



**Wolters Kluwer**

When you have to be right

# **Evidence-Based Medicine (EBM): An overview of the informational foundations**

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**9<sup>th</sup> October 2015**

# Programme outline

## *Key points*

### 1. Introduction

*“Are not all medical decisions based on good evidence?”*

### 2. Evidence-based medicine

*Origins, principles and perspectives.*

### 3. Key publication types

*Systematic reviews and meta-analyses.*

### 4. Key information sources

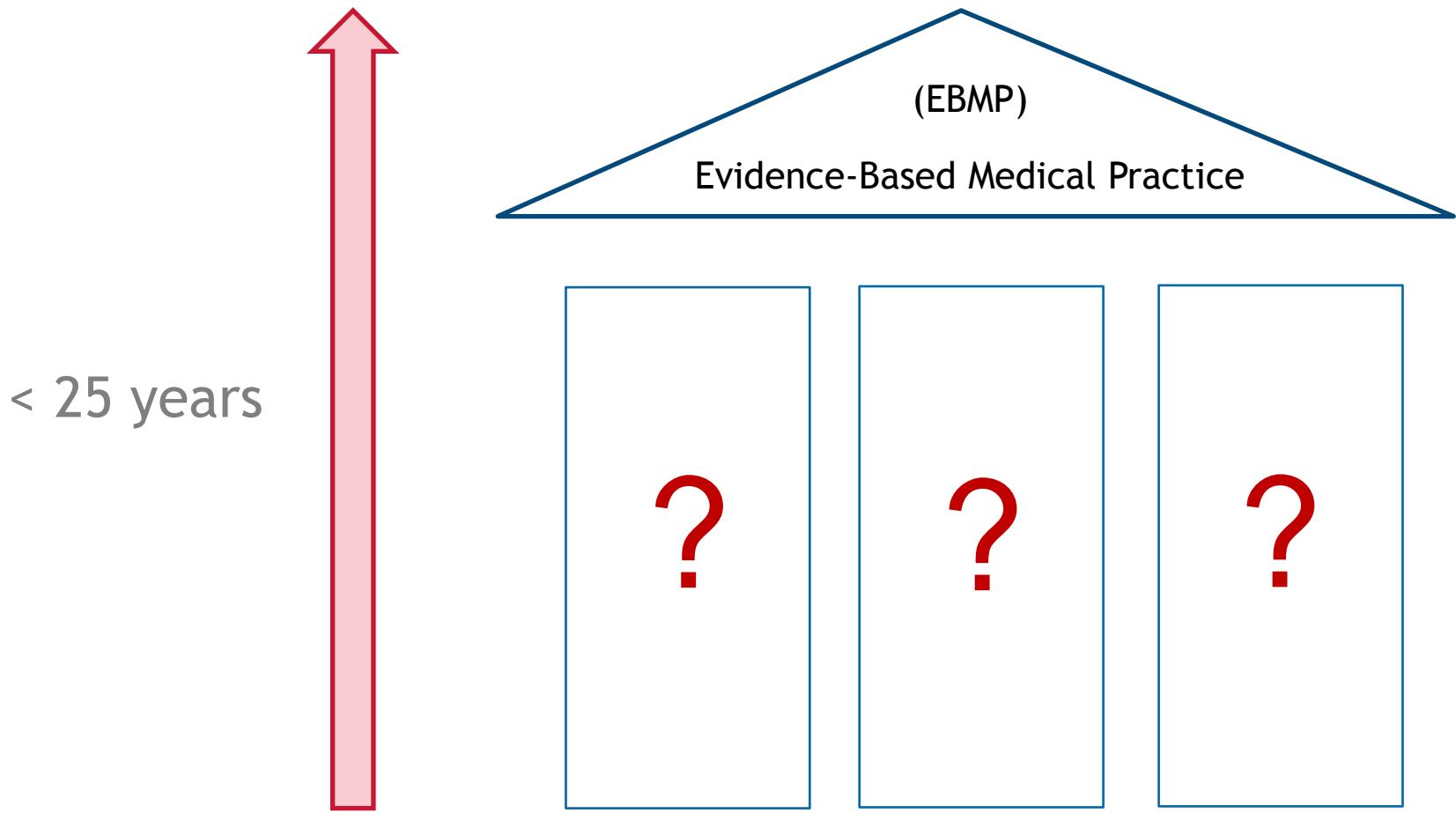
*Cochrane (SRs), Cochrane (RCTs), Ovid MEDLINE, Embase.*

### 5. Quo vadis EBMP?

*Joanna Briggs Institute (JBI).*

# Programme task

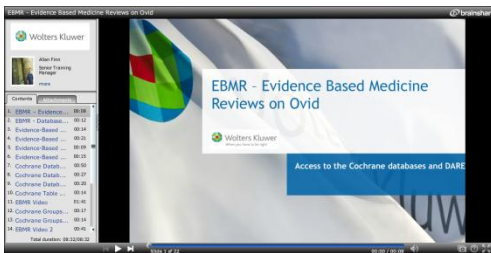
*Identify the informational foundations of EBMP.*



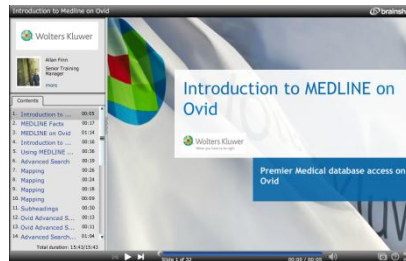
# Programme “first aid”

References and assistance.

Ovid®



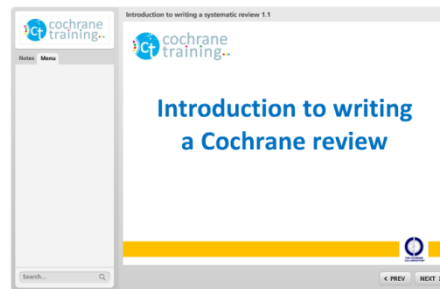
[Click here](#)



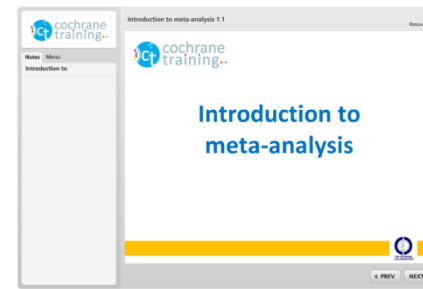
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# 1. Introduction

*“Are not all medical decisions based on good evidence?”*

Not necessarily...

Throughout the ages, the informational basis of medical practice has varied between **opinion** and **evidence**. Often it has been a mixture of both in a variety of proportions.

Sometimes opinion and guesswork has triumphed over evidence, and not always to the patient's advantage. Consider for example the work and subsequent fate of Ignaz Semmelweis (1818-1865).

# 1. Introduction

*“Are not all medical decisions based on good evidence?”*

Obtaining the evidence is one thing...

“**Ignaz Philipp Semmelweis** (born Semmelweis Ignác Fülöp; 1 July 1818 - 13 August 1865) was a Hungarian physician of German extraction now known as an early pioneer of antiseptic procedures. Described as the "savior of mothers", Semmelweis discovered that the incidence of puerperal fever (also known as "childbed fever") could be drastically cut by the use of hand disinfection in obstetrical clinics. Puerperal fever was common in mid-19th-century hospitals and often fatal, with mortality at 10%-35%. Semmelweis proposed the practice of washing hands with chlorinated lime solutions in 1847 while working in Vienna General Hospital's First Obstetrical Clinic, where doctors' wards had three times the mortality of midwives' wards. He published a book of his findings in **Etiology, Concept and Prophylaxis of Childbed Fever.**”

Source: [https://en.wikipedia.org/wiki/Ignaz\\_Semmelweis](https://en.wikipedia.org/wiki/Ignaz_Semmelweis) (Visited on 12<sup>th</sup> October 2015)

# 1. Introduction

*“Are not all medical decisions based on good evidence?”*

...having people act upon it is another!

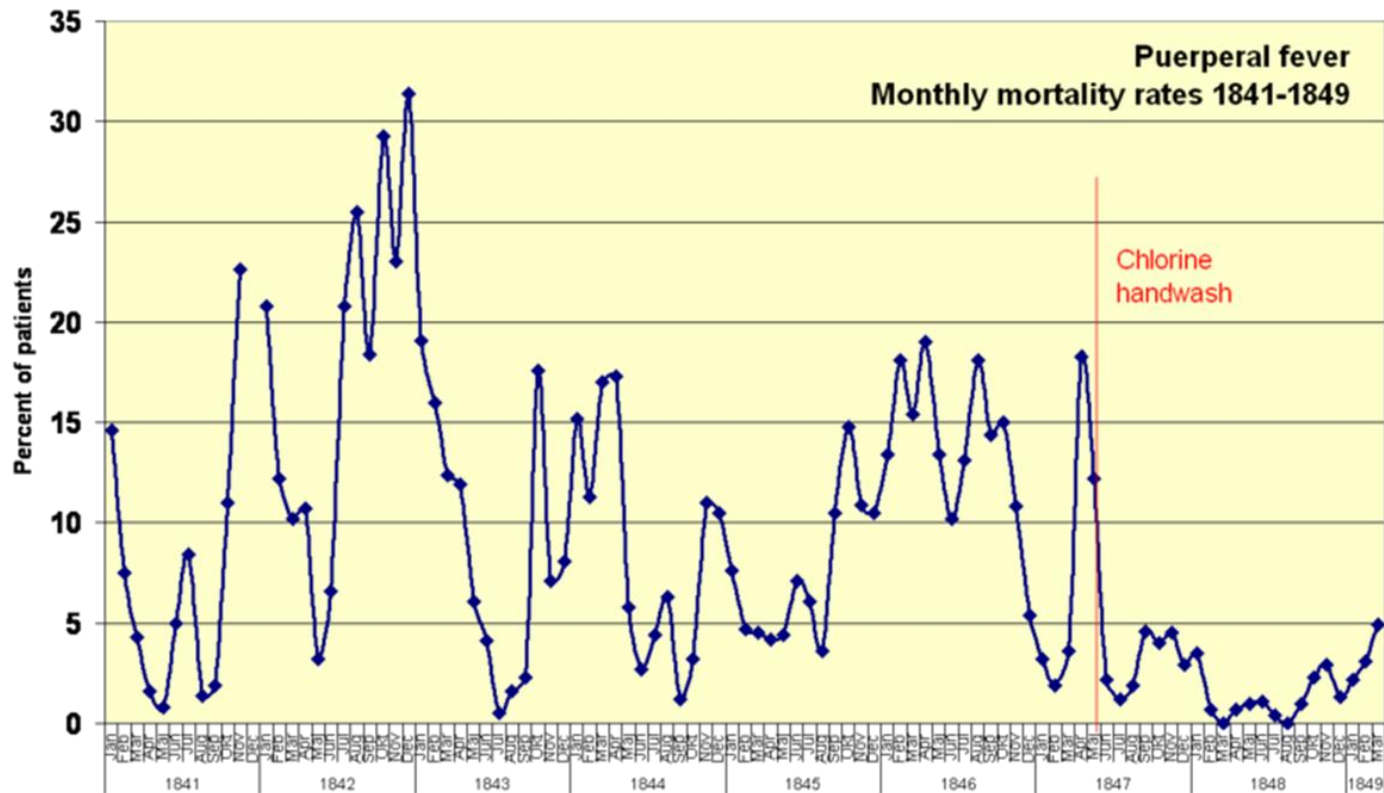
“Despite various publications of results where hand washing reduced mortality to below 1%, Semmelweis's observations conflicted with the established scientific and medical opinions of the time and his ideas were rejected by the medical community. Some doctors were offended at the suggestion that they should wash their hands and Semmelweis could offer no acceptable scientific explanation for his findings. Semmelweis's practice earned widespread acceptance only years after his death, when Louis Pasteur confirmed the germ theory and Joseph Lister, acting on the French microbiologist's research, practiced and operated, using hygienic methods, with great success. In 1865, Semmelweis was committed to an asylum, where he died at age 47 of pyaemia, after being beaten by the guards, only 14 days after he was committed.”

Source: [https://en.wikipedia.org/wiki/Ignaz\\_Semmelweis](https://en.wikipedia.org/wiki/Ignaz_Semmelweis) (Visited on 12<sup>th</sup> October 2015)

# 1. Introduction

*“Are not all medical decisions based on good evidence?”*

But what Ignaz Semmelweis knew then...



Source: [https://en.wikipedia.org/wiki/Ignaz\\_Semmelweis](https://en.wikipedia.org/wiki/Ignaz_Semmelweis) (Visited on 12<sup>th</sup> October 2015)

# 1. Introduction

*“Are not all medical decisions based on good evidence?”*

...we are now realising!

**Better health is not  
a science problem,  
it's an  
information problem.**

Source: It's time to redesign medical data by Thomas Goetz  
[http://www.ted.com/talks/thomas\\_goetz\\_it\\_s\\_time\\_to\\_redesign\\_medical\\_data](http://www.ted.com/talks/thomas_goetz_it_s_time_to_redesign_medical_data)

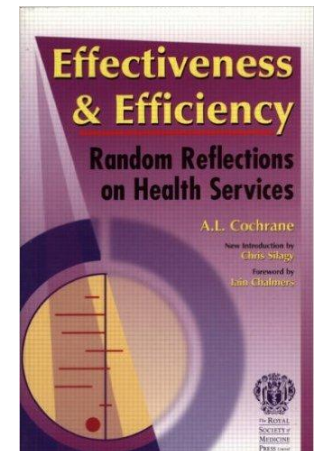
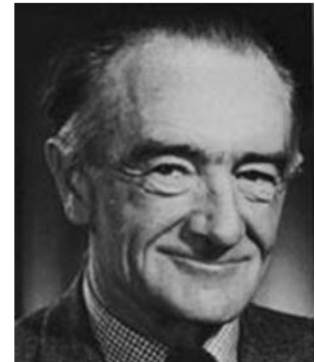
## 2. Evidence-based medicine

### Origins, principles and perspectives.

The man Archie Cochrane.....

“Archie Cochrane was born in the Scottish cloth-manufacturing town of Galashiels in 1909. He studied natural sciences at Cambridge, and completed his medical studies in London after serving with a field ambulance unit during the Spanish Civil War. He spent most of his career as a medical researcher in Wales, conducting several long-term epidemiological studies into tuberculosis and other chest diseases among the coal mining communities of South Wales. The success of these studies earned Cochrane the respect and admiration of his peers, but his international renown is founded on the publication in 1972 of his book *‘Effectiveness and Efficiency: random reflections on health services’*.”

Source: [http://www.cochrane.org.au/libraryguide/pop\\_guide\\_archie.php](http://www.cochrane.org.au/libraryguide/pop_guide_archie.php)



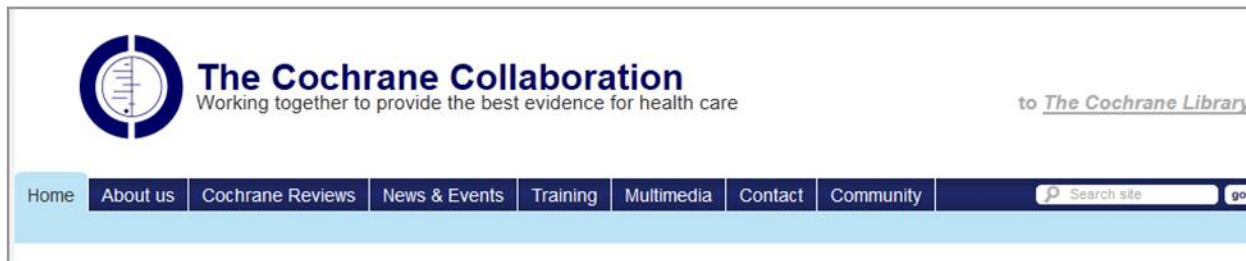
## 2. Evidence-based medicine

### Origins, principles and perspectives.

....and his legacy....

“Cochrane continued to be critical of the medical profession for failing to seek evidence to support treatment recommendations. In a paper published in 1979 he famously wrote, ‘It is surely a great criticism of our profession that we have not organised a critical summary by speciality or subspeciality, adapted periodically, of all relevant randomised controlled trials’.”

Source: [http://www.cochrane.org.au/libraryguide/pop\\_guide\\_archie.php](http://www.cochrane.org.au/libraryguide/pop_guide_archie.php)



<http://www.cochrane.org>

## 2. Evidence-based medicine

Origins, principles and perspectives.

....which has now become this....



See <http://www.cochrane.org/about-us/our-logo>

## 2. Evidence-based medicine

Origins, principles and perspectives.

*“Evidence-based medicine is the conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients. The practice of evidence-based medicine means integrating individual clinical expertise with the best available evidence from systematic research.”*

Source: „What is evidence- based medicine and what is not?“ D.L.Sackett et al.

....in a nutshell!

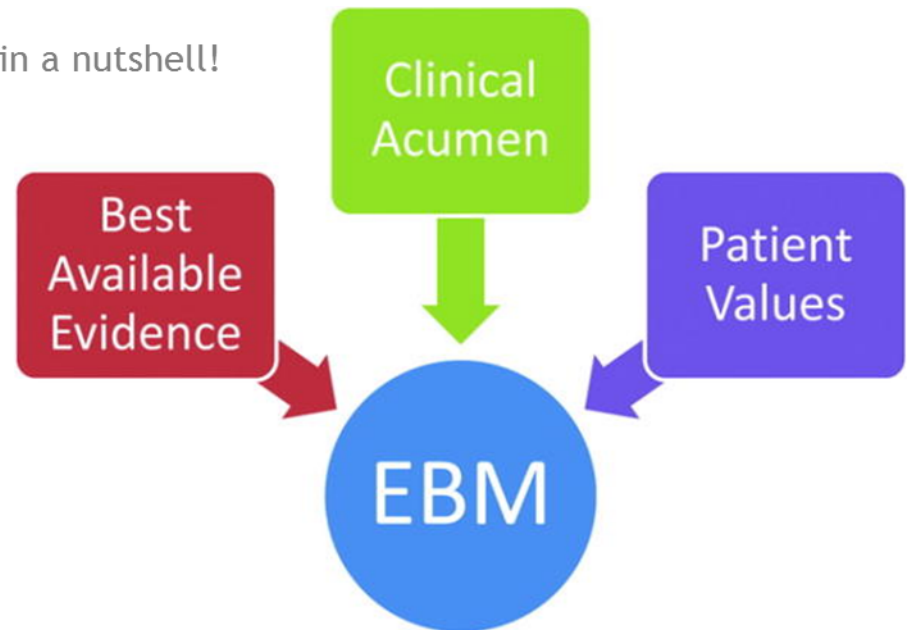


Fig. 2. Three quintessential components of evidence-based medicine (EBM).

**Archie Cochrane and His Vision for Evidence-Based Medicine.**

Shah, Hriday; Chung, Kevin

Plastic & Reconstructive Surgery. 124(3):982-988, September 2009.

DOI: 10.1097/PRS.0b013e3181b03928

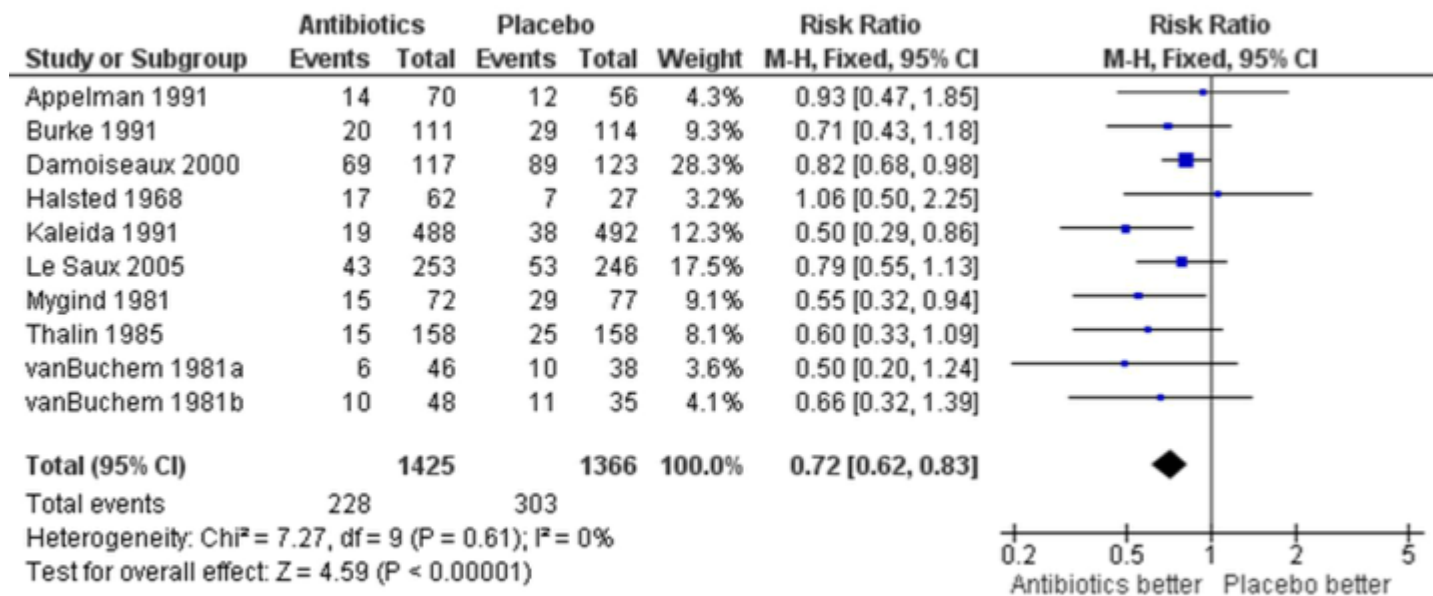




### 3. Key publication types

Systematic reviews and meta-analyses.

## Considering clinical significance



Based on Sanders S, Glasziou PP, Del Mar C, Rovers MM. Antibiotics for acute otitis media in children. *Cochrane Database of Systematic Reviews* 2004, Issue 1. Art. No.: CD000219. DOI: 10.1002/14651858.CD000219.pub2.



# 4. Key information resources

Cochrane (SRs), Cochrane (RCTs), Ovid MEDLINE, Embase.

### Evidence Based Medicine Reviews: Cochrane Database of Systematic Reviews

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The Cochrane Database of Systematic Reviews (COCH) is part of Ovid's Evidence Based Medicine Reviews collection, and includes the full text of the regularly updated systematic reviews of the effects of healthcare prepared by The Cochrane Collaboration.

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Database gu updated Oct  
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The reviews are presented in two types:

- Cochrane Methodology Reviews** are full-text systematic reviews that are both highly structured and systematic. Evidence from these reviews is based on explicit quality criteria, thus minimizing bias. Each review includes a summary of Data from studies are often combined statistically to improve the accuracy of the results.

Cochrane Group List	
<input type="checkbox"/>	Cochrane Acute Respiratory Infections Group 1. <a href="#">Group Information</a>   <a href="#">Table of Contents</a>
<input type="checkbox"/>	Cochrane Airways Group 2. <a href="#">Group Information</a>   <a href="#">Table of Contents</a>
<input type="checkbox"/>	Cochrane Anaesthesia Group 3. <a href="#">Group Information</a>   <a href="#">Table of Contents</a>
<input type="checkbox"/>	Cochrane Back Group 4. <a href="#">Group Information</a>   <a href="#">Table of Contents</a>
<input type="checkbox"/>	Cochrane Bone, Joint and Muscle Trauma Group 5. <a href="#">Group Information</a>   <a href="#">Table of Contents</a>
<input type="checkbox"/>	Cochrane Epilepsy Group Accession: 00075320-001700000-00000 Keywords: Cochrane Epilepsy Group
<input type="checkbox"/>	Cochrane Breast Cancer Group 6. <a href="#">Group Information</a>   <a href="#">Table of Contents</a>

#### Specialised Register: Electronic Searches

MEDLINE search strategy (Searched 1950 to end of September 2009 using Ovid)

1. randomized controlled trial.pt.
2. controlled clinical trial.pt.
3. exp Randomized Controlled Trials/
4. exp Random Allocation/
5. exp Double-Blind Method/
6. exp Single-Blind Method/
7. 1 or 2 or 3 or 4 or 5 or 6
8. (animals not humans).sh.
9. 7 not 8
10. clinical trial.pt.
11. Clinical Trial/
12. (clin\$ adj trial\$).ab,ti.
13. ((sing\$ or doub\$ or treb\$ or trip\$) adj (blind\$ or mask\$)).ab,ti.
14. exp PLACEBOS/
15. placebo\$.ab,ti.
16. random\$.ab,ti.
17. exp Research Design/
18. 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17
19. (animals not humans).sh.
20. 18 not 19
21. 9 or 20

# 4. Key information resources

Cochrane (SRs), Cochrane (RCTs), Ovid MEDLINE, Embase.

### Evidence Based Medicine Reviews: Cochrane Central Register of Controlled Trials (CCTR)

Wolters Kluwer | OvidSP  
CCTR (formerly Cochrane Controlled Trials Register) is a bibliographic database of definitive controlled trials, and part of Ovid's Evidence Based Medicine Reviews collection. It is a joint production of the National Library of Medicine (NLM) in Washington, DC (USA) who produces MEDLINE and Reed Elsevier of Amsterdam (the Netherlands) who produce EMBASE.

CCTR contains over 300,000 bibliographic references to controlled trials in health care together with references to clinical trials identified by contributors to the Cochrane Collaboration in MEDLINE and EMBASE. Contributors follow quality control standards to ensure that only reports of definite randomized controlled trials or controlled clinical trials are included. These controlled trials included were identified by the contributors to the Cochrane Collaboration to create an unbiased source of data for systematic reviews.

#### Segments and Years of Coverage

Name	Years of Coverage
CCTR	1991 - present

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Database guide last updated May 01, 2014  
Copyright 2009, Wolters Kluwer Health

#### Results Tools

Options  All

Clear View: Title Citation Abstract 10 Per Page 1 Go Next >

#### Search Information

You searched:  
exercise depression (Including Related Terms)  
- Search terms used:  
    ▶ exercise  
        exercises  
        physical exercises  
        physical exercise  
        physical conditioning  
        exercises physical  
        exercise physical  
        exercise pain management  
    ▶ depression  
        depressions  
        feeling of sadness

Relevance: ★★★★★

- The DOSE study: a clinical trial to examine efficacy and dose response of exercise as treatment for depression.  
Dunn AL, Trivedi MH, Kampert JB, Clark CG, Chambless HO  
*Controlled clinical trials. 23(5):584-603, 2002 Oct. [Clinical Trial. Comparative Study. Journal Article. Randomized Controlled Trial. Research Support, U.S. Gov't, P.H.S.]*  
▶ Abstract

Abstract Reference  
Complete Reference  
Find Similar  
Find Citing Articles  
EBM Full Text  
Translate Abstract  
Ovid Expert Searches

OPEN ACCESS RESULTS  
Anxiety and Depression Symptoms in Chest Pain Patients Referred for the Exercise Stress Test  
Rohani, Atoosheh Akbari, Vahid Zarei, Fahimeh  
The effects of 8 weeks of regular aerobic exercise on the symptoms of premenstrual syndrome in non-athlete girls  
Samadi, Zeinab Taghian, Farzaneh Valiani, Mahboubeh

+ My Projects + Annotate

## 4. Key information resources

Cochrane (SRs), Cochrane (RCTs), Ovid MEDLINE, Embase.

### Essentials:

**Provider:** NLM, USA

**Type:** Bibliographic

**Focus:** Biomedical

**Scope:** 1946 to date

**Journals:** 5,600

**Records:** 23 million

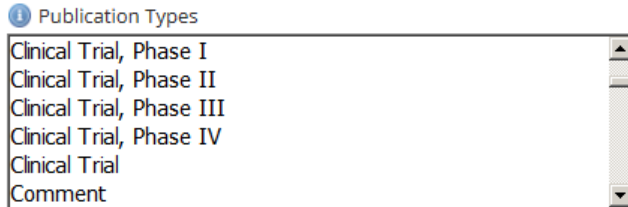
The screenshot displays the Ovid MEDLINE search interface. At the top, the Ovid logo and navigation menu (Search, Journals, Books, Multimedia, My Workspace, Links, OvidMD, EBP Tools) are visible. The main content area shows a 'Select Resource(s) to search:' dropdown menu with several options, including 'Ovid MEDLINE(R) 1946 to October Week 1 2015' and 'Ovid MEDLINE(R) In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily, Ovid MEDLINE(R) and Ovid OLDMEDLINE(R) 1946 to Present'. Below this, the 'Basic Search' section is active, showing a search history of 0 searches and a search box with radio buttons for 'Keyword', 'Author', 'Title', and 'Journal'. The 'Limits' section is expanded, showing various filters such as 'Abstracts', 'Evidence Based Medicine Reviews', 'Review Articles', 'Topic Reviews (Cochrane)', 'Pharmacologic Actions', 'Structured Abstracts', 'Article Reviews (ACP Journal Club)', 'Article Reviews (DARE)', 'Core Clinical Journals (AIM)', 'English Language', 'Full Text', 'Humans', and 'Latest Update'. The 'Publication Year' is set to a range, and the 'Star Ranking' is set to 'Five Stars'. The interface is clean and professional, with a blue and white color scheme.

## 4. Key information resources

Cochrane (SRs), Cochrane (RCTs), Ovid MEDLINE, Embase.

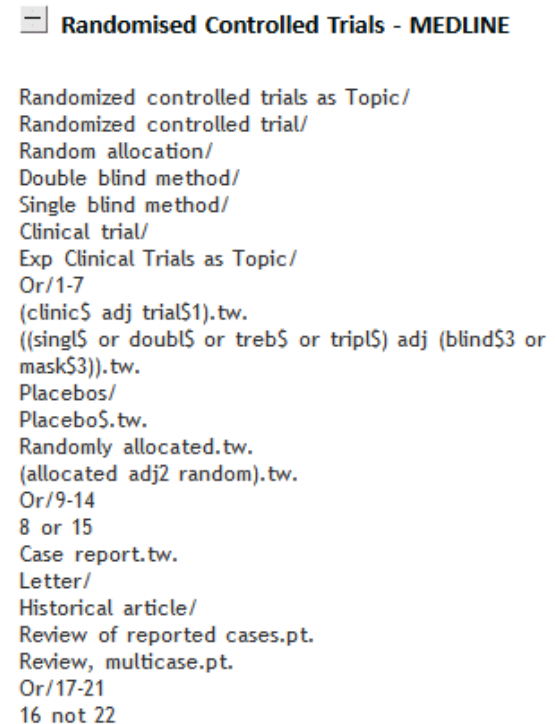
**Question:** How can I locate RCTs on Ovid MEDLINE?

**Answer:** Limits



Note: Limit is “Publication Types”

**Answer:** Search Filters



OR

Source: [Click here](#)

# 4. Key information resources

Cochrane (SRs), Cochrane (RCTs), Ovid MEDLINE, Embase.

## Essentials:

**Provider:** Elsevier, NL

**Type:** Bibliographic

**Focus:** Pharmaceutical

**Scope:** 1974 to date

**Journals:** 7,500

**Records:** 22 million

The image displays three overlapping screenshots of the Ovid search interface. The top screenshot shows the main search page with navigation tabs (Search, Journals, Books, Multimedia, My Workspace, Links, OvidMD, EBP Tools) and search options (Basic Search, Find Citation, Search Tools, Search Fields, Advanced Search, Multi-Field Search). The middle screenshot shows a search results page for 'Embase 1996 to 2015 Week 40' with a 'Limits' sidebar and a 'Subject Headings' section. The bottom screenshot shows a 'Thesaurus for depression' table with columns for Select Terms, Subject Heading, Hits, Explode, Focus, and Scope Note.

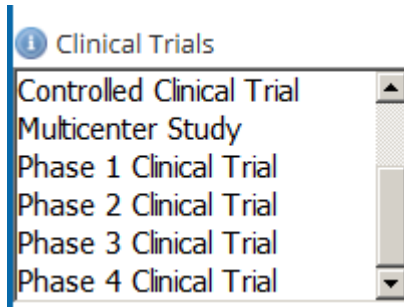
Select Terms	Subject Heading	Hits	Explode	Focus	Scope Note
<input type="checkbox"/> deprectide to 99m		224	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="radio"/>
<input type="checkbox"/> deprectide technetium to 99m					
<input type="checkbox"/> deprectide trifluoroacetate to 99m					
<input type="checkbox"/> deprectal					
<input type="checkbox"/> depression					
<input type="checkbox"/> depressants, central nervous system					
<input type="checkbox"/> depressed blood pressure		280	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="radio"/>
<input type="checkbox"/> depression					
<input checked="" type="checkbox"/> depression		210601	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="radio"/>
[Used For]					
	central depression				
	clinical depression				
	depressive disease				
	depressive disorder				
	depressive episode				
	depressive illness				
	depressive personality disorder				
	depressive state				
	depressive symptom				
	depressive syndrome				
	mental depression				
	parental depression				

## 4. Key information resources

*Cochrane (SRs), Cochrane (RCTs), Ovid MEDLINE, Embase.*

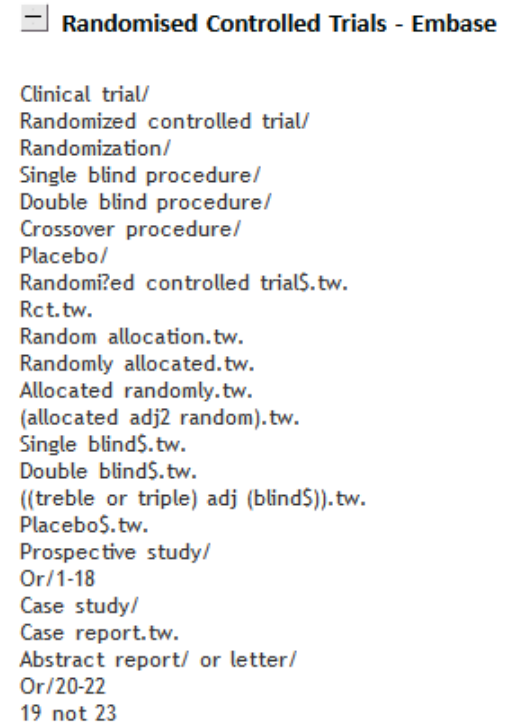
**Question:** How can I locate RCTs on Embase?

**Answer:** Limits



Note: Limit is “Clinical Trials”

**Answer:** Search Filters



Randomised Controlled Trials - Embase

- Clinical trial/
- Randomized controlled trial/
- Randomization/
- Single blind procedure/
- Double blind procedure/
- Crossover procedure/
- Placebo/
- Randomized controlled trial\$.tw.
- Rct.tw.
- Random allocation.tw.
- Randomly allocated.tw.
- Allocated randomly.tw.
- (allocated adj2 random).tw.
- Single blind\$.tw.
- Double blind\$.tw.
- ((treble or triple) adj (blind\$)).tw.
- Placebo\$.tw.
- Prospective study/
- Or/1-18
- Case study/
- Case report.tw.
- Abstract report/ or letter/
- Or/20-22
- 19 not 23

OR

Source: [Click here](#)

# 5. Quo vadis EBMP?

## Joanna Briggs Institute (JBI)

Select Resource(s) to search:

### All Resources

- [Transplant Library](#) March 19, 2014
- [The Joanna Briggs Institute EBP Database - Current to M](#)
- [Joanna Briggs Institute EBP Database - Aged Care](#)
- [Joanna Briggs Institute EBP Database - Burns Care](#)
- [Joanna Briggs Institute EBP Database - Cancer Care](#)
- [Joanna Briggs Institute EBP Database - Chronic Disease](#)
- [Joanna Briggs Institute EBP Database - Diagnostic Imag](#)
- [Joanna Briggs Institute EBP Database - Emergency & T](#)
- [Joanna Briggs Institute EBP Database - General Medici](#)
- [Joanna Briggs Institute EBP Database - Health Manage](#)
- [Joanna Briggs Institute EBP Database - Infection Cont](#)
- [Joanna Briggs Institute EBP Database - Mental Health](#)
- [Joanna Briggs Institute EBP Database - Midwifery Care](#)
- [Joanna Briggs Institute EBP Database - Rehabilitation](#)
- [Joanna Briggs Institute EBP Database - Surgical Services](#)
- [Joanna Briggs Institute EBP Database - Wound Healing and Management](#)
- [Joanna Briggs Institute EBP Database - Paediatrics](#)
- [Joanna Briggs Institute EBP Database - Tropical and Infectious Disease](#)
- [ACP Smart Medicine](#) February 2014
- [EBM Reviews - ACP Journal Club](#) 1991 to March 2014

### Publication Types

**Evidence Based Recommended Practices:** Interventions or procedures that describe and/or recommend certain practices on selected clinical topics. Recommended Practices are based on the best available evidence and each practice consists of an equipment list, a recommended practice, occupational health and safety provisions, and an adjoining evidence summary where evidence is available.

**Evidence Summaries:** Short abstracts that summarize existing international evidence on common health care interventions and activities. Based on structured searches of the literature and selected evidence-based health care databases.

**Best Practice Information Sheets (BPIS):** Short summaries based on the results and recommendations of systematic reviews. BPIS are easily disseminated and provide busy health professionals access to key issues and recommendations that have been collected from a large volume of material.

**Systematic Reviews:** An analysis of all of establishing inclusion criteria; developing a each paper; excluding papers of poor quality included papers.

**Consumer Information Sheets (CIS):** S activities targeted at consumers of health c Information Sheet is based on the best avai new entries are added in response to custo

**Systematic Review Protocol:** Documents

**Technical Report:** Documents the develop

The image shows the cover of a 'Best Practice' information sheet. The title is 'Solutions, techniques and pressure in wound cleansing'. It includes a 'Recommendations' section with a list of solutions and pressures. There is also an 'Information Source' section and a 'Grades of Recommendation' table. The cover features a logo with a red sphere and blue waves.

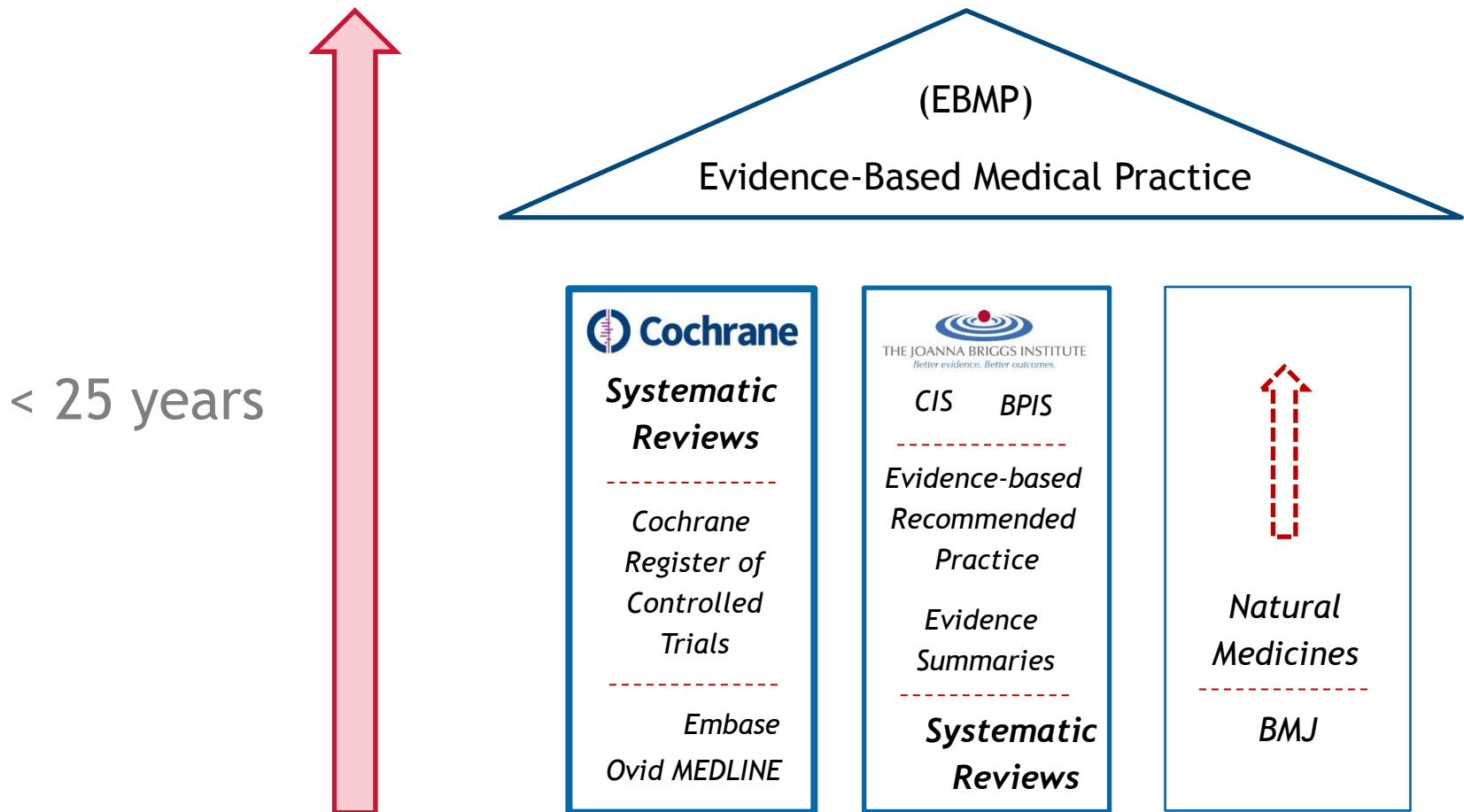
...ing a question;  
...ng the quality of  
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...tions and  
...nsumer  
...y is updated and

...atic review.  
...matic review.

# Summary

*EBMP has sound informational foundations.*



# Thank you for your time!

## Contact information.

For more information and further assistance on how to use any of the features on Ovid such as **Export Selected to Powerpoint** as demonstrated on this slide, please see the OvidSP Resource Center or contact the trainer directly:

**Michael Fanning**

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Wolters Kluwer Health (Medical Research)  
Ovid Technologies GmbH  
Leipziger Platz 7  
10117 Berlin

**t:** +49-(0)30 85 77 99 0

**f:** +49-(0)30 85 77 99 99

**m:** +49-(0)170 788 09 36

**e:** michael.fanning@wolterskluwer.com

**w:** <http://www.ovid.com>

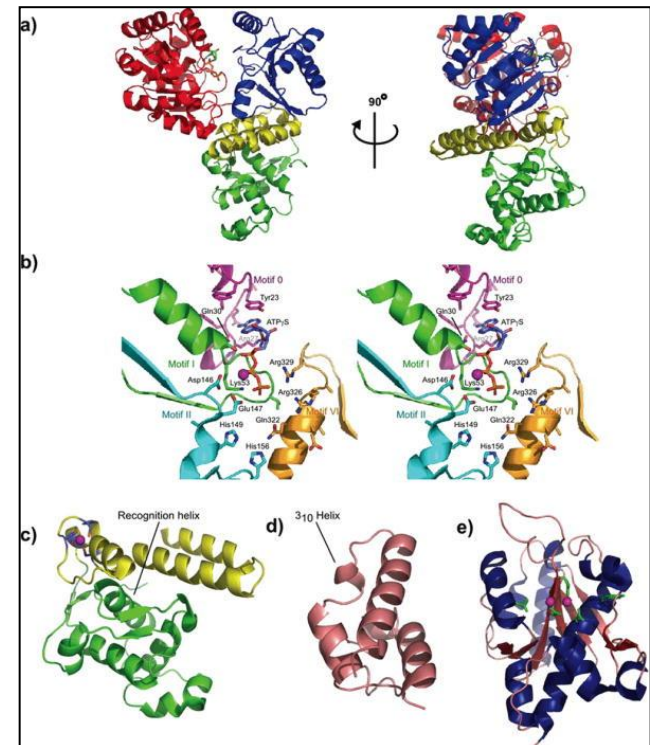


Figure 2 . Structural features of RecQ DNA helicases. Sit down, relax and unwind: structural insights into RecQ helicase mechanisms. Killoran, Michael; Keck, James *Nucleic Acids Research*. 34(15):4098-4105, September 2006. © Copyright Oxford University Press 2006. Published by Oxford University Press.