

Searching the biomedical literature  
basics:

# “Painless” PubMed

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# OBJECTIVES


At the end of this workshop you will:

- Be better able to formulate a clear search question
- Be more familiar with PubMed and PubMed Labs:
  - PubMed is a key biomedical database.
  - PubMed Labs is the new version of PubMed that will become the default version starting in early 2020.
- Be able to conduct a successful search in PubMed using Automatic Term Mapping, PubMed Clinical Queries, & Advanced Search

# Getting to the database

## JGH e-resources

- 🌐 CINAHL Complete
- 🌐 CINAHL Education (CE for Nurses and allied health professionals)
- 🌐 Cochrane Library
- 🌐 DSM-5
- 🌐 eBook Nursing Collection (via EBSCO)
- 🌐 EMBASE (via Ovid)
- 🌐 Evidence Based Mental Health Journal
- 🌐 Healthstar (via Ovid)
- 🌐 JGH Journals by Topic A-Z
- 🌐 Medline (via Ovid)
- 🌐 Natural Medicines
- 🌐 Nursing Reference Center Plus
- 🌐 Oxford Clinical Psychology
- 🌐 Psychiatry Online (POL)
- 🌐 PsycINFO (via Ovid)
- 🌐 PubMed (Medline, etc.)
- 🌐 RxVigilance
- 🌐 UpToDate




@ JGH / LDI (PubMed with enhanced availability of full text):

- JGH Health Sciences Library Website Homepage > JGH (or McGill) e-Resources > PubMed
- Or go to: [jgh.ca/hsl](http://jgh.ca/hsl)
- > Then scroll down and click on PubMed

## McGill e-resources

- 🌐 CINAHL
- 🌐 Clinical Key
- 🌐 Cochrane Library
- 🌐 Clinical Practice Guidelines Infobase (CMA)
- 🌐 Dynamed Plus
- 🌐 Evidence-Based Practice Resources
- 🌐 e-CPS / RxTx
- 🌐 EMBASE (via Ovid)
- 🌐 Essential Evidence Plus
- 🌐 Google Scholar (enable your 🌐 library links!)
- 🌐 McGill Search for Full Text
- 🌐 Life Sciences Subject Guides
- 🌐 McGill Catalogue (WorldCat)
- 🌐 Medline (via Ovid)
- 🌐 PsycINFO (via Ovid)
- 🌐 PubMed (Medline, etc.)
- 🌐 Scopus
- 🌐 TRIP database
- 🌐 UpToDate
- 🌐 Web of Science



# “Painless” PubMed

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- 1 Scenario & Clinical Question
- 2 Basic Search: Using Automatic Term Mapping
- 3 Basic Search: Using PubMed Clinical Queries
- 4 Advanced Search
- 5 Reminder & References

# What is PubMed?

PubMed is:

- The 1st biomedical database most health professionals learn how to use.
- Multidisciplinary.
- Freely accessible on the internet.
- Includes MEDLINE (peer reviewed journal selection) and PubMed Central (open access full text, the institutional repository of the national institute of health in the US).

<b>Producer</b>	National Library of Medicine, U.S.
<b>Coverage &amp; Updating</b>	1950 to present, updated daily 5246 + journals indexed
<b>Full text</b>	Many Open Access/Free by PubMed Central and from publishers (more available if subscription to journal is held by your institution)
<b># of references</b>	30 million + 1 million + added every year
<b>Languages</b>	58+
<b>Content</b>	PubMed provides access to bibliographic information that includes MEDLINE, as well as: <ul style="list-style-type: none"><li>▪ Citations that precede the date that a journal was selected for MEDLINE indexing.</li><li>▪ Some additional life science journals that submit full text to PubMed Central and receive a qualitative review by NLM.</li><li>▪ PubMed Central- Open Access (= the institutional repository of the national institute of health)</li><li>▪ Bookshelf</li></ul>
<b>Search Options</b>	<ul style="list-style-type: none"><li>▪ Subject headings (MeSH) and subheadings, AND, OR, limit by date, type of publication, age group, etc.</li><li>▪ Keywords</li><li>▪ Truncation using *</li></ul>

# 1. Scenario and Clinical Question

# Scenario

- You are looking for literature on prognostic factors for triple negative breast cancer in adult men.

# Identify Key Concepts with PICO

**P** (Patient or population) Whom is the question about?

**I** (Intervention or exposure) What intervention, exposure, problem, or issue are you considering / studying in the patient or population? Define

**C** (Comparison) If necessary, define what you are comparing your intervention to.

**O** (Outcome) Define your desired outcome



# EXAMPLE

**Question:** You are looking for literature on prognostic factors for triple negative breast cancer in adult men.

**P**opulation (adults men with triple negative breast cancer)

**I**ntervention (prognostic factors)

**C**omparison (/)

**O**utcome (/)

**Where to search for an answer:**

In a biomedical database (like PubMed)

# Identifying Key Concepts without PICO

Look at your question. Remove all extra words:

You are looking for literature on prognostic factors for triple negative breast cancer in adult men.



~~You are looking for literature on~~ **prognostic factors for triple negative breast cancer in adult men.**

## 2. Basic Search: Using Automatic Term Mapping

# Automatic Term Mapping

## ➤ What is Automatic Term Mapping?

The algorithm behind the basic search box in PubMed. It was designed by librarians at the National Library of Medicine in the US designed to help you find what you are looking for quickly without needing to know how a biomedical database functions.

## ➤ How does it work?

# Steps to a successful quick search

- 1) Identify the key concepts that you want to use
- 2) Enter the key concepts into the search bar using no punctuation or Boolean operators
- 3) Click search
- 4) Find the « sort by » menu
- 5) Make sure it is set to « Best match »
- 6) Use the filters on the left hand side of the page to limit your results (for example to only results in English and French, All adults, last 5 years...)

### 3. Basic Search: Using PubMed Clinical Queries

# What is PubMed Clinical Queries ?

- The PubMed Clinical Queries Page is an evidence based tool within PubMed designed to help you quickly find the information / evidence you are looking for.
- It is designed limit one search by three clinical research areas: Clinical Study Categories, Systematic Reviews, or Medical Genetics.

# Clinical Study Categories

- This column, situated on the left hand side of the page, offers five categories by which to limit your search:
  - Therapy (default): will retrieve clinical studies that discuss the treatment of disease.
  - Diagnosis: will retrieve clinical studies addressing disease diagnosis.
  - Etiology: will retrieve clinical studies addressing causation/harm in disease and diagnostics.
  - Prognosis: will retrieve clinical studies addressing disease prognosis.
  - Clinical Prediction Guides: will retrieve clinical studies which discuss methods for predicting the likelihood of disease presence or absence.
- The scope can be defined as Broad or Narrow:
  - Broad (default) : more articles = will include more results with a maximum of relevant articles but will probably also include some that will be less relevant.
  - Narrow: fewer articles = will retrieve fewer and more targeted articles, but might not include all relevant articles.



# Steps to search by Clinical Study Category

- 1) Identify the key concepts that you want to use
- 2) Go to PubMed Clinical Queries, it is on the welcome page of PubMed, in the middle of the page under the column “PubMed Tools”
- 3) Enter the key concepts into the search bar using no punctuation or Boolean operators
- 4) Click search
- 5) Select a category in the Column on the left hand side of the page “Clinical study category” according to the type of clinical studies you wish to retrieve
- 6) Review the 1<sup>st</sup> 5 results and decide if you need to change the scope from broad to narrow to better target your topic
- 7) If you would like to see all the results, click on “see all” under the 1<sup>st</sup> 5 results in the clinical study column on the left hand side of the page

# Systematic Reviews

- This column helps you locate systematic reviews and similar articles.
- It is a good tool to use if you need to quickly find the best evidence on your topic.
- It limits your search to results identified in PubMed as systematic reviews, meta-analyses, reviews of clinical trials, evidence-based medicine, consensus development conferences, and guidelines.

# Steps to Search for Systematic Reviews

- 1) Identify the key concepts that you want to use
- 2) Go to PubMed Clinical Queries, it is on the welcome page of PubMed, in the middle of the page under the column “PubMed Tools”
- 3) Enter the key concepts into the search bar using no punctuation or Boolean operators
- 4) Click search
- 5) The systematic review filter is automatically applied to your search, the results are in the middle column of the page
- 6) If you would like to see all the results, click on “see all” under the 1<sup>st</sup> 5 results in the systematic review column in the middle of the page

# Medical Genetics

- This column helps you filter your search to studies in the field of Medical Genetics.
- You can choose from the following topics: Diagnosis, Differential Diagnosis, Clinical Description, Management, Genetic Counseling, Molecular Genetics, Genetic Testing, or All(of the listed topics).

## 4. Advanced Search

# Keywords

- Keywords are words that appear in the record
- They are usually words in the title or abstract of the article and are in the authors vocabulary
- You will only find your keyword if it is in the article's record exactly as you have entered it (exact spelling, no plural, no synonyms...)
- You can use truncation \*
- In PubMed you can search for keywords by using the Textword field

## Examples of Keywords:

Cancer, Cancers, Cancerous, Tumor, Tumour, Tumors, Tumours, Carcinoma, Sarcoma, Neoplasm, Neoplasms, Neoplastic (...)

# Subject Headings

- Subject headings are controlled vocabularies used to index contents in different databases,
- MeSH is the name of the controlled vocabulary used in MEDLINE,
- MEDLINE articles are indexed with MeSH by librarians at the National Library of Medicine in the US,
- PubMed Central Articles are not indexed with MeSH if they are not part also part of MEDLINE,
- If the indexing is perfect, when you search a subject heading, you will find all the articles about this topic,
- MeSH is organized in a tree,
- To explore the MeSH vocabulary you can use the [MeSH browser](#).

Example of MeSH: Neoplasms

Which should I use?

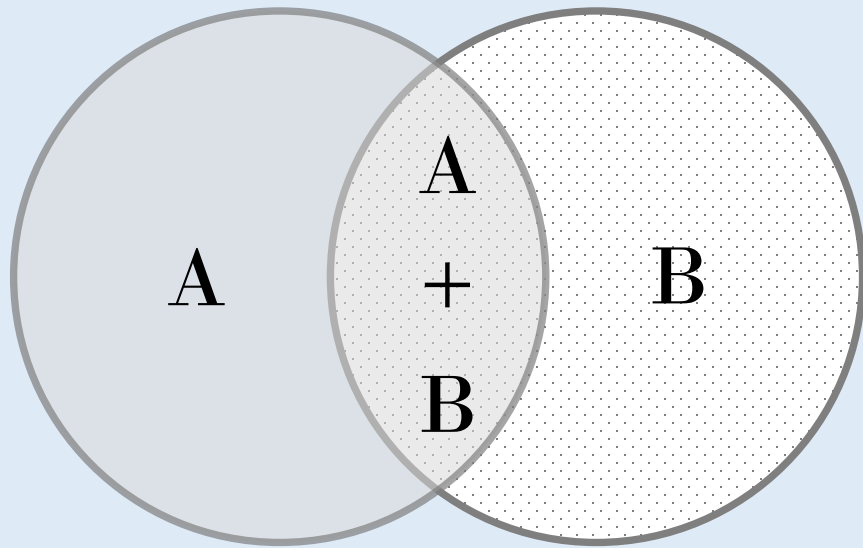


# BOTH



- Indexing is never perfect as it usually done by humans
- There may not be a subject heading for your concept
  - Example: Concepts like “72 hours” or a very rare disease may not have a corresponding subject heading
- Searching using subject headings and keywords together works like building blocks: take one concept at a time and build your search
- Searching using only keywords is more imprecise:
  - Formulating a search with both subject headings and keywords will give you the best chance of getting as many relevant results as possible without having too many irrelevant results

# BOOLEAN OPERATORS



Use Boolean operators to combine your concepts  
(Subject headings/keywords)

**AND** = A+B (both concepts must be included - use to build your final search, based on the PICO if you have one)

**OR** = A, A+B, B (either of selected concepts are included - use to combine Subject heading/keyword synonyms)

**NOT** = A only (use to see what has been excluded from one search combination compared

# SEARCH ALGORITHM FOR BIOMEDICAL DATABASES

Subject Heading

OR

Keyword

AND

Subject Heading

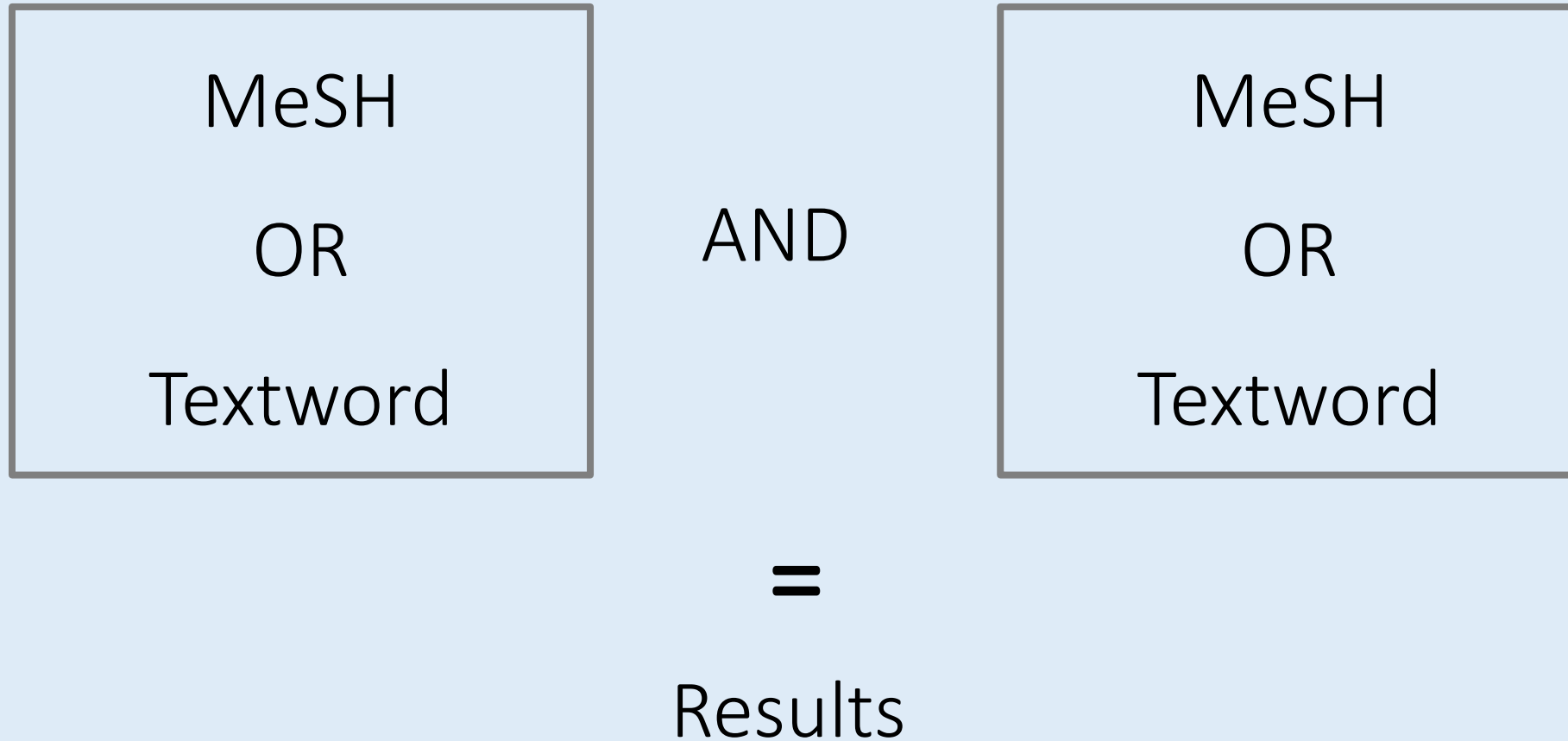
OR

Keyword

=

Results

# SEARCH ALGORITHM FOR PubMed



# Concept Map

AND		AND		AND			
Concept 1		Concept 2		Concept 3		Concept 4	
OR							

S  
Y  
N  
O  
N  
Y  
M  
S

# Steps to Search Using the Advanced Search

- 1) Search for your 1<sup>st</sup> concept using the MeSH Terms field
- 2) Click on “show index list” and select your concept
- 3) If your concept isn’t appearing as a MeSH term use the MeSH browser to find the appropriate MeSH term
- 4) Add it to your history using the “Add to history button”
- 5) Search for your 1<sup>st</sup> concept using the textword field
- 6) Click on “show index list” and select your concept
- 7) Add it to your history using the “Add to history button”
- 8) Repeat until you have included all possible MeSH Terms and Keywords for your 1<sup>st</sup> concept
- 9) In your search history click add beside each line that belongs to your 1<sup>st</sup> concept to add them to your search builder
- 10) In between each line you have added make sure to change the Boolean operator to OR

# Steps to Search Using the Advanced Search

- 11) Repeat for each concept
- 12) Once you have built a search for each concept, go to the search history and add the final search line (the one where you used OR) for each concept to the search builder using the Add button beside the appropriate search line
- 13) In between each line you have added make sure the Boolean operator is AND
- 14) To see your results, click on the number of results beside your final search line in the search history
- 15) Use the filters on the left hand side of the result page to limit your results

# Create a Personal Account for PubMed: MyNCBI

- To save your searches
- To set up search alerts to stay informed of the latest developments on topics of particular interest to you



# What to do when you are stuck?

- If you find one relevant article use it as a lead to find more:
  - Look at the subject headings used to index the article - reformulate your search
  - Find synonyms in the title or abstract
  - Snowball:
    - Use the “Similar Articles” function
    - Look at the references
  - Try another database
  - Try Google, or Google Scholar to learn more about the topic and maybe find more literature

- This is an iterative process



## Similar articles

**Review** Diabetes and obesity in pregnancy.  
[Best Pract Res Clin Obstet Gyn...]

**Review** Assessment and management of pregnancies c [J Assoc Acad Minor Phys. 1994]

**Review** [Gestational diabetes mellitus].  
[Wien Klin Wochenschr. 2016]

Effects of management in gestational diabetes mellitus with normal prepregn [Endocrine. 2016]

[Gestational diabetes mellitus].  
[Wien Klin Wochenschr. 2012]

[See reviews...](#)

[See all...](#)

## 5. Reminder & References

# REMINDER

- A Librarian is available to provide one-on-one instruction and help:

@ JGH: Kendra Johnston, 514 340 8222 x22453  
[kendra.johnston.ccomtl@ssss.gouv.qc.ca](mailto:kendra.johnston.ccomtl@ssss.gouv.qc.ca)

- To access this presentation:

<https://www.jgh.ca/care-services/health-sciences-library/instruction/workshop-presentations-handouts/>

# REFERENCES

1. Straus, S. E., Glasziou, P., Richardson, W. S., & Haynes, R. B. (2018). Evidence-Based Medicine E-Book: How to Practice and Teach EBM. Elsevier Health Sciences.
2. Greenhalgh, T. (2014). How to read a paper: the basics of evidence-based medicine. John Wiley & Sons.
3. Frati, F., Touchette, J. (2015) The basics of searching biomedical databases, Presented at JGH

# THANK YOU

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