STATE UNIVERSITY OF MEDICINE AND PHARMACY "NICOLAE TESTEMITANU"

DEPARTMENT of
MANAGEMENT AND PSYCHOLOGY

SYSTEMATIC REVIEWS IN SUPPORT OF EVENTS

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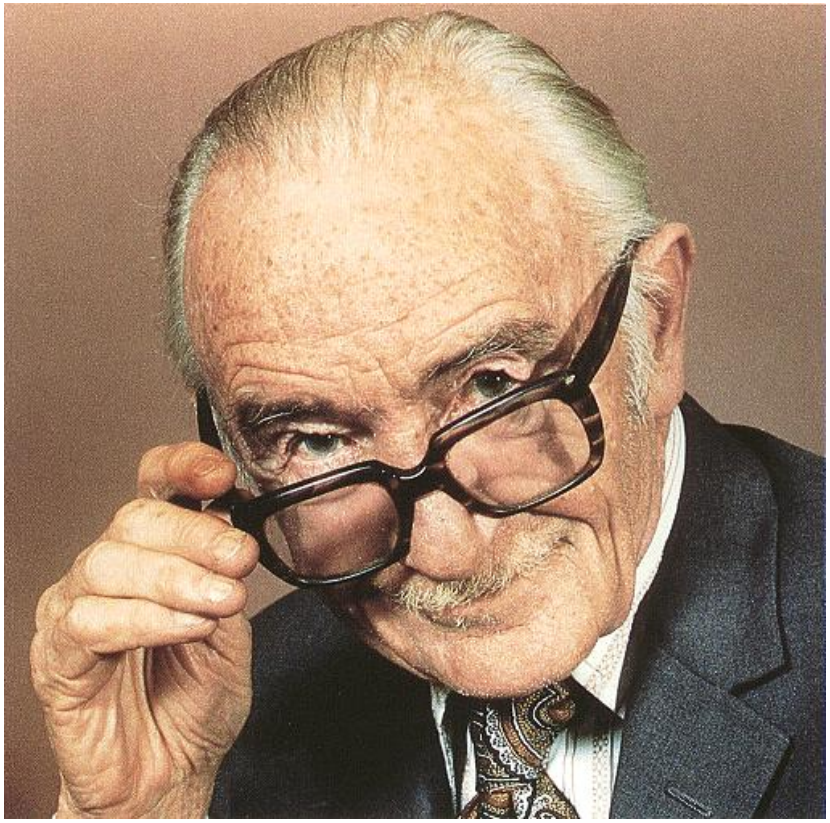
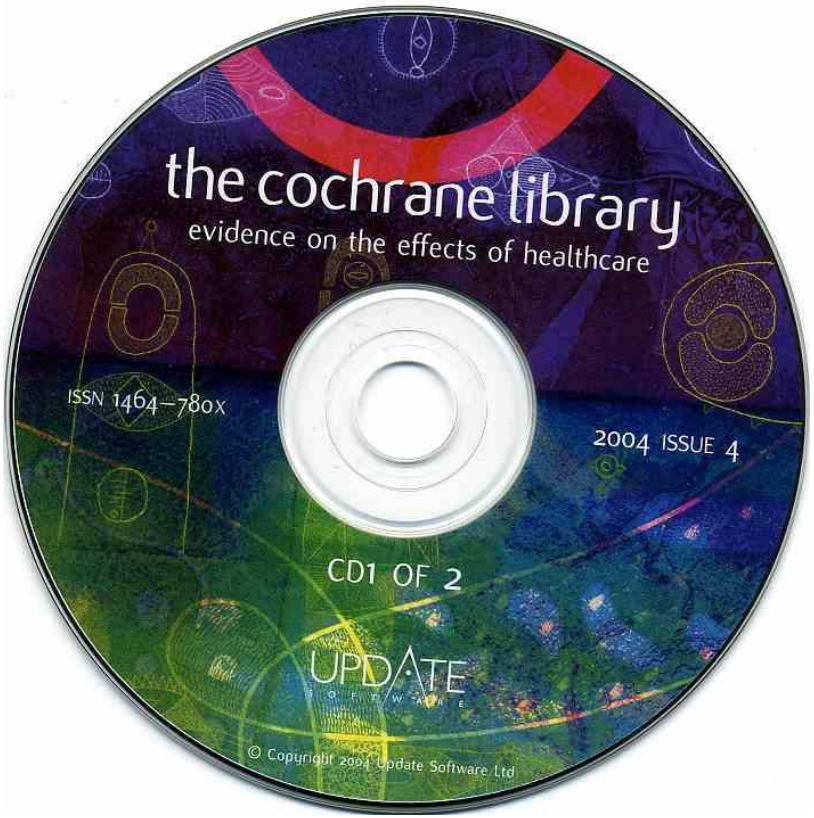
d.h.ş.m., profesor universitar

26 March 2020

Archie Cochran




the cochrane library
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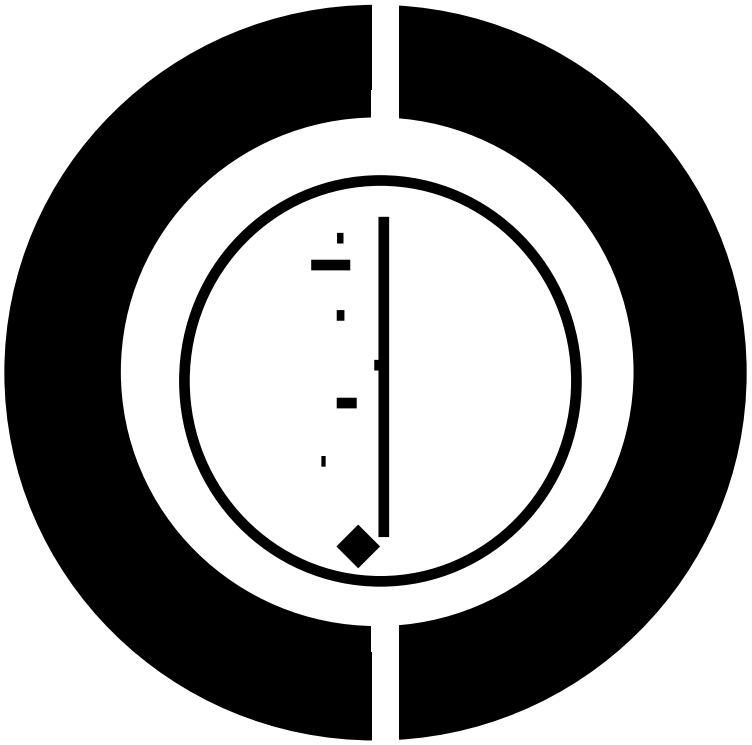
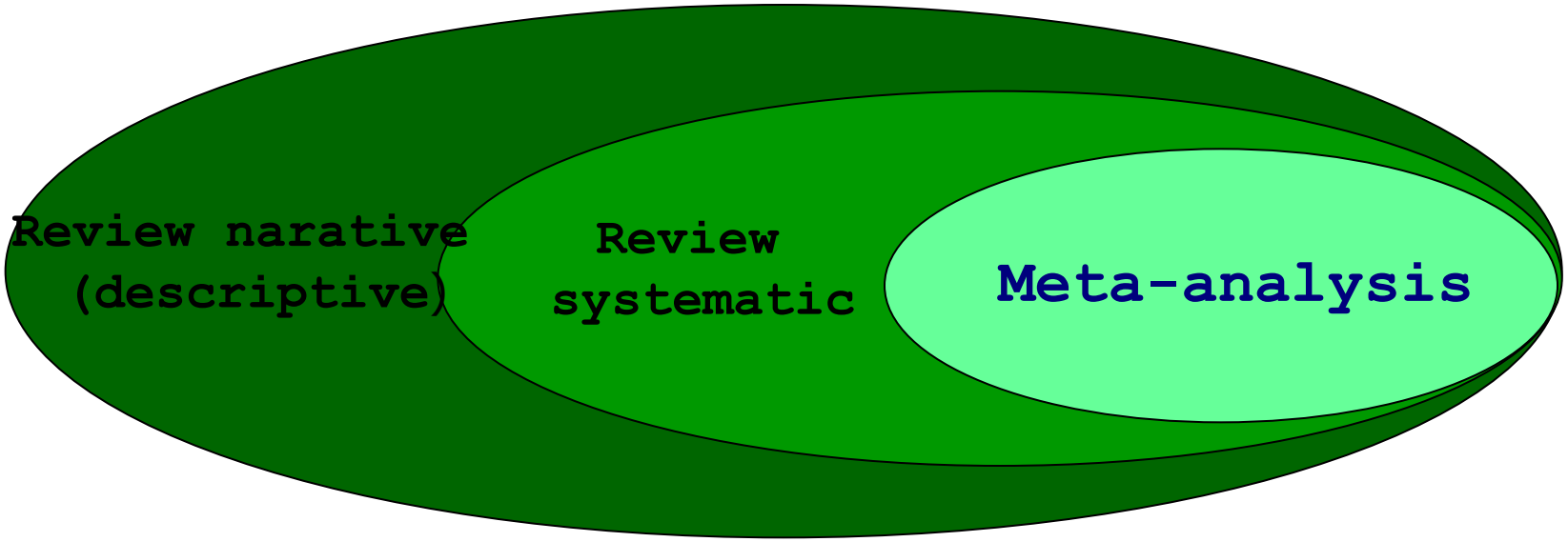


Preparing, maintaining and disseminating systematic reviews of the effects of health care

Forest plot

TYPES OF REVIEW

- Narrative (descriptive)
- Systematic
- Meta-analysis



- **Narative review (descriptive)**
- **(highest category)**

- **Most narrative reviews are unsystematic, as the author did not take in consideration all the evidences**

- **Review systematic –**

primary study review with explicit and reproducible methodology

TYPES OF REVIEW

Narative Review

- It covers many questions
- It is subject to deviations

Systematic Review

- Review of Primary Studies
- focused
- Answer a question
- It uses an exact methodology
- Minimizes deviation

SYSTEMATIC REVIEW

- Assessing the importance of research
- Evaluation of research design
- Evaluation of research results

- **Data combining - meta-analysis**

- **Significant informatics medicine**

ADVANTAGES OF SYSTEMIC REVIEWS

- The explicit method limits the error
- Summarizes the evidences
- They can reduce the lag between research and implementation
- Increasing accuracy
- Identifies differences between studies and subgroups

Meta-analysis

- **Meta-analysis –the mathematical synthesis of the results of two or more primary studies, with the purpose to increase the precision of the results**

Systematic Review/meta-analysis

SR

- Review of primary studies with correct and reproducible methodology
- Qualitative review

MA

- Mathematical analysis of several similar primary studies with the purpose of increasing the validity / accuracy of the results
- Quantitative review

SystematicReview /Meta-analysis

- **In 1966 Nobel Prize winner - Prof. L. Paling published a review about the reduction of IRVA by the administration of ascorbic acid** [Paling L. How to live longer and feel better. New York: Freeman; 1986].

- **In 1992, meta-analysis was published on the same issue that did not confirm L. Paling's conclusions**

[Kleijnen J., and Knipschild P. The comprehensiveness of Medline and Embase computer searches. Searches for controlled trials of homoepathy, ascorbic acid for common cold and ginkgo biloba for cerebral insufficiency and intermittant claudication. PharmWekbl (Sci) 1992;14:316—20].

META-ANALYSIS OF TYPE I

- **Helps solve medical controversy caused by differences in studies**
- **Being an inexpensive alternative to bulky randomized trials**
- **I can "modify" health policy**

META-ANALYSIS OF TYPE II

- **is useful for designing future studies by systematically identifying patients with important outcomes and study characteristics based on previous materials**

STEPS OF META-ANALYSIS

1. **Identification**
2. **selection**
3. **extracting**
4. **Analyze**

1. IDENTIFICATION

- **The first step in a meta-analysis is to identify all relevant articles to your subject**

NAVIGATION OF SOURCES

1. ELECTRONIC DATABASES

- The Specialized Register of the Cochrane Dementia and Cognitive
- Improvement Group
- Cochrane Central Register of Controlled Trials (CENTRAL)
- MEDLINE
- EMBASE
- PsycINFO (a database ofpsychological literature)
- CINAHL
- SIGLE (Grey Literature in Europe)
- LILACS (Latin American and Caribbean Health Science Literature)

NAVIGATION OF SOURCES

2. ELECTRONIC DATABASES OF CONFERENCE ABSTRACTS

- **ISTP (Index to Scientificand Technical Proceedings)**
- **INSIDE**
- **(British Library Database of Conference Proceedings and Journals)**

NAVIGATION OF SOURCES

3. ELECTRONIC DATABASES OF THESES

- **Index to Theses (formerly ASLIB) (United Kingdom and Ireland theses)**
- **Australian Digital Theses Program**
- **Canadian Theses and Dissertations**
- **DATAD - Database of African Theses and Dissertations**

- **MEDLINE –the electronic database of the National Library of Medicine, USA**
- **It is an excellent starting point, not the only source of information**
- **MEDLINE indexes about 4100 journals, dating from 1966 to the present**

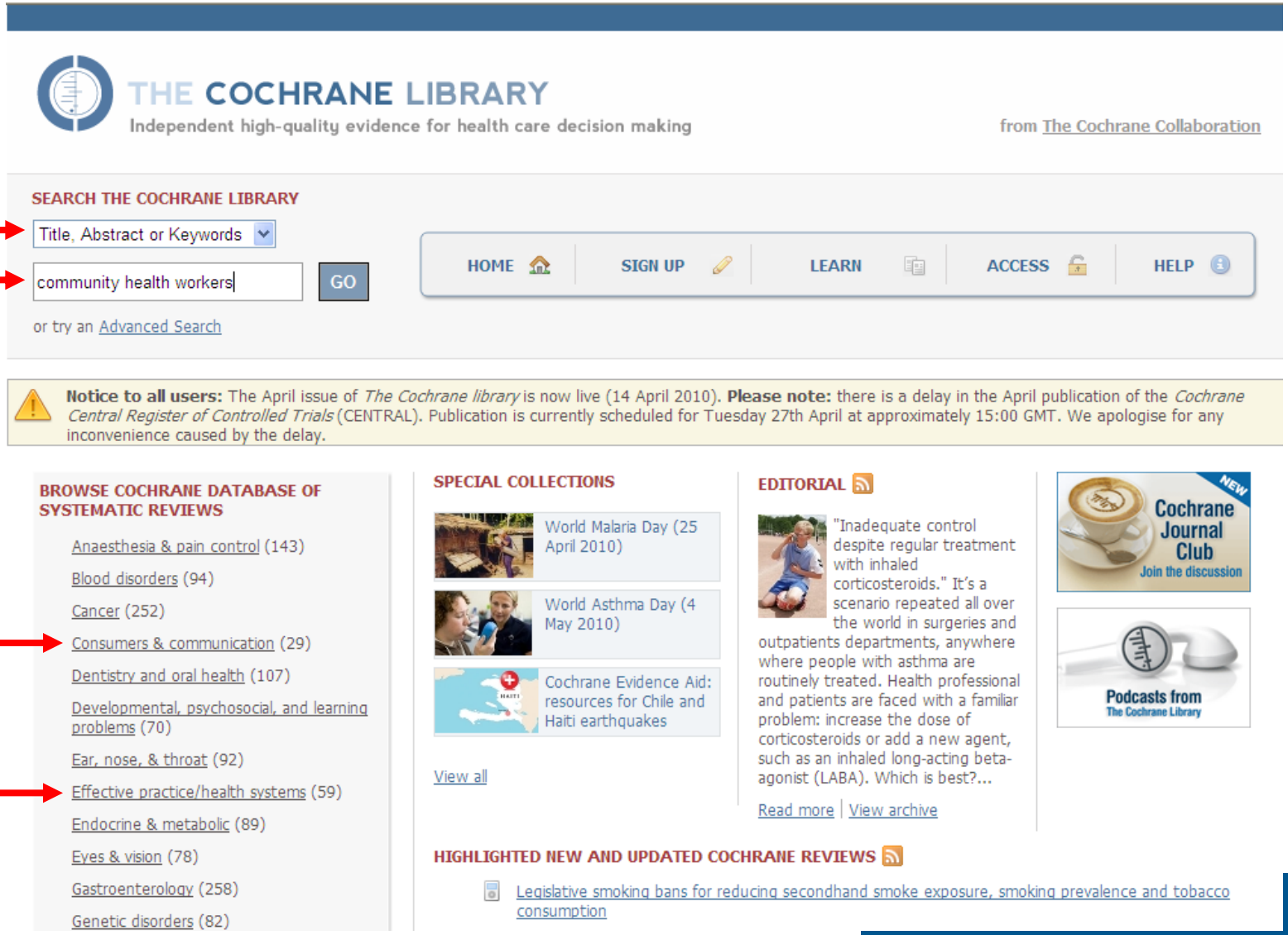
Cochrane Registry

a.1993

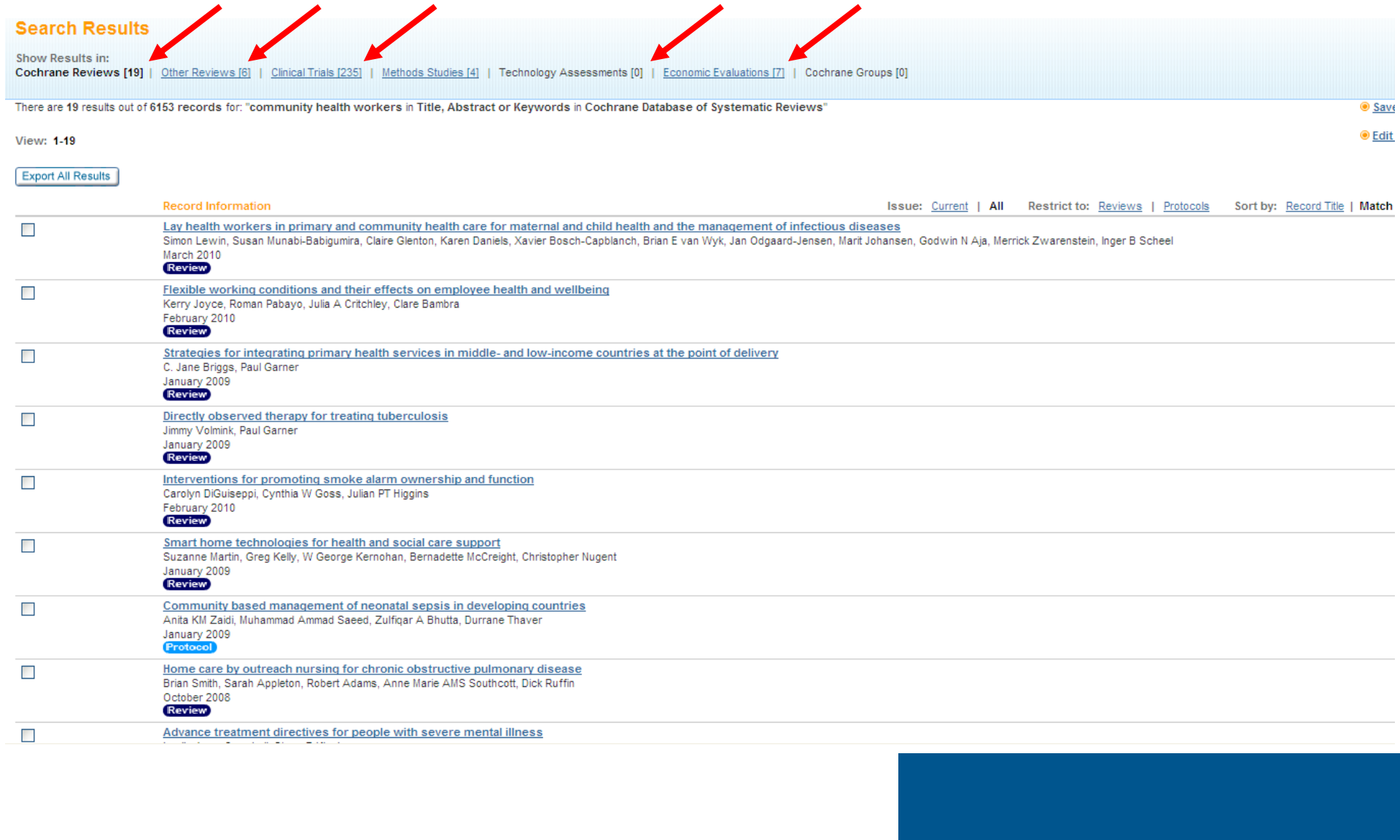
It is an important source for meta-analysis

The registry includes summaries of more than 160 thousand studies

The Cochrane Library



The Cochrane Library



Search Results

Show Results in:
Cochrane Reviews [19] | Other Reviews [6] | Clinical Trials [235] | Methods Studies [4] | Technology Assessments [0] | Economic Evaluations [7] | Cochrane Groups [0]

There are **19** results out of **6153 records** for: "**community health workers** in **Title, Abstract or Keywords** in **Cochrane Database of Systematic Reviews**"

Save

Edit

View: **1-19**

Export All Results

Record Information — Issue: Current | All — Restrict to: Reviews | Protocols — Sort by: Record Title | Match

1. **Lay health workers in primary and community health care for maternal and child health and the management of infectious diseases**
   Simon Lewin, Susan Munabi-Babigumira, Claire Glenton, Karen Daniels, Xavier Bosch-Capblanch, Brian E van Wyk, Jan Odgaard-Jensen, Marit Johansen, Godwin N Aja, Merrick Zwarenstein, Inger B Scheel
   March 2010
   Review

2. **Flexible working conditions and their effects on employee health and wellbeing**
   Kerry Joyce, Roman Pabayo, Julia A Critchley, Clare Bambra
   February 2010
   Review

3. **Strategies for integrating primary health services in middle- and low-income countries at the point of delivery**
   C. Jane Briggs, Paul Garner
   January 2009
   Review

4. **Directly observed therapy for treating tuberculosis**
   Jimmy Volmink, Paul Garner
   January 2009
   Review

5. **Interventions for promoting smoke alarm ownership and function**
   Carolyn DiGuiseppi, Cynthia W Goss, Julian PT Higgins
   February 2010
   Review

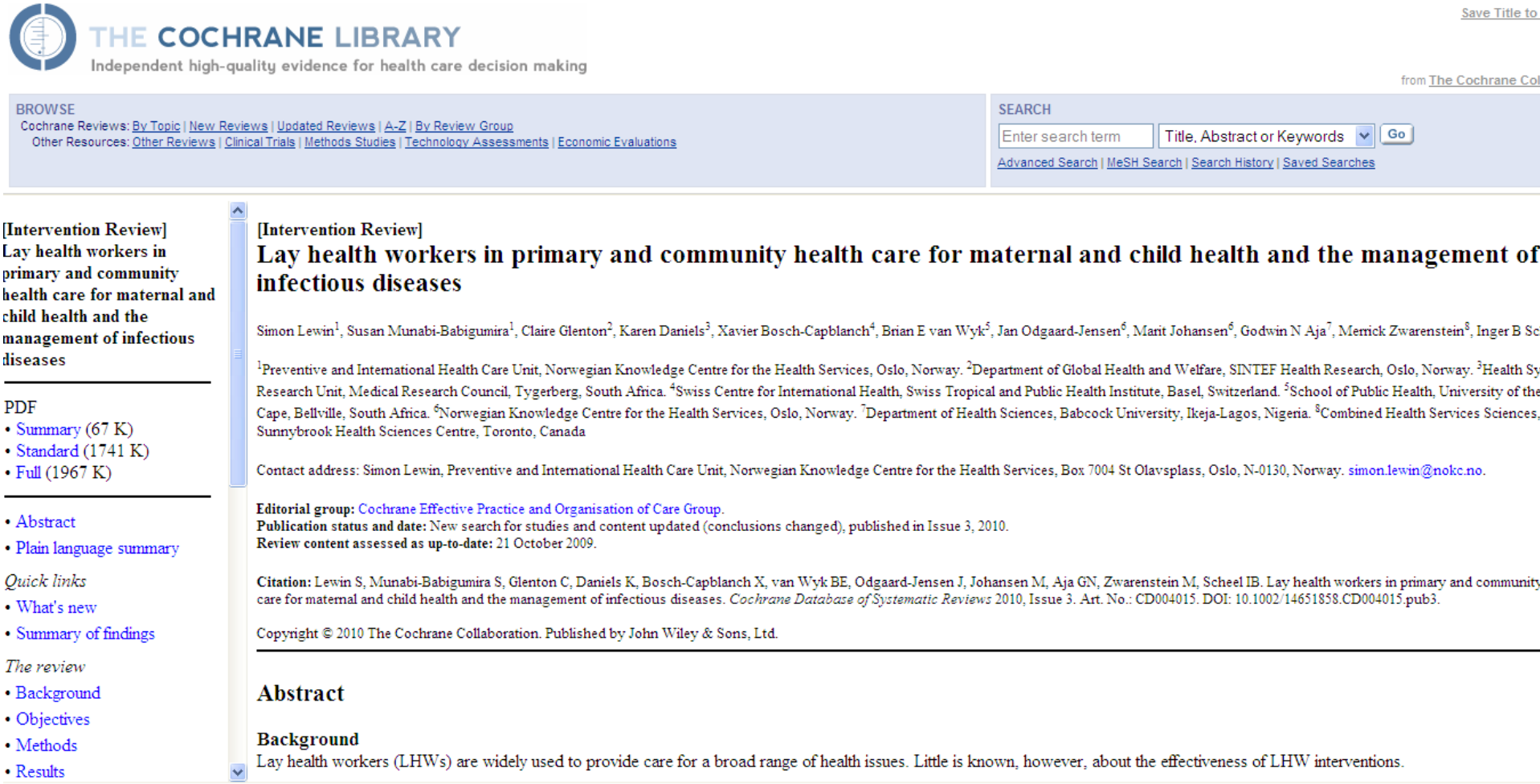
6. **Smart home technologies for health and social care support**
   Suzanne Martin, Greg Kelly, W George Kernohan, Bernadette McCreight, Christopher Nugent
   January 2009
   Review

7. **Community based management of neonatal sepsis in developing countries**
   Anita KM Zaidi, Muhammad Ammad Saeed, Zulfiqar A Bhutta, Durrane Thaver
   January 2009
   Protocol

8. **Home care by outreach nursing for chronic obstructive pulmonary disease**
   Brian Smith, Sarah Appleton, Robert Adams, Anne Marie AMS Southcott, Dick Ruffin
   October 2008
   Review

9. **Advance treatment directives for people with severe mental illness**

The Cochrane Library



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Independent high-quality evidence for health care decision making

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BROWSE
Cochrane Reviews: By Topic | New Reviews | Updated Reviews | A-Z | By Review Group
Other Resources: Other Reviews | Clinical Trials | Methods Studies | Technology Assessments | Economic Evaluations

SEARCH
Enter search term | Title, Abstract or Keywords | Go
Advanced Search | MeSH Search | Search History | Saved Searches

[Intervention Review]
Lay health workers in primary and community health care for maternal and child health and the management of infectious diseases

PDF
- Summary (67 K)
- Standard (1741 K)
- Full (1967 K)

- Abstract
- Plain language summary

Quick links
- What's new
- Summary of findings

The review
- Background
- Objectives
- Methods
- Results

[Intervention Review]

Lay health workers in primary and community health care for maternal and child health and the management of infectious diseases

Simon Lewin[1], Susan Munabi-Babigumira[1], Claire Glenton[2], Karen Daniels[3], Xavier Bosch-Capblanch[4], Brian E van Wyk[5], Jan Odgaard-Jensen[6], Marit Johansen[6], Godwin N Aja[7], Merrick Zwarenstein[8], Inger B Sc

[1]Preventive and International Health Care Unit, Norwegian Knowledge Centre for the Health Services, Oslo, Norway. [2]Department of Global Health and Welfare, SINTEF Health Research, Oslo, Norway. [3]Health Sy Research Unit, Medical Research Council, Tygerberg, South Africa. [4]Swiss Centre for International Health, Swiss Tropical and Public Health Institute, Basel, Switzerland. [5]School of Public Health, University of the Cape, Bellville, South Africa. [6]Norwegian Knowledge Centre for the Health Services, Oslo, Norway. [7]Department of Health Sciences, Babcock University, Ikeja-Lagos, Nigeria. [8]Combined Health Services Sciences, Sunnybrook Health Sciences Centre, Toronto, Canada

Contact address: Simon Lewin, Preventive and International Health Care Unit, Norwegian Knowledge Centre for the Health Services, Box 7004 St Olavsplass, Oslo, N-0130, Norway. simon.lewin@nokc.no.

Editorial group: Cochrane Effective Practice and Organisation of Care Group.
Publication status and date: New search for studies and content updated (conclusions changed), published in Issue 3, 2010.
Review content assessed as up-to-date: 21 October 2009.

Citation: Lewin S, Munabi-Babigumira S, Glenton C, Daniels K, Bosch-Capblanch X, van Wyk BE, Odgaard-Jensen J, Johansen M, Aja GN, Zwarenstein M, Scheel IB. Lay health workers in primary and community care for maternal and child health and the management of infectious diseases. *Cochrane Database of Systematic Reviews* 2010, Issue 3. Art. No.: CD004015. DOI: 10.1002/14651858.CD004015.pub3.

Abstract

Background

Lay health workers (LHWs) are widely used to provide care for a broad range of health issues. Little is known, however, about the effectiveness of LHW interventions.

The Cochrane Library

Outcome effectiveness of community health workers: an integrative literature review (Structured abstract)

Centre for Reviews and Dissemination

Database of Abstracts of Reviews of Effects 2010 Issue 2

Original article: Swider S M. Outcome effectiveness of community health workers: an integrative literature review. *Public Health Nursing*.2002;**19**(1):11-20. Links

Authors' objectives

To review the database literature on the effectiveness of community health workers (CHWs) in community health promotion and disease prevention efforts.

Searching

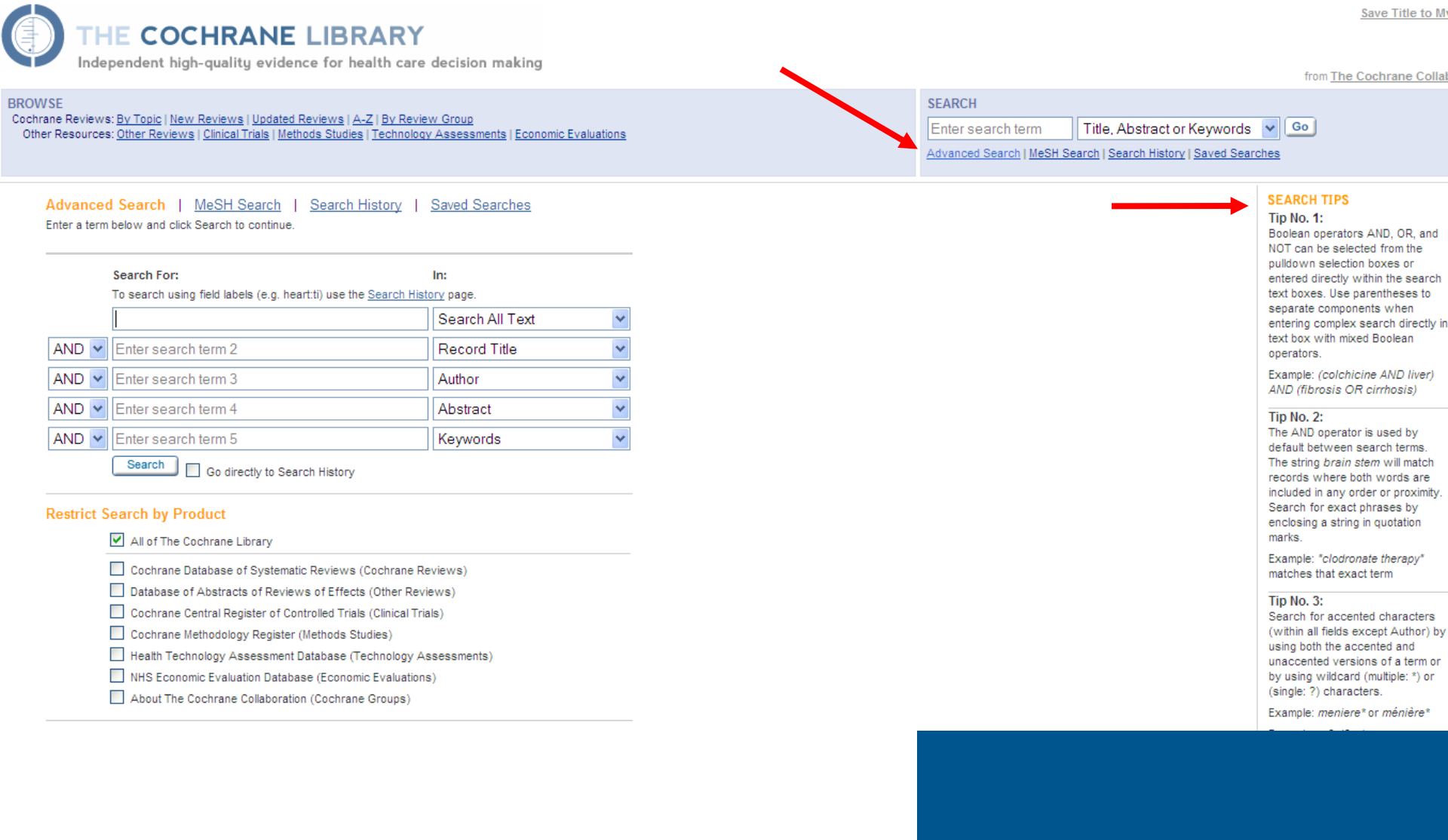
MEDLINE (from 1981 to 1999), HealthStar (from 1975 to 1999), CINAHL (from 1982 to 1999), EBM Reviews: Best Evidence (from 1991 to 1999), PsycINFO (from 1984 to 1999)
PubMed (from 1980 to 1999) were searched. The search terms were not listed. It is implied that only English language studies were included in the review.

Study selection: study designs

Studies of any design seem to have been eligible for inclusion in the review. The included studies had the following designs: cross-sectional or survey; retrospective; randomised controlled tri
(RCTs); 'quasi-experimental'.

Study selection: specific interventions

The Cochrane Library



Index Medicus

- **It can be just as useful when it is important to research articles published before 1966**

PubMed


PubMed.gov
U.S. National Library of Medicine
National Institutes of Health
Search: PubMed
Limits
Advanced search
Help
Search
Clear
Welcome to PubMed
PubMed comprises more than 19 million citations for biomedical articles from MEDLINE and life science journals. Citations may include links to full-text articles from PubMed Central or publisher web sites.
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PubMed Quick Start
New and Noteworthy
PubMed Tutorials
Full Text Articles
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Single Citation Matcher
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Clinical Queries
Topic-Specific Queries

PubMed

PubMed Clinical Queries

This page provides the following specialized PubMed searches for clinicians:

- Search by Clinical Study Category
- Find Systematic Reviews
- Medical Genetics Searches

Results of searches on these pages are limited to specific clinical research areas. For comprehensive searches, use PubMed directly.

Search by Clinical Study Category

This search finds citations that correspond to a specific clinical study category. The search may be either broad and sensitive or narrow and specific. The search filters are based on the work of Haynes RB et al. See the filter table for details.

Search [ ] Go

Category	Scope
○ etiology	◉ narrow, specific search
○ diagnosis	○ broad, sensitive search
◉ therapy	
○ prognosis	
○ clinical prediction guides	

Find Systematic Reviews

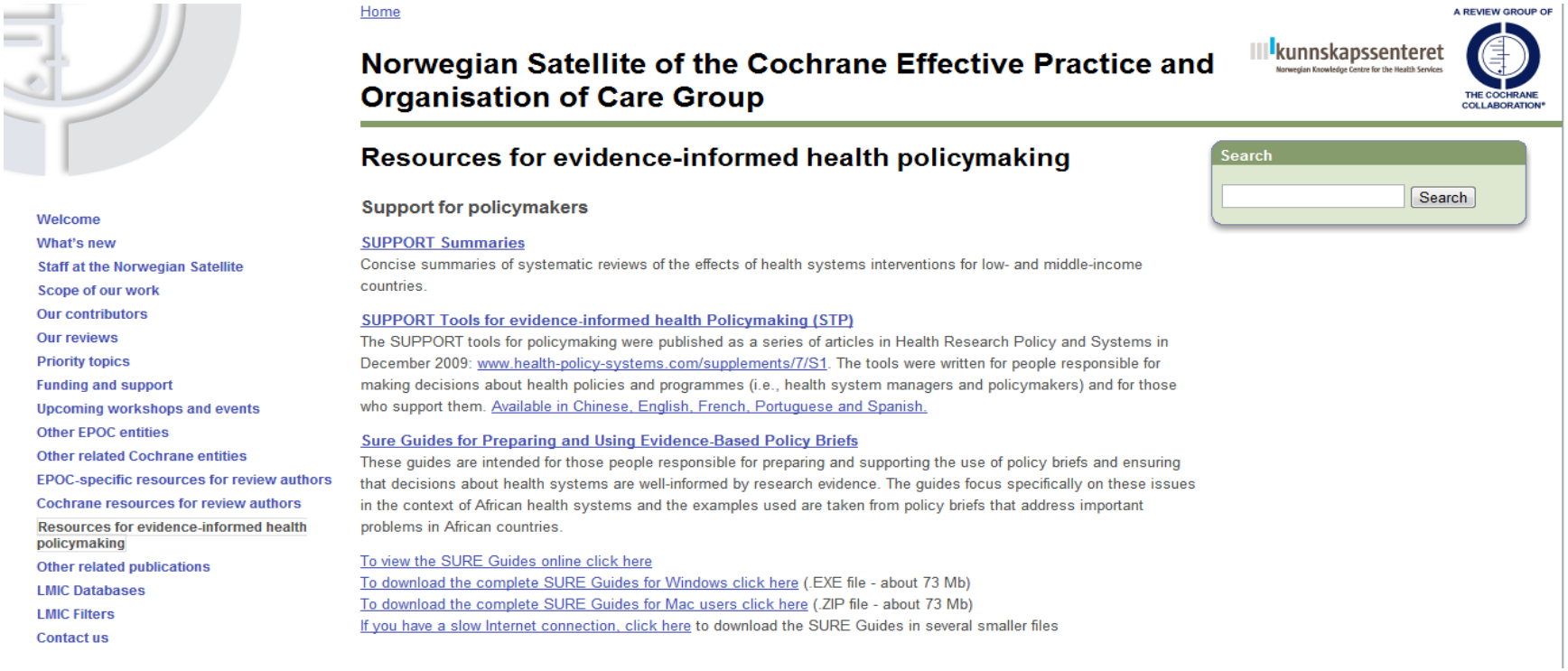
For your topic(s) of interest, this search finds citations for systematic reviews, meta-analyses, reviews of clinical trials, evidence-based medicine, consensus development conferences, an guidelines.

For more information, see Help. See also related sources for systematic review searching.

Search [task shifting] Go

NAVIGATION OF SOURCES

http://epocoslo.cochrane.org/resources-evidence-informed-health-policymaking



NAVIGATION OF SOURCES

http://www.support-collaboration.org/supporttool.htm

SUPPORT Tools for evidence-informed health Policymaking (STP)

Report from Norwegian Knowledge Centre for the Health Services
(Nasjonalt kunnskapssenter for helsetjenesten) No 4–2010

NAVIGATION OF SOURCES

http://global.evipnet.org/SURE-Guides/

2. SELECTION

- **Once a large number of studies have been collected with the help of a meta-analysis, then it is important to select the correct studies!**

- **There is a variety of possible inclusion criteria (also called "eligibility")**

2. SELECTION

- **If the study includes sufficient information for an analysis (standard deviation or standard error outside the fixed value)**

- **Year of study: if**

  the typical drug technology or dosage regimen has changed

2. SELECTION

- **Design of the study (only randomized controlled trials, particularly in the case of therapeutic trials)**

- **Sample size - Very small studies (with a small sample) may be unrepresentative**

2. SELECTION

- **Age of the patient (adults only, or just over 60 years)**

- **Circumstances for deployment (emergency service, ambulatory, hospital)**

3. EXTRACTION

- **Having identified the appropriate group of studies, at the next stage, the author should extract the relevant data from each study**

3. EXTRACTION

- **Sources of potential errors in data extraction**

- **The article may be incorrect due to typographical or drafting mistakes**
- **Table data may be interpreted incorrectly**
- **Errors can occur from the beginning or during data extraction**

"MEASURES" TO MINIMIZE ERRORS

- Two reviewers will participate in the meta-analysis
- The third reviewer or an institution may also be included
- A "joint session" to resolve divergences

"MEASURES" TO MINIMIZE ERRORS

- **Appoint reviewers with the experience of "processing" articles**
- **Compare the abstract and text to identify some "mismatches"**

"MEASURES" TO MINIMIZE ERRORS

- **Which Program was used for data analysis**
- **The results of the data extraction, including the percentage match, are reported**

4. ANALYSIS

- **There are many controversies in the analysis of meta-analysis**
- **Homogeneity and heterogeneity describe the degree of variability between studies in the comparison group**

4. ANALYSIS

- It is more appropriate to combine the results of the homogeneous study group
- Contrary to the combination of results from heterogeneous studies
- As a homogeneity test (to establish homogeneity of studies), the statistical test "ksi-square"

4. ANALYSIS

- **Fixed effects models - in studies included in a revium: interventions, patients, and effects measurements are similar**
- **Their results must be identical, and differences can only be conditioned by variations within the study**

4. ANALYSIS

- **Random effects patterns - studies included in a revium are randomly selected, being an extract from a multitude of possible studies**

ASSESSING THE RELEVANCE OF A META ANALYSIS 1.

Basic meta-analysis evaluation questions

1. **Can the results change my practice if they are valid?**
2. **Are the results important to my patients?**
3. **Are the results valid?**

ASSESSING THE RELEVANCE OF A META ANALYSIS 2.

- **A study that meets these three criteria is a POEM (Patient Oriented Evidence that Matters, Dovezi Importante în Baza Rezultatelor Obţinute de la Pacient)**

EVALUATION OF THE VALIDITY OF A META ANALYSIS 1.

1. **Did the authors correctly formulate the clinical question?**
2. **Did the inclusion criteria for selecting articles be appropriate?**
3. **Have any relevant studies been omitted?**

EVALUATION OF THE VALIDITY OF A META ANALYSIS 2.

4. Has been assessed the validity of the included studies (the quality of the study)?
5. Was reproducible the trial evaluation (data extraction)?
6. Were the results of the studies similar (homogeneity)?

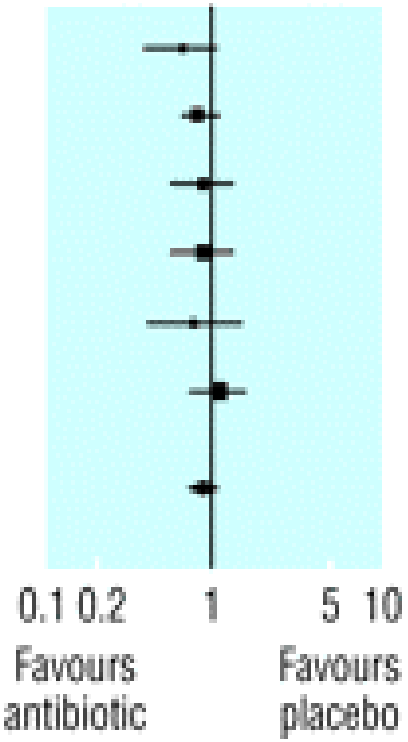
INTERPRETATION OF THE RESULTS OF A META ANALYSIS

- RR
- CI
- Chi-square

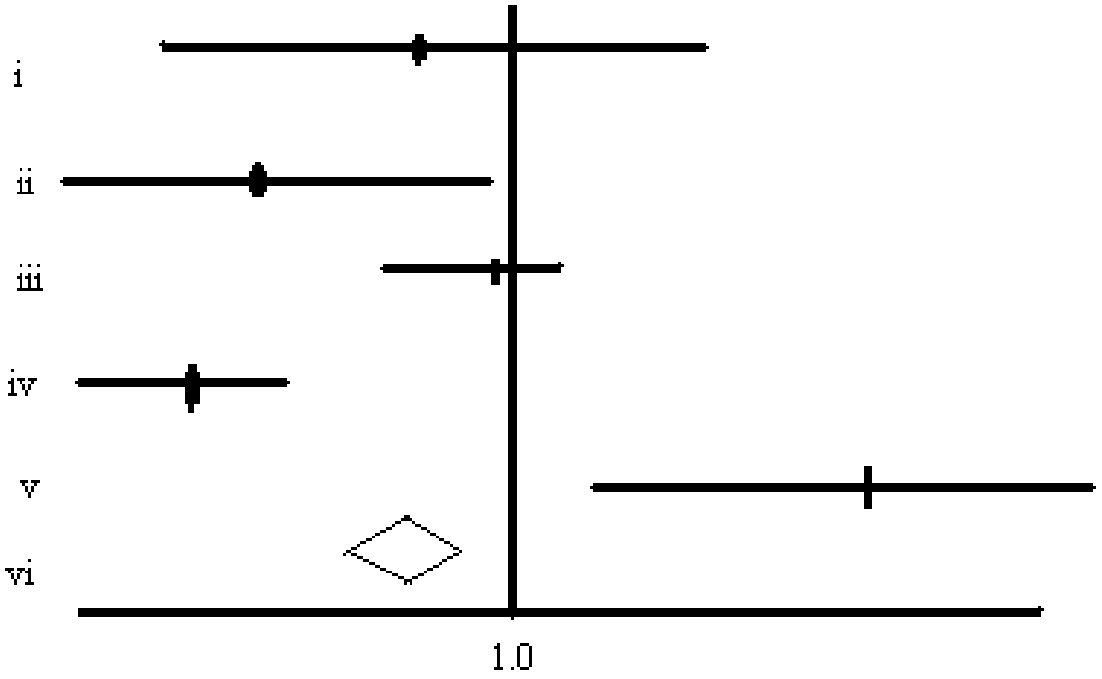
INTERPRETARE REZULTATELOR UNEI METAANALIZE

Proportion of subjects with productive cough at follow up

Study	Antibiotic	Placebo	Relative risk (95% CI) random effects model	Weight (%)	Relative risk (95% CI) random effects model
Dunlay et al[25]	10/21	17/24		9.6	0.67 (0.40 to 1.13)
King et al[27]	28/41	27/31		41.3	0.78 (0.61 to 1.01)
Stephenson (unpublished)	24/81	27/82		12.3	0.90 (0.57 to 1.42)
Stott and West[21]	30/104	32/103		14.7	0.93 (0.61 to 1.41)
Verheij et al[26]	13/72	16/72		6.0	0.81 (0.42 to 1.56)
Williamson[23]	23/37	18/32		16.3	1.11 (0.74 to 1.64)
Total (95% CI)	128/356	137/344		100.0	0.85 (0.73 to 1.00)
χ^2=3.21, df=5, Z=1.94					



Forest Plot

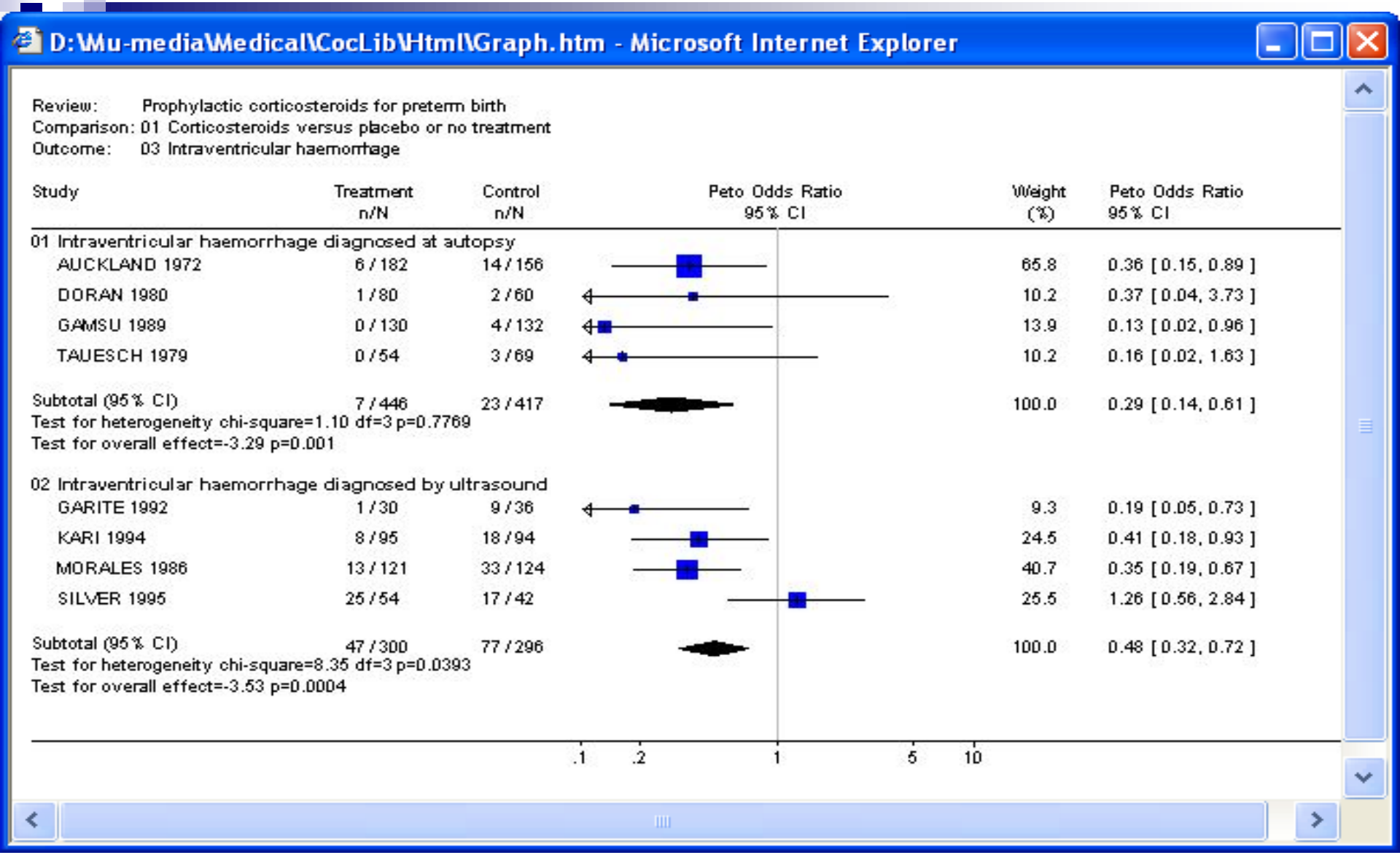


Intervention Group does BETTER

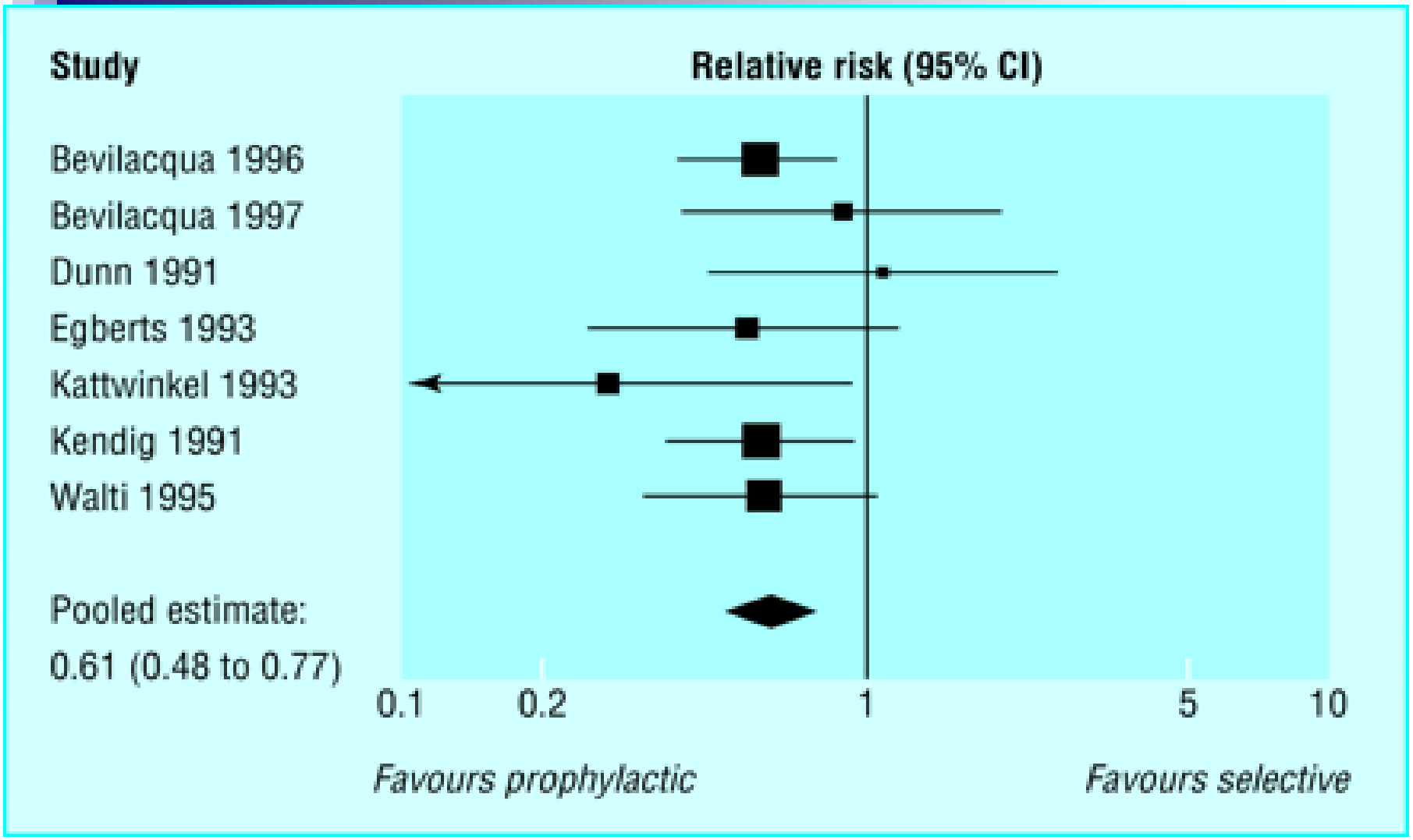
Line of no effect

Control Group does BETTER

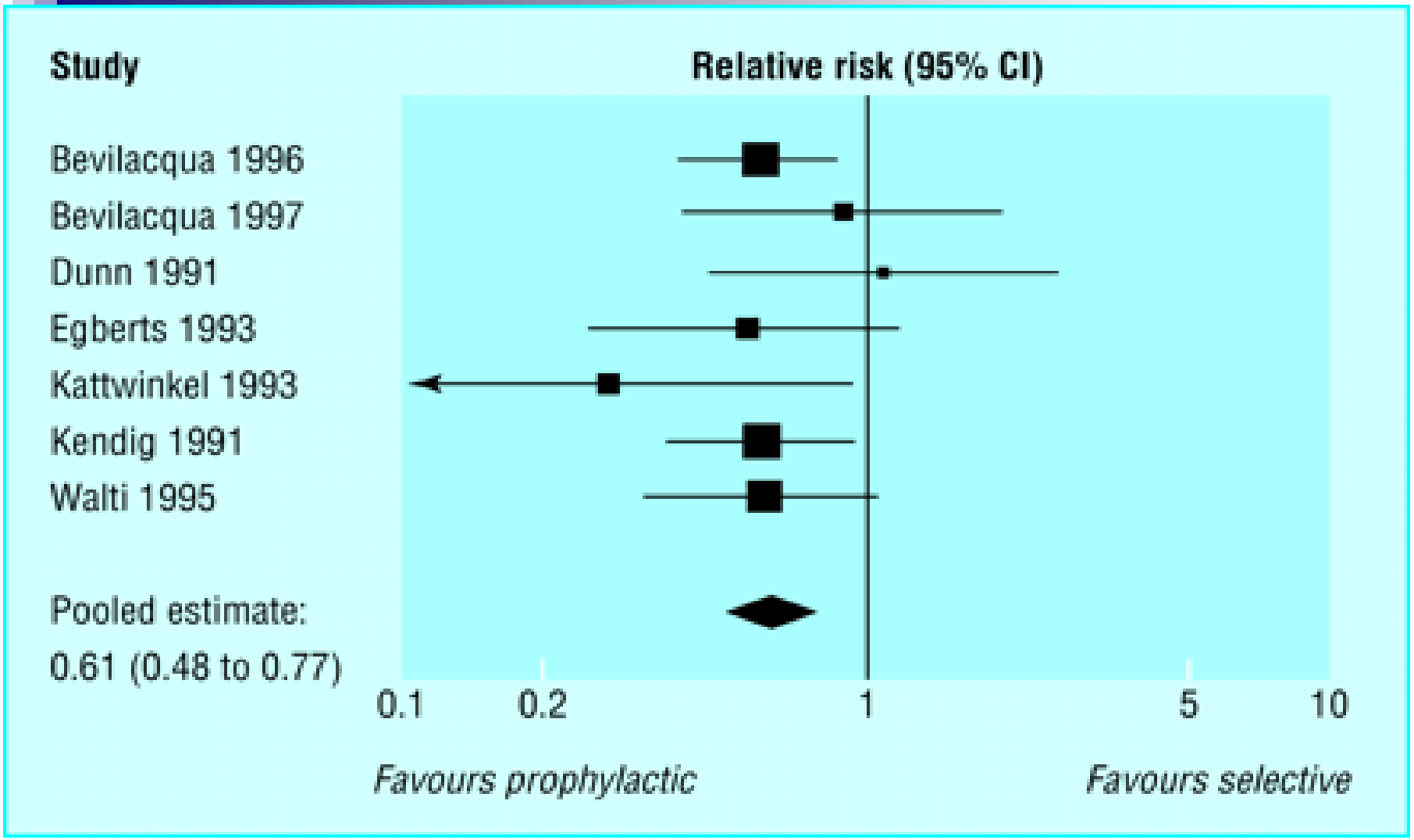
NB: Horizontal scale may be logarithmic.



Crowley P. Prophylactic corticosteroids for preterm birth (Cochrane Review). In: *The Cochrane Library*, Issue 3, 2004. Chichester, UK: John Wiley & Sons, Ltd



Meta-analysis of prophylactic versus selective use of surfactant to prevent mortality in preterm infants. Adapted from Soll et al. *Cochrane Database Syst Rev* 2003;(4): CD000510



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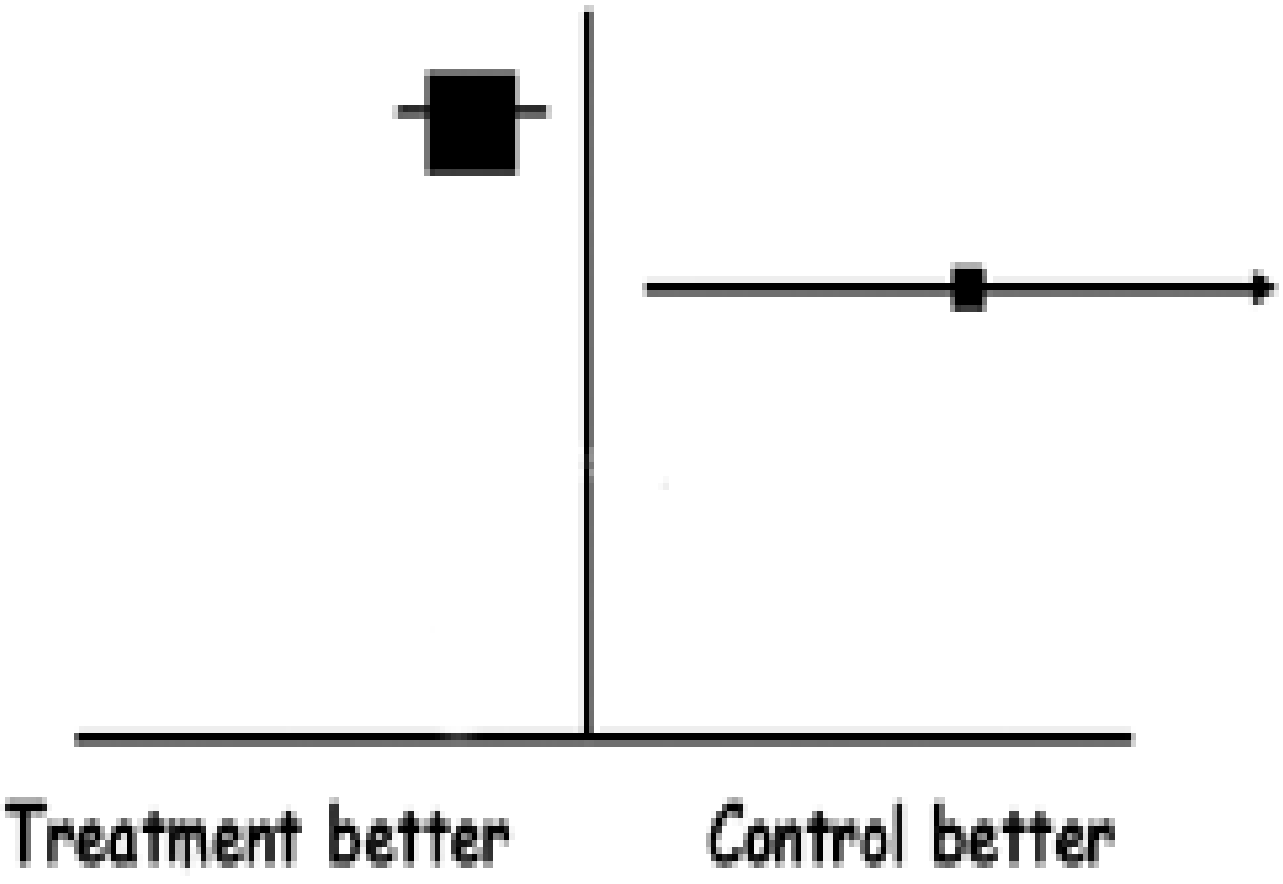
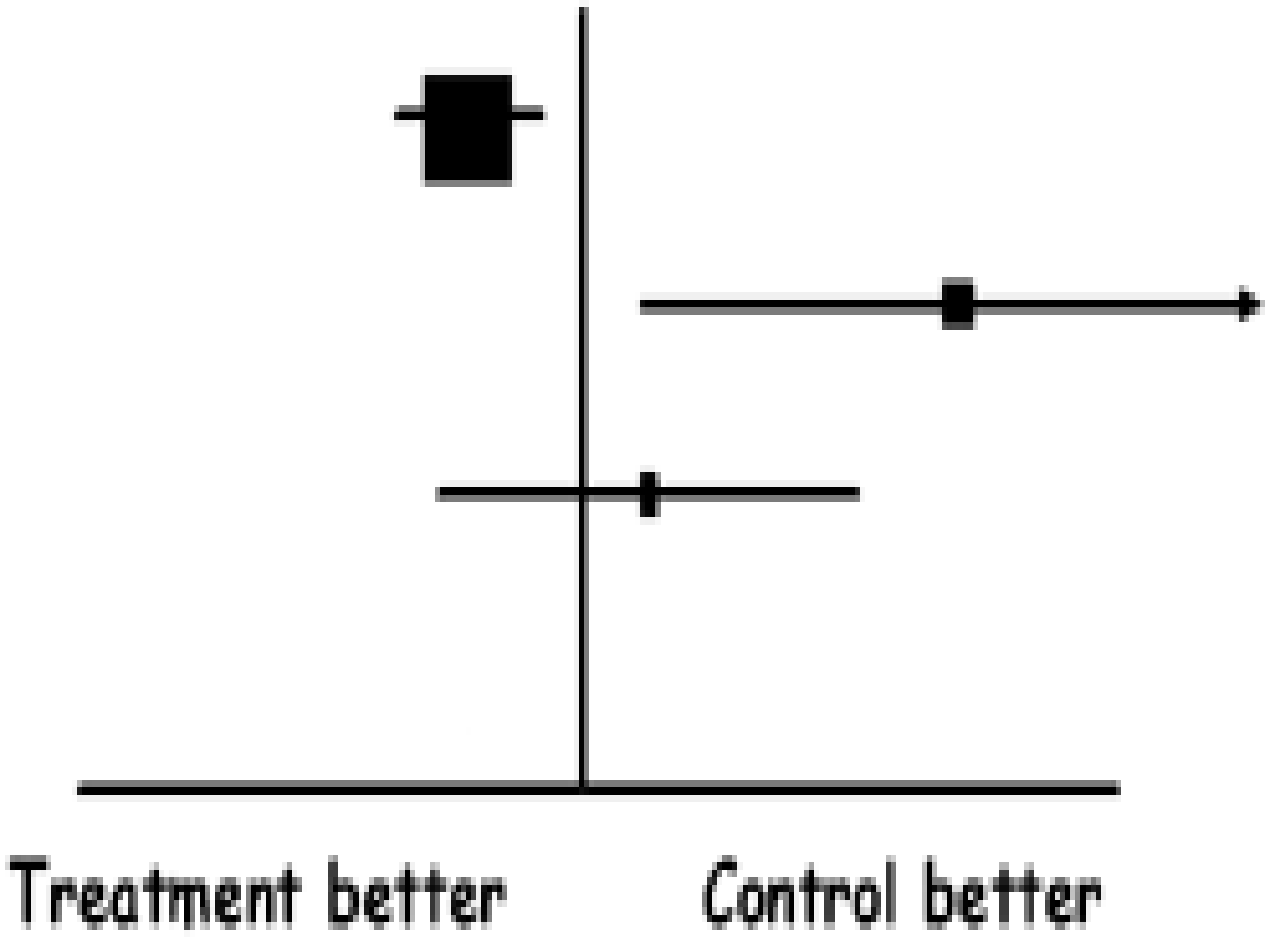
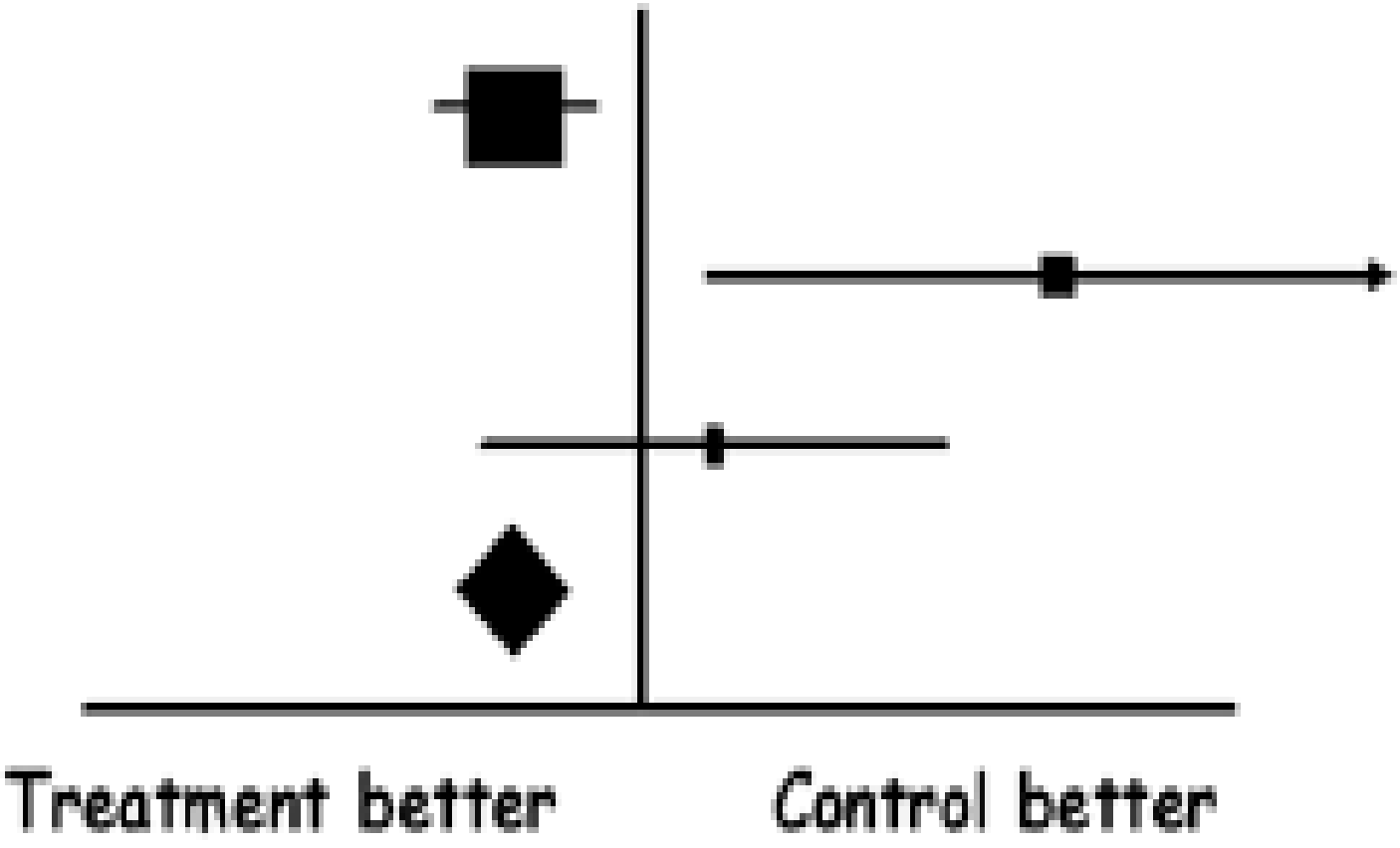

Treatment better
Control better


Treatment better
Control better


Treatment better
Control better

Interpretation of MA results

- **The horizontal line - the result (the shorter the line, the better the result)**
- **The vertical line indicates the position for different results**

Interpretation of MA results

- **If the horizontal line intersects the vertical line - the result is not statistically significant**
- **Diamond - indicates the result of the meta-analysis**
- **Placement of the diamond from the left - treatment is effective**