

MEDLINE Search Strategies vs. Relevant Retrieval: How Closely Do They Match for a Research Evaluation Topic?

Presented at the 2007 American Evaluation Association
Conference
November 10, 2007

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Premise

- No standardized research portfolio evaluation method reported in literature
- Research evaluation is informed and advanced by review of relevant scientific knowledge
- Retrieval of this knowledge depends on:
 - Accessibility of knowledge
 - Quality and extent of indexing of literature databases
 - Searching skills

How Do You Retrieve “Relevant” Literature?

Step 1. Define research question

Search query

Concepts

Step 2. Identify knowledge bases

- Public health
- Economics
- Policy
- Biomedical sciences
- Research
- Business management

Step 3. Execute search queries in databases

- Construct search strategy
- Search skill
- Concept – Term translation

Step 4. Filter with inclusion/exclusion criteria

- Date
- Setting
- Publication type
- Purpose of study

Our Research Question

- What are “best practice” methods, models, and metrics used by organizations for conducting portfolio research evaluation?
 - Discipline: Economics, policy and management, evaluation, health services research, etc.
 - Method: Formal management systems, bibliometric analysis, User assessments, etc.
 - Model: Payback, logic
 - Metric: Input, process, output, outcome, or impact
- Method: Literature Review
- Goal: To apply this knowledge towards framing a methodology for evaluating health impact of a public health research portfolio



Step 1. Search Queries

- Main concepts:
 - What are **methods, models, and metrics** used by **health organizations** in various disciplines for conducting **portfolio research evaluation**?
 - How is **public health impact or payback** from research measured or **evaluated**?

Step 2. What are the appropriate sources for these queries?

Domain	Database
Public health	MEDLINE, Cochrane
Economics	MEDLINE, EconLit
Policy	MEDLINE
Biomedical sciences	MEDLINE, Web of Science, Cochrane
Business, Management	ABI/INFORM

Step 3. Search Strategies

Keyword vs. Index Term

Keyword

- Must appear somewhere in text
- Often appended by authors
- At mercy of authors' wording
- Google
- Helpful when no index term exists for concept

Index Term

- Describes content of article
- Databases: Subject headings
- Attached by trained human indexers
- ~~Google~~
- Synonym / word variant control

Step 3. Search Strategies (cont.)

Varies with different databases

Index Term Exists?

Search Term

Payback

Health Policy

Portfolio Research

	Yes	No
Payback	ABI/Inform	MEDLINE
Health Policy	MEDLINE	EconLit
Portfolio Research	[none]	[none]

Searching for Portfolio Evaluation Literature

- “Public Health” Journals: 700
- Indexing: Public health concepts “squeezed” into existing terminology
 - Same terms mean different things in different domains
 - Need creative search strategies using both
 - Indexed vocabulary
 - Non-indexed vocabulary

* Alpi, K. M. (2005). Expert searching in public health. *J Med Libr Assoc*, 93(1), 97-103.



Search PubMed for portfolio research [Save Search](#)

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All: 409 Review: 92


Items 1 - 20 of 409


Page 1 of 21


- 1: [Elnitsky C, Bryan M, Kerns RD.](#) Related Article

 Guest Editorial: Veterans Health Administration's pain research portfolio and publications.
J Rehabil Res Dev. 2007;44(2):xi-xviii. No abstract available.
PMID: 17551868 [PubMed - in process]
- 2: [Blazer KR, Macdonald DJ, Justus KA, Grant M, Azen SP, Chamberlain RM, Petersen GM, King M, Weitzel JN.](#) Related Article

 Creating Tomorrow's Leaders in Cancer Prevention: A Novel Interdisciplinary Career Development Program in Cancer Genetics Research.
J Cancer Educ. 2006 Winter;21(4):216-22.
PMID: 17542713 [PubMed - in process]
- 3: [Kwon YK, Moon BR.](#) Related Articles, Links

 A hybrid neurogenetic approach for stock forecasting.
IEEE Trans Neural Netw. 2007 May;18(3):851-64.
PMID: 17526350 [PubMed - in process]
- 4: [Gujral S, Conroy T, Fleissner C, Sezer O, King PM, Avery KN, Sylvester P, Koller M, Sprangers MA, Blazeby JM; on behalf of the European Organisation for Research and Treatment of Cancer Quality of Life Group.](#) Related Article

 Assessing quality of life in patients with colorectal cancer: An update of the EORTC quality of life questionnaire.
Eur J Cancer. 2007 May 21; [Epub ahead of print]
PMID: 17521904 [PubMed - as supplied by publisher]
- 9: [Curry CW, De AK, Ikeda RM, Thacker SB.](#) Related Articles, Links

 Health burden and funding at the Centers for Disease Control and Prevention.
Am J Prev Med. 2006 Mar;30(3):269-76.
PMID: 16476645 [PubMed - indexed for MEDLINE]



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1: [Am J Prev Med](#). 2006 Mar;30(3):269-76.

ELSEVIER FULL-TEXT ARTICLE Link

Health burden and funding at the Centers for Disease Control and Prevention.

[Curry CW](#), [De AK](#), [Ikeda RM](#), [Thacker SB](#).

Centers for Disease Control and Prevention, Atlanta, Georgia, USA. c Curry@cdc.gov

BACKGROUND: The relationship between domestic funding for selected conditions to the Centers for Disease Control and Prevention (CDC) and the burden of disease and disability in the United States was assessed systematically. METHODS: Using mortality, years of potential life lost (YPLLs), disability-adjusted life years (DALYs), hospital days, hospital discharges, and direct medical costs of conditions, 34 high-burden conditions addressed by CDC programs were identified, and information was collected about the funds spent on each by CDC during fiscal year (FY) 2003. The 34 conditions were grouped into 15 categorical areas, and the relationship between budget and burden was analyzed using correlation and regression methods for each of the categorical areas and for each measure of burden. RESULTS: Of CDC's total FY 2003 budget of \$6.9 billion, 62% (\$4.3 billion) of funding was allocated to one of the 34 conditions studied. A positive relationship between budget and burden was identified for all measures of burden, although the correlations varied for the different conditions. CONCLUSIONS: Although examination of the relationship of CDC's budget to burden measures provides insight into the agency's portfolio of investments, this exercise also highlights a number of limitations with this approach and the currently available burden measures. Assessment of key public health functions such as emergency preparedness and the collection of vital statistics require development of metrics different from the burden measures used in this analysis. Investment in the development of such metrics warrants consideration.

PMID: 16476645 [PubMed - indexed for MEDLINE]

Related Links

- ▶ The relation between funding by the National Institutes of Health and the burden of disease. [N Engl J Med. 1999]
- ▶ To what extent is health and medical research funding associated with the burden of c [Aust N Z J Public Health. 2004]
- ▶ Women and arthritis: burden, impact and prevention programs. [J Womens Health Gen Based Med. 2002]
- ▶ The role of disease burden measures in future estimates of endemic waterborne disease. [J Water Health. 2006]
- ▶ Identifying and pursuing research priorities at the National Center for Complementary and Alternative Me [FASEB J. 2005]
- ▶ See all Related Articles...

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- All: 1
- 1: AbstractPlus
 - Citation
 - MEDLINE
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 - LinkOut
 - ASN.1
 - Related Articles
 - Cited Articles
 - Cited in Books
 - CancerChrom Links
 - Domain Links
 - 3D Domain Links
 - GEO DataSet Links

269-76.

Centers for Disease Control and Prevention.

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Atlanta, Georgia, USA. ccurry@cdc.gov

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MeSH Terms: **“Medical Subject Headings”**

- [Budgets/statistics & numerical data*](#)
- [Budgets/trends](#)
- [Centers for Disease Control and Prevention \(U.S.\)*](#)
- [Cost of Illness*](#)
- [Health Status Indicators*](#)
- [Hospitalization/statistics & numerical data](#)
- [Humans](#)
- [Morbidity/trends](#)
- [Mortality/trends](#)
- [Planning Techniques](#)
- [Primary Prevention/economics*](#)
- [Program Evaluation](#)
- [Quality-Adjusted Life Years](#)
- [Research Support/economics*](#)
- [United States/epidemiology](#)

8-18 MeSH
terms are
assigned to
each article

Supplement MeSH
searching with textwords


Full Text
Am J Public Health

Erratum in:

- Am J Public Health. 2007 Apr;97(4):590.

Current priorities in health research funding and lack of impact on the number of child deaths per year.

[Leroy JL](#), [Habicht JP](#), [Pelto G](#), [Bertozzi SM](#).

Mexican National Institute of Public Health, Cuernavaca, Mexico. jleroy@correo.insp.mx

We determined the proportion of research on childhood mortality directed toward better medical technology (i.e., by improving old technology or creating new technology) compared with research on technology delivery and utilization. We also estimated mortality reductions from a research-funding strategy focusing primarily on developing technology compared with one that also focused on delivery and utilization. Ninety-seven percent of grants were for developing new technologies, which could reduce child mortality by 22%. This reduction is one third of what could be achieved if existing technologies were fully utilized. There is a serious discrepancy between current research and the research needed to save children's lives. In addition to increased research on the efficacy of treatment, there is an even greater need for increased research on delivery and use of technology.

Publication Types:

- [Research Support, Non-U.S. Gov't](#)

MeSH Terms:

“Medical Subject Headings”

- [Biomedical Research/economics*](#)
- [Biomedical Technology](#)
- [Child](#)
- [Child Health Services/utilization](#)
- [Child Mortality/trends*](#)
- [Child, Preschool](#)
- [Data Collection](#)
- [Delivery of Health Care](#)
- [Developing Countries](#)
- [Financing, Organized/classification](#)
- [Financing, Organized/statistics & numerical data*](#)
- [Foundations*](#)
- [Health Priorities](#)
- [Health Services Needs and Demand](#)
- [Health Services Research/economics*](#) ←
- [Humans](#)
- [National Institutes of Health \(U.S.\)*](#)
- [Research Support/classification](#) ←
- [Research Support/statistics & numerical data*](#)

The words
“portfolio” and
“research” are not
in the abstract . . .

But that's what it's about!

Search Strategy: MEDLINE

Ovid MEDLINE(R) 1996 to October Week 1 2007

#	Search History	Results
1	(portfolio adj4 research).tw. ←	38
2	research translation.tw. ←	11
3	(research adj4 translat\$).tw. ←	1693
4	"outcome and process assessment (health care)"/ or "outcome assessment (health care)"/ or "process assessment (health care)"/ MeSH	33527
5	3 and 4	58
6	Health Policy/ or exp Policy Making/ MeSH	25176
7	portfolio.tw. ←	758
8	6 and 7	21
9	exp "Costs and Cost Analysis"/ MeSH	71301
10	9 and 7	48
11	10 not 8	43
12	exp research/ or research support/ MeSH	341629
13	12 and 7	124
14	13 not (8 or 10)	114
15	(health adj2 impact).tw. ←	3032
16	15 and 12	315
17	exp Public Health/ MeSH	2003288
18	16 and 17	270
19	methods.fs.	957386
20	18 and 19	67
21	exp evaluation studies/ MeSH	322730
22	16 and 21	131
23	ec.fs.	133718
24	*"Outcome Assessment (Health Care)"/ MeSH	9929
25	15 and 23 and 24	5

Textwords: Proximity Searching

Ovid MEDLINE(R) 1996 to September Week 4 2007

#	Search History	Results
1	(portfolio adj4 research).tw.	37
2	(portfolio adj3 research).tw.	33
3	(portfolio adj2 research).tw.	24
4	(portfolio adj1 research).tw.	20
5	or/2-4	33
6	1 not 5	4

“In this article we examine the merits of a ‘portfolio approach’ to generating research funds in . . .”

1

2

3

4

Basic

Advanced

Topics

Publications

My Research
0 marked items[Databases selected:](#) ABI/INFORM Research

My Research

- [Create a web page](#) with links to your articles, searches, and

Search Strategy: ABI/INFORM

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- With Results displayed--Select the check box to the left of a document title.
- With a document displayed--Select the "mark document" check box on the document display page.

Once you have documents marked, you can create your bibliography, email marked documents, export citations, or create a web page with links to your

* The maximum number of documents you can save is 50.

Recent Searches

[Marked Documents](#)

- | | | | |
|----|---|-------------------|----------------|
| 1. | (translation w/4 research) AND (health)
Database: ABI/INFORM Research
Look for terms in: Citation and abstract
Publication type: All publication types | Keyword | 5 results as |
| 2. | (portfolio w/4 research) AND (health)
Database: ABI/INFORM Research
Look for terms in: Citation and abstract
Publication type: All publication types | Keyword | 15 results as |
| 3. | LSU({PAYBACK METHOD})
Database: ABI/INFORM Research
Look for terms in: Citation and abstract
Publication type: All publication types | Index Term | 107 results as |

Step 4. Inclusion/Exclusion Criteria

- Inclusion criteria
 - Peer-reviewed
 - Journal articles
 - 1995 – present
- Exclusion criteria
 - Not program outcome assessment

Step 4. Team Review

Database	Total # References Retrieved from Search	Screened by Searcher	# Relevant Articles Reviewed to Date
MEDLINE	244	184	12
ABI/Inform	27	14	1
Web of Science	15	8	TBD
Cochrane	37	25	TBD
EconLit	134	46	TBD
Internet	---	69	35
TOTALS	457	346	48

Conclusion

- Must search the gamut of knowledge databases to identify all of the relevant literature
- **Do not** rely solely on Google
- Search strategies must be tailored to the database
 - Same indexing terms can have different meanings in different databases, e.g.,
 - In the ERIC database, “portfolio assessment” means “student evaluation”
- The use of screening criteria is helpful for finding “relevant” literature
- For complex searches, enlist a reference librarian



The Bigger Picture

- Develop process with specialized expertise
- Characterize accurately a public health portfolio for later retrieval and reporting
 - OPHR Strategic Objectives
- Pave way to achieve Excellence in Science Objective B1:
 - Sustain and expand intramural, extramural, and intra-agency research that meets the highest standards of quality to provide the foundation for evidence-based public health decisions and practices (Popovic)
- Support goals-driven research – must be tagged appropriately
 - Identify the knowledge gaps and the evidence
 - Evidence must be retrievable

References and Resources

- PubMed Searching Tutorials
 - Searching the Public Health Literature
www.sph.umich.edu/mi-info
 - PubMed Tutorial—Northwestern
www.galter.northwestern.edu/tutorials/pubmed

Contact Information

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