



Teaching Evidence-based Public Health to Public Health Practitioners

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PURPOSE: The purpose of the Evidence Based Public Health (EBPH) course is to train public health practitioners to utilize a comprehensive approach for program development and evaluation from a scientific perspective, including principles of scientific reasoning and systematic uses of data and information systems. The increasing technical sophistication of public health problems and approaches emphasizes the importance for an evidence-based approach to developing policy and interventions.

METHODS: The training methods used highlight the linkages between data systems and program/policy initiatives. Participants learn to access and interpret existing data systems and methods of using data to impact specific policies or decision-makers. From 1992 through mid-2004 the EBPH course was offered a total of 20 times, in Missouri, nationally and internationally. In March 2002, the workshop was taped and pressed into a 16-CD set that public health workers can use as a self-teaching program in their own homes and offices. The group exercises from the classroom workshop have been adapted into individual self-guided applications, and background readings are included in the set.

RESULTS: Compiled results of course evaluations indicate average ratings for course satisfaction ranging from 8.50 to 10.00 on a scale from 1 to 10. Satisfaction with course instructors ranged between 8.00 and 10.00 on the same scale. Ninety-four to ninety-six per cent of participants reported that they would use the course in their day-to-day work. Qualitative comments from participants at the time of and after the course show that the material is applied in a variety of ways.

CONCLUSIONS: The EBPH course is making a valuable contribution in strengthening the application of scientific methods to public health practice. To expand the offerings of this training, a train-the-trainer component for the EBPH course is being developed, to be made available in 2005.

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KEY WORDS: Public Health Practice, Decision Making, Epidemiology, Evidence-based Medicine, Review, Systematic.

INTRODUCTION

The practice of public health is a large and diverse enterprise, encompassing the activities of 59 state and territorial health departments, over 3000 local health departments, and myriad federal agencies with both discrete and overlapping responsibilities. As noted in *The Future of the Public's Health in the 21st Century* (1), other central actors in the public health system include the health care delivery system and academe, as well as those engaged in the media, business and industry, and members of communities.

There are many reasons for the increasing complexity we see in the demands of the public health field: the diversity of local and state health departments and the communities they serve; new threats to the health of the population, ranging from infectious and chronic disease to climate change and biosecurity; technological innovation calling for

new skills to use new tools; demographic transformations; and an ever-changing political climate that places new demands on the priority-and policy-setting decision system. Faced with increasing demands and limited resources, we must find new and increasingly effective ways to address the threats facing the public's health.

Too often, what we do in day-to-day public health practice lacks scientific evidence of effectiveness (2). There are both historical and current examples of widespread implementation of programs or policies lacking scientific grounding. The 1975 campaign to immunize the American population against the swine flu was advanced without adequate consideration of the scientific evidence (3). Even though the policy was halted shortly after implementation, it led to substantial legal liability for the US Government because of the potential link between swine flu vaccination and Guillain-Barre syndrome (4). Another prominent example is the Drug Abuse Resistance Education (D.A.R.E.) program, which is the most widely used school-based drug use prevention program in the United States reaching over 70% of elementary-school children (5). Systematic reviews of methodologically sound D.A.R.E. program evaluations have shown the program to be ineffective (6).

It is estimated that the governmental public health workforce numbers over 430,000, with another 15,000 in voluntary agencies (7). The report entitled *Who Will Keep*

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This program was funded through Centers for Disease Control and Prevention contract U48/CCU710806 (Prevention Research Centers Program), the Chronic Disease Directors, and the Missouri Department of Health and Senior Services.

Received July 29, 2004; accepted September 3, 2004.

the People Healthy? identified the public health workforce as cutting across multiple professions with highly varied preparation in the biological and social sciences and other technical fields (7). For example, only 44% of the public health workforce has formal public health education and only 22% of local public health officials have graduate degrees in public health (http://www.phppo.cdc.gov/owpp/WDI_Identify.asp).

In light of the increasing technical sophistication of public health problems, and the growing importance of applying an evidence-based approach to developing policy and interventions, there is a crucial need for educational offerings that create a common base of understanding of the fundamentals of public health practice.

Evidence-based public health (EBPH) has been defined as "...the development, implementation, and evaluation of effective programs and policies in public health through application of principles of scientific reasoning, including systematic uses of data and information systems, and appropriate use of program planning models" (8). To enhance uses of evidence in public health practice, a course entitled "Evidence Based Public Health" was originally developed in 1997 by the Saint Louis University School of Public Health (SLU-SPH) in collaboration with the Missouri Department of Health and Senior Services; it has since been expanded with the Centers for Disease Control and Prevention, the Chronic Disease Directors, the World Health Organization (i.e., the Countrywide Integrated Noncommunicable Diseases Intervention [CINDI] directors), and the Pan American Health Organization.

COURSE DESCRIPTION

The EBPH course was developed to train professionals to use a comprehensive approach for program development and evaluation from a scientific perspective. Development of effective programs and policies in public health depend on the application of principles of scientific reasoning and systematic uses of data and information systems. This process relies on several related disciplines including epidemiology, biostatistics, behavioral sciences, and health care management. The course teaches a comprehensive approach to program development and evaluation from a scientific perspective. Highlighting the linkages between data systems and program/policy initiatives, participants learn to access and interpret existing data systems and methods of using data to impact specific policies or decision-makers. The EBPH course teaches about a process that includes:

- Engaging stakeholders (e.g., agency leaders, policy makers, community partners)
- Assessing what influences health, health behaviors, and community health (literature, local needs, academic theory)

- Developing programs based on assessment (science)
- Evaluating process, impacts, and outcomes
- Learning from our work and sharing it in ways that are accessible to all stakeholders

The course takes a "hands-on" approach and emphasizes information that is readily available at the fingertips of busy practitioners. It relies on experiential learning and includes lectures, practice exercises, and case studies. The audience for the course is broad and includes public health practitioners, that is, people who direct and implement population-based intervention programs in agencies or in other community settings. Most of the course attendees have had no formal training in public health (e.g., an MPH).

The main areas covered in the course are: 1) developing a concise statement of the issue; 2) describing the issue in a quantitative way; 3) determining what is known through the scientific literature; 4) developing program or policy options; 5) developing an action plan for the program or policy; and 6) evaluating the program or policy (Fig. 1). The EBPH course is organized into seven modules.

The first course module provides an introduction to evidence-based decision making. It includes an overview of basic principles and applications in disease prevention and health care. Participants learn to understand and apply the basic concepts of evidence-based decision making, differentiating between applications based on strong and weak evidence, and to identify the barriers to evidence-based decision making in public health settings. A broad view of evidence is presented that includes: data and scientific evidence, input from community members, input from other stakeholders, and professional experience.

In the second module, students learn to develop an initial, concise, operational statement of the issue in the context of the forces that shape public health programs and policies. The material in this model includes an overview of the strategic planning process for setting priorities in public health, developing a concise written statement of the public health problem, issue, or policy under consideration in a measurable manner, and understanding a criterion for the components of a sound problem statement.

The third module, quantifying the issue, presents an overview of descriptive and analytic epidemiology. In this section, participants come to understand the major designs and contributions of analytic epidemiology, as well as several major sources of public health surveillance data. They also learn how to characterize a public health issue according to time, place, and person.

The course then moves on to cover the process of determining what is known through the scientific literature. Participants receive an introduction to searching the scientific literature or other sources about the problem, issue, or policy under consideration, with an introduction

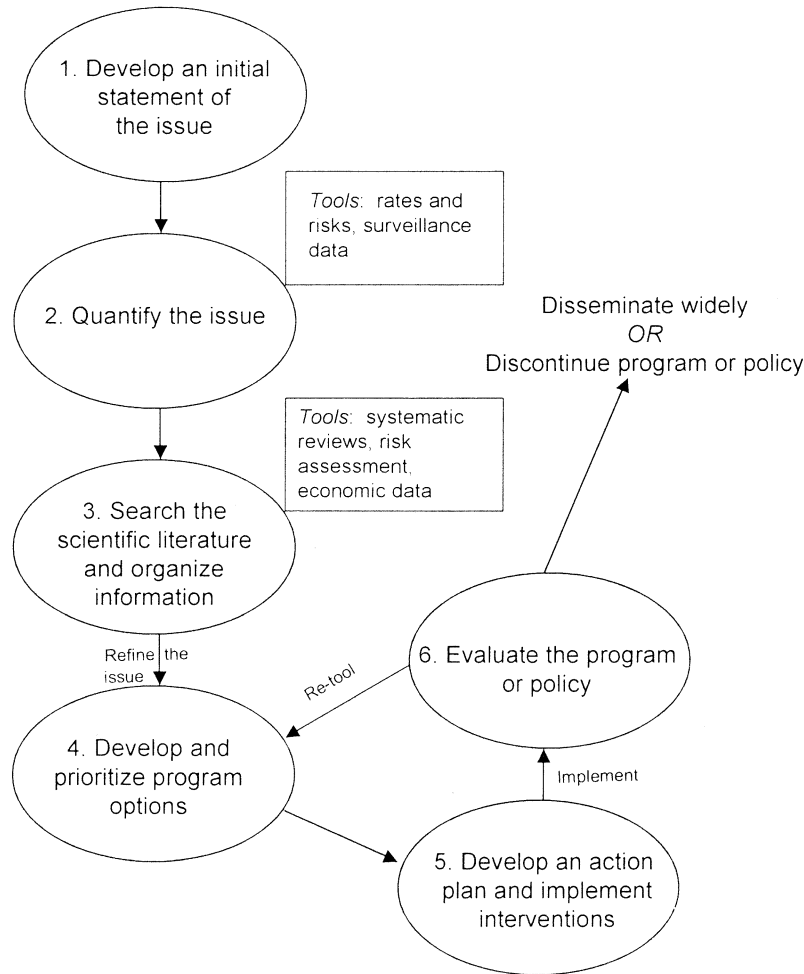


FIGURE 1. A sequential framework for conducting evidence-based public health [adapted and reprinted with permission from Brownson et al., Evidence-based decision making in public health. *J Public Health Manag Pract.* 1999;5:86-87. (8)].

to several key databases. At the conclusion of the module, participants are able to develop and document a systematic review process and to search the literature on a topic of importance in their own work.

Module 5 addresses the methods for assembling and selecting program or policy options. Key skills and steps taught in this module include reviewing sources of information on various public health programs, describing the constraints on resources in public health settings and the need for careful decision making, understanding the criteria that may be invoked in prioritizing among options, and being aware of several group processes that may be useful when developing program and policy options. The economic evaluation component of this module describes different types of systematic reviews and the basic principles of cost-effectiveness and cost-benefit analysis.

In Module 6, participants learn to develop a program or policy plan based on the principles of strategic planning and solid action planning. This section covers the role and uses

of analytic and ecological frameworks, and the application of the principles of effective action planning in developing a program or policy.

The course closes with Module 7, evaluating the program or policy using both quantitative and qualitative methods, with particular emphasis on practical issues that are likely to be encountered in the public health setting. Participants learn to understand the basic components of program evaluation, including the differences between and unique contributions of quantitative and qualitative evaluation, and the concepts of measurement validity and reliability.

COURSE EVALUATION

From 1998 through mid-2004, the EBPH course was offered a total of 20 times. There were 11 offerings to 253 participants from the Missouri Department of Health and Senior Services and local health agencies in Missouri.

TABLE 1. Qualitative feedback from EBPH course participants

Area of application	Participant comment
General usefulness	<ul style="list-style-type: none"> I have a 19-year career in Public Health. This course pulled together in a comprehensive whole instruction in areas where I feel I have a good foundation, and in other areas in which I've had some real gaps. I would love to bring this course to my entire staff. We have a difficult time recruiting staff with a PH degree and/or background and this would be a huge asset.
Policy development	<ul style="list-style-type: none"> Trying to come in contact with the public health doctors, common programs, expressing ideas, to contact head of community and persuade them to change policy.
Program design and implementation	<ul style="list-style-type: none"> I will use it in making evidence-based program decisions. This is a very timely course—our entire department is looking at evaluation-based programming but don't know how to do it. I am very excited about sharing this with my coworkers.
Program evaluation	<ul style="list-style-type: none"> Implementing health promotion programs, working with shareholders, conducting health research. Will be able to consider evaluation process with several programs currently lacking or having weak evaluation. I was familiar with epi and lit search materials. I would like very much to use economic evaluation and qualitative methods discussed in this course.

National courses were held five times with 146 participants from many US states and territories. The course has been held four times internationally in Russia and Europe. Based on the Missouri model, the course also has been adapted for use in Illinois, New Mexico, West Virginia, Minnesota, and Chile; plans also are underway in New Mexico, Bulgaria, and Lithuania.

Course evaluations have been conducted for both the Missouri and national offerings of EBPH since they began. Compiled results of these evaluations indicate average ratings for course satisfaction ranging from 8.50 to 10.00 on a scale from 1 to 10. Satisfaction with course instructors ranged between 8.00 and 10.00 on the same scale. Ninety-four to ninety-six percent of participants reported that they would use the course in their day-to-day work. Qualitative comments from participants at the time of the course and after the course show a variety of uses for the material (Table 1).

INCREASING THE REACH

Several steps have been taken based on the workshop model for the EBPH course. The first of these was the 2003 publication of a book (*Evidence-based Public Health*) building on the structure and content of the class (9). This publication provides a critical resource, both for public health professionals who cannot attend a workshop, and for those who wish to deepen their grasp of the concepts and applications described in the course. The book is also a resource for other teachers and trainers who wish to incorporate the evidence-based approach in their own teaching.

In March 2002, the workshop was taped and pressed into a 16-CD set that public health workers can use as a self-teaching program in their own homes and offices. The group exercises from the classroom workshop have been adapted into individual self-guided applications, and background readings are included in the set. A course for MPH students at the SLU-SPH is now being offered based

on the CD-ROM set. The EBPH course on CD-ROM is available on request from the SLU-SPH. Updated slide sets for all modules are also available.

As a way to expand the offerings of this training in evidence-based methods for public health, a train-the-trainer component for the EBPH course is being developed. It is anticipated that this offering will be made available in 2005. An infectious disease version of the course is also in planning stages.

SUMMARY

There are a number of challenges when attempting to translate scientific discoveries into public health action. We have a wealth of evidence on the etiology and magnitude of major health issues affecting populations. We also have a growing literature on the effectiveness of preventive interventions in clinical (10) and community settings (11, 12). The Internet and innovative new tools (13, 14) put epidemiologic data at the fingertips of practitioners. A key aim is to increase the use of scientific approaches in "real world" public health programs and policies. Our course in EBPH seeks to speed up the use of evidence in decision making by training practitioners in methods for finding, using, and evaluating interventions. At this crucial period in public health practice, it is particularly important that we incorporate elements of EBPH in public health curricula and in on-the-job training programs for practitioners.

We appreciate support from our course advisors, in particular Garland Land, Chris Maylahn, Deborah Porterfield, Paul Siegel, and Eduardo Simoes. We are also grateful to our course instructors: Beth Baker, Don Bishop, Claudia Campbell, Gunter Diem, Kathy Douglas, Kathy Gillespie, Vilius Grabauskas, Jim Gurney, Debra Haire-Joshu, Garland Land, Terry Leet, Aulikki Nissinen, Aushra Shatchkute, and Bill True; and also to our research assistants: Laura Caisley, Carolyn Harris, Lori Hattan, and Leslie McIntosh.

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