

# Searching PubMed

This doc describes how to use Boolean search to retrieve records from PubMed via [Application Program Interface](#) (API). For advice on getting started, see also our [blog](#) on constructing a query from the start!

## Entering a Boolean Query

Boolean Operators can be used to specify the structure of your search.

### Basic Boolean Operators

When entering your search terms of interest, use:

- AND/OR/NOT to separate terms,
- quotation marks to search for an exact term (which also turns off Automatic Term Mapping), and
- parenthesis to dictate groupings and priority order

to narrow in on publications of interest. For example,

stroke AND (trevo OR solitaire) AND “modified Rankin Scale”

will retrieve all PubMed-indexed publications that contain **all of the following** in their title, abstract, or keywords:

- The word stroke or similar terms to stroke (using [Automatic Term Mapping](#) [ATM])
- The word trevo or the word solitaire and associated ATM
- The exact phrase “modified Rankin Scale.”

Note: Asterisks are also Boolean operators and can be used for [truncation](#),

### Using Search Fields and Filters

If you want to specify how a term will be interpreted by PubMed, specify the field in the following manner: term[FIELD], using one of PubMed's pre-specified fields (or filters), which will narrow how that specific term is interpreted.

Fields and filters generally follow the structure of term[FIELD], but if the field is incorrectly spelled or not recognized, it will be ignored by PubMed and the term will be searched as plain text.

### MeSH Fields

PubMed indexes articles using the [MeSH controlled vocabulary](#), which means that you can add this

field to search for MeSH topics so long as your term of interest is in the MeSH hierarchy.

- [MESH] / [MESH TERMS]: Searches throughout the MeSH hierarchy.
- [MESH MAJOR TOPIC]: Searches only for MeSH “[Major Topics](#)” (which are indicated in the MeSH hierarchy by asterisks).
- [MESH SUBHEADING]: Searches for only non-Major Topics in the MeSH hierarchy.

So, a search for `stroke[MESH MAJOR TOPIC]` will return only studies tagged with Major Topics at or under “stroke” in the MeSH hierarchy, while a search for `stroke[MESH]` will return any study tagged at or below “stroke” in the hierarchy.

Note: MeSH field searches will still be mapped by ATM, but only across the relevant MeSH fields.

## Filter by Study Traits

PubMed enables searches to be narrowed by the following [study characteristics](#):

- Publication type, by searching for one of PubMed's supported [publication types](#) using, for example, `review[PT]`;
- Full Text available, by appending `full text[SB]`;
- Publication date, by searching for `YYYY-MM-DD[Date - Publication] : YYYY-MM-DD[Date - Publication]` (only the Year is required for the filter to function);
- Language, by searching for the `language[LANGUAGE]`;
- And [others](#) (see full list [here](#))

## Filter by Study Contents

You can also narrow the section of the publication in question that your term will be searched within by specifying:

- Title only, `term[TITLE]`
- Title or Abstract (TIAB), `term[TITLE/ABSTRACT]`
- Text only, `term[TEXT WORD]`

# Guidance on Search Creation

While it is possible to simply enter your terms of interest, the following guidance (as well as this more in-depth [search guide](#)) helps narrow your search with the goal of finding as many relevant/includable records as possible, while returning as few irrelevant records as possible.

## PICO Framework

If you are searching for clinical studies and are seeking a framework for building out your search, you may consider using [PICO](#) to organize your Patients, Interventions/Comparators, and Outcomes.

## Automatic Term Mapping

When you search on PubMed, it will search not only for your term of interest but also use [Automatic Term Mapping](#) (ATM) to find records with related terms. Specifically, ATM matches each individual term in your search against:

- A Subject translation table (including MeSH (Medical Subject Headings)),
- A Journals translation table,
- The Author index, and
- An Investigator (Collaborator) index.

In effect, ATM expands your search's coverage to ensure that synonyms and close-matches are not thrown out. To see how ATM has expanded your search, you can view the [Search History](#) on the Literature Search page.

## Expanding or Narrowing?

If your search was too narrow (and did not return the records you want to include), consider:

- Adding new terms or synonyms with “OR”
- Removing extraneous and highly specific terms
- Removing quotation marks.

If your search was too broad (and returned more records than you want to screen, with a low 'hit rate'), consider:

- Removing general terms in favor of more specific ones,
- Appending more “AND”- phrases, including filters for both concepts of interest and traits like study type or date
- Adding quotation marks, where appropriate.

See also our guidance on [search size](#).

## API vs. "New" PubMed Searches

When you run your PubMed search on Nested Knowledge, you are plugging into the PubMed API. The API still uses the search from before the launch of ["New" PubMed](#). This **can lead to differences between the records pulled from the API compared to running the search directly on PubMed**, due to differences in [Automatic Term Mapping](#) between New PubMed and the API.

PubMed has recently released [estimates](#) on the schedule to “match” the API to New PubMed.

If you are interested in using New PubMed for Nested Knowledge, you still can do so! However, this involves running the search directly on PubMed, exporting an nBIB file, and [importing it](#). This has the downside that there will be no automatic updating of your search.

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