

How to Conduct a Literature Search

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Outline

- What is a literature review
- What is a literature search
- Why do we do literature reviews
- □ The common literature databases
- □ How to conduct the search
- How to focus your search and apply limits
- Practical Example



What is a literature review?

It is an objective summary and critical analysis of all available research (and non-research) literature on the topic being studied

Source: Cronin P, Ryan F, Coughlan M. Undertaking a literature review: a step-by-step approach. Brit J Nurs 2008; 17(1): 38-43.



Types of literature reviews

Types of literature reviews Traditional Structured (unstructured) Systematic Review Meta-analysis



What is a literature search?

- "A <u>systematic</u> and thorough search of published literature in order to collect information about a particular topic" *
- Note that literature search is different from the literature review
- It is the means that we use in order to collect the appropriate data we want to include in our literature review

Why do we search the literature?

- □ To advance our medical knowledge
- For clinicians to answer questions about the best treatment
- Stimulates us to develop new research ideas through identifying gaps in knowledge
- Differentiate what has been done vs. what needs to be done
- Helps us learn about the newest developments in our area of research (and worldwide experts)
- □ To prepare a literature review for our project



Where do we start?

- Scientific databases
- Other search engines
- Journal databases (sometimes not indexed e.g. Ann Saudi Med, Saudi Med J....etc.)
- Books
- Governmental websites (e.g. unpublished estimates from the Ministry of Health)
- WHO



Examples of search engines

















Examples of scientific databases

General:

- □ PubMed/Medline
- □ Clinical Evidence
- Cochrane
- □ Best Evidence
- Best Treatment
- □ Trip database
- Bandolier

EBM Guidelines:

- PRODIGY
- SIGN
- Others



More databases

- **CINAHL** Cum. Index to Nursing and Allied Health Literature
 - □ http://www.cinahl.com
- **ERIC** Education Resources Information Center
 - □ http://www.eric.ed.gov
- **PsycINFO** A database of American Psychological Association
 - □ http://www.apa.org/psycinfo
- **Campbell Collaboration**
 - □ http://www.campbellcollaboration.org
- **BEME** Best Evidence Medical Education
 - □ www.bemecollaboration.org

Regional and local databases

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- □Index Medicus of the Eastern Mediterranean Region
 - http://www.emro.who.int/informationresources/imemr-database/
- □Saudi Medical Literature:
 - http://saudimedlit.librarynwafh.com/index.html



Evidence Based Guidelines

- NICE National Institute for Health and Clinical Excellence
 - http://www.nice.org.uk
- PRODIGY formerly CKS
 - http://prodigy.clarity.co.uk/home
- NGC National Guideline Clearinghouse
 - http://guideline.gov/
- SIGN Scottish Intercollegiate Guidelines Network
 - http://www.sign.ac.uk/index.html



Start broad then refine your search

- Internet search/Any search engine
- Guidelines review

- Database search Medline/PsyclNFO
- Reference tracking-references in articles
- Use limits and boolean operators
- Expert contacts

General overview Thorough search



Tips to optimize your search

- Well formulate your research question
- Decide what the criteria are for including or excluding the studies in your review
 - English articles; age group? Gender? Exclude other conditions? region? country?etc.
- Specify what sort of information you are searching for
 - methods? outcomes? epidemiologic? intervention?
- Having an outline for your literature review will help guide your literature search



What are Medline and PubMed?

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- PubMed is a database developed by the National Center for Biotechnology Information (NCBI) at the National Library of Medicine (NLM) available on the Web.
- NLM is the worlds largest medical library
- NLM has been indexing the biomedical literature since 1879
- MEDLINE is a database of indexes (with citations and abstracts)
- Since 1996, Medline is accessed for free through PubMed
- PubMed database is more current and comprehensive than MEDLINE
 (it includes citations even prior to their indexing with MEDLINE)



Practical example for searching through Medline





Formulate your research question

□ For example, you are interested in learning about the association between TB and DM in Saudi Arabia, and you believe (based on previous knowledge) that DM may increase the risk of TB. However, what does it do to seropositivity?

Research question:

How does DM influence seropositivity of TB in the Saudi population?



Decide what keywords to use

- Keywords are the words you will use in the search engine query box
- Published work that is available in Pubmed (and other databases) uses key words to index the articles
- It is wise to think of the key words that will give you coverage of what you are searching for

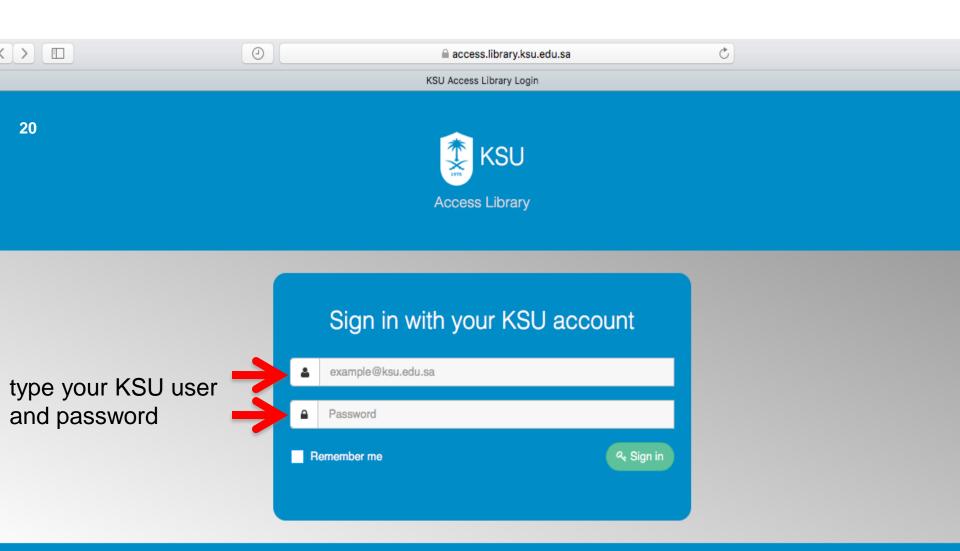
- "Type II DM", "TB", "Saudi Arabia", "seropositivity",
 - To see what has already been done first



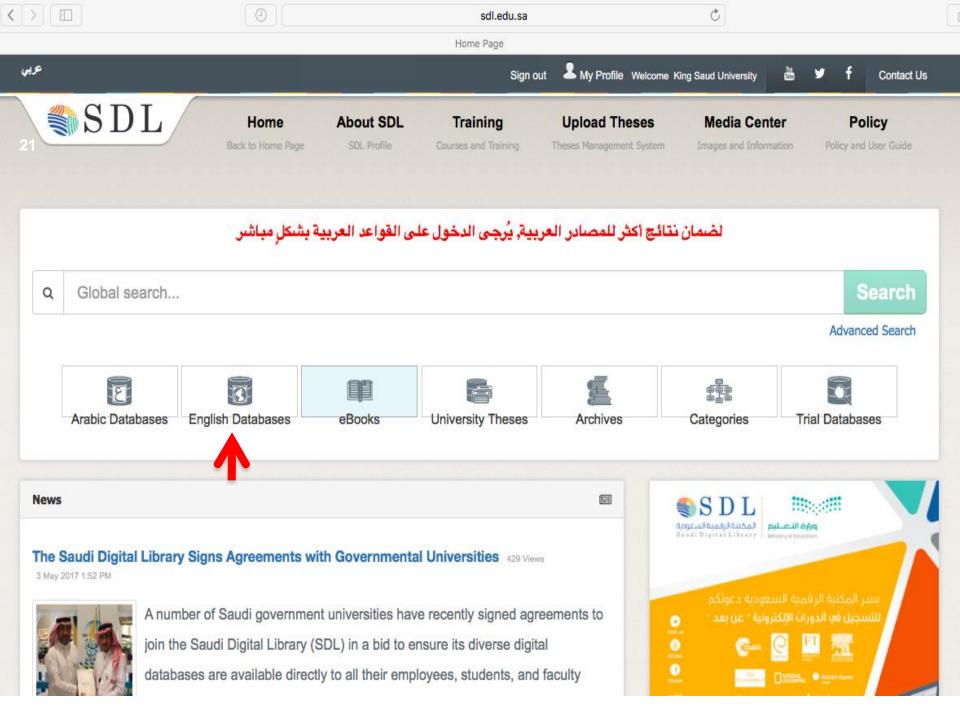
Accessing Medline through SDL

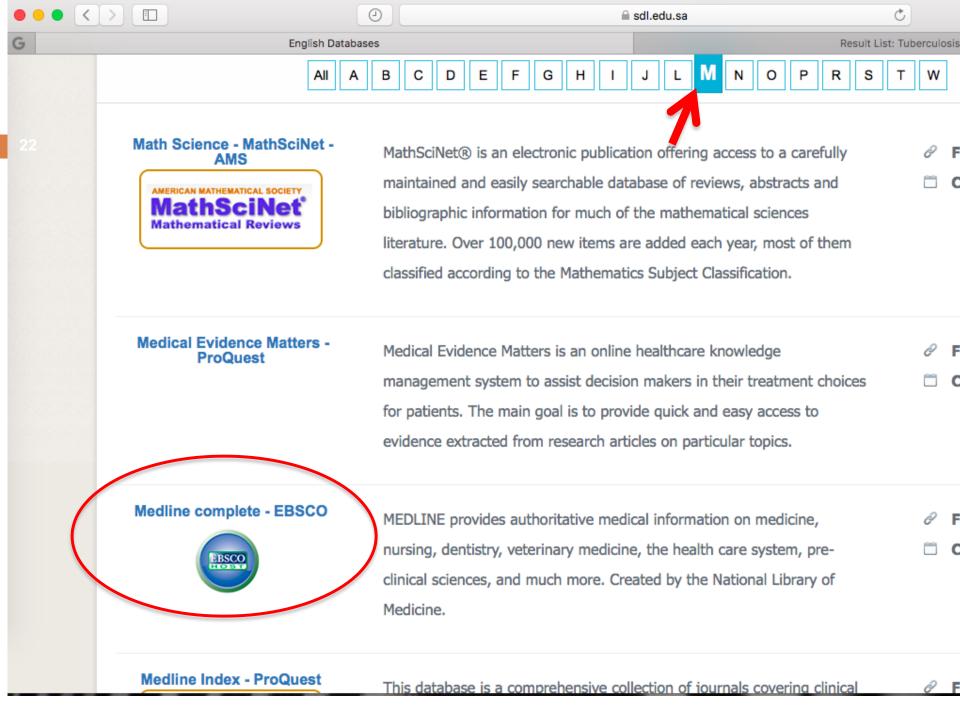
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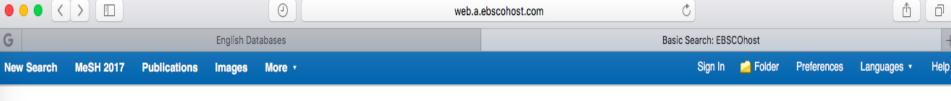
□ https://access.library.ksu.edu.sa



النسخة العربية Terms of use I Services Directory I Forget you Password I

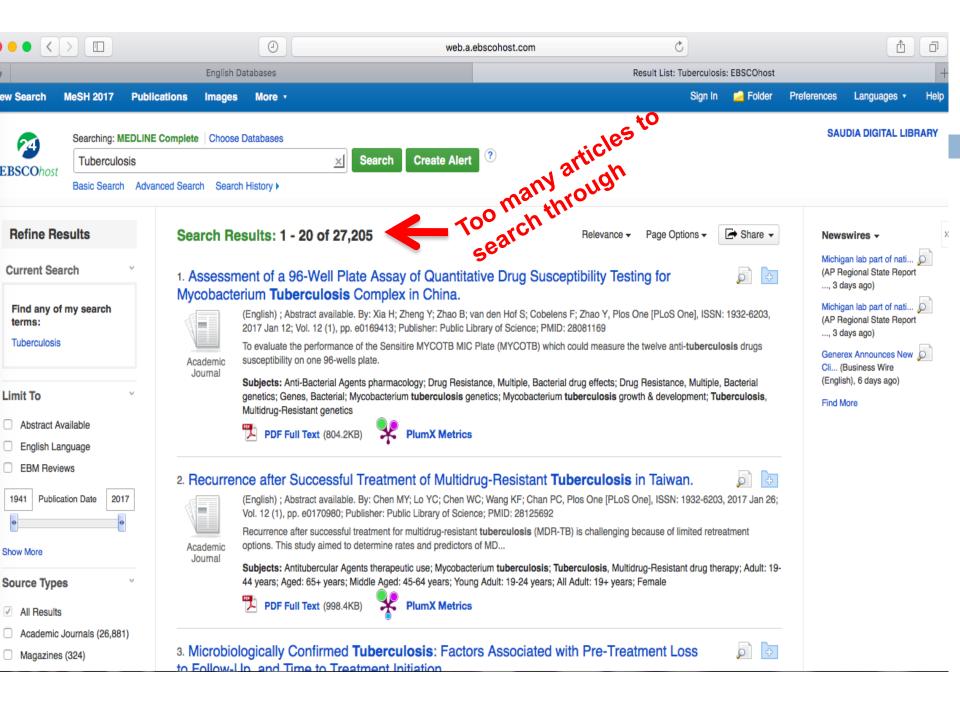






SAUDIA DIGITAL LIBRARY







Refine search by **Boolean Operators**

These make our search more to the point and help filter out all unneeded literature.

□ And -

- both terms should be present

- either search term should be present

□ Not

- the term should not be present

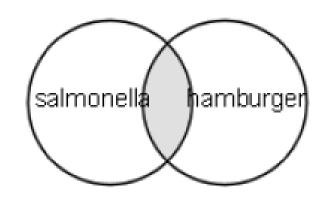
- □ TB AND DM
- □ TB **OR** DM
- NOT children -> (only interested in adults)



Boolean Operators

AND

Salmonella AND Hamburger



- □ Salmonella 69432
- □ Hamburger 2703
- Salmonella AND Hamburger 14



Boolean Operators

OR

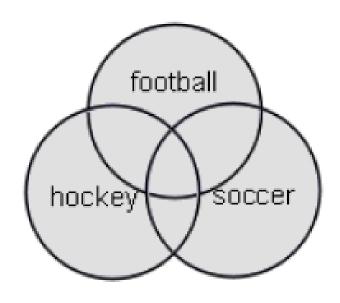
Football OR Hockey OR Soccer

□ Football - 3948

□ Hockey - 1466

□ Soccer - 3137

Total - **7538**

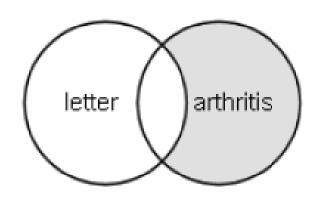




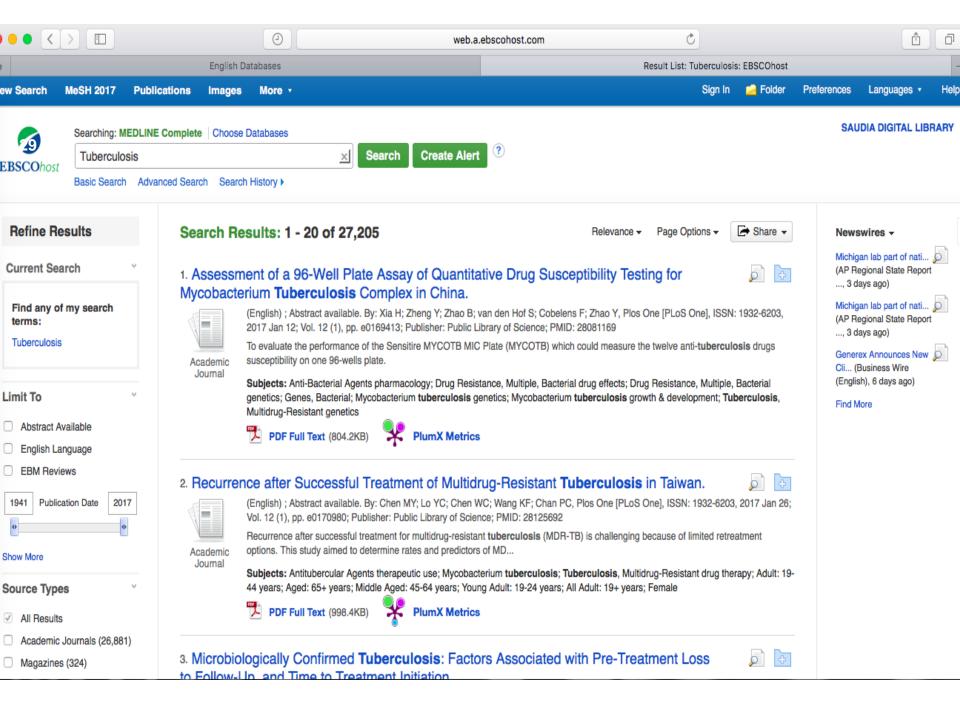
Boolean Operators

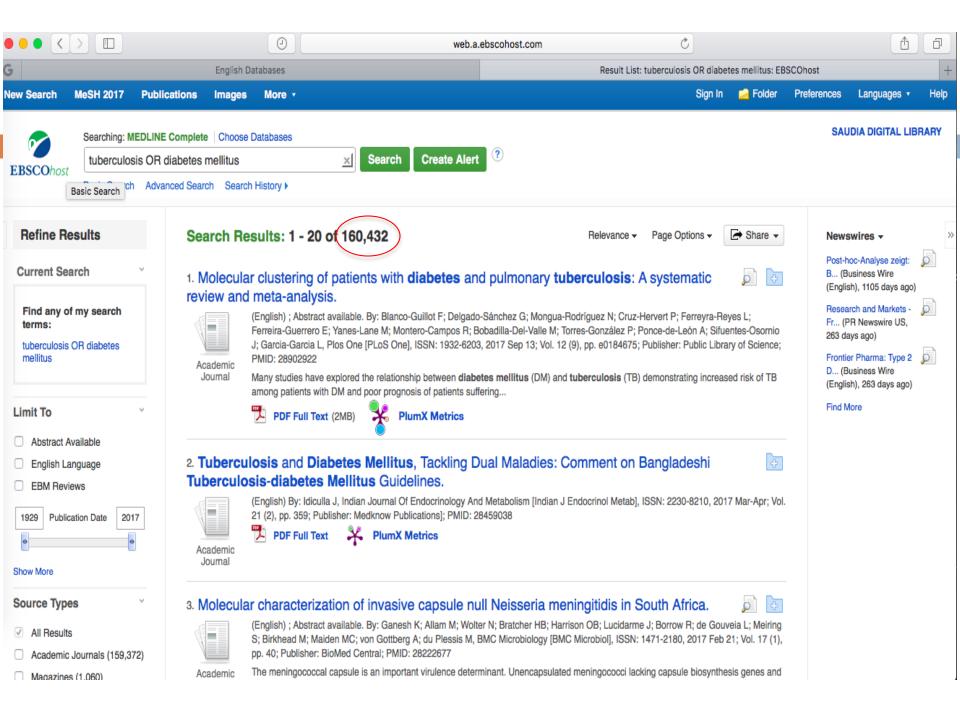
NOT

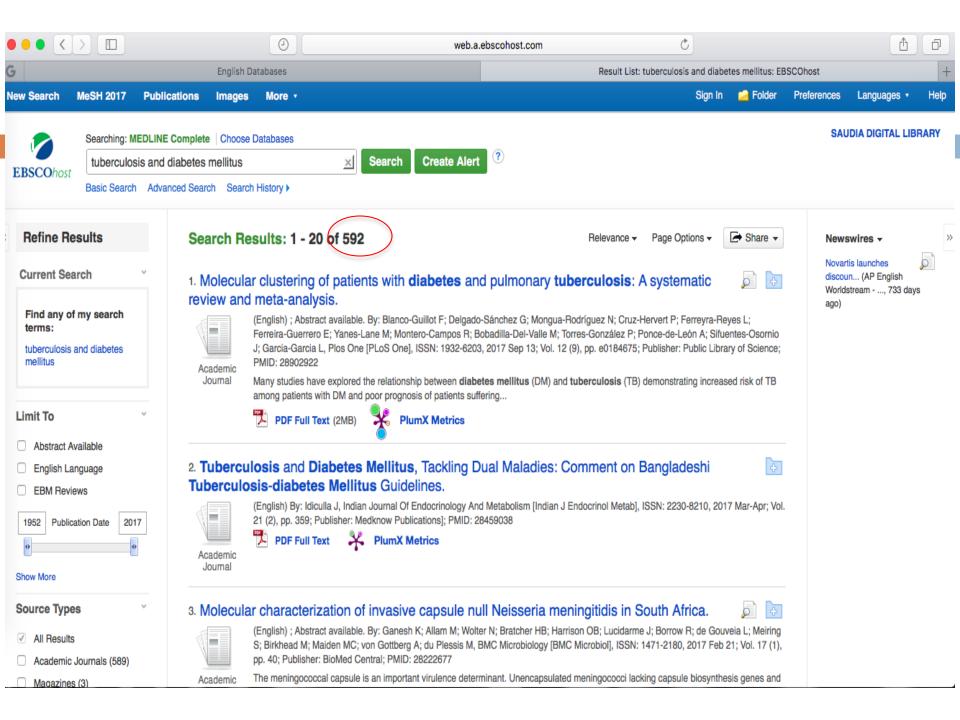
Arthritis NOT Letter

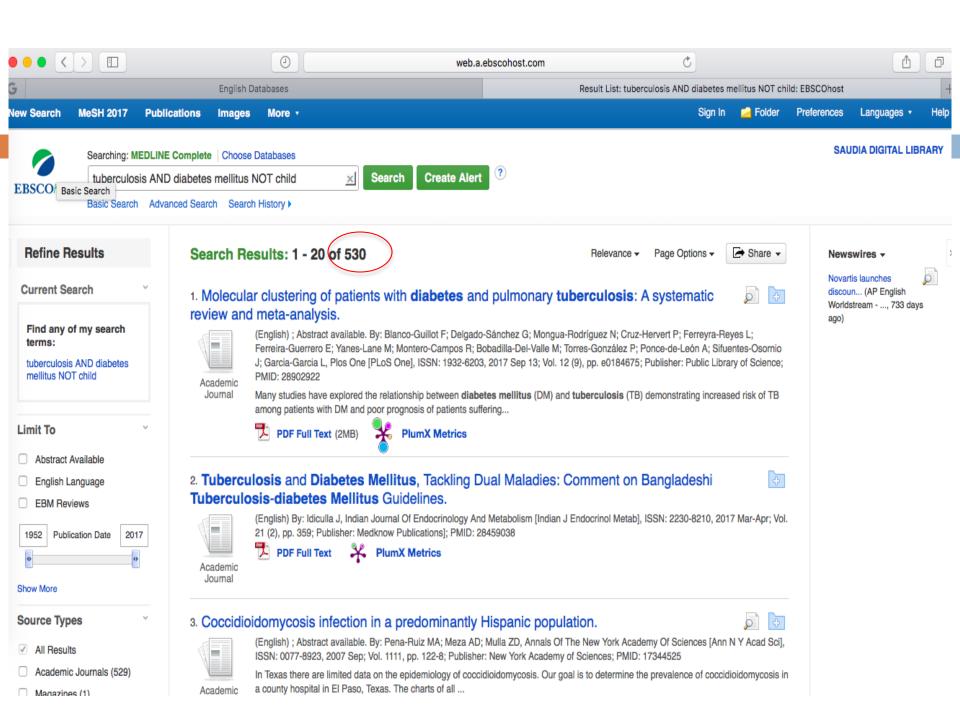


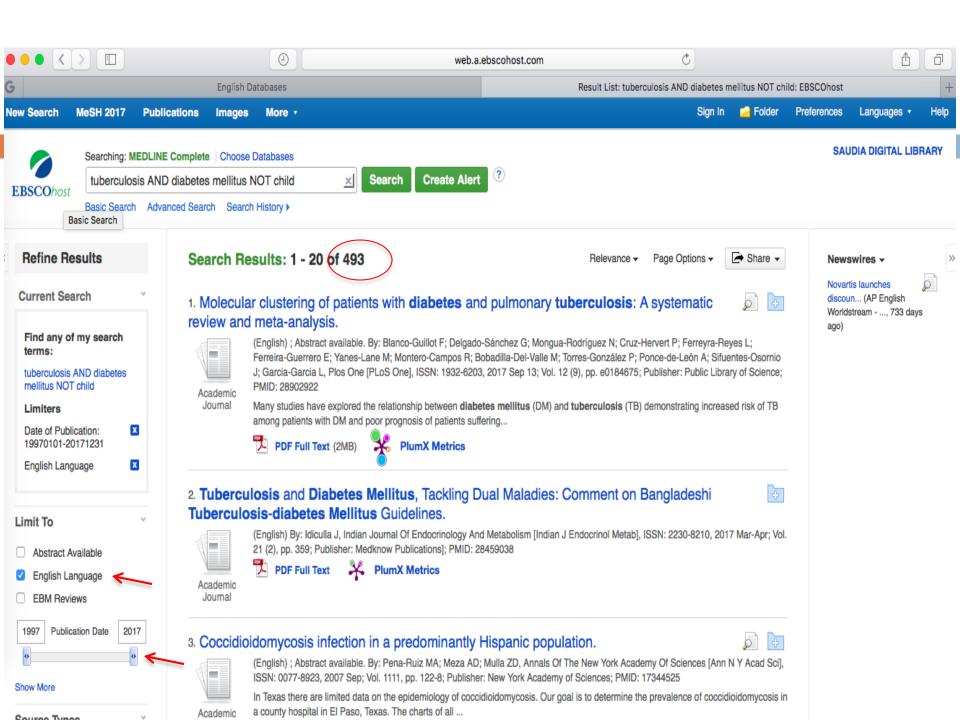
- □ Arthritis 185375
- □ Letter 686049
- Arthritis "excluding" letter 176352













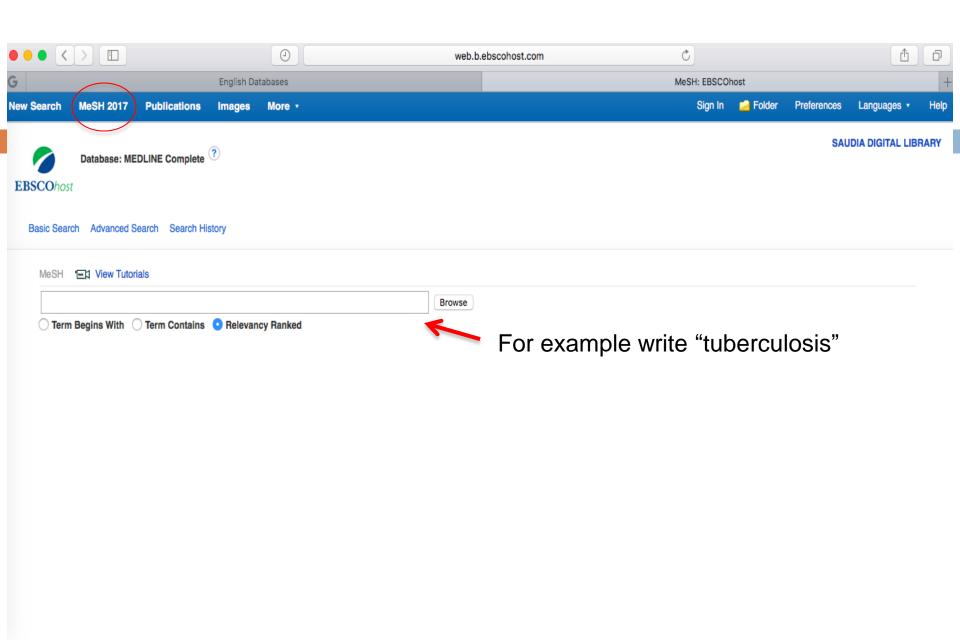
Am I using the right keyword?

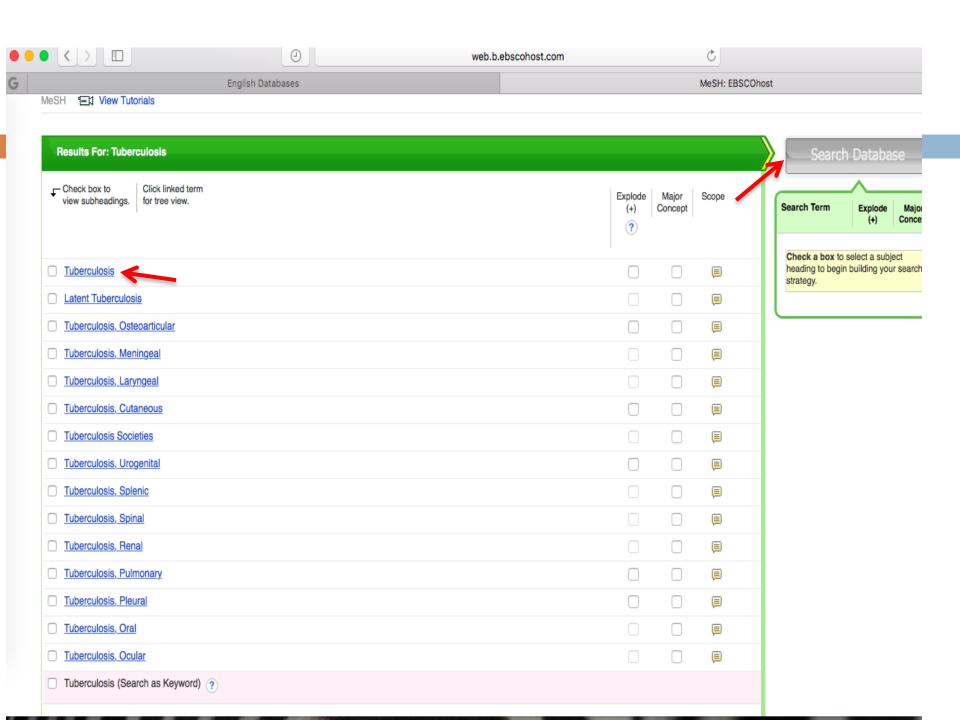
How can I make sure I'm not missing anything?

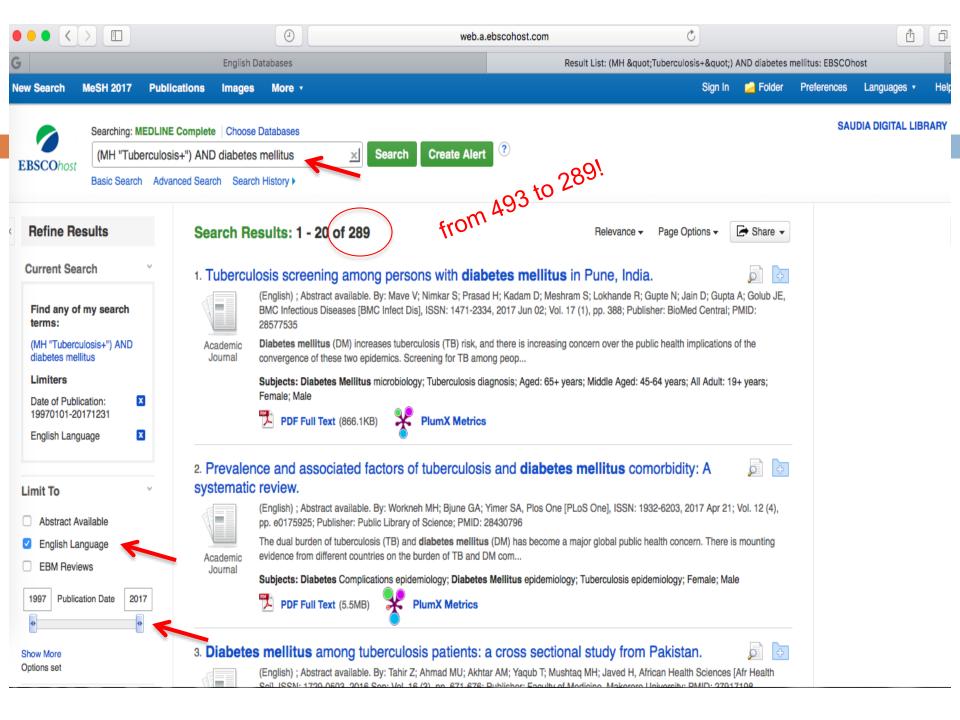


MeSH

- Medical subject headings (MeSH) is the database that uses hierarchy to index citations.
- This means that the database already has a created library of terms related to the term entered in the query box.
- This is usually arranged in hierarchy, from more general and broad term, to more specific term.
- This makes it easy for the searcher to catch all articles possibly related to the term entered in the query box. (automatic term explosion)
- It also helps you trace articles that have the EXACT word you are looking for.









Other helpful resources

 Try other search databases (Ovid, Science direct...all are available on SDL)

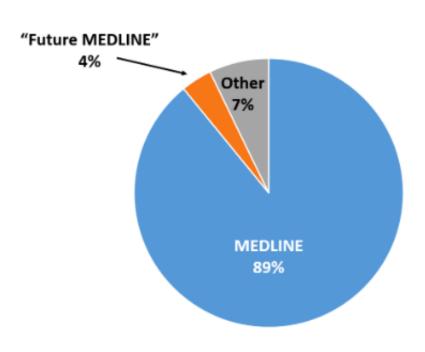
PubMed is more comprehensive than Medline (you may want to look into PubMed)

Search for tutorials on different databases



Items Included in PubMed

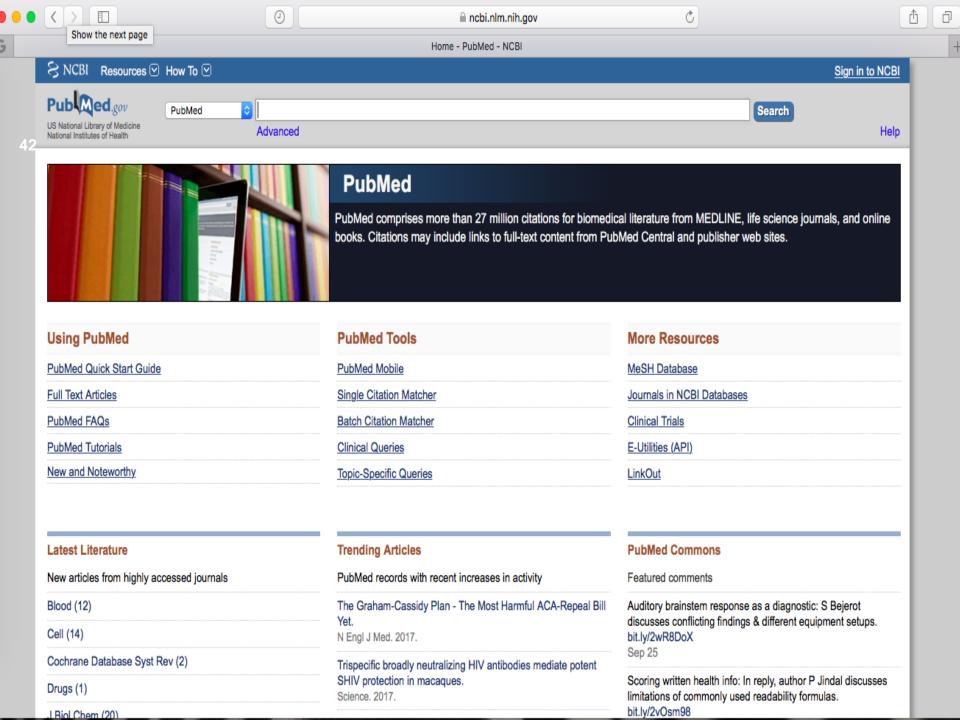
- 27 M articles from biomedical literature
- Some books from NCBI database
- journals directly from the publisher but not indexed in Medline yet
- Old articles that are not indexed in Medline

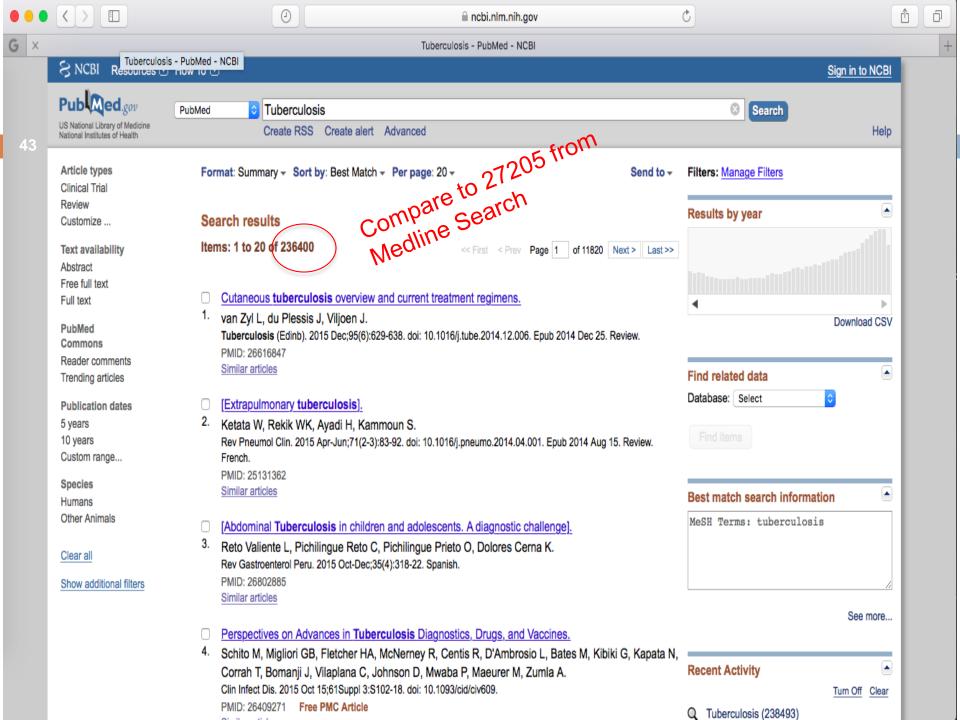


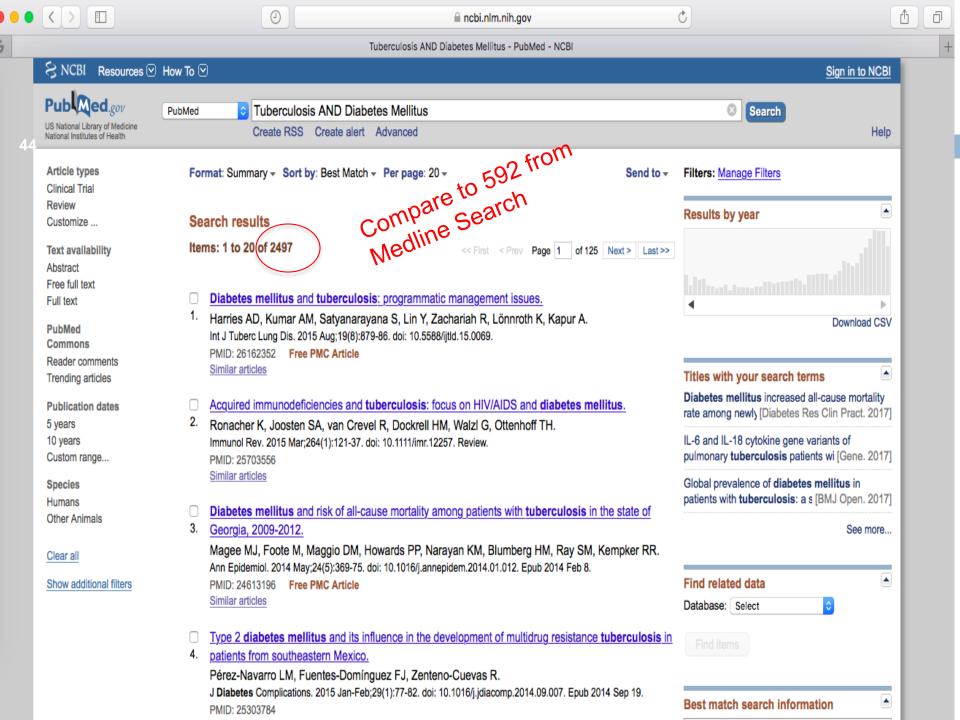


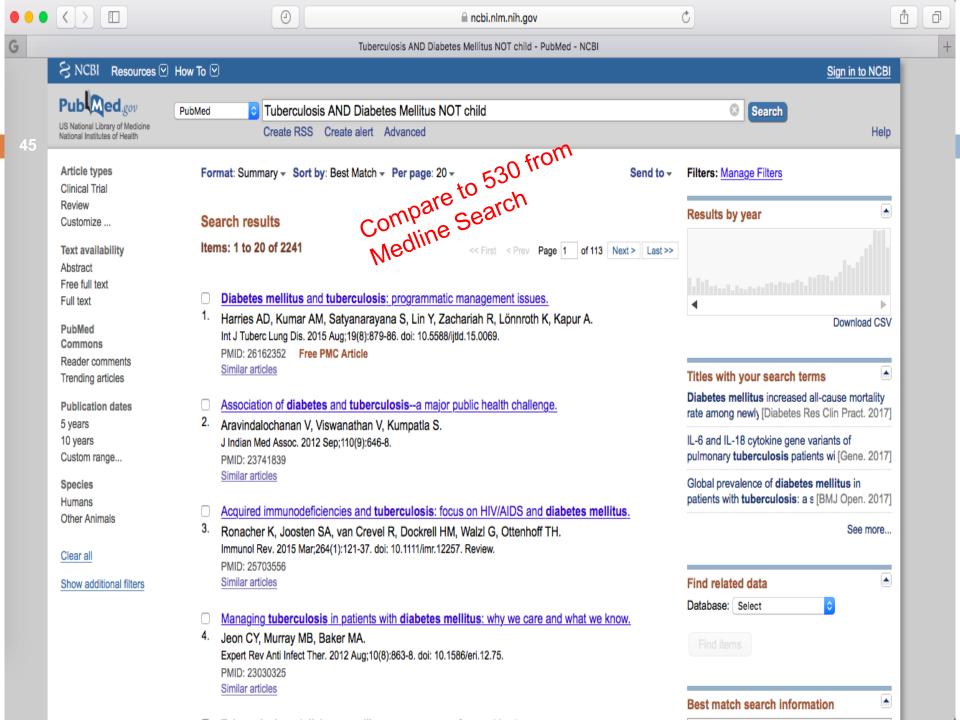
Let's apply what we learned to PubMed

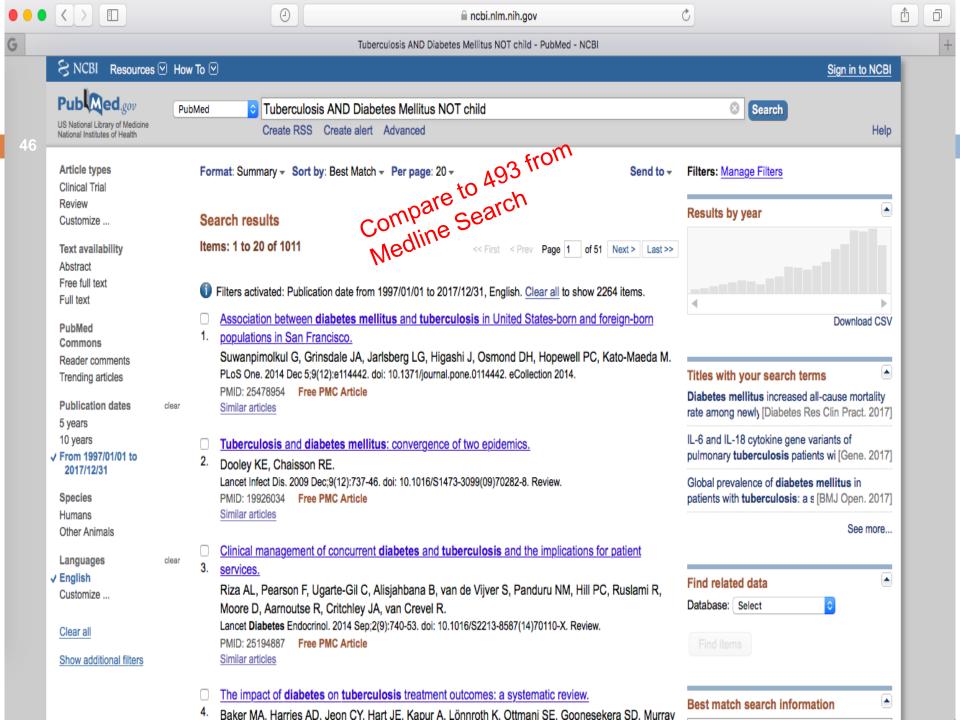
□ https://www.ncbi.nlm.nih.gov/pubmed/

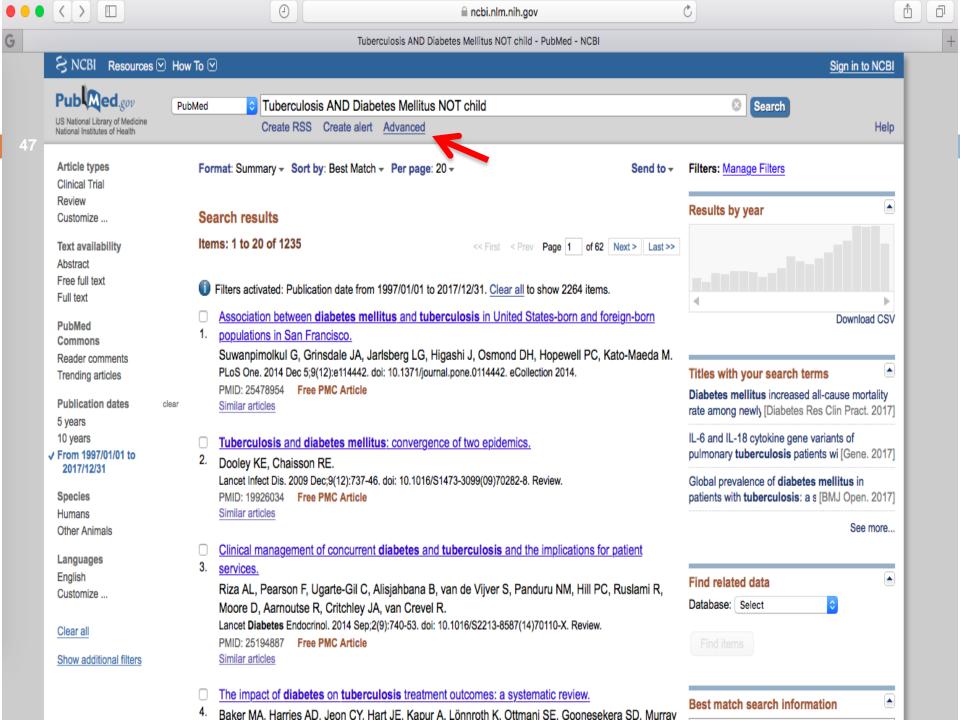


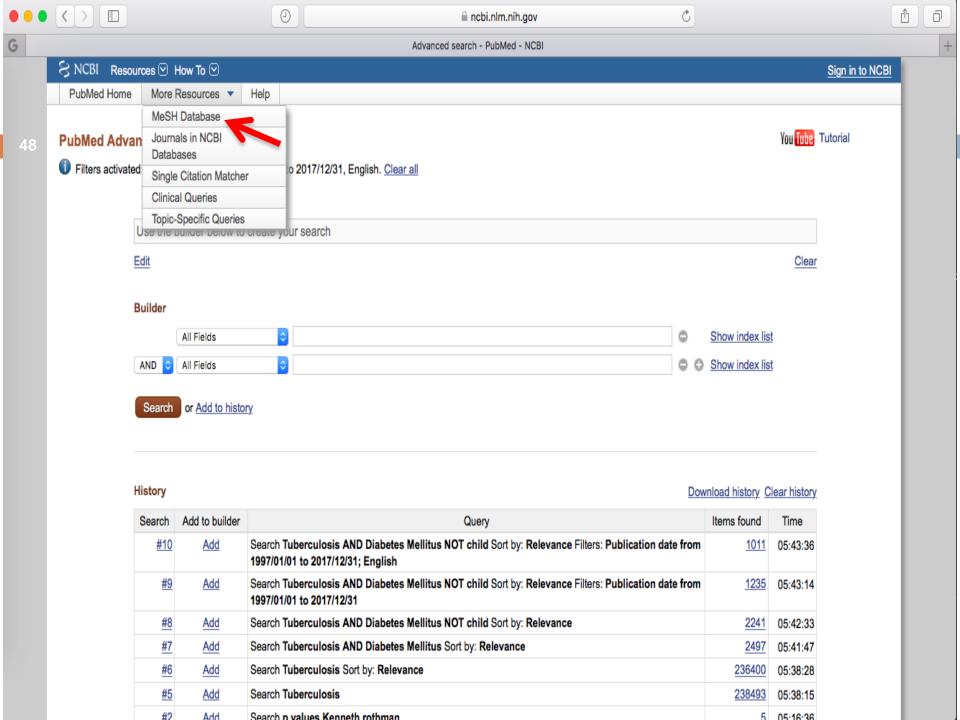






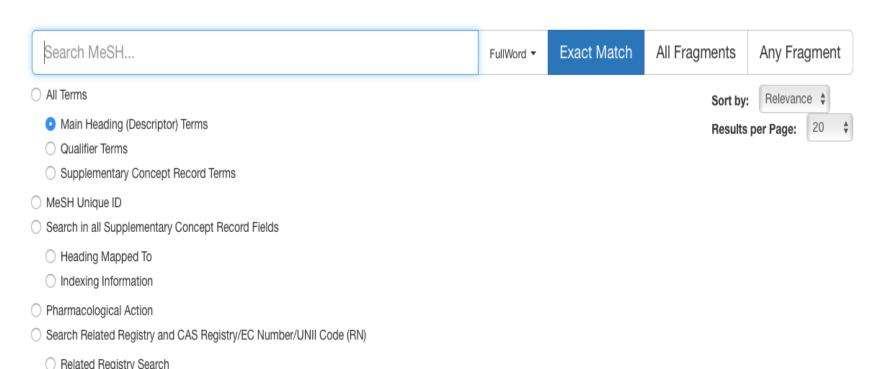








The files are updated each week day Monday-Friday by 8AM EST





Tuberculosis MeSH Descriptor Data 2017

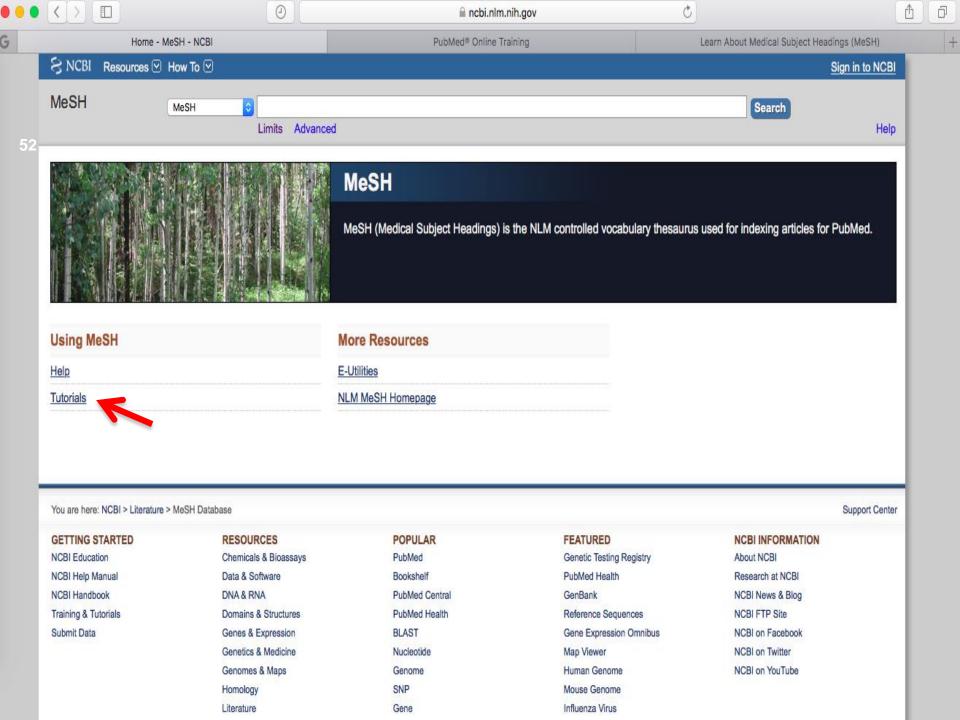
MeSH Tree Structures Details Qualifiers Concepts MeSH Heading Tuberculosis Tree Number(s) C01.252.410.040.552.846 Unique ID D014376 Annotation caused by various species of Mycobacterium; GEN: prefer specifics; if unspecified as just "tuberculosis", TUBERCULOSIS, PULMONARY is probably the correct heading but check text carefully; tuberculid: index under TUBERCULOSIS, CUTANEOUS; /drug ther: consider also ANTITUBERCULAR AGENTS; indexing policy: Manual 23.13.2 Scope Note Any of the infectious diseases of man and other animals caused by species of MYCOBACTERIUM. Entry Term(s) Koch's Disease Kochs Disease See Also Antitubercular Agents Interferon-gamma Release Tests **Tuberculin Test** Public MeSH Note TUBERCULOSIS IMMUNITY was heading 1963-66 use TUBERCULOSIS to search TUBERCULOSIS IMMUNITY 1966 Online Note **History Note** TUBERCULOSIS IMMUNITY was heading 1963-66 Date Established 1960/01/01 Date of Entry 1999/01/01 Revision Date 2011/06/24

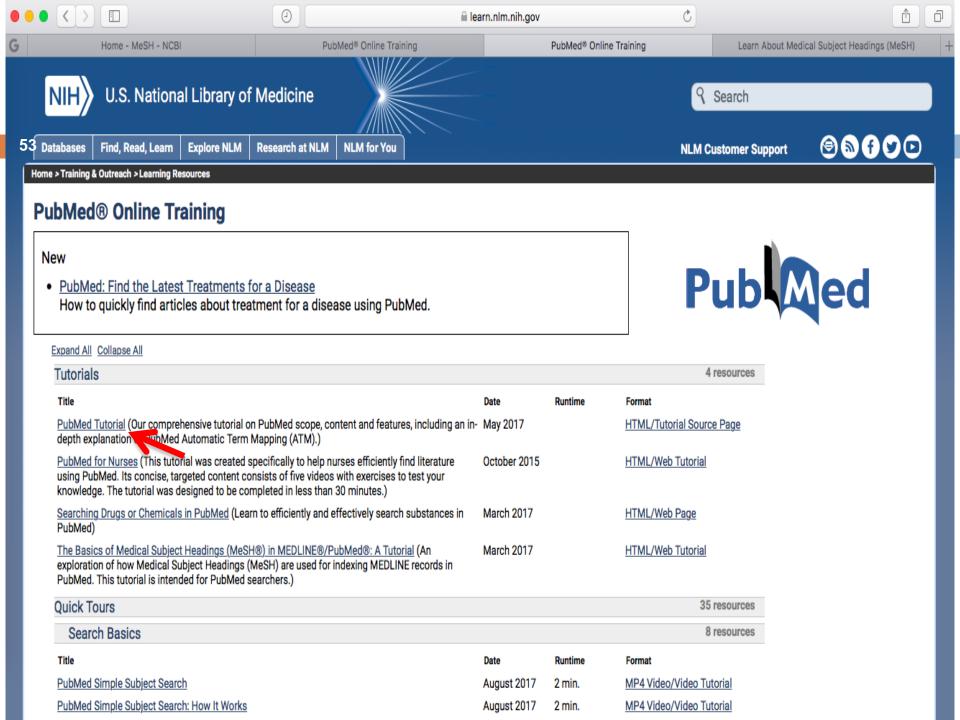


Tuberculosis MeSH Descriptor Data 2017

MeSH Tree Structures Qualifiers Details Concepts Bacterial Infections and Mycoses [C01] Bacterial Infections [C01.252] Gram-Positive Bacterial Infections [C01.252.410] Actinomycetales Infections [C01.252.410.040] Mycobacterium Infections [C01.252.410.040.552] Leprosy [C01.252.410.040.552.386] • Mycobacterium Infections, Nontuberculous [C01.252.410.040.552.475] • Paratuberculosis [C01.252.410.040.552.588] Tuberculosis [C01.252.410.040.552.846] Latent Tuberculosis [C01.252.410.040.552.846.122] Peritonitis, Tuberculous [C01.252.410.040.552.846.246] Tuberculoma [C01.252.410.040.552.846.493] • Tuberculosis, Avian [C01.252.410.040.552.846.516] Tuberculosis, Bovine [C01.252.410.040.552.846.538] Tuberculosis, Cardiovascular [C01.252.410.040.552.846.561] • Tuberculosis, Central Nervous System [C01.252.410.040.552.846.570] • Tuberculosis, Cutaneous [C01.252.410.040.552.846.583] • Tuberculosis, Endocrine [C01.252.410.040.552.846.606] Tuberculosis, Gastrointestinal [C01.252.410.040.552.846.628]

Tuberculosis, Hepatic [C01.252.410.040.552.846.651]









PubMed Training and Tutorials

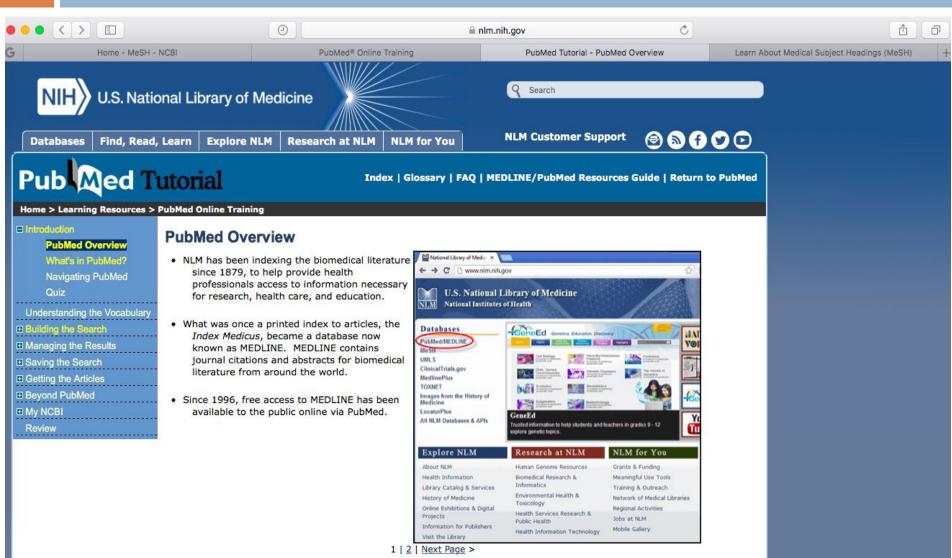
https://learn.nlm.nih.gov/rest/training-packets/T0042010P.html

- PubMed overview tutorial:
 - https://www.nlm.nih.gov/bsd/disted/pubmedtutorial/0 10 050.html



This page is extremely helpful so give yourself time to navigate

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Another method for searching the literature (Endnote)

- □ To download:
 - http://etc.ksu.edu.sa/en/swtools

- Informative tutorial:
 - http://www.waikato.ac.nz/__data/assets/pdf_file/00 12/204420/EndNote-Guide2-PC.pdf

- □ Guide for EndnoteX7:
 - http://endnote.com/training/mats/enuserguide/eng/e ndnote7/enguide-full.pdf



Evidence-based Medicine Database

- Cochrane Library:
 - http://www.cochranelibrary.com
- What is it?
 - A database for high-quality independent evidence that helps inform healthcare decision making
- □ How to use Cochrane:
 - http://www.cochranelibrary.com/help/how-to-usecochrane-library.html
 - This same page has helpful video tutorials

How to Use Cochrane Library

Part 1 - An Introduction to the Cochrane Library



Library. Sessions are conducted using WebEx, an online conferencing system that allows you to view live presentations from your desktop. All you need is an internet connection and access to a telephone. Training is offered completely free of charge and we will provide a toll free number to

Go to wiley-onlinelibrary.webex.com to view the current schedule.

Online self-paced tutorials

Categories

dial in.

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These online tutorials were designed for users as a quick and informative overview and demonstration of the Cochrane Library. The tutorials provide an introduction to the Cochrane Library and how to browse and search the Cochrane Library.

Part 1 - An introduction to the Cochrane Library

Part 2 - Browsing and Searching the Cochrane Library



Part 3 - Using MeSH and Search Manager

Databases - Additional information

Additional information is available for the Cochrane Central Register of Controlled Trials (CENTRAL; Clinical Trials) and the Cochrane Methodology Register (CMR; Methods Studies).

The Anywhere Systematic Review

'Any format, any device, any time'

Today, more than ever, we need access to information that is immediate, clear and communicable. As a member of the scientific community we serve, you will know how important it is to have access to that data. Anywhere Systematic Review is available whenever you need it, and wherever you are.



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In Summary

- Literature search is a means to allow us to conduct a literature review
- Well focused questions, keywords, and criteria for search make the search more successful and time efficient
- Use search limits, MeSH terms and boolean operators to refine your search
- Don't be shy to ask experienced professionals for advice when needed



References

- JON O. EBBERT, MD, et al, Searching the Medical Literature Using PubMed: A Tutorial, Concise Review for Clinicians, Mayo Clin Proc. 2003;78:87-91
- A Sood*, AK Ghosh**, Literature Search Using PubMed: An Essential Tool for Practicing Evidence- Based Medicine,
 JAPI, VOL. 54, APRIL 2006
- Cronin P, Ryan F, Coughlan M. Undertaking a literature review: a step-by-step approach. Brit J Nurs 2008; 17(1): 38-43.
- Some of the slide material was courtesy of Dr Armen Torchyan and Dr Shaffi Ahmad, from the Family and Community Medicine Department, King Saud University



Thank you

Questions?