A Model to Translate Evidence-Based Interventions Into Community Practice

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There is a tension between 2 alternative approaches to implementing community-based interventions. The evidence-based public health movement emphasizes the scientific basis of prevention by disseminating rigorously evaluated interventions from academic and governmental agencies to local communities. Models used by local health departments to incorporate community input into their planning, such as the community health improvement process (CHIP), emphasize community leadership in identifying health problems and developing and implementing health improvement strategies. Each approach has limitations. Modifying CHIP to formally include consideration of evidence-based interventions in both the planning and evaluation phases leads to an evidence-driven community health improvement process that can serve as a useful framework for uniting the different approaches while emphasizing community ownership, priorities, and wisdom. (*Am J Public Health.* 2012;102:617–624. doi:10.2105/AJPH.2011.300468)

Two approaches to implementing community health improvement interventions are in use, each with strengths and limitations. Research-driven approaches such as evidence-based public health[1] emphasize the scientific basis of prevention by disseminating rigorously evaluated interventions from academic and governmental agencies to local communities. These approaches acknowledge that the efficacy of an intervention in controlled trials frequently does not carry over to wide implementation in communities.[2] Other approaches to incorporating community input into local health department planning, such as the community health improvement process (CHIP),[3] Mobilizing for Action Through Planning and Partnerships,[4] and PRECEDE-PROCEED,[5] emphasize community leadership in identifying high-priority health problems and in developing and implementing health improvement strategies. We designed the evidence-driven community health improvement process (EDCHIP) to unite these different approaches to community health planning, implementation, and evaluation and emphasize community ownership, priorities, and wisdom.

RESEARCH-DRIVEN TRANSLATION MODELS

Traditional methods of research translation rely on academic institutions and governmental agencies at the state and national levels to identify effective interventions and disseminate them to local communities for implementation.[6] The expert knowledge of academic and governmental researchers is considered essential to identifying and assessing health needs in the community and to identifying solutions. In this approach, health improvement strategies are planned for the community by outside experts, and community members are often viewed as research participants or recipients of services. Literature prior to the 1990s failed to reflect the social mechanisms through which communities' attributes influence individual outcomes.[7] Some have argued that this approach hinders communities' ownership, responsibility to create meaningful and effective change, and sense of empowerment.[6]

Others have defined the scope and phases of translation of research into practice very differently.[6,8–11] Sogolow et al. define translation, or diffusion, as the process of moving an innovation (e.g., an evidence-based intervention) into widespread use.[12] Although developed in the context of public health genetics, the framework of Khoury et al. is useful for health improvement.[11] It makes the necessary phases of this process explicit, from discovery to health application to practice guidelines to health practice, and it goes beyond traditional measures of translation to include population health impact.

Research-driven approaches to improving population health, such as evidence-based public health, focus on disseminating, or translating, effective interventions into community settings.[1] Evidence-based public health entails systematically finding, appraising, and using scientific research as the basis for developing sound practices (Figure 1). The knowledge gleaned from this research is used to develop policies and practices that improve health outcomes and performance as well as allow for more efficient use of resources. Policymakers are also provided with a better understanding of the science, ensuring that policy decisions are based on the best information available.

Limitations of research-driven approaches to evidence-based public health arise when fundamental characteristics of the specific community are ignored or not understood and when communities do not feel ownership of health improvement interventions. Research-driven processes may fail to consider community priorities, community assets and challenges, or community commitment, which may jeopardize implementation and sustainability. A model that will ensure a balance between what is efficacious and what will address a community's priorities and capacity is still needed.

HEALTH IMPROVEMENT MODELS INCORPORATING COMMUNITY INPUT

Limitations of the traditional research-driven models and growing recognition of the role of

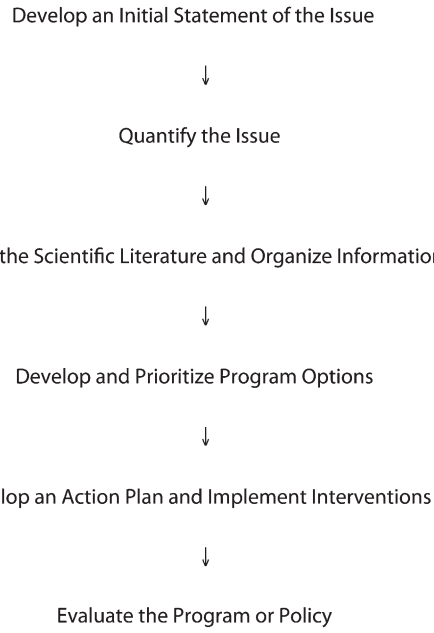

FIGURE 1—Evidence-based public health.

the community itself in determining health outcomes led to recognition of the need for community participation in the health improvement process. Many models used for local health department planning, such as Planned Approach to Community Health,[13] Mobilizing for Action Through Planning and Partnership,[4] and PRECEDE–PROCEED,[5] reflect a greater effort to incorporate community input but were developed before the evidence-based public health movement and do not explicitly emphasize evidence-based interventions. CHIP mentions evidence-based approaches but does not formally incorporate consideration of evidence-based approaches in either of its component cycles, problem identification and prioritization or analysis and implementation, nor does it make explicit a process for incorporating evidence-based approaches.[3]

All of these approaches to community health improvement share notable similarities (Figure 2), with each incorporating planning, implementation, and evaluation. We focus on CHIP, but similar principles apply to all of the models.

Community Health Improvement Process

A 1997 report from the Institute of Medicine (IOM), *Improving Health in the Community: A Role for Performance Monitoring*, outlines CHIP, which provides a systematic approach for how communities can address the numerous health issues that affect their populations.[3] CHIP was not designed as a community-based model for program planning, but instead as a public health institutional planning model. Nonetheless, the IOM suggests that a framework such as CHIP is an effective tool for creating a shared vision for improving the public's health among community stakeholders, and many health departments use it in that way. Unfortunately, because this distinction between a community-based and an institutional model is not recognized, community engagement is often marginal and programs are often mediocre. It is important to make CHIP as explicit as possible so that public health professionals have adequate guidance for implementation.

The IOM separates CHIP into 2 cycles (Figure 3). The problem identification and prioritization cycle has 3 key elements: form a community health coalition, prepare and analyze community health profiles, and identify critical health issues. The analysis and implementation cycle has 7 elements: analyze health issue (with the field model of Evans and Stoddart[14]), inventory resources, develop health improvement strategy, identify accountability, develop indicator set, implement strategy, and monitor process and outcomes. The problem identification and prioritization cycle helps communities determine which health issues they feel need to be addressed. The analysis and implementation cycle outlines how the health issue is to be addressed.[3]

A key feature of the program identification and prioritization cycle is that multidisciplinary involvement of individuals from different sectors of the community is essential to a successful CHIP. Although the IOM emphasizes coalitions specifically, these collaborations may also take the form of health teams, committees, or working groups, according to the needs and infrastructure in each community. Regardless of their structure, collaborations bring together diverse groups with a common agenda, thus providing access to new ideas, materials, and resources and potentially minimizing duplication of services while ensuring that the needs of a community are addressed.[15] Collaborations are particularly important in addressing multifactorial issues such as obesity, injury, and smoking prevention, which have powerful behavioral and social determinants. Collaborations, whether they are driven by professionals or community members, are important vehicles for pooling resources, sharing information and workload, and reducing duplication of effort. In CHIP, the main roles of the collaborative are to

1. obtain and analyze data to inform community decision-making,
2. prioritize critical health issues,
3. support the development of improvement strategies,
4. determine who will carry out this work, and
5. monitor the effectiveness of those carrying out the work and the impact of the strategy on the health issue.[3]

In the CHIP analysis and implementation cycle, the community or collaborative analyzes the health issue to understand the contributing factors and how they operate in the community. The collaborative assesses the inventory of health resources available for health improvement efforts. These assessments drive the development of a health improvement strategy. This strategy (ideally) implements efforts for which evidence of effectiveness is available. Collaboratives establish accountability from members or participating organizations to undertake specific activities that are part of the strategy. A next step is for the

	PATCH	MAPP	PRECEDE-PROCEED	CHIP
PLANNING				**Problem Identification and Prioritization Cycle**
	Mobilizing the Community	Partnership Development/Organize for Success		Form Community Health Coalition
		Assessments	**Assessments**	
		Community Themes and Strengths	Social Assessment	
		Local Public Health System		
		Forces of Change		
	Collecting and Organizing Data	Community Health Status	Epidemiological, Behavioral and Environmental Assessments	Prepare & Analyze Community Health Profiles
	Choosing Health Priorities	Identify Strategic Issues	Educational and Ecological Assessment	Identify Critical Health Issues
		Formulate Goals and Strategies		
IMPLEMENTATION		**Action Cycle**		**Analysis and Implementation Cycle**
				Analyze Health Issue
			Administrative and Policy Assessment / Intervention Alignment	Inventory Resources
	Developing a Comprehensive Intervention Plan			Develop Health Improvement Strategy
				Identify Accountability
				Develop Indicator Set
		Implement	Implementation	Implement Strategy
EVALUATION	Evaluating PATCH	Evaluate	Process Evaluation	Monitor Process and Outcomes
			Impact Evaluation	
			Outcome Evaluation	

Note. CHIP = community health improvement process; MAPP = Mobilizing for Action Through Planning and Partnerships.

FIGURE 2—Models for community health planning, implementation, and evaluation.

collaborative to develop a set of performance indicators to monitor whether the program is being implemented as intended. Once these indicators are established, the collaborative can implement the improvement strategy and monitor both the implementation process and the outcome of the program.[3]

In an ideal world, public health professionals would always develop policies and implement programs on a bedrock of scientific evidence. In our imperfect world, programs and policies often result from short-term demands arising from anecdotal evidence.[1] The IOM recommends that because of limited resources available to communities to develop, implement, and evaluate interventions, priority should be given to improvement strategies for which evidence of effectiveness is available.[3] The IOM suggests that communities seek advice from subject experts to identify and interpret available evidence and design appropriate interventions.[3] The IOM's report *The Future of the Public's Health in the 21st Century* argues that the academic community needs to collaborate with communities to address public health problems because these partnerships reduce gaps in access to information, resources, and skills; increase understanding of community needs and assets; and potentially lead to the development of a process for continual improvement in prevention efforts.[16] CHIP, however, does not explicitly emphasize evidence-based interventions throughout the planning, implementation, and evaluation phases; it may therefore fall short by not providing explicit guidance for how to implement proven programs.

Local Health Department Performance Standards

The Centers for Disease Control and Prevention, the Public Health Accreditation Board, and the National Association of County and City Health Officials have developed performance standards for local health departments to carry out the 10 essential public health services.[17–19] All recommend the use of evidence-based information, or best practices, in the community health planning process as part of essential service 3 (give people information they need to make healthy choices) when implementing health promotion and essential service 10 (contribute to and apply the evidence base of public health) when implementing new or improved processes, programs, or interventions. Only the National Association of County and City Health Officials' operational definition assessment criteria, in discussing essential service 4 (covering the development of CHIP), advises, "Strategies and best practices are selected to increase potential for success."[19] However, little guidance is provided on using evidence-based information.

The Public Health Accreditation Board is developing a national voluntary accreditation program for state, local, territorial, and tribal public health departments.[18] The group has

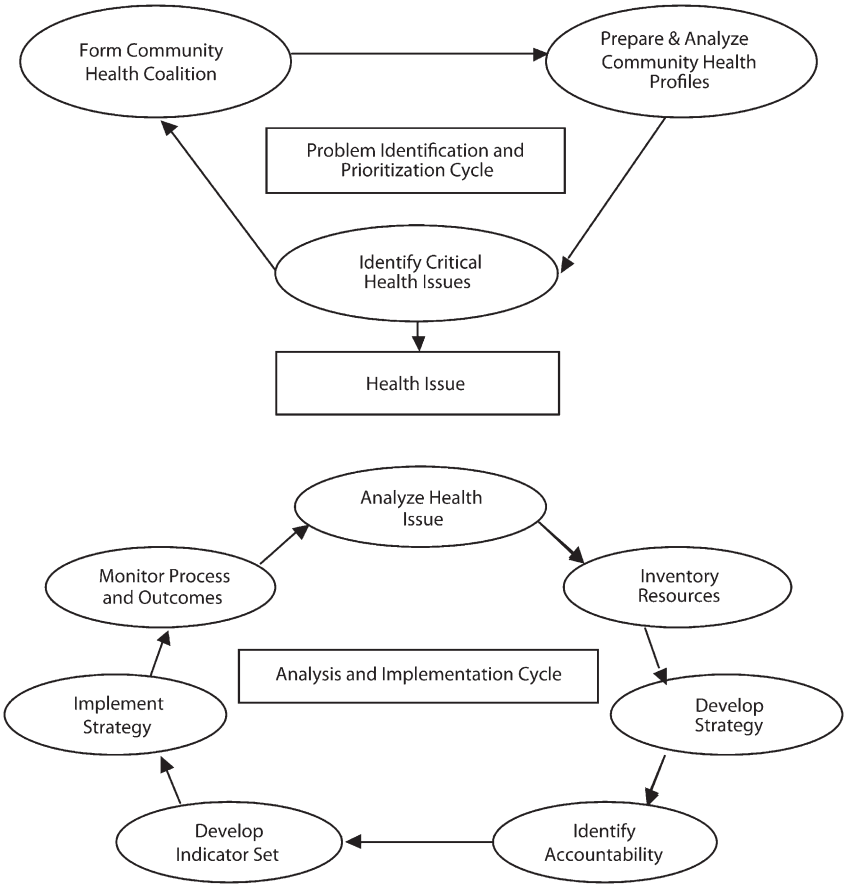

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FIGURE 3—Community health improvement process.

identified standards and their related measures as well as the required documentation for the accreditation process. These standards include the review and use of applicable evidence-based or promising practices and documentation of the source of the practice and how it was implemented. Because a clear process for using evidence-based information is not well integrated into community health improvement planning models, fulfilling this requirement of the voluntary accreditation process will be challenging.

EVIDENCE-DRIVEN COMMUNITY HEALTH IMPROVEMENT PROCESS

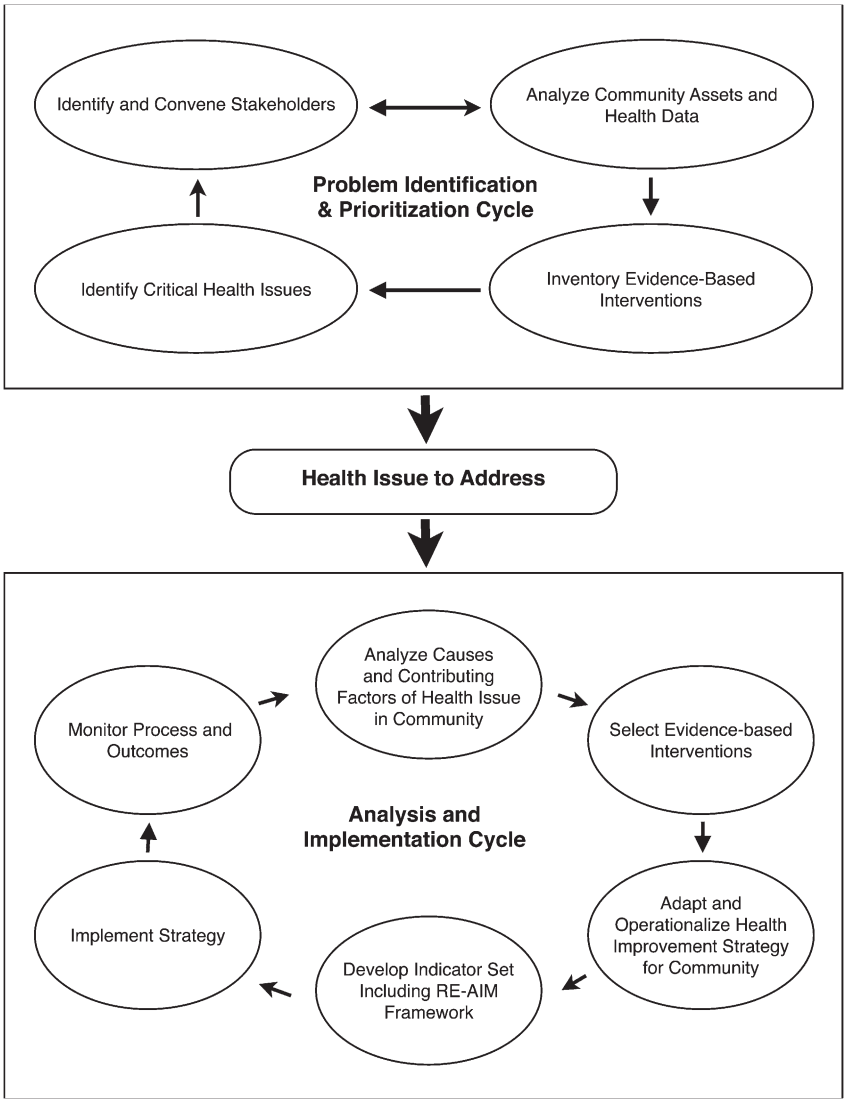
Our modifications of CHIP arose from our experiences of applying the process to communities selecting, adapting, and implementing evidence-based injury prevention programs. EDCHIP is designed to facilitate translation of effective interventions into sustainable programs responsive to community needs. It is a framework for incorporating evidence-based public health into CHIP, which is often used by health departments to incorporate community input into their planning (Figure 4).

To develop EDCHIP, we started with the framework of CHIP. In the analysis and implementation cycle, the description of one step, "develop health improvement strategy," states that "priority should be given to actions for which evidence of effectiveness is available."[3(p9)] The IOM does not include consideration of effectiveness in the problem identification and prioritization cycle, however, or provide a comprehensive framework or process to incorporate consideration of effectiveness throughout CHIP.

To incorporate current thinking on evidence-based public health interventions, our model modifies CHIP's planning and evaluation phases. We incorporate elements of the evidence-based public health framework of Brownson et al.[1] into the planning phase to make explicit the need to search the scientific literature and organize information. In addition, we emphasize communicating to key community stakeholders critical information on community patterns of disease and risk factors and on efficacious interventions identified from the literature. For evaluation, we follow the 1999 reach, effectiveness, adoption, implementation, and maintenance (RE-AIM) model of Glasgow et al.,[20] which has been used in translation research.[21–24] RE-AIM evaluates both the individual and the organizational impacts and processes of the intervention.

Problem Identification and Prioritization Cycle

Identify and convene stakeholders. Collaboration of key stakeholders is an important component in any strategy to improve the health



Note. RE-AIM = 1999 reach, effectiveness, adoption, implementation, and maintenance model.

FIGURE 4—Evidence-driven community health improvement process.

of the community. Collaboration may differ according to the needs and infrastructure in a community, as well as the community's capacity to bring these groups together. One model is a coalition comprising a wide range of representatives of agencies and organizations, as well as concerned citizens. Collaboratives can be long lasting, with long-term agendas to move forward broad initiatives, or they can address a specific health issue and dissolve once their goal is achieved. On the other side of this spectrum are communities that bring together a small number of key partners. These may be individuals who work on multiple health issues in the community, and thus it is not necessary or efficient to develop another community coalition to focus on a specific issue. For example, members of a midsized community wanted to address suicides in their community and convened a broad-based coalition of public health and mental health service agencies, community organizations, schools, and health care providers. A smaller community in the same state that also wanted to reduce suicides recognized that many relevant agencies and organizations were already meeting to discuss alcohol and other drug abuse and therefore decided to integrate suicide prevention efforts into the existing coalition.

During this initial step in the planning process, coalitions should consider the ultimate evaluation of the process. The RE-AIM evaluation framework points out the need to engage partners positioned to maximize reach, adoption, implementation, and maintenance.[20]

Analyze community assets and health data. Events that initiate the planning process vary greatly. Statutory mandates for periodic planning, release of comparative health rankings, and highly publicized health events, for example, can all trigger planning for community health improvement efforts. Although it is tempting to think of the problem identification and prioritization cycle as a linear sequence of events, a community can start at any stage in the cycle, as the developers of the original CHIP model acknowledged.

EDCHIP integrates communities' inventory of their assets into the program identification and prioritization cycle. In this step, communities determine what health issues they want and have the capacity to address. Inventorying assets involves gaining an understanding of the infrastructure to know what elements of the health issue are being addressed by other groups, as well as assessing opportunities to leverage these assets. Local health departments in some communities periodically assess community priorities and strengths; in those cases, information on assets is available to the community coalition throughout the process.

In an example of this process, the agency that received the initial funding for an injury prevention project in a midsized city assessed current programs and services addressing other injury priority areas. On determining that other groups were targeting issues such as motor vehicle crash reduction and falls among older adults, the agency decided to convene the coalition to focus on an injury issue the community as a whole had not previously addressed.

Inventory evidence-based interventions. Communities often review available evidence-based interventions prior to identifying the critical health issue they want to address. Knowing what interventions (programs and policies) are available and feasible to implement facilitates identifying a health area that they will be able to affect. For example, if a community is trying

to make decisions about which health problem to tackle, it may choose an issue for which there are evidence-based strategies that would use existing community assets rather than issues for which evidence-based interventions or required resources are unavailable.

CHIP is iterative, and communities and collaboratives vary widely. In the problem identification and prioritization cycle, some communities may focus on identifying health priorities that take into account community values and the burden associated with various health issues. Those communities may put the identification of evidence-based interventions in the analysis and implementation cycle, closely coupled to the selection of an intervention. In such cases, it is important to consider steps to be taken if no feasible evidence-based interventions are available to address the health priority selected. Few local communities have the resources or interest to develop and rigorously evaluate entirely new interventions. Therefore, if identification of evidence-based interventions is delayed until the analysis and implementation cycle, the community should be prepared to revise or refine the health priority selected in the problem identification and prioritization phase if no feasible and effective interventions are subsequently identified. For example, one coalition struggled with determining an injury priority area to address. Data suggested that injury rates from poisonings, motor vehicle crashes, and all-terrain vehicle accidents were higher in the community than in the general state population. In searching the literature on all 3 problems, coalition members determined that the strongest evidence-based interventions addressed motor vehicle crash injuries, and that finding drove their choice of priority.

Identify critical health priorities. This process is largely the same in EDCHIP as in CHIP. Identification of the critical health issue derives from the health concerns of the community, the data, and the feasibility of implementing an evidence-based intervention.

Analysis and Implementation Cycle

Analyze causes of and contributing factors to health issue in community. Some communities have the resources to do a thorough assessment of causes and contributing factors. Communities may begin assessing these issues in the earlier problem identification and prioritization cycle, but they do not always have the resources or interest to address root causes or to determine the weakest link in the causal chain of a health problem. However, it is important for communities to know what these are so that they are able to understand how their efforts have a broader impact on causality, rather than developing an isolated strategy that is not linked to a root cause.

Select evidence-based interventions. As part of the problem identification and prioritization cycle, communities may take a broad inventory of available evidence-based programs to help them determine the feasibility of affecting a particular health issue. For this component of EDCHIP, communities select evidence-based strategies. Their choice may be influenced by many factors, such as support from coalition members, available funding and other resources, and the community's perception of whether the program or policy will be feasible to implement.

The community that selected motor vehicle crash injuries as its priority decided to work with the Native American reservation in the area to pass a primary-enforcement seat belt law on tribal land because evidence existed for the efficacy of this approach and because the large size of the reservation made the potential impact large as well.

Adapt and operationalize health improvement strategy for community. CHIP directs communities to use the information they collect to develop a health improvement strategy. Although communities may use information acquired in the previous cycle, when they are translating evidence into practice, they often adapt an evidence-based strategy to their community rather than develop a new strategy. As part of this adaptation phase, issues of particular local importance should be considered, including cultural and environmental contexts. As communities work to adapt an evidence-based strategy, it is important to understand the original program's key elements that help define which aspects of the program are adaptable and which are not. These key elements are not always published and may not even be known with certainty by the program developers. Qualitative assessment of the fidelity of the community implementation of the intervention can be helpful, as can careful assessment of program impact.

It is also important to identify resources available to implement the strategy and to decide which agencies and individuals to hold accountable for successful implementation. CHIP's directives to inventory resources and to identify accountability are separate. EDCHIP couples these because when communities determine the basic operations of a program, the resources they identify often guide the decision on whom to hold accountable for carrying through the intervention. For example, the community that worked with tribal leaders on the seat belt law went about passing this policy differently from the process of passing a state law. The coalition approached the tribal governing board council, which cleared the way for the tribal attorney to consider the legal implications. The coalition worked to address the complex issues of enforcement with shared law enforcement from the county and the tribe. Eventually, the state passed its own primary-enforcement seat belt law before the coalition completed this work, so the coalition refocused its efforts on tracking seat belt use rates throughout the whole county, including the tribal land.

Develop indicator set with RE-AIM framework. EDCHIP encourages developing indicators to measure the translation of research into practice. The RE-AIM framework is useful for understanding what elements of the translation process should be evaluated.[20] The elements of the framework are

- Reach: number, proportion, and representativeness of individuals who participate in an intervention;
- Efficacy–effectiveness: impact of an intervention on important outcomes;
- Adoption: the number, proportion, and representativeness of organizations, settings, and people who participate;
- Implementation: at the organizational level, fidelity to the various elements of an intervention's protocol, and at the individual level, participants' use of the intervention strategies;
- Maintenance: at the organizational level, extent to which an intervention becomes institutionalized as part of routine practices and policies, and at the individual level, long-term effects of a program on participant outcomes.

Reach and effectiveness are indicators derived from the impact of the program

on the people being served. Adoption, implementation, and maintenance are dimensions that can assess organizational processes for implementing the program.[25] A community working to translate a falls prevention research project into community practice, for example, wants to assess both its effectiveness for the individuals the program is serving and the broader effects the program will have on involved organizations and the community to determine whether the program is sustainable. To accomplish this, the community collects data not only on fall-related measures, but also on community awareness about fall prevention programs, the proportion and representativeness of program participants, and key measures related to program fidelity.

Implement strategy. For this component, CHIP and EDCHIP have no major differences.

Monitor process and outcomes. Like CHIP, EDCHIP emphasizes monitoring the process and outcomes of the improvement strategy. EDCHIP's use of the RE-AIM framework enables communities to inform the public health community about lessons learned for the broad dissemination of specific interventions. In other words, data on dissemination of a program can be analyzed and shared, so that others learn, among other important considerations, which elements of a program work well in one community but not another. Communities can also use these data to report on what changes they had to make in adapting the program to their community and the implications of those changes on performance monitoring and outcomes. Finally, data on EDCHIP indicators will inform the broader scientific community about the processes for translating research to practice. These data could help researchers identify similar processes across communities and different interventions that are critical to the successful translation of evidence into practice.

CONCLUSIONS

Our modified model, EDCHIP, will help communities plan, implement, and evaluate effective evidence-based interventions that are responsive to community needs and priorities. It is also a framework for incorporating community input into translational research through community–academic partnerships and local–state partnerships. Community groups and funding agencies continue to expect that the work they are doing or paying for will make a difference. Resources such as the Guide to Community Preventive Services[26] and the Substance Abuse and Mental Health Services Administration's National Registry of Evidence-Based Programs and Practices[27] provide valuable information on evidence-based resources for these community groups. EDCHIP provides additional information on the process of moving this information into practice, thereby ensuring that the work being done to address community priorities will result in improved health outcomes for community members.

EDCHIP's modifications to CHIP's planning and evaluation phases provide an explicit framework for using evidence-based public health interventions in community health improvement and evaluating their translational impact. EDCHIP unites evidence-based public health approaches with planning approaches incorporating community input and has the potential to facilitate translation of effective interventions into successful, sustainable programs that are responsive to community needs and priorities. To realize this potential, however, communities must have the diverse skills and resources needed to implement the process, such as developing a community coalition; assessing community health status; identifying local priorities; finding relevant, evidence-based interventions from the literature that would be feasible and acceptable within the community; implementing an intervention successfully; and evaluating its impact. In many communities, developing or refining these skills and resources will require building local capacity. Fortunately, EDCHIP not only provides a systems framework for translating evidence-based interventions into community programs, but also describes the skills and the capacity building that are required. ■

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P. M. Layde developed the initial EDCHIP model, with revision suggestions by A. L. Christiansen, D. J. Peterson, and C. E. Guse. A. L. Christiansen added the community examples used to illustrate the model. D. J. Peterson and T. Brandenburg added material on the public health standards. C. A. Maurana assisted with writing the introductory and background information. All authors contributed to the final editing of the article.

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This project was reviewed and approved as exempt by the Medical College of Wisconsin's Human Research Protection Program institutional review board.

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