- #6 HIV INFECT*
- #7 HIV-1
- #8 HIV-2
- #9 ACQUIRED IMMUNODEFICIENCY SYNDROME
- #10 #5 OR #6 OR #7 OR #8 OR #9
- #11 #10 AND #4
Homework Assignment Day 4

- Try searching for any relevant articles in the Regional databases.
- Be creative..... where else could you find studies. (Think about http://books.google.com http://dosei.who.int and others on the following list.)
Let's go fishing .. this weekend?

- Please provide feedback on this course to
  
  - allent@who.int

- Please say what you found useful, not useful, what was clear or not clear and any other suggestions.

- Thanks