PubMed®/MEDLINE® Basics: Finding What You Need

National Library of Medicine
www.nlm.nih.gov

NLM brochures

Advanced PubMed Searching Resource Packet: http://nnlm.gov/training/resources/pubmedpacket.doc
Full Text and PubMed: http://nnlm.gov/training/resources/fulltexttri.pdf
LoanSome Doc®: http://nnlm.gov/training/resources/ldtrifold.pdf
MedlinePlus® *for Health Professionals*: http://nnlm.gov/training/resources/mp4hptri.pdf
PubMed Basics: http://nnlm.gov/training/resources/pmtri.pdf
PubMed My NCBI: http://nnlm.gov/training/resources/myncbitri.pdf
Searching PubMed with MeSH: http://nnlm.gov/training/resources/meshtri.pdf

Other resources

NLM PubMed Online Training: http://www.nlm.nih.gov/bsd/disted/pubmed.html
NN/LM Non-English Guides to PubMed: http://nnlm.gov/training/resources/intlpubmedlinks.html
PubMed®/MEDLINE® Basics: http://nnlm.gov/training/resources/pubmedbasic8.doc
NLM PubMed®/MEDLINE® Advanced: http://nnlm.gov/training/resources/pubmedadv8.doc

National Library of Medicine – www.nlm.nih.gov

The United States National Library of Medicine (NLM), part of the National Institutes of Health (NIH), is the world's largest medical library. The collections of the National Library of Medicine include more than seven million books, journals, technical reports, manuscripts, microfilms, photographs, and images on medicine and related sciences, including some of the world's oldest and rarest works. Additionally, there are a wide variety of databases available through NLM including genetics, consumer health, environmental health and toxicology, and the literature citation database – PubMed.

PubMed®

The PubMed database was developed by the National Center for Biotechnology Information (NCBI) at NLM and is one of several databases under NCBI's Entrez retrieval system available on the Web. Since 1996, free access to MEDLINE has been available to the public online via PubMed. PubMed contains over 19 million bibliographic citations back to the 1860s, although indexing of citations began in 1948.

PubMed is updated Tuesday through Saturday. Coverage is worldwide, but most records (about 90%) are from English-language sources or have English abstracts. PubMed provides links to the full-text of articles at participating publishers' Web sites and from PubMed Central. PubMed also includes links to biological data, sequence data, and other molecular biology databases maintained by NCBI, plus links to chemical information in PubChem Substance, PubChem Compound and PubChem Bioassay databases.

Citations in PubMed

Most records are supplied electronically by publishers and are immediately made available via PubMed. They will have the status tag: [PubMed - as supplied by publisher]. Articles that are not yet available in print will include: [Epub ahead of print].

All citations go through a quality control process. At the [PubMed - in process] step, 10 to 15 Medical Subject Headings (MeSH) terms (NLM's controlled vocabulary terms) are added to a citation, as well as links to other databases and information. The records are also checked for bibliographic accuracy. After this step is completed, the citations graduate to become MEDLINE records with the status tag: [PubMed - indexed for MEDLINE]. Submitted citations generally require about one month from submission to becoming a fully indexed MEDLINE citation, although that depends on the journal and the article. A relatively small number of records are included in PubMed – but are not selected for MEDLINE – and contain the status tag: [PubMed].
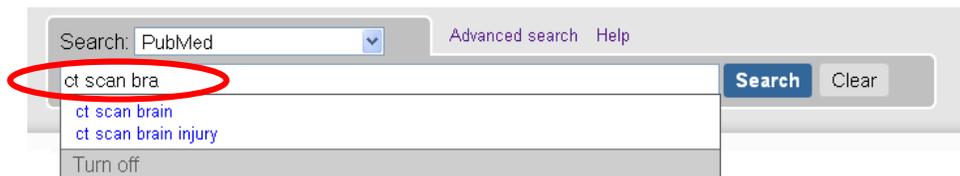
MEDLINE®

MEDLINE is the indexed subset of PubMed. MEDLINE contains nearly 18 million bibliographic citations and author abstracts from nearly 5,400 biomedical journals currently indexed by NLM and published in the United States and in other countries. The scope of MEDLINE includes such diverse topics as microbiology, delivery of health care, nutrition, pharmacology and environmental health. The categories covered in MEDLINE include everything from anatomy, organisms, diseases, psychiatry, and psychology to the physical sciences.

Journals are selected for indexing by the Literature Selection Technical Review Committee (LSTRC) which meets three times a year and considers approximately 140 titles for MEDLINE at each meeting. Final approval is made by the Director of the National Library of Medicine. Titles are considered for scope and coverage, quality of content, quality of editorial work, production quality, audience, and type of content. For more details, see the NLM Fact Sheet, MEDLINE Journal Selection, at http://www.nlm.nih.gov/pubs/factsheets/jsel.html.
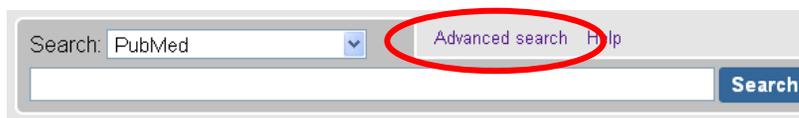
Searching PubMed

Enter significant search terms in the search box (e.g., *ct scan brain aneurysm*) and click on the **Search** button. Note that as you type, PubMed offers suggestions (e.g., *ct scan brain injury*). However, these suggestions are based on searches made by other researchers and may not accurately reflect an effective PubMed search on your topic. Turn off the autosuggest by clicking "Turn off" or set it permanently turn it off when signed into My NCBI.

Focus Your Search in *Advanced Search*

Limit by Topics, Languages, and Journal Groups

Limit your search to *Humans or Animals*, a specific *Gender*, the *Type of Article*, *Languages, Subsets, Ages* groups and/or text features (e.g. *Full Text* or *Abstracts*).

Check the box next to the desired limit to activate that limit.

- **Clear All** removes the limits applied in this section.
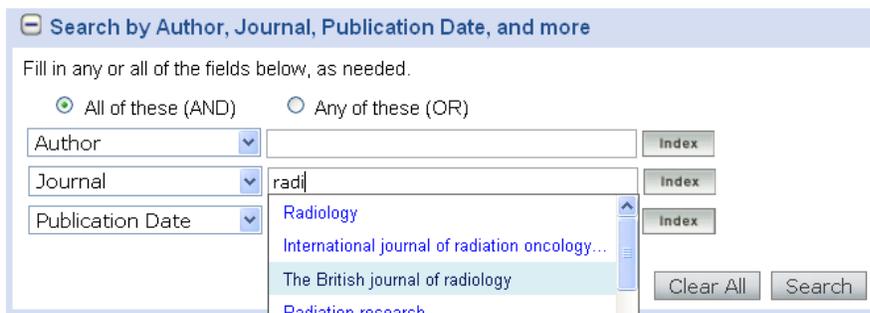- Any **Search** button will run the search.

On the search Results page, a **Limits** notice appears. Click *Change* to return to Advanced Search and *Remove* to remove all applied limits.

Search by an individual **Author, Journal,** or **Publication Date**.
Start typing in the search box. Optional: select a name from the auto-complete feature which is available for Author, First Author, Last Author, and Journal. Use the radio buttons to choose the **AND** or **OR** operator. Click **Search.**
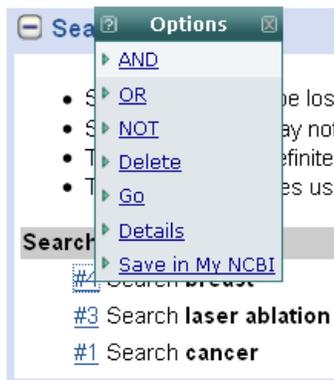
Use the pull-down menus to change the search fields. Click on the **Index** button to the right of each line to display the index of searchable terms for the selected search field.

Search History

Use **Search History** to access or combine previous searches.

For example, previous searches on *cancer* (#1), *laser ablation* (#3) and *breast* (#4) may be combined to identify articles focusing on:
laser ablation in cases of breast or lymph cancer.

Options
▸ AND
▸ OR
▸ NOT
▸ Delete
▸ Go
▸ Details
▸ Save in My NCBI

Search
#4 Search **breast**
#3 Search **laser ablation**
#1 Search **cancer**

Clear the search box if necessary. Click on each number and then **AND** to add it to your search. PubMed will add parentheses.

((#3) AND #1) AND #4

Change the parentheses as needed in the search box and add any additional terms.

#3 AND #1 AND (#4 OR lymph)

Click **Search.**

Index of Fields and Field Values

Add Term(s) to the search box or view an index.

MeSH Terms | tomography | Index

tomography (443460)
tomography/adverse effects (1479)
tomography/classification (102)
tomography/contraindications (232)
tomography/drug effects (5)
tomography/economics (2137)

Previous 200

Next 200

Add to Search Box with: AND | OR | NOT

Use the **Index of Fields and Field Values** to identify Authors, Journals, MeSH Terms or Subheadings, Titles, etc.

Use the drop-down menu to select the field to be searched (e.g. *MeSH Terms*), then enter a term in the search box (e.g. *tomography*) and click **Index**.

Select the desired term (e.g., *contraindications* - CT above).

Multiple search terms may be added your search by using **AND, OR** and **NOT** buttons.

Advanced Search **More Resources**

- **Clinical Queries** – Search filters including clinical studies and systematic reviews
- **Topic-Specific Queries** – Includes additional search interfaces and limits for subject searching including *Health Disparities* and *Veterinary Medicine/Animal Health*
- **MeSH** – Use the Medical Subject Heading database (PubMed's controlled vocabulary) to find appropriate terms for a search and to build search strategies
- **Journals** – In the Journals Database build journal searches for PubMed searches
- **Single Citation Matcher** – Use to find individual citations

More Resources

- Clinical Queries
- Topic-Specific Queries
- MeSH
- Journals
- Single Citation Matcher

Using the Search *Results* Screen

On the *Results* screen you will find:	You may also see:
Search box: Which includes a drop-down menu to search other NCBI databases including MeSH ⬛ RSS : Create an RSS Feed for the search **Save Search:** Save search strategies in My NCBI **Advanced Search:** Change or start a new search **Help:** Access the PubMed Help manual **Display Settings:** Menu to change the reuslts format **Sent to:** Menu to save or send selected citations **Filter your Results:** Use filters to sort results **Find Related Data:** Find records in other databases that cite the identified citations **Search Details:** View how PubMed does the search **Recent Activity:** Shows searches completed, citations and/or elements viewed, and the databases used	⚠ **Limits Activated:** Appears when Advanced Search Limits (Limit by Topics, etc) are applied 📋 **Clipboard:** Appears only when items have been stored temporarily on the Clipboard. (Also appears in green under Advanced Search **Also Try:** Suggestions based on searches performed by other researchers using the same phrase **Titles with your Search Terms:** Appears when all the search terms are in one or more citation titles **Free Full-Text Articles in PubMed Central:** Appears when one or more of the citations have a full-text article in PubMed Central, the free digital archive of biomedical and life sciences journal literature

Display Settings

Select the format, number of items and order in which you want the citations to be displaced, then click **Apply.**

- **Format:** Only two formats provide links to additional reasources: *Summary*, for example, links to the individual citation; *Abstract*, includes links to the Publication Types and MeSH Terms. The remainder of the formats appear as text in your browser.
- **Items per Page:** Default is 20; reveal up to 200 items on a page for review or printing.
- **Sort by:** Reorder citations by date, author, journal title or article title.

Send to: In addition to printing, citations may be sent to

- **File:** Save a text version of the citation as a document
- **Collections:** Save citations permanently by sending them to My NCBI Collections
- **Order:** Order selected citations through PubMed's LoanSome Doc® system
- **Clipboard:** Hold citations for up to eight hours
- **E-mail:** Email citations in any format to a specific address

🖨 **Printing Citations** is done from the browser. Select the citation(s) and format desired, then use the **File** and **Print** commands from the browser (FireFox®, Internet Explorer®, Safari®, etc.).

Filter Your Results: Two default filters are provided: *Review* and *Free Full Text.*

- Click on the link (e.g. *Review*) to view the articles in that filter; the filter being viewed will be highlighted in yellow.
- Click on the **Plus** symbol to append the filter to the search.

- Use *Manage Filters* to *c*hange and/or add other filters. Clicking on this link opens the *Search Filters* section in PubMed's My NCBI.

The **Summary Display** provides links to the individual citation, to *Related articles* and if applicable, to a *Free article* link and the *Item in clipboard* information.

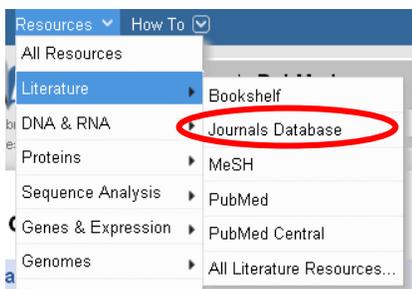The **Abstract Display** links to the individual citation and shows selected icons to full-text journals.

If a library filter is checked in My NCBI, the icon will appear in here and the individual citation display. To access the Abstract Supplemental Data, click on the **Plus** sign. This can be set to be permanently open when signed into My NCBI.

Viewing an individual or single citation defaults to the Abstract Display. **Link Out** provides links to other resources related to this citation. In addition to Limits, Clipboard, icons and Recent Activity, you may see:

- *Related Articles:* Based on an search algorithm which includes the MeSH terms when available
- *Cited by xx PubMed Central article(s):* Links to articles in PubMed Central when available
- *Patient Drug Information:* Links to the AHFS Consumer Medication Information database
- *All Links from the record:* Lists links to NCBI databases used in the record

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Using the *Journals Database* to Limit Searches to Specific Journals

To create and save large collections of journals to add to a search, access the *Journals Database* by clicking on **Resources**, at the top of the page, then click on **Literature**, followed by **Journals Database**. Search by journal title.

Click on selected journals and then use the **Send to** drop-down menu to send the citations to the **Search Box with OR.**

```
"Radiology"[Journal:__jrid6859] OR "Adm Radiol"[Journal:__jrid699]
OR "AJR Am J Roentgenol"[Journal:__jrid377] OR "AJNR Am J
Neuroradiol"[Journal:__jrid379] OR "Appl Radiol"
[Journal:__jrid370] OR "Radiographics"[Journal:__jrid6987]
```

Search PubMed | Clear

Finally, **Search PubMed** with your journals. This search may now be saved in PubMed My NCBI and used to focus **future search on these journals.**

Search: PubMed ▼   RSS Save search Advanced search Help

"Radiology"[Journal:__jrid6859] OR "Adm Radiol"[Journal:__jrid699] OR "AJR   **Search**   Clea

My NCBI | Sign In

Use **My NCBI** to save citations, to save search strategies and to set personal preferences and filters

- Sign into My NCBI by clicking on the link in the upper right hand corner of PubMed
- Use *Register for an account* to create a new account
- Optional options include *Keep me signed in* and *Remember my username*

My NCBI

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My NCBI Home
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Use My NCBI to save your searches and data, and to set NCBI Web s

Sign into My NCBI

Username [   ]
Password [   ]
Keep me signed in ☐
Remember my username ☐

Sign In

▶ See more sign in options for My NCBI partner organizations.

My Saved Data

You have:
- 🟧 32 Saved Searches
- 🟧 5 Collections
- 🟧 2 Bibliographies
- 🟧 Recent Activity

Saved Data
- **Saved Searches:** When *Save Search* is clicked on the **Results** screen, PubMed offers the option of having PubMed run the search and send email updates to you of the latest citations meeting the search criteria
- **Collections:** save citations permanently by using the *Collections* option in the **Send to** menu. Citations may be added to a new or to an existing collection and colletions may be shared with others
- **Bibliographies:** collections of citations by a specific author (max. two)
- **Recent Activity:** When signed into My NCBI, searches in any NCBI database and all individual items examined are stored for six months. Past search strategies may be saved and single citations examined may be added to a collection

Search Filters   These options include adding a link to citations available in a specific library (one using **LinkOut**) and creating a **Custom** filter based on a preset search strategy you have created.

Common Preferences

Username	Member
Password	******
E-mail Address	bebuet@uic.edu
Links Display	Popup Menu
Highlighting	Aqua
Shared Settings	Filters
Linked Accounts	None

Common Preferences
- **Password:** update and change as needed
- **Email Address:** update and change as needed
- **Links Display:** for computers with pop-up limitations
- **Highlighting:** of searched terms
- **Shared Settings:** Used by institutions to allow others to easily access their resources
- **Linked Accounts:** e.g. to NIH Manuscript Submission System
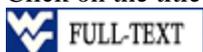
PubMed Preferences

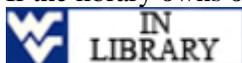| Abstract Supplemental Data	Open
Document Delivery	Loansome Doc
PubMed Filters & Icons	Consumer Healt[...] Custom, Molecu[...]
Outside Tool	UIC: University o[...]
Auto Suggest	On

PubMed Preferences
- **Abstract Supplmental Data:** update and change as needed
- **Document Delivery:** service used by **Send to** *Order*
- **PubMed Filters & Icons:** list of filters set under *Search Filters*
- **Outside Tool:** Used by institutions
- **Auto Suggest:** Turn on or off when signed into My NCBI

Accessing the full-text or print version of the articles:
- Click on the title of the article to see if it is available full-text or if the library owns a print copy.

   Clicking on the Full-text link will bring up a screen with a link to the pdf of the article.
- If the library owns only the print version of the journal, click on the link for **In Library.**

  This link will open the LinkOut page which shows the location of the journal and the holdings. Click on the link for the Library Catalog to search for the journal in Mountainlynx.

- Use Illiad if there is no full-text and no print version of the article at the library. To register for Illiad and request the article, go to http://illiad.lib.wvu.edu/.

Exercises

Exercise 1:   Find articles discussing the clinical trials of chemoradiotherapy on female lung cancer patients. Look at only review articles.

- In Advanced Search, **Limits**, check the boxes for **Type of Article – *Clinical Trial*** and **Gender – *Female*.** Note: if you check both *Clinical Trials* and *Review* under **Type of Article**, PubMed will perform an OR search (*Clinical Trials OR Reviews*) rather than an AND search.
- Enter *chemoradiothearpy* and *lung cancer* in any order in the search box. Click *Search.*
- Under **Filter your results**, click on *Review*.

Exercise 2:   Find several full-text articles about MRIs on seniors with pancreatic cancer. Send them to the Clipboard; then examine the MeSH headings for these citations. Finally, e-mail one citation to yourself.

- In Advanced Search, **Limits**, click *Clear All* to remove previous limits
- Check the box for **Aged 65+ years** and enter *pancreatic cancer* and *MRI* in any order in the search box; click *Search*
- Use the **Free Full Text** filter to identify articles and then select several. In **Send to**, click on *Clipboard*

- Access the Clipboard by clicking on the number of items (i.e., *11 items*)
- To view the MeSH Terms, click on the **Plus** before *Publication Types, MeSH Terms*
- Email the citation(s) using **Send to** *E-mail*

Exercise 3. Select find articles about the effects of contrast media in children with abdominal injuries as published in the following journals*: Radiology, AJR, Pediatric Radiology* and *Clinical Radiology*. Save the search strategy in My NCBI.

- Either the Journal Database or Advanced Search can be used to identify the journals. In Advanced Search under *Search by Author, Journal, …*, use the drop-down menu to change each of the fields to **Journal** and click *Add More Search Fields* to add the four journals. NOTE: be sure to use otherwise PubMed will AND the journals together.
- Limit to *All Child: 0-18 years;* enter the search terms (*contrast media*, *abdominal injuries)* in the search box; click *Search*. Note: using the **Limit** produces more results than using *children* as a search term

- Click on *Save Search.* Follow the My NCBI instructions and optionally send email updates