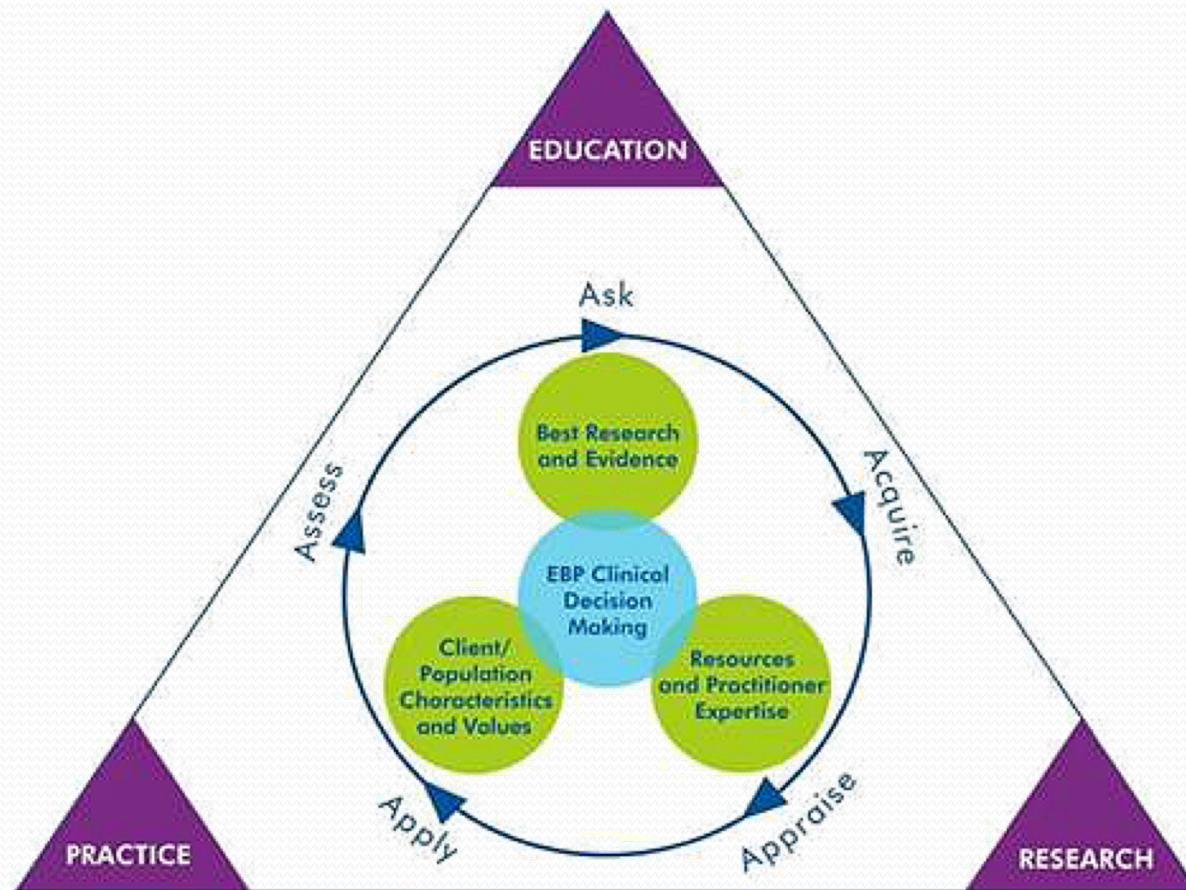


# Electronic Search for Evidence

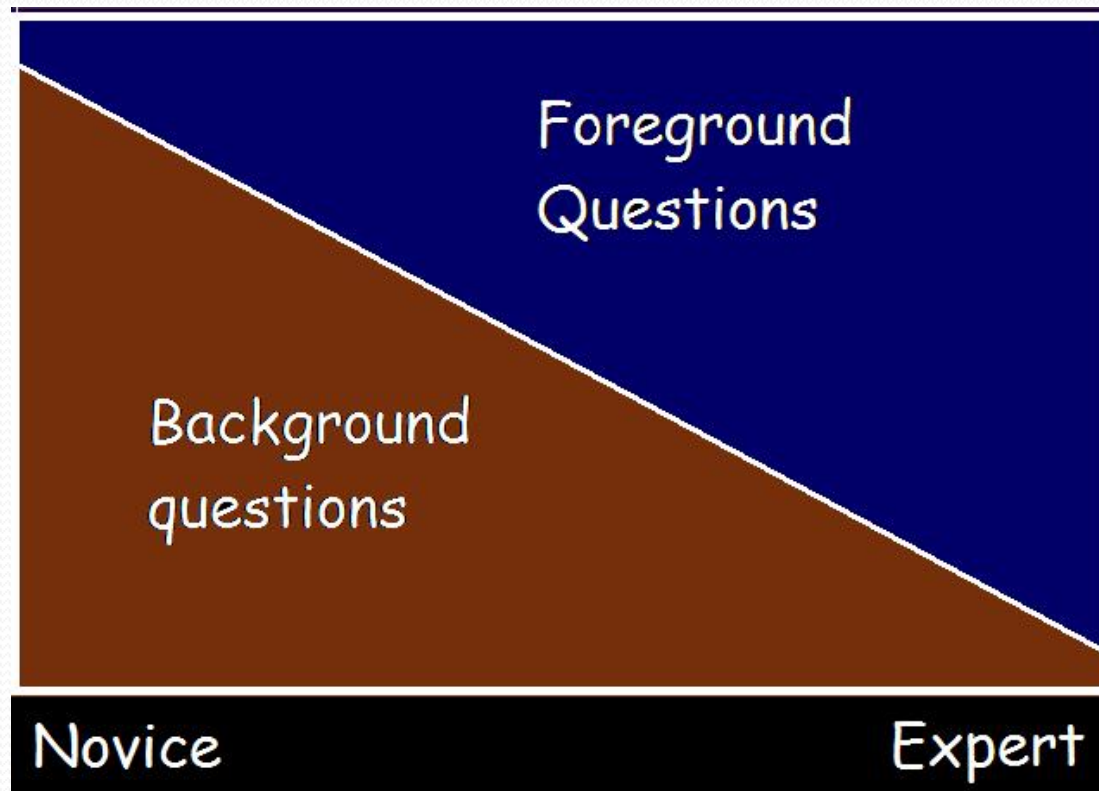
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***Amr A. Jamal, MD, SBFM, ABFM, MRCGP, GCCI, MBI***  
*Chairman, Associate Professor and Consultant*  
*Family Physician and Clinical Informatician*  
Family and Community Medicine Department  
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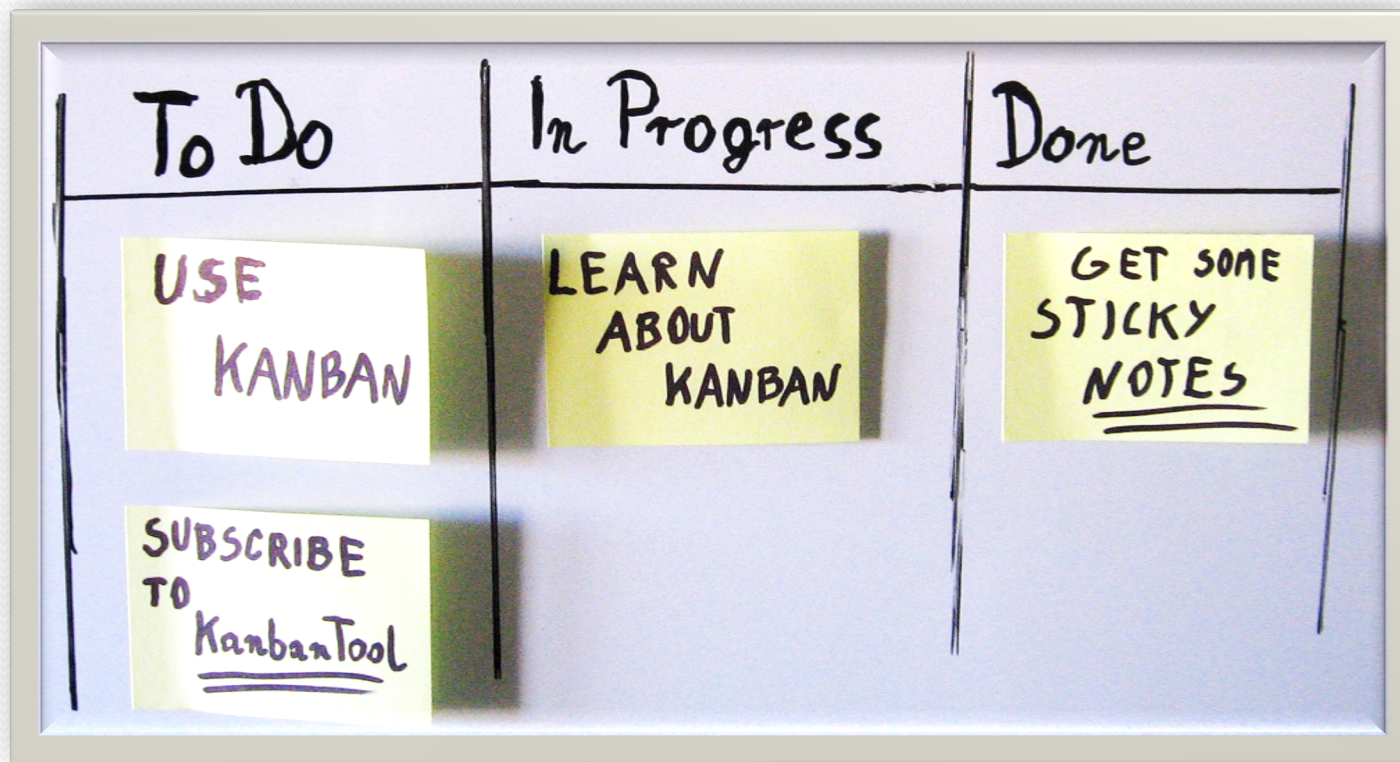
# 5-step EBM process



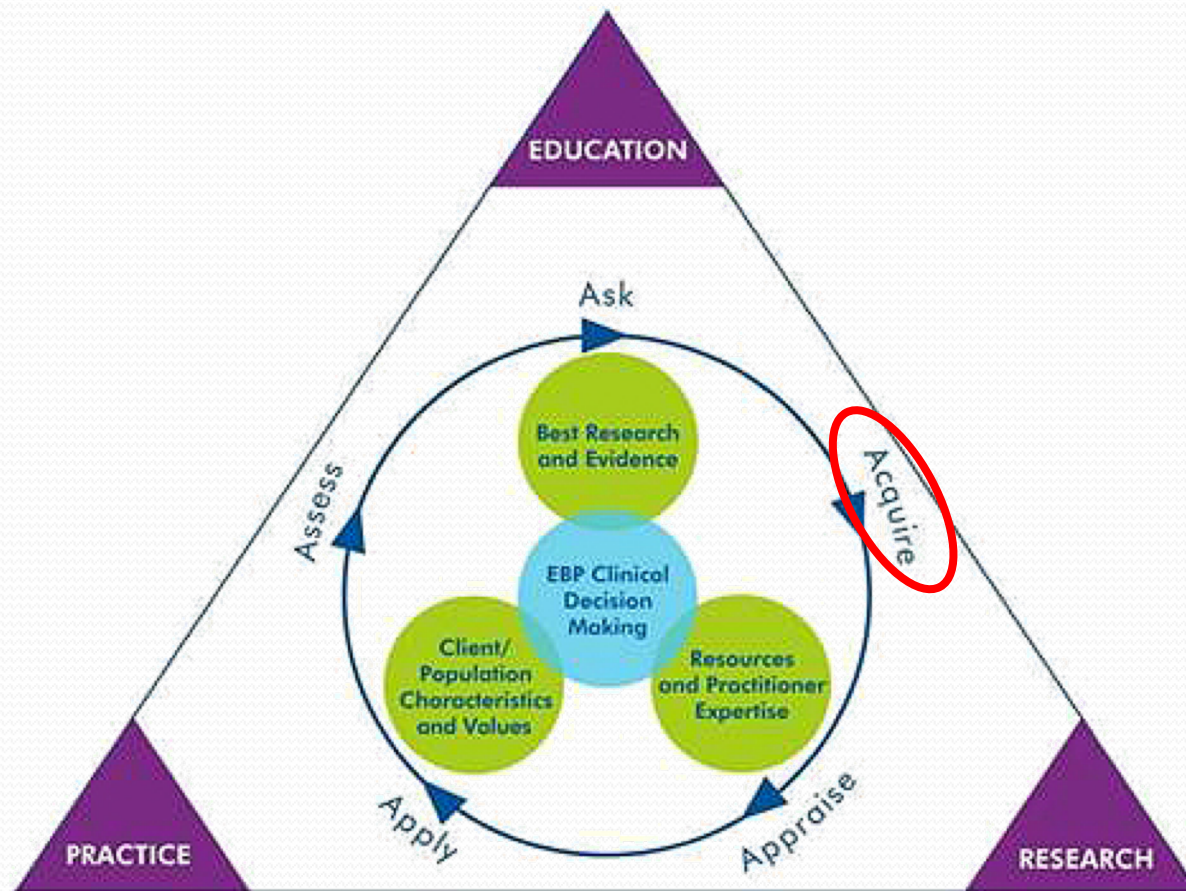
# Foreground Vs. Background EBM questions



# Kanban Board



# 2<sup>nd</sup> step: Acquire



# Where do you search for evidence?

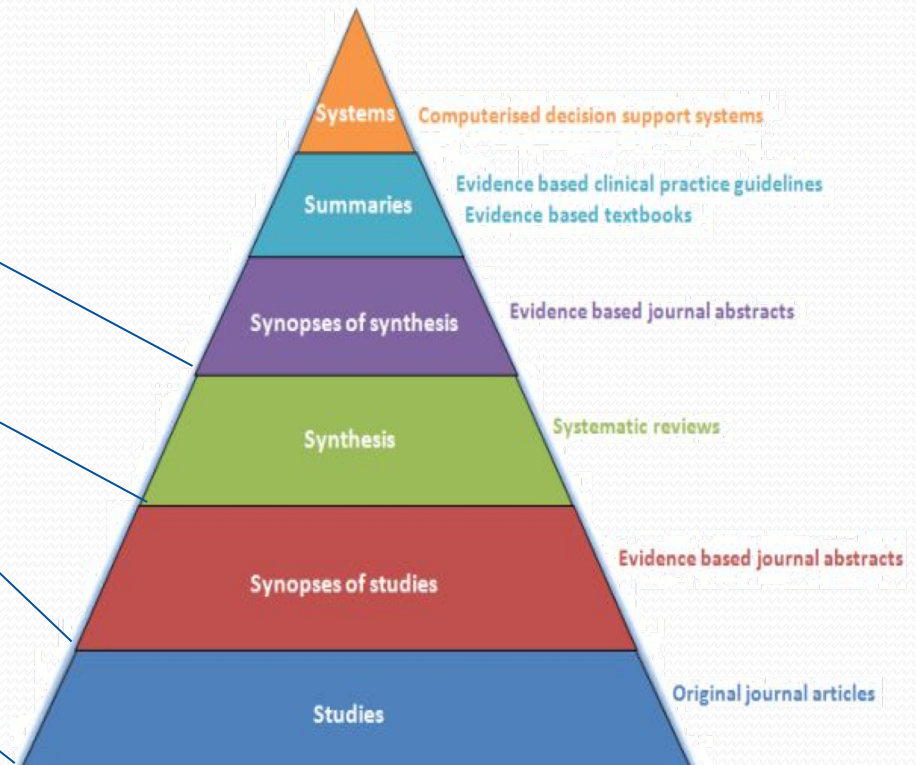
1. ACP Clinical Guidelines and Recommendations
2. BMJ BestPractice / Clinical Evidence
3. ClinicalKey / MDConsult
4. Cochrane Library
5. DynaMed
6. Essential Evidence Plus
7. Google
8. Google Scholar
9. Medscape
10. PubMed
11. Saudi Digital Library
12. Skyscape
13. StatRef
14. TRIP Database
15. UpToDate
16. Web of Knowledge
17. WebMD (Med-U)
18. Other

# Hierarchy of evidence

## Levels of evidence



## Sources of evidence (6 Ss)



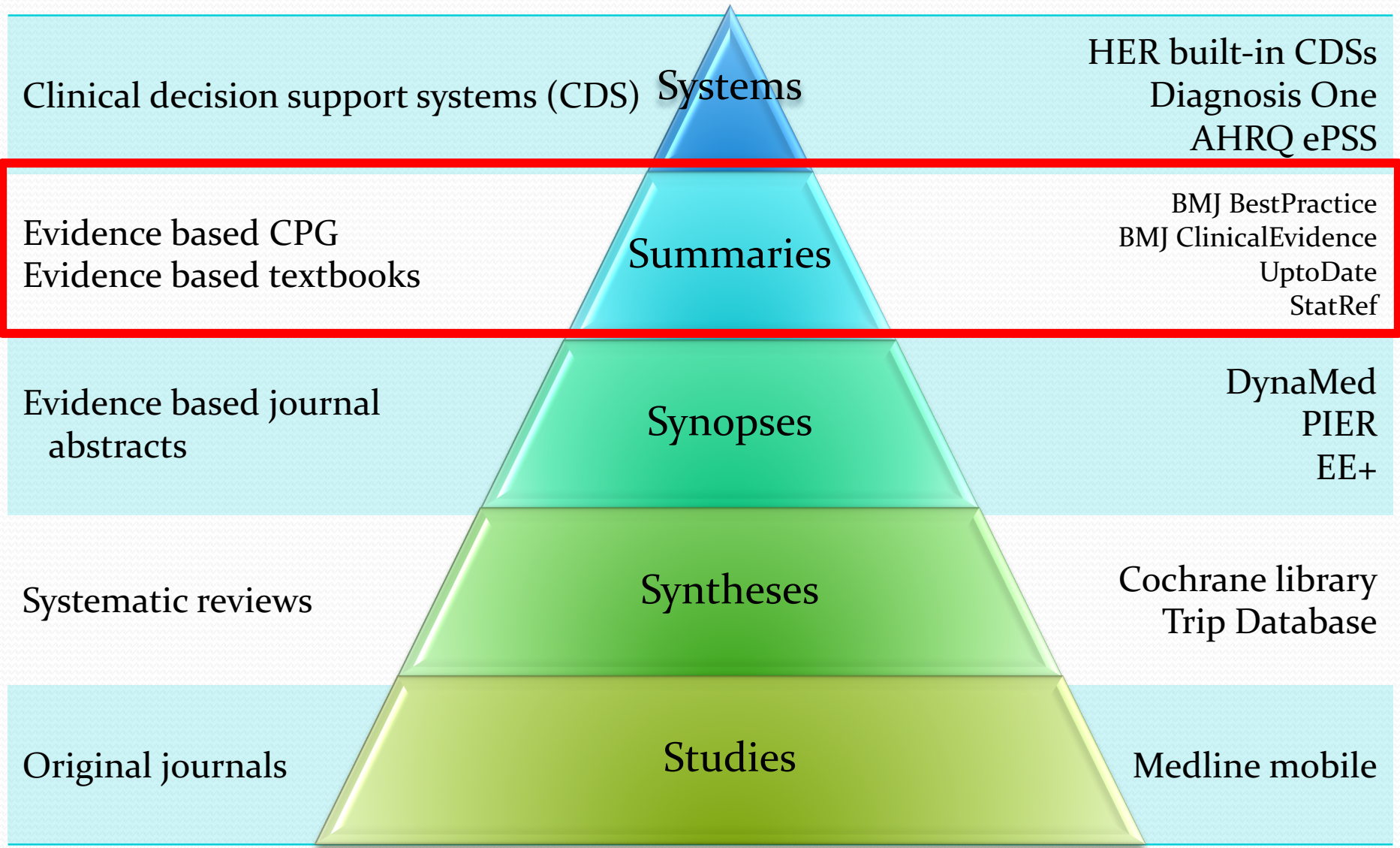
# Oxford Centre for Evidence-based Medicine Levels of Evidence (May

2001)

Level	Therapy/Prevention, Aetiology/Harm	Prognosis	Diagnosis	Differential diagnosis/symptom prevalence study	Economic and decision analyses
1a	SR (with <a href="#">homogeneity*</a> ) of RCTs	SR (with <a href="#">homogeneity*</a> ) of inception cohort studies; <a href="#">CDR†</a> validated in different populations	SR (with <a href="#">homogeneity*</a> ) of Level 1 diagnostic studies; <a href="#">CDR†</a> with 1b studies from different clinical centres	SR (with <a href="#">homogeneity*</a> ) of prospective cohort studies	SR (with <a href="#">homogeneity*</a> ) of Level 1 economic studies
1b	Individual RCT (with narrow <a href="#">Confidence Interval‡</a> )	Individual inception cohort study with ≥ 80% follow-up; <a href="#">CDR†</a> validated in a single population	Validating** cohort study with <a href="#">good†††</a> reference standards; or <a href="#">CDR†</a> tested within one clinical centre	Prospective cohort study with good follow-up****	Analysis based on clinically sensible costs or alternatives; systematic review(s) of the evidence; and including multi-way sensitivity analyses
1c	<a href="#">All or none§</a>	All or none case-series	<a href="#">Absolute SpPins and SnNouts††</a>	All or none case-series	Absolute better-value or worse-value analyses †††
2a	SR (with <a href="#">homogeneity*</a> ) of cohort studies	SR (with <a href="#">homogeneity*</a> ) of either retrospective cohort studies or untreated control groups in RCTs	SR (with <a href="#">homogeneity*</a> ) of Level >2 diagnostic studies	SR (with <a href="#">homogeneity*</a> ) of 2b and better studies	SR (with <a href="#">homogeneity*</a> ) of Level >2 economic studies
2b	Individual cohort study (including low quality RCT; e.g., <80% follow-up)	Retrospective cohort study or follow-up of untreated control patients in an RCT; Derivation of <a href="#">CDR†</a> or validated on split-sample§§§ only	Exploratory** cohort study with <a href="#">good†††</a> reference standards; <a href="#">CDR†</a> after derivation, or validated only on split-sample§§§ or databases	Retrospective cohort study, or poor follow-up	Analysis based on clinically sensible costs or alternatives; limited review(s) of the evidence, or single studies; and including multi-way sensitivity analyses
2c	"Outcomes" Research; Ecological studies	"Outcomes" Research		Ecological studies	Audit or outcomes research
3a	SR (with <a href="#">homogeneity*</a> ) of case-control studies		SR (with <a href="#">homogeneity*</a> ) of 3b and better studies	SR (with <a href="#">homogeneity*</a> ) of 3b and better studies	SR (with <a href="#">homogeneity*</a> ) of 3b and better studies
3b	Individual Case-Control Study		Non-consecutive study; or without consistently applied reference standards	Non-consecutive cohort study, or very limited population	Analysis based on limited alternatives or costs, poor quality estimates of data, but including sensitivity analyses incorporating clinically sensible variations.
4	Case-series (and <a href="#">poor quality cohort and case-control studies§§</a> )	Case-series (and <a href="#">poor quality prognostic cohort studies***</a> )	Case-control study, poor or non-independent reference standard	Case-series or superseded reference standards	Analysis with no sensitivity analysis
5	Expert opinion without explicit critical appraisal, or based on physiology, bench research or "first principles"	Expert opinion without explicit critical appraisal, or based on physiology, bench research or "first principles"	Expert opinion without explicit critical appraisal, or based on physiology, bench research or "first principles"	Expert opinion without explicit critical appraisal, or based on physiology, bench research or "first principles"	Expert opinion without explicit critical appraisal, or based on economic theory or "first principles"



# Haynes' 5S pyramid of EBM resources



Clinical decision support systems (CDS) **Systems**

HER built-in CDSs  
Diagnosis One  
AHRQ ePSS

Evidence based CPG  
Evidence based textbooks

**Summaries**

BMJ BestPractice  
BMJ ClinicalEvidence  
UptoDate  
StatRef

Evidence based journal  
abstracts

**Synopses**

DynaMed  
PIER  
EE+

Systematic reviews

**Syntheses**

Cochrane library  
Trip Database

Original journals

**Studies**

Medline mobile

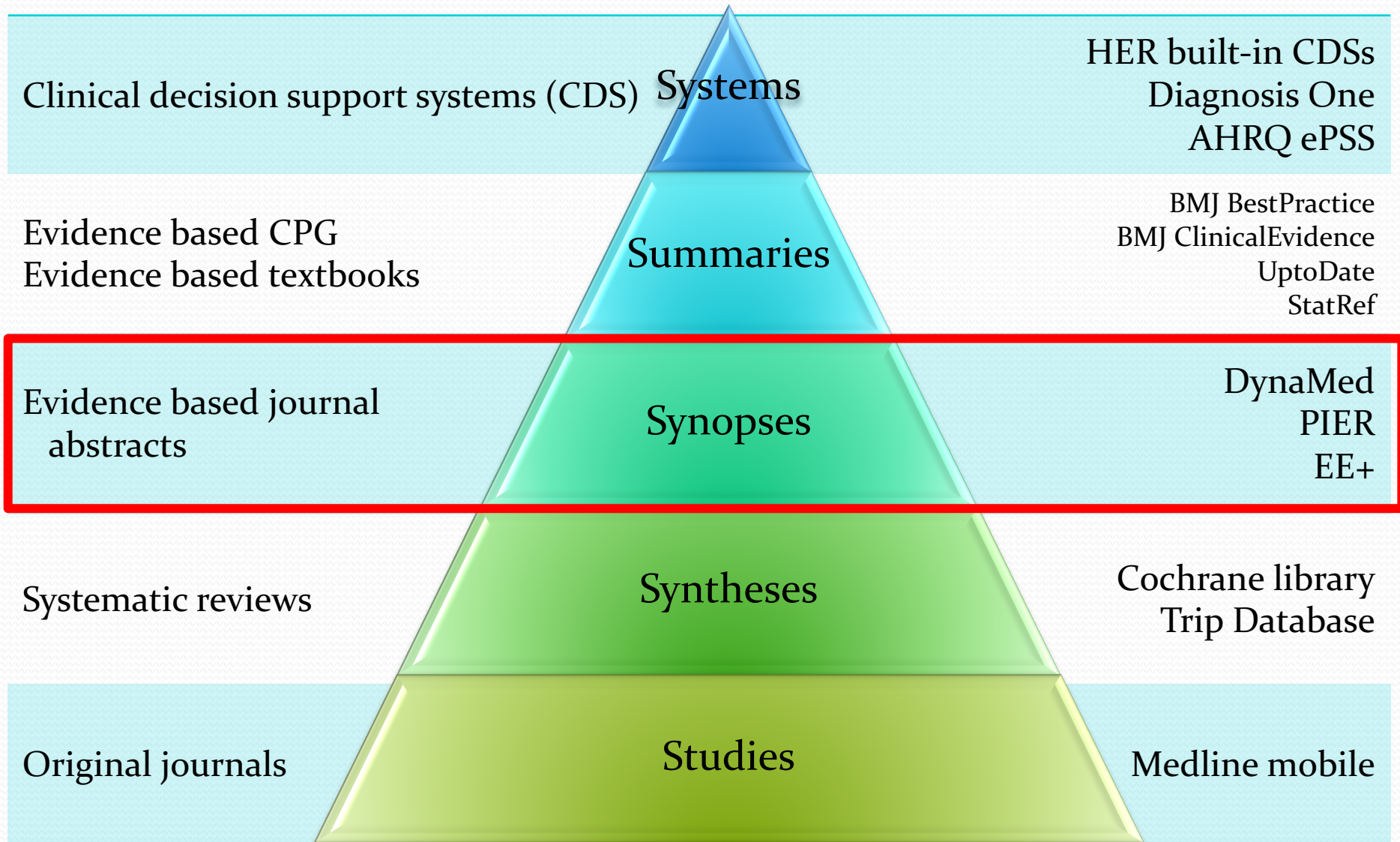
# Where do you search for guidelines?

1. BMJ Best Practice
2. CMA Infobase
3. Cochrane
4. DynaMed
5. EMBASE
6. Essential Evidence Plus
7. Medline
8. National guideline Clearinghouse
9. **TRIP database**

# TripDataBase

- Hands on training

# Haynes' 5S pyramid of EBM resources



BMJ Group and McMaster University's Health Information Research Unit are collaborating to provide you with access to current best evidence from research, tailored to your own health care interests, to support evidence-based clinical decisions.

This service is unique: all citations (from over 120 premier clinical journals) are pre-rated for quality by research staff, then rated for clinical relevance and interest by at least 3 members of a worldwide panel of practicing physicians. Here's what we offer:

- A [searchable database](#) of the best evidence from the medical literature
- An [email alerting](#) system
- Links to selected evidence-based resources

#### Hit Parade: The most often read articles in all disciplines, in the past 30 days

1. [Effectiveness of non-steroidal anti-inflammatory drugs for the treatment of pain in knee and hip osteoarthritis: a network meta-analysis.](#)  
Lancet (*Review*)
2. [Vaccines for preventing herpes zoster in older adults.](#)  
Cochrane Database Syst Rev (*Review*)
3. [Blood-Pressure and Cholesterol Lowering in Persons without Cardiovascular Disease.](#)  
N Engl J Med (*Original*)

#### News and headlines:


- ▢ [Warning issued over alarming rise in 'super-gonorrhoea' cases](#)  
Mon, 18 Apr 2016 16:00:00 GMT
- ▢ [Child head injuries could harm relationship with parents](#)  
Mon, 18 Apr 2016 13:30:00 GMT
- ▢ [Would you trust a smartphone app as a contraceptive?](#)  
Fri, 15 Apr 2016 12:00:00 GMT
- ▢ [Zika virus 'does cause birth defects'](#)  
Thu, 14 Apr 2016 16:30:00 GMT
- ▢ [Study argues ditching butter for veg oil won't prevent heart disease](#)  
Wed, 13 Apr 2016 16:30:00 GMT

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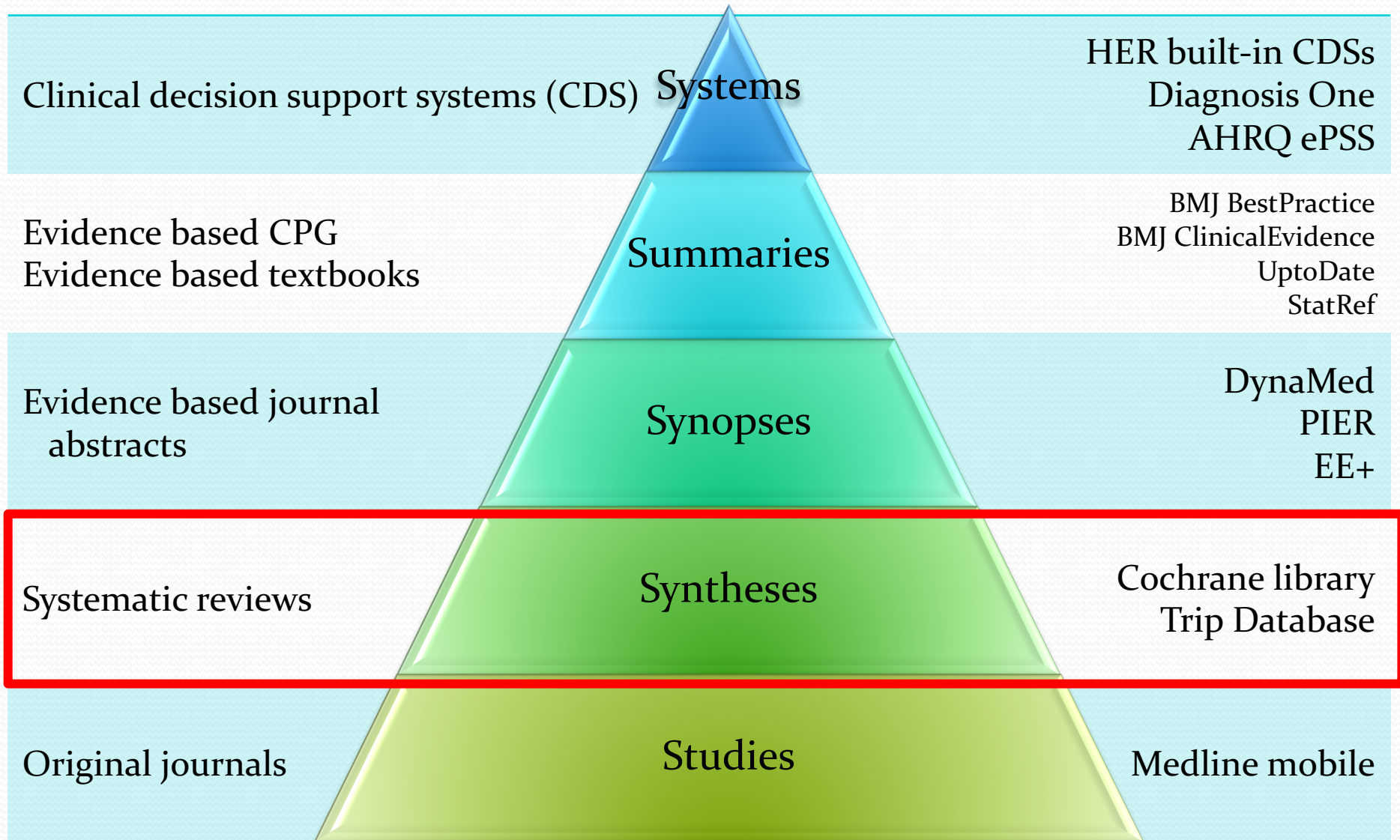
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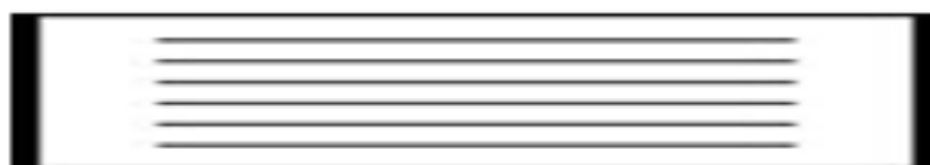
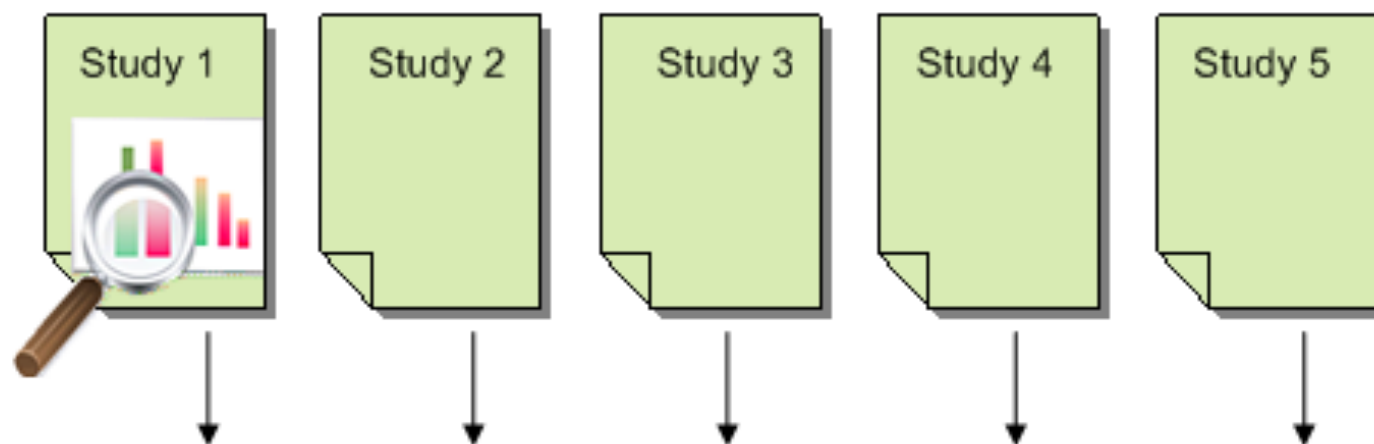
**Help:** [Unable to log in?](#) | [Not receiving email alerts?](#)



# Haynes' 5S pyramid of EBM resources

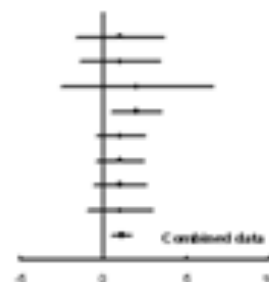


# Systematic Reviews and Meta-analysis: Putting Results into Perspective



## Systematic Review of Studies

A thorough, comprehensive, and explicit interrogation of the medical literature.



## Meta-analysis

A statistical approach to combine the data derived from a systematic review.

# What is Cochrane

- Archie Cochrane (1909-88)
  - British epidemiologist
  - Advocated RCTs to inform healthcare practice
  
- Cochrane collaboration
  - Cochrane Reviews (>4,000) registered
  - Identify, appraise and synthesise research-based evidence and present it in accessible format; regularly updated
  - Focus on interventions
  - Outstanding general resource



The School of Medicine,  
Cardiff University and the  
Cochrane Archive

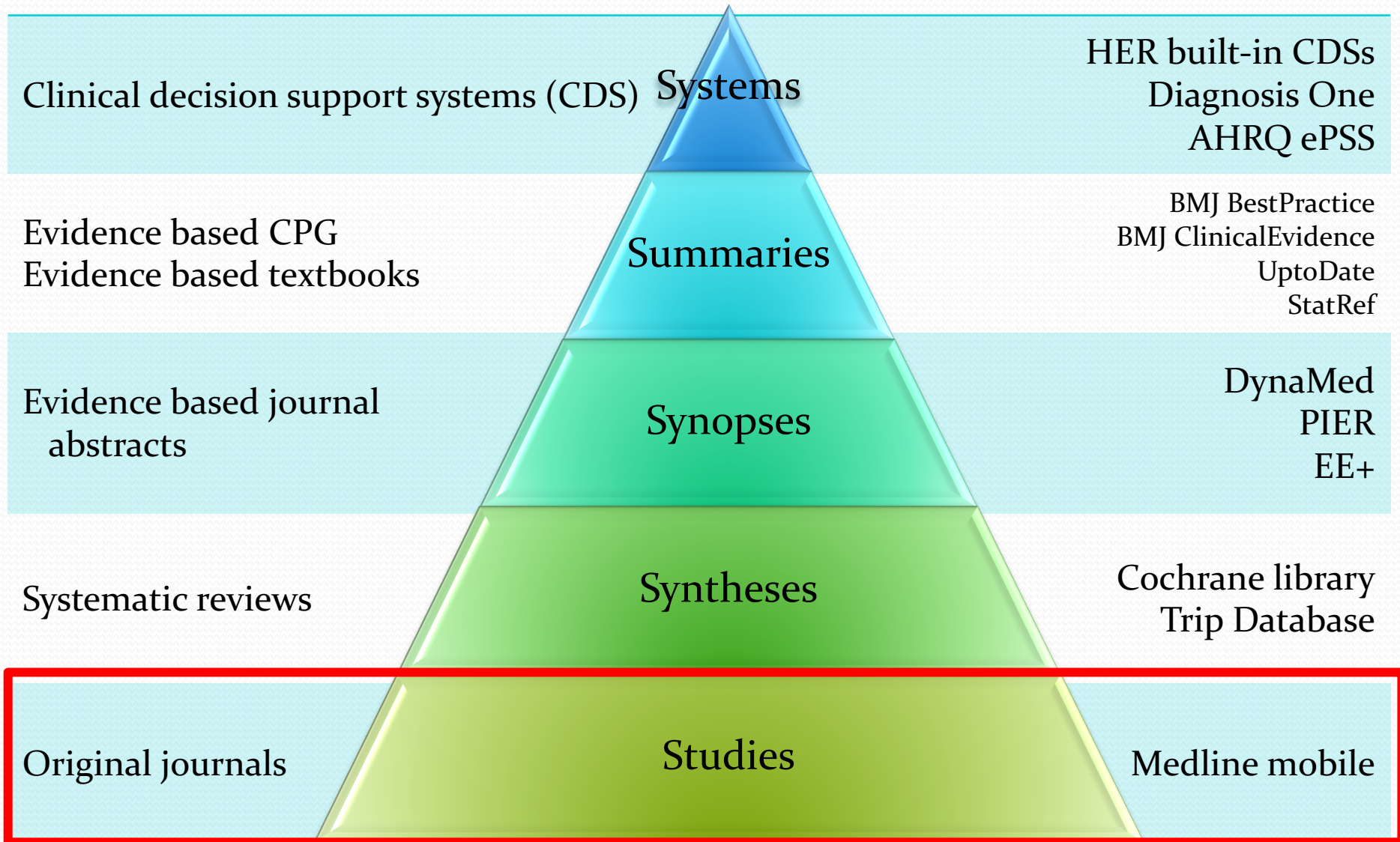




# Filtered and Critically Appraised EBM Resources

- *The Cochrane Library* by The Cochrane Collaboration via Wiley
  - Independent non-for-profit international collaboration
  - Reviews are among the studies of highest scientific evidence
  - Minimum Bias: Evidence is included/excluded on the basis of explicit quality criteria
  - Reviews involve exhaustive searches for all RCT, both published and unpublished, on a particular topic
  - Abstracts searchable for free on the Internet; complete database is available via OVID in SDL for all universities
  - 1995-

# Haynes' 5S pyramid of EBM resources



# Primary resources

- Global databases
  - (Cochrane, PubMed, Health PubMed, Ovid, Science Citations, grey literature, etc.)
- WHO databases
  - (global / regional): observatories; scientific journals (WHO Bulletin / EMHJ); surveillance; surveys; ICTRP; CPG, etc.
- National databases:
  - ENSTINET, SaudiMedLit; NCHS, CAPMAS; healthcare delivery institutions (websites, reports); clinical trials; grey literature, etc.

# PubMed

<https://www.ncbi.nlm.nih.gov/pubm>

- Hands on training

# PubMed® Online Training

[Return to PubMed](#)

## Tutorials:

- [PubMed Tutorial](#)  
[[Understanding the Vocabulary](#)] - [[Building the Search](#)] - [[Managing the Results](#)] - [[Saving the Search](#)] - [[Getting the Articles](#)]
- [The Basics of Medical Subject Headings \(MeSH®\) in MEDLINE®/PubMed®](#)
- [Searching Drugs or Chemicals in PubMed](#)
- [PubMed for Nurses](#)

### New

- [PubMed for Scientists](#)  
A Webinar introduction to PubMed for scientists.
- [Finding Genes in PubMed](#)
- [PubMed for Nurses](#)

## Quick Tours:

### Searching PubMed

- [Search PubMed by Author](#) (2 min., Dec 2014)
- [Searching PubMed by Author and Subject](#) (1 min., Dec 2014)
- [PubMed Simple Subject Search](#) (1 min., Dec 2014)
- [PubMed Simple Subject Search: How It Works](#) (1 min., Dec 2014)
- [Use MeSH to Build a Better PubMed Query](#) (3 min., YouTube video, February 2013)
- [PubMed: The Filters Sidebar](#) (2 min., YouTube video, December 2012)
- [Search for a Journal](#) (2 min., Dec 2014) - See also [Searching for Journals in the NLM Catalog](#)
- [Retrieving Citations from a Journal Issue](#) (1 min., Dec 2014)
- [Advanced Search Builder](#) (2 min., YouTube video, December 2011)

### Managing Results

- [Changing Your Default Display Settings](#) (2 min., Dec 2014)

### Links to Full Text (My NCBI)

Your library may use LinkOut Filters or Outside Tool to link from PubMed to full text articles. Ask your librarian.

- [Need the Full Text Article?](#) (2 min., YouTube video, revised April 2013)
- [Links to Full Text from Your Library \(Library LinkOut Filters\)](#) (3 min., Dec 2014)
- [Selecting Your Outside Tool Preference](#) (3 min., Dec 2014)

### Saving Searches (My NCBI)

- [Save Searches and Set E-mail Alerts](#) (2 min., June 2015)
- [E-mail Alerts for Articles from Your Favorite Journals](#) (3 min., June 2015)

### Collections and Bibliographies (My NCBI)

## Webcasts and Videos:

- [PubMed for Scientists](#) (45 min. video, November 2015)
- [Finding Genes in PubMed](#) (12 min. video, December 2015)
- [PubMed for Librarians](#) (5 part series, NLM Training Center)
- [PubMed Update](#) (26 min. video, MLA Annual Meeting Theater Presentation, May 2015)
- [PubMed Commons and Journal Clubs](#) (17 min. video, MLA Annual Meeting Theater Presentation, May 2015)
- [My NCBI Update: SciENcv & My Bibliography](#) (26 min. video, MLA Annual Meeting Theater Presentation, May 2015)
- [Branching Out: The MeSH® Vocabulary](#) (11 min. video)

## Handouts:

These handouts are a [U.S. National Network of Libraries of Medicine \(NN/LM\)](#) resource.

- [PubMed Basics](#) (tri-fold handout in [PDF](#), [docx](#) and [doc](#))
- [Searching PubMed with MeSH](#) (tri-fold handout in [PDF](#), [docx](#) and [doc](#))
- [Full Text and PubMed](#) (tri-fold handout in [PDF](#), [docx](#) and [doc](#))
- [PubMed Journal Searching](#) (tri-fold handout in [PDF](#), [docx](#) and [doc](#))
- [Advanced PubMed Searching Resource Packet](#) (tri-fold handout in [PDF](#), [docx](#) and [doc](#))
- [My NCBI](#) (tri-fold handout in [PDF](#), [docx](#) and [doc](#))
- [Loansome Doc](#) (tri-fold handout in [PDF](#), [docx](#) and [doc](#))
- [U.S. National Network of Libraries of Medicine \(NN/LM\) Non-English Guides to PubMed](#)

## More:

[LinkOut for Libraries Training and Educational Resources](#)

PubMed Instructional Resources (for Trainers)

# PubMed Health

<http://www.ncbi.nlm.nih.gov/pubmedhealth>

- **About Pubmed Health**

- PubMed Health provides information for consumers and clinicians on prevention and treatment of diseases and conditions.
- PubMed Health specializes in reviews of clinical effectiveness research, with easy-to-read summaries for consumers as well as full technical reports. Clinical effectiveness research finds answers to the question “What works?” in medical and health care.
- PubMed Health is a service provided by the National Center for Biotechnology Information (NCBI) at the U.S. National Library of Medicine (NLM).



# Medline via OVID

- Hands on training