



Designing Search Strategies for Medical Information

Lebanese Order of Pharmacists

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Presented by

Aida Farha

Medical Information Specialist
Medical Librarian
AUB Saab Medical Library
aida.farha@aub.edu.lb

► Objectives

- To understand value of information literacy;
- To do effective Medline/PubMed searching;
- To identify reliable resources for medical/health information;
- To understand EBM searching;
- To provide tips on effective Googling...



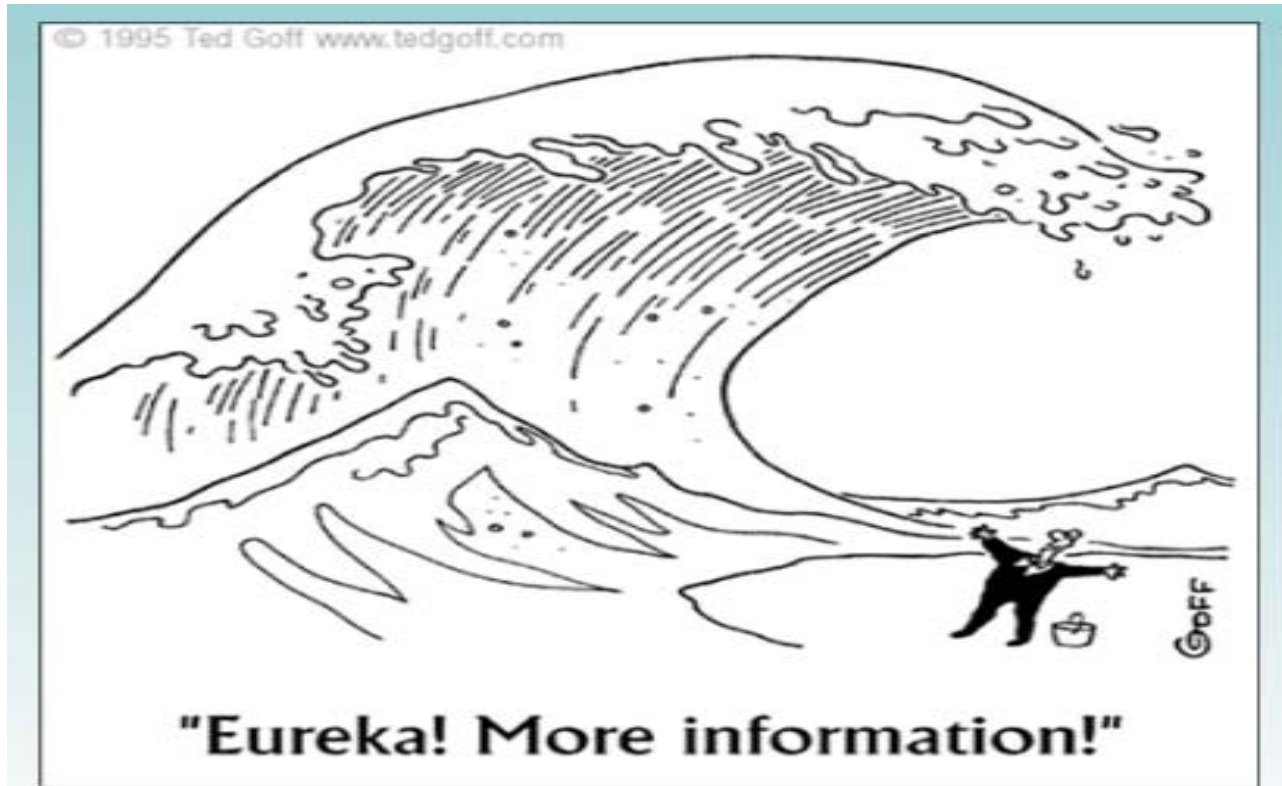
*Library session,
anyone?!*

- ▶ ***"Half of what you are taught as medical students will in 10 years have been shown to be wrong. And the trouble is none of your teachers knows which half"***

Dr. Sydney Burwell 1956

*It is no longer your job to know everything, even in your chosen specialty;
It **IS** your job to be able to find the information as & when needed...*

Tsunami of Information



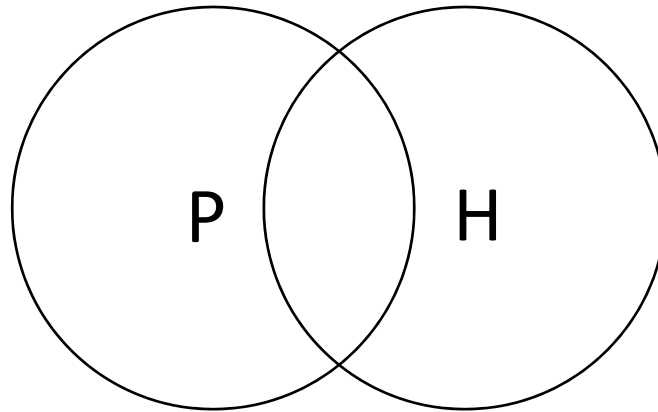
2010 numbers:

- Every day 6500 medical articles
- 1800 article into PubMed/day
- 75 RCT/day into Pubmed

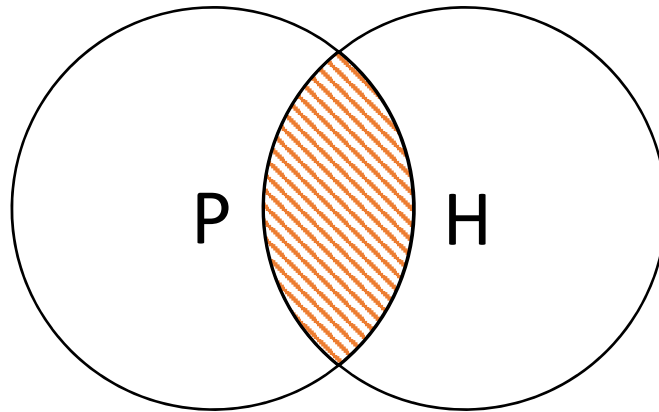
High cost of not finding information...

Boolean Operators

Boolean Operators

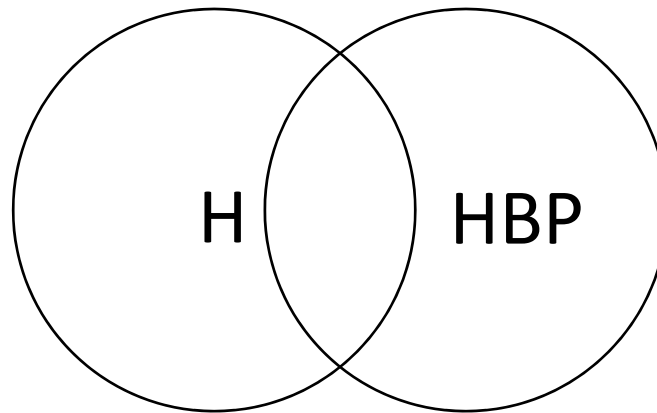


Boolean Operators

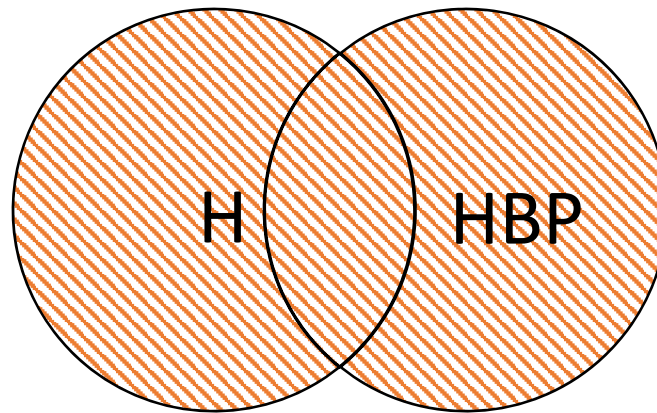


P AND H

Boolean Operators



Boolean Operators



H OR HBP

Default Boolean

Hospital infection

Hospital **AND** infection

“hospital infection”

Truncation

Polluti*

Truncation

~~Polluti*~~

Pollut*

Truncation

Cat*

Truncation

~~Cat*~~

Cat OR Cats

Basic Computer Search Options...

- Boolean operators and nesting;
- Boolean by default;
- Truncation;
- “Phrase search”;
- Proximity search;
- Field search;
- Controlled vocabulary vs. free-text.

▶ Google Tips...

- Boolean AND by default
- Insert OR
- “phrase”
- Star * is one word within a phrase “end * life”
- Search for a range ex. digital cameras 250\$..500\$
- To ask Google to search Pubmed, at the end put **site:nih.gov**
- To locate librarians’ guides, at the end put **libguides**



▶ LOP Resources

- *Micromedex*
- *Medline*
- *UpToDate*
- *Books@OVID...*

▶ **PubMed (<http://pubmed.gov>)**

Indexes 5700 international journals, plus e-books:

- Goes back to early 1900
- Medline, plus dental, nursing, history, complimentary medicine...
- PubMed Central
- E-Books
- 2 journals from Lebanon.



► MeSH Tree Structure

CARDIOVASCULAR DISEASES

Heart diseases

- Heart arrest

- Endocarditis

- Arrhythmias, cardiac
 - atrial fibrillations
 - bradycardia

- Heart failure

- Heart rupture

- Myocardial ischemia

 - Myocardial infarction

 - Angina pectoris

Vascular diseases

- Hypertension

- Varicose veins

- Cerebrovascular disorders
 - stroke



► Free Resources Beyond PubMed

Medicines Learning Portal

<http://www.medicineslearningportal.org>

Clinical eCompanion <http://ecompanion.pitt.edu/>

NHS Specialist Pharmacy Services <https://www.sps.nhs.uk/>

PillBox <https://pillbox.nlm.nih.gov>

Drug Information

<http://dailymed.nlm.nih.gov>

<http://druginfo.nlm.nih.gov>

http://www.drugs.com/drug_interactions.html

► Free Resources Beyond PubMed

NLM image search engine

<http://openi.nlm.nih.gov>

Instructions to Authors

<http://mulford.utoledo.edu/instr/>

POPLINE

<https://www.popline.org/>

TOXNET

<https://toxnet.nlm.nih.gov/>

ChemidPlus, Lactmed, LiverTox, etc...

Global Health Library

<http://www.globalhealthlibrary.net/php/index.php>

► Consumer Resources

MedlinePlus <http://www.medlineplus.gov>

HealthReach <https://healthreach.nlm.nih.gov/>

PubMed Health Drugs

http://www.ncbi.nlm.nih.gov/pubmedhealth/s/drugs_and_supplements/a/

Arabic Sites

<http://www.healthinfotranslations.com/arabic.php>



▶ Clinical Practice
Pre-EBM
Revolution...

► **Experts NOT always correct!**

Sometimes, experts give advice lacking evidence and proves to be harmful:

Beneficial effects of prenatal steroids given to mothers at risk of delivering prematurely was first reported in 1960s.

By 1982, there were enough RCT supporting this beneficial effect, yet in mid 1980s an expert did a narrative review and warned against use of steroids. In 1989, a SR was done on all trials concluded it is beneficial to give steroids.



▶ **Another Example...**

Physicians traditionally recommended babies to sleep on stomach, thinking that sleeping on their backs causes SIDS;

In 1980s, some physicians looked for the evidence for infants sleeping position, and found out that sleeping on their backs lead to dramatic decrease in deaths due to SIDS;

Had someone asked that question 20 years earlier, thousands of babies lives could have been saved...

▶ **Clinical Practice Situation**

Archie Cochrane 1972:

“healthcare not always based on evidence”

IOM study 2003: 17 yrs.

- 75% of practitioners were unaware of 2 high-profile NIH funded studies on conditions relevant to their practice *[Tilburt JC, 2009]*.
- Half US patients with diabetes, asthma, hypertension receive recommended care, *[NEJM 2003]*.

► **Clinical Practice Situation...** (cont'd)

Physicians get ~60 clinical questions / week, answer only **30%** of them, the other **70%** are not pursued because...

Some medical products & practices disseminate into healthcare because of power & money rather than evidence *[McKinlay JB, 1981]*.

“Late 1980s, it has been estimated that antiarrhythmic drugs used in patients with MI killed as many Americans every year as were killed during the whole of Vietnam war” *[Moore et al. 1995]*.

► Deterioration in Performance

1. The level of diastolic blood pressure
2. The patient's age
3. ???
4. The amount of target-organ damage

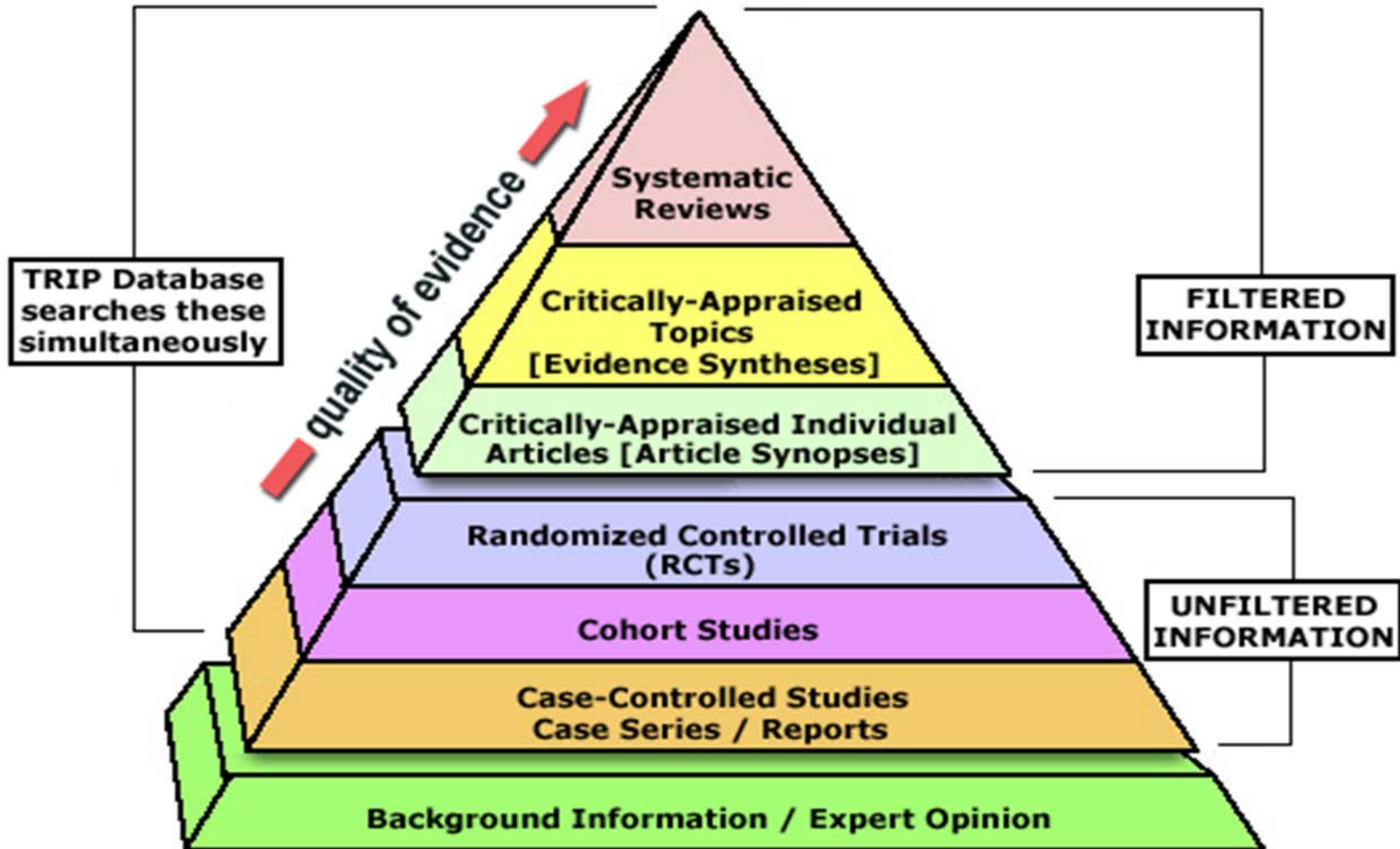
So, Early 1990s Start of Evidence-Based Medicine Revolution...

**“The integration of
best research
evidence with clinical
expertise and patient
values.”**

(Sackett et al., 2000)



Where to Look for Evidence?



➤ **To Answer a Clinical Question...**

- **BACKGROUND Questions** - You need to get basic information on a condition, treatment etc.
- **FOREGROUND Questions** - You are familiar with a condition, test, treatment, etc. and trying to find best answer based on evidence:
 - (1) **Pre-Appraised or EBM Literature** – these review research on a topic, provide synopses of important studies, &/or offer summaries based on EBM principles: designed to make EBM a practical reality at bedside.
 - (2) **Primary Literature** – If pre-appraised resources do not answer question, turn to original studies. Be aware that all studies are not created equal, so do critical appraisal.

► **Free EBM Resources...**

EvidenceUpdates

register from AUB SML homepage

TripDatabase <http://www.tripdatabase.com>

Guideline <http://www.guideline.gov>

NICE Guidance <https://www.nice.org.uk/guidance>

PubMed Health

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

► **Final Words on EBM...**

EBM builds on & reinforces but never replaces clinical judgment or experience...

No matter how good the evidence is, evidence doesn't make decisions. People do. But perhaps with the evidence in hand, some future decisions might be just a little more informed.



“A speech should be like a woman's skirt: long enough to cover the topic yet short enough to keep the interest”

Winston Churchill

Thank you
Any Questions?

That's all for today's ppt lesson.