

DEVELOPING AND USING THE *GUIDE TO COMMUNITY PREVENTIVE SERVICES*: Lessons Learned About Evidence-Based Public Health*

Peter A. Briss,¹ Ross C. Brownson,² Jonathan E. Fielding,³ and Stephanie Zaza⁴

¹*The Division of Prevention Research and Analytic Methods, Epidemiology Program Office, Centers for Disease Control and Prevention, Atlanta, Georgia 30341; email: PBriss@cdc.gov*

²*Department of Community Health, School of Public Health, St. Louis University, St. Louis, Missouri 63104; email: brownson@slu.edu*

³*Los Angeles Department of Health Services, Los Angeles, California 90012; School of Public Health, University of California, Los Angeles, California 90095-1772; email: jfielding@dhs.co.la.ca.us*

⁴*The Office of the Director, National Center for Chronic Disease Prevention and Health Promotion, Atlanta, Georgia 30341; email: SZaza@cdc.gov*

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■ **Abstract** The *Guide to Community Preventive Services (Community Guide)* is being developed under the leadership of the independent, nonfederal Task Force on Community Preventive Services. The Task Force makes recommendations for the use of public health programs and policies based on scientific evidence about what practices have worked to improve health. The *Community Guide* thoroughly searches scientific literature for topic-relevant studies, evaluates their quality according to established criteria, and makes recommendations based on the overall strength of the body of evidence and the size and variability of reported effects. In addition, the *Community Guide* identifies promising interventions that have not been adequately researched, thus helping to inform the public health research agenda. The continuously updated and expanded body of recommendations and research agenda formulated by this rigorous process have been published on the Internet and in various publications since 1999 and constitute a highly valued and objective evidence-based resource for guiding current and future public health activities. More remains to be learned, however, on how best to disseminate *Community Guide* findings to key target audiences and encourage their use to inform practice, policy, and additional research.

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INTRODUCTION

Large improvements in the public's health over the past 150 years in developed countries are attributable in significant measure to the establishment of effective policies and programs at the population level (10, 11, 15). As a result, the patterns of mortality, disability, and morbidity have changed, and so have the opportunities for health improvement. The *Guide to Clinical Preventive Services* (37), first released in 1989, systematically surveyed evidence for the effectiveness of prevention conducted by health care providers for individual patients and provided specific evidence-based recommendations. In 1996, a companion effort was inaugurated to systematically evaluate the effectiveness of interventions for populations and products began to be released in 1999. The continuously updated and expanded compendium of that work to date is the *Guide to Community Preventive Services* (*Community Guide*, <http://www.thecommunityguide.org>) (36).

The *Community Guide* is a resource to help decision makers and practitioners select effective population-based interventions to improve health and prevent disease in their states, communities, businesses, health care organizations, and schools. It was created to answer three key questions that users ask as they choose policies, programs, and other activities designed to improve and maintain the health of their population:

1. What interventions have been evaluated and how do they work?
2. How can I select from among interventions of proven effectiveness?
3. What might this intervention cost and what I am likely to achieve through my investment?

The *Community Guide* also serves as a resource for those performing and funding research by identifying important gaps in knowledge about population-based interventions.

Audiences for the *Community Guide* are diverse. They include people who plan, fund, or implement services and policies for health care systems, communities, and states, such as staff of public health departments or health care delivery systems; purchasers of health care or public health services, governments, and foundations; community organizations; and academia.

Because the determinants of health are many and varied, the *Community Guide* considers a wide range of interventions and intervention targets. For convenience, the topics it addresses can be grouped into three categories: (a) risky behaviors such as tobacco use, physical inactivity, unhealthy sexual behaviors, and violence; (b) specific health conditions such as cancer, diabetes, vaccine-preventable diseases, and motor vehicle injuries; and (c) broad social and environmental determinants of health such as education, housing, and access to health care.

Although the long-term goal of the *Community Guide* is to be comprehensive, its initial publication includes evidence reviews and related recommendations for

topics that were considered priorities on the basis of two primary criteria: the topics (behaviors, diseases/injuries, and social factors) imposing the greatest burden of suffering and those offering the broadest range of intervention opportunities.

The *Community Guide* effort is designed to maximize the credibility of the methods and processes for conducting systematic reviews of evidence. To this end, considerable effort has been devoted to developing methods and processes for conducting reviews.

First, the *Community Guide* uses systematic, objective, and consistent methods and processes to assess whether interventions or policies change important health outcomes, including both benefits and harms (intended and unintended). The methodology for the reviews has been published (5) and peer reviewed extensively. Second, the process is broadly inclusive of scientists and practitioners with diverse backgrounds, points of view, and interests from both the public and private sectors to ensure that the scientific questions asked are appropriate and useful and that the reviews capture relevant information and interpret it correctly. Finally, explicit rules for translating the scientific evidence into recommendations are used. These three important dimensions of conducting reviews are intended to reduce or eliminate the biases and perspectives of any one individual or organization on the topics or interventions chosen for review, on the findings from the review, and on the resulting recommendations. They have the added benefit of engaging representatives of the intended audiences in the review process, which enhances acceptance and use of the final product.

Systematic reviews can be an efficient way to identify relevant research results, assess their quality, and present them to users in ways that are understandable and useful. Systematic review methodologies build on the experience of various disciplines such as statistics, the social sciences, epidemiology, and medicine, which, since at least the 1960s, have sought to increase the quality of scientific review syntheses. This type of approach has become increasingly popular for summarizing information on the efficacy of medical treatments (<http://www.cochrane.org/>) and clinical preventive services (<http://www.ahrq.gov/clinic/cps3dix.htm>). Results of systematic reviews have sometimes been used as the foundation for developing clinical practice guidelines, a prominent example of which is the *Guide to Clinical Preventive Services* (37). Given its deep roots in the social sciences, statistics, and epidemiology, it is not surprising that the systematic review is a useful method for summarizing the effectiveness of public health and other population-based interventions. The *Community Guide* is the largest application of systematic review methods to population-oriented health interventions in the United States.

In addition to methods for assessing the effectiveness of a wide range of intervention types with diverse goals, *Community Guide* reviews include systematic assessment of the relevant literature on economic costs and benefits, where available (9). Where data permit, the *Community Guide* reports the evaluation of both effectiveness and economic consequences.

The *Community Guide* activity takes place under the aegis of the Task Force on Community Preventive Services, a group of 15 nonfederal experts with a wide range of disciplinary backgrounds, practice settings, and research experience (36). The Task Force approves the topics, methods, and conclusions of all *Community Guide* reviews as well as having approved the rules for translating the results of topic reviews into specific recommendations (5).

Community Guide reviews are published in a family of products that include a book (*The Guide to Community Preventive Services*, expected to be published in the summer of 2004), various journal articles (1a, 4, 13, 17, 19, 24, 25, 33, 35, 40), and a website (<http://www.thecommunityguide.org>) that includes summaries of reviews, links to published articles, and other resources. The Centers for Disease Control and Prevention (CDC), which provides principal staffing for *Community Guide* activity, has also supported dissemination of findings to practitioners and researchers through various media. A variety of evaluations, including impact evaluations, are also planned or underway.

THE METHODS AND PROCESS OF PERFORMING *COMMUNITY GUIDE* REVIEWS

Methods and Process Overview

The systematic reviews and the evidence-based recommendations in the *Community Guide* are designed to make diverse current scientific evidence accessible and useful to decision makers responsible for selecting appropriate health interventions for their communities. A range of information is provided by *Community Guide* reviews and recommendations. This information includes (a) systematically derived and communicated information on high-priority health topics; (b) conceptual models that link interventions to improvements in health; (c) reviews of empirical studies that have measured the success of these interventions including assessment of the quality of those studies, individually and collectively; (d) the size and variability of reported effects on intermediate outcomes, health outcomes, and costs; (e) the applicability of the findings across different intervention characteristics and community contexts; (f) pertinent barriers to implementation; (g) important gaps in knowledge justifying additional research and recommendations for such research; and (h) Task Force recommendations about using or not using the interventions studied. By providing this information, the *Community Guide* contributes to the scientific basis for effective public health practice and helps to develop a public health research agenda.

This section summarizes the methods and process used in the *Community Guide* to evaluate and summarize evidence. These methods have evolved over time to improve technical quality, efficiency, and responsiveness to user needs (i.e., to provide information that is useful to decision makers). More detailed information on *Community Guide* methods is available elsewhere (5, 41).

Steps in a Review

The main steps in a *Community Guide* review are:

1. selecting topics,
2. convening a systematic review team,
3. developing a conceptual model for each topic and intervention,
4. defining and selecting interventions for review,
5. conducting a search for relevant scientific information,
6. evaluating the quality of, and abstracting data from, included studies, and
7. summarizing information on:
 - a. effectiveness,
 - b. applicability of the effectiveness results,
 - c. other effects (side benefits and harms),
 - d. cost and cost effectiveness, and
 - e. barriers to implementation.

SELECTING TOPICS General topics for reviews are selected by the Task Force in consultation with various stakeholders. The Task Force makes its choices on the basis of the public health burden of the problem; how preventable it is; how it relates to other public health initiatives; and the current level of research and practice activity in public health, clinical, and other settings (39). The agenda-setting process incorporates input from other interested parties. For example, the first round of priority setting by the Task Force benefited from information provided by subject matter experts from CDC and elsewhere in the Department of Health and Human Services (39).

CONVENING A SYSTEMATIC REVIEW TEAM After topics are selected, systematic review teams are convened including methodologists and subject matter experts from relevant areas of public health science, public health practice, and public health policy. The systematic review teams are composed to assure that diverse viewpoints are reflected, reviews are conducted and communicated in a consistent manner, rigorous review methods are applied, results can be understood by generalist audiences, the questions are relevant to practice, the information is complete and accurate, and the reviews and recommendations are conceptually sound. In addition, broad input in the development of the reviews may increase the likelihood that stakeholders will act on the results.

DEVELOPING A CONCEPTUAL MODEL FOR EACH TOPIC AND INTERVENTION Next, a conceptual model (6, 38) is developed for each topic and intervention. The models used in the *Community Guide* are designed to be easy-to-understand diagrams that describe relationships between causes of public health problems (determinants),

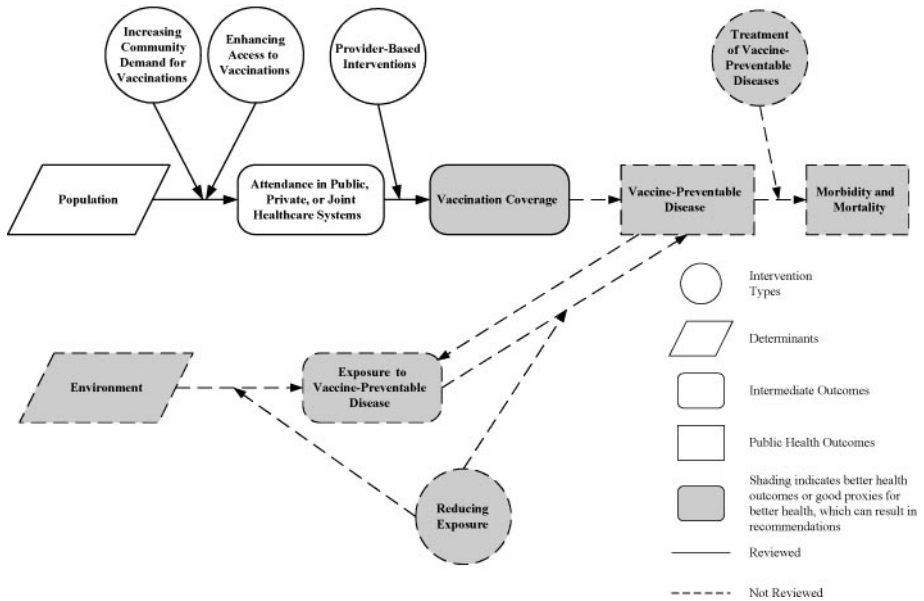


Figure 1 Vaccine-preventable disease: logic framework (reprinted from *Am. J. Prev. Med.*, Vol. 18, No. 1S, Briss PA, et al., Reviews of evidence regarding interventions to improve vaccination coverage in children, adolescents, and adults, p. 99, Copyright 2000, with permission from *Am. J. Prev. Med.*) (4).

interventions, intermediate outcomes (such as changes in behavior), and health outcomes. The models specify the outcomes that will be used to determine if the interventions are effective (that is, the extent to which they actually achieve important goals in promoting health or reducing disease, injury, and impairment). Figure 1 shows the conceptual model used for the *Community Guide* reviews on reducing vaccine-preventable diseases (4). This model shows that the ultimate outcome of these programs and policies is reduced disease. It also shows that, because vaccine coverage is a good proxy for reduced disease and is more quickly and feasibly measured than disease outcomes, it was the main outcome used in the reviews to measure program or policy success.

The model also shows the main mechanisms by which interventions might act, specifically by:

- 1) improving knowledge or attitudes about vaccination and therefore increasing demand for the service,
- 2) improving access to vaccination services, and
- 3) improving the performance of providers and systems at delivering vaccines.

DEFINING AND SELECTING INTERVENTIONS FOR REVIEW The team next identifies, defines, and sets priorities among interventions (activities or groups of related activities intended to prevent disease or promote health in a group of people). The process of selecting interventions for review generally involves developing the logic framework; deciding whether any areas of the logic framework will be excluded from further consideration (for example, because an area was already covered in another review); developing a candidate list of interventions for review; and setting priorities, usually by a voting procedure among the team. The Task Force approves or modifies the resulting priorities.

Table 1 shows the priority interventions that were chosen to address the main areas illustrated in Figure 1.

CONDUCTING A SEARCH FOR RELEVANT SCIENTIFIC INFORMATION Once intervention priorities have been set, teams engage in a thorough search for relevant information in the scientific literature by:

- determining which types of documents are relevant to the study question,
- identifying existing relevant systematic or narrative reviews and relevant studies from the reference sections of these reviews,

TABLE 1 Population-based interventions to improve vaccination coverage, ranked as high priority for evaluation in the *Community Guide*

Increasing community demand for vaccination services

Client recall/reminder
 Multicomponent interventions with education
 Vaccination requirements for child care and school attendance
 Community-wide education only
 Clinic-based education only
 Client or family incentives
 Client-held medical records

Enhancing access to vaccination services

Reducing out-of-pocket costs
 Multicomponent interventions for expanding access in health care settings
 Expanding access only in health care settings
 Women, Infants, & Children (WIC) programs
 Home visits
 Programs in schools
 Programs in child care centers

Provider-based interventions

Provider reminder/recall
 Assessment and feedback for providers
 Standing orders for adults
 Standing orders for children
 Provider education only

- determining which databases are most likely to yield the appropriate document types,
- determining the search parameters and inclusion criteria,
- conducting the search,
- screening titles and abstracts of the resulting document list to determine potential relevance,
- obtaining copies of potentially relevant documents,
- reviewing documents to confirm that they meet inclusion criteria, and
- reviewing study references for other potential sources.

Frequently, the teams' definitions or nomenclature differ from those used in the original studies. When this occurs, the teams will map relevant research to the *Community Guide's* categories.

Community Guide reviews collect a range of information about the effects of interventions (e.g., effectiveness, cost and cost effectiveness, other effects, and implementation barriers) from diverse scientific approaches published in journals and, usually, from government and other technical reports. When this more readily available information is sparse, other document types, such as dissertations, books, or abstracts, may also be considered. Although no search procedure will find every possible document, this process identifies a broad range of available scientific information.

EVALUATING THE QUALITY OF, AND ABSTRACTING DATA FROM, INCLUDED STUDIES

The team next performs a systematic evaluation of the quality of the included studies and abstracts information from those studies using a standardized abstraction form and procedure (41). Abstracted information includes classification of the study and the intervention, description of the intervention, the context in which the intervention was conducted, the results, and other key information.

Studies are characterized in terms of suitability of design and quality of execution. Designs can be of greatest, moderate, or least suitability, based on the degree to which study design characteristics affect confidence that the intervention being evaluated really caused the effects or outcomes being measured (internal validity) (5). For example, prospective studies with concurrent comparison groups such as randomized controlled trials or prospective cohort studies are categorized as greatest suitability designs, time series studies without concurrent comparison groups as moderate suitability designs, and simple before-and-after comparisons as least suitable designs.

Quality of study execution is assessed on the basis of six characteristics: descriptions of the study population and the intervention, sampling of the study population, measurement of exposures and outcomes, data analysis, interpretation of results, and other threats that have not already been addressed in the other categories (41). Failure to adequately address specific aspects of these characteristics are considered "limitations." Each study is categorized as having good,

fair, or limited quality of execution based on the number of limitations. Performance in these domains can affect confidence either that the intervention being evaluated really caused the effects or outcomes being measured (internal validity) or that the study results can be generalized to populations and contexts beyond the particular ones included in the studies themselves (external validity).

SUMMARIZING INFORMATION The results of a group of related studies are then summarized in tables and text and, where appropriate, graphically or quantitatively. When multiple studies of reasonably similar interventions are available, a typical effect is shown, as is information on how much that effect has varied across studies. This sometimes requires transforming the data presented in the primary research studies to a common measure of effect so that the results of multiple studies can be compared and contrasted. Average effects are usually calculated using an easily understandable effect measure (either the mean or the median) as the best estimate of typical changes that will occur if the intervention is used.

Finally, the body of evidence of the effectiveness of an intervention is characterized as strong, sufficient, or insufficient on the basis of the number of available studies, the strength of their design and execution, and the size and consistency of reported effects (Table 2). One can achieve sufficient or strong evidence in a variety of ways. For example, sufficient or strong evidence can be achieved through one or two very-well-designed and -executed studies with few threats to validity. Alternatively, and more commonly, a group of individually less persuasive studies can provide sufficient or strong evidence taken together, especially if their flaws are not overlapping.

Interventions designed to lead to health outcomes sometimes result in “other effects,” that is, important outcomes of the intervention that are side effects, rather than the primary effects used to assess effectiveness in the *Community Guide* review. Other effects may be intentional or incidental, and can relate to either health or nonhealth outcomes. They can include “harms” (for example, sobriety checkpoints may cause inconvenience or compromise motorist privacy) (33) or “benefits” (for example, workplace smoking bans may reduce risk of fire and workplace cleaning costs) (17).

Community Guide reviewers identify potentially important other effects and systematically search for and evaluate the strength of evidence supporting these, following the same process used for assessing effectiveness. The importance of other effects may affect Task Force recommendations. For example, credible evidence that harms outweigh benefits would lead to recommendations that interventions not be used.

To help users determine the likelihood that reviewed interventions will apply to their local populations and settings, *Community Guide* reviews provide information on the applicability of bodies of evidence and resulting recommendations. The conceptual basis of the intervention and the variability or robustness of empirical findings in different contexts inform Task Force conclusions about how broadly

TABLE 2 Assessing the strength of a body of evidence on effectiveness of population-based interventions in the *Guide to Community Preventive Services* (reprinted from *Am. J. Prev. Med.*, Vol. 18, No. 1S, Briss PA, et al., Developing an evidence-based Guide to Community Preventive Services—methods, p. 40, Copyright 2000, with permission from *Am. J. Prev. Med.*) (4)

Evidence of effectiveness ^a	Execution (good or fair ^b)	Design suitability (greatest, moderate, or least)	Number of studies	Consistent ^c	Effect size ^d	Expert opinion ^e
Strong	Good	Greatest	At least 2	Yes	Sufficient	Not used
	Good	Greatest or moderate	At least 5	Yes	Sufficient	Not used
	Good or fair	Greatest	At least 5	Yes	Sufficient	Not used
Sufficient	Meets design, execution, number, and consistency criteria for sufficient but not strong evidence			Not used	Large	Not used
	Good	Greatest	1	Not applicable	Sufficient	Not used
	Good or fair	Greatest or moderate	At least 3	Yes	Sufficient	Not used
Expert opinion	Good or fair	Greatest, moderate, or least	At least 5	Yes	Sufficient	Not used
	Varies	Varies	Varies	Varies	Sufficient	Supports a recommendation
Insufficient ^f	A. Insufficient designs or execution		B. Too few studies	C. Inconsistent	D. Small	E. Not used

^aThe categories are not mutually exclusive; a body of evidence meeting criteria for more than one of these should be placed in the highest possible category.

^bStudies with limited execution are not used to assess effectiveness.

^cGenerally consistent in direction and size of effect.

^dSufficient and large effect sizes are defined on a case-by-case basis and are based on Task Force opinion.

^eExpert opinion will not be routinely used in the *Community Guide* but can affect the classification of a body of evidence as shown.

^fReasons for a determination that evidence is insufficient will be described as follows: A. Insufficient designs or executions; B. Too few studies; C. Inconsistent; D. Effect size too small; E. Expert opinion not used. These categories are not mutually exclusive, and one or more of these will occur when a body of evidence fails to meet the criteria for strong or sufficient evidence.

the findings of the review might apply across different settings, populations, and intervention characteristics.

Interventions to improve health are typically constrained by scarce or limited resources. To help allocate resources to produce maximum improvements in health, decision makers seek useful information about the resources required for various interventions and the return that can be expected relative to the cost of an intervention. Whenever economic data are available, *Community Guide* teams collect, abstract, adjust, and summarize results from economic studies to support decision making. The rationale, utility, procedures, and instruments for summarizing economic information are discussed elsewhere (9) (<http://www.thecommunityguide.org/methods/econ-abs-form.pdf>).

Community Guide reviews also provide information on barriers that might impede implementation of interventions. Examples of such barriers include political opposition to smoking restrictions by smokers and the tobacco industry (17), difficulty passing legislation on vaccination requirements (4), or state constitutional prohibitions against sobriety checkpoints to reduce alcohol-impaired driving (33). Knowledge of barriers can help decision makers select interventions or help practitioners anticipate potential problems, allowing them to find ways to work around barriers early in the implementation process.

Translating the Results of Systematic Reviews into Findings

Based on the results of the systematic review of the accumulated public health research, the Task Force recommends use of the intervention, finds that evidence is insufficient to determine whether or not the intervention is effective, or recommends that the intervention not be used. The Task Force's recommendations primarily address evidence of the effectiveness of interventions, but other factors, such as applicability, barriers, and economic evidence, are sometimes incorporated.

Recommendations are based primarily on effectiveness data, which the *Community Guide* systematically summarizes using the guidelines shown in Table 2. Evidence for the effectiveness of interventions is determined to be strong, sufficient, or insufficient, on the basis of the number of available studies, the suitability of their designs and quality of execution, and the consistency and size of reported effects. In general, a direct relationship exists between strength of evidence and strength of recommendation, as shown in Table 3. Insufficient evidence to determine whether an intervention is effective should not be confused with evidence of ineffectiveness, as discussed in more detail below.

The consistency of results also affects recommendations. When evidence of effectiveness is inconsistent, and the inconsistency can be attributed to certain characteristics of the population, setting, or intervention, recommendations can be targeted to a specific context. For example, some interventions may be appropriate for urban populations but not for rural populations, or for use in health department clinics but not in managed care organizations.

All else being equal (i.e., strength of evidence and consistency of findings), a large effect size can strengthen a body of evidence and, conversely, a small effect

TABLE 3 Relationship between strength of evidence of effectiveness and recommendations (reprinted from *Am. J. Prev. Med.*, Vol. 18, No. 1S, Briss PA, et al., Developing an evidence-based Guide to Community Preventive Services—methods, p. 40, Copyright 2000, with permission from *Am. J. Prev. Med.*) (4)

Strength of evidence of effectiveness	Recommendation
Strong	The intervention is recommended on the basis of strong evidence of effectiveness.
Sufficient	The intervention is recommended on the basis of sufficient evidence of effectiveness.
Insufficient evidence	Available studies do not provide sufficient evidence to determine the effectiveness of the intervention.
Sufficient or strong evidence of ineffectiveness or harm	Use of the intervention is discouraged on the basis of sufficient or strong evidence of ineffectiveness or harm.
Insufficient empirical information, supplemented by expert opinion	The intervention is recommended on the basis of expert opinion.

size can weaken a body of evidence. The Task Force also has the option of making a recommendation based solely on expert opinion, but has not done so to date.

The Task Force recommendations incorporate judgments about the applicability of recommendations in various contexts. These judgments are based on (a) a conceptual understanding of the intervention in question; (b) what the research evidence says about the consistency or variability of results of the intervention across different characteristics of the intervention, the population, or the context; and (c) the characteristics of the settings and populations. In most cases, *Community Guide* recommendations have been thought to apply to a wide range of populations and settings, but, at times, recommendations are targeted to a specific context. For example, some interventions to reduce the adverse consequences of diabetes have been recommended for people with type 1 but not type 2 diabetes, or vice versa (24, 25), and “standing orders” to promote vaccinations have been recommended for adults but not for children (4).

Documented harms to health that outweigh benefits will lead to recommendations against use of interventions. Furthermore, because harms are frequently understudied relative to benefits, postulated serious harms that have not yet been adequately studied may lead to recommendations for further research rather than to practice recommendations (even if the intervention has been found to be effective in changing some outcomes). There may also be cases in which an intervention is effective in some populations but harmful to one or more other populations. In such cases, the Task Force may make a more narrowly targeted recommendation than would otherwise be made or may recommend against use of the intervention.

Economic information has not, to date, influenced *Community Guide* recommendations because the availability and quality of data are often limited.

Additionally, different users will bring different values to bear in terms of how and whether economic information should be incorporated into decision making.

Each intervention evaluated in a *Community Guide* systematic review includes information on barriers that have been encountered when implementing interventions. This information is primarily provided for decision makers to consider when selecting interventions and does not typically influence recommendations.

Although *Community Guide* reviews are explicit and systematic, an element of judgment is always involved. The same is true for the development of recommendations. Many Task Force decisions (including, for example, intervention definitions and outcomes used to define success) influence the resulting recommendations. A different group of decision makers could reach different conclusions.

Community Guide systematic reviews identify and assess existing evidence to provide a basis for public health decisions. An important additional benefit of these reviews is identification of areas where the evidence is lacking or is of poor quality. Identifying questions that remain to be answered about a given topic area can help researchers and funding agencies focus their efforts on areas most in need of further study (i.e., research agendas). For each intervention evaluated, whether or not evidence was already sufficient for a recommendation, remaining evidence gaps are identified.

TRANSLATING THE SCIENCE IN THE *COMMUNITY GUIDE* INTO PUBLIC HEALTH ACTION

Theoretical Considerations

The challenges in translating scientific information into meaningful public health programs and policies are substantial. As described elsewhere in this review, the *Community Guide* provides science-based information on what works in public health; it provides relatively little information on how to implement effective interventions. To better understand the “how,” it is useful to identify processes for dissemination or diffusion of effective programs or policies. [No standard definitions of dissemination and diffusion exist in the literature (12). Some authors differentiate between dissemination and diffusion (2), whereas others use the terms synonymously (32). For this article, we typically use the term dissemination and limit the use of the term diffusion to specific discussions of diffusion of innovations theory.] In general, dissemination of clinical guidelines using only passive methods (e.g., publication of consensus statements in professional journals, mass mailings) has resulted in small or no changes in the uptake of new practices (3, 20).

The literature on how to achieve the widespread dissemination of effective population-based health promotion programs is growing (7, 16, 23, 29, 31, 34). Yet the literature is sparse as to whether and how information emanating from systematic reviews might contribute to the diffusion of effective programs. Dissemination of effective programs appears to require a planned and orderly process that supports the maintenance of effective health promotion initiatives (8, 18).

A theoretical basis for the dissemination of *Community Guide* findings might follow from the diffusion of innovations theory (26, 32). In that context, the *Community Guide*'s recommended interventions are the innovation—defined as the idea, practice, or object that is perceived as new (32). According to Rogers (32), the decision to adopt, to accept, and to use an innovation is not an instantaneous act, but a process. As noted in Figure 2, stages in the process might include awareness, adoption, implementation, and maintenance; different strategies might be appropriate for encouraging the use of recommended interventions at each of these stages.

The diffusion of innovations theory also suggests that several characteristics of *Community Guide* recommendations might contribute to the speed or extent of the diffusion of recommended interventions (26). Interventions that are recommended might demonstrate relative advantage (e.g., be more effective than or more cost effective than alternatives being considered); might be communicable (e.g., the intervention and its advantages might be easily and clearly understood); might reduce the time required for adoption (i.e., might reduce the time required for practitioners and policy makers to understand and compare intervention or policy alternatives); and finally, might reduce risk or uncertainty levels by providing extensive information on what has worked elsewhere and how well.

Community Guide recommendations are disseminated by a variety of methods (Figure 2). Activities to promote the use of recommended interventions can be thought of as a series of orderly stages corresponding to activities from innovation development to promoting awareness, adoption, implementation, and maintenance of evidence-based practices (2, 27, 28) (Figure 2). Although it is unlikely that a public health practitioner who is choosing and implementing interventions and policies will have the luxury of time and resources to follow a detailed set of dissemination steps, and actual dissemination is more complex than indicated in this linear model, it is nonetheless helpful to be aware of the components that might lead to effective dissemination depending on the stage of innovation. In the rest of this section, selected examples are described across these stages of dissemination to illustrate adoption of recommended interventions.

Evaluations of and Experience with *Community Guide* Dissemination and Diffusion

Given that the first *Community Guide* findings were published in 1999, evaluation data on any aspect of *Community Guide* dissemination and diffusion are limited. Evaluation efforts to date are summarized below as is selected other information that comes from sources other than formal evaluations.

The rationale for and feasibility of developing a *Community Guide* was assessed with considerable consultation among the Task Force, the staff, and partners from 1996 to the point at which the initial methods and findings were published in 1999. This process of broad consultation and consensus building is thought to have

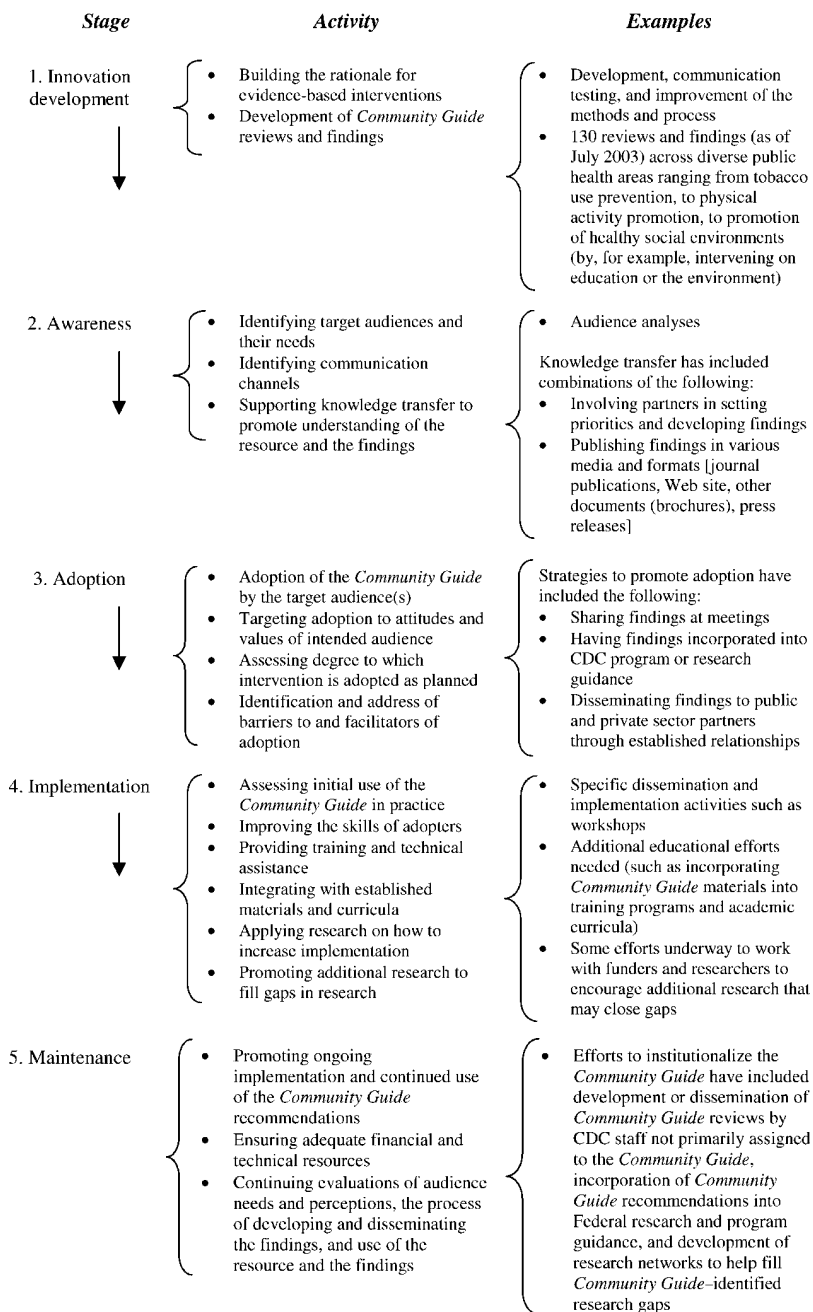


Figure 2 Stages and activities in the dissemination of evidence-based interventions in the *Community Guide*.

contributed to meeting the needs of the *Community Guide*'s diverse stakeholders and therefore setting the stage for widespread dissemination and application.

All *Community Guide* reviews are published together with expert commentaries, which have been useful to identify successes (22) as well as opportunities for improvement (30). In general, the body of this work has reflected positively on the *Community Guide*'s methods, processes, results, and conclusions.

Few formal evaluations of the methods and processes used to develop *Community Guide* reviews and recommendations have been done, but some are beginning to emerge. For example, a systematic review (1) recently evaluated 121 approaches to assessing the quality of individual studies or bodies of scientific evidence. The *Community Guide*'s approach was 1 of 19 that were identified as representing "best practices" for evaluating individual studies and 1 of 7 identified as "best practices" for evaluating bodies of evidence. These "best practice" designations were based on measuring all of a set of quality characteristics that these reviewers considered to be essential.

A formal needs assessment was conducted in 1999 by Mathematica Policy Research (21), which conducted site visits to 10 city and county health departments across the United States. Four programmatic areas were the focus of the Mathematica study: vaccine-preventable diseases, injury prevention, tobacco use prevention, and physical activity. A short interview protocol included a checklist for specific interventions in these four areas and a discussion of the process for prioritizing interventions and barriers to intervention. Overwhelmingly, program directors reported that rigorous information on the effectiveness of an intervention was important in deciding whether to implement it, but they noted that evidence-based recommendations alone will not assure implementation of effective interventions.

In 2000–2001 an "audience analysis" for the *Guide to Clinical Preventive Services* (the *Clinical Guide*) and the *Community Guide* was supported by the Robert Wood Johnson Foundation and conducted by the American College of Preventive Medicine. This evaluation consisted of focus groups and one-on-one interviews with representatives from target audiences. Recommendations from this evaluation included a call for increasing integration between *Clinical Guide* and *Community Guide* dissemination efforts, coupling "what to do" information with "how to" implementation tools, and providing more summary and audience-specific materials (B. Myers, personal communication, July 2003).

A recent evaluation of awareness and adoption of the *Community Guide* sponsored by the Agency of Healthcare Research and Quality (AHRQ) in 2002 revealed that, three years after its initial publication in late 1999, 35% of 1155 directors and instructors involved in graduate medical and public health training self-reported awareness of the *Community Guide*. Although levels of awareness left much to be desired, of those who reported awareness, 93% felt that the *Community Guide* is useful in instruction or practice (B. Myers, personal communication, July 2003).

To build awareness and understanding of evidence-based findings including those from the *Community Guide*, state tobacco control workshops were conducted in six states (Illinois, Indiana, Missouri, Nebraska, New York, and Wisconsin) by

the CDC Office on Smoking and Health in collaboration with the *Community Guide*. Post-workshop evaluations found that the workshops enhanced knowledge and understanding of evidence-based resources available for tobacco control and how these resources could be used at state and local levels (B. Myers, personal communication, July 2003). The workshops were useful for disseminating *Community Guide* findings to a grassroots audience, and the evaluations provided insights into ways to improve the delivery of credible and useful information to state and local public health practitioners. A follow-up evaluation is in progress to see how the *Community Guide* was incorporated into decision making in these communities.

Moreover, in a recent survey of state health departments regarding the adoption of evidence-based interventions to promote physical activity, the influence of the *Community Guide* was documented (R. Brownson, personal communication, July 2003). Based on the information in the *Community Guide*, 22% of respondents reported that existing programs had been changed, and 36% reported that new programs were developed or implemented in accordance with *Community Guide* recommendations.

In addition, anecdotal experiences suggest that *Community Guide* findings have provided information useful in guiding practice or policy. For example, a *Community Guide* review on the effectiveness of lowering the definition of illegal blood alcohol concentrations from 0.10% to 0.08% showed that such a change has typically resulted in a 7% reduction of fatalities associated with alcohol-impaired driving (33). Based on this evidence, the Task Force recommended that policy makers consider enacting this type of law (14). In response to requests from members of the House Appropriations Committee's Transportation Subcommittee for information about the effectiveness of these laws, the National Safety Council summarized the review and provided information to the Subcommittee in the summer of 2000. Based in part on this information, the Transportation Appropriations bill provided incentives in the form of federal highway construction funds for implementing such legislation (6). By the end of 2002, 32 states had passed some form of ".08 law."

Practical Considerations in Applying *Community Guide* Findings

In addition to theory-based considerations regarding dissemination, a number of practical issues should be considered when implementing the findings of the *Community Guide*.

First, the local context for an intervention should be assessed in conjunction with applicability information in the *Community Guide*. This is important because decisions in public health are based on a number of factors including scientific effectiveness, available resources, community priorities, perceived value, and culture (1a, 5, 37). It is important to keep in mind that intervention effectiveness does not necessarily equate with intervention feasibility. For example, a highly effective intervention may call for the use of mass media to promote healthy eating or physical activity. Yet a mass media campaign is expensive and out of budgetary reach for many public health agencies. The converse may also be true: Interventions that

are inexpensive and easy are often ineffective. Local data on risk factors, community priorities, and local resources are essential complements to the information provided in the *Community Guide* for framing this local context for intervention.

A second important consideration for public health practitioners is that a finding of “insufficient evidence” in the *Community Guide* does not imply that the intervention does not work, but merely that the available evidence base was insufficient in quality or quantity to make a determination. About half of the interventions studied thus far in the *Community Guide* have received the designation “insufficient evidence.” Whether a particular intervention has been adequately studied depends on factors such as the recency of its introduction and the priorities of research funders. Thus many promising interventions simply have not been adequately studied. Conceptually important interventions, programs, and policies that have not been sufficiently evaluated should not be ruled out. It is hoped that the *Community Guide*'s recommendation for high-quality research in these areas will be heeded by researchers and funding institutions.

Third, practitioners may benefit from a variety of ready-made tools for program planning, implementation, and evaluation. The purpose of these tools is to provide resources on how to best implement an intervention after a potentially effective program has been chosen from the menu in the *Community Guide*. As one example, the Community Toolbox (<http://ctb.ukans.edu>) is an Internet-based resource for practical, comprehensive, accessible, and user-friendly information on community health promotion (41). Another example of such tools is the Cancer Control PLANET (Plan, Link, Act, and Network with Evidence-Based Tools). This resource is jointly sponsored by the National Cancer Institute, the CDC, the Substance Abuse and Mental Health Services Administration, and the American Cancer Society and links evidence-based recommendations with research-tested intervention materials and other cancer prevention and control resources (<http://cancercontrolplanet.cancer.gov/>).

FUTURE NEEDS

As reviews of topics in the *Community Guide* are completed, the gaps in our understanding of effective methods of dissemination need to be filled. A few examples of critical research and practice needs are:

- a better understanding of how best to speed up the dissemination and adoption of *Community Guide*-recommended interventions, including more knowledge of key barriers in practice settings and of the most useful dissemination strategies for different groups of key users;
- an exploration of whether the tailoring of dissemination strategies to the stage of adoption (i.e., awareness, adoption, implementation, maintenance) is effective;
- more information on the relative importance of scientific evidence in shaping public health decisions among administrators and policymakers, including

ways of moving the role of evidence higher on the list of considerations when making decisions;

- evaluation of the impact(s) of the recommendations emerging from the *Community Guide*, in particular, effects on knowledge, program development, or policy changes;
- a better understanding of how data on costs and cost effectiveness might be used by practitioners to affect decisions about programs and policies;
- an understanding of how and whether systematic reviews might be useful for informing public health practice in non-U.S. contexts; and
- more information on how to communicate findings of insufficient evidence in ways that are understandable, helpful in filling research gaps, and do not discourage needed innovations.

CONCLUSION

Consistent with an increasing premium on using scientific evidence to support health-related program and policy decisions, the *Community Guide*'s systematic review and summarization of current scientific information to inform public health practice and policy are valued by practitioners and decision makers. The *Community Guide*'s methods for reviewing existing evidence also help define the state of public health science, highlighting critical areas for future research to resolve the uncertainties and gaps in knowledge that rigorous review uncovers.

Information alone, however, does not change policies or practices. Additional effort to disseminate findings and encourage their use is still needed. Furthermore, much remains to be learned on how best to disseminate *Community Guide* findings to key target audiences and to encourage the use of the findings to inform practice, policy, and additional research.

The *Community Guide* is not a cookbook that provides "how-to" advice nor is it a one-size-fits-all solution; multiple political, community, resource, and other factors are also important in decision making. The independent, objective view of the science on what works and at what cost is, however, essential to making wise choices about program and policy.

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