

# Searching for evidence



**Rahul Mhaskar**

**Assistant Professor**

Clinical and Translational Sciences Institute

Division and Center for Evidence based Medicine and Health Outcomes Research

Morsani College of Medicine

May 1, 2013

# Outline

- Introduction
- Resources / Databases
- How to search
  - PubMed
  - TRIP Database
- Management of search results

# Learning through play

- Try all “buttons”
- Make lots of “mistakes”
- Have fun



# Introduction

Foundations of informed healthcare are:

- assessment of knowledge gaps,
- question formulation,
- gathering and synthesis of evidence and
- application of that evidence into clinical practice



# Task

## Questions:

- What is hypertension?
- What is Chagas disease?
- What is the role of a single dose versus short course of Primaquin in management of *Plasmodium falciparum* transmission?

## Task:

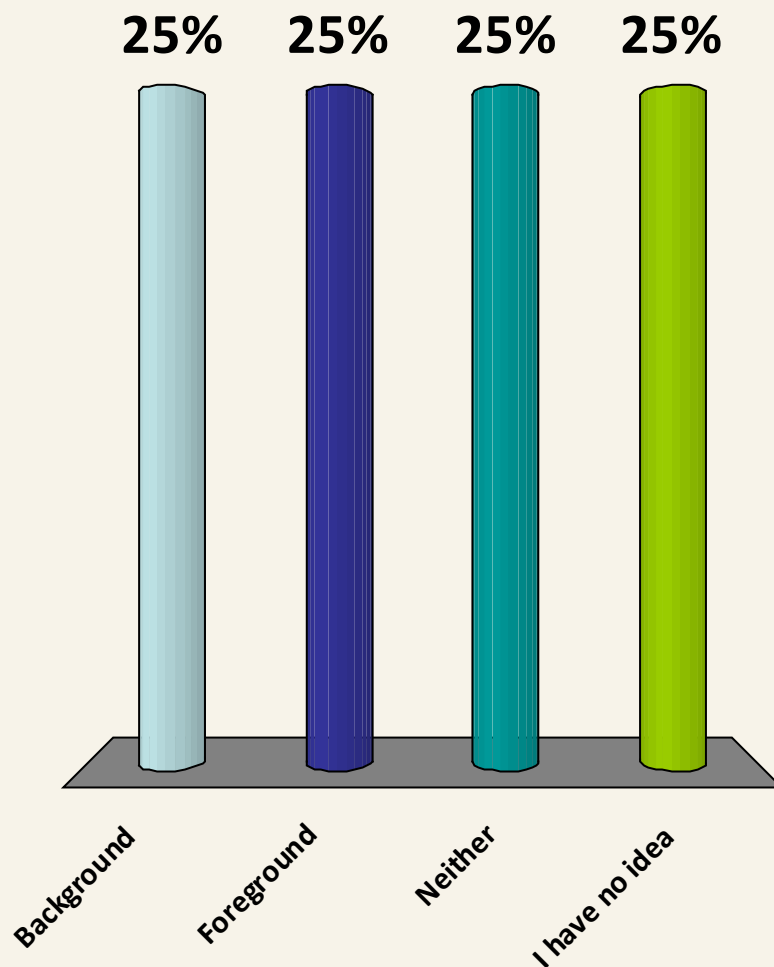
Search and get the answer.

Where to search: you decide.....

# What is hypertension?

## Which type of question is this?

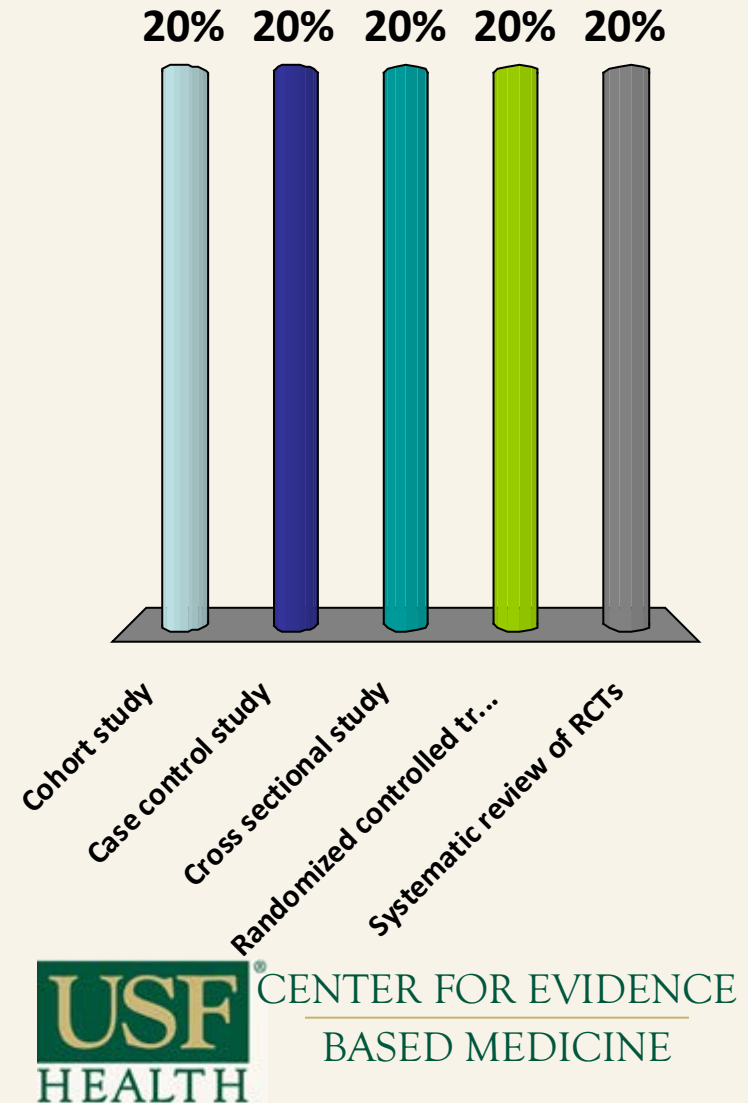
- A. Background
- B. Foreground
- C. Neither
- D. I have no idea



Whether a single dose or short course of Primaquin added to treatments for malaria caused by *Plasmodium falciparum* infection reduces malaria transmission

What is an ideal study design to answer this question?

- A. Cohort study
- B. Case control study
- C. Cross sectional study
- D. Randomized controlled trial (RCT)
- E. Systematic review of RCTs

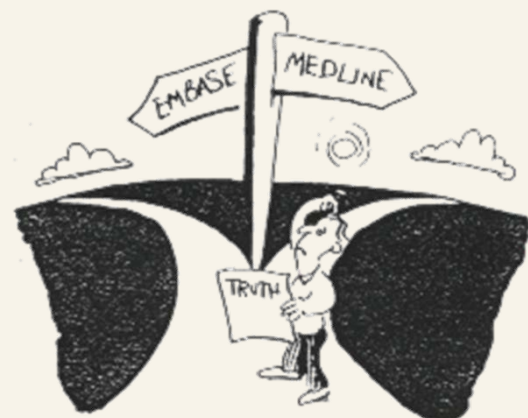






# Resources

- A resource's usefulness is contingent on many factors such as:
  - Type of question
  - Availability of resources
  - Stage of your training
  - Your specialty
  - Your familiarity with the specific topic of a search



# Categories of Clinical Information Resources

Category	Description	Degree of Evidence Processing	How Many Exist	Ease of Use
<b>Systems</b>	Textbook-like resources that summarize and integrate clinical evidence with other types of information directed at clinical practice decisions/directions	Substantial processing with the integration of evidence and practice—can direct care (give answers) or provide evidence on a clinical action	Few	Very easy
<b>Synopses</b>	Summaries of studies and systematic reviews that include guides or advice for application by expert clinicians	Evidence is externally assessed, with strengths and weaknesses provided for each article/topic	Several thousand	Easy
<b>Summaries</b>	Systematic review of articles and clinical practice guidelines—you assess the information and make decisions	Systematic reviews and high-quality guidelines summarize and present evidence from primary studies; some exemplary guidelines can also be considered synopses	Fewer than 50,000	Use may be time consuming and access to full text may require some searching
<b>Studies</b>	Individual studies (e.g., MEDLINE articles)	No processing of evidence at all—individuals must assess and apply	In the millions	Requires critical appraisal; hard to find and may require searching databases



CENTER FOR EVIDENCE  
BASED MEDICINE

# Where to search?

Published studies

[Shimberg Library](#)

[Main library e-journals](#)

[Inter library loan service](#)

## ■ **General clinical questions**

- MEDLINE (PubMed)
  - Pubmed “[Apps](#)” and other resources
- EMBASE
- CENTRAL (Cochrane library)
- Web of Science



# Where to search?

## Published studies

- **Subject-specific databases**
  - CINHAL, British Nursing Index, AMED
    - Nursing and allied health
  - PsychINFO, ASSIA
    - Social science, education, psychology and psychiatry
  - AgeLine, Chiddata, Social Services Abstracts
    - Social and community health and welfare

# Where to search?

## Published studies

### ■ Regional databases

#### – LILACS

- Latin America and the Caribbean

#### – PASCAL

- Europe (fee based)

#### – IndMED

- India

#### – CBM

- China (in Chinese)

#### – IMSEAR

- South-East Asia



# Where to search?

## Ongoing/unpublished trials

- **National and International trial registries**

- [Clinicaltrials.gov](https://clinicaltrials.gov)
- [WHO International Clinical Trials Registry](https://www.who.int/trials/registry)
- CenterWatch

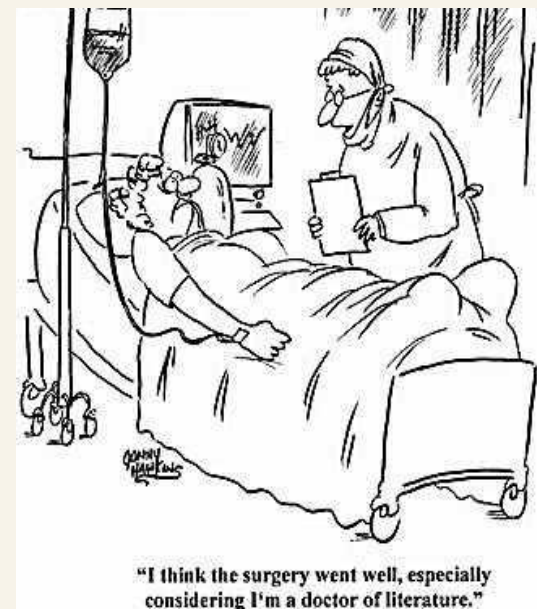
- **Industry trial registries**

- GlaxoSmithKline (all attempted trials)
- AstraZeneca, Bristol-Myers Squibb, Eli Lilly, Novartis, Roche, Wyeth (selected trials are reported)

# Where to search?

## Hand-searching

- Conference abstracts
  - [ASH](#), ASCO, APHA,
- Snowball search
  - References from related systematic reviews and literature reviews
  - References in included studies
- Consult with content experts



# Using the question to guide the search

- Scenario - You are interested in checking the hearing of elderly patients, and have heard that the 'whispered voice test' is good.
- Question
  - Population
  - Indicator (intervention, test, etc)
  - Comparator
  - Outcome



# PICO(TS)

- **Question in a structured format**
  - Population – in elderly patients does
  - Indicator – a ‘poor’ whispered voice test
  - Comparator – a ‘normal’ whispered voice test
  - Outcome – predict abnormal audiogram
  - Type - diagnostic accuracy
  - Study design- cross sectional
- [Pubmed](#)

# Case




- Lumbar supports (also called braces or corsets) are commonly used in the prevention and treatment of low-back pain.
- Is lumbar support useful in the management of lower back pain?
- How would you search for evidence to support your judgment / decision regarding buying a lumbar support brace?
  - Amazon?
  - Google?
  - Pinterest?
  - Facebook?

# Truncation

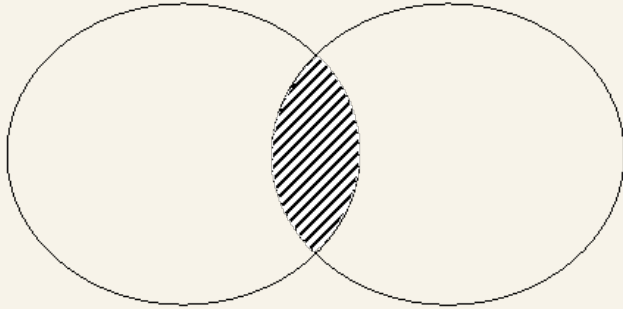
- Most databases allow use of a symbol to assist in retrieving different endings for words
- Pathology in a search retrieves just that
- pathol\* retrieves the root with any ending, i.e., pathology, pathological, pathologist, etc.
- \* is the most common truncat\* symbol

# Boolean

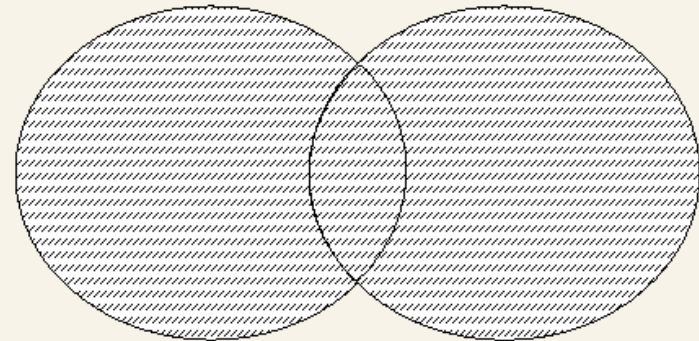
Mathematical operators represented by words

- OR=addition; using “OR”  results
- AND=intersect/union; using “AND”  results
- NOT=subtraction; using “NOT” also  results
  
- Math symbols (+,-) do not work;
- use OR AND NOT; and capitalized

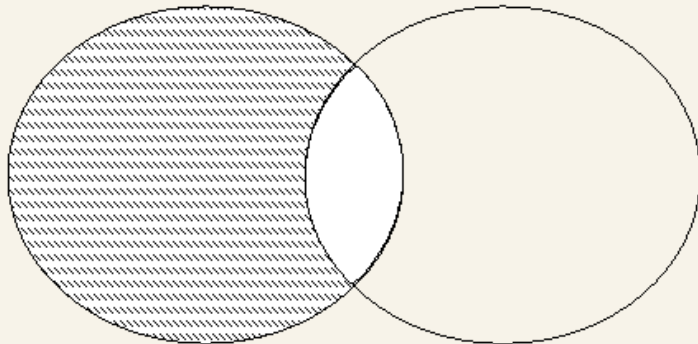
**“AIDS” AND “Tuberculosis”**



**“Penicillin” OR “Cipro”**



**“AIDS” NOT “Sarcoma”**





# PubMed

- Where we search for research from medical journals
- 13 million citations/abstracts
- 4,500 journals
  - From 1966
- Covers
  - Medicine
  - Nursing
  - Dentistry
  - Veterinary medicine
  - Healthcare systems
  - Preclinical sciences



# More About PubMed

- Links to other databases
  - OLDMEDLINE (1950-1965)
  - International biomedical journals
    - 1,760,000 citations
- Not all journals are strictly scientific or medical
  - We recently found a Newsweek article in PubMed
- Links (LinkOut) to the full-text of articles at participating publishers' web sites

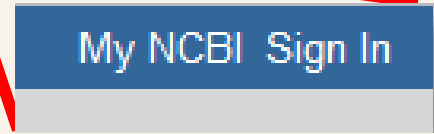
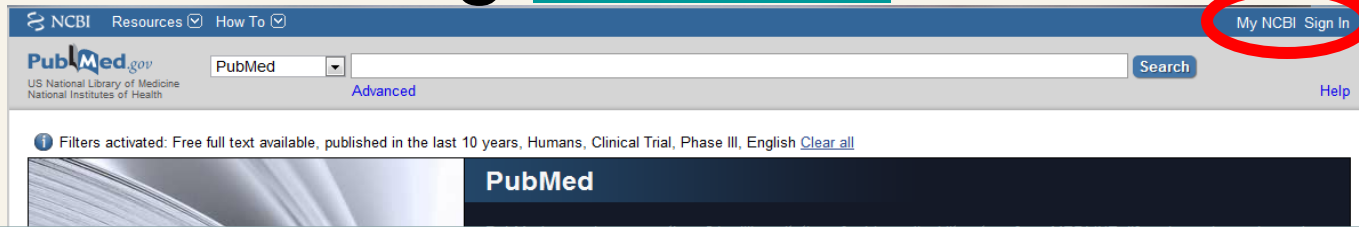


# What Can You Do in PubMed?

- Search for articles (usually abstracts)
  - By keyword
  - By author
  - By Journal, etc
- Combine searches
- Link to related articles
- Link to outside sources
  - To purchase the full article
  - Look at related books (including pages in the books)
- Clinical queries



# Searching PubMed



## My NCBI Sign In

Username:

Password:

Keep me signed in unless I sign out  
(Leave unchecked on public computers)

Remember my username

[Register for an account](#)

[I forgot my username](#)

[I forgot my password](#)

[About automatic sign in](#)

## Sign in via Partner Organization

[Google](#)

[NIH & eRA Commons](#)

[UKPMC Funders Group grantees](#)

Or choose from:

Case Western Reserve University  
Colorado State University  
Columbia University

[See expanded list >](#)

Can sign in using personal login for limited access to full text articles or using your institutional login (USF) for access to articles available to your institution

ENTER FOR EVIDENCE  
BASED MEDICINE

# Searching PubMed

Comprehensive PubMed search

PubMed

Advanced

Search

Help

Using PubMed

PubMed Tools

More Resources

PubMed Quick Start Guide	PubMed Mobile	MeSH Database
Full Text Articles	Single Citation Matcher	Journals in NCBI Databases
PubMed FAQs	Batch Citation Matcher	Clinical Trials
PubMed Tutorials	Clinical Queries	E-Utilities
New and Noteworthy	Topic-Specific Queries	LinkOut

Advanced search builder:

Allows you to combine previous searches

## Using PubMed

[PubMed Quick Start Guide](#)

[Full Text Articles](#)

[PubMed FAQs](#)

[PubMed Tutorials](#)

[New and Noteworthy](#)

## PubMed Tools

[PubMed Mobile](#)

[Single Citation Matcher](#)

[Batch Citation Matcher](#)

[Clinical Queries](#)

[Topic-Specific Queries](#)

## More Resources

[MeSH Database](#)

[Journals in NCBI Databases](#)

[Clinical Trials](#)

[E-Utilities](#)

[LinkOut](#)

Clinical Queries:

- Limits search to specific clinical research areas
- Use to search for systematic reviews

MeSH Database:

- Use to search for MeSH terms to include in search strategy

# Using PubMed Clinical Queries

## PubMed Clinical Queries

Results of searches on this page are limited to specific clinical research areas. For comprehensive searches, use [PubMed](#) directly.

### Clinical Study Categories

Category:

Scope:

### Systematic Reviews

### Medical Genetics

Topic:

#### Results: 5 of 803

[Bisphosphonates in multiple myeloma: a network meta-analysis.](#)

Mhaskar R, Redzepovic J, Wheatley K, Clark OA, Miladinovic B, Glasmacher A, Kumar A, Djulbegovic B.

Cochrane Database Syst Rev. 2012 May 16; 5:CD003188. Epub 2012 May 16.

[Effects of induction and maintenance plus long-term bisphosphonates on bone disease in patients with multiple myeloma: the Medical Research Council Myeloma IX Trial.](#)

Morgan GJ, Davies FE, Gregory WM, Szubert AJ, Bell SE, Drayson MT, Owen RG, Ashcroft AJ, Jackson GH, Child JA, et al.

Blood. 2012 Jun 7; 119(23):5374-5383. Epub 2012 Apr 12.

[The effect of bisphosphonates combined](#)

#### Results: 5 of 32

[Bisphosphonates in multiple myeloma: a network meta-analysis.](#)

Mhaskar R, Redzepovic J, Wheatley K, Clark OA, Miladinovic B, Glasmacher A, Kumar A, Djulbegovic B.

Cochrane Database Syst Rev. 2012 May 16; 5:CD003188. Epub 2012 May 16.

[Bisphosphonates in lung cancer: can they provide benefits beyond prevention of skeletal morbidity?](#)

Hirsh V.

Anticancer Agents Med Chem. 2012 Feb; 12(2):137-43.

[Bisphosphonate anticancer activity in prostate cancer and other genitourinary cancers.](#)

Saad F, Mulders P.

#### Results: 5 of 30

[A gene expression-based predictor for myeloma patients at high risk of developing bone disease on bisphosphonate treatment.](#)

Wu P, Walker BA, Brewer D, Gregory WM, Ashcroft J, Ross FM, Jackson GH, Child AJ, Davies FE, Morgan GJ.

Clin Cancer Res. 2011 Oct 1; 17(19):6347-55. Epub 2011 Aug 19.

[Immune modulation by zoledronic acid in human myeloma: an advantageous cross-talk between V \$\gamma\$ 9V \$\delta\$ 2 T cells,  \$\alpha\$  \$\beta\$  CD8+ T cells, regulatory T cells, and dendritic cells.](#)

Castella B, Riganti C, Fiore F, Pantaleoni F, Canepari ME, Peola S, Foglietta M, Palumbo A, Bosia A, Coscia M, et al.

J Immunol. 2011 Aug 15; 187(4):1578-90. Epub 2011 Jul 13.

# General search in PubMed

[Choose additional filters](#)

## Text availability

Abstract available  
Free full text available  
Full text available

## Publication dates

5 years  
10 years  
Custom range...

## Species

Humans  
Other Animals

## Article types

Clinical Trial  
Clinical Trial, Phase III  
Meta-Analysis  
Practice Guideline  
Randomized Controlled Trial  
Review  
Systematic Reviews  
more ...

## Languages

English  
more ...

**Display Settings:**  Summary, 20 per page, Sorted by Recently Added

**Send to:**

**Filter your results:**

**Results: 1 to 20 of 991**

<< First < Prev Page 1 of 50 Next > Last >>

All (991)

[Free Full Text \(165\)](#)

[Review \(356\)](#)

[Manage Filters](#)

1. [Targeted therapy of multiple myeloma: the changing paradigm at the beginning of the new millennium.](#)

Morabito F, Recchia AG, Mazzone C, Gentile M.  
Curr Cancer Drug Targets. 2012 Jun 5. [Epub ahead of print]  
PMID: 22671929 [PubMed - as supplied by publisher]  
[Related citations](#)

2. [Atypical femur fractures among breast cancer and multiple myeloma patients receiving intravenous bisphosphonate therapy: A case series.](#)

Chang ST, Tenforde AS, Grimsrud CD, O'Ryan F, Gonzalez JR, Baer DM, Chandra M, Lo JC.  
Bone. 2012 May 23. [Epub ahead of print]  
PMID: 22634175 [PubMed - as supplied by publisher]  
[Related citations](#)

3. [Bisphosphonates in multiple myeloma: a network meta-analysis.](#)

Mhaskar R, Redzepovic J, Wheatley K, Clark OA, Miladinovic B, Glasmacher A, Kumar A, Djulbegovic B.  
Cochrane Database Syst Rev. 2012 May 16;5:CD003188.  
PMID: 22592688 [PubMed - in process]  
[Related citations](#)

4. [Bisphosphonates: focus on inflammation and bone loss.](#)

Iannitti T, Rosini S, Lodi D, Frediani B, Rottigni V, Palmieri B.  
Am J Ther. 2012 May;19(3):228-46.  
PMID: 22549638 [PubMed - in process]  
[Related citations](#)

## Titles with your search terms

The role of **bisphosphonates** in **multiple myeloma**: me [Oncologist. 2011]

**Bisphosphonates** in **multiple myeloma** [Cochrane Database Syst Rev. 2010]

The use of **bisphosphonates** in **multiple myeloma**: recommend; [Ann Oncol. 2009]

[See more...](#)

## 39 free full-text articles in PubMed Central

[Review](#) **Bisphosphonates** as antimyeloma drugs. [Leukemia. 2012]

[Review](#) The Medical Research Council **Myeloma IX** trial: t [Eur J Haematol. 2012]

Acupuncture for cancer-induced bone pain: [Evid Based Complement Alternat...]

[See all \(39\)...](#)

[Find related data](#)



# Advanced search in PubMed

PubMed.gov  
US National Library of Medicine  
National Institutes of Health

PubMed

[RSS](#) [Save search](#) [Advanced](#) [Help](#)

## PubMed Advanced Search Builder

You Tutorial

Query #10 deleted.

(#7) AND #11

[Edit](#)

[Clear](#)

### Builder

Recent Query

AND

AND

[Show index list](#)

or [Add to history](#)

### History

[Clear history](#)

Search	Add to builder	Query	Items found	Time
<a href="#">#11</a>	<a href="#">Add</a>	Search #1 AND #2 AND (#3 OR #5 OR #6)	<a href="#">479</a>	14:34:31
<a href="#">#7</a>	<a href="#">Add</a>	Search placebo	<a href="#">155287</a>	14:30:22
<a href="#">#6</a>	<a href="#">Add</a>	Search etidronate	<a href="#">2820</a>	14:30:06
<a href="#">#5</a>	<a href="#">Add</a>	Search pamidronate	<a href="#">2487</a>	14:29:31
<a href="#">#3</a>	<a href="#">Add</a>	Search zoledronate	<a href="#">2456</a>	14:27:01
<a href="#">#2</a>	<a href="#">Add</a>	Search multiple myeloma	<a href="#">34339</a>	14:26:51
<a href="#">#1</a>	<a href="#">Add</a>	Search Bisphosphonates	<a href="#">20716</a>	14:26:37

Manually edit search

Choose appropriate Boolean operator (AND, OR, NOT)

Record of previous searches

Add in terms from search history or type in new search terms

OR EVIDENCE  
MEDICINE



# Using Medical Subject Headings (MeSH)

The screenshot shows the MeSH website interface. At the top, there is a search bar with 'bisphosphonates' entered and a 'Search' button. Below the search bar, there are links for 'Save search', 'Limits', 'Advanced', and 'Help'. The main content area is titled 'Diphosphonates' and includes a definition: 'Organic compounds which contain P-C-P bonds, where P stands for phosphonates or phosphonic acids. These compounds affect calcium metabolism. They inhibit ectopic calcification and slow down bone resorption and bone turnover. Technetium complexes of diphosphonates have been used successfully as bone scanning agents. Year introduced: 1977'. Below the definition, there are 'PubMed search builder options' and a 'Subheadings:' section with a grid of checkboxes for various subheadings such as 'administration and dosage', 'adverse effects', 'analysis', 'antagonists and inhibitors', 'blood', 'chemical synthesis', 'chemistry', 'classification', 'contraindications', 'diagnostic use', 'economics', 'history', 'immunology', 'isolation and purification', 'metabolism', 'pharmacokinetics', 'pharmacology', 'physiology', 'poisoning', 'radiation effects', 'standards', 'therapeutic use', and 'urine'. There are also checkboxes for 'Restrict to MeSH Major Topic' and 'Do not include MeSH terms found below this term in the MeSH hierarchy'. Below this, there are 'Entry Terms' (Bisphosphonates), 'Previous Indexing' (Organophosphorus Compounds (1971-1976), Phosphonic Acids (1966-1976)), and 'Pharmacologic Action' (Bone Density Conservation Agents). A 'Recent activity' section at the bottom shows search results for 'bisphosphonates' and related terms.

Subheadings  
>80 possible groupings used

Select subheadings and terms to add to the search builder

MeSH categories

Broader categories

More narrow

EVIDENCE  
BASED  
MEDICINE

# Building a search with MeSH terms

## Pros

- Allows you to search for multiple related terms using single search

[Pathologic Processes](#)

### Hemorrhage

[Blood Loss, Surgical](#)

[Ecchymosis](#)

[Epistaxis](#)

[Exsanguination](#)

[Eye Hemorrhage](#)

[Choroid Hemorrhage](#)

[Hyphema](#)

[Retinal Hemorrhage](#)

[Vitreous Hemorrhage](#)

[Gastrointestinal Hemorrhage](#)

[Hematemesis](#)

[Melena](#)

[Peptic Ulcer Hemorrhage](#)

[Hemarthrosis](#)

[Hematocele](#)

[Hematoma](#)

[Hematoma, Epidural, Cranial](#)

[Hematoma, Epidural, Spinal](#)

[Hematoma, Subdural +](#)

[Hematuria](#)

[Hemobilia](#) | UNIVERSITY OF SOUTH FLORIDA

Using a broad MeSH category will allow you to search all the terms below it

## Cons

- MeSH terms are assigned to studies by humans
  - Assignment may be subjective and may not include all studies in the category
- MeSH terms are assigned after the study is indexed
  - May not identify recently published studies

**Use a combination of text and MeSH terms**



# PICO search

Medline allows you to search using the

- Patients
- Intervention
- Control
- Outcomes
- Publication type (trial/systematic review etc.)

## PICO search

(<http://pubmedhh.nlm.nih.gov/nlmd/pico/piconew.php>)

# Image search

[Google images](#)



# Trip database

- a clinical search engine designed to allow users to quickly and easily find and use high-quality research evidence; has been online since 1997.
- motto is 'Find evidence fast'.
- can search across other content types including images, videos, patient information leaflets, educational courses and news.
  
- The content from PubMed is typically added every two weeks
- while content added manually (secondary evidence) is added once per month (middle of the month).

# Tips for building a good search strategy

- Use MeSH terms
  - Form 'backbone'
- Add free text
  - Identify recently added/un-indexed studies
- Use appropriate filters
  - To obtain manageable number of studies manual selection
- Pilot test strategy

# Managing search results

... or export studies to a reference management software for selection.

The screenshot shows the PubMed search results management interface. At the top, there are two callout boxes: 'Display Settings' and 'Send to:'. The 'Display Settings' callout points to a table with three columns: Format, Items per page, and Sort by. The 'Send to:' callout points to a 'Choose Destination' dialog box. The main interface shows search results for 'Bisphosphonates in multiple myeloma' with a list of 5 items. The 'Display Settings' table is as follows:

Format	Items per page	Sort by
<input checked="" type="radio"/> Summary	<input type="radio"/> 5	<input checked="" type="radio"/> Recently Added
<input type="radio"/> Summary (text)	<input type="radio"/> 10	<input type="radio"/> Pub Date
<input type="radio"/> Abstract	<input checked="" type="radio"/> 20	<input type="radio"/> First Author
<input type="radio"/> Abstract (text)	<input type="radio"/> 50	<input type="radio"/> Last Author
<input type="radio"/> MEDLINE	<input type="radio"/> 100	<input type="radio"/> Journal
<input type="radio"/> XML	<input type="radio"/> 200	<input type="radio"/> Title
<input type="radio"/> PMID List		

The 'Choose Destination' dialog box has the following options:

- File
- Collections
- Order
- Citation manager
- Clipboard
- E-mail
- My Bibliography

The search results list includes:

1. [Bisphosphonates in multiple myeloma: a network meta-analysis.](#)  
Mhaskar R, Redzepovic J, Wheatley K, Clark OA, Miladinovic B, Glasman Kumar A, Djulbegovic B.  
Cochrane Database Syst Rev. 2012 May 16;5:CD003188.  
PMID: 22592688 [PubMed - in process]  
[Related citations](#)
2. [Bisphosphonates: focus on inflammation and bone loss.](#)  
Iannitti T, Rosini S, Lodi D, Frediani B, Rottigni V, Palmieri B.  
Am J Ther. 2012 May;19(3):228-46.  
PMID: 22549638 [PubMed - in process]  
[Related citations](#)
3. [\[Current approaches in multiple myeloma and other cancer-related bone diseases\].](#)  
Engelhardt M, Kleber M, Udi J, Wäsch R.  
Dtsch Med Wochenschr. 2012 May;137(20):1057-61. Epub 2012 Apr 27. German.  
PMID: 22549292 [PubMed - in process]

You may choose to display abstracts and perform the study selection in PubMed...

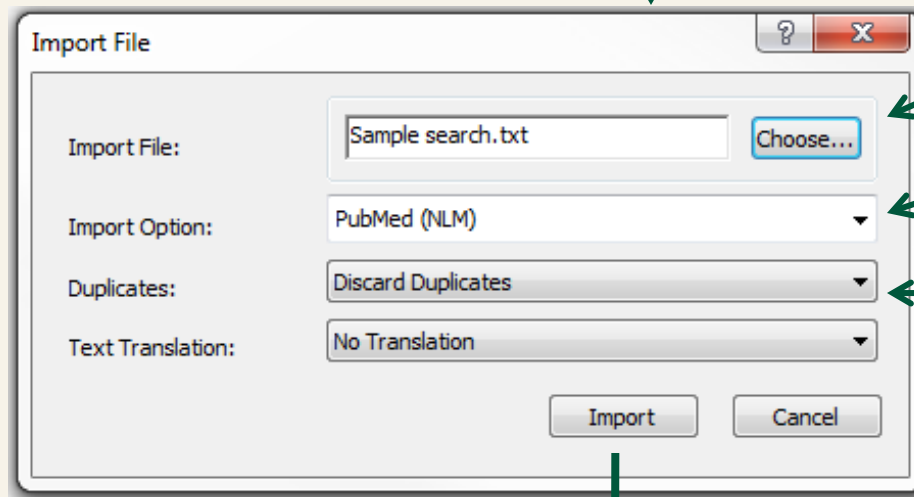
Exporting studies will:

- Make it easier to keep track of the study selection
- Remove duplicate publications

# Managing search results:

## Working with EndNote

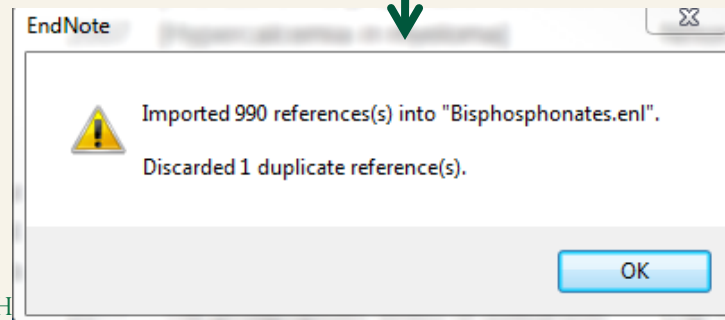
- Create new EndNote library  
(File:New => [enter library name] => Save)
- Import results
  - (File:Import:File →



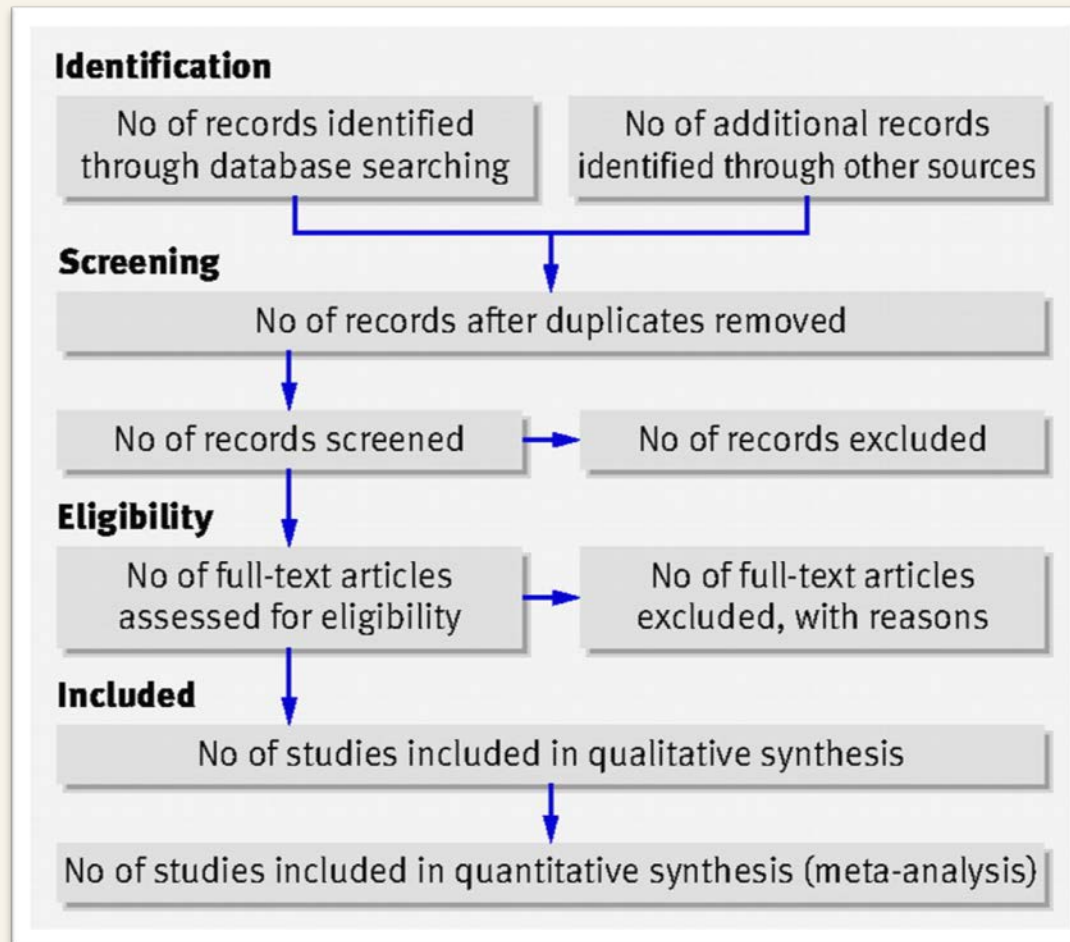
Select the file exported from searched database


Select database used to search for studies (PubMed, Cochrane...)

If compiling results from multiple searches, this option will automatically remove all duplicate references



# PRISMA diagram





# FDA Webpage – Tons of Info.

- Contains MedWatch
  - product safety alerts
    - Alerts be sent to your email address as they happen
- Find
  - Warning Letters
    - <http://www.fda.gov/foi/warning.htm>
  - Approved drugs and patent information
    - Using the Electronic Orange Book database
    - <http://www.fda.gov/cder/ob/default.htm>
  - Devices
    - <http://www.fda.gov/cdrh/index.html>
  - Guidance documents
    - <http://www.fda.gov/cder/guidance/guidance.htm>



# Categorization of Information Resources Readily Available

Category/ Examples of category	Soundness of Evidence- Based Approach	Comprehensiveness	Ease of Use and Availability
--------------------------------------	---	-------------------	---------------------------------

**Textbook-like Resources (Systems)**

Up to Date	Moderate	Most clinical areas, especially internal medicine and primary care	Easy to use, although searching somewhat lacking; \$450 for individuals for their first year, then \$350 per year; \$10,000 plus for libraries
DynaMed	Strong	More than 2,000 summaries presented in standard formats for primary-care physicians	Easy to use; \$200 but free if you help in the development

**Pre-appraised (Synopses)**

InfoPOEMs	Strong	Recently published family medicine studies; covers all categories of studies	Easy to use; \$250
DARE (Database of Abstracts of Reviews of Effects) York, UK	Strong	Covers all disciplines; concentrates on therapy and prevention; summaries of systematic reviews of studies of diagnostic test performance may also be found	Easy to use; free



# Categorization of Information Resources Readily Available

Category	Comprehensiveness	Ease of Use/Availability
<b>Systematic Reviews and Guidelines (Syntheses)</b>		
US National Guide-lines Clearinghouse	Comprehensive coverage of US and many other nations' guidelines; often several guidelines on the same topic	Easy to search; one of the strengths of the site is being able to "compare" guidelines on the same topic; free
Cochrane Database of Systematic Reviews	Covers broad range of disciplines; limited to therapy and prevention	Easy to find a Cochrane review but sometimes difficult to apply because of the depth of coverage; abstracts free; included in many composite resources such as Ovid
<b>Primary Studies</b>		
MEDLINE	Lots of primary studies across all disciplines and areas of research	Hard to find a specific study and often difficult to use; free
Cochrane Controlled Trials Registry (CCTR)	All specialties and all topics for which a controlled trial is relevant (therapy and prevention mainly)	The Cochrane Library includes DARE, Cochrane systematic reviews, and CCTR; the fastest way to determine whether a controlled trial has been published on the topic
PubMed Clinical Queries	Limits searches to those articles with some possibility of having direct clinical application	Easier to use than MEDLINE because the queries turn MEDLINE into a clinical tool; free

## Categorization of Information Resources Readily Available

Category	Comprehensiveness	Ease of Use/Availability
<b>Others</b>		
Google	One of the major search engines to the Web—almost everything	Easy to find something, hard to find just what you want and to know the worth and evidence behind the content; fastest way to find high-impact articles that have recently made press and media headlines
TRIP	A single search system for 150 health databases; one-stop searching; comprehensive; also has 27 specialist subsections (allergy to urology)	Easy to use; free access

# Selection Criteria for choosing or Evaluating Resources

## Criterion

## Description of Criterion

### Soundness of evidence-based approach

How strong is the commitment to evidence to support inference?

How well does the resource indicate the strength of the evidence behind the recommendations or other content?

Does the resource provide links for those who wish to view the evidence?

### Comprehensiveness and specificity

Does the resource cover my discipline or content area adequately?

Does it cover questions of the type I am asking (e.g., therapy, diagnosis, prognosis, harm)?

Does it target my specific area of practice?

### Ease of use

Does it give me the kind of information I need quickly and consistently?

### Availability

Is it readily available in all locations in which I would use it?

Can I easily afford it?

# Case 1

- A 65 year old female comes to your clinic and is suffering from chemotherapy induced anemia and is being treated with erythropoietin stimulating agent (ESA). She is wondering if an iron supplement in addition to the current ESA will help her anemia get any better?
- Search for evidence to assist you in decision-making !!

# Case 2

- A 60 year old man with multiple myeloma is referred to a cancer center for the management of his bone disease.
- Bisphosphonates are used to manage osteoporosis. The attending physician wants to decide whether the patient should be treated with bisphosphonates?
- Search for evidence to assist you in decision-making !!

# Questions / comments

Please contact:

Rahul Mhaskar

[rmhaskar@health.usf.edu](mailto:rmhaskar@health.usf.edu)

(813) 974 9608