



## Objectives:

1. To explain the role of searching the literature in conducting research
2. To recognize the levels of evidence
3. To differentiate the EBM resources
4. To identify where to search for evidence
5. To prepare proper search terms
6. To perform Boolean operators and MeSH indexing
7. To conduct literature search for evidence using Pubmed and Cochrane
8. To summarize the literature review for the IRB

# How to do literature search



Our Team:  Lama AlAssiri  Aued Alanazi

## Editing file



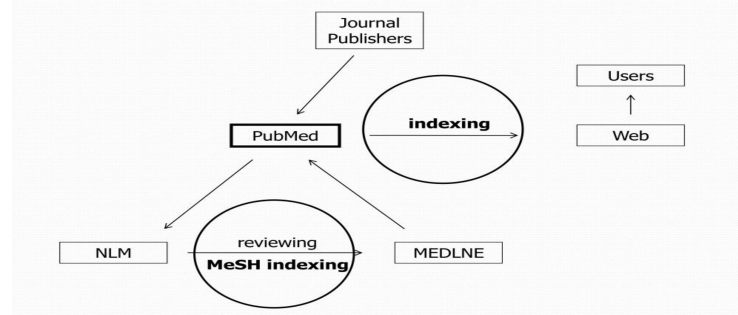
Black: in male AND female slides  
Red : important  
Gray: extra information

# Why Searching a literature?

- 1 Staying: Staying current with advances in medicine
- 2 Identifying: Identifying information and ideas
- 3 Increasing: Increasing your breadth of knowledge
- 4 Identifying: Identifying seminal works in your area

- 5 Carrying: Carrying on from where others have already reached
- 6 Avoiding: Avoiding reinventing the wheel
- 7 Putting: Putting your work into perspective

## Indexing a literature Where to start?



### General overview

- Internet search/Any search engine
- Guidelines review

### Thorough search

- Database search – Medline/PsycINFO
- Reference tracking-references in articles

### Refining

- Expert contacts

## More thorough search?



Prepare

What do we need to know about our topic?

Make a list of all the terms connected with our topic

Organize

1- Make a list of the words that are critical to your search.

2- Exchange/add some words if needed.

3- Note terms that you don't want to appear.

4- Exchange/add some words if needed.

Compine

Use AND to connect the terms we want to see.

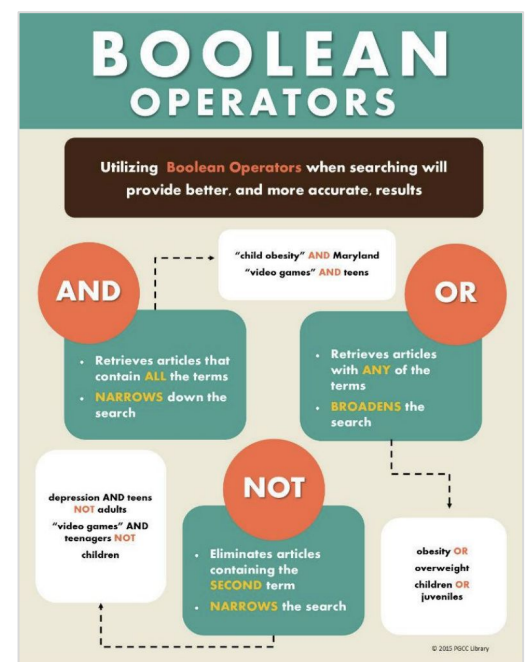
Use NOT to exclude terms we don't want.

Use OR to include similar terms.

Use Boolean operators to combine our most important terms

## Boolean Operators

- ❑ **MeSH indexing**
  - Acronym for “Medical Subject Headings”
  - Similar to key words on other systems
  - Used for indexing journal articles for MEDLINE
  - Arranged in hierarchy, from more general to more specific
  - Used by researchers
- ❑ **This will help you exclude all other diseases in that category**
- ❑ **This will give you fewer articles in your results page**



## Keys to Successful Searching

**Indexes:** Identifying appropriate indexes through clinical questions

**Components of “well-built clinical questions.”: PICO**

- ❑ **P**opulation / **P**atients  
Who are the relevant patients?
- ❑ **I**ntervention / **I**ndicator  
What is the treatment, diagnostic test, or exposure that you are interested in?
- ❑ **C**omparison / **C**ontrol  
Is there a control or alternative treatment you would like to compare to the intervention or indicator?
- ❑ **O**utcome  
What do you intend to accomplish, measure, improve or affect?
- ❑ **T**ime  
What is the appropriate follow-up time to assess outcome?

**Evidence Based practice (EBP) involves the following:**

1

Best research and evidence

2

Resources and Practitioners expertise

3

Client/Population Characteristics and Values

# Evidence Based Practice

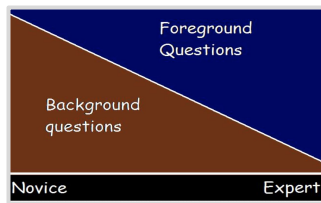
## The 5-step EBM process:

### 1st Ask a clinical question



#### 1) Background questions

Very basic and broad questions, usually asked by novices.



#### 2) Foreground questions

After specifying and limiting the background question, usually asked by experts.

Example of **Background** question:

"what is malaria?"

Example of **Foreground** question:

"Are bed nets effective in lowering the incidence/prevalence of malaria in developing countries?"

### 2nd Acquire available research and evidence

- After knowing your question, it will need to undergo investigation by **searching for information relevant to your topic.**

#### Where do you search for evidence?

- ACP Clinical Guidelines and Recommendations
- BMJ BestPractice/Clinical Evidence
- ClinicalKey/MDConsult
- Cochrane Library
- DynaMed
- Essential Evidence Plus
- Google
- Google Scholar
- Medscape

- PubMed
- Saudi Digital Library
- Skyscape
- StatRef
- TRIP Database
- UpToDate
- Web of Knowledge
- WebMD (Med-U)
- Other

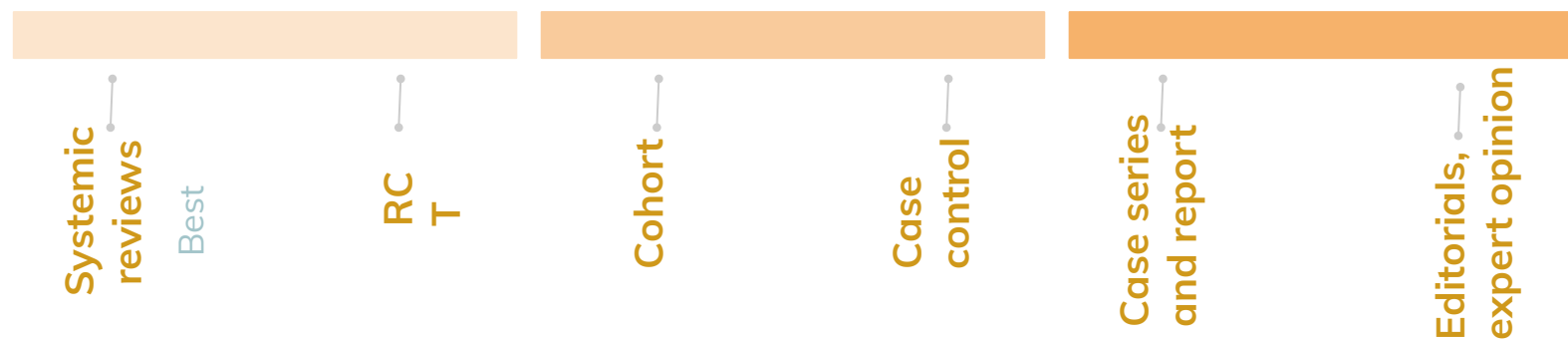
### 3rd Apprise the research quality

### 4th Apply research to practice

### 5th Assist the impact of change

# Hierarchy of Evidence

## Levels of Evidence:



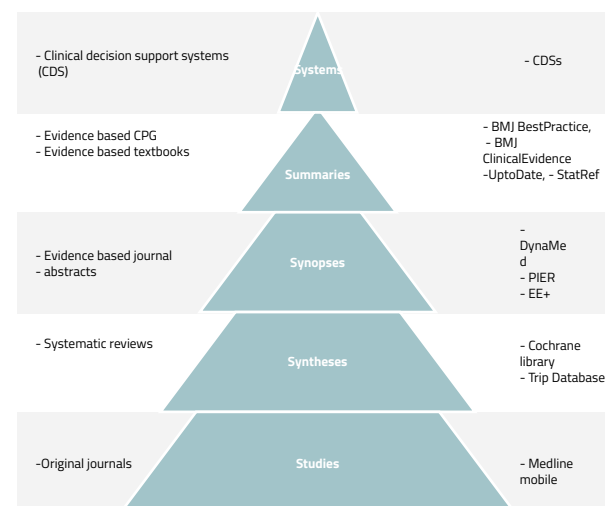
## Haynes' 5S pyramid of EBM resources:



### Systems

Found clinical decision support system (CDS)

**Examples:** HER built-in CDSs, Diagnosis One, AHRQ ePSS



### Summaries

Evidence based CPG  
 Evidence based textbooks

**Examples:** BMJ BestPractice, BMJ ClinicalEvidence, UptoDate, StatRef.



### Synopses

Evidence based journal abstracts

**Examples:** DynaMed, PIER, EE+



### Syntheses

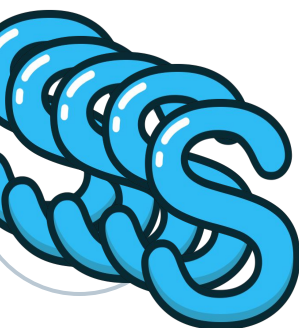
Systematic reviews

Example: Cochrane library, Trip Database

#### What is Systematic Reviews and Meta-analysis?

- Systematic Review of Studies: is a thorough, comprehensive, and explicit interrogation of the medical literature.

- Meta-analysis: is a statistical approach to combine the data derived from a systematic review.



### Studies

Original journals

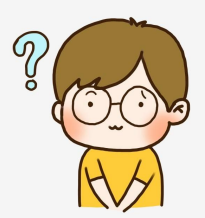
**Examples:** Medline mobile

#### Primary resources:

- Global databases (Cochrane, 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; NHCS, CAPMAS; healthcare delivery institutions (websites, reports); clinical trials; grey literature, etc.



# Where do you search for guidelines?

- 💡 BMJ Best Practice
- 💡 DynaMed
- 💡 Medline

- 💡 CMA Infobase
- 💡 EMBASE
- 💡 National guideline Clearinghouse

- 💡 Cochrane
- 💡 Essential Evidence Plus
- 💡 **TRIP database**

## EBM Resources

### Cochrane

[\(Click Me!\)](#)

Made by Archie Cochrane (1909-88)

- British epidemiologist
- Advocated RCTs to inform healthcare practice

#### Cochrane collaboration

- Cochrane Reviews (>4,000) registered
- Identify, appraise and synthesize research-based evidence and present it in accessible format; regularly updated
- Focus on interventions
- Outstanding general resource

#### The Cochrane Library by The Cochrane Collaboration via Wiley

- 1995-present
- 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

Scenario: Professor X is teaching the Global Health course and asks that you write a descriptive five-page paper describing a program that has made a positive impact on one of the eight 2015 Millennium Development Goals or on one of the many Healthy People 2020 objectives. How would you go about it? State a general research question, Locate background information , Analyze search results , Identify high quality articles

### Medline via OVID

- Hands on training



## What is PubMed?

- 01** PubMed is a database developed by the National Center for Biotechnology Information (NCBI) at the U.S. National Library of Medicine (NLM) available on the Web.
- 02** PubMed Health provides information for consumers and clinicians on prevention and treatment of diseases and conditions.
- 03** 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.
- 04** NLM is the world's largest medical library.
- 05** NLM has been indexing the biomedical literature since 1879.
- 06** MEDLINE is a database of indexes (with citations and abstracts).
- 07** PubMed provides access to MEDLINE.
- 08** PubMed database is more current and comprehensive than MEDLINE (it includes citations even prior to their indexing with MEDLINE).

## Why is PubMed?

### Source:

- MEDLINE (NLM database)
- Life science journals
- Online books

**Over 20 million citations for biomedical literature from app. 5500 selected journals from over 70 countries**

### Fields:

- Medicine
- Nursing
- Dentistry
- Health care system
- Preclinical sciences

# Critical Appraisal Table – Key Elements

- ❑ **Reference or ID number**  
the table must include a unique identifier for ease in finding the record being appraised.
- ❑ **Study Design**  
this helps with determining the strength of evidence of the data.
- ❑ **Participants**  
How many participants were in the study?
- ❑ **Characteristics of the problem within the population**
- ❑ **Intervention outcomes.**
- ❑ **Include or exclude the study?**  
based on what you find

Reference	Study Design	Population	Intervention	Outcomes	Year
Turner et al. 2011	Cross-sectional Study	11 focus groups with 80 participants	Interventions: Alternative forms of tobacco cessation, including e-cigarettes are discussed, and it is recommended that additional studies are needed.		
Kahn et al. 2013	Focus Groups	11 focus groups with 80 participants	Interventions: Alternative forms of tobacco cessation, including e-cigarettes are discussed, and it is recommended that additional studies are needed.		
Kahn et al. 2014	Review Article	14 articles	Interventions: Alternative forms of tobacco cessation, including e-cigarettes are discussed, and it is recommended that additional studies are needed.		
Wagner et al. 2014	Mail survey	1524 ACOG members/ 212 eligible	Interventions: Alternative forms of tobacco cessation, including e-cigarettes are discussed, and it is recommended that additional studies are needed.		
Wagner et al. 2015	Research Article (Pilot Evaluation)	n/a	Interventions: Alternative forms of tobacco cessation, including e-cigarettes are discussed, and it is recommended that additional studies are needed.		

# Key Elements of High Quality Articles

- ❑ **Peer Reviewed Journal**  
This is a process where experts in a scholarly discipline review the research of an author or authors to ensure that the article meets standards for publication. The criteria includes: quality, significance, methodology, and importance.
- ❑ **Currency**  
Locating the most current five or ten years of information is not a gold standard. There are several factors that determine how far back in time your search should run.
- ❑ **Clearly recognized research question or problem:**  
The introduction or background should include what is known, what is unknown and what is the author's aim or hypothesis.
- ❑ **Study design**  
Revisit the PUBLIC HEALTH EVIDENCE BASED PYRAMID to review different types of study designs.
- ❑ **Times Cited**  
This is an indication that something important is going on with the article, but one should not assume that the article is necessarily good

# Summarizing the Literature Review

- 1 Introduction:** Gives a quick idea of the topic of the literature review, such as the central theme or organizational pattern.
- 2 Body:** Contains your discussion of sources and is organized either chronologically, **thematically**, or methodologically
- 3 Conclusions/Recommendations:** Discuss what you have drawn from reviewing literature so far. Where might the discussion proceed?



# Lecture notes 438 ...

- aim of searching for literature: who does it? Any healthcare professional
- google isn't the best
- 5 steps for EBM: pt with disease X are adults (observation not EBM) evidence is prioritized
- the research question I will develop is either:
  - background:** if I want to know background info about something (not what we do in research questions)
  - Foreground:** what research questions should be
- the 2nd question is better (foreground q) and it is what we answer in research
- where do I search for evidence? How do I start? there are priorities in what/how to search
- synthesis and studies is what we should focus on
  - systematic reviews: collection of studies being reviewed/critiqued → best found in Cochrane
  - Sometimes we have studies that compare drug A to drug B.. what study should I take? I don't know. So some people founded cochrane where they take a few studies that study the same thing (drug a vs drug b) that have tiny differences (if there's any). These people read these studies, criticize them within certain criteria, and come up with one answer to the question: which drug is better
    - meta analysis:
      - can't do it if there are minute differences that they put it all together in one study (combine the participants and analyze them again) you don't have to know meta analysis.
      - Comes from systematic review
      - If the studies weren't similar enough to pool all participants together, no meta analysis, just systematic review
    - Best thing to look for your research question in cochrane library first.
  - What is cochrane? **Cochrane** (previously known as the **Cochrane Collaboration**) is a British international charitable organisation formed to organise medical research findings to facilitate evidence-based choices about health interventions involving health professionals, patients and policy makers.
  - Studies: it is where I look for in the databases that you already know
  - **SaudiMedLibrary is very important**
  - NCBI is what developed pubmed
  - index, reference, citation
    - Index: some journals and databases like pubmed (not as much as journals). Some journals are indexed in pubmed → you can find whatever subject from that paper in that database like hungerstination and restaurants. Not all restaurants,/journals are indexed though.
    - Usually, prestigious journals are indexed in pubmed
    - Citation: (number) someone in 3 journals/papers/paper (whatever literature is there) used my paper as a reference
    - Google scholar shows citation number
    - Reference: list of references that I looked into and took background info from
    - Check endnote/mendeley
  - pubmed provides connection to medline
- how do you index?
  - we send our manuscript to the journal, if they accept publishing it, they will contact pubmed and tell them we want to index this, we accepted this study
    - prepare:
      - after refining your question, you search for similar things in the literature • Ex: attitude/ knowledge of primary school teachers in regard to adhd
      - Make a list of important words in the research: knowledge, attitude, adhd, teachers --- I don't want (filtering more): parents
    - words like and not or are very important to use! Boolean operator
      - ADHD + knowledge + teachers + attitudes
      - Not: parents, high school
      - Or: synonyms → knowledge or attitude only, or both altogether ==> so (knowledge or attitude) + teachers adhd
- mesh indexing: used like keywords → adhd and I want something specific in it so I go to mesh (branches of adhd) which helps me filter the results (not everything can be found in adhd)
- "head injury" search on mesh helps exclude all other diseases in that category
- Boolean operator and: any paper that has both those 2 words together.. papers with only 1 of the words won't appear
- clinical scenario is not very important
- **Never neglect the reference tracking as it can be useful. It is when you check the reference list of paper you have used and look for references related to your topic**

# Lecture notes 439 ...

How to do Literature search

5 steps EMB process:

Start by assessing the impact of change then ask clinical question then acquire available resources then appraise (قيم) quality then apply it by practicing .

Foreground Vs background questions:

Foreground (clear and simple can be used as intro to Background question)

background ( from resources -books etc)

Starting any research you will need Background question.

Haynes' 5S pyramid of EBM resources : (الهرم)

1-( studies ) - if you want to search for reviews, topics is not the best way (why?) because it's abroad and not all has evidence based and you need to find many researches has Background question.

2-( syntheses) - result from many studies in one document  ex **systemic review** .

( synapses ) - findings of the synthesis.

3-The most important ( summaries) -combined results of the synapses and the experts opinion to create single document that can provide recommendations ( som important for decision maker .

4-( Systems) - CDS these electronic information will link the information with guidelines for practice to create the best Health care practice.

Key elements of high quality articles:

1-peer reviewed journals: يعني انه منشور في مجلة و عليه نقاط وله شروط معينة .


2-currency : الافضل تستخدم الدراسات الحديثة ولكن ليست قاعده عامة :

3-Times cited

بشكل عام اذا شفت ال data base واكدت ان البحث اقتبس منه فالاغلب انها مرفوضه حتى لو كانت دراسة جديدة

# Lecture Summary

## Evidence Based Practice (EBP)

<b>Involves the following:</b>	Best research and evidence - Resources and Practitioners expertise - Client/Population Characteristics and Values				
<b>The 5 Steps in EBM process:</b>	<p><b>ASK</b></p> <p>1- Background questions: very basic, usually asked by <b>novices</b>.</p> <p>2- Foreground questions: after specifying and limiting the background question, asked by <b>experts</b>.</p>	<p><b>ACQUIRE</b></p> <p>Where to search for evidence?</p> 	<p><b>APPRAISE</b></p>	<p><b>APPLY</b></p>	<p><b>ASSIST</b></p>

- |   |   |  |
|---|---|--|
| 1- ACP Clinical Guidelines and Recommendations.<br>2- BMJ BestPractice/ Clinical Evidence.<br>3- ClinicalKey / MDConsult<br>4- Cochrane Library<br>5- DynaMed | 6- Essential Evidence Plus<br>7- Google<br>8- Google Scholar<br>9- Medscape<br>10- PubMed | 11- Saudi Digital Library<br>12- Skyscape<br>13- StatRef<br>14- TRIP Database<br>15- UpToDate and others |
|---|---|--|

<b>Levels of Evidence:</b>	(1) Systemic Reviews	(2) Randomized Controlled Trials	(3) Cohort Studies	(4) Case-Control Studies	(5) Case series and reports	(6) Editorials, Expert opinion
----------------------------	-------------------------	-------------------------------------	-----------------------	-----------------------------	--------------------------------	-----------------------------------

<b>Haynes' 5S pyramid of EBM resources:</b>	<p><b>1S</b> -Systems</p> <p>Found clinical decision support system (CDS)</p>	<p><b>2S</b> - Summaries</p> <p>Evidence based CPG Evidence based textbooks</p> <p><b>Examples:</b> BMJ BestPractice</p>	<p><b>3S</b> - Synopses</p> <p>Evidence based journal abstracts</p> <p><b>Examples:</b> DynaMed, PIER, EE+</p>	<p><b>4S</b> - Syntheses</p> <p>Systematic reviews</p> <p><b>Examples:</b> Cochrane library, Trip Database</p>	<p><b>5S</b> - Studies</p> <p>Original journals <b>Primary resources:</b></p> <ul style="list-style-type: none"> <li>- <b>Global</b> databases.</li> <li>- <b>WHO</b> databases</li> <li>- <b>National</b> databases</li> </ul>
---	---	--	--	--	---

<b>EBM Resources</b>	<b>Cochrane Library - PubMed Health - Medline via OVID</b>
----------------------	--

# Questions

**(1) Which of the following does EBP involves?**

- A) Research and evidence.
- B) Resources and expertise.
- C) Population characteristic and values.
- D) All of the above.

**(2) Which is the correct strategy to find information on Zika virus and any of these countries Brazil, Mexico and the United States?**

- A) Zika AND Brazil AND Mexico AND United States
- B) Zika AND (Brazil OR Mexico OR United States)
- C) Zika OR (Brazil OR Mexico OR United States)
- D) Zika OR (Brazil OR Mexico OR United States)

**(3) Which of the following is an example for summary resources?**

- A) DynaMed.
- B) Cochrane Library.
- C) BMJ BestPractice.
- D) Medline mobile.

**(4) What are the benefits of Cochrane Library?**

- A) Minimum Bias.
- B) Reviews are among the studies of highest scientific evidence.
- C) Non-for-profit.
- D) All of the above

**(5) PubMed is an example of which database?**

- A) Global databases.
- B) WHO databases.
- C) National databases.
- D) All of the above.

**(6) What are the benefits of PubMed**

- A) Provides information on prevention end treatment of diseases.
- B) Easy to read summaries.
- C) Specializes in reviews of clinical effectiveness research.
- D) All of the above

Answers:

1: D, 2: B, 3: C, 4: D, 5: A 6: D

## Leaders



**Rania Almutiri**



**Homoud algadib**

### **39- Done by:**

**Mohamed Albabtain - members**  
**Rania Almutiri- note' taker**

### **38-Done by:**

**Deana Awartani**  
**Yasmeen Almousa**  
**Meshaal alghanim**  
**Noura AlTurki**

### **Reviewed by:**

**Lama AlAssiri**  
**Noura AlTurki**