

# Reconsidering Community-Based Health Promotion: Promise, Performance, and Potential

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Contemporary public health emphasizes a community-based approach to health promotion and disease prevention. The evidence from the past 20 years indicates, however, that many community-based programs have had only modest impact, with the notable exception of a number of HIV prevention programs.

To better understand the reasons for these outcomes, we conducted a systematic literature review of 32 community-based prevention programs. Reasons for poor performance include methodological challenges to study design and evaluation, concurrent secular trends, smaller-than-expected effect sizes, limitations of the interventions, and limitations of theories used.

The effectiveness of HIV programs appears to be related in part to extensive formative research and an emphasis on changing social norms. (*Am J Public Health*. 2003; 93:557–574)

Current trends in the field of health promotion emphasize community-based programs employing multiple interventions as the main strategy for achieving population-level change in risk behaviors and health. This focus on a community- and population-based approach has evolved steadily over the past several decades, representing a shift in emphasis from individually focused explanations of health behavior to ones that also encompass social and environmental influences, as reflected in ecological models of health. Ecological models are based on the premise that an individual’s behavior is shaped by a dynamic interaction with the social environment, which includes influences at the interpersonal, organizational, community, and policy levels.<sup>1,2</sup>

The notion of community participation and ownership also is integral to community-based health promotion models considered essential for generating community support and capacity for engaging in prevention activities.<sup>3–5</sup> The community-based model is reflected in numerous prevention programs funded by both federal health agencies and private foundations that have targeted entire communities for intervention.<sup>6</sup> The prominence of the multilevel population approach to health promotion is exemplified by the Task Force on Community Preventive Services, established by the Centers for Disease Control and Prevention (CDC) in collabora-

tion with other federal health agencies, which recommends a focus on community-based prevention and control strategies.<sup>7</sup> The Institute of Medicine’s Committee on Capitalizing on Social Science and Behavioral Research to Improve the Public’s Health recently endorsed a similar perspective, emphasizing a social environmental approach to health promotion interventions.<sup>8</sup>

Despite the emphasis on community health promotion, much remains to be understood regarding the determinants and processes of population-level change.<sup>9,10</sup> Although community participation and multilevel ecological models provide useful frameworks for addressing community health issues, there is a need for improved understanding of the precise ways in which these models are operationalized and influence program outcomes. Given the importance of community prevention efforts to public health practice and policy, obtaining scientifically based evidence of the most effective ways of stimulating community change is essential for planning the next generation of health promotion programs and for advancing the nation’s prevention agenda.

The significance of such inquiry is underscored by the evidence to date suggesting that health promotion programs employing community coalitions have limited impact on community health status.<sup>6,11</sup> Evaluations of well-designed, large-scale, community-based

prevention trials indicate that, in general, these programs have produced only modest effects in changing population risk behaviors.<sup>12–20</sup>

These findings stand in contrast to those of a number of HIV prevention programs, which show significant community-level change in safe sex and at-risk drug behaviors.<sup>21–23</sup>

In this article, using a systematic literature review of interventions implemented over the past 2 decades in the United States, we explore a number of issues to aid in understanding the limits and potential of community health promotion programs. An examination of the cumulative evidence across a variety of community health promotion interventions can lead to better comprehension of the interplay of factors related to study design, evaluation methods, programmatic strategies, and contextual factors, all of which influence the outcomes and effectiveness of community-based health promotion efforts. The main purpose of the study is to assess what has been learned to date regarding the contributions of community-based interventions to public health, with an overall goal of providing insight into the nature of community change, as both a process and an outcome of health promotion efforts.

We address:

1. What are the reasons for the modest impact of many community-based prevention programs?
2. To what extent have programs implemented an ecological approach, targeting change in the social environment as well as at the individual level?
3. What magnitude of effects can be expected from community health promotion programs?
4. Is community participation related to the overall effectiveness of a program?
5. Why have community HIV prevention interventions shown apparent greater success than cardiovascular disease prevention programs?

Our study provides a unique compendium of community-based interventions across a variety of health issues, including cardiovascular disease, cancer, HIV, and substance use prevention. Although the review is not exhaustive, it captures major community interventions in these areas, allowing for a more comprehensive assessment of the impact of community-level programs. In addition, we assess the role of community participation and collaboration and examine programs across multiple levels of intervention.

## METHODS

Three primary on-line reference databases were used to conduct the literature search for this project: Medline, PubMed, and Health-CommKey. The initial phase of the search began with the following broad categories, entered as keywords: “community-based intervention,” “population-based” combined with “health promotion,” “community-based” combined with “health promotion,” “community level intervention,” “community health promotion,” and “community capacity.” In addition, searches were conducted on the basis of the following public health topics combined with “community-based,” “community-level,” and “population-based”: cardiovascular disease prevention, HIV prevention, cancer prevention, and alcohol- and drug-use prevention. Interventions were selected from the results of these initial queries. A further search then was conducted for each intervention by program name and health issue addressed.

Programs derived from the search described above were selected for inclusion in this study on the basis of the following criteria. First, the analysis was limited to programs conducted in the United States since 1980. Articles published from 1980 to 2001 were selected for review. Second, the program had to target communities as opposed to select groups of individuals or limited settings; interventions that took place entirely within schools or workplaces were not included. The accepted definition of community was broad; it included geography, age, gender, sexual orientation, and racial/ethnic background. Inclusion also was restricted to programs that had some form of published outcome evaluation.

Table 1 identifies the 11 HIV-related projects and 21 other projects selected for analysis. It should be noted that the selection methodology biases the analysis toward findings from the published literature, favoring studies with positive results and excluding several major community interventions that have not yet published outcome reports. In addition, important information regarding the process of program development and implementation often was unavailable from the published literature.

Information from the published articles derived from our search was abstracted into a computer spreadsheet, classified across over 30 dimensions. Categories assessed included the following: study design; unit of analysis; number of units in each study arm; target population and subpopulations; definition of community; community size and demographics; urban/suburban/rural character of community; theories used; description of intervention activities; levels of intervention targeted; length of intervention; presence of community coalition and partnerships; nature of community involvement; process evaluation findings; observed baseline differences with the comparison community; outcome measures; program participation rates; participants lost to follow-up; and effects on mediating and outcome variables.

## COMMUNITY-BASED APPROACH TO HEALTH PROMOTION

Community-based health promotion represents a conceptual framework emphasizing primary prevention and a population-based perspective. According to Blackburn,<sup>81</sup> community-based prevention programs are integrated and comprehensive, not limited to medical care settings, and systematically involve community leaders, social networks, mass communication campaigns, and direct education of the general population. Community-based programs use multiple interventions, targeting change among individuals, groups, and organizations, and they often incorporate strategies to create policy and environmental changes.<sup>82</sup> Key elements of community-based health promotion programs include the following: mobilizing communities to actively participate in achieving pro-

gram goals; implementing interventions in multiple community settings, including workplaces, places of worship, health care facilities, and schools; using multiple individual-level intervention strategies, including contests and competitions, self-help programs, mass media, and screening programs; and developing environmental interventions (restaurant menu marking, supermarket shelf labeling for heart-healthy foods, and policy initiatives).<sup>83</sup>

Community-based prevention programs stem from efforts beginning in the 1960s to reduce the high rates of cardiovascular disease found in the United States and other industrialized countries. The early programs generally were based on a medical model, focusing on the identification and treatment of high-risk individuals.<sup>20,81</sup> However, recognition of behavioral influences on health also was emerging at that time as a result of epidemiological evidence presented by the Framingham Heart Study and the Surgeon General’s Report on Smoking.<sup>84</sup> Beginning in the 1970s, a new approach to cardiovascular disease prevention was pioneered in the North Karelia Project in Finland<sup>85,86</sup> and the Stanford Three-Community Study in the United States.<sup>81</sup> These programs targeted entire communities and applied social science theory to the development of multiple interventions designed to modify individual behaviors and change the social environment in which behaviors are shaped.

The North Karelia and the Stanford studies provided the model for 3 seminal National Heart, Lung, and Blood Institute (NHLBI)–funded community-based prevention trials implemented in the 1980s. These programs were based on the premise that a primary prevention and public health perspective had greater potential than did a clinical focus to change underlying behavioral and social factors influencing population health.<sup>20</sup> The 3 NHLBI demonstration projects—the Stanford Five-City Project, the Minnesota Heart Health Program, and the Pawtucket Heart Health Program—were rigorously designed and well-funded experiments testing the effectiveness of comprehensive, communitywide health education interventions in reducing the risk of cardiovascular disease at a population level.<sup>87</sup>

**TABLE 1—Project Intervention Strategies and Nature of Community Participation**

Project	Individual-Level Interventions	Group-Level Interventions	Community-Level Interventions	Community Board	Community Involvement in Issue Selection	Community Involvement in Program Development	Community Involvement in Program Implementation
<b>Cardiovascular disease</b>							
Minnesota Heart Health Program <sup>16,24–27</sup>	Screening; adult education programs; smoking cessation and weight loss programs; school-based education programs	Health care provider training	Mass media campaigns; targeting workplace smoking policies; restaurant menu labeling; supermarket shelf labeling; community advisory board and partnerships with schools, worksites, local leaders	Yes	No	Yes	Yes
Pawtucket Heart Health Program <sup>28–35</sup>	Adult education programs; self-help materials; screening, counseling and referral events (SCORES); small media messages	Lay volunteers to help deliver interventions	Restaurant menu labeling; supermarket shelf labeling; food providers and worksite cafeterias to offer heart-healthy menus; installation of exercise facilities; communitywide contests; mass media	No	No	No	No
South Carolina Heart to Heart <sup>36</sup>	Presentations and classes in multiple settings; small media messages	Lay volunteers; health care provider education	Restaurant menu labeling; walking trails; communitywide contests and campaigns to engage in fitness activities; mass media; community advisory board and partnerships with service agencies	Yes	No	Yes	Yes
Stanford Five-City Project <sup>10,37–42</sup>	Direct education; school-based programs; self-help materials	Health care provider education	Mass education campaigns; use of mass media; partnerships with schools, service agencies	No	No	No	Yes
<b>Smoking prevention</b>							
Community Intervention Trial for Smoking Cessation (COMMIT) <sup>9,43–48</sup>	Public education via media and communitywide events; self-help materials	Lay volunteers; health care provider training	Promote worksite smoking policies; communitywide contests; public education via media and communitywide events	Yes	No	No	Yes
Neighbors for a Smoke Free North Side <sup>49</sup>	Smoking cessation classes; door-to-door campaigns	Community Wellness Councils (lay volunteers)	Billboards; events; community advisory board and partnerships with community organizations, businesses, and service agencies	Yes	No	Yes	Yes
Project ASSIST <sup>50</sup>	None	None	State and local coalitions to change tobacco policy through media advocacy of tobacco control laws and regulations, increased demand for cessation services; community advisory board	Yes	No	Not discussed	Not discussed

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TABLE 1—Continued

Tobacco Policy Options for Prevention (TPOP) <sup>51</sup>	Presentations	Lay program leaders	Promote local ordinances to limit youth tobacco use; enforcement of ordinances; media campaigns; community advisory board	Yes	No	Yes	Yes
Massachusetts Tobacco Control <sup>52,53</sup>	Smoking cessation services	Youth leadership programs	Mass media campaign; promotion of local policies and laws regarding tobacco control	Not discussed	Not discussed	Not discussed	Not discussed
<b>Cancer prevention</b>							
5-A-Day Program: MD <sup>54</sup> ; NC churches <sup>55</sup> ; CA <sup>56</sup>	Varied across projects: classes, printed materials, computer tailored messages	Peer counselors and lay health advisors; contests; church events	Media campaigns; supermarket programs; enhanced WIC coupon program; community coalitions; victory gardens; point of purchase information; community advisory board (NC); partnerships with stores (all) and churches (NC)	MD: No NC: Yes CA: Yes	No No No	No Yes Not discussed	No Yes discussed
<b>Substance abuse</b>							
Community Partnership Program (CSAP) <sup>57</sup>	Parent training; employment programs; printed material; youth education programs	School and cultural events; alternative recreational programs for youth; family training programs; workplace programs	Formation of community partnerships; mobilization and training of community volunteers; coordination among social service agencies; organization of neighborhood watches; media campaigns; communitywide events; neighborhood cleanups of drug houses; mobilizing citizens to change laws and policies	Yes	Yes (within broad area of substance abuse)	Yes	Yes
Midwestern Prevention Project <sup>58,59</sup>	Skills-building sessions	Homework with family	Mass media coverage; partnerships with schools and TV stations	Not discussed	No	Not discussed	Yes
Project Freedom <sup>60</sup>	None	None	Community coalitions; community advisory board; partnerships with schools, government, local agencies	Yes	No	Yes	Yes
Project Northland <sup>61,62</sup>	Classroom educational sessions; printed materials	Homework with family and printed materials for parents; alcohol-free youth activities developed by peer leaders and groups	Community task forces to work on local ordinances and resolutions; business discounts to drug-free students; partnerships with schools	Yes	No	Yes	Yes
Fighting Back <sup>63-65</sup>	Examples: youth self-esteem programs; after-school programs; youth mentoring; youth job referral; dropout prevention; treatment services	Examples: parenting classes; workplace programs; training of health professionals	Examples: community organizing; community policing; neighborhood drug cleanups; increasing alcohol tax; banning Sunday liquor sales; limiting youth access to alcohol	Yes	Yes (within substance abuse)	Yes	Yes

Continued

TABLE 1—Continued

Other health issues							
CINCH (child immunization) <sup>66</sup>	Parent education; free transportation to clinics	Distribution of materials by numerous community institutions; provider training	Community coalitions to develop and implement interventions; media and public education campaigns; expansion of clinic hours and other delivery system changes; program linkages; community advisory board; partnerships with service agencies, religious, civil organizations	Yes	No	Yes	Yes
Healthy Start (infant mortality) <sup>67,68</sup>	Varied across projects: outreach; case management; health education	Enhanced clinical services; peer education	Public information campaigns; community consortia; provider linkages; community advisory board; coalitions with community service providers, businesses, government	Yes	Yes (within broad area of infant mortality)	Yes	Yes
Seattle Minority Youth Health Project (various adolescent health issues) <sup>69</sup>	Workshops and educational programs	Peer leadership; programs for parents	Community action boards; community events; partnerships with community organizations	Yes	No	Yes	Yes
Kaiser Community Health Promotion Grants Program (various health issues) <sup>70,71</sup>	Varied across projects: skills training; educational programs; community health screenings	Educational programs for peers and parents; peer counseling; drug-free social events; peer leadership groups; church-based initiatives	Community advisory board; community coalitions; media and community awareness campaigns; education in grocery stores; tobacco sting operations; passage of local ordinances; home modification for safety; advocacy; changes in school curricula; resource centers; mini-grants	Yes	Yes	Yes	Yes
HIV prevention							
AIDS Community Demonstration Projects (Dallas, Denver, Long Beach, New York, Seattle) <sup>72,73</sup>	Distribution of educational materials in community; role model messages delivered by peer street intercepts; store-front intervention services; use of role model stories	Use of trained peer networks and nonpeer interactors to deliver intervention	Change in community norms through mobilization of community members to accept, distribute, and reinforce prevention messages; increased availability of condoms and bleach kits; small media messages; partnerships with peers, local businesses, service providers	Not discussed	No	Yes	Yes
3-city and 8-city studies <sup>74,75</sup>	Risk reduction messages delivered in gay bars by opinion leaders	Use of trained opinion leaders to deliver messages	Change in community norms through mobilization of opinion leaders to endorse prevention messages; partnerships with bars	No	No	No	Yes
Focus on Kids <sup>76</sup>	Weekly small-group educational sessions focusing on decisionmaking skills	Recruitment of friends to join program	Community advisory board; partnerships with youth service programs, housing organizations, government	Yes	No	Yes	Yes

Continued

TABLE 1—Continued

Women in housing developments project <sup>77</sup>	Workshops conducted by opinion leaders	Use of opinion leaders to deliver messages	Creation of Women's Health Councils to plan and conduct community events; distribution of printed materials	Yes	No	Yes	Yes
Mpowerment Project <sup>78</sup>	Formal and informal education by peer outreach workers in community; small-group education	Use of trained peers to deliver messages	Creating social activities for young gay men; public information campaign; community advisory board	Yes	No	Yes	Yes
Women and Infants Demonstration Projects <sup>79,80</sup>	Education by peer outreach workers in community; peer-led workshops; use of role model stories	Use of network of peers and community leaders to deliver messages	Distribution of role model stories and educational materials throughout community; partnerships with community organizations and businesses as distribution sites; community advisory board	Yes	No	Yes	Yes

Note. MD = Maryland; NC = North Carolina; CA = California; WIC = Special Supplemental Nutrition Program for Women, Infants, and Children; CSAP = Center for Substance Abuse Prevention.

The CDC adopted the community-based approach beginning in the mid-1980s with the Planned Approach to Community Health (PATCH) and Community Chronic Disease Prevention programs, which focused on creating volunteer community networks to engage in health promotion activities.<sup>88</sup> In the 1990s, the CDC extended comprehensive community planning to HIV prevention.<sup>72,89</sup> By the end of the 1990s, the focus on individual “lifestyle” behaviors as the nation’s main prevention strategy was on the wane in the field of health promotion, as emphasis shifted to a social-ecological paradigm and the active involvement of communities as a means of changing the social environment.<sup>90</sup>

The rationale for community-based health promotion is the notion that individuals cannot be considered separately from their social milieu and context and that programs incorporating multiple interventions extending beyond the individual level have the potential to be more successful in changing behaviors.<sup>17,82</sup> The epidemiological foundation is the work of Geoffrey Rose, who demonstrated the principle that a large number of people exposed to a low risk can result in many more cases than a small number of people exposed to a high risk.<sup>91</sup> Rose argued that a “population strategy” of prevention is more effective than a “high risk strategy,” because even a small shift at the peak of a risk curve can have siz-

able population effects.<sup>92(p101)</sup> Thus, the population strategy provides the basis for targeting entire communities, including individuals at low levels of risk, as the best means of achieving a public health impact on rates of disease.

### WHY THE MODEST IMPACT?

Despite their strong design and conceptual foundation, the major community-based cardiovascular disease prevention programs conducted in the 1980s resulted in limited population-level change in health behaviors and health status outcomes. For example, the Minnesota Heart Health Program detected no differences between intervention and comparison communities for a number of outcomes, including mean blood cholesterol levels, smoking prevalence among men (a small treatment effect was noted among women), blood pressure, body mass index, and risk of coronary heart disease. An intervention effect was noted for increased physical activity.<sup>16</sup>

The Pawtucket Heart Health Program detected no consistent, measurable differences in physical activity between the intervention and comparison communities.<sup>28</sup> No intervention effects were observed for cholesterol levels, blood pressure, or body mass index; in fact, prevalence of these risk factors increased. Although prevalence of smoking declined in Pawtucket, the change was not sig-

nificantly greater than the decrease in the comparison city. A small but significant reduced risk of cardiovascular disease was found in Pawtucket during the peak intervention period, but this effect disappeared by 3 years postintervention.<sup>29</sup>

A number of small but significant intervention effects were noted in the Stanford Five-City Project, outpacing similar positive changes in the comparison communities.<sup>10</sup> However, no treatment effect was observed for weight-related variables<sup>37</sup>; improvements in smoking and overall heart disease risk were limited to longitudinal cohort samples and were not maintained at a community level.<sup>38</sup>

The main findings of the Community Intervention Trial for Smoking Cessation (COMMIT) indicated that the program had an impact on light to moderate smokers but did not change the smoking behavior of heavy smokers, the primary target population.<sup>43</sup> In addition, intervention effects detected in cohort samples were not replicated in communitywide cross-sectional samples.<sup>44</sup>

Similarly modest findings were noted for several other community-based cardiovascular disease prevention programs.<sup>18</sup> Reviews including cardiovascular disease prevention programs in other industrialized countries also show small impacts at a population level.<sup>17,93</sup> Programs designed to increase com-

munity levels of physical activity through environmental changes such as creating bicycle paths have also not met with much success.<sup>94</sup> Community-based intervention programs also have not demonstrated substantial program effects in a number of other health areas, including substance use,<sup>57,63,64</sup> infant mortality,<sup>67</sup> a variety of chronic diseases,<sup>70</sup> and adolescent health.<sup>69</sup>

A number of reasons have been offered to explain the lack of strong intervention effects for community prevention programs. Explanations found in the literature generally fall into the following areas: (1) methodological issues; (2) the influence of secular trends; (3) smaller-than-expected effect sizes; (4) limitations of the interventions; and (5) limitations of theory. We examine each of these reasons below, incorporating evidence from the 21 studies reviewed that dealt with prevention of cardiovascular and other chronic diseases, substance abuse, and promotion of child health. These explanations are not mutually exclusive, and no single rationale emerges as dominant or most credible. Taken together, they illustrate the difficulty in evaluating community-based prevention interventions and in achieving a population-level impact.

### Methodological Issues

*Low statistical power.* Because community-based prevention programs are designed to test differences between communities, the appropriate unit of assignment and analysis in such comparisons is the community. Logistical, financial, and political issues, however, limit the number of areas that can participate in a given intervention and evaluation. Thus, the lower statistical power obtained as a result of the small number of communities composing the sample is a major challenge to evaluating the impact of community interventions.<sup>24,95</sup> Some evaluators recommend that at least 10 communities per study condition are needed to obtain sufficient statistical power to detect differences.<sup>95,96</sup>

Power computations are challenged further by the difficulty in obtaining reliable estimates of community-level variance on behavioral outcomes.<sup>15</sup> Complicating the statistical picture is the need to use special analytical techniques to take into account the nested nature of individual observations taken within

communities and changes in independent variables over time.<sup>15,95,97</sup> In addition, given the small effect sizes obtained in most studies, one would need much larger sample sizes to obtain sufficient statistical power to detect differences.<sup>98</sup> For example, power calculations for the main NHLBI-funded cardiovascular trials were based on an estimated 10% to 20% difference between communities, a much higher value than the effects actually obtained.<sup>87</sup>

Although low statistical power clearly has contributed to the difficulty in detecting differences between communities, it should be noted that COMMIT used 11 community pairs, thus providing substantial statistical power,<sup>43</sup> and a pooled analysis of the results from the Minnesota, Pawtucket, and Stanford Five-City programs did not show strong program effects.<sup>87</sup> In addition, several studies employed sophisticated analytical techniques and still found few sustained intervention effects.<sup>43,63,99,100</sup>

*Design and sampling issues.* Although the randomized controlled trial is considered the strongest evaluation strategy for establishing causality, among the National Institutes of Health (NIH) cardiovascular disease-related studies, only COMMIT employed this design. Other programs with random assignment of communities or other clusters included 2 youth alcohol use prevention programs,<sup>58,61</sup> a tobacco prevention program,<sup>51</sup> and several projects promoting consumption of fresh fruits and vegetables.<sup>55,101,102</sup> For the most part, the remaining programs we reviewed employed a quasi-experimental design with matched comparison communities.

One of the main challenges with the quasi-experimental design is the possibility of biased outcomes owing to selection effects among participants. Of the prevention studies reviewed that provided information regarding baseline measures of outcome variables for the intervention and comparison communities, most reported no risk factor differences at baseline, although many found demographic differences.<sup>16,30,36,59,63,67,71,78,103</sup> Interestingly, 2 studies employing randomized designs detected important baseline differences between intervention and control groups.<sup>45,61</sup> Given the lack of strong effects noted in most programs, use of a nonrandomized design does not appear to have presented a major

challenge to the overall internal validity of the studies.

Even randomized designs, however, present special challenges for community trials in which the number of units of assignment is low and biasing influences—including differential selection, history, and contamination—may still be present across communities, given the real-world context of these programs.<sup>15,97</sup> Regardless of whether an experimental or quasi-experimental design is employed, identification of communities with comparable characteristics is difficult to achieve,<sup>104</sup> especially given the complexity of communities as social units and the limited ability to obtain accurate and complete measures of the environmental influences that can affect program outcomes.

Another issue affecting sample bias, as well as statistical power, is the nature of the sampling strategy used to measure community change. The COMMIT, Stanford Five-City, Minnesota, and Pawtucket studies used both longitudinal cohorts to measure individual change over time and serial community cross-sectional samples to determine population-level change. Although each approach is valid for examining program effects at the individual and community levels, respectively,<sup>95,97</sup> cohort samples typically suffer from high dropout rates, limiting representativeness, whereas cross-sectional samples have large sampling errors and include new residents who were unexposed to the intervention, attenuating the ability to detect program effects. As noted above, program effects for these studies frequently were limited to the cohort samples. Although this finding may reflect the tendency of the most motivated individuals to continue participation in ongoing surveys, it also demonstrates the difficulty of measuring population-level change.

### The Influence of Secular Trends

There is broad consensus that changes in societal attitudes and behaviors were a major force limiting the impact of the NIH cardiovascular disease and smoking prevention trials. Thus, during the late 1970s and 1980s, while community interventions were implementing activities designed to reduce at-risk behaviors, a general shift also was occurring in US society regarding attitudes toward diet,

exercise, and smoking, resulting in significant changes in comparison communities as well. For example, initial intervention effects on risk factors were erased by similar trends in comparison communities by the end of the Minnesota Heart Health Program.<sup>16</sup> In the Stanford Five-City Project, improvements in cardiovascular risk knowledge were found in all communities along with decreases in smoking, whereas body mass index increased everywhere, also reflecting the national trend.<sup>39</sup>

Changes in smoking attitudes and behaviors were found in both experimental and control communities in the COMMIT trial,<sup>44</sup> and program effects were larger when control communities experienced relatively small declines in smoking prevalence.<sup>46</sup>

Although secular trends were anticipated, investigators were surprised by their size and strength,<sup>10,15,87</sup> which exceeded the hypothesized program effect size in the Minnesota project.<sup>16</sup> At the same time, given the close proximity of some intervention and comparison communities, it is possible that outcomes were contaminated by diffusion of program activities.<sup>8(p287)</sup>

### Magnitude of Effects

The modest impact obtained across most community health programs raises the question of what level and kind of effect can be anticipated. As noted by Fishbein,<sup>98</sup> the evidence strongly suggests that community-based program effects will be much smaller than the 20% to 30% typically expected from health interventions. These smaller effect sizes have made detection of differences more difficult because of the resulting reduction in statistical power for the calculated sample sizes. Furthermore, outcome measures often are defined as complete avoidance of a risk behavior, thus ignoring less absolute reductions.<sup>98</sup>

Review of outcomes obtained in health promotion programs indicates that many changes were of a magnitude of less than 5% and generally were no larger than around 15%. For example, smoking declined by 1.25% to 1.28% per year in the Stanford Five-City intervention communities.<sup>38</sup> A similar smoking effect was observed for the Minnesota Heart Health Program.<sup>25</sup> The quit rate in the COMMIT intervention communities was 1.8%,<sup>44</sup>

and smoking declined by 2.1% in the Heart to Heart intervention group.<sup>36</sup> Smoking decreased in Pawtucket by 8.9% and by 8.2% in the comparison city.<sup>29</sup> The California 5 a Day program found that fruit and vegetable consumption increased by 1.3% per year in the state.<sup>56</sup> Project Freedom obtained a 13% decrease in regular alcohol use among high school seniors in the intervention schools,<sup>60</sup> while the Midwestern Prevention Project reduced past-month alcohol use by 4%.<sup>58</sup> The effect on drug use among males was about 3% lower in Center for Substance Abuse Prevention (CSAP) intervention communities than in comparison sites.<sup>57</sup> Infant mortality decreased by an average 2.8% per year in Healthy Start communities.<sup>67</sup> These examples indicate that relatively small effects are to be expected from community-level programs, due in part, perhaps, to the less intensive nature of these kinds of interventions.

### Limitations of the Intervention

Much discussion of the modest impact of the community-based prevention trials focuses on weaknesses in the delivery of the intervention, including limited duration and intensity, insufficient scope of activities, and inadequate penetration into the community. Although some argue that the lack of impact probably was not due to ineffective interventions, because many individual program components were shown to work in these and earlier studies,<sup>10,16,19,24</sup> a closer examination of the ways in which interventions were implemented and their ability to operate on a communitywide basis provides insight into the challenges of effecting population-level change through a planned program with finite parameters.

*Length of the intervention.* Many observers question whether an intervention lasting only a few years can demonstrate an impact on behavioral and health outcomes. The investigators involved with COMMIT conclude that the 4 years of the program may have been insufficient to influence heavy smokers, among whom no intervention effect was detected.<sup>43,44</sup> In addition, the emergence of behavioral and health changes may become apparent only after a program's relatively short data collection period, as was found for the North Karelia Project.<sup>18</sup> Our review indicates

that the NHLBI-funded studies were among those with the longest duration, generally 5 to 7 years, whereas other programs typically lasted only 2 to 3 years.

Programs of such short duration may have difficulty in achieving communitywide impact, given the level and intensity of program activities. For example, both the Minnesota and the Pawtucket Heart Health programs shifted to a mass education approach after experiencing initial difficulty in recruiting participants to individual-level educational programs; however, the less intensive mass approach was not as effective.<sup>24,31</sup> The COMMIT researchers concluded that the small difference between intervention and comparison communities in exposure to smoking cessation-related messages and activities implies that the intervention was not sufficiently intensive to manifest a program effect.<sup>44</sup> Even relatively lengthy substance use prevention programs funded for more than 7 years have shown little overall impact.<sup>57,64</sup>

*Insufficient tailoring.* Another limitation of many community-based health promotion programs is the lack of tailoring of interventions to reflect community conditions or to reach different segments of the community. COMMIT used a standardized intervention protocol, leaving communities with little flexibility to adapt the program to meet local needs.<sup>43</sup> The South Carolina Heart to Heart Project was criticized by community members for not taking into account community priorities and interests in program planning and for not tailoring the program to reach African Americans, who composed 35% of the target population.<sup>36</sup> In addition, most programs did not develop different strategies for particular subgroups but used the same approach throughout the community. As Fisher<sup>9</sup> notes, targeting pockets of high prevalence in communities may be necessary, particularly when risk is not evenly distributed across all segments of a community.<sup>9</sup>

*Low level of community penetration.* One of the most difficult aspects of community-level programs is ensuring sufficient penetration and reach across a community to attain a population-level impact. As a result, populationwide exposure to the interventions in the cardiovascular disease prevention programs probably was insufficient to produce an im-



fact in excess of the secular trend toward improvement.<sup>15,16,24</sup> Although few studies report population participation rates, the evidence suggests that the highest exposures are obtained for public information and screening activities rather than more intensive interventions and that maximum penetration is about 60%.

In Pawtucket, an estimated 10.6% of the city's population participated in exercise programs over the entire 7 years of the project and about 59% of the population participated in 1 or more project programs. By the end of the project, 55% of program participants received screening services only.<sup>31</sup> The South Carolina Heart to Heart Project reached 31 850 people out of a population of 56 240 (57%) with such activities as public fitness campaigns, contests, screenings, and health fairs.<sup>36</sup> Fifty-nine percent of the Stanford population recalled seeing a televised public service announcement from the project.<sup>10</sup> In the Minnesota Heart Health Program, about 60% of adults participated in screening and education programs and about 30% received face-to-face interventions. Only 4.1% of smokers participated in smoking cessation programs in the Minnesota intervention communities, similar to the 3.1% in the comparison areas. Exposure to mass media health messages reached 87% in the intervention communities, but this proportion was almost identical to that in the comparison communities.<sup>16,26</sup>

About 8% of heavy smokers and 4% of light to moderate smokers in COMMIT intervention communities joined smokers' registries to receive newsletters and health information. Although there was a statistically significant difference between COMMIT experimental and control communities in the proportion of people reporting exposure to antismoking information or activities, the size of this difference was small.<sup>105</sup>

These findings demonstrate the difficulty of engaging large proportions of a population in activities that are sufficiently intensive to result in sustained behavior change. Thus, although specific program components may be effective, the low level of involvement in individual-level behavior change programs limits the communitywide impact.<sup>15,17</sup> Furthermore, the level of exposure to program messages needs to be interpreted in the context of the

much greater effort of commercial advertising. People were exposed to about 1 hour per year of television messages by the Stanford Five-City Project; in contrast, the average adult in the United States is exposed to 292 hours per year of television advertisements.<sup>10</sup>

*Limited ecological reach.* Most community health promotion programs incorporate an ecological perspective by targeting change in individuals, social networks, and the community environment. McKinlay<sup>106</sup> argues that the most effective public health interventions involve changes in policies and regulations, because these can cover entire populations. Although there is an emerging consensus that multiple interventions across multiple levels are necessary to achieve population-level impacts,<sup>107</sup> few interventions have been able to provide substantial intervention effort across all levels, making more difficult attempts by programs to outperform the secular trends influencing risk behavior outcomes.<sup>8</sup>

Table 1 presents a summary of intervention strategies, organized by ecological level. Although 17 of the 21 non-HIV projects included interventions targeting the community environment as well as individuals and groups, only 9 projects incorporated explicit activities focusing on policy or regulatory change, primarily dealing with control of tobacco, alcohol, and other drugs. Most community-level interventions focused on mass media campaigns to change awareness and attitudes among individuals or on efforts to convince local merchants to include health-promoting messages in their stores. Thus, individuals were the primary intervention targets even on a community level. Only 8 projects went beyond tracking individual behaviors and included indicators of community change—for example, alcohol-related traffic deaths or passage of ordinances restricting youth access to tobacco.<sup>50,51,56,57,60–63,70,71</sup> As a result, most projects were limited in the ability to assess intervention impact on the social environment.

Although the volume and intensity of activity across each level was not assessed, the findings suggest wide variation in the degree to which health promotion programs implement an ecological perspective and emphasize interventions that address upstream social influences. Most programs reflect the first

2 principles of integrating an ecological approach outlined by Richard et al.<sup>108</sup>: the targeting of multiple levels across a variety of settings and the inclusion of at least 2 different intervention strategies, targeting the individual and a component of the environment. The third principle, which states that level is more important than setting in defining the ecological character of a program, is more difficult to implement, as indicated by the limited number of interventions targeting environmental influences with apparently sufficient strength and penetration to achieve populationwide results.

### Limitations of Theory

Although most community interventions examined were based either implicitly or explicitly on various theories of behavior change and community organization, the complexity of conceptualizing the relationship between multiple interventions and multiple levels of influence, including the larger social context, makes it difficult to develop integrated explanatory theories as well as testable models. Thus, most programs implement specific interventions derived from particular theories and do not have a larger unifying model of community change that synthesizes all program components and addresses the underlying dynamics of such change.<sup>9</sup> Because the most developed theories that were employed are based on behavioral psychology, health promotion programs tend to focus more on individual-level change and often do not adequately target the many contextual factors influencing behavior, although the importance of such factors may be recognized. The difficulty of developing and evaluating comprehensive theoretical frameworks and implementation models is a challenge confronting all community interventions.

This problem is compounded by the complexity of identifying and measuring the various synergistic relationships between intervention components and levels.<sup>15</sup> Furthermore, the interaction of community-specific factors with intervention components shapes program outcomes,<sup>109</sup> making it even more difficult to hypothesize outcomes and frame comparisons. As noted by Goodman and colleagues,<sup>110</sup> the modest results associated with community-based programs derive in part

from lack of specificity of the intervention's causal mechanisms, thereby limiting the capacity to apply the model accurately and leading to "Type III" errors—that is, the inability to detect effects owing to faulty model implementation.

Even when programs are based on theoretical models specifying such mediating factors as attitudes and skills hypothesized to influence behaviors, the predictive power of these psychosocial variables is relatively low.<sup>111</sup> Furthermore, most community-based interventions do not specify the nature of mediating relationships or report the effectiveness of interventions in influencing mediating variables, which makes difficult the assessment of how program outcomes were obtained.<sup>95</sup>

Of the programs examined, we found 9 that presented findings regarding program effects on knowledge, attitudes, or beliefs. About half of these, primarily the 5 a Day nutrition projects, noted clear intervention effects on psychosocial variables.<sup>55,56,61,101</sup> The remaining programs either had more equivocal findings or found no long-lasting influence on knowledge or attitudes.<sup>28,38,39,45,52,112–115</sup> These patterns may reflect the strong focus of the 5 a Day projects on influencing knowledge and attitudes as major components of their interventions. Thus, the evidence suggests that both incomplete model implementation and limits of the theories employed contribute to lackluster performance across programs.

The main non-individual-level theoretical framework employed in most projects is based on community organization and development models. Community organization models operate on the assumption that community participation and coalitions create a sense of ownership and a synergy of action and outcome that could not otherwise be achieved.<sup>11,116–118</sup> Among the 21 programs reviewed, 11 explicitly identified elements of community development theory that were used in designing their interventions.<sup>32,49,51,60,63,64,66,69,119–121</sup> Reflecting this theoretical emphasis, many of these 11 programs focused efforts on group and community activities rather than individual-level interventions. Regardless of theoretical basis, the main vehicles for community participation

in almost all programs were some type of community advisory body and partnerships with a variety of community agencies and sectors, primarily to help implement interventions. Thus, few programs were able to develop and implement an integrated theory of ecological change that targeted social and policy influences through an intensive process of community mobilization.

## CHALLENGES TO COMMUNITY PARTICIPATION

As noted by Cheadle and colleagues, "It is almost an article of faith that locating programs in the community and involving community members in planning, implementation, and evaluation can be an effective strategy for improving population health."<sup>12(p240)</sup> However, many observers agree that programs emphasizing community participation and collaboration have yet to demonstrate an impact on behavioral or health status outcomes.<sup>6,11,12,117,122</sup> Although the tenuous relationship between community participation and program outcomes has not been examined as thoroughly as the methodological difficulties confronting community trials, the literature includes much discussion of the logistical, organizational, and political challenges to conducting and evaluating health promotion programs in community settings and the difficulty of engaging communities in health promotion programs.

A major factor shaping the dynamics of community-based programs is the difference in goals and priorities frequently found between researchers and communities, given other pressing community concerns.<sup>36,88,122</sup> Such differences in priorities and values often lead to struggles over power and control of programs and reflect the need to build trust and mutual respect to foster true partnership.<sup>12,3</sup> Establishing community ownership is challenging when outside agencies define the issues and control the resources.<sup>12,119</sup> Community collaborations are hard to develop and sustain, given the volunteer nature of community participation, the enormity of the task, and the natural conflict between groups with differing agendas and priorities.<sup>6,122</sup>

A common problem confronted by many health promotion programs is the insufficient

time allowed for engaging multiple groups of stakeholders who may have competing priorities.<sup>82</sup> The time constraints of grants often prevent projects from addressing community readiness to adopt health promotion activities and from phasing in program development and implementation activities that can facilitate community commitment and involvement.<sup>110,124</sup> The importance of a developmental approach is underscored by the failure of many health coalitions in the early stages of a program.<sup>6</sup> Addressing these issues also requires sufficient funding, technical resources, and ongoing support of community efforts.<sup>36,88,122,123</sup>

Although most of the articles reviewed do not include detailed information regarding the specific nature of community involvement, some aspects can be noted, which correspond generally to the stages of community readiness identified by Goodman et al.<sup>124</sup> The first stage involves initial mobilization of community members and organizations and establishment of a program organizational structure. As seen in Table 1, almost all of the non-HIV projects had some form of a community advisory board. However, these boards had a limited voice in determining the issues to be addressed by the project, which were dictated by funding agencies. The inability of communities to have a role in issue selection may have affected the capacity to activate community residents and organizations to support and become involved in the program.

The second stage, entailing building capacity for action through program planning and implementation, appears to be when the greatest level of community participation occurred; more than half of the programs we examined involved community members in these activities to varying degrees. However, inadequate attention to the earlier stage may have compromised the ability of projects to successfully develop broad-based support for program activities.

The last stage, refinement and institutionalization of interventions, can help ensure that a community continues to address health promotion issues. Although developing capacity to maintain project activities was an important aspect of the rationale for the establishment of community collaborations, this goal

was difficult to attain in the absence of sustained funding.

These challenges are reflected in the experience of many prevention programs, which encountered numerous difficulties in implementing community mobilization models and sustaining community participation. A process evaluation of 2 community cardiovascular disease prevention initiatives in Maine indicated that the programs were too limited in scope and did not address all the health concerns of the community or devote enough time or resources to developing community support for the program.<sup>88</sup>

Difficulty in achieving consensus on program goals, and confusion regarding roles and responsibilities among coalition members, impeded program performance of the South Carolina Heart to Heart Project<sup>36</sup> and the Project DIRECT diabetes prevention program.<sup>110</sup> Coalition effectiveness was related to the quality of coalition cohesiveness, communications, membership skills, and amount of staff time in the Project ASSIST tobacco control project.<sup>125</sup> The Pawtucket Heart Health Program was challenged by the difficulty in engaging workplaces, churches, and other organizations to serve as the major loci of program implementation; the project obtained greater organizational support and community participation when it developed a phased-in approach that relied less on intensive involvement of organizations and more on communitywide implementation.<sup>31</sup>

Sustaining coalitions and community participation beyond the life of the project also was difficult, as reported by the Kaiser Family Foundation Community Health Promotion Grants Program<sup>126</sup> and the South Carolina Heart to Heart Project.<sup>36</sup> Community support for maintaining the Stanford Five-City Project was greater when the project's managers adopted a strategy designed to enhance existing community capacity to plan and implement prevention programs, shifting from their original emphasis on creating new program structures. These structures were viewed as competition for scarce resources and considered to require too much continuing effort from coalition members.<sup>119</sup>

These examples underscore the conclusion from the NHLBI trials that "the enduring lesson . . . is that the core of a successful pro-

gram is the community organization process," which requires a thorough assessment of community structure and resources before embarking on the intervention effort.<sup>83</sup>

Although the inability to address many of these challenges to community involvement may stem, in part, from a limited vision of community participation that emphasizes advisory boards and issue-specific ad hoc coalitions as the primary vehicles for community collaboration,<sup>116</sup> programs that adopted a more explicit community participatory approach as an integral component of program design and implementation also generally experienced modest effects on mediating or outcome variables. A youth health project based on empowerment theory had the goal of mobilizing communities to work together to address health issues and increase neighborhood pride and identification. The project gave neighborhoods broad latitude in devising their own strategies for achieving project goals. However, the study found no measurable program effect on community mobilization.<sup>69</sup> The Kaiser Community Health Promotion Grants Program was one of the few that allowed communities to select the health issue and gave them substantial flexibility in developing program targets and tailoring activities to meet local needs and priorities. However, the project produced no measurable improvements in community activation or in health-related norms and behaviors except in limited population subgroups.<sup>70</sup>

One smoking control program focused efforts at the neighborhood level and emphasized neighborhood-based wellness councils to develop and direct activities. Although initial program effects on smoking prevalence were found, these were reduced to borderline significance after community demographic and social characteristics were controlled for.<sup>49</sup> Two major national substance use prevention programs emphasized community organizing and community control in developing solutions to the problem, yet both had little impact on substance use rates, although they were successful in establishing broad-based community partnerships and coalitions.<sup>57,63,100</sup> Improvements in infant birth outcomes were limited to a small number of projects participating in a national infant mortality prevention program, which also empha-

sized community control over program planning and implementation of strategies to reduce infant deaths.<sup>67,68</sup>

One program with a demonstrable intervention effect was the North Carolina Black Churches United for Better Health Project, part of the national 5 a Day program to promote consumption of fresh fruits and vegetables. The North Carolina project fostered community involvement through such mechanisms as lay health advisors in each church, involvement of pastors in program planning and implementation, and creation of nutrition action teams in each church, in addition to community coalitions.<sup>55</sup> The investigators attribute the success of the program to its multi-level approach and use of qualitative information from the study population to design culturally sensitive programs and messages.<sup>127</sup>

The apparent failure of most programs, even those with relatively strong community participation components, to demonstrate an impact raises questions regarding how health promotion programs tend to define communities and community involvement. Every program examined used a geographic approach to identifying communities, which may not reflect social or political dimensions of community. Imposition of such designations raises fundamental questions regarding who defines and represents community.<sup>123</sup> Community involvement tends to be operationalized primarily in terms of creation of new coalitions designed to help the project fulfill its funding mission, an emphasis that is inadequate for addressing the complex social structural and organizational influences on health.<sup>6,11,117</sup>

Such externally imposed partnerships may not be reflective of community relationships and history. Few projects have been able to fully apply key principles of community-based health promotion, which emphasize facilitating community capacity and readiness to mobilize<sup>124,128</sup> and establishing true partnerships in which researchers and communities share decisionmaking and resources.<sup>123</sup> However, the emphasis on consensus-based models can lead to a tendency to ignore inherent conflicts and power differences between program constituencies and with political-economic institutions influencing community health, thus affecting both coalition development and scope of action.<sup>129(p37)</sup>

## LESSONS FROM HIV PREVENTION PROGRAMS

### Impact of HIV Prevention Interventions

During the 1990s, HIV prevention efforts began employing a population-level and community-based approach. Results from these trials demonstrated the effectiveness of community-level interventions in changing sexual and drug-use behaviors in high-risk populations. The CDC-sponsored AIDS Community Demonstration Projects reported that change in rates of consistent condom use with main and nonmain partners was significantly greater in intervention communities than in comparison areas. Significant increases in rates of carrying condoms and in readiness to use them were found not only among individuals reached directly by the intervention but also for the study communities as a whole. This communitywide diffusion effect is reflected in the 74% increase in condom carrying in the intervention communities. Although the change in community rates of using bleach to clean drug injection equipment was similar between intervention and comparison communities, probably as a result of inadequate statistical power, respondents exposed to the intervention were likely to have higher scores on stage of readiness to adopt bleach use.<sup>73</sup>

Another intervention targeting men in gay bars in 3 small southern US cities found reductions in levels of high-risk sexual behavior ranging from 15% to 29%.<sup>74</sup> In a randomized community trial conducted in 8 cities across several states, unprotected anal intercourse decreased from 32% to 20% among men frequenting gay bars in the intervention cities compared with a 2% increase in control cities.<sup>75</sup> The Women and Infants Demonstration Projects conducted in 4 communities produced significant intervention effects for condom use with main partners, although there was no impact for use with other partners.<sup>79</sup> A program targeting low-income women living in housing projects across 5 cities found significant increases in condom use among women in the intervention projects but no program effect on frequency of unprotected intercourse.<sup>77</sup> Significant increases in safe sex were noted among young gay men in the intervention community of

the Mpowerment Project.<sup>78</sup> Focus on Kids produced higher rates of condom use and intention to use condoms among low-income youth in an urban African American community compared with adolescents in the study's control arm.<sup>76</sup>

The findings from the HIV trials represent consistent evidence of the capacity of community-based prevention programs, implemented in a variety of settings, to change complex health behaviors at the population level, in striking contrast to most other community health promotion interventions. However, the HIV projects and the various other community-based prevention programs were comparable in many respects. The HIV programs employed social psychological theories similar to those used in interventions targeting other health issues and experienced similar methodological challenges, including quasi-experimental designs, cross-sectional samples, and low statistical power. Secular trends appeared to be changing safer-sex and drug-using norms and behaviors in the HIV comparison communities as well.<sup>72,79</sup> As seen in Table 1, the general types of interventions employed by the different programs were similar, and the HIV projects were not more likely to emphasize policy-level changes.

What, then, appear to be the critical factors influencing the success of the HIV prevention programs? One explanation may be the general reliance by the HIV studies on self-report, as compared with the clinical markers used by the major cardiovascular disease prevention trials. However, the most significant areas distinguishing the HIV-focused prevention efforts appear to be related to the intervention model and implementation approach, as well as the nature of the communities and risk involved.

### Emphasis on Modifying Social Norms

The HIV projects had a strong emphasis on changing social norms regarding risk behaviors and increasing the social acceptability of risk avoidance.<sup>130</sup> Thus, these programs sought to modify the social context in which risk behaviors occur. Modification of norms and behaviors was achieved through interventions focusing on role modeling, developing a sense of mastery in the ability to engage in risk-reducing behaviors, and reinforcing ed-

ucational messages. Notably, most programs used peer volunteers to deliver the health messages as a primary means of influencing social norms.<sup>22</sup>

For example, the AIDS Community Demonstration Projects recruited community peers and nonpeer "interactors" who had regular contact with the target population and trained them in engaging people, delivering the educational messages through role-playing interactions, and providing positive reinforcement for sexual and drug-use behavior change. Use of community peers helped build acceptance and support for the project.<sup>72</sup> The programs developed printed materials featuring theory-based messages in the form of role model stories depicting empirically derived attitudes, perceived norms, and sense of mastery regarding the target behaviors.<sup>73</sup>

Several interventions developed by Kelly and colleagues<sup>74,75</sup> identified and recruited opinion leaders in gay bars and trained them to engage bar patrons in conversations that included risk behavior change messages. A number of other HIV prevention programs employed community peers to conduct similar activities.<sup>77-79</sup> A process evaluation of 37 AIDS prevention programs concluded that use of trained community peers whose life circumstances and characteristics closely resembled those of the target population was one of the most important factors influencing acceptance of health messages.<sup>131</sup> Use of peers and role model stories by the community HIV prevention programs was an important means of delivering interventions that taught the skills needed to avoid risk behaviors as well as employing credible members of the target population to conduct outreach and education.<sup>22,130</sup>

Although many of the cardiovascular disease, substance use, and other prevention programs also employed community volunteers to help deliver educational messages, the HIV programs may be unique in the extensive effort given to identifying, recruiting, and training trustworthy community members to provide education addressing attitudes and behavioral skills as well as health information.

### Use of Formative Research

Another notable feature of a number of HIV interventions was the extensive forma-

tive research conducted in the communities to tailor the program to the target populations. Unlike many prevention programs discussed here that used a communitywide approach to intervention design and implementation, the HIV programs identified high-risk subsets of the larger population and employed a highly refined approach to intervention tailoring.

The AIDS Community Demonstration Projects, for example, implemented a standardized protocol across sites for conducting ethnographic research with the objective of gathering information relevant to intervention development.<sup>132</sup> This information was used to develop a better understanding of the nature of the risk behaviors in the target population and to shape the messages used in educational materials as well as to identify other relevant community concerns that could be addressed, promoting community interest in and support of the project.<sup>72</sup> Thus, formative research was viewed as an integral component of intervention development, continuing throughout the life of the project and used to refine the intervention.<sup>132</sup> Community members had a major role in developing and delivering the educational messages, resulting in interventions that were customized to specific populations and local conditions.

### Nature of Risk and Communities

In addition to differences in intervention development and implementation, the HIV programs may have had greater success because the nature of the disease and its risks may present a more compelling argument for adopting preventive behaviors. Unlike cardiovascular disease, cancer, and most other chronic diseases, HIV is communicable and can be contracted through relatively few occurrences of at-risk behaviors, leaving little room for lapses.<sup>130</sup> Most chronic-disease risks are long-term and probabilistically low at the individual level.<sup>133</sup> Thus, the “prevention paradox,” the fact that prevention measures that bring large benefits to the community provide little benefit to the individual,<sup>134</sup> helps explain why most community-based chronic disease prevention programs have found it extremely difficult to motivate individuals to change their behavior, while HIV-related programs have had greater success.

Finally, the HIV programs may have been more successful than other health promotion efforts because the targeted communities and subgroups for the former were relatively small and more homogenous. Under such conditions, extensive intervention tailoring and concentrated efforts to change the normative environment may be more feasible and effective than when the community is large, diverse, and difficult to define in terms of risk. Thus, getting identifiable social groups to change specific behaviors with discrete levels of individual risk may be more achievable than developing multiple interventions designed to motivate numerous subgroups of varying risk found within a broad geographically defined community.

The above lessons from the HIV community prevention programs indicate the importance of identifying the target population and understanding how to reach it. Community members, particularly peers, should be closely involved in intervention design and delivery, and messages should be tailored to target audiences through the use of real role model stories of success to help change norms and teach skills needed to reduce risk behaviors.<sup>89,130,131</sup> Addressing social norms promoting at-risk behaviors is one of the most critical elements. Furthermore, the need to continually monitor norms and tailor interventions toward different populations is underscored by recent reports of high incidence of HIV among young men who have sex with men, particularly African Americans,<sup>135</sup> suggesting that safer-sex messages developed earlier may be inappropriate for a new generation.

Although the HIV interventions had more community input in terms of intervention design and implementation than many other community-based prevention programs, it is worth noting that the HIV programs appear to have relied on informal methods of community involvement. Four of the 11 HIV projects we examined discussed having a community advisory group,<sup>76,78,79</sup> compared with 16 of the 21 programs targeting other health issues. HIV partnerships did not involve formal coalitions; rather, local businesses and service agencies were used primarily as vehicles for peer recruitment and intervention settings. Among the HIV projects, community mobilization generally involved organizing commu-

nity members to commit themselves to helping improve health in the community by providing a direct educational service. The HIV projects focused their community and ecological approach on changing group norms and, as a result, the social environment.

### SUMMARY AND CONCLUSIONS

The evidence from health promotion programs employing a community-based framework suggests that achieving behavioral and health change across an entire community is a challenging goal that many programs have failed to attain. The modest impact of community-based prevention programs is the result of multiple factors. Methodological limitations, particularly issues related to low statistical power, impair the ability to detect significant differences, given the smaller-than-expected effect sizes typically obtained. These methodological challenges compound the difficulty of observing significant community-level changes in health behaviors when similar trends also are occurring in society at large.

In addition, the interventions themselves probably are too limited in scope and intensity to produce large effects across a community. Many programs focus primarily on individuals, with most people receiving mass education alone, and interventions and messages are not sufficiently tailored to reach various population subgroups. Implementation of a comprehensive intervention model, targeting the social environment as well as individual factors affecting health behaviors and health, is difficult to accomplish, and many programs did not address normative and policy changes that could produce a wider impact. The lack of strong evidence supporting the relationship of community participation in health promotion programs to positive changes in health-related outcomes also points to the difficulty in developing community capacity to address health issues, particularly in the context of larger social, economic, and political forces shaping community life.

The notable exception to the prevailing limitations of community health promotion is found in the area of HIV prevention. The success of a number of community HIV interventions in changing sexual and drug-use be-

haviors indicates the potential of community-based programs as an important approach for achieving public health improvements. The accomplishments of the HIV programs indicate that obtaining considerable community input for the development and delivery of interventions and focusing on changing social norms as a means of altering individual behavior should be considered critical aspects of community-based health promotion. At the same time, the nature and degree of the risk involved and the targeting of relatively smaller, more homogenous social groups distinguish HIV programs from other health promotion efforts.

Although these lessons from the HIV interventions are instructive, community prevention programs still face limited results owing to their propensity toward both Type II and Type III errors. The likelihood of detecting effects is reduced when, in addition to the reasons noted above, target populations and outcome measures are too broad to adequately capture local diversity and change and the level of funding for a given community is too low to have widespread impact.<sup>136</sup> These factors test the program models upon which interventions are based. The inability to observe effects owing to poor model implementation—Type III errors—is not simply an issue of lack of adherence to plans or protocols. Community interventions occur in natural settings where local conditions vary greatly and are constantly changing, leading some to describe these programs as moving targets.<sup>137</sup> Thus, developing detailed program models, derived from ecologically based theories that specify the hypothesized web of multiple levels of influence and processes of community change, is a challenging endeavor.<sup>138</sup>

## FUTURE DIRECTIONS

The secular trends toward health improvement in the general population can be seen as a positive sign that large-scale behavior change is possible and that a public health agenda can succeed.<sup>18</sup> However, this raises the questions of whether public health resources should be spent on community-based interventions if improvement is achievable without such efforts and whether the impetus must come first from within communities. In

part, the answer to this challenge lies in rethinking our expectations regarding the ability of programs to achieve large impacts over a relatively short time frame. The positive behavior trends are the result of decades of social change efforts regarding smoking and heart disease risks, and continuous effort is needed to bring about and sustain such change.<sup>19</sup>

In addition, there is a need to realistically assess the size and kind of effects to be achieved at a community level. Fishbein<sup>98</sup> argues that smaller effects should be anticipated when designing community-level programs and determining sample sizes and that a wider range of behavioral outcomes relevant to the purpose of the intervention should be considered. Smaller effects can be meaningful at a community level, where a modest reduction in the level of risk within a population can have a significant public health impact.<sup>92(p74)</sup> This suggests that we need to understand better the metric for assessing the public health impact of community health promotion programs, including the scale and time frame needed to influence and detect outcomes. Further research is needed to address whether effect size varies according to particular types of outcomes, population subgroups, and degree of integration of an ecological approach. Another important question is the magnitude of program effect needed to produce community-level impacts.

Addressing the nature of expected outcomes also is critical. There is an emerging consensus that decreasing mortality and morbidity are inappropriate and unrealistic outcomes for health promotion programs that focus primarily on behavior change and do not last long enough to affect mortality and morbidity. Some even argue that individual risk behavior change is an inappropriate or improbable outcome of community health programs and that impact should be assessed by community-level indicators, including changes in community participation and health-promoting policies.<sup>6,15,83,139</sup> Addressing the question of what are realistic and valid outcomes will have important implications for how researchers, funders, policymakers, and communities view the success of community health promotion efforts. Equally important is acknowledging the lim-

its of traditional evaluation methods in capturing the complexity and richness of the process of community change. Increasingly, health promotion researchers are calling for the application of multiple methods, including detailed process evaluations, and both quantitative and qualitative techniques.<sup>124,140</sup> The CSAP Community Partnership Program is a good example of how local evaluations can be used to identify community-level impacts that remain undetected by the larger cross-site evaluation.<sup>112–115,136</sup>

Program outcomes should reflect an ecological framework by going beyond changing individual levels of risk and by incorporating improvement in community-level factors, including the normative environment, health promoting policies, and activation of community residents and organizations.<sup>20,83,107,139</sup> Although public support for policy-level change may have been minimal when the earlier generation of health promotion programs was developed in the late 1970s and 1980s,<sup>16</sup> societal acceptance of health-related regulation has dramatically changed since that time. More recent programs, such as the CSAP Community Partnership Program, the Robert Wood Johnson Foundation's Fighting Back, and several CDC programs focusing on teen pregnancy and STD prevention, demonstrate a greater willingness among public and private funders to support multilevel programs. Recent mass media efforts to influence youth attitudes toward tobacco show great promise as a method for altering the social environment influencing health behaviors.<sup>141</sup> As noted by the Minnesota Heart Health investigators, "Just as we have learned that it is difficult to change the behavior of individuals without changing the communities in which they live, we may be learning that it is difficult to change the behavior of whole communities without changing their broader social environment as well."<sup>16(p1391)</sup>

In line with the call for a new theoretical paradigm in public health that emphasizes the ecological, nested, and interactive relationship between health and the social environment,<sup>142–144</sup> health promotion as a field would benefit from the development of integrated theories of community health change to guide the development of multilevel program models. Health promotion theories need to move

beyond the individual level and incorporate the social context in which behavior occurs.<sup>16</sup> Public health also has much to learn from other disciplines, including community psychology, social work, and urban studies regarding the theory and practice of community change.

The past 2 decades of community-based health promotion experience have yielded a general consensus that future programs should focus on exploring successful approaches to fostering community change rather than attempting to create new types of interventions or aiming for more rigorous study designs.<sup>9,10,20,145</sup> To more effectively reach all segments of a community, programs should employ a reinforcing combination of both high-risk and populationwide strategies.<sup>9,13,93,146</sup> Such an approach would emphasize (1) intensive educational and skills-building interventions aimed at high-risk individuals and (2) messages reaching across an entire community.<sup>73</sup>

Health promotion programs of the past have demonstrated the feasibility of reaching large groups of people with social marketing and mass media communications.<sup>15,130,147</sup> Thus, the most effective strategy for community-based health promotion may involve a 3-tiered approach, incorporating one-on-one interventions for high-risk individuals, communitywide interventions that attempt to change social norms, and policy-level efforts that also help modify the social and political environments. It may be necessary to gradually integrate program components, with interventions effecting attitudinal and other social environmental changes being implemented before interventions focusing on individual behavior change. Important questions to be explored include identifying the level and length of intervention needed to ensure endurance of normative change and how well strategies transfer across different populations, health behaviors, and communities.

Although normative and policy change interventions are among the most promising health promotion strategies, it is important to recognize that such approaches often rely on stigmatizing behavior or involuntary actions. Whereas some negative attitudes (e.g., toward smoking and smokers) may be perceived within the public health community as neces-

sary and even desirable to effect widespread behavior change, such views raise questions of how, when, and whether to emphasize personal responsibility as the primary influence on health behaviors. Another challenge to an ecological approach is the limited improvement in health that can be achieved without addressing underlying social, political, and economic forces.<sup>148</sup>

Innovative approaches to working with communities are needed to provide the foundation for multilevel interventions. We have learned a great deal over the past 20 years about how to engage communities and develop effective partnerships. Community readiness and capacity to address change are key factors influencing community health promotion efforts. Accordingly, community organizing strategies and health interventions should be shaped by a community's particular stage of readiness.<sup>82,124</sup> Examination of community capacity (i.e., a community's resources, skills, networks, leadership, values, history) can provide a deeper understanding of community dynamics and ways to mobilize a particular community for public health action.<sup>128</sup> Developing community relationships and infrastructure are critical initial stages before embarking on program planning and implementation, and they require continued nurturing if the conditions for community participation are to be sustained. At the same time, health promotion professionals should keep in mind the often uneasy fit between grant-driven categorical public health programs and the longer-term dynamic process of community mobilization and self-determination.<sup>149</sup>

Although there are many obstacles, community-based programs can provide numerous strategic advantages for health promotion efforts. Community interventions can reach people on a large enough scale to have an impact on major public health problems.<sup>75</sup> Community-based programs explicitly address the social context in which behaviors occur and have the potential to modify norms, values, and policies influencing health.<sup>18,22,82,150</sup> Sustainability of prevention efforts and their impact may be enhanced because programs draw on existing community resources and help generate local ownership and empowerment in addition to producing change in the social environment.<sup>22,82,96</sup> A community ap-

proach may be especially important when attempting to engage inaccessible populations, in which reliance on informal community networks is a critical component of outreach and can support normative and behavioral change, augmenting diffusion of interventions and their effects.<sup>22,96,104</sup> Finally, community programs are implemented in real environments, providing public health policymakers with community-tested evidence of program feasibility and effectiveness.<sup>104</sup>

Despite these advantages, achieving sustainable communitywide health impact remains an unrealistic expectation for time- and resource-limited interventions. The next generation of health promotion programs will continue to confront the challenge of demonstrating the value of incremental change. The most significant potential of public health programs to improve the quality of community life may perhaps emerge from the engagement with communities in an ongoing process of social change. ■

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