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# LECTURE 2: SEARCHING THE LITERATURE: SEARCH TECHNIQUES & CONSTRUCTION

Mark MacEachern, MLIS

# Overview

- Introductory items
- Search construction
  - Concept building
  - Boolean logic
  - Vocabulary
  - Techniques
- Sources
  - PubMed
  - Ovid MEDLINE
  - EMBASE
  - Grey literature
- Search completion
  - Documentation
  - Reporting
  - Citation management
- If time permits: Demonstration (from sentinel to evaluation)

# Why search?

- A high-quality lit search is essential for a successful meta-analysis
- It is from the search results that data is gathered for analysis
- Failure to locate important studies can significantly affect results
- Remember the goal is to capture every relevant study
- Important to report search so your methodology can be reproduced

# What to expect?

- Expect 1000s of results
- Expect to search multiple databases
  - ▣ Ovid, EMBASE, Cochrane, PubMed, etc.
- Expect the search process to take weeks or months
- Expect to publish search strategy and search methodology
- Expect to consult a professional with search expertise (e.g., health sciences librarian)

# Search construction

---

- Concept building
- Boolean logic
- Vocabulary
- Techniques
- Evaluating searches

# Search construction: Concept building

- Identify major concepts of topic
- PICO helps for clinical questions
  
- Example: Is the incidence of breast cancer greater in people who are obese?
  
- What are the major concepts?
  - Breast cancer
  - Obesity
  - Incidence
  - People

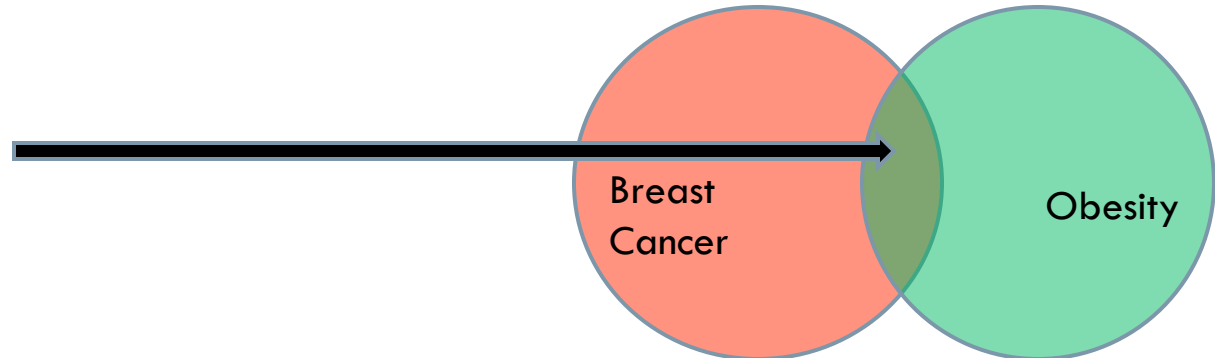


# Search construction: Concept building

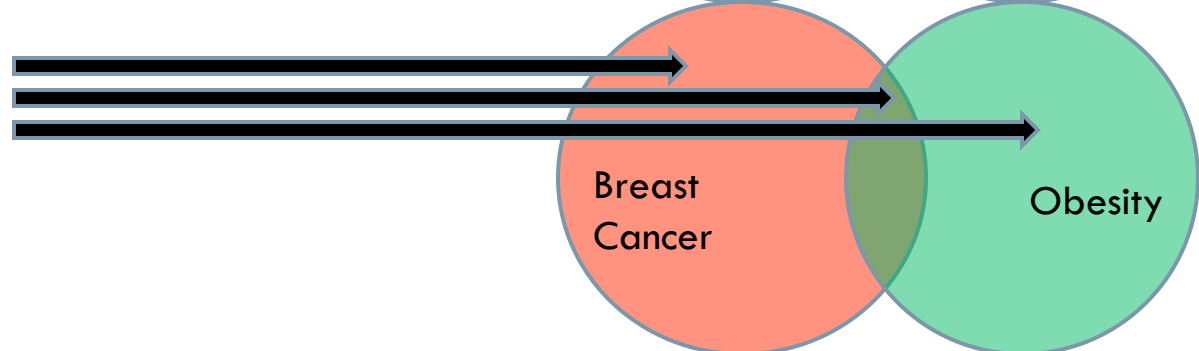
- Alternate words / Synonyms
  - ▣ Obesity, obese, overweight, BMI, etc.
  - ▣ Breast cancer, breast neoplasms, breast tumors, etc.
  - ▣ Incidence, epidemiology

# Search construction: Boolean Logic

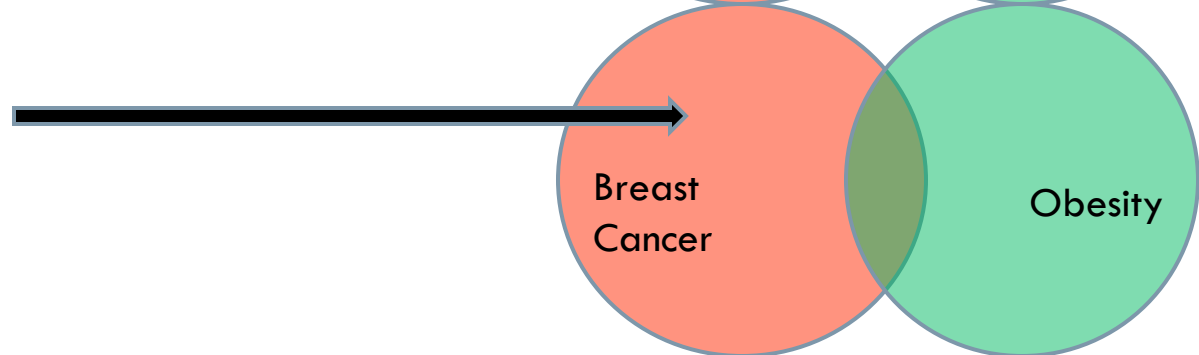
□ AND



□ OR



□ NOT



# Search construction: Boolean Logic

## Concept 1

Breast cancer

OR

Breast neoplasms

OR

Breast tumors

AND

## Concept 2

Obesity

OR

Obese

OR

Overweight

OR

BMI

AND

## Concept 3

Incidence

OR

Epidemiology

# Search construction: Vocabulary



Keywords

Controlled  
vocabularies

# Search construction: Vocabulary

## Keywords

### What are they?

- Literal search
- Looks for occurrences of words

### When to use?

- Current topics
- Not easy to describe concepts
- No vocabulary exists in database

### Examples

- Drug names (Lipitor, Prozac)
- Slang
- Concepts (Swine flu, oil spill)

Controlled  
vocabularies

# Search construction: Vocabulary

## Keywords

### Pros

- Very current projects/topics
- No knowledge of controlled vocabulary necessary
- Slang
- Broad, difficult to describe concepts

### Cons

- Not consistent
- Burden on enduser to discover synonyms (might miss some)
- Too many (irrelevant) results
- Difficult to limit results

Controlled  
vocabularies

# Search construction: Vocabulary

## Keywords

What are they?

- Set of words or phrases used to describe concepts
- Dictionary of accepted terms for a database

When to use?

- Searching a database that uses one

Examples

- MeSH (Medical Subject Headings)
- Emtree (Embase)

Controlled  
vocabularies

# Search construction: Vocabulary

Keywords

## Pros

- Burden on database to discover variations in terms
- Consistency & reproducible searches
- Specific & targeted (increased relevancy)

## Cons

- Restrictive
- Burden on enduser to learn vocabulary
- Vocabularies differ (no consistency)

Controlled  
vocabularies



# Search construction: Vocabulary

Keywords

MeSH

Controlled  
vocabularies

[All MeSH Categories](#)

[Chemicals and Drugs Category](#)

[Complex Mixtures](#)

[Biological Products](#)

**Vaccines**

[Alzheimer Vaccines](#)

[Bacterial Vaccines](#)

[Anthrax Vaccines](#)

[Autovaccines](#)

[Brucella Vaccine](#)

[Cholera Vaccines](#)

[Diphtheria-Tetanus-acellular Pertussis Vaccines](#)

[Diphtheria-Tetanus-Pertussis Vaccine](#)

[Diphtheria-Tetanus Vaccine](#)

[Escherichia coli Vaccines](#)

[Haemophilus Vaccines](#)

[Lyme Disease Vaccines](#)

[Meningococcal Vaccines](#)

[Pertussis Vaccine +](#)

[Plague Vaccine](#)

[Pseudomonas Vaccines](#)

[Rickettsial Vaccines](#)

[Salmonella Vaccines +](#)

[Shigella Vaccines](#)

[Staphylococcal Vaccines](#)

[Streptococcal Vaccines +](#)

[Tuberculosis Vaccines +](#)

[Cancer Vaccines](#)

[Fungal Vaccines](#)

# Search construction: Techniques

- Truncation
- Wild cards
- Adjacency
- Phrases
- Boolean
- Parentheses
- `obes*`
- `an?sthesiology`
- `screen* adj10 cancer*`
- `"breast cancer"`
- `"vitamin d" AND cancer`
- `("breast cancer" OR "breast neoplasms") AND obes*`

Note: Techniques vary from database to database

# Search construction: Techniques

- Limits – use sparingly (language, species, pt)

The screenshot displays the PubMed.gov search interface. At the top, the PubMed.gov logo is on the left, and the search bar contains 'PubMed'. To the right of the search bar are links for 'Advanced search' and 'Help'. Below the search bar are 'Search' and 'Clear' buttons.

The 'Limits' section is expanded, showing several filter categories:

- Dates:** 'Published in the Last: Any date' (dropdown menu).
- Type of Article:** A list of checkboxes for 'Clinical Trial', 'Editorial', 'Letter', 'Meta-Analysis', and 'Practice Guideline'.
- Species:** A list of checkboxes for 'Humans' and 'Animals'.
- Subsets:** A list of checkboxes for 'AIDS', 'Bioethics', 'Cancer', 'Complementary Medicine', and 'Core clinical journals'.
- Languages:** A list of checkboxes for 'English', 'French', 'German', 'Italian', and 'Japanese'.
- Sex:** A list of checkboxes for 'Male' and 'Female'.
- Ages:** A list of checkboxes for 'All Infant: birth-23 months', 'All Child: 0-18 years', 'All Adult: 19+ years', 'Newborn: birth-1 month', and 'Infant: 1-23 months'.

At the bottom left, there is a 'PD-GOV' logo and the text 'PubMed.gov'.

# Search construction: Techniques

- Exploding subject headings
  - Use differs across databases

<input checked="" type="checkbox"/> Vaccines	12631
<input type="checkbox"/> Alzheimer Vaccines	225
[-] <input type="checkbox"/> Bacterial Vaccines	15171
<input type="checkbox"/> Anthrax Vaccines	543
<input type="checkbox"/> Autovaccines	7
<input type="checkbox"/> Brucella Vaccine	992
<input type="checkbox"/> Cholera Vaccines	1205
<input type="checkbox"/> Diphtheria-Tetanus-acellular Pertussis Vaccines	511
<input type="checkbox"/> Diphtheria-Tetanus-Pertussis Vaccine	2147
<input type="checkbox"/> Diphtheria-Tetanus Vaccine	290
<input type="checkbox"/> Escherichia coli Vaccines	253
<input type="checkbox"/> Haemophilus Vaccines	2241
<input type="checkbox"/> Lyme Disease Vaccines	167
<input type="checkbox"/> Meningococcal Vaccines	1911
[+] <input type="checkbox"/> Pertussis Vaccine	4100
<input type="checkbox"/> Plague Vaccine	412
<input type="checkbox"/> Pseudomonas Vaccines	57
<input type="checkbox"/> Rickettsial Vaccines	107
[+] <input type="checkbox"/> Salmonella Vaccines	345

# Search construction: Techniques

## □ Subheadings

MeSH  
NLM Controlled  
Vocabulary

Search: MeSH [v] Limits Advanced search Help

[Search] [Clear]

Display Settings: [v] Full [Send to: v]

### Vaccines

Suspensions of killed or attenuated microorganisms (bacteria, viruses, fungi, protozoa, or rickettsiae), antigenic proteins derived from them, or synthetic constructs, administered for the prevention, amelioration, or treatment of infectious and other diseases.

PubMed search builder options

[Subheadings:](#)

<input type="checkbox"/> administration and dosage	<input type="checkbox"/> diagnostic use	<input type="checkbox"/> pharmacokinetics
<input type="checkbox"/> adverse effects	<input type="checkbox"/> economics	<input type="checkbox"/> pharmacology
<input type="checkbox"/> analysis	<input type="checkbox"/> genetics	<input type="checkbox"/> poisoning
<input type="checkbox"/> biosynthesis	<input type="checkbox"/> history	<input type="checkbox"/> radiation effects
<input type="checkbox"/> blood	<input type="checkbox"/> immunology	<input type="checkbox"/> standards
<input type="checkbox"/> chemical synthesis	<input type="checkbox"/> isolation and purification	<input type="checkbox"/> supply and distribution
<input type="checkbox"/> chemistry	<input type="checkbox"/> legislation and jurisprudence	<input type="checkbox"/> therapeutic use
<input type="checkbox"/> classification	<input type="checkbox"/> metabolism	<input type="checkbox"/> toxicity
<input type="checkbox"/> complications	<input type="checkbox"/> microbiology	<input type="checkbox"/> virology
<input type="checkbox"/> contraindications		

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

PD-GOV

**"Vaccines/economics"[majr] AND "public health"[majr]**

# Search construction: Techniques

## □ Floating subheadings

Ovid MEDLINE (part of a search)

1. exp Arthritis, Rheumatoid/
2. exp Inflammatory Bowel Diseases/
3. cuc.tw.
4. chronic ulcerative colitis.tw.
5. crohn\*.tw.
6. ibd.tw.
7. rheumatoid arthritis.tw.
8. or/1-7
9. exp Postoperative Complications/
10. exp Perioperative Care/
- 11. su.fs.**
12. or/9-11
13. 8 and 12

PubMed (part of a search)

("inflammatory bowel diseases"[mesh] OR "chronic ulcerative colitis" OR cuc[title/abstract] OR crohn[title/abstract] OR "crohn's" [title/abstract] OR crohns[title/abstract] OR ibd[title/abstract] OR "rheumatoid arthritis" [title/abstract]) AND ("postoperative complications"[mesh] OR "perioperative care"[mesh] OR **"surgery"**[Subheading] OR "post operative"[title/abstract] OR "postoperative"[title/abstract])

# Search construction: Filters

- A predefined search designed to target specific study methodologies (RCTs, Cohort, Systematic Reviews)
- Use a validated filter (whenever possible)
  
- Example: PubMed Clinical Queries – Specific, Therapy
  - (randomized controlled trial[Publication Type] OR (randomized[Title/Abstract] AND controlled[Title/Abstract] AND trial[Title/Abstract]))
  - 93% Sensitive
  - 97% Specific

# Search construction: Evaluation

- Important to validate your search in each database
- Make sure search captures all sentinel articles
- How:
  - ▣ Cross search set of sentinel papers with your final search
  - ▣ (Set of Papers) NOT (Final Search)
- Save searches for reporting

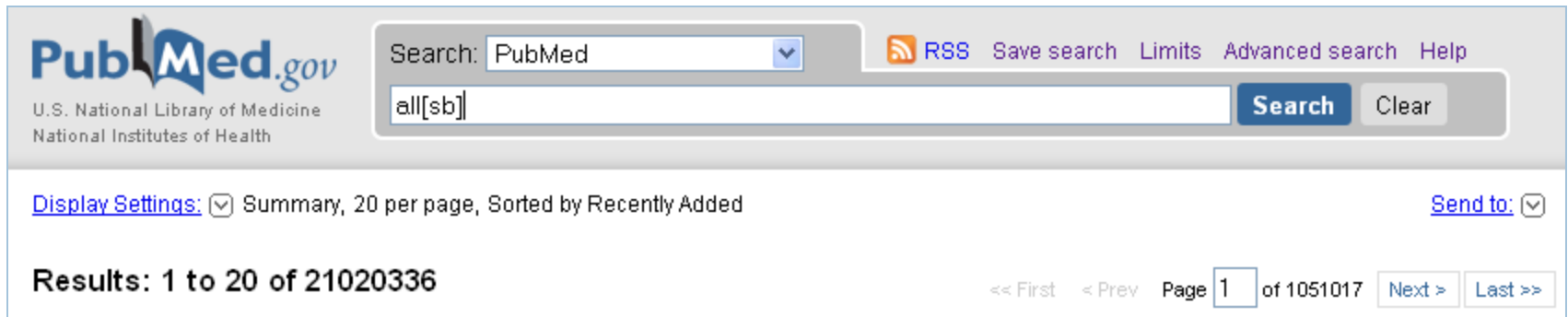


# Sources

- PubMed
- Ovid MEDLINE
- EMBASE
- Scopus
- Web of Science
- PsycINFO
- CINAHL
- Cochrane Database of Systematic Reviews
- Conference Papers Index
- ClinicalTrials.gov
- Proquest Theses & Dissertations
- CABI
- Google Scholar
- Sociological Abstracts
- And others...

# Sources: PubMed (pubmed.gov)

- Primary biomedical database
- 20+ million citations
- Native interface for MEDLINE dataset
- Citations indexed with MeSH



The screenshot shows the PubMed search interface. The search bar contains the text 'PubMed'. Below the search bar, the results are displayed as 'Results: 1 to 20 of 21020336'. The page number is 'Page 1 of 1051017'. The search settings are 'Summary, 20 per page, Sorted by Recently Added'. The search button is labeled 'Search' and the clear button is labeled 'Clear'.

PubMed.gov  
U.S. National Library of Medicine  
National Institutes of Health

Search: PubMed

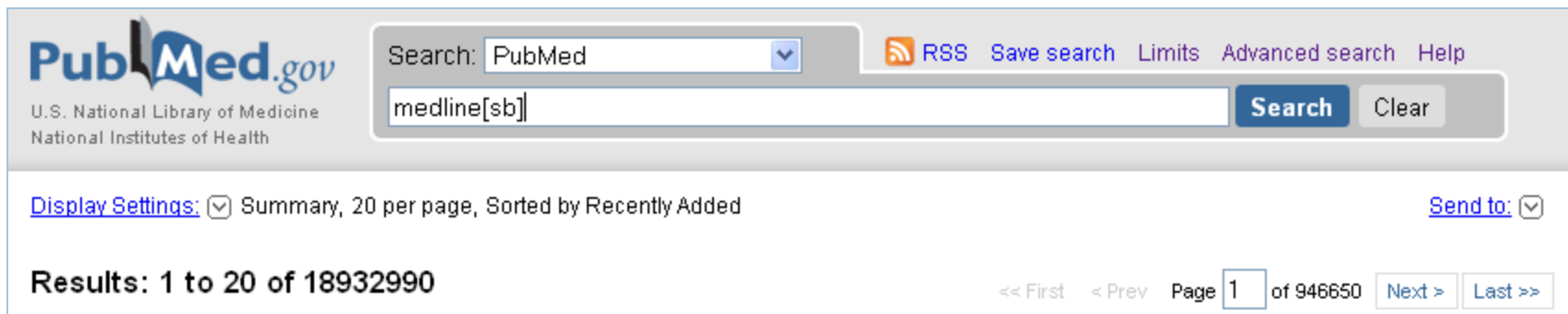
all[sb]

Search Clear

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

Results: 1 to 20 of 21020336

Page 1 of 1051017



The screenshot shows the PubMed search interface. The search bar contains the text 'PubMed'. Below the search bar, the results are displayed as 'Results: 1 to 20 of 18932990'. The page number is 'Page 1 of 946650'. The search settings are 'Summary, 20 per page, Sorted by Recently Added'. The search button is labeled 'Search' and the clear button is labeled 'Clear'.

PubMed.gov  
U.S. National Library of Medicine  
National Institutes of Health

Search: PubMed

medline[sb]

Search Clear

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

Results: 1 to 20 of 18932990

Page 1 of 946650

Search: PubMed RSS Save search Limits Advanced search Help

("Alcoholism"[mh] OR "Alcoholic Intoxication"[mh] OR "Alcohol Drinking"[mh]) **Search** Clear

[Display Settings:](#)  Summary, 20 per page, Sorted by Recently Added [Send to:](#)

**Results: 1 to 20 of 1011**

<< First < Prev Page **1** of 51 Next > Last >>

- [A randomised controlled trial of extended brief intervention for alcohol dependent patients in an acute hospital setting \(ADPAC\).](#)  
1. Owens L, Butcher G, Gilmore I, Kolamunnage-Dona R, Oyee J, Perkins L, Walley T, Williamson P, Wilson K, Pirmohamed M. BMC Public Health. 2011 Jul 4;11(1):528. [Epub ahead of print]  
PMID: 21726445 [PubMed - as supplied by publisher] **Free Article**  
[Related citations](#)
- [Exploration of the prevalence and correlates of depression among South Korean workers with injuries.](#)  
2. Park SK. Work. 2011 Jan 1;39(3):345-51.  
PMID: 21709370 [PubMed - in process]  
[Related citations](#)
- [Alcohol-induced memory blackouts as an indicator of injury risk among college drinkers.](#)  
3. Mundt MP, Zakletskaia LI, Brown DD, Fleming MF. Inj Prev. 2011 Jun 27. [Epub ahead of print]  
PMID: 21708813 [PubMed - as supplied by publisher]  
[Related citations](#)
- [Alcohol screening in the emergency department.](#)  
4. [No authors listed] Ann Emerg Med. 2011 Jul;58(1):113. No abstract available.  
PMID: 21689583 [PubMed - in process]  
[Related citations](#)
- [Health risk screening in adolescents: a pilot study.](#)  
5. Borrione P, Marchiaro G, Vincenti M, Sciacca A, Spaccarniglio A, Di Gianfrancesco A, Casasco M, Pigozzi F. J Sports Med Phys Fitness. 2011 Jun;51(2):268-74.  
PMID: 21681162 [PubMed - in process]  
[Related citations](#)
- [Risk factors for delirium in trauma patients: the impact of ethanol use and lack of insurance.](#)  
6. Branco BC, Inaba K, Bukur M, Talving P, Oliver M, David JS, Lam L, Demetriades D. Am Surg. 2011 May;77(5):621-6.  
PMID: 21679598 [PubMed - in process]

**Filter your results:**

All (1011)

[Free Full Text \(183\)](#)

[Review \(93\)](#)

[Manage Filters](#)

**Save Results in Collections Tutorial**

The screenshot shows the 'My NCBI - Collections' interface. At the top, there's a search bar and a 'Select' dropdown. Below that is a table with columns: Name, Items, Status, Last Modified, and Type. The table lists several collections like 'My Bibliography', 'Other Collections', 'personnel cancer', 'L33 accreditation review', and 'Oxidative stress across in children'. Below the table is a video player with a play button, volume icon, and a progress bar showing 0:00 / 2:32.

See larger video at YouTube

See all NCBI YouTube video channel videos

**Find related data**

Database:  Find items

**Search details**

```
("Alcoholism"[mh] OR
"Alcoholic Intoxication"[mh]
OR "Alcohol Drinking"[mh] OR
"Alcohol-Induced Disorders"
[mh:noexp] OR
alcohol[title/abstract] OR
```

Search: PubMed

Limits Advanced search Help

Search Clear

Display Settings: Abstract

Send to:



J Am Coll Health. 2010 Nov-Dec;59(3):151-8.

## Screening and brief interventions for alcohol use in college health centers: a review.

Seigers DK, Carey KB.

Center for Health and Behavior, Syracuse University, Syracuse, New York 13244-2340, USA. dkseiger@syr.edu

### Abstract

**OBJECTIVES:** to provide a critical review of the efficacy of brief interventions for **alcohol** use in college health centers.

**METHODS:** studies were included if (a) they examined brief intervention trials that were conducted in college- or university-based student health centers or **emergency departments**, and (b) they provided pre-post data to estimate change.

**RESULTS:** twelve studies suggested that **screening** and brief interventions in these settings are acceptable, feasible, and promote risk reduction.

**CONCLUSIONS:** findings support continued use of time-limited, single-session interventions with motivational interviewing and feedback components.

PMID: 21186444 [PubMed - indexed for MEDLINE]

### Publication Types, MeSH Terms

#### Publication Types

Review

#### MeSH Terms

Adolescent

Adult

**Alcohol Drinking/epidemiology\***

**Alcoholism/epidemiology\***

Female

Humans

Male

**Mass Screening/methods\***

**Mass Screening/statistics & numerical data**

Public Health

Risk-Taking\*

Student Health Services/statistics & numerical data\*

United States/epidemiology

Young Adult

### LinkOut - more resources

PD-GOV PubMed.gov

### Related citations

Brief screening and intervention for alcohol and drug use in a college st [J Am Coll Health. 2010]

Alcohol use in students seeking primary care treatment at university h [J Am Coll Health. 2010]

Screening for high-risk drinking in a college student health [J Stud Alcohol Drugs Suppl. 2009]

**Review** Screening and brief intervention for underage drinkers. [Mayo Clin Proc. 2010]

**Review** Heavy drinking in college students: who is at risk and what is being [J Gen Psychol. 2006]

See reviews...

See all...

### Recent activity

Turn Off Clear

Screening and brief interventions for alcohol use in college health centers: a r... PubMed

("Alcoholism"[mh] OR "Alcoholic Intoxication"[mh] OR "Alcohol Dri... (9 PubMed

A randomised controlled trial of extended brief intervention for alcohol depende PubMed

medline[sb] (18932990) PubMed

all[sb] (21020336) PubMed

See more...

# MeSH

NLM Controlled Vocabulary

Search:

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

[Display Settings:](#)  Summary

[Send to:](#)

## Results: 2

### [Alcoholism](#)

1. A primary, chronic disease with genetic, psychosocial, and environmental factors influencing its development and manifestations. The disease is often progressive and fatal. It is characterized by impaired control over drinking, preoccupation with the drug alcohol, use of alcohol despite adverse consequences, and distortions in thinking, most notably denial. Each of these symptoms may be continuous or periodic. (Morse & Flavin for the Joint Commission of the National Council on **Alcoholism** and Drug Dependence and the American Society of Addiction Medicine to Study the Definition and Criteria for the Diagnosis of **Alcoholism**: in JAMA 1992;268:1012-4)

### [National Institute on Alcohol Abuse and Alcoholism \(U.S.\)](#)

2. Component of the NATIONAL INSTITUTES OF HEALTH. It conducts research focused on improving the treatment and prevention of **alcoholism** and alcohol-related problems to reduce the health, social, and economic consequences of this disease. NIAAA, NIMH, and NIDA were created as coequal institutes within the Alcohol, Drug Abuse and Mental Health Administration in 1974. It was established within the NATIONAL INSTITUTES OF HEALTH in 1992.  
Year introduced: 2008

### PubMed search builder

### Find related data

Database:

### Search details

"alcoholism"[[MeSH Terms](#)] OR alcoholism[Text Word]

[See more...](#)

### Recent activity

[Turn Off](#) [Clear](#)

alcoholism (2)

MeSH

vaccines (61)

MeSH

Screening and brief interventions for alcohol use in college health centers: a r... PubMed

("Alcoholism"[mh] OR "Alcoholic Intoxication"[mh] OR "Alcohol Dri... (9, PubMed

# Sources: Ovid MEDLINE

- Different interface to search MEDLINE dataset
- Heavily used for systematic reviews
- Provides additional search functionality (adjacency)
- Uses MeSH (like PubMed)

The screenshot displays the Ovid MEDLINE search interface. At the top, there are navigation tabs: "Search" (selected), "Journals", "Books", and "My Workspace". Below these are links for "Basic Search", "Find Citation", "Search Tools", "Search Fields", "Advanced Search", and "Multi-Field Search". A section titled "Change Ovid Resources" shows "Ovid Resources: Ovid MEDLINE(R) 1948 to June Week 5 2011". Search options include "Keyword" (selected), "Author", "Title", and "Journal". A search input field and a "Search" button are present. A "Limits" section (clickable to close) includes a checked "Map Term to Subject Heading" option and several unchecked checkboxes: "Abstracts", "English Language", "Evidence Based Medicine Reviews", "Review Articles", and "Humans". There are also "Publication Year" dropdown menus and "Additional Limits" and "Edit Limits" buttons.

▼ Search History (26 searches) (Click to close)

View Saved

<input type="checkbox"/>	# ▲	Searches	Results	Search Type	Actions
<input type="checkbox"/>	1	exp diabetes mellitus/	267208	Advanced	Display <a href="#">More &gt;&gt;</a>
<input type="checkbox"/>	2	exp Diabetes Insipidus/	6581	Advanced	Display <a href="#">More &gt;&gt;</a>
<input type="checkbox"/>	3	diabet*.mp.	366928	Advanced	Display <a href="#">More &gt;&gt;</a>
<input type="checkbox"/>	4	(dm 1 or dm i or dm 2 or dm ii).mp.	504	Advanced	Display <a href="#">More &gt;&gt;</a>
<input type="checkbox"/>	5	1 or 2 or 3 or 4	368249	Advanced	Display <a href="#">More &gt;&gt;</a>
<input type="checkbox"/>	6	Hemoglobin A, Glycosylated/	17712	Advanced	Display <a href="#">More &gt;&gt;</a>
<input type="checkbox"/>	7	((glycosylated or glycated) adj hemoglobin).mp.	5609	Advanced	Display <a href="#">More &gt;&gt;</a>
<input type="checkbox"/>	8	(a1c or hb a1c or hba1c).mp.	13486	Advanced	Display <a href="#">More &gt;&gt;</a>
<input type="checkbox"/>	9	exp Blood Glucose/	113260	Advanced	Display <a href="#">More &gt;&gt;</a>
<input type="checkbox"/>	10	blood glucose.mp.	127092	Advanced	Display <a href="#">More &gt;&gt;</a>
<input type="checkbox"/>	11	blood sugar.mp.	6286	Advanced	Display <a href="#">More &gt;&gt;</a>
<input type="checkbox"/>	12	((sugar or glucose) adj3 blood).mp.	132411	Advanced	Display <a href="#">More &gt;&gt;</a>
<input type="checkbox"/>	13	((glucose or sugar) adj (control or level)).mp.	12606	Advanced	Display <a href="#">More &gt;&gt;</a>
<input type="checkbox"/>	14	exp hyperglycemia/	21324	Advanced	Display <a href="#">More &gt;&gt;</a>
<input type="checkbox"/>	15	exp hypoglycemia/	19279	Advanced	Display <a href="#">More &gt;&gt;</a>
<input type="checkbox"/>	16	(glycemi* or glycaemi*).mp.	24590	Advanced	Display <a href="#">More &gt;&gt;</a>

CONTRACT

**Search** Journals Books My Workspace

Your term mapped to the following Subject Headings:

Click on a subject heading to view more general and more specific terms within the tree.

**i** Any term you select will automatically be exploded to include all narrower terms. To select a term without exploding, clear the Explode checkbox for that term.

Term mapped through permuted index

Include All Subheadings

Combine selections with:

Select	Subject Heading	Auto Explode	Focus	Scope
<input checked="" type="checkbox"/>	<a href="#">Alcoholism</a>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<a href="#">i</a>
<input type="checkbox"/>	<a href="#">"National Institute on Alcohol Abuse and Alcoholism (U.S.)"</a>	<input type="checkbox"/>	<input type="checkbox"/>	<a href="#">i</a>
<input type="checkbox"/>	alcoholism.mp. search as Keyword			

**? Hints:**

- Click on a Subject Heading to view its tree - related terms that are more general and more specific.
- Select the Explode box if you wish to retrieve results using the selected term and all of its more specific terms.
- Select the Focus box if you wish to limit your search to those documents in which your subject heading is considered the major point of the article.
- If your search did not map to a desirable subject heading, select the box Search as Keyword.
- If you select more than one term, you can combine them using a boolean operator (AND or OR).
- If you wish to see the scope note for any term or heading, click on the information [i](#) icon, when available.

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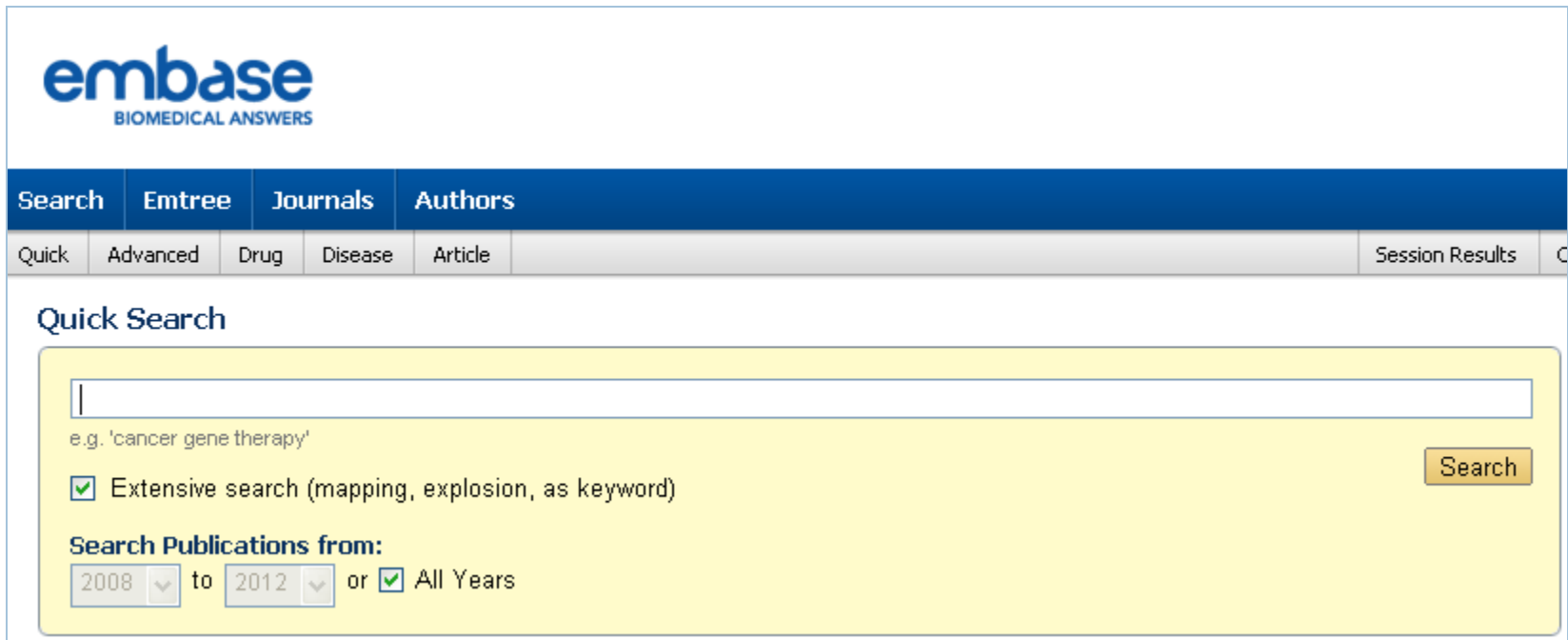
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Version: OvidSP\_UI03.04.01.113, SourceID 54495



# Sources: EMBASE

- Similar to PubMed, Ovid
- Indexes many more international journals than MEDLINE
- Uses Emtree
- Includes MEDLINE, unless you NOT out



The screenshot shows the EMBASE website interface. At the top left is the logo "embase BIOMEDICAL ANSWERS". Below the logo is a navigation bar with tabs for "Search", "Emtree", "Journals", and "Authors". Under the "Search" tab, there are sub-tabs for "Quick", "Advanced", "Drug", "Disease", and "Article". To the right of these sub-tabs are "Session Results" and a partial "C" tab. The main content area is titled "Quick Search" and features a large search input field. Below the input field is a text prompt "e.g. 'cancer gene therapy'". There is a checked checkbox for "Extensive search (mapping, explosion, as keyword)". Below this is a section titled "Search Publications from:" with two dropdown menus showing "2008" and "2012", followed by the text "to" and "or" and a checked checkbox for "All Years". A "Search" button is located to the right of the input field.



## Entree

### Query Builder

Build a multi-term search query

Find Term **Browse by Facet**

vaccine

Type word or phrase (without quotes)

Find Term

For term: 'vaccine'

Extend your search:  Explosion  As major focus

[Take this query to Drug Search](#) or [Add to Query Builder](#) →

### Entree

- chemicals and drugs
  - biologic factors and agents acting on the immune system
    - biological product
      - vaccine 227,062 Records
        - [acellular vaccine](#)
        - [Alzheimer disease vaccine](#)
        - [amebiasis vaccine](#)
        - [autovaccine](#)
        - [bacterial vaccine](#)
        - [cancer vaccine](#)
        - [canvaxin](#)
        - [chorionic gonadotropin vaccine](#)
        - [contraceptive vaccine](#)
        - [dendritic cell vaccine](#)
        - [diploid cell vaccine](#)
        - [DNA vaccine](#)
        - [edible vaccine](#)
        - [encephalitis vaccine](#)



## Drug Search

**Drug Name:**  
  
 e.g. 'low molecular weight heparin'

Map to preferred terminology (with spell check)  
 Also search as free text  
 Include sub-terms/derivatives (explosion search)  
 Search terms must be of major focus in articles found

**Drug Subheadings:** **Routes of Drug Administration:**

<div style="border: 1px solid #ccc; padding: 2px;"> <p>None</p> <p>Adverse drug reaction</p> <p>Clinical trial</p> <p>Drug administration</p> </div> <p> <input type="radio"/> Or    <input type="radio"/> And         </p>	<div style="border: 1px solid #ccc; padding: 2px;"> <p>None</p> <p>Buccal drug administration</p> <p>Epidural drug administration</p> <p>Inhalational drug administration</p> </div> <p> <input type="radio"/> Or    <input type="radio"/> And         </p>
---	---

Hold down the Shift, Ctrl, or "Apple" key to select or deselect multiple items

**Search Publications from:**

to  or  All Years

**Records from:**

Embase     Embase Classic     MEDLINE

**Quick Limits:**

Humans     With abstract     Priority journals     Only in English     Article in Press  
 Animals     In Process     With molecular sequence number     With clinical trial number  
 Records added from  to   
(dd/mm/yyyy)    (dd/mm/yyyy)

**Advanced Limits:**

**Evidence Based Medicine:**

Limits selected: none

**Publication Types:**

Limits selected: none

# Sources: Grey literature

- “Information produced on all levels of government, academic, business and industry in electronic and print formats not controlled by commercial publishing, i.e., where publishing is not the primary activity of the producing body”
- Types
  - ▣ Conference abstracts (Conference Papers Index)
  - ▣ Clinical trials (ClinicalTrials.gov)
  - ▣ Government reports, documents (.gov, CABI)
  - ▣ Dissertations (ProQuest Dissertations and Theses)
  - ▣ Unpublished manuscripts

# Sources: Other options

- Examine the references of articles of relevance
  - ▣ Included studies and relevant reviews
- Use cited by features
- Contact authors
- Snowballing (esp for complex questions or interventions)
- Contact companies, organizations, societies, etc
- Hand search important journals (by Impact Factor, perhaps)
- Search for ongoing studies (prelim data)
  - ▣ [Clinicaltrials.gov](http://Clinicaltrials.gov) ; [controlled-trials.com](http://controlled-trials.com) (ISRCTN)
- Citation tracking

# Search Completion

---

- Documentation
- Reporting
- Citation Management

# Search Completion: Documentation

- Important to document exact search terms
- MeSH Terms?
- Keywords?
- Limits?
- Filters?
- Databases?
- Dates?
- Save strategy

#	Concept 1: Term(s)	Concept 2: Term(s)	Concept 3: Term(s)

# Search completion: Reporting

- See PRISMA statement
  - “The aim of the PRISMA Statement is to help authors report a wide array of systematic reviews to assess the benefits and harms of a health care intervention. PRISMA focuses on ways in which authors can ensure the transparent and complete reporting of systematic reviews and meta-analyses.”



## PRISMA 2009 Checklist

Section/topic	#	Checklist item	Reported on page #
Information sources	7	Describe all information sources (e.g., databases with dates of coverage, contact with study authors to identify additional studies) in the search and date last searched.	
Search	8	Present full electronic search strategy for at least one database, including any limits used, such that it could be repeated.	



# Search completion: Reporting

- See Cochrane Handbook
  - <http://www.cochrane-handbook.org/>
    - Section 6.6
  
- “It should be borne in mind at the outset that the full search strategies for each database will need to be included in an Appendix of the review.”

# Search completion: Reporting

- See Cochrane Handbook
  - <http://www.cochrane-handbook.org/>
    - Section 6.6
  
- In study flow diagram:
  - number of unique records identified by the searches;
  - number of records excluded after preliminary screening (e.g. of titles and abstracts); and
  - number of records retrieved in full text

# Search completion: Reporting

- See Cochrane Handbook
  - <http://www.cochrane-handbook.org/>
    - Section 6.6
  
- In abstract:
  - List all databases searched.
  - Note the dates of the last search for each database or the period searched.
  - Note any language or publication status restrictions (but refer to Section [6.4.9](#)).
  - List individuals or organizations contacted.”

# Search completion: Reporting

- See Cochrane Handbook

- <http://www.cochrane-handbook.org/>

- Section 6.6

- In methods:

- List all databases searched.

- Note the dates of the last search for each database AND the period searched.

- Note any language or publication status restrictions

- List grey literature sources.

- List individuals or organizations contacted.

- List any journals and conference proceedings specifically handsearched for the review.

- List any other sources searched (e.g. reference lists, the internet).

# Search completion: Citation mgmt

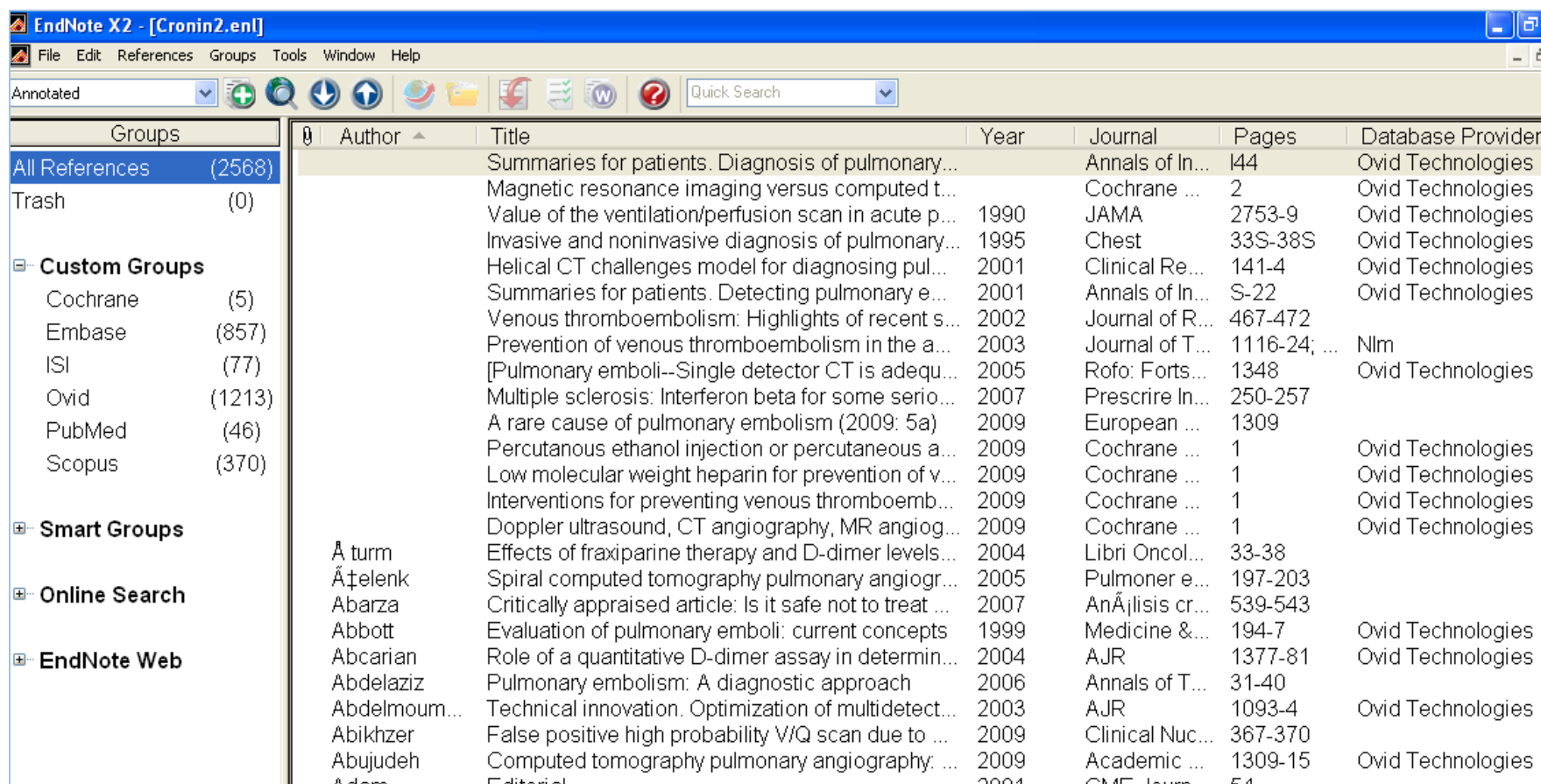
	Endnote	Refworks	Zotero
Cost	\$105	\$0 (UM & alumni)	\$0
Web-based	No (and yes)	Yes	Yes (Firefox, Chrome, others)
Database imports	700+	800+	Some (not EMBASE, but YouTube, Amazon)
Output styles	3700+ (customize)	800+ (customize)	1250+ (customize)
References	Unlimited (100000)	Unlimited	Unlimited
Learning curve	High	Lowish	Low
File attachments	Yes	Yes (limited space)	Yes (not easy to share)
Collaborate	Best for single users; Endnote web	Shared account	Public groups

# Search completion: Citation mgmt

	Endnote	Refworks	Zotero
Cost	\$105	\$0 (UM & alumni)	\$0
Web-based	No (and yes)	Yes	Yes (Firefox, Chrome, others)
Database imports	700+	800+	Some (not EMBASE, but YouTube, Amazon)
Output styles	3700+ (customize)	800+ (customize)	1250+ (customize)
References	Unlimited (100000)	Unlimited	Unlimited
Learning curve	High	Lowish	Low
File attachments	Yes	Yes (limited space)	Yes (not easy to share)
Collaborate	Best for single users; Endnote web	Shared account	Public groups

# Search completion: Citation mgmt

## □ Endnote



The screenshot shows the EndNote X2 software interface. The main window displays a list of references in a table format. The table has columns for Author, Title, Year, Journal, Pages, and Database Provider. The references are organized into groups on the left side of the window, including All References (2568), Trash (0), Custom Groups (Cochrane, Embase, ISI, Ovid, PubMed, Scopus), Smart Groups, Online Search, and EndNote Web.

Groups	Author	Title	Year	Journal	Pages	Database Provider
All References (2568)		Summaries for patients. Diagnosis of pulmonary...		Annals of In...	144	Ovid Technologies
Trash (0)		Magnetic resonance imaging versus computed t...		Cochrane ...	2	Ovid Technologies
		Value of the ventilation/perfusion scan in acute p...	1990	JAMA	2753-9	Ovid Technologies
		Invasive and noninvasive diagnosis of pulmonary...	1995	Chest	33S-38S	Ovid Technologies
Custom Groups		Helical CT challenges model for diagnosing pul...	2001	Clinical Re...	141-4	Ovid Technologies
Cochrane (5)		Summaries for patients. Detecting pulmonary e...	2001	Annals of In...	S-22	Ovid Technologies
Embase (857)		Venous thromboembolism: Highlights of recent s...	2002	Journal of R...	467-472	
ISI (77)		Prevention of venous thromboembolism in the a...	2003	Journal of T...	1116-24; ...	Nlm
Ovid (1213)		[Pulmonary emboli--Single detector CT is adequ...	2005	Rofo: Forts...	1348	Ovid Technologies
PubMed (46)		Multiple sclerosis: Interferon beta for some serio...	2007	Prescrire In...	250-257	
Scopus (370)		A rare cause of pulmonary embolism (2009: 5a)	2009	European ...	1309	
		Percutaneous ethanol injection or percutaneous a...	2009	Cochrane ...	1	Ovid Technologies
		Low molecular weight heparin for prevention of v...	2009	Cochrane ...	1	Ovid Technologies
		Interventions for preventing venous thromboemb...	2009	Cochrane ...	1	Ovid Technologies
Smart Groups		Doppler ultrasound, CT angiography, MR angiog...	2009	Cochrane ...	1	Ovid Technologies
	Å turn	Effects of fraxiparine therapy and D-dimer levels...	2004	Libri Oncol...	33-38	
Online Search	Å telenk	Spiral computed tomography pulmonary angiogr...	2005	Pulmoner e...	197-203	
	Abarza	Critically appraised article: Is it safe not to treat ...	2007	AnÅjlisis cr...	539-543	
	Abbott	Evaluation of pulmonary emboli: current concepts	1999	Medicine &...	194-7	Ovid Technologies
EndNote Web	Abcarian	Role of a quantitative D-dimer assay in determin...	2004	AJR	1377-81	Ovid Technologies
	Abdelaziz	Pulmonary embolism: A diagnostic approach	2006	Annals of T...	31-40	
	Abdelmoum...	Technical innovation. Optimization of multidetec...	2003	AJR	1093-4	Ovid Technologies
	Abikhzer	False positive high probability V/Q scan due to ...	2009	Clinical Nuc...	367-370	
	Abujudeh	Computed tomography pulmonary angiography: ...	2009	Academic ...	1309-15	Ovid Technologies
	Adam	Editorial	2001	CME Journ	51	

# Recap

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- Spend time developing your search
- Search multiple databases
- Test your searches
- Take notes during process to facilitate reporting
- Consult an expert searcher



# Thanks!



Mark MacEachern

A. Alfred Taubman Health Sciences Library