

## USING PUBMED

MEDLINE, one of the premier databases for clinical medicine, can be accessed through many different search interfaces from many different vendors. PubMed is the free version of MEDLINE made available by The National Library of Medicine. The Mulford Library and OhioLINK have added links to institutionally available full texts of articles to PubMed. Links to these selected full-text articles are only available through the PubMed link on the Mulford Library's web page (click on PubMed@UT); these links are not available when accessing PubMed outside the Library's Web pages.

PubMed has special features that are not found in all versions of MEDLINE:

- **In Process Citations** (also **Supplied by Publisher**), are additional citations that have not yet been indexed and included in MEDLINE, allowing earlier access to new articles
- Links to the **full text of (publisher) selected articles** are available ; not all of the full text articles are available for free; some require a subscription
- The ability to find **related articles** for an individual item in a search result
- Special filters for **clinical queries** (see below for details on the clinical queries feature)
- A **journals database** that can be used to find full journal titles from abbreviations or abbreviations from full titles (this option is in the left column)
- A **citation matcher**, also in the left column, searches for citations when only some bibliographic information is available (e.g., journal name, author name(s) , volume, page number)

### General Information

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- Take advantage of the many ways to obtain help
  - The left column of the Pub Med home page includes a searchable **Help** site, an **FAQ section**, and **online tutorials**.
  - **Distance Education Program Resources** ([http://www.nlm.nih.gov/bsd/dist\\_edu.html](http://www.nlm.nih.gov/bsd/dist_edu.html))
  - There are several help sheets available from the Mulford Library that may be of interest:
    - *Assessing an Information Need*  
<http://www.utoledo.edu/library/mulford/pdf/assess.pdf>
    - *MEDLINE Subheading and Publication Type Information*  
<http://www.utoledo.edu/library/mulford/pdf/medsubhd.pdf>
    - *Accessing Online Journal Articles through PubMed*  
[http://www.utoledo.edu/library/mulford/pdf/online\\_journals.pdf](http://www.utoledo.edu/library/mulford/pdf/online_journals.pdf)
    - *Step-by-Step Searching in PubMed*  
<http://www.utoledo.edu/library/mulford/pdf/PubMedstep.pdf>
- If personal professional assistance is needed, ask a reference librarian. From home or office, contact Mulford Reference Assistance at [MulfordReference@utoledo.edu](mailto:MulfordReference@utoledo.edu), 419-383-4218, or via chat at <http://www.utoledo.edu/library/mulford/resources.html>



## Searching for Information on a Topic (General, Advanced, and Subject)

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### General searches directly through the search box

One may enter a word, term, or short descriptive phrase in the search box. Please note that PubMed does not perform true keyword searching. It will only search for words that have been entered in its various fields (as author, title, and abstract). Words and terms included in each field (part of PubMed's "vocabulary") may be retrieved using the **Preview/Index** option (see below).

PubMed performs automatic term mapping for items entered into the search box. The entered word or short phrase will be matched with MeSH terms (see below for more information on Medical subject headings), journal names, author and investigator names, and chemical names, text words (including title and abstract), and more. For greater control of searches, it's recommended that one use the MeSH database (below on pages 3 and 4).

For example, results from the entered word *heart* will include items from the journal *Heart*, items with heart included in a MeSH term, items authored by *Heart*, and items including *heart* in all fields (as title and abstract). See Help Link at the PubMed home page for a complete description of field descriptions.

If the results include unexpected items, click on the **Details** tab under the search box. One may modify the *Query translation* and perform a revised search.

### Hints for searching

- Use specific terms instead of more general concepts ("low back pain" instead of "back pain")
- Use quotation marks to search for phrases (i.e. "neck pain", "pancreatic ducts", etc.)
- Search for variant endings using the asterisk(\*) (i.e. *inject\** will retrieve records containing the words *inject*, *injects*, *injection*, *injections*, etc.)
- Limit searching (to identifiers as author, title words, journal names) through PubMed fields tags. For example *smith [au]* and *hypertension [ti]*. Here are some commonly used field labels:

[au] author	[pt] publication type
[ta] journal title	[tw] text word
[la] language	[ti] title word
[pg] first page number	[tiab] title or abstract word
[dp] publication date (using the format YYYY/MM/DD)	

A complete list of field tags is available from PubMed's online help.

- Browse and search with PubMed's index of terms (Preview/Index)
  - On the main PubMed page, click on the **Preview/Index** tab below the search box. From the dropdown menu, select the field of interest, enter the search term, and click on either **Preview** or **Index**.  
**Preview** will run the search and add a set to the search history, allowing the user to see how many records the search would retrieve.
  - **Index** shows a selection of terms from which to select one or more; select field of interest, next type in the desired term, then hit **Select Index**. From the resulting list, select the desired terms, and combine them by clicking on the **OR**, **AND**, or **NOT** button. The terms will be added to the search field. Add other searches as desired. Click the **Go** button to run the search.

- Use the connectors AND, OR, and NOT (in **CAPITAL LETTERS** ) in the search box for more powerful searching
  - AND** Use AND to restrict a search, such as *smoking AND myocardial infarction*. This retrieves articles indexed with both *smoking* and *myocardial infarction*.
  - OR** Use OR to expand a search, such as *home care services OR home care agencies*. This retrieves articles indexed with one term, the other term, or both terms.
  - NOT** Use NOT to restrict a search by excluding articles in a particular set. For example, NOT can be used in circumstances as working with exploded subheadings. To find non-drug therapies for ADD, the search would be structured *attention deficit disorder with hyperactivity/therapy NOT attention deficit disorder with hyperactivity/drug therapy*.
- The **Limits tab** (under the search box) provides numerous criteria for limiting results, as author, journal title, date ranges, language, topic subsets (as cancer, bioethics, toxicology), article type (as review, meta-analysis, clinical trial), and age groups.
- If planning to include **In Process Citations** in a search, be careful not to use limits that only retrieve MEDLINE records. More detailed information on these limits may be found through the **PubMed Help** link (left column of the home page of PubMed).
- If a research question has more than one concept, consider searching for each component separately ( correlation between exercise and physical activity with well being)
  - Use the **History** tab (under the search box) to combine the search results for each component of the query. The connectors AND, OR, and NOT may be activated by clicking on the statement number in History. Alternatively one may enter a number sign followed by the search number, e.g., #1, in the search box. Use the **Limits** function (above) if applicable.
  - For a step-by-step guide to combining in PubMed, see the *Step-by-Step Searching in PubMed* help sheet (<http://www.utoledo.edu/library/mulford/pdf/PubMedstep.pdf> ).
- If planning to include **In Process Citations** in a search, be careful not to use limits that only retrieve MEDLINE records. More detailed information on these limits may be found through the **PubMed Help** link (left column of the home page of PubMed).

### Advanced Search

The **Advanced Search** link is to the right of the search box. While the search options are not as complete as the main search page, it may be useful for preliminary and more general searches. See above (**General Searches**) for guidance in how to enter a search, as well as the function of the **Details** link. One may search (with or without the search box) by Author, Journal, Publication Date, and more. Citation Search Fields may be added (as volume, issue, and pagination). An abbreviated set of Limits (see above **Limits tab**) is also included.

### More Focused Searching Using MeSH (Medical Subject Headings )

PubMed uses MeSH (Medical Subject Headings) to locate articles. (MeSH terms are used by the National Library of Medicine to index articles. More information about these subject headings may be found at the National Library of Medicine's Basics of Medical Subject Headings (MeSH) (<http://www.nlm.nih.gov/bsd/disted/mesh/>).

These indexing terms pull all articles on a particular concept together under a subject heading, no matter how that concept is described in the article. In practical terms, this means there is no need to search with variations in spelling and terminology. The subject heading takes those variations into account.

To search using MeSH, start with the **MeSH Database** link in the left column.

- Type a term in the search field and click on the **Go** button. From the resulting list, click on the subject heading that most appropriately represents the search term. The resulting page allows refinement of the search.
  - **Subheading** - These can be used to narrow the search to a particular facet of the subject. Select desired subheadings, if any.
  - **Restrict Search to Major Topic headings only** - Finds only those articles which have the MeSH term as the main focus of the article. This excludes articles which have the MeSH term as a supporting point.
  - **Do Not Explode this term** (i.e., do not include MeSH terms found below this term in the MeSH tree). - If this box is unchecked, the “explode” feature (underneath the above **Major Topic** option) will search using the MeSH term as well as any narrower term associated with it. (Scroll down to see any narrower terms). To **not** explode the term, click in the appropriate check box.
- After selecting the desired search options, click on the button labeled **Send to Search Box with AND** (will be in a dropdown menu at the bottom of the screen). If the search is complete, click on the **Search PubMed** button. If the search is not complete, enter the next term in the search box and repeat the process.

One may combine two or more searches using the above **Send to Search Box with AND** (to find articles that have both sets in common). Alternatively one may use the option **Send to Search Box with OR** (which creates a large set of articles in one or both sets) or **Send to Search Box with NOT** (which finds articles in the first set, but excludes the articles in the second set; use NOT with caution because it is easy to exclude good articles).

## Specialized PubMed Searches

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Clinical Queries – PubMed provides specialized PubMed searches for clinicians (located under **PubMed** services on the left side of the PubMed screen).

- **Clinical Study Query** finds citations that correspond to a specific clinical study category (e.g. etiology, diagnosis, and therapy). The search may be either broad and sensitive or narrow and specific.

- **Systematic Reviews** finds citations for systematic reviews, meta-analyses, reviews of clinical trials, evidence-based medicine, consensus development conferences, and guidelines.
- **Medical Genetics Searches** finds citations and abstracts related to various topics in medical genetics.

Additional Special Query Links (as Cancer, Bioethics, and Toxicology) may be found under **PubMed** services on the left side of the PubMed screen. Most of these links may also be found through the **Limits** tab (subsets).

### **Citation Information (Results)**

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- **In Process Citations** are generally recent articles that are searchable by fields as author, title, journal name, etc. While they often contain abstracts, they have not yet been assigned MeSH terms. Consider the search hints on pages 2 and 3 [with the exception of MeSH].  
**Citations Supplied by Publisher** will eventually have MeSH terms added if they are from journals that PubMed indexes.
- **Epub ahead of print** citations are provided by the publisher prior to its final format. Full text of these citations are generally limited to individual subscribers. The UT libraries generally only have access to the final format, not the Epub version.
- **Related articles** link to the right of the citation “retrieves a pre-calculated set of PubMed citations that are closely related to the selected article”.
- **Display** options above the results includes Summary (default), Abstract, AbstractPlus (currently features related review articles), and more.
- **Reviews tab** (above the search results) links to any review articles in the search results.

### **Full-Text Access to Articles**

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UT and OhioLINK provide online journal content from many biomedical journals. These full text links are only available when accessing PubMed through the library’s web pages. For example, click on the PubMed@UT link at the Mulford Library Home page.

Any available full-text links can be found through an article’s abstract display. Click on a desired title from a list of citations to obtain the accompanying abstract. The icon **Find it with OLinks** (the OhioLINK linking service) is the best option for full-text, as it allows easy access to the full-text article directly or through the UT Library catalog, if the full-text is available.

### **Saving, Printing, Printing, Emailing, and Exporting Records**

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Select items in the results. If no items are checked, all items on the page will be selected.

**Clipboard** is useful for collecting citations from multiple searches. (Items may be removed from Clipboard using the option **Clip Remove**; they will be removed after 8 hours of inactivity. For more information, see online help.) Items selected or sent to the clipboard may be saved more permanently, printed, emailed, or exported.

Select the desired display option from the drop-down menu and the desired send-to option.

<b><u>If you want to:</u></b>	<b><u>Select this Display Option</u></b>	<b><u>Select this Send-to</u></b>
Print stored records	Summary or Abstract	Text
Download records to print	Summary or Abstract	File
Download for export into EndNote	MEDLINE	File
Email record	Summary or Abstract	E-Mail

## **Using My NCBI**

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The My NCBI feature allows searchers to save search strategies in order to run them at a later date as well as set preferences for grouping search results (such as human, English, clinical trials, reviews, etc.). To use My NCBI, you must use a computer that accepts cookies and complete the free registration form. My NCBI features include:

- Multiple search strategies that can be stored in each account
- Automatic email updates for stored search strategies
- Saving results in collections
- Grouping search results by selected areas of interest (including publication types as review articles and clinical trials, Human, dates (as last 30 days) , specific age groups

For more information, see online help.