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Evidence-based Decision Making to Improve Public Health Practice

Ross C. Brownson
Washington University in St. Louis, rbrownson@wustl.edu

Jonathan E. Fielding
Los Angeles Department of Health Services, jfielding@ph.lacounty.gov

Christopher M. Maylahn
New York State Department of Health, cmm05@health.state.ny.us

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Abstract

Despite the many accomplishments of public health, greater attention on evidence-based approaches is warranted. This article reviews the concepts of evidence-based public health (EBPH), on which formal discourse originated about 15 years ago. Key components of EBPH include: making decisions based on the best available scientific evidence, using data and information systems systematically, applying program planning frameworks, engaging the community in decision making, conducting sound evaluation, and disseminating what is learned. Core competencies for EBPH are emerging, including not only technical skills but also attention to administrative practices in public health agencies. To better bridge evidence and practice, the concepts of EBPH outlined in this article should be carried out in their entirety.

Keywords

Cover Page Footnote

Introduction

Public health research and practice are credited with many notable achievements, including much of the 30-year gain in life expectancy in the United States over the 20th century. A large part of this increase can be attributed to provision of safe water and food, sewage treatment and disposal, tobacco use prevention and cessation, injury prevention, control of infectious diseases through immunization and other means, and other population-based interventions.

Despite these successes, many additional opportunities to improve the public's health remain. To achieve state and national objectives for better population health, more widespread adoption of evidence-based strategies has been recommended (1). Increased focus on evidence-based public health (EBPH) has numerous direct and indirect benefits, including access to more and higher quality information on what works, a higher likelihood of successful programs and policies being implemented, greater workforce productivity, and more efficient use of public and private resources.

Several concepts are fundamental to achieving a more evidence-based approach to public health practice. First, scientific information is needed on the programs and policies that are most likely to be effective in promoting health (i.e., undertake evaluation research to generate sound evidence). An array of effective interventions is now available from numerous sources including the Guide to Community Preventive Services, the Guide to Clinical Preventive Services, Cancer Control PLANET, and the National Registry of Evidence-based Programs and Practices. Second, to translate science to practice, information on evidence-based interventions from the peer reviewed literature must account for the realities of a specific real-world environment. To do so, the processes that lead to evidence-based decision making must be made more explicit, including the use of a more transdisciplinary approach to problem solving. Finally, wide-scale dissemination of interventions of proven effectiveness must occur more consistently at federal, state, and local levels.

This article briefly describes: 1) the core concepts and audiences for EBPH; 2) several key characteristics of an evidenced-based process; and 3) competencies for EBPH.

Core Concepts and Audiences

Formal discourse on the nature and scope of EBPH originated about 15 years ago. Kohatsu and colleagues broadened earlier definitions of EBPH to include the perspectives of community members, fostering a more population-centered approach (2): "Evidence-based public health is the process of integrating science-based interventions with community preferences to improve the health of populations." (p. 419). A consensus has emerged that a combination of scientific evidence, as well as resources and context should enter into decision making (1).

There are four overlapping user groups for EBPH. The first includes public health practitioners with executive and managerial responsibilities who want to know the scope and quality of evidence for alternative strategies (e.g., programs, policies). The next user group is policy makers at local, regional, state, national and international levels. They are faced with making macro-level decisions on how to allocate the public resources for which they are stewards. The third group is composed of stakeholders who may be affected by interventions being considered. This includes the public, especially those who vote, as well as interest groups formed to support or oppose specific policies, such as the legality of abortion, whether the community water supply should be fluoridated, or whether adults must be issued handgun licenses if they pass background checks. The final user group is composed of researchers on population health issues, such as those who evaluate the impact of a specific policy or programs. They both develop and use evidence to answer research questions.

As these audiences generate and receive evidence in a variety of forms, several important questions arise:

- What is the size of the public health problem?
- Are there effective interventions for addressing the problem?
- What information about the local context and a particular intervention is helpful in deciding its potential use in the situation at hand?
- Is a particular program or policy worth doing (i.e., is it better than alternatives) and will it provide a satisfactory return on investment, measured in monetary terms and/or in health impacts?

Key Characteristics of Evidence-Based Decision Making

It is useful to consider several overarching, common characteristics of an evidence-based approach to public health practice. Described below for various attributes of EBPH, key characteristics include:

- Making decisions based on the best available peer-reviewed evidence (both quantitative and qualitative research);
- Using data and information systems systematically;
- Applying program planning frameworks (that often have a foundation in behavioral science theory);
- Engaging the community in assessment and decision making;
- Conducting sound evaluation;
- Disseminating what is learned to key stakeholders and decision makers; and
- Synthesizing scientific skills, effective communication, common sense, and political acumen in making decisions.

Competencies for Evidence-Based Decision Making

While the formal concept of EBPH is relatively new, the underlying skills are not. For example, reviewing the scientific literature for evidence or evaluating a program intervention are skills often taught in graduate programs in public health or other academic disciplines, and are building blocks of public health practice. Competencies for more effective public health practice are becoming clearer (3). To address the critical competencies forEBPH, training programs have been developed in the United States for public health professionals in state health agencies, local health departments and community-based organizations, and similar programs have been developed in other countries. A set of core competencies is emerging (Table 1) (4). The development and execution of core competencies can be supported with so-called "administrative evidence-practices" that focus on agency-level conditions and practices that are likely to improve decision making in public health practice. These administrative practices cover five domains: 1) workforce development, 2) leadership, 3) organizational climate and culture, 4) relationships and partnerships, and 5) financial processes (5).

Implications and Conclusion

The successful implementation of EBPH in public health practice is both a science and an art. The science is built on epidemiologic, behavioral, and policy research showing the size and scope of a public health problem and identifying interventions that are likely to be effective in addressing the problem. The art of decision making often involves knowing what information is important to a particular stakeholder at the right time. Unlike solving a math problem, significant decisions in public health must balance science and art, since evidence-based decision making often involves choosing one alternative from among a set of rational choices. Several implications for practitioners are shown in the Summary Box. By applying the concepts of EBPH outlined in this article, decision making and, ultimately, public health practice can be improved.

Summary Box

- To achieve state and national objectives for improved population health, more widespread adoption of evidence-based strategies is recommended.
- Stakeholder who should practice evidence-based public health (EBPH) are public health practitioners, policy-makers, individuals affected by an intervention, and researchers.
- Key components of EBPH include: making decisions based on the best available scientific evidence, using data and information systems systematically, applying program planning frameworks, engaging the community in decision making, conducting sound evaluation, and disseminating what is learned.
- Analytic tools and approaches that can enhance the uptake of EBPH include public health surveillance, systematic reviews, economic evaluation, health impact assessment, and participatory approaches.
- To increase the implementation of EBPH in practice settings (e.g., health departments), greater attention to administrative practices is needed, including: 1) workforce development, 2) leadership, 3) organizational climate and culture, 4) relationships and partnerships, and 5) financial processes.

Table 1. Competencies in Evidence-Based Public Health

Competency	Domain[a]	Level[b]	Competency
1. Community input	C	B	Understand the importance of obtaining community input before planning and implementing evidence-based interventions.
2. Etiologic knowledge	E	B	Understand the relationship between risk factors and diseases.
3. Community assessment	C	B	Understand how to define the health issue according to the needs and assets of the population/community of interest.
4. Partnerships at multi-levels	P/C	B	Understand the importance of identifying and developing partnerships in order to address the issue with evidence-based strategies at multiple levels.
5. Developing a concise statement of the issue	EBP	B	Understand the importance of developing a concise statement of the issue in order to build support for it.
6. Grant writing need	T/T	B	Recognize the importance of grant-writing skills including the steps involved in the application process.
7. Literature searching	EBP	B	Understand the process for searching the scientific literature and summarizing search-derived information on the health issue.
8. Leadership and evidence	L	B	Demonstrate the importance of strong leadership from public health professionals regarding the need and importance of evidence-based public health interventions.
9. Role of behavioral science theory	T/T	B	Understand the role of behavioral science theory in designing, implementing, and evaluating interventions.
10. Leadership at all levels	L	B	Enlist the commitment from all levels of public health leadership to increase the use of evidence-based interventions.
11. Evaluation in 'plain English'	EV	I	Recognize the importance of translating the impacts of programs or policies in language that can be understood by communities, practice sectors and policy makers.
12. Leadership and change	L	I	Recognize the importance of effective leadership from public health professionals when making decisions in the midst of ever-changing environments.
13. Translating evidence-based interventions	EBP	I	Recognize the importance of translating evidence-based interventions to unique 'real world' settings.
14. Quantifying the issue	T/T	I	Understand the importance of descriptive epidemiology (concepts of person, place, time) in quantifying a public health issue.
15. Developing an action plan for program or policy	EBP	I	Understand the importance of developing a plan of action which describes how the goals and objectives will be achieved, what resources are required, and how responsibility of achieving objectives will be assigned.
16. Prioritizing health issues	EBP	I	Understand how to choose and implement appropriate criteria and processes for

			prioritizing program and policy options.
17. Qualitative evaluation	EV	I	Recognize the value of qualitative evaluation approaches including the steps involved in conducting qualitative evaluations.
18. Collaborative partnerships	P/C	I	Understand the importance of collaborative partnerships between researchers and practitioners when designing, implementing, and evaluating evidence-based programs and policies.
19. Non-traditional partnerships	P/C	I	Understand the importance of traditional partnerships as well as those that have been considered non-traditional such as those with planners, department of transportation, and others.
20. Systematic reviews	T/T	I	Understand the rationale, uses, and usefulness of systematic reviews that document effective interventions.
21. Quantitative evaluation	EV	I	Recognize the importance of quantitative evaluation approaches including the concepts of measurement validity and reliability.
22. Grant writing skills	T/T	I	Demonstrate the ability to prepare an application for funding including an outline of the steps involved in the application process.
23. Role of economic evaluation	T/T	A	Recognize the importance of using economic data and strategies to evaluate costs and outcomes when making public health decisions.
24. Creating policy briefs	P	A	Understand the importance of writing concise policy briefs to address the issue using evidence-based interventions.
25. Evaluation designs	EV	A	Comprehend the various designs useful in program evaluation with a particular focus on quasi-experimental (non-randomized) designs.
26. Transmitting evidence-based research to policy makers	P	A	Understand the importance of coming up with creative ways of transmitting what is known to work (evidence-based interventions) to policy makers in order to gain interest, political support and funding.

[a]C = community-level planning; E = etiology; P/C = partnerships & collaboration; EBP = evidence-based process; T/T = theory & analytic tools; L = leadership; EV = evaluation; P = policy.
[b]B = beginner; I = intermediate; A = advanced.

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