Introduction to Evidence Based Public Health Information Resources

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Objectives

• Define evidence-based medicine, evidence-based practice and evidence-based public health (EBPH)
• Outline the unique characteristics of EBPH
• Describe the EBPH Framework
• Apply key concepts to searching and evaluating the public health literature
• Identify resources that support best evidence research and practice
EBM → EBP → EBPH

**Evidence Based Public Health**

A guide about evidence based public health information and resources.
Evidence-based medicine (EBM) involves conscientiously working with patients to help them resolve or cope with problems related to their physical, mental, and social health (Guyatt, Rennie, Meade, Cook, & American Medical Association, 2015).

Evidence-based decision making grew out of a desire to move beyond “authority-based decision making,” in which decisions were made by consensus, by anecdotal experience, or tradition (Gambrill, 2006).

It did not take long for people to realize that the principles of EBM were equally applicable to other professions.

So, evidence-based health care and evidence-based practice covers the full range of clinical applications of the evidence-based approach to patient care.

EBP has been adopted by nurses, social workers, and policy analysts.

And parts of EBP are embedded in the EBPH framework.

Guyatt, Rennie, Meade, Cook, & American Medical Association (2015)
“Process of integrating science-based interventions with community preferences to improve the health of populations”

Brownson, R. C. (2011)

EBPH Characteristics

Best available research evidence

Environment and organizational context

Decision-making

Population characteristics, needs, values, and preferences

Resources, including practitioner expertise

Brownson (2013)
### EBM & EBPH Differences

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>EBM</th>
<th>EBPH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quality &amp; volume of evidence</td>
<td>Experimental studies</td>
<td>Quasi-experimental studies</td>
</tr>
<tr>
<td>Time from intervention to outcome</td>
<td>shorter interval</td>
<td>longer interval</td>
</tr>
<tr>
<td>Training</td>
<td>more formal – certification required</td>
<td>less formal – no certification required*</td>
</tr>
<tr>
<td>Decision making</td>
<td>Individual (mostly)</td>
<td>Group (mostly)</td>
</tr>
</tbody>
</table>

Brownson, R. C. (2013)

### Public Health Practice

- What makes public health interventions different from medical interventions?
  - Scale
  - Situational variability
  - Complexity of the intervention

Shelton, J. D. (2014)
Scale

- Public health interventions usually operate at a larger scale, and address issues that span clinical, behavior, and structural dimensions.

Shelton, J. D. (2014)

Situational variability

- Because situations can vary so widely in public health, the “external validity” or generalizability of evidence to other situations is absolutely crucial for public health applications.
- Yet, with RCTs?

Shelton, J. D. (2014)
Complexity of the intervention

- What is the best set of interventions for particular settings?
- How should the interventions be organized and delivered within existing systems?
- What will make the intervention sustainable?

Shelton, J. D. (2014)
Community Assessment

What is the issue?

Search the literature

Develop and implement the intervention

Evaluate the intervention

EBPH Framework

Brownson, Fielding, & Maylahn (2009)

EBPH Framework

Brownson, Fielding, & Maylahn, (2009)

Finke (2009)
Public health evidence is usually the result of a complex cycle of observation, theory, and experiment.

### Different forms of evidence

**Objective**
- Systematic reviews
- Scientific literature
- Public health surveillance data
- Program evaluations

**Subjective**
- Media/marketing data
- Word of mouth
- Personal experience

*Like beauty, evidence is in the eye of the beholder...*
### Types of Evidence: Comparison

<table>
<thead>
<tr>
<th>Character</th>
<th>Type 1</th>
<th>Type 2</th>
<th>Type 3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Typical data/relationship</strong></td>
<td>Size and strength of preventable Risk or disease relationship</td>
<td>Relative effectiveness of intervention</td>
<td>Information on the adaptation and translation of an effective intervention</td>
</tr>
<tr>
<td><strong>Common setting</strong></td>
<td>Clinic or controlled community setting</td>
<td>Socially intact groups or community wide</td>
<td>Socially intact groups or community wide</td>
</tr>
<tr>
<td><strong>Example</strong></td>
<td>Smoking causes lung cancer</td>
<td>Targeted campaign to reduce smoking</td>
<td>Understanding the implications of the intervention to particular segments</td>
</tr>
<tr>
<td><strong>Quantity</strong></td>
<td>More</td>
<td>Less</td>
<td>Less</td>
</tr>
<tr>
<td><strong>Action</strong></td>
<td>Something should be done</td>
<td>Implementing the intervention</td>
<td>How an intervention should be implemented</td>
</tr>
</tbody>
</table>

**Evidence-based**

**Effective**

**Promising**

**Emerging**

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*Brownson, Fielding, & Maylahn (2009)*

*Browson (2013)*
### Emerging Evidence

<table>
<thead>
<tr>
<th>Category</th>
<th>How established</th>
<th>Rigor</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emerging</td>
<td>• Ongoing work</td>
<td>• Formative evaluation data</td>
<td>• Evaluability assessments</td>
</tr>
<tr>
<td></td>
<td>• Practice based summaries</td>
<td>• Potentially high-reaching</td>
<td>• Pilot studies</td>
</tr>
<tr>
<td></td>
<td>• Evaluation works in progress</td>
<td>• Face value</td>
<td>• Projects funded by health foundations</td>
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Browson, Fielding, & Maylahn (2009)

### Promising Evidence

<table>
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<tr>
<th>Category</th>
<th>How established</th>
<th>Rigor</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Promising</td>
<td>Written program evaluation without formal peer review.</td>
<td>• Cumulative evidence of effectiveness</td>
<td>• State or federal government reports (without peer review)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Formative evaluation data</td>
<td>• Conference presentations</td>
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Browson, Fielding, & Maylahn (2009)
### Effective Evidence

<table>
<thead>
<tr>
<th>Category</th>
<th>How established</th>
<th>Rigor</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effective</td>
<td>Peer-review</td>
<td>• Based on study design and execution</td>
<td>• Articles in the scientific literature</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• External validity</td>
<td>• Research-tested intervention Programs</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Assessing risk or benefits</td>
<td>• Technical reports with peer review</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Costs and cost-effectiveness</td>
<td></td>
</tr>
</tbody>
</table>

Brownson, Fielding, & Maylahn (2009)

### Evidence-based Evidence

<table>
<thead>
<tr>
<th>Category</th>
<th>How established</th>
<th>Rigor</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Evidence-based</td>
<td>Peer review via systematic or narrative review</td>
<td>• Based on study design and execution</td>
<td>• Community Guide</td>
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<tr>
<td></td>
<td></td>
<td>• External validity</td>
<td>• Cochrane or Campbell reviews</td>
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<tr>
<td></td>
<td></td>
<td>• Assessing risk or benefits</td>
<td>• Narrative reviews based on published literature</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Costs and cost-effectiveness</td>
<td></td>
</tr>
</tbody>
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Brownson, Fielding, & Maylahn (2009)
1. Frame research question
2. Select databases, websites, and other sources
3. Choose a search strategy
4. Apply a methodological standards for evaluating a study’s scientific quality
5. Perform the review so that it can be reproduced by others
6. Synthesizing the results

Fink, A. (2013)

PICO Question

- Ask for specific knowledge to inform decisions or actions, and have four essential components:
  - P: The patient, the population, or the problem.
  - I: The intervention, exposure, or test.
  - C: The comparison intervention, exposure, or test (if relevant).
  - O: The outcome of importance, including time (if relevant).

Straus (2011)
PICO Questions: The P

- What is the relevant population?
- What are the relevant characteristics for your population?
- This should be defined in terms of health condition, age, gender, ethnic background, comorbidities, and socioeconomic status.
- Examples of strong population component include:
  - Homeless male clients diagnosed with PTSD.
  - Hispanic adolescents residing in single-parent households.

Falzon (2010)
Flanagan (2014)

PICO Questions: The I

- The interventions or exposures:
  - An intervention might be therapeutic, diagnostic, or administrative.
  - Exposure refers to something that is happening unintentionally but is having an effect on health.
  - Again, this should be as detailed as possible.

Falzon (2010)
Flanagan (2014)
• What is the intervention being compared to?
  Example: interventions to reduce smoking rates – health education programs vs. smoking bans
• Considering these different comparators ensures that the chosen comparison is appropriate to the population.

Falzon (2010)
Flanagan (2014)

• What are the population-relevant consequences of the exposures in which we are interested?
• What can I hope to accomplish, measure, improve, or affect?
• We may also be interested in the consequences to society, including cost or resource use.
• It may also be important to specify the period of interest.

Falzon (2010)
Flanagan (2014)
Selected Resources

- Journal Literature
- Books
- Conference Proceedings & Abstracts
- Dissertations & Theses
- Health Impact Assessments
- Government Reports
- Policy Statements, Laws & Regulations
- Surveillance Data
- Newsletters
- Teleconferences & Webcasts
- Alert Systems
- Listservs
- Internet Sources
- Expert Knowledge & Opinion
- Grey Literature
Public Health Evidence Sources

- Systematic Reviews
- Evidence Based Guidelines
- Pre-formulated Searches
- Best and Model Practices
- Bibliographic Databases
- Public Health Journals
- Health Data and Statistics
- Legislation and Policy

Cochrane Library

Workplace interventions for reducing sitting at work
Ezquível Inês, Marisa T. Falcao, Rui P. Ferreira, Sofia G. Silva, Inês Freitas
27 March 2015

Interventions for strategies to overcome patient’s mistrust in primary care and community settings
Susan R Smith, Emma Wallasey, Tom D Dowell, Karen Pinto
10 March 2015
Find Evidence: search.healthevidence.org for access to 4,342 quality-rated systematic reviews evaluating the effectiveness of public health interventions. We search the published literature and compile public health-relevant reviews – eliminating your need to search and screen individual databases. Join the 9,121 visitors that accessed our database this past month!

Use Evidence: Our consultation services assist individuals, teams, divisions and organizations in interpreting research evidence and applying it to program and policy decisions. Our tools support you along the way.

<table>
<thead>
<tr>
<th>Article</th>
<th>Authors</th>
<th>Note</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Interventions to prevent obesity in 0-5 year olds: An updated systematic review of the literature</td>
<td>Havelaar, K.O., et al.</td>
<td>1010</td>
</tr>
<tr>
<td>2</td>
<td>Effectiveness of school-based interventions to promote healthy eating in students and addressors: Systematic review of published and grey literature</td>
<td>Van Cauwenberge, E., et al.</td>
<td>1010</td>
</tr>
<tr>
<td>6</td>
<td>A protocol of an older adults' lifestyle and nutrition changes: Interventions for controlling and preventing obesity</td>
<td>Chandhakia, A.Z., et al.</td>
<td>1012</td>
</tr>
<tr>
<td>7</td>
<td>Physical activity, diet and obesity intervention: A systematic review</td>
<td>Barn-Andersson, D., et al.</td>
<td>1013</td>
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</table>
Health Evidence Practice Tools

Practice Tools
We developed these tools in collaboration with Canadian public health professionals to:

- Help you find & use research evidence
- Help public health organizations document and share lessons learned

Have you used these tools?

Currently Available Tools
- Evidence-Informed Decision Making (EIDM) Checklist
- Developing an Efficient Search Strategy Using PICO
- Levels & Sources of Public Health Evidence
- Resources to Guide & Track Your Search
- Tracking Track of Search Results: A Flowchart
- Briefing Note: Decisions, Rationale and Key Findings Summary
- Improving Future Decisions: Optimizing the Decision Process from Lessons Learned

Evidence-Informed Decision Making (EIDM) Checklist
The purpose of this evidence-informed decision making tool is to provide a mechanism to:

- Track progress through the stages of the EIDM process (Step 1: Define; Step 2: Search; Step 3: Analyze)

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- Health Impact Assessments
- Health Data and Statistics
- Legislation and Policy
Healthy People 2020 Queries

Practice Informed by Research
This resource provides pre-formatted PubMed search strategies to find published literature.

Search by Topic Area
- Access to Health Services
- Adolescent Health
- Birth Defects and Birth Defects, Interventions
- Chronic Kidney Disease
- Colon Cancer
- Early and Middle Childhood
- Environmental Health
- Family Planning
- Food Safety
- Genetic
- Health Communication and Health IT

Access to Health Services

Public Health Evidence Sources

- Systematic Reviews
- Evidence Based Guidelines
- Pre-formulated Searches
- Best and Model Practices
- Bibliographic Databases
- Public Health Journals
- Health Impact Assessments
- Health Data and Statistics
- Legislation and Policy
Profile of State Public Health

Individual State Profiles

- Alabama
- Alaska
- Arizona
- Arkansas
- California
- Colorado
- Connecticut
- Delaware
- Missouri
- Montana
- Nebraska
- New Hampshire
- New Jersey
- New Mexico
- New York
- North Carolina
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PubMed – Special Queries

Using PubMed
- PubMed Quick Start Guide
- PubMed Tutorials
- New and Noteworthy

PubMed Tools
- PubMed Mobile
- Single Citation Matcher
- PubMed Central Matcher
- Clinical Queries

More Resources
- PubMed LinkOut
- Clinical Tools
- PubMed LinkOut
- Medline Plus

PubMed Special Queries
- Diseases and Health Services
- Drugs and Toxic Substances
- Environmental Health Hazards
- Gene/Genome/DNA
- Molecular and Cellular Biology
- Psychological, Social, and Rehabilitation Services
- Statistical Topics

PubMed.gov
- PubMed Central
- Advanced

PubMed – Special Queries
- Clinical Queries
- Topic-Specific Queries
- Gene/Genome/DNA
- Psychological, Social, and Rehabilitation Services
- Statistical Topics

4/4/2016
Public Health Evidence Sources

- Evidence Based Guidelines
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- Pre-formulated Searches
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- Bibliographic Databases

Public Health Journals
- Health Impact Assessments
- Health Data and Statistics
- Legislation and Policy

Evidence Based Practice Portal

The Pathway to Evidence-Based Resources

Evidence-Based Guidelines
- Evidence-based public health guidelines based on systematic reviews of the literature.

Systematic Reviews
- Systematic reviews and meta-analysis of the public health literature.

Pre-formulated and Filtered Searches of Published Studies
- Specialized branches of PubMed to include specific health topics or types of research studies.

Best Practices
- Public health programs, interventions, and policies used by others that have been evaluated and shown to be successful.

Other Resources

Public Health Journals
- PubMed
- Health Data and Statistics
- Legislation and Policy

Knowledge Domains of Public Health

About Evidence-Based Practice for Public Health

Evidence-based practice for public health involves using the best available evidence to make informed public health practice decisions. This website provides free online access to evidence-based public health information. "Evidence-based practice is a scientific approach to public health that emphasizes the evaluation of the most current scientific evidence with regard to its applicability to specific public health situations and the implementation of relevant interventions. The notion of evidence-based practice suggests a balance of evidence to allow public health practitioners to assess and use the best evidence to develop and implement effective interventions, programs, and policies. Learn more..."
Public Health Evidence Sources

- Evidence Based Guidelines
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- Best and Model Practices
- Bibliographic Databases
- Public Health Journals

- **Health Impact Assessments**
  - Health Data and Statistics
  - Legislation and Policy

Health Impact Assessment Sites


- [CDC Healthy Places Health Impact Assessment](#)
- [Health Impact Project – PEW Trust](#)
- [International Health Impact Assessment Consortium](#)
- [World Health Organization Health Impact Assessment](#)
- [UCLA HIA Clearinghouse Learning & Info Center](#)
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NIH Library | http://nihlibrary.nih.gov

PHPPartners – Data and Stats

Health Data Tools and Statistics

- Health Data News
- Subscribe to RSS Feed

Health Data News
- ICD-10 Master Mapping Reference Table Available to Assist with Public Health Surveillance Activities - 13-OCT-2015
- HHS Publishes a Roadmap to Advance Health Information Sharing and Transform Care - 07-OCT-2015

Health Data News
- CDC’s 2014 Behavioral Risk Factor Surveillance System (BRFSS) Data Released - 23-SEP-2015
- Social Security Administration Releases New Disability Statistics Resources - 03-SEP-2015

Social Security Administration has released new data on Supplemental Security Income (SSI) recipients and a national SSI issue paper to help states update their disability determinations systems and improve the coordination of SSI programs with other programs.

Return to Top
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Policy Archive / Policy File

Welcome to PolicyFile

Offering access to U.S. foreign and domestic policy papers and gray literature. It is updated weekly with abstracts and links to the latest reports, papers, and documents from think tanks, research institutes, and agencies. Read More...
### Policy Centers

- **Academy Health** - Health policy information on the evolving health system.
- **Center for Health Care Strategies** - Health policy resource center information on access, quality and cost-effectiveness in publicly financed health care.
- **Commonwealth Fund** - Access independent research on health care issues and health care practice and policy.
- **Kaiser Family Foundation Health and Law** - Policy research and analysis, and in-depth health policy news coverage.
- **National Health Policy Forum** - Health policy information for federal health policy staff featuring basic education on specific policies, programs, and issues, to complex analyses of the health care system, including information from important research studies, demonstrations, and innovative community efforts.
- **Robert Wood Johnson Foundation** - Information and funding for research and programs to build a Culture of Health.
- **PH Partners Legislation and Policy** - Resources to support legislation and policy at the state and federal levels.

### Social Media and Blogs
Blogs and Twitter follows

NIH Library | http://nihlibrary.nih.gov

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National Institutes of Health
U.S. Department of Health and Human Services

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