

# MeSH Guideline for Trainees of the Postgraduate Institute of Medicine

Finding, selecting, combining and documenting Medical Subject Headings for PubMed searching

**Medical Subject Headings (MeSH)**  
**official NLM vocabulary for biomedical searching**

# Training Purpose and Learning Outcomes

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## Purpose

To help PGIM trainees and trainers search biomedical literature by concept, not only by the exact words used by authors.

## Main aim

To build accurate PubMed searches using MeSH terms, keywords, Boolean operators and clear documentation.

## By the end, participants should be able to:

- Explain what MeSH is and why it improves biomedical searching.
- Find the correct MeSH term for a clinical or research concept.
- Read a MeSH record: scope note, entry terms, tree number and subheadings.
- Combine MeSH terms with keywords and record the complete search strategy.

# What is MeSH?

MeSH means Medical Subject Headings.

## Simple definition

MeSH is the National Library of Medicine controlled vocabulary thesaurus used for indexing articles for PubMed and for organising biomedical and health-related information.

## Why it matters

MeSH helps searchers retrieve articles about the same concept even when different words are used in titles and abstracts.

## Common words used in searching

## MeSH heading

high blood pressure; raised blood pressure;  
increased blood pressure

Hypertension

heart attack

Myocardial Infarction

cancer

Neoplasms

# Why Use MeSH and Keywords Together?

MeSH improves precision; keywords improve coverage.

Search type	What it searches	Useful for
Keyword search	Words in title, abstract and other text fields	New topics, acronyms, local terms, phrases not yet in MeSH
MeSH search	Official subject headings assigned by indexers	Recognised biomedical concepts, systematic searching, synonym control
Combined search	MeSH terms plus title/abstract keywords	balanced precision and recall

**Best practice: combine MeSH terms with carefully selected keywords, especially for theses, reviews and evidence-based healthcare questions.**

# Where to Search for MeSH Terms

Use the MeSH Database for PubMed searching; use the MeSH Browser for deeper checking.


Tool	Best use	What to check
NCBI MeSH Database	Build PubMed searches from MeSH records	Heading, entry terms, subheadings, search builder
NLM MeSH Browser	Explore hierarchy and detailed term relationships	Tree position, broader/narrower terms, year and record details
PubMed Advanced Search	Combine and test search lines	Search history, result counts, field tags

# MeSH Database

Type your Keyword



MeSH   [Limits](#) [Advanced](#) [Help](#)



## MeSH

MeSH (Medical Subject Headings) is the NLM controlled vocabulary thesaurus used for indexing articles for PubMed.

### Using MeSH

[Help](#)

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[Tutorials](#)

### More Resources

[E-Utilities](#)

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[NLM MeSH Homepage](#)

# Search an ordinary word

NCBI Resources How To Sign in to NCBI

MeSH Database MeSH Database high blood pressure Search

Create alert Limits Advanced Help

Filter by Clear all

Article attribute

Associated data	72
Books	5

Article type

Clinical Trial	103
Meta-Analysis	24
Practice Guideline	5
Randomized Controlled Trial	67
Review	226
Systematic Review	47

Publication date

1 year	212
5 years	973
10 years	1791
Custom range...	

Display Settings:  Summary, 20 per page, Sorted by Relevance Send to: ▾

Results: 1 to 20 of 229 << First < Prev Page 1 of 12 Next > Last >>

#	Name	Hit Count
1.	<a href="#">Hypertension</a> A chronic elevation of blood pressure in the systemic arteries. Year introduced: 1963(1960)	25411
2.	<a href="#">Blood Pressure</a> The pressure exerted by the blood against the... Year introduced: 1963(1960)	11372
3.	<a href="#">White Coat Hypertension</a> Elevated blood pressure in a patient in a clinical setting but not in other settings. Year introduced: 1999	2084
4.	<a href="#">Pulmonary Hypertension</a> High blood pressure in the pulmonary circulation. Year introduced: 1985	2763
5.	<a href="#">Renovascular Hypertension</a> High blood pressure associated with renal vascular disease. Year introduced: 1985	1540

1. Enter a simple keyword

2. Check the mapped MeSH term

3. Open the correct record



Keyword: **high blood pressure** → MeSH term: **Hypertension**

# Build and run the PubMed search

## 1. Identify and select MeSH terms

### 1 Choose main concepts

#### MeSH

Viewing 1 - 20 of 1 results for Hypertension

- Hypertension** MeSH Descriptor Data 2024  
Hypertensions; High Blood Pressure; Blood Pressure, High  
Tree Number(s): C14.907.482.500, C14.907.734.500, C23.888.260.500  
Unique ID: D006973  
Entry Terms:
  - Hypertensions
  - High Blood Pressure
  - Blood Pressure, High

### 2 Find the MeSH terms

Viewing 1 - 20 of 1 results for Pregnancy

- Pregnancy** MeSH Descriptor Data 2024  
Gravidity; Pregnancies; Pregnant State  
Tree Number(s): C13.351.747  
Unique ID: D011491  
Entry Terms:
  - Gravidity
  - Pregnancies
  - Pregnant State

**Note:** MeSH terms are updated annually. "2024" indicates the current MeSH vocabulary year.

## 2. Build your search (Search Builder)

### PubMed Search Builder

Add terms to the query box

MeSH Terms

MeSH Terms

Query box

"Hypertension"[MeSH Terms]

AND

"Pregnancy"[MeSH Terms]

#### History and Search Details

Search	Actions	Details	Query	Results	Time
#2	...	>	"Hypertension"[MeSH Terms] AND "Pregnancy"[MeSH Terms]	5,217	10:15:32
#1	...	>	"Hypertension"[MeSH Terms]	198,841	10:14:58
#0	...	>	"Pregnancy"[MeSH Terms]	568,354	10:14:27

## 3. Run the search in PubMed



National Library of Medicine  
National Center for Biotechnology Information

Log in



"Hypertension"[MeSH Terms] AND "Pregnancy"[MeSH Terms]

Search

Advanced Create alert Create RSS

User Guide

Save Email Send to Sort by: Best match Display options

### 4 Run the search in PubMed

MY NCBI FILTERS

5,217 results

Page 1 of 522

RESULTS BY YEAR



1950 2024

- 1 **Hypertensive Disorders of Pregnancy.**  
1 Magee LA, von Dadelszen P.  
N Engl J Med. 2022 Feb 3;386(5):431-440.  
doi: 10.1056/NEJMra1903677. Review.  
PMID: 35116058 **Free article.**  
**Hypertensive disorders** complicate 5 to 10% of **pregnancies** and are a leading cause of maternal and perinatal morbidity and mortality...
- 2 **Chronic Hypertension in Pregnancy.**  
2 Sibai BM, Caritis S.  
N Engl J Med. 2007 Aug 16;357(7):699-711.  
doi: 10.1056/NEJMcp071042. Review.  
PMID: 17699808  
**Chronic hypertension** complicates 1 to 5% of pregnancies and is associated with increased risks for maternal and perinatal complications...
- 3 **Hypertension and Pregnancy Outcomes: An Updated Review.**  
3 Brown MA, Magee LA, Kenny LC, Karumanchi SA, McCarthy FP.  
Hypertension. 2018 Apr;71(4):660-669.  
doi: 10.1161/HYPERTENSIONAHA.117.10519. Review.  
PMID: 29301956 **Free article.**  
This review summarizes the association between **hypertension** in



**Tip:** Add keywords if needed for very new terms or phrases.  
Example: "preeclampsia"[All Fields] AND "Hypertension"[MeSH Terms]

## Read the MeSH record and Use the MeSH hierarchy

Record part	What it tells you
MeSH heading	The official subject heading used for indexing
Entry terms	Alternative words that lead to the same heading
Tree number	Where the term sits in the hierarchy
Subheadings	Aspects such as diagnosis, therapy or epidemiology

### Hypertension

Persistently high systemic arterial BLOOD PRESSURE. Based on multiple readings (BLOOD PRESSURE DETERMINATION), hypertension is currently defined as when SYSTOLIC PRESSURE is consistently greater than 140 mm Hg or when DIASTOLIC PRESSURE is consistently 90 mm Hg or more.

PubMed search builder options

Subheadings:

- |  |                                       |   |
|--|---------------------------------------|---|
| <input type="checkbox"/> blood               | <input type="checkbox"/> enzymology   | <input type="checkbox"/> pathology              |
| <input type="checkbox"/> cerebrospinal fluid | <input type="checkbox"/> epidemiology | <input type="checkbox"/> physiopathology        |
| <input type="checkbox"/> chemically induced  | <input type="checkbox"/> ethnology    | <input type="checkbox"/> prevention and control |
| <input type="checkbox"/> classification      | <input type="checkbox"/> etiology     | <input type="checkbox"/> psychology             |
| <input type="checkbox"/> complications       | <input type="checkbox"/> genetics     | <input type="checkbox"/> radiotherapy           |
| <input type="checkbox"/> congenital          | <input type="checkbox"/> history      | <input type="checkbox"/> rehabilitation         |
| <input type="checkbox"/> diagnosis           | <input type="checkbox"/> immunology   | <input type="checkbox"/> surgery                |
| <input type="checkbox"/> diagnostic imaging  | <input type="checkbox"/> metabolism   | <input type="checkbox"/> therapy                |
| <input type="checkbox"/> diet therapy        | <input type="checkbox"/> microbiology | <input type="checkbox"/> urine                  |
| <input type="checkbox"/> drug therapy        | <input type="checkbox"/> mortality    | <input type="checkbox"/> veterinary             |
| <input type="checkbox"/> economics           | <input type="checkbox"/> nursing      | <input type="checkbox"/> virology               |
| <input type="checkbox"/> embryology          | <input type="checkbox"/> parasitology |   |

Restrict to MeSH Major Topic.

Do not include MeSH terms found below this term in the MeSH hierarchy.

Tree Number(s): C14.907.489

MeSH Unique ID: D006973

Entry Terms:

- Blood Pressure, High
- Blood Pressures, High
- High Blood Pressure
- High Blood Pressures

See Also:

- [Antihypertensive Agents](#)
- [Vascular Resistance](#)

[All MeSH Categories](#)

[Diseases Category](#)

[Cardiovascular Diseases](#)

[Vascular Diseases](#)

**Hypertension**

[Essential Hypertension](#)

[Isolated Systolic Hypertension](#)

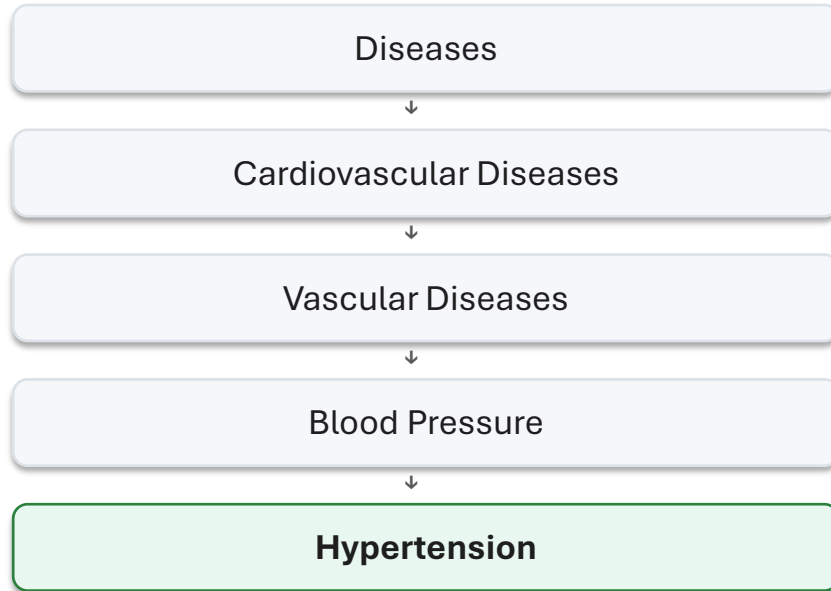
[Hypertension, Malignant](#)

[Hypertension, Pregnancy-Induced](#)

# Understand the MeSH Tree

The MeSH tree moves from broad subjects to more specific subjects.

## Example tree for Hypertension:



- Choose the most specific term that matches your topic.
- Use a broader term when you need a wider search.
- Check narrower terms if your topic is more specific.
- Some MeSH terms appear in more than one tree location.

**The tree helps you decide whether your search is too broad or too narrow.**

# Example : Type 2 Diabetes and Exercise

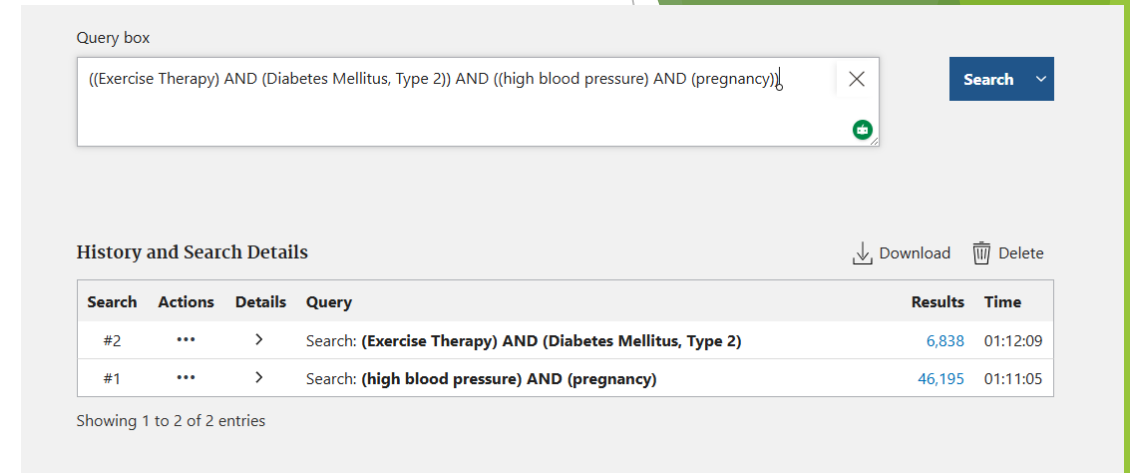
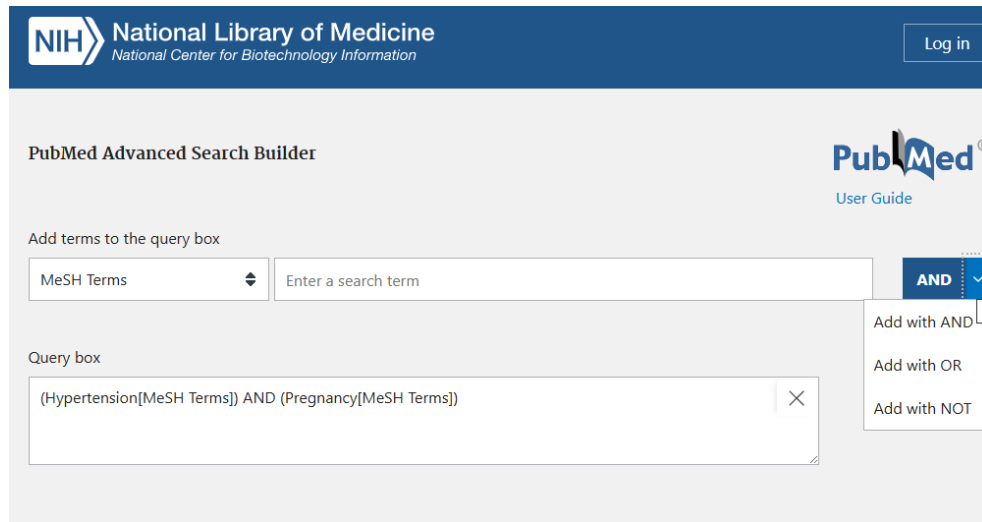
From clinical question to PubMed search strategy.

Question: In adults with Type 2 Diabetes, does exercise improve blood glucose control?

Concept	MeSH term	Keywords
Disease	Diabetes Mellitus, Type 2	type 2 diabetes; T2DM
Intervention	Exercise; Exercise Therapy	exercise; physical activity
Outcome	Blood Glucose; Glycated Hemoglobin A	HbA1c; glycaemic control

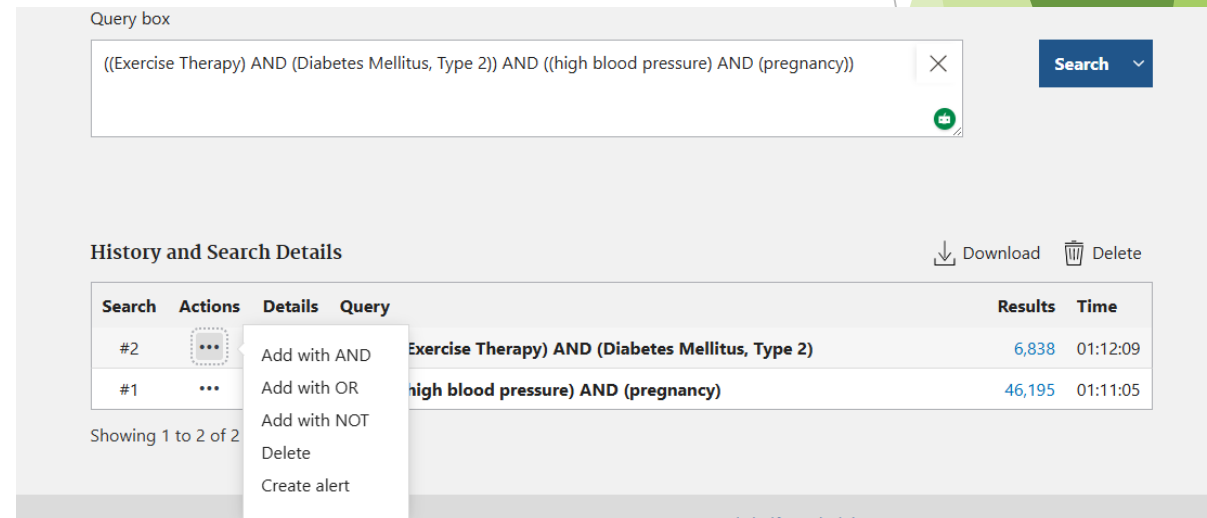
("diabetes mellitus, type 2"[MeSH Terms] OR "type 2 diabetes mellitus"[All Fields] OR "type 2 diabetes"[All Fields]) AND "T2DM"[All Fields] AND ("exercise"[MeSH Terms] OR "exercise"[All Fields] OR "exercises"[All Fields] OR "exercise therapy"[MeSH Terms] OR ("exercise"[All Fields] AND "therapy"[All Fields]) OR "exercise therapy"[All Fields] OR "exercising"[All Fields] OR "exercise s"[All Fields] OR "exercised"[All Fields] OR "exerciser"[All Fields] OR "exercisers"[All Fields]) AND ("exercise"[MeSH Terms] OR "exercise"[All Fields] OR ("physical"[All Fields] AND "activity"[All Fields]) OR "physical activity"[All Fields]) AND ("glycated hemoglobin"[Supplementary Concept] OR "glycated hemoglobin"[All Fields] OR "hba1c"[All Fields] OR "glycated hemoglobin"[MeSH Terms] OR ("glycated"[All Fields] AND "hemoglobin"[All Fields]) OR "hba1cs"[All Fields]) AND ("glycaemic control"[All Fields] OR "glycemic control"[MeSH Terms] OR ("glycemic"[All Fields] AND "control"[All Fields]) OR "glycemic control"[All Fields])

# Boolean Search Strategy Using MeSH Terms in PubMed Advanced Search Builder



## How to Do MeSH Mapping in PubMed

- Open [PubMed](#)
- Enter search terms
- Click **Search**
- Go to **History and Search Details**
- Click the arrow beside the search query
- View **Search Details** to check MeSH mapping
- Example mapped search:
  - "Exercise Therapy"[Mesh] AND
  - "Diabetes Mellitus, Type 2"[Mesh]



## Advantages of Using MeSH Terms in PubMed

- Improves search precision and relevance
- Uses standardized medical vocabulary
- Reduces irrelevant search results
- Groups all synonyms under one heading
- Ensures consistent search results across studies
- Retrieves both older and newer articles uniformly
- Captures articles despite keyword variations used by authors
- Provides controlled vocabulary for biomedical concepts
- Organizes topics using a hierarchical MeSH tree structure
- Allows easy transition from broad to specific searches
- Improves sensitivity and specificity of search strategy
- Helps avoid missing relevant studies due to spelling or terminology differences
- Enhances systematic review quality
- Supports evidence-based clinical research
- Improves reproducibility of search strategy
- Saves time during literature searching
- Useful for thesis, dissertation, and academic publishing

# Final Checklist and Official Sources

Use this before submitting, teaching or documenting a PubMed search.

- The question is written clearly and separated into concepts.
- PICO(C) is used where suitable, including Comparison when relevant.
- The correct MeSH heading is found for each main concept.
- Scope note, entry terms and tree number are checked.
- Subheadings, Explode, NoExp and Major Topic are considered carefully.
- Keywords are added for synonyms, acronyms and new terms.
- OR is used for synonyms; AND is used between different concepts.
- The database, date, search string, filters and result count are saved.

## Official sources to check:

- NCBI MeSH Database: <https://www.ncbi.nlm.nih.gov/mesh/>
- NLM MeSH homepage: <https://www.nlm.nih.gov/mesh/meshhome.html>
- NLM MeSH Browser: <https://meshb.nlm.nih.gov/>
- NLM MeSH Qualifiers List: <https://www.nlm.nih.gov/mesh/subhierarchy.html>
- NLM PubMed / MeSH training and Technical Bulletin pages

**A good MeSH search is accurate, reproducible and transparent.**