Best Practices of Searching PubMed MEDLINE

There are a number of effective ways to search PubMed MEDLINE. One way is to utilize the MeSH database within PubMed in order to help guide and facilitate your PubMed search.

**Spotlight on MeSH**

- **Use MeSH (Medical Subject Headings)**
- **Search concepts individually (and either combine in the MeSH search builder or, better, in your Search History located on the Advanced Search page)**
- **Check scope notes; look at the MeSH tree to see if there are broader or narrower terms that would be more appropriate**
- **Explode (done automatically in PubMed MeSH search)**
- **Use subheadings (sparingly, i.e. don’t select more than 3-4)**
- **Use AND/OR/NOT (aka Boolean Operators) to combine searches**
- **Include keywords when needed**
- **Apply limits last (incrementally)**

**Medical Subject Headings (MeSH) Defined:**
MeSH is a comprehensive controlled vocabulary for the purpose of indexing journal articles and books in the life sciences; it can also serve as a thesaurus that facilitates searching.

Created and updated by the United States National Library of Medicine (NLM), it is used by the MEDLINE/PubMed article database and by NLM's catalog of book holdings.

**Why use MeSH?**
People often use different words to describe the same concept. The vast number of synonyms in language creates problems for running thorough searches in databases. A searcher has to find all synonyms for all concepts in a question.

MeSH is designed to solve this problem. MeSH allows you to be a more efficient searcher.

You don’t have to think of all the synonyms! What’s great about the MeSH search in PubMed MEDLINE is that it will take the search term you enter and automatically look for—or map it, as it’s called—to the MeSH term.
Let’s say that you wanted to look for articles on ALS. Instead of using the PubMed search, switch the dropdown to the left of the search box to MeSH (from PubMed) and then enter ALS. Click search.

Remember to change this to MeSH!

PubMed tries to find the best terms in the MeSH database based on the keyword that we entered. Amytrophic Lateral Sclerosis seems like the best. Read the scope note—i.e. the definition below the term—to make sure. The scope note will also sometimes have suggestions on better MeSH terms to use.

Seems like the right term, so go ahead and click on the hyperlinked MeSH term.
Amyotrophic Lateral Sclerosis

A degenerative disorder affecting upper MOTOR NEURONS in the brainstem and SPINAL CORD. Disease onset is usually after the age of 50 and progresses rapidly over a few years. Clinical manifestations include progressive weakness, atrophy, FASCICULATION, dysarthria, dysphagia, and eventual paralysis of respiratory function. Replacement of motor neurons with fibrous ASTROCYTES and atrophy of corticospinal tracts. (From Adams et al., Principles of Neurology, 6th ed.)

PubMed search builder options

- analysis
- anatomy and histology
- blood
- cerebrospinal fluid
- chemically induced
- classification
- complications
- congenital
- cytology
- diagnosis
- diet therapy
- drug therapy
- economics
- embryology
- enzymology
- epidemiology
- ethnology
- etiology
- genetics
- history
- immunology
- legislation and jurisprudence
- metabolism
- microbiology
- mortality
- nursing
- organization and administration
- pathology
- physiology
- physiopathology

- Restrict to MeSH Major Topic
- Do not include MeSH terms found below this term in the MeSH hierarchy.

Tree Number(s): C10.228.854.139, C10.574.562.250, C10.574.950.050, C10.668.467.250, C13.452.845.800.050

Entry Terms:

- Sclerosis, Amyotrophic Lateral
- Charcot Disease
- Motor Neuron Disease, Amyotrophic Lateral Sclerosis
- Lou Gehrig Disease
- Lou Gehrig's Disease
- Lou-Gehrigs Disease
- Disease, Lou-Gehrigs
- ALS (Amyotrophic Lateral Sclerosis)
- Gehrig's Disease
- Gehrig Disease
- Gehrig Disease
- Amyotrophic Lateral Sclerosis, Guam Form
- Amyotrophic Lateral Sclerosis, Parkinsonism-Dementia Complex of Guam

This is known as the full display. Here, we see the MeSH term, the scope note definition, the subheadings assigned to the term, and the Entry Terms.

Look at the Entry Terms now. This is one of the real benefits of MeSH: you don’t have to come up with and search for all of the synonyms and variant spellings of a term or concept! Rather, the MeSH term will find all of the articles about that topic for you. In the example, using the MeSH term Amyotrophic Lateral Sclerosis will retrieve articles that mention Lou Gehrig’s Disease and many other variations.
The MeSH Tree

Farther down the full display, you will see instances of the MeSH tree. The MeSH tree shows you the hierarchical relationship of the terms. For the MeSH term you selected, it will show you the broader terms as well as any narrower terms.

It’s always a good idea to Explode your MeSH terms; this step is done automatically for you in PubMed. What Exploding does is tell the database to automatically include those narrower terms.

Let’s look at Headache Disorders...

Exploding Headache Disorders will automatically include searches for the narrower terms, like Migraine Disorders, Tension-Type Headaches, and Post-Dural Puncture Headaches. Generally, this is a good thing because you are ensuring you are casting a wide enough net to trap all relevant articles.
Building a Search

When you have selected your MeSH term (and any subheadings), you should add it to your Search Builder.

At this point, you can: click the Search PubMed button or look up another MeSH term and keep adding it to the PubMed Search Builder.

Let’s say that you were interested in the Sensitivity and Specificity of diagnostic tests for ALS. I searched ALS (as we did above) and added that term to the Search Builder.

Then, I looked up Sensitivity and Specificity and added that to the Search Builder with AND. After, I clicked Search PubMed.