LEARNING OBJECTIVE

- What is PubMed /MEDLINE
- Search Process
  - Boolean Logic
  - Construct a search strategy
  - Search Pubmed : Keywords, Fields, MESH
- Working with the Search Results
- Create a My NCBI account
- Create Alerts
PUBMED

• Search interface developed by the National Center for Biotechnology Information (NCBI) at National Library of Medicine (NLM)

• Provide access to approximately 26 million MEDLINE citations to articles published in biomedical journals, life science journals, and online books
MEDLINE

• Biomedical literature database covering the fields of medicine, dentistry, nursing and health care system

• MEDLINE records contain journal citations indexed with Medical Subject Headings (MeSH)

• Citations are selected from approximately 5500 reputable biomedical journals published in US and 80 other countries

• Updated daily
MEDLINE is a subset of PubMed.

Some articles are being processed and will move into MEDLINE... AND some articles will never be included in MEDLINE (For reasons such as not biomedical source, etc)
HOW TO ACCESS PUBMED

Library Portal
http://www.lib.nus.edu.sg
On Campus & Off Campus

*Benefit: Seamless access to full-text articles (journals subscribed by NUS Libraries)*

Google
*Benefit: Faster*
1. Define/clarify search **topic**

2. Identify key concepts
   - (list keywords/synonyms for each concept)
   - Combine concepts with
     - Boolean operators **(AND, OR, NOT)**
     - Truncations *, Brackets (nesting)

3. Run the search

4. Refine search if necessary
**BOOLEAN**

**OR** either terms may be present
→ Use to join synonyms; more results
E.g. doctors **OR** physicians

**AND** both terms must be present
→ Use to combine concepts; fewer results
E.g. doctors **AND** managed care

**NOT** → Use with caution
E.g. Humans **NOT** animals
PHRASE SEARCHING “ ”

Searches exact phrase

“drug delivery systems”
“delivery of healthcare”
“Single cell”
“Self expandable metallic stent”
TRUNCATION *

Searches spelling variants:

- **Vaccine** * - vaccine, vaccines...
- **Vaccin** * - vaccination, vaccinations, vaccinator, vaccinating...
- **Vac** * - vacation, vaccine... vacuum, vacuole...

*Pubmed searches only first 600 variants*
BRACKETS (NESTING)

Used to combine concepts in a prescribed order in a search statement:

“managed care” AND (doctor* OR physician*)
SEARCH STATEMENT

**Topic**
Review articles on **Warfarin Resistance**

**Concepts**

<table>
<thead>
<tr>
<th>Warfarin</th>
<th>resistance</th>
<th>review</th>
</tr>
</thead>
<tbody>
<tr>
<td>coumadin</td>
<td>Drug resistance</td>
<td>reviews</td>
</tr>
<tr>
<td>coumadine</td>
<td>Resist*</td>
<td></td>
</tr>
</tbody>
</table>

**Keywords**

(warfarin OR coumadin OR coumadine ) AND (resistance OR drug resistance OR resist*) AND (review OR reviews)
A COMPREHENSIVE SEARCH

1. Keyword Search
2. Field Search
   • by title, abstract, author, etc
3. MeSH Search
   • Major MeSH
NAVIGATING PUBMED
LETS SEARCH

1. Type warfarin
   Click Go. Click Clear.

2. Type warfarin OR coumadin OR coumadine
   Click Go. Click Clear.

3. Type resistance OR drug resistance
   Click Go. Click Clear.
BASIC SEARCH

PubMed search for warfarin

Search results
Items: 1 to 20 of 24997

1. Pantaprevir/ronvir/ombitasvir-dasabuvir plus ribavirin therapy and inhibition of the anticoagulant effect of warfarin, a case report.
PMD: 27813106

PMD: 27812956

3. Understanding the RECORDS 3 Trial and its impact on anticoagulation practice in resource poor countries.
PMD: 2781436

4. Betrixaban - the next direct factor Xa inhibitor?
PMD: 27800616

Search details
"warfarin"[MeSH Terms] OR "warfarin" [All Fields]
USE SEARCH HISTORY TO COMBINE TERMS

((warfarin OR coumadin OR coumadine)) AND (resistance OR drug resistance)) AND (review OR reviews)

Search or Add to history

Search | Add to builder | Query | Items found | Time
---|---|---|---|---
#4 | Add | review OR reviews | 263636 | 04:20:56
#3 | Add | resistance OR drug resistance | 653215 | 04:20:07
#2 | Add | warfarin OR coumadin OR coumadine | 23804 | 04:19:26
#1 | Add | warfarin | 23186 | 04:12:17
The use of direct oral anticoagulants in inherited thrombophilia

Shelley J.W.1, White C.W.2, Thompson A.R.2

Author information

Abstract

To review the use of the direct oral anticoagulant (DOAC) agents in inherited thrombophilia based on the literature. MEDLINE, International Pharmaceutical Abstracts, and Google Scholar searches (1970-May 2016) were conducted for case reports, case series, retrospective cohorts, or clinical trials using the key words: protein C deficiency, protein S deficiency, antithrombin deficiency, activated protein C resistance, Factor V Leiden, hypercoagulable, NOACs, dabigatran, apixaban, rivaroxaban, betrixaban, edoxaban, Xa Inhibitor, direct thrombin inhibitor. Results were limited to English-only articles. Clinical studies evaluating the use of DOACs for hypercoagulable states related to inherited thrombophilia were selected and evaluated. Thrombophilia, a predisposition to thrombosis, manifests predominantly as venous thromboembolism. Causes of inherited thrombophilia include antithrombin deficiency, deficiencies of proteins C and S, and Factor V Leiden mutation. Many patients with thrombophilia receive anticoagulant therapy for primary or secondary prevention of VTE, historically either warfarin or a heparin product. DOACs have been considered as potential alternatives to traditional agents based on their pharmacologic activity. Case reports and a post-hoc analysis of a clinical trial have indicated positive results in patients with inherited thrombophilia and VTE. Positive results have been reported for the use of DOACs in inherited thrombophilia. Further robust studies are needed for definitive decision making by clinicians.

KEYWORDS: Apixaban, Betrixaban, Dabigatran, Direct oral anticoagulants, Direct thrombin inhibitor, Edoxaban; Rivaroxaban; Xa inhibitor

PMID: 27734187 DOI: 10.1007/s11139-016-1435-2

Published: Date supplied by publisher
FIELD SEARCH RESULTS

Bypasses Automatic Term Mapping – More Specific but less comprehensive
MESH: MEDICAL SUBJECT HEADINGS

Medicine's controlled vocabulary used for indexing articles
Provides a **consistent** way to retrieve information

Human indexers read articles in MEDLINE and assign standarised terms called MESH

*Warfarin*

An anticoagulant that acts by inhibiting the synthesis of vitamin K-dependent coagulation factors. Warfarin is indicated for the prophylaxis and/or treatment of venous thrombosis and its extension, pulmonary embolism, and atrial fibrillation with embolization. It is also used as an adjunct in the prophylaxis of systemic embolism after myocardial infarction. Warfarin is also used as a rodenticide.
ENTRY TERMS

SEARCH MESH FIRST TO CHECK FOR RIGHT TERMS

If you need to expand your search consider these synonyms in keyword search

Other ways to find Synonyms

- Thesaurus
- Subject terms in Library catalogue and key concepts or Descriptors (Author supplied)
- Find a review article and look for the “keywords” used to search the different databases
MESH: Automatically expands MeSH term to include more specific terms

- Resistance, Drug

- Pharmacogenetics

All MeSH Categories
- Phenomena and Processes Category
- Physiological Phenomena
- Pharmacological Phenomena

Drug Resistance
- Drug Resistance, Microbial
  - Drug Resistance, Bacterial
  - Drug Resistance, Fungal
  - Drug Resistance, Viral
- Drug Resistance, Multiple
  - Drug Resistance, Multiple, Bacterial
  - Drug Resistance, Multiple, Fungal
  - Drug Resistance, Multiple, Viral
- Drug Resistance, Neoplasm
- Herbicide Resistance
- Insecticide Resistance
- Insulin Resistance

Check this to turn the expansion off
Subheadings can be used with MeSH to get at specific aspects of a topic.

Examples:

- An article about drugs used to treat cancer - Neoplasms/drug therapy

- An article on heredity/genetic aspects of drug resistance - Drug Resistance/genetics
MESH SEARCH RESULTS

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PubMed

"Warfarin"[Mesh] AND "Drug Resistance"[Majr])
MESHS MAJOR: A MeSH Major heading is assigned to an article which covers that topic in great detail.
REFINE SEARCH USING FILTERS

PubMed search results with filters applied: "Warfarin" AND "Drug Resistance".

Search details:
- Abstract:
  - PURPOSE OF REVIEW: In North America, warfarin is the current standard for oral anticoagulation therapy in the treatment and/or prophylaxis of different thrombotic conditions. In daily clinical practice, a significant proportion of patients on long-term warfarin therapy fail to stabilize within their target therapeutic range, leading to an increased risk of thromboembolism or bleeding. Various authors and agencies advocate the role of genetic testing to guide warfarin dosing.
  - RECENT FINDINGS: Evidence regarding the clinical efficacy and cost-effectiveness of genotype-based warfarin dosing has been conflicting, although some recent studies have suggested a potential benefit in certain subgroups.
  - SUMMARY: More evidence is needed before the wide adoption of genotype-based warfarin dosing. Future studies should be designed to address outcomes such as major bleeding or recurrent thrombosis, and allow economic evaluations.
- Publication Types, MeSH Terms, Substances:
  - Publication Types: Review
  - MeSH Terms: Warfarin, Drug Resistance
TWO WAYS TO DO A MESH / MAJOR SEARCH

From the MESH database

From Pubmed, look at the MESH terms assigned to the article and use it to search
<table>
<thead>
<tr>
<th><strong>Keyword</strong></th>
<th><strong>MeSH</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Broader, less precise</td>
<td>More specific</td>
</tr>
<tr>
<td>Retrieves all kinds of records, including the latest (as supplied by publisher) = Pubmed</td>
<td>Retrieves citations indexed with MeSH terms (time lag, older) = Medline</td>
</tr>
<tr>
<td>Useful when there is no MeSH term available to represent the concept</td>
<td>Consistent way to retrieve information that may use different terminology for the same concept</td>
</tr>
</tbody>
</table>
Egs of newly added MESH Terms – 2015
• Middle east Respiratory Syndrome (MERS-CoV)
• electronic cigarettes

Egs of newly added MESH Terms – 2016
• Zika Virus
• Zika Virus Infection
• Smartphone
COMPLETE SEARCH

- keyword

- MeSH
  - Major MeSH
  - narrowest, most precise, slightly dated
  - broadest, least precise, current

Refine e.g. Field searching
**SUMMARIZE**

Identify key concepts of your question /topic

- Always search for MeSH terms first
- If there are no MeSH terms then use keywords
- Combine keywords and MeSH terms for a complete search
- Use “AND” or “OR” to either narrow or widen your search
- Filter your results at last- Language ; Article type ; Age
MANAGE SEARCHES

Collect desired citations in clipboard

Search results
Items: 7  Selected: 2

Filters activated. Review Clear all to show 61 items.

1. Will there be a role for genotyping in warfarin therapy?
   Gandara E, Wells PS.
   PMID: 20601874
   Similar articles

   Osinbowale O, Al Malki M, Schade A, Bartholomew JR.
   PMID: 19952297
   Free Article
   Similar articles


Find related data
Database: Select

Search details
("Warfarin"[Mesh] AND Resistance"[Majr])
CREATE ALERTS

1. Saves your search and emails new articles on your topic
2. Requires NCBI account
3. Can also sign in via Google
MY NCBI ACCOUNT

Sign in to NCBI

Sign in with

Google
NIH Login
SRA Commons

See more 3rd party sign in options

OR

Sign in directly to NCBI

NCBI Username
Password
Keep me signed in

Sign In

Forgot NCBI username or password?

Register for an NCBI account

My NCBI features include:

- Save searches & automatic e-mail alerts
- Display format preferences
- Filter options
- My Bibliography & NIH public access policy compliance
- SciENcv: a researcher biosketch profile service
- Highlighting search terms
- Recent activity searches & records for 6 months
- LinkOut, document delivery service & outside tool selections
SAVE SEARCH & CREATE ALERTS

Name of saved search: ABC

Search terms: 

Would you like e-mail updates of new search results?
- No, thanks.
- Yes, please.

E-mail: (change)

Schedule:
- Frequency: Monthly
- Which day? the first Sunday

Formats:
- Report format: Abstract

Number of items:
- Send at most: 5 items
- Send even when there aren't any new results

Rename your search
Change report format to abstract
Login via Library Portal:
Click on: Findit! @ NUS Libraries or Publisher Icons
Focus on particular clinical aspects of a topic.

Quickly search a medical condition or a type of intervention) then select the type of filter

Example: administration of neuroleptic drugs to patients with dementia

neuroleptic drugs AND dementia
Clinical study categories: Articles focusing on: therapy, diagnosis, etiology, prognosis; or, clinical prediction guides (i.e. studies which develop or validate rules, guides, indexes, equations, scales, scores or models to predict a diagnosis, prognosis, risk, therapeutic response, therapeutic drug level or clinical outcome)
QUESTIONS?
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lib.nus.edu.sg Medical Library MD6, Level 5,

We value your feedback!
http://tinyurl.com/pb2017jun