McMaster University EPC

State of the Evidence: Health IT Evidence-Based Practice Center Reports Track 1 Medication Management

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Evidence Report
MM and HIT
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Objectives

- Look at the literature of health IT and its challenges

- Finding citations—theoretical calculations

- Finding citations—practical help

  - For those who need everything

  - For those who need just some of the best

Values for those who seek information

➤ Calculate the size of a literature—*know when to stop searching for those producing systematic reviews*

➤ Understand how a literature is *indexed—how to improve your retrievals in MEDLINE with new tools*

➤ Build on information retrieval work of others
- Searching filters
- AHRQ websites and others
- Federated searching

Problems with retrieval in health IT

➢ New fast paced area with moving definitions

Problems with retrieval in health IT

- ➢ New fast paced area with moving definitions

- ➢ 118 Medline citations with "meaningful use"

#	OR	Mesh
63	☐	Humans
35	☐	United States
22	☐	American Recovery and Reinvestment Act
19	☐	Female
18	☐	Male
16	☐	Diffusion of Innovation
11	☐	Adult
10	☐	Child
8	☐	Child, Preschool
8	☐	Middle Aged

Problems with retrieval in health IT

- ➤ New, fast paced area with moving definitions
- ➤ Differences across disciplines, counties
- ➤ Difference across time
- ➤ Our discipline is weak in its theoretical foundation
- ➤ Lots of commercial development with little testing—not much published in clinical (hard core) literature
- ➤ Lots of inhouse development with small budgets—again not much published
- ➤ Ongoing development (ever changing)—not the sort of material that lends itself to clinical evaluation/publishing

Problems with retrieval in health IT

Getting what you cannot have

Absolute zero

Perpetual motion

All the literature on a topic

Capture Mark Recapture Statistical Methods

Alternate Names

capture-recapture

capture-mark-recapture

mark-recapture

sight-resight

mark-release-recapture

multiple systems estimation

band recovery

Calculate what the total size of a literature (stop)

Capture Mark Recapture Statistical Methods

Lincoln-Peterson method

Poisson regression/modeling

Jolly-Seber method

Scnabel estimate

Examples from biology and medicine

Estimate of a population by multiple sampling

Fish in a pond

Deer in Woodley Park

Polar bears

Asthma in a community

Theoretical maximum number of relevant citations on a topic

Method calculating population size

Fish in a pond

1. Go fishing and capture some fish
2. Put them back after marking them
3. Go fishing again (same methods or different ones)
4. Count the number of fish caught each time and number re-caught
5. Calculate the whole population of fish

Asthma in a community

1. Identify children who have asthma by using clinic records
2. Note their names (i.e., mark them)
3. Identify children in the school system who have asthma
4. Count the number of children with asthma in both systems noting overlap
5. Calculate the whole population of asthma

Formula for (2 samples) calculation

N = total population—what you want

M = marked in your first sampling foray

C = total caught or identified in second foray

R = total capture in first foray

N = MC/R

N = {[(M+1)(C+1)]/R+1)} - 1

Var N = [(M+1)(C+1)(M-R)(C-R)]/[(R+1)(R+1)(R+2)]

Formula for (>2 samples) calculation

Get better results with > 2 sampling times/methods

Need a statistician

Need some help—AHRQ?

Example: Health IT and Osteoporosis

First screen results

Medline + Embase	1177 found	1729 calculated
Add CINAHL	1210 found	1739 calculated
Add EBMR	1246 found	1838 calculated

…tried but could not find the "missing" 500-600

Example: Health IT and Osteoporosis

Final included RCTs with 95% Confidence Intervals

Databases	Found	Calculated	Missing
Medline + Embase	34	44 (36-81)	10 (4-27)
Add CINAHL	36	46 (40-63)	10 (4-27)
Add EBMR	39	48 (42-63)	9 (3-24)

…found 81% of the theoretical domain of articles

…tried but could not find the "missing" 9-10 articles

Move on to

Help for those

who are **not** doing

comprehensive searching
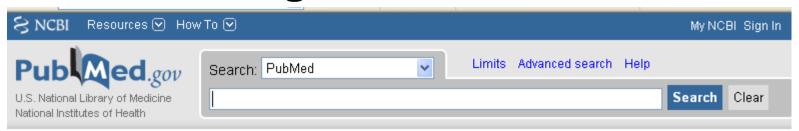
Search using the work of others—Filters

Searching Filters: Sets of search strategies that are designed to find only a certain subset of literature
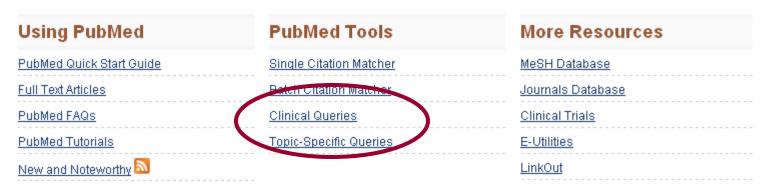
- Randomized controlled trials
- Etiology or diagnostic studies
- Qualitative studies
- Costs or economics studies
- Appropriateness or outcomes studies
- Nephrology, palliative care, mental health, knowledge translation

Search using the work of others—Filters

Search using the work of others—Filters

United States
National Library of Medicine
National Institutes of Health

Search NLM Web Site

[Go]

NLM Home | Contact NLM | Site Map | FAQs

Home > Library Catalogs and Services > Reference and Customer Services

MEDLINE/PubMed Search & Electronic Health Record Information Resources

🖳 **Printer-friendly Version**

The Electronic Health Record search focuses on all aspects of the Electronic Health Record. Subjects include: implementation, attitudes, beliefs and use, data privacy, health data standards and consumer access to the EHR and personal health records (PHRs).

The US Department of Health and Human Services (HHS) defines the electronic health record as "An electronic record of health-related information on an individual that conforms to nationally recognized interoperability standards and that can be created, managed, and consulted by authorized clinicians and staff across more than one health care organization." The National Library of Medicine® is a major participant in electronic health record development.
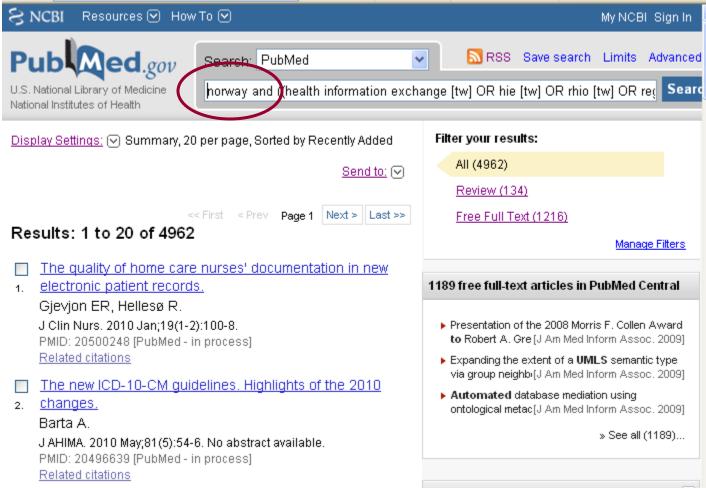
MEDLINE/PubMed Search

Perform the electronic health record search in PubMed to retrieve citations to journal literature.
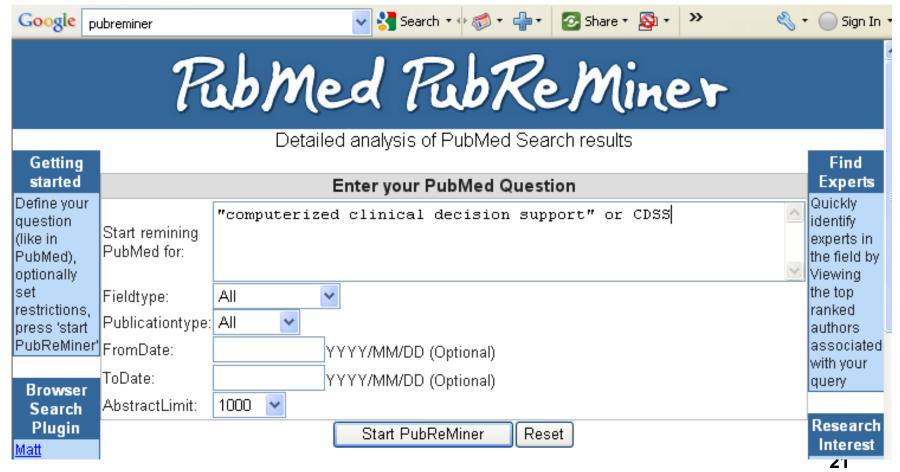
See the details of the search strategy.

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Search using the work of others—Filters

Use the work of others—Analysis of items

Use the work of others—Analysis of items

#	OR	Year
30	☐	2010
72	☐	2009
52	☐	2008
41	☐	2007
49	☐	2006
34	☐	2005
27	☐	2004
31	☐	2003
21	☐	2002
11	☐	2001
24	☐	2000
11	☐	1999
10	☐	1998

#	OR	Journal	
28	☐	AMIA Annu Symp Proc	P
21	☐	Stud Health Technol Inform	P
14	☐	Nucleic Acids Res	P
11	☐	J Am Med Inform Assoc	P
10	☐	DNA Res	P
9	☐	Int J Med Inform	P
9	☐	Schizophr Res	P
8	☐	BMC Genomics	P
7	☐	BMC Med Inform Decis Mak	P
6	☐	Gene	P
6	☐	Inform Prim Care	P
6	☐	Methods Inf Med	P
6	☐	Proc AMIA Symp	P

#	OR	Author	
14	☐	BODOR N	P
7	☐	ADDINGTON D	P
7	☐	LANCON C	P
7	☐	POP E	P
7	☐	REINE G	P
6	☐	AUQUIER P	P
5	☐	BERNARD D	P
5	☐	BULLARD MJ	P
5	☐	HAYNES RB	P
5	☐	HOLROYD BR	P
5	☐	NAGASE T	P
5	☐	OHARA O	P
5	☐	PARKHILL J	P

CDSS

Use the work of others—Analysis of items

#	OR	Mesh	
268	☐	Humans	P
111	☐	Male	P
109	☐	Female	P
89	☐	Decision Support Systems, Clinical	P
76	☐	Adult	P
65	☐	Middle Aged	P
49	☐	Molecular Sequence Data	P
46	☐	Animals	P
44	☐	Aged	P
34	☐	Base Sequence	P
33	☐	Decision Making, Computer-Assisted	P
33	☐	Schizophrenic Psychology	P
30	☐	Practice Guidelines as Topic	P

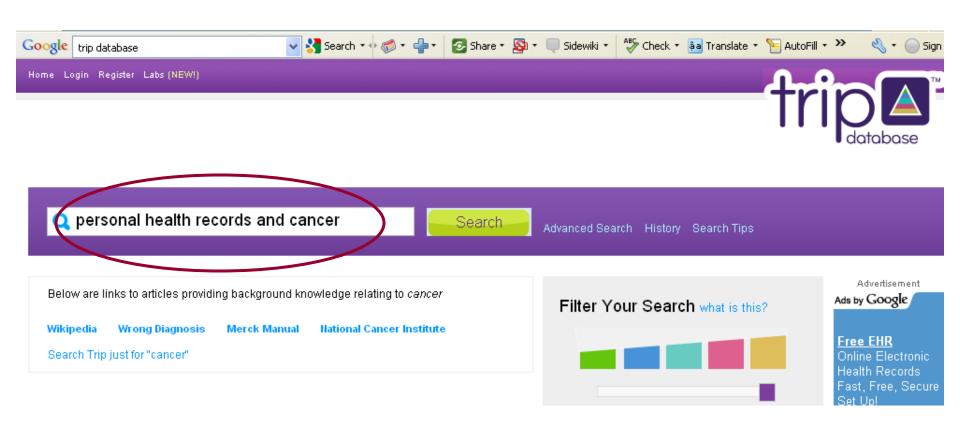| #	OR	Country
115	☐	UNITED STATES
48	☐	UNITED KINGDOM
36	☐	JAPAN
27	☐	FRANCE
20	☐	CANADA
20	☐	CHINA
19	☐	NETHERLANDS
17	☐	ITALY
14	☐	GERMANY
11	☐	AUSTRALIA
8	☐	KOREA
7	☐	ISRAEL

CDSS

…Work of others: Trust other's sites

…Work of others: Federated searching

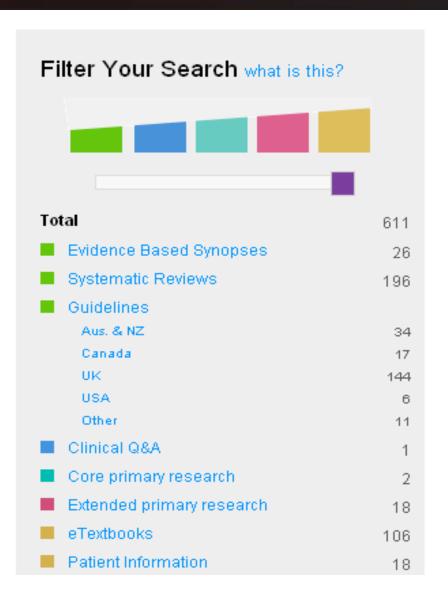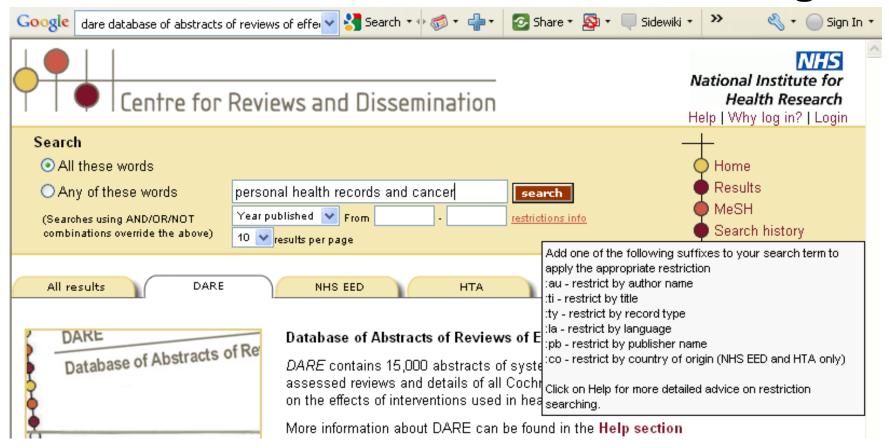# …**Work of others: Federated Searching**

TRIP database

1. Does the patient-held record improve continuity of care and related outcomes in cancer? Health Expectations 2007;10(1):75-91

Filter Your Search what is this?

Total	611
■ Evidence Based Synopses	26
■ Systematic Reviews	196
■ Guidelines	
Aus. & NZ	34
Canada	17
UK	144
USA	6
Other	11
■ Clinical Q&A	1
■ Core primary research	2
■ Extended primary research	18
■ eTextbooks	106
■ Patient Information	18

…Work of others: Federated Searching

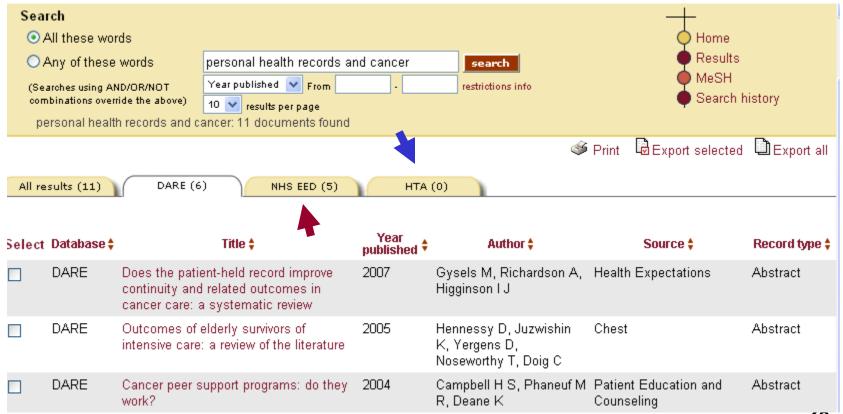

Dare

…Work of others: Federated Searching

Summary:

➢ Searching for health IT is hard

➢ Get some help from work of others

➢ Build a relationship with a librarian

➢ If you need to do comprehensive searching think about stopping rules

Questions