

A REVIEW OF COLLABORATIVE PARTNERSHIPS AS A STRATEGY FOR IMPROVING COMMUNITY HEALTH

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■ **Abstract** Collaborative partnerships (people and organizations from multiple sectors working together in common purpose) are a prominent strategy for community health improvement. This review examines evidence about the effects of collaborative partnerships on (a) community and systems change (environmental changes), (b) community-wide behavior change, and (c) more distant population-level health outcomes. We also consider the conditions and factors that may determine whether collaborative partnerships are effective. The review concludes with specific recommendations designed to enhance research and practice and to set conditions for promoting community health.

INTRODUCTION

A collaborative partnership is an alliance among people and organizations from multiple sectors, such as schools and businesses, working together to achieve a common purpose (53). In public health, collaborative partnerships attempt to improve conditions and outcomes related to the health and well being of entire communities. When the focus is a community, those affected may include people who share a common place, such as a rural community or an urban neighborhood, or an experience, such as being a child or living in poverty.

Such partnerships are often hybrid strategies that may include aspects of social planning, community organizing, community development, policy advocacy, and acting as a catalyst for community change (30, 31, 47, 70, 104). As such, they may have both top-down (i.e. social planning led by experts) and bottom-up (i.e. grass-roots community organizing) features (30, 47, 70). The distinguishing feature of collaborative partnerships for community health is broad community engagement

in creating and sustaining conditions that promote and maintain behaviors associated with widespread health and well being.

As an ecological approach (82, 116), collaborative partnerships for community health share a similar function. They aim to improve population-level health outcomes by creating important and sustainable environmental changes in the different community sectors in which health-related behaviors occur. For example, a coalition to increase health care access for the poor may attempt to transform employer health care policies, reduce pharmacy fees, and increase access to services through neighborhood clinics and religious organizations (3). A partnership goal of population-level improvement (e.g. improvement for all people in a county or urban neighborhood) differs from more modest preventive interventions or programs that target change in only limited segments of a community. The emphasis on multisectoral collaboration, environmental change, and population-level improvement often involves a greater number and type of intervention components than other community-based interventions such as policy advocacy or mass media campaigns.

In public health, collaborative partnerships take many forms, including coalitions of community members and groups (105), alliances among service agencies (3), consortia of health care providers (12), and grassroots and broader advocacy efforts and initiatives (64). The structure of partnerships can vary and may include formal organizations with a financial stake or interest (e.g. a consortium of health care providers) as well as individuals and grassroots organizations that have formed around a recent event (e.g. child homicide) or a local concern (e.g. environmental pollution). In a similar manner, the vision and mission of the partnership may focus on a continuum of outcomes, including (a) categorical issues (e.g. immunization or violence), (b) broader interrelated concerns (e.g. education and jobs), and/or (c) more fundamental social determinants of health and development (e.g. income disparities and trusting relationships).

Two broad conclusions can be drawn about the published literature on collaborative partnerships for community health improvement: collaborative partnerships have become an increasingly popular strategy, and only limited empirical evidence exists on their effectiveness in improving community-level outcomes. Their popularity, that is, their increased use to address a greater number and kind of concerns, may be the result of both local and national trends. At the local level, groups of citizens and organizations have organized around a variety of concerns such as substance abuse (105), crime and violence (14, 20), and adolescent pregnancy (93). Federal policies in the 1980s and 1990s shifted responsibility for solving public problems from national to state and local authorities (109). In a corresponding manner, governmental funding agencies and philanthropies at all levels have invested in multisectoral community alliances to address a variety of issues in community health and development (24, 94, 118, 128).

Several assumptions underlie the strategy of collaborative partnership: (a) the goal cannot be reached by any one individual or group working alone, (b) participants should include a diversity of individuals and groups who represent the concern and/or geographic area or population, and (c) shared interests make

consensus among the prospective partners possible. Other strategies may be more appropriate in different circumstances; for example, a single intervention in one setting may be sufficient to accomplish more modest goals for health improvement, and advocacy may be necessary when there are conflicting interests (23, 104).

This review builds on previous summaries and critical assessments of the literature on collaborative partnerships for community health improvement (1, 9, 10, 15, 71, 78, 79, 83). After an overview, we focus on four central questions: (a) What is the evidence that collaborative partnerships change behavior and improve health outcomes at a population level? (b) What is the evidence that collaborative partnerships effect environmental (community and systems) changes that are associated with population-level outcomes? (c) What factors contribute to the ability of a partnership to create community and system changes? and (d) Under what conditions may environmental (community and systems) change be related to more distant behavioral and population-level outcomes? We conclude with recommendations for research and practice designed to enhance collaborative partnerships as a strategy for community health improvement.

BACKGROUND AND CONTEXT

This section outlines the lessons learned from earlier research with demonstration trials and comprehensive community interventions. It also describes the methods used, the limitations of this review, and the characteristics of the studies and partnerships included in this report.

Lessons from Demonstration Trials and Comprehensive Community Interventions

Throughout the 1970s and 1980s, community-based intervention trials, especially those for the prevention of cardiovascular diseases, used community organizing approaches to implement program components (5, 22, 81, 86, 99, 108, 112). These studies were designed to test whether risks for cardiovascular diseases could be reduced by using community-wide (i.e. attempts to reach all members of a defined population) and multicomponent interventions (e.g. mass education campaigns, clinical services, and worksite health promotion activities). In these comprehensive community-based interventions, researchers selected the program components based on existing medical, epidemiological, and behavioral knowledge. Although researchers worked with community members to gain support for and to implement certain program components, such as media campaigns or school and worksite activities, the researchers largely designed the manner in which the interventions were to be implemented. Reviews of these studies emphasized the importance of community organization for successful implementation and maintenance of program components (86, 108), but evaluation of the unique contributions of community mobilization efforts was typically not part of these trials.

The experiences of researchers in community trials in the 1970s and 1980s helped clarify some emerging lessons and challenges. In general, the lessons learned in these trials described ways to enhance community engagement in implementing study components with less researcher attention and involvement over time. Increased community participation in decisions about intervention components and their implementation, especially early in the trial, reduced later conflicts and improved implementation. Participation by community leaders and gatekeepers in bringing about changes in their sectors (e.g. business, government, or media) helped expose a greater number and diversity of people to intervention components. A significant challenge was involving those who experienced the targeted problem most, often minority or low-income people, in community-organizing efforts and decisions regarding community interventions. Another key challenge was getting people from non-health-related sectors, such as businesses or faith communities, to adopt and engage in disease-prevention and health-promotion causes. A central question in every intervention effort was how to sustain community-implemented efforts long enough to have a potential effect on both proximal (2- to 5-year) and more distant (10- to 20-year) population-level outcomes.

Lessons from these community-based trials provided information for another generation of community health initiatives in the late 1980s and throughout the 1990s. Funded by government and private foundation investments in community-based grant-making, these initiatives often looked at collaborative partnerships as the intervention itself rather than as one strategy of a broader intervention (e.g. mass media or policy advocacy). Funding for program implementation and evaluation was considerably less than that for the previous demonstration trials. Initiatives funded by external sources may have been required to form a community coalition or collaborative partnership or to implement specific interventions or components. Community members, who were often paid staff of public health and other service agencies, worked with support organizations, such as research and technical assistance groups, to develop and implement community-influenced interventions. Usually, a research team provided technical assistance and evaluated community-led activities. Researcher involvement varied from assistance provided only during the early phases of organization to direct participation in supporting and evaluating implementation throughout the initiative. This generation of studies of collaborative partnerships for community health is the subject of this review.

Review Methods and Limitations

The review covers published studies of collaborative partnerships or coalitions working primarily at the local level (e.g. county, city, or neighborhood) to address a community health concern. Selected studies described (a) an alliance of different people and organizations working to improve a health-related condition at the community level (i.e. an effort not limited to a specific sample or group of people), (b) a study design and/or logic model to help understand the relationship

between the coalition and its effects, and (c) quantitative and/or qualitative data about processes and/or outcomes attributed to the collaborative partnership. The search for relevant literature relied on electronic journal databases (i.e. HEALTHSTAR, MEDLINE, and PSYCHLIT), bibliographies of previous reviews, conceptual and descriptive papers, and recommendations from authors and colleagues in public health, community psychology and development, and related domains with experience evaluating community coalitions and collaborative partnerships.

Interpretations and conclusions based on this review should reflect several limitations. First, the available pool of studies was potentially limited by a publication bias toward studies with outside, paid evaluation of partnerships and studies of local partnerships that were part of national or state-wide initiatives. Second, although the review includes studies from disciplines outside traditional health fields (e.g. political science, sociology, community development, and community psychology), the focus is on studies of collaborative partnerships that clearly targeted a health-related concern rather than broad societal concerns with health implications (e.g. economic development, education, or housing). Third, although only empirical studies were reviewed, we defined the term “empirical” broadly to include studies with relatively less methodological rigor and those written by practitioners with experiential (if not experimental) knowledge of the functioning of collaborative partnerships.

Characteristics of Studies and Collaborative Partnerships in This Review

This review features 34 unique studies (each composed of one or more papers) describing the effects of a total of 252 collaborative partnerships (3, 7, 8, 12–14, 16–18, 20, 27, 35, 37, 41, 42, 44–46, 48–52, 54–56, 57a, 60, 62, 64, 67–69, 72–76, 80, 87, 88, 91–95, 97, 101–103, 105–107, 110, 119, 120, 122–124, 128, 129, 130). The number of partnerships included in a single study ranged from 1 to 57. The length of a report describing concepts, methods, and results of a study ranged from one paper to two entire journal volumes (e.g. 54, 120). Almost all of the studies used some type of experimental or quasi-experimental design (11, 19, 127) to assess different aspects of collaborative partnerships. Most studies used multiple measurement systems and study designs to capture different aspects of partnership functions and outcomes. For example, a study might use a case study design to document partnership activity and implementation, a cross-sectional survey to evaluate staff satisfaction or community-wide behaviors, and a prospective cohort design to assess trends in population-level health outcomes. All but eight studies (3, 14, 45, 52, 72, 87, 94, 101) used a comparison group or condition to better understand the effects of partnerships. Two studies attempted to control for the effects of unknown confounding variables by randomly assigning community exposure to partnership intervention (17, 124). Nearly all [31 of 34 (91%)] of the studies (except for 44, 54, 64, 97) had an evaluation period of ≤ 4 years (references 97 and 107 provided preliminary results of 5- and 10-year studies, respectively).

The reviewed studies assessed the effects of collaborative partnerships working on a wide variety of community health concerns. These included substance use [e.g. tobacco, alcohol, and illegal drugs (13, 16, 27, 37, 45, 54, 67, 72, 101, 102, 105, 107, 110, 124, 129)], adolescent pregnancy (52, 87, 92a, 122), cardiovascular diseases (42, 44, 80, 92), crime and violence (14, 20), health services (3, 12), human immunodeficiency virus infection/acquired immune deficiency syndrome (HIV/AIDS) (130), immunization (7, 103), infant mortality (97), lead poisoning (64), and nutrition and food security (51).

EVIDENCE OF EFFECTIVENESS OF COLLABORATIVE PARTNERSHIPS

What is the evidence that collaborative partnerships can effectively transform conditions to improve health-related behaviors and more distant population-level health outcomes?

Evidence of Effects on More Distant Population-Level Outcomes

The broad aim of community health initiatives is to improve (often distant) population-level outcomes. The specific mission of a collaborative partnership (e.g. to reduce substance abuse) is often related to population-level indicators associated with morbidity and mortality (e.g. alcohol-related vehicular crashes). Yet partnerships face several challenges in measuring their contribution to more distant health outcomes. First, visible changes in population-level health outcomes take longer than the lifetime of many partnerships. Changes in most community health areas may not be detectable for 3–10 years. More fundamental community health goals, such as changing income disparities or inequities in health outcomes associated with race, may take generations to achieve.

Second, there is an absence of accurate and sensitive indicators for many community health concerns. For example, delayed reporting and underreporting of cases (e.g. of vaccine-preventable diseases) greatly limit the accuracy of indicators. Even when suitable indicators exist (theoretically), access to indicators at the level targeted by the partnership (e.g. neighborhood or city) may be lacking. For example, data on the prevalence of tobacco use at the state level are of limited value for county-level initiatives, and county-level data on infant mortality cannot provide information on progress for place-based efforts in specific urban neighborhoods. These and other difficulties may help explain why most studies evaluated more proximal outcomes, such as health behavior, using selected population samples. Some authors argue that evaluating the effects of a collaborative partnership on population-level outcomes may not be prudent, given the minimal understanding of the contexts and mechanisms by which they operate (87).

Despite these challenges, 10 of the 34 reviewed studies (7, 12, 20, 27, 35, 75, 92a, 97, 122, 123) presented population-level outcomes with some improvements that could be potentially attributed to activities of the collaborative partnership. Some examples illustrate the reported findings and contexts for study. A case study of a New York coalition to prevent lead poisoning reported a 43% reduction in lead poisoning among children in New York City within 4 years of the beginning of the partnership, after 10 years of consistently higher annual rates before the partnership (35). A case study of an initiative to reduce infant mortality in Boston, which then had one of the highest rates in the nation, found a 50% reduction in Boston's infant mortality rate among African Americans within 2 years after the start of the partnership (97). The South Carolina School/Community Program for Sexual Risk Reduction Among Teens found a 52% reduction in the incidence of adolescent pregnancy within 2 years (122). This preinitiative-postinitiative difference in the intervention community was statistically significant when compared with change in three other similar communities (69, 122). In a systematic replication of the South Carolina program in three intervention communities, the School/Community Adolescent Pregnancy Prevention Partnerships in Kansas found a 9–12% decrease in estimated pregnancy rates and a 13% decrease in birth rates in 14 to 17 year olds within 2 years (92a). Rates in comparison communities increased, stayed the same, or had smaller decreases during the same period. The Community Trials Project found 78 fewer alcohol-involved crashes in three intervention communities within 2 years (a 10% annual reduction) (56, 123). Statistically significant crash differences between intervention and comparison communities were found for all but one intervention-comparison community pair (123).

Altogether, findings from these instances of what are mostly case studies (with various threats to internal and external validity) are insufficient to make strong conclusions about the effects of partnerships on population-level outcomes. Nevertheless, these results suggest that, at least under some conditions, implementation of collaborative partnerships is associated with improvements in population-level outcomes.

Evidence of Effects on Community-Wide Behavior Change

Collaborative partnerships are a particularly attractive strategy for changing community-wide behavior, owing to their multicomponent, multisector approach to changing the environments that establish and maintain behaviors. For example, reduction in the population-level prevalence of obesity requires changes in the environmental conditions (i.e. access to lower-fat foods and opportunities for activity such as walking trails and bike routes) that support widespread change in eating and activity habits. Because behavioral change often occurs sooner than with more distant population health outcomes, measures of risk and protective behaviors, such as self-reported eating habits or direct observation of lower-fat food

purchases, are often appropriate means to evaluate the contribution of a partnership to community health.

Although a change in community-wide behavior may occur sooner than for population-level health outcomes, such change is not necessarily easier to influence or assess. Data on population-level behavior outcomes (e.g. the percentage of residents in a county who exercise or eat five or more servings of fruits and vegetables each day) are less likely to exist for a given geographic area than outcomes related to morbidity (e.g. sports injuries) or mortality (e.g. deaths attributed to cancer). Behavioral surveys, such as the U.S. Centers for Disease Control and Prevention Behavioral Risk Factor Survey or Youth Risk Behavior Survey, are not standard practice for states, counties, and urban neighborhoods. When such survey data are available, their accuracy, reliability, and the generalizations that can be drawn from them are often limited by poor survey research methods (e.g. convenience samples and irregular survey periods). Few local public health departments and even fewer local collaborative partnerships can regularly and systematically collect behavioral measurements of their target populations, either with behavioral surveys or observational methods.

Of the 34 studies reviewed, 15 evaluated the influence of collaborative partnerships on community-wide changes in behavior (8, 17, 18, 20, 27, 37, 44, 49, 74, 92a, 102, 105, 107, 110, 129). Occasionally, nested studies within the broader evaluation assessed the effects of specific behavioral interventions implemented by a partnership (41, 48, 73, 91, 106). Improved behavioral outcomes associated with partnership activity were reported for tobacco use (17, 44), alcohol use (27, 37, 88, 95, 102, 110), illicit drug use (95, 110, 129), physical activity (8), and safer sexual practices (74, 92a).

Two of the larger and methodologically stronger community trials warrant particular attention. The COMMIT community trial to reduce tobacco use attempted to control confounding variables by randomly assigning communities to experimental and comparison groups (16–18). Researchers reported null and weak statistically significant quit rates for cohorts of heavy and light smokers, respectively, following a 4-year study period. With similar results, the U.S. Center for Substance Abuse Prevention evaluated changes in alcohol and illegal substance use by adults and youths in a random sample of 24 of 251 communities with a collaborative partnership (129). Within a 2-year period, researchers found statistically significant (and usually small) improvements in only 22 (8%) of 288 analyses of substance use (four separate measures of illicit drug use and alcohol use among adults and 8th- and 10th-grade students in 24 partnership and matched comparison community pairs). Although the Center for Substance Abuse Prevention researchers showed that this small percentage of positive outcomes was not likely to be due to chance (129), they raised concerns about the potential overall impact of community coalitions and collaborative partnerships. Taken together, findings from the reviewed studies suggest that collaborative partnerships can contribute to widespread change in a variety of health behaviors, but the magnitude of these effects may not be as great as intended.

Evidence of Effects with Community and Systems Change (Environmental Change)

Collaborative partnerships aim to change the environment in which behaviors and factors that are related to health occur. The premise is that, by changing the environment, partnerships can effect widespread behavioral change and improve population-level health outcomes. Change within the environment (community and systems change) is hypothesized to be an intermediate outcome in the long process of community health improvement (24, 31). Community and systems change refers to new or modified (*a*) programs (e.g. school nutrition curriculum or smoking cessation workshops), (*b*) policies (e.g. seat-belt laws or family-friendly work policies), and (*c*) practices (e.g. addition of Heart Healthy symbols to restaurant menus or modifying clinic hours to enhance access) facilitated by a partnership to influence the community at large and/or specific organizations or institutions (31, 34). To accomplish environmental change in communities and systems, collaborative partnerships engage a wide variety of people in collaborative planning and community mobilization efforts at multiple levels (e.g. individuals, families, social networks, and organizations) and in multiple sectors or settings (e.g. schools, businesses, faith communities, health and human service organizations, government, and media). Analysis of the process by which collaborative partnerships create environmental change and the variables that affect such change helps to clarify how partnerships serve as catalysts for changing conditions that may affect community health.

The reviewed studies assessed community and systems change as a dependent variable targeted by a partnership (e.g. 51, 92), as a primary independent variable to which community members were exposed (e.g. 13, 128), or both (e.g. 27, 54), depending on the purpose and design of the study. All of the studies reported evidence of new programs, services, and practices that were facilitated by collaborative partnerships. For instance, some reported new public health information programs in specific sectors, such as schools (76, 122), businesses (41, 124), or more broadly across the entire target community, such as radio messages for the prevention of human immunodeficiency virus infection (130). Other examples included preventive health services, such as cholesterol screenings (8), immunizations (7, 103), and skill enhancement workshops for weight control (8, 44) and smoking cessation (119). Broader system-level changes included changes in school lunch menus to reduce calories from fat (50), creation of walking trails and community walking clubs (8, 44, 92), liquor store and bar-owner programs to train employees in alcohol control methods (106), and changes in the allocation of funds (52, 97) or space (3) to allow for new or expanded services and programs, such as cholesterol screening for those at risk or after-school programs for children.

Some studies also found evidence of policy changes to which collaborative partnerships contributed, for example, new or modified policies to reduce harm related to smoking (41) and alcohol (55, 124), increase the amount of time students spend in physical education classes (50), and improve access to health care services

(3, 7, 130). Overall, the reviewed studies demonstrate that community and systems changes are often associated with the implementation of collaborative partnerships. Although collaborative partnerships facilitate environmental change, determining the degree of attribution is difficult, because weak designs do not rule out other plausible explanations for the observed effects.

UNDER WHAT CONDITIONS IS ENVIRONMENTAL CHANGE RELATED TO POPULATION-LEVEL BEHAVIOR AND HEALTH IMPROVEMENTS?

This review offers some evidence for the contributions of collaborative partnerships to population-level health outcomes and community-wide behavioral change. Although environmental change is seen as the (often implicit) mechanism for influencing these more distant outcomes, little empirical work exists that tests the assumptions inherent in this mechanism. For example, is more community and systems change (environmental change) associated with more behavioral change and related improvements in population-level outcomes?

As a working hypothesis (24), improvements in community-wide behavior and population health outcomes are seen as related to specific attributes of environmental change: (a) the amount of change by goal (e.g. new or modified community and systems changes across goals to increase physical activity and decrease fat consumption), (b) the intensity of behavioral change strategy (e.g. changes that modify access and remove barriers to health care services may be more powerful than changes that provide information about services), (c) the duration of a change (e.g. ongoing changes may be more influential than one-time events), and (d) the penetration or exposure to relevant populations (e.g. did the environmental change make contact with the whole population and/or groups with multiple risk factors) through multiple sectors, settings (e.g. schools, businesses, and faith communities), or geographic areas. For example, a partnership to promote childhood immunization may have a greater probability of improving its community vaccination rate if it produces environmental change of greater amount (e.g. perhaps 30–50 changes rather than 5–10 changes per year), intensity of strategy (e.g. changes that reduce access barriers to vaccination services, rather than just providing information about the value of immunizations), duration (e.g. more clinic and school policies increasing regular access to immunization services, than immunization awareness presentations and vaccination services that last one day), and penetration (e.g. changes within churches, schools, and worksites, not just in physicians' offices and health care organizations) to reach areas with disproportionately lower rates of immunization, such as neighborhoods of concentrated poverty.

Although few assessments of these attributes of potential effectiveness exist, some preliminary evidence supports the relationship between the amount, duration, and penetration of environmental change (an intermediate outcome) and more distant health outcomes.

Amount of Change

One study using a case-study design assessed the relationship between the amount of community and systems change facilitated by collaborative partnerships and improvements in population-level outcomes over time. In this study of a coalition to reduce risk for adolescent substance abuse, a decreasing trend in the rate of single-vehicle nighttime (occurring between 8 p.m. and 4 a.m.) crashes (a more distant population-level outcome of substance abuse) was observed concurrently with an increasing rate of community change (associated with coalition implementation) over a 4-year period (27). These findings offer preliminary evidence that partnerships that facilitate greater amounts of community and systems change are more likely to effect improvements in population-level outcomes.

Duration of Change

Some cogent arguments for the value of sustainable change come from studies assessing policy changes that are facilitated by collaborative partnerships (41, 52, 55, 57). For example, the Community Prevention Trials required collaborative partnerships to implement local policy changes in addition to awareness and service activities that were more likely to be implemented for shorter periods (55, 57). After training partnership members to identify and advocate needed local policy change, all three experimental communities facilitated (durable) policy changes by law enforcement, businesses selling alcohol products, and local government; and all showed reduced alcohol sales to minors and a reduced incidence of drunk driving and single-vehicle nighttime crashes (48, 55, 57). Some studies assessed the duration and maintenance of community change that was facilitated by coalitions but did not assess the unique influence of duration on health outcomes (6, 74, 89). Further research is needed to clarify how the duration of community change influences population-level outcomes.

Penetration of Change

The logic of place-based intervention is that a higher dose of environmental change in a particular location will increase its effects for those who live and work in those neighborhoods or settings. In one study, researchers examined the effects of a school-community partnership to reduce adolescent pregnancy in two contiguous urban neighborhoods (89). Within 3 years, the estimated pregnancy rate for 14- to 17-year-old females decreased markedly in the neighborhood with more community changes, whereas the pregnancy rate actually increased slightly in the neighborhood where fewer changes had been facilitated.

The likelihood that a collaborative partnership affects improvement in population health may be related to the amount, intensity of strategy, duration, and penetration of the community and systems change it facilitates. Further research should test this working hypothesis more fully. Despite the methodological limitations and challenges, analysis of multiple case studies may help us better understand

the effects of these complex and unfolding innovations on population health improvement.

METHODOLOGICAL CHALLENGES IN THE STUDY OF COLLABORATIVE PARTNERSHIPS AND THEIR OUTCOMES

Caution should be used when making generalizations about the findings in the reviewed studies. Weak outcomes, contradictory results, or null effects were found in the more methodologically rigorous studies (8, 17, 18, 44, 129). For example, a study may report a reduction in the prevalence of alcohol for boys but not for girls (110), decreased alcohol use and increased use of illegal drugs for the same community, or improved physical activity with no effects on smoking or consumption of fruits and vegetables in a community exposed to cardiovascular disease prevention (8). All of the studies reporting improvements in behavior or health outcomes strongly cautioned against inferences of causality attributed to the efforts of collaborative partnerships. The primary reasons for caution were the absence of true experimental designs (11). When the unit of analysis is a community, weaknesses related to the absence of an appropriate comparison group and random assignment are well noted in the literature (48a, 59, 84, 117, 128, 129). These limitations have been acknowledged as (largely) unavoidable, and few alternatives have been noted (4, 46, 48a).

One promising alternative is the use of multiple-baseline or interrupted time series designs (4, 11) with multiple partnerships (each in a unique community) that share as many similar community contexts as possible. A common baseline is established by obtaining repeated measures of outcomes of interest (i.e. rates of community and systems change, behavior, and/or population-level outcome). Staggered initiation of a collaborative partnership across communities permits analyses of trends over time within and across communities. Analyses of discontinuities in trends associated with events may help identify relationships between factors that are related to coalition function and its contribution to environmental change (e.g. increases in community and systems change associated with action planning and new leadership) and between community and systems changes and population-level outcomes (e.g. decreases in estimated pregnancy rates associated with the implementation of community changes). Replication of observed effects in different communities might suggest the generalized effects of collaborative partnerships on outcomes related to community health. A similar approach with less control of partnership initiation was used in several studies (48, 50, 57a, 88, 106, 107, 123).

Three other serious, and potentially avoidable, limitations should be considered when attempting to understand possible relationships between the implementation of collaborative partnerships and effects with population-level outcomes. First, it

is difficult to know the relationship between the degree of individual exposure to the intervention (facilitated by the partnership) and population-level health outcomes (e.g. dose-response effects). As one approximation, several studies reported estimates of the number of participants in partnership activities (8, 17, 44, 105, 119, 124). Systematic measurement of individual exposure to each of the multicomponent and multilevel interventions common among partnerships was not attempted. Millar & Gruenewald (85) gave a hypothetical example of how to use geographic information systems to examine the relationship between the density of alcohol outlets and self-reported drinking and driving by geographic area. Paine-Andrews et al showed that a neighborhood (zip code area) with greater amounts of community changes (i.e. new programs, practices, and policies) to prevent teenage pregnancies had a lower pregnancy rate than another targeted zip code area in which the community partnership had facilitated fewer changes (89). Place-based or geographic analyses, looking at the density and frequency of environmental events and outcomes over time, may be helpful in estimating potential dose-response relationships between partnership efforts (and related environmental changes) and more distant population-level outcomes.

A second limitation to understanding how collaborative partnerships may improve population health outcomes is the typically short study period. Of the evaluation periods in the reviewed studies, 91% lasted for ≤ 4 years, although partnerships may go on for a longer time and population-level outcomes may take longer to detect. One exception was the case study of a New York coalition to prevent lead poisoning, which documented collaborative efforts and the annual rates of child lead poisoning for 15 years (including 5 years after the partnership began) (35, 64). The study demonstrated the relationship between strong and weak periods of partnership activity and parallel improvements and reversals in the prevalence of lead poisoning.

Longer follow-up periods are more likely to detect the potential effects of social trends related to the population outcome of interest (117) and the effects of additions and deletions of important intervention components (69). For example, a reanalysis of data from a 4-year study with significant improvements in population-level outcomes found that the discontinuation of some intervention components reversed the effects 3 years later (69). Demonstrations of how collaborative efforts contribute to improvement of more distant population-level health outcomes may be more likely with studies of collaborative partnerships that benefit from either sustained local funding or longer-term extramural funding.

Third, understanding the relationship between partnership efforts and distant community health outcomes may be more difficult for outcomes that are less categorical or are broader than any one health concern. For example, research with a collaborative partnership to reduce disparities in health outcomes associated with race (or income) would be challenged to examine relationships among (a) multiple-component interventions facilitated by the partnership, (b) multiple (and presumably interrelated) outcomes in discrete categorical issues (e.g. diabetes or immunization), and (c) more fundamental social determinants of health

(e.g. income disparities, employment, or education). Furthermore, partnerships, even those that address (seemingly) discrete and unrelated health concerns, may have a long-term impact on multiple causes of morbidity and mortality by transforming cross-cutting factors, such as civic engagement or social trust, that are related to multiple discrete health outcomes and overall well-being (20, 65, 66). These methodological challenges may prompt longer and more interdisciplinary approaches to understanding the potential effects of collaborative partnerships on the diverse, interconnected, and distant outcomes they seek.

Conclusions about the contributions of collaborative partnerships to environmental change are limited owing to several methodological weaknesses. First, measures of environmental change (community and systems change) are usually not collected systematically. Seven studies reported using observational definitions and observer instructions to measure environmental change (27, 50, 74, 80, 88, 92, 92a, 107, 121), and fewer reported reliability of measures of environmental change (i.e. levels of interobserver agreement) (27, 50, 74, 88, 92, 92a). Most studies assessed the type and number of environmental events facilitated by a partnership by using retrospective reviews of meeting notes and interviews with key leaders and informants at the end of the study period. Because information was often presented in the form of narrative stories or a summary and common measurement instruments were rarely used, it was difficult to compare the rate of environmental change over time, both within and across studies. Some researchers characterized environmental change across stages of partnership development (e.g. formation, implementation, and maintenance) (33, 42, 76, 87, 121). Another promising approach is to prospectively document environmental changes over time, using monthly or quarterly feedback on rates of community change to prompt adjustments (27, 50, 51, 88, 92, 92a). The categorizing and graphing of environmental changes over time permit creation of a time series design for analyzing time-dependent factors (e.g. action planning or a change in leadership) that may affect the rate of change facilitated by partnerships (27, 50, 88, 92).

Second, there are challenges to estimating the public health significance of environmental changes. This is important because, for instance, a classroom education program to increase knowledge of nutrition among 30 elementary-school students might be expected to have less effect in reducing risk for childhood obesity than a change in a school district policy to reduce the percentage of calories from fat in the food on school menus. An environmental change may have public health significance by affecting many people in a small way (e.g. a media campaign to engage adults in relationships with children) or by affecting a few people more dramatically (e.g. an after-school mentoring program to enhance social support and life options among teens with multiple-risk markers) (114). Four studies used ratings of importance by community members and public health experts to estimate the potential significance of specific environmental changes in addressing a community health goal (27, 50, 92, 92a). The effects of specific community changes spawned by partnerships (e.g. walking clubs to increase physical activity or policies to prevent tobacco sales to minors) were also examined by nesting intervention

research studies in the context of case studies of partnerships (41, 48, 73, 91, 106). However, empirical evidence for the public health impact of each environmental change sought by a partnership may be neither available nor feasible, given the resources and access to research assistance of most partnerships. A better understanding is needed of how collaborative partnerships can choose environmental changes with greater potential for public health impact.

A final challenge in interpreting how partnerships create environmental change and community health improvement is the paucity of tested logic models or theories of action guiding the efforts of such partnerships. Although many studies described a model or framework behind the partnership formation and mission (16, 27, 42, 44, 50, 51, 57, 68, 72, 80, 87, 94, 101, 119, 122, 124, 130), its relationship to measures of environmental change and more distant outcomes was often unclear. Specific reference to how environmental (community and systems) change fits in the long-term process of community health improvement may permit a better understanding of the dynamic and unfolding nature of collaborative partnerships (29, 57).

WHAT MODIFIABLE FACTORS AND BROADER CONDITIONS MAY AFFECT CAPACITY TO CREATE COMMUNITY AND SYSTEMS CHANGE?

As with most aspects of public health practice, the work of facilitating environmental change can be performed with various degrees of success. This may be a function of both modifiable factors (e.g. leadership development and action planning for specific community and system changes) and broader conditions (e.g. concentrated poverty or widespread discrimination).

Some Factors Affecting Rates of Community and Systems Change

Study of the factors that affect the capacity of a partnership to create community and systems change meets challenges similar to those already noted, for example, limited prospects for strong experimental designs, multiple and correlated variables, and differences in measurements of partnership effectiveness. However, some empirical evidence and consistent reports among the reviewed studies were found for seven interconnected and modifiable factors that potentially enhance partnership ability to create environmental conditions related to improved behavioral and population-level health outcomes.

Having a Clear Vision and Mission Although developing a clear vision and mission is widely regarded as an essential aspect of collaborative partnerships, some partnerships never develop one (87). A comparative case study with five coalitions found that collaborative partnerships with a targeted mission (e.g. to

reduce adolescent pregnancy) facilitated five- to sixfold-higher rates of community change than “healthy communities” initiatives with no particular focus or targeted mission (VT Francisco, SB Fawcett, TJ Wolff, DL Foster, unpublished data). A partnership’s vision and mission may articulate work at a continuum of outcomes, including (a) categorical issues (e.g. infant mortality), (b) broader interrelated concerns (e.g. decent jobs and housing), and/or (c) more fundamental social determinants (e.g. income disparities) (25). A clear vision and mission may help generate support and awareness for the partnership (55, 61, 87), reduce conflicting agendas and opposition (23, 52, 87), help identify allies (52, 61), and minimize time costs and distractions from appropriate action (52, 87).

The process used to develop a partnership’s vision and mission may be as important as the product. Full and representative participation in planning, including both influential leaders and those experiencing the issue or concern, may help generate and sustain participation (45, 52, 68, 72, 101). This may be true whether the original mission was adopted because of a request by a funding agency (67, 68, 97, 119, 124) or it grew out of a grassroots reaction to a community tragedy or issue (64, 102, 119). Furthermore, periodic review (and renewal) of the vision and mission may help a partnership adapt to emerging community concerns and create opportunities to address them (3, 87).

Action Planning for Community and Systems Change Planning (identifying what to do and when and how to do it) may be the one activity common to all collaborative partnerships. Almost all studies reported a planning period sometime early in the life of a partnership during which the vision, mission, objectives, and, sometimes, strategies to reach identified goals were identified. This planning process might occur over several meetings within a month or last well over a year before any activities are implemented.

Action planning describes the process of identifying what community and systems changes to facilitate, who will produce them and by when, and how to gain support and minimize opposition in the process of bringing about a given environmental change. Several case studies identified action planning as a factor associated with increases in rates of community change (27, 74, 88, 92). Other reported benefits from action planning include increased membership in the partnership, especially from outside the lead sector (3, 64, 94), greater sustainability of events (113), and adoption of activities by organizations outside the partnership (6, 102). Some reasons that action planning contributes to greater environmental change are that it focuses attention on and clarifies the way to create changes (45, 52, 68), and it helps develop accountability and ownership of responsibility for facilitating community and systems changes (61, 68). Further research may help clarify the function of action plans and their use and adaptation to enhance ongoing action and implementation.

Although planning is important in identifying and implementing community and systems change, it may also lead to internal conflicts (44, 51, 60, 87), invite potential opposition (87, 97), or contribute to the dissolution of a partnership (87).

One factor that may add to these challenges is a time limitation for planning, based on funding agency or locally set requirements, that may force decisions and limit the use of planning to build a support network among initial and potential members of the partnership (42, 44, 67, 97, 119). When partnerships are led by professionals, participation in planning may be limited among those with less formal training, including nonprofessionals, people outside the dominant sector (e.g. health care), and members of low-income or minority communities (44, 52, 94, 97).

Developing and Supporting Leadership Leadership is the process of persuasion or example by means of which an individual (or leadership team) induces a group to pursue objectives held by the leader or shared by his or her followers (39). Among the reviewed studies, leadership was the most often reported internal (or organizational) factor for a partnership's effectiveness in creating community and systems change. Partnership leaders, often the only full-time paid staff, are responsible for organizing and managing partnership activities. In grassroots initiatives, the leader is often the person who organizes and mobilizes community members around a common concern. In more formal, externally funded initiatives, the leader is also often the person who manages and administers the program and resources. Although one person often leads a partnership, leadership may occur through a core group of members (52, 105, 130). Loss of leadership may be adversely associated with rates of community change (27); on the other hand, the arrival of stronger leadership may increase rates of environmental change (74).

Core competencies related to effective leadership include communication, meeting facilitation, negotiation, and networking. Framing and communicating the vision and mission of a partnership to a broad range of stakeholders may help engage other leaders throughout different community sectors (e.g. businesses and schools) and groups (e.g. minorities and cultural groups) in selecting and implementing changes that penetrate places where people live and work (3, 61, 64, 87). Good communication includes cultural competence—respect for, engagement with, and mutual influence among people of different ethnic, racial, and economic backgrounds (44, 97, 105). On the other hand, leaders can limit the type and amount of change by surrounding themselves only with very similar others, for example, those with similar professional, social, or economic status, resulting in a more modest array of changes in a narrower band of sectors within the leader's immediate peer group (44, 51, 87, 97). By using democratic and consensus decision-making methods, leaders may increase members' satisfaction (52, 68, 72, 101), broaden community participation (72, 68), and improve overall coalition effectiveness (72, 68, 105).

Less is known about how partnerships develop and transfer leadership. Different leadership skills may be more useful during different stages of partnership development. The early stages of coalition development may require greater facilitation and listening skills to help engage a diverse and representative membership (51, 68, 87). Later, when a partnership has developed a strong identity and community presence, negotiation and advocacy skills may help bring about environmental

changes that are less feasible politically but important to a partnership's mission (3, 55, 87). Given the variety of leadership skills needed and the absence of those skills among members of community-based initiatives, partnerships may benefit from a leadership team that includes various people with a variety of experiences and skills (3, 102, 105). Another means to diversify leadership is to promote and develop community champions who work for environmental change within a specific sector or for a specific objective (3, 102). Partnerships with dispersed leadership may be less vulnerable to manipulation, reduced efficacy, or dissolution than those that rely on only one leader (67, 68, 87).

Documentation and Ongoing Feedback on Progress Although community health partnerships often aim to improve population-level outcomes, the long period required to change these more distant outcomes limits the utility of behavioral and community-level indicators in guiding the day-to-day activities of a partnership. Documentation and evaluation systems that focus on more intermediate outcomes were found to enhance the functioning of a partnership by helping to identify and provide feedback on what is (and is not) working (43, 51, 105, 110). Specifically, focusing on more intermediate outcomes can help (a) document progress (e.g. with community and systems change), (b) celebrate accomplishments, (c) identify barriers to progress, and (d) redirect efforts to potentially more effective activities (28).

In several studies, partnerships used a measurement and feedback system to document the community and systems changes facilitated by a partnership over time (27, 43, 51, 74, 88, 92, 92a). Data on community (and systems) changes were graphed monthly in a cumulative record, with each new change (i.e. a specific program, policy, or practice) added to all prior ones to depict the process of community development and change. Graphs of community change were used to provide feedback on progress to coalition members and stakeholders. Feedback can illuminate the partnership theory of action by analyzing the distribution of community and systems change by (a) partnership goals, (b) type of risk (protective) factor or asset, (c) duration, and (d) penetration throughout different community sectors (e.g. schools and government) to reach relevant populations (e.g. youth and community leaders). Communicating data on the process of environmental change may enhance accountability, both to those funding the partnership and, more importantly, to the community.

Technical Assistance and Support Technical assistance includes the training and support needed to implement and sustain a collaborative partnership. Such assistance is often provided by professionals outside a partnership (27, 33, 57, 119) but may also be provided by partnership members with specific expertise (64, 87). Whether delivered in person or through Internet-based support systems (26), some core competencies enhanced by technical assistance include community assessment, member recruitment and leadership development, meeting facilitation, action planning, program development and implementation, evaluation, social

marketing, and fundraising (33, 94). Context-sensitive technical assistance will adjust to reflect the type and level of the focal issue in the community, available financial and human resources, the partnership stage of development, and member skills and experiences (33).

Several barriers may limit access to valued technical assistance brokered for partnerships by external sources. These include presumptions about existing levels of staff or community capacity and inappropriate or insufficient support (1, 33, 42, 97, 119). For example, a community that is presumed to lack the capacity to implement a partnership may be denied funding (and access to technical support). Also, a partnership may need support for leadership development but be offered assistance with implementing community assessments; or grant funding may only permit assistance during the first few months rather than providing ongoing support during the life span of the initiative. Potentially more important than receipt of assistance brokered by a grant maker is the ability of a partnership to identify its own needs and secure appropriate technical assistance. This may be especially true for partnerships started by volunteer efforts without initial external funding. For example, a New York coalition to prevent lead poisoning obtained legal counsel to sue the city for not enforcing lead control laws (35, 64). Securing appropriate external technical assistance may occur later in the development of a partnership when members better understand their own strengths and limitations (87). More research is needed to better understand how to build the capacity of community partnerships effectively through technical assistance.

Securing Financial Resources for the Work The work of community change and population-level improvement requires significant human and financial resources that last long enough to effect intended outcomes. The ability of a partnership to secure financial resources for the work (e.g. donations and in-kind support, competent staff, daily expenses, and technical assistance) may predict its sustainability and indicate its capacity to influence community-level outcomes. Resources are often used to hire community organizers or mobilizers who can follow through on facilitating community and systems change and implement interventions identified in action plans (27, 44, 119, 121). Several studies found an increase in the rate of community change (i.e. new or modified programs, policies, and practices) when staff and community organizers were hired by collaborative partnerships (27, 74, 88, 92, 92a). The financial security of a partnership may depend on its ability to demonstrate its value to the community and its contribution to community change and population health improvement (115).

Making Outcomes Matter Collaborative partnerships often begin because community health outcomes matter to a core group of individuals and organizations. The more the outcome promoted by a partnership matters to community members, grant makers, and influential leaders within and beyond the community, the more likely there will be human and financial support for progress toward those outcomes. Initial excitement about a new community health initiative may generate

a flurry of interest and participation, but support may diminish over time (1, 87). Furthermore, in the absence of appropriate intermediate markers for more distant population-level health outcomes, those providing funding support may invest in (or divest from) a partnership regardless of progress. Evaluators can help make outcomes matter by documenting community-relevant indicators of success and providing regular reports to community stakeholders, funding organizations, the media, and local government (35, 44, 50, 51, 64, 87).

Grant makers can also help make outcomes matter. For example, after a grant maker made annual renewal of a multiyear grant contingent on evidence of intermediate outcome (i.e. environmental change), researchers noted a marked increase in the rate of community change (27). Grant makers may request evidence of progress on quarterly partnership reports, provide minigrants for community innovations related to the mission of a partnership (90), and offer bonus grants (e.g. up to one-third of the annual award) contingent on evidence of partnership-facilitated community change and implementation (25). Finally, grant makers can help make more distant outcomes matter by offering "outcome dividends" or dollar bonuses calculated on cost-benefit estimates associated with improvements (e.g. reduced rates of violence or increased immunizations) (40).

Some Broader Contributors to the Effectiveness of Partnerships for Community Health

Researchers speculate that possible side effects of collaborative partnerships, such as enhanced trust, might explain some of their functions and outcomes (20, 24, 66). Perhaps the social network mechanisms inherent in collaborative partnerships (e.g. engaging both influential leaders and those from marginalized communities) may be part of the functional intervention. Some broader factors that may influence the effectiveness of collaborative partnerships as a public health strategy are discussed below.

Social and Economic Factors Social and economic factors are often stronger predictors of population-level health outcomes than many public health interventions. Those with greater social and community ties are less at risk for death (1a). Age and gender predict the probability of many specific diseases and of health status in general. Race and ethnicity are correlates of health outcomes, although questions remain regarding the accuracy and appropriateness of racial and ethnic terms and definitions (2, 32, 36). Educational attainment (126a) and social status (e.g. job class) (77) are potentially modifiable factors related to health outcomes. Concentrations of poverty (i.e. the percent of households below the poverty line) are associated with an array of adverse health outcomes (126). Income inequality (i.e. income of the top 20% compared with the bottom 20%) is a particularly strong predictor of adverse outcomes for population health at national and state levels (63, 65, 126). These are some of the social and economic determinants of health that influence whether and how partnerships work.

Partnerships working in communities with concentrated poverty face several unique barriers. Economic problems, such as high unemployment or inadequate housing, often overshadow the categorical health concerns, such as substance abuse or childhood immunizations, to be addressed by a partnership. Although social and economic problems are likely to be interconnected with health concerns, the community may not have sufficient resources to allocate to multiple and interrelated issues. Mobilizing citizens around more distant health concerns, such as reducing risks for cardiovascular diseases, may be particularly difficult. Resources for organizing around even more proximal concerns, such as youth violence or crime, might be better allocated to addressing more fundamental social determinants (e.g. education and jobs). Competition for scarce resources and economic and social gaps between low-income residents and those with financial resources may further challenge collaborative and substantial investments in local work.

Social Capital Social ties and related trust, which make up the basic structure of social capital, may be an important factor in the functioning of collaborative partnerships. Social capital refers to the degree of citizens' engagement with and trust for each other and trust in community institutions (66, 98). Social capital is correlated with economic and social factors and the capacity of a community to act for public benefit (66, 100). Some research suggests that social capital may be predictive of health outcomes independent of economic indicators (65, 66). Perhaps civic trust influences—and is influenced by—the formation, development, and effectiveness of collaborative partnerships. Social capital may be both an intervening variable, facilitating the relationships needed for collaboration, and a dependent variable or byproduct of partnerships that influence valued outcomes related to community health and development.

Context of the Partnership The conditions that give rise to a collaborative partnership can influence its growth and potential effect on community health. Some of these conditions include the community history of previous collaboration to address related concerns and whether the partnership forms in reaction to a felt community concern, opportunities for external funding, and/or other occasions. Although these conditions are not mutually exclusive, each may exert different influences on the functioning of a partnership.

In this context, history of collaboration refers to prior experience among people and organizations in sharing risks, resources, and responsibilities in pursuit of a common purpose (53, 109). This may include prior collaborative activity as part of an extinct partnership (64, 110), an ongoing effort with a different or related issue (87, 102), and informal social relationships among members or potential members (3, 80, 130). Such histories exist in every partnership, although only a few studies describe their nature and potential effects (3, 64, 87, 97). In a remarkable documentation effort, a study of the New York coalition to prevent lead poisoning described the 10-year history of successes and failures of collaborative

efforts (35, 64). In a similar manner, the Boston initiative to reduce infant deaths, particularly in an African-American community, described how the previous history of conflict and mistrust among partners contributed to difficulties organizing and applying for a large, multiyear grant and deciding how to divide and use the grant money (97). Additional research on how a history of collaboration influences the effectiveness of a partnership can enhance understanding and support for collaborative partnerships for community health.

For any given community health concern, such as preventing injury or promoting early childhood development, a new collaborative partnership may be one of many initiatives within and outside the community working on that concern. Preexisting programs and initiatives may be sources of members for a partnership (110, 119), sources of opposition (97, 119), and potential contributors to effects independent of a partnership within a study (13, 58). However, most studies did not describe how other concurrent partnership and community efforts might have affected the examined partnership and its effects. Documentation of the potential influence of local, state, and national initiatives similar in scope to a partnership in a study can reduce concerns about confounding events, strengthen potential attribution of effects to the partnership, and provide a truer picture of the context for collaborative work (13, 117). Documentation of other community health initiatives that may potentially affect partnership work and outcomes is particularly important for case studies and field experiments that permit limited control over confounding variables.

The primary impetus for formation of a partnership can contribute to its effectiveness by influencing who participates and why. Partnerships within the reviewed studies often were initiated by the staff of one or more service organizations in response to government or foundation funding. Although partnerships may benefit from professional experience and assistance, the presence of experts may also discourage engagement by natural leaders, especially those from the communities most experiencing the community health concern (33, 42, 68, 97, 119). Furthermore, partnerships in which one lead (intermediary) organization receives funding to distribute to other partners may experience challenges and conflict with those partners (44, 97, 119). Partnerships that begin in reaction to a salient community event (e.g. measles epidemic or violent youth death) may attract initial participation that is difficult to sustain long after the event (23, 96). On the other hand, those addressing broader (but less salient) population health issues, such as inadequate immunization rates or lack of caring adult-youth relationships, may have difficulty attracting broad interest and participation (51, 96). Partnerships initiated primarily as the result of research pursuits may suffer the same limitations as those led by professionals (e.g. distance from community participants) and those formed in reaction to a single event or broader issue (e.g. difficulty in raising and maintaining community participation) (44, 119). Although each context of coalition formation can contribute to limitations, these may be overcome, usually with attention to those factors that help support development of a coalition.

The most frequently noted factor contributing to partnership development is time. Each partnership is unique in the time required to organize and plan its

actions, mobilize and expand the group of collaborators, develop and implement appropriate actions and interventions, and potentially effect community and systems changes and related population-level health outcomes (42, 87, 107, 129). Grant and research priorities may rush partnership planning and program development, contributing to a loss of community input and trust and less time to build the competence required for the work of community change and improvement (42, 44, 67, 97, 119).

Community Control in Agenda Setting Power is exercised in the process of agenda setting—determining what concerns will be addressed and what are acceptable means of addressing them. How the agenda for the work of the partnership is set is reflected in who identifies core goals and population-level indicators of success. Few studies explain how partnership goals were prioritized among other concerns within a community (42, 58, 97). In these studies, partnerships went through a process, such as a survey of community health concerns (58, 90) or a community health assessment (21, 42, 70), to decide what health issues were of greatest concern in the community. The final decision about community health goals appeared to be heavily influenced by those who made up the core group of decision makers (e.g. community people, professionals, or outside funding organizations). A much greater understanding is needed of how to balance epidemiological data (the “hard” science) with local citizens’ concerns (experiential knowledge) in choosing what and how to address community health issues (38, 84, 111, 125).

SOME RECOMMENDATIONS FOR RESEARCH AND PRACTICE

This critical review has implications for research and practice with collaborative partnerships for community health. Practitioners working with collaborative partnerships recognize that there is no best way to implement a partnership (87, 129), and researchers know that there is no one true way of evaluating success (60a, 84). Adjustments to the identified challenges and limitations, and lessons from related work (24, 25, 29), suggest specific recommendations. The 14 interrelated recommendations that follow are organized into three groups: (a) those that enhance the practice of implementing collaborative partnerships, (b) those that improve research and evaluation with partnerships, and (c) those that set the conditions under which collaborative partnerships can be successful.

Recommendations for Enhancing Practice with Collaborative Partnerships

1. A partnership should frame and communicate a clear vision and mission that is broadly understood (not just by health-related professionals). The mission should define the problem and acceptable solutions in such a manner as to engage (not blame) those community members most affected

and not to limit the strategies and environmental changes needed to address the community-identified concern.

2. Ongoing action planning should identify specific community and system changes to be sought to effect widespread behavior change and community health improvement.
3. The core membership of a partnership should develop widespread leadership, engaging a broad group of members and allies in the work of community organization, mobilization, and change. Important and sustained environmental change is more likely when leaders emerge from and engage multiple community sectors in facilitating change within their own peer group, organizations, and context.

Recommendations for Improving Research with Collaborative Partnerships

4. Evaluation research should be part of an ongoing and integrated support system, guiding partnership decisions and facilitating continuous improvement. Evaluation information should be shared with key stakeholders, such as community members and grant makers, both to be accountable to the community and to gain support for decisions affecting the partnership and its goals.
5. A collaborative partnership should systematically document its progress in facilitating environmental change (e.g. community and systems change), an intermediate marker in the long process of effecting more distant population-level outcomes. Ongoing documentation, feedback, and critical reflection should be used to assess progress, celebrate successes, and redirect efforts.
6. Research (and practice) would be enhanced by the development of community-level indicators that reliably and sensitively assess the effectiveness of local partnerships. As promising community-referenced indicators emerge for various concerns, these should be made accessible at the level of partnership work (e.g. county, city, or urban neighborhood). Indicators for study should also include measures of the social and economic well being of a community (e.g. caring relationships or income equality).
7. More research is needed to identify generic intervention strategies (e.g. enhanced social support, modifying access, and barriers) that would, if implemented, yield optimal improvements with multiple public health outcomes (e.g. reduced incidence of violence or adolescent pregnancy and increased prevalence of physical activity or childhood immunizations).
8. Further epidemiological research is needed on the broader social conditions or determinants that may affect community health and well

being (e.g. minimal disparities in wealth, higher education, strong social ties). Multiple case studies and social experiments should be conducted to better understand how these conditions could be affected.

9. The costs of such research should match the value added for collaborative partnerships and the communities they serve, and cost-benefit and cost-effectiveness analyses may help yield enhanced methods for understanding and improving collaborative partnerships as a public health strategy.

Recommendations for Setting Conditions for Success

10. Identification of human and financial support for doing the work of community change and public health improvement should begin early and continue throughout the life of a partnership. It should support those actions that effect the environmental changes most valued by the local community and those more likely to influence population-level outcomes. When multiple organizations are represented in a partnership, decisions on allocating human and financial resources should reflect a sharing of risks, resources, and responsibilities for the common work.
11. A collaborative partnership should have access to support and technical assistance for enhancing the core competencies of its members relevant to different stages of the partnership development (e.g. community assessment, action planning, mobilization, and intervention; generating resources to sustain the effort).
12. Communities and grant makers should help make (often delayed) outcomes matter through communications, resource allocation, recognition and celebrations, and systems of rewards and accountability.
13. Efforts should focus on building the capacity of community-based initiatives to address issues that matter to local people over time (e.g. ≥ 10 years), across concerns (e.g. from physical activity to youth development), and across generations of dispersed leadership (e.g. leadership teams integrated by age and experience).
14. Finally, we must transform the conditions under which efforts to improve health and well being occur, including those broader social determinants (i.e. social ties, social class, and income inequality) that lead to unequal outcomes.

CONCLUSION

Adherence to the recommendations in this review does not guarantee the success of a collaborative partnership. Several challenges exist for even the most adept partnership. Among those most reported are (a) engaging those who most

experience the focal issue or community concern, often those with relatively little money or status, (b) collaborating with community leaders in sectors outside the professional field of the lead organization in a partnership, (c) sharing risks, resources, and responsibilities among participating people and organizations, (d) confronting and overcoming conflict within and outside the partnership, and (e) maintaining adequate resources and continuity of leadership long enough to make a difference. Additional challenges include transformation of the broader social and economic factors that limit effectiveness and, when part of an externally supported effort, communicating the needs and negotiating for the time and other resources needed to affect outcomes of public health significance.

The study of more intermediate markers of partnership effectiveness, such as community and systems change, may help researchers and practitioners better understand how partnership efforts are related to more distant population-level outcomes. Many questions remain about the conditions under which community and systems changes may be related to widespread behavior change and improvements in population-level health outcomes. A particularly burning question is, what amount of environmental change, intensity of strategy, duration, and penetration (or exposure) are necessary and sufficient to achieve population-level health improvement?

Finally, much more work is needed to better understand what affects capacity to promote health: the ability to bring about community and systems change and related outcomes over time (e.g. across generations of leadership) and across concerns (e.g. from prevention of adolescent pregnancy to promotion of economic development) (24). Perhaps this work could include research and training for practitioners, researchers, and grant makers in the core competencies of supporting community-based work (e.g. providing appropriate technical assistance, using documentation and evaluation to support ongoing partnership efforts rather than only provide summative judgments, structuring funding mechanisms to improve outcomes and enhance accountability to both funding organizations and the community) (25).

Collaborative partnerships are a promising strategy for engaging people and organizations in the common purpose of addressing community-determined issues of health and well being. Understanding and improving the way partnerships create community and systems change and related improvement in widespread behavior and population-level health outcomes offer an abundance of opportunities for improving the science and practice of community health promotion. Such advances may help us move toward a more just and healthy society—one in which all of us help create environments worthy of any of us.

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LITERATURE CITED

1. Altman DG, Endres J, Linzer J, Lorig K, Howard-Pitney B, Rogers T. 1991. Obstacles to and future goals of ten comprehensive community health promotion projects. *J. Community Health* 16:299–314
- 1a. Berkman LF, Syme SL. 1979. Social networks, host resistance and mortality: a nine-year follow-up study of Alameda County residents. *Am. J. Epidemiol.* 109:186–204
2. Bhopal R, Donaldson L. 1998. White, European, western, Caucasian, or what? Inappropriate labeling in research on race, ethnicity, and health. *Am. J. Public Health* 88:1303–7
3. Bibeau DL, Howell KA, Rife JC, Taylor ML. 1996. The role of a community coalition in the development of health services for the poor and uninsured. *Int. J. Health Serv.* 26:93–110
4. Biglan A. 1995. *Changing Cultural Practices: A Contextualist Framework for Intervention Research*. Reno, NV: Context. 464 pp.
5. Blackburn H. 1983. Research and demonstration projects in community cardiovascular disease prevention. *J. Public Policy* 4:398–421
6. Bracht N, Finnegan JR, Rissel C, Weisbrod R, Gleason J, et al. 1994. Community ownership and program continuation following a health demonstration project. *Health Educ. Res.* 9:243–55
7. Broussard LA, Blankenship FB. 1996. Shots for tots: Louisiana's infant immunization initiative. *J. Soc. Ped. Nurs.* 1:113–16
8. Brownson RC, Smith CA, Pratt M, Mack NE, Jackson-Thompson J, et al. 1996. Preventing cardiovascular disease through community-based risk reduction: the Bootheel Heart Health project. *Am. J. Public Health* 86:206–13
9. Butterfoss FD, Goodman RM, Wandersman A. 1993. Community coalitions for prevention and health promotion. *Health Educ. Res.* 8:315–30
10. Butterfoss FD, Goodman RM, Wandersman A. 1996. Community coalitions for prevention and health promotion: factors predicting satisfaction, participation, and planning. *Health Educ. Q.* 23:65–79
11. Campbell DT, Stanley JC. 1963. *Experimental and Quasi-Experimental Designs for Research*. Chicago: Rand McNally. 84 pp.
12. Caplan PA, Lefkowitz B, Spector L. 1992. Health care consortia: a mechanism for increasing access for the medically indigent. *Henry Ford Hosp. Med. J.* 40:50–55
13. Casswell S, Gilmore L. 1989. An evaluated community action project on alcohol. *J. Stud. Alcohol.* 50:339–46
14. Chavis DM. 1995. Building community

- capacity to prevent violence through coalitions and partnerships. *J. Health Care Poor Underserved* 16:234–45
15. Cheadle A, Beery W, Wagner E, Fawcett S, Green L, et al. 1997. Conference report: community-based health promotion-state of the art recommendations for the future. *Am. J. Prev. Med.* 13:240–43
 16. COMMIT Research Group. 1991. Community intervention trial for smoking cessation: summary of design and intervention. *J. Natl. Cancer Inst.* 83:1620–28
 17. COMMIT Research Group. 1995. Community intervention trial for smoking cessation. I. Cohort results from a four-year community intervention. *Am. J. Public Health* 85:183–91
 18. COMMIT Research Group. 1995. Community intervention trial for smoking cessation. II. Changes in adult cigarette smoking prevalence. *Am. J. Public Health* 85:193–200
 19. Cook TD, Campbell DT. 1979. *Quasi-Experimentation: Design and Analysis Issues for Field Settings*. New York: Houghton Mifflin. 405 pp.
 20. Donnelly PG, Kimble CE. 1997. Community organizing, environmental change and neighborhood crime. *Crime Delinq.* 43:493–511
 21. Durch JS, Bailey LA, Stoto MA, eds. 1997. A community health improvement process. In *Improving Health in the Community: A Role for Performance Monitoring*, pp. 71–125. Washington, DC: Natl. Acad. Press. 475 pp.
 22. Elder JP, McGraw SA, Abrams DB, Ferreira A, Lasater TM, et al. 1986. Organizational and community approaches to community-wide prevention of heart disease: the first two years of the Pawtucket Heart Health program. *Prev. Med.* 15:107–17
 23. Fawcett SB. 1999. Some lessons on community organization and change. In *Reflections on Community Organization: Enduring Themes and Critical Issues*, ed. J Rothman, pp. 314–34. Itasca, IL: Peacock. 408 pp.
 24. Fawcett SB, Francisco VT, Hyra D, Paine-Andrews A, Schultz JA, et al. 1999. Building healthy communities. In *Society and Population Health Reader: State and Community Applications*, ed. A Tarlov. New York: New Press. In press
 25. Fawcett SB, Francisco VT, Paine-Andrews A, Schultz JA. 1999. Working together for healthier communities: a research-based memorandum of collaboration. *Public Health Rep.* In press
 26. Fawcett SB, Francisco VT, Schultz JA, Berkowitz B, Wolff TJ, Nagy G. 1999. The community tool box: an internet-based resource for building healthier communities. *Public Health Rep.* In press
 27. Fawcett SB, Lewis RK, Paine-Andrews A, Francisco VT, Richter KP, et al. 1997. Evaluating community coalitions for prevention of substance abuse: the case of Project Freedom. *Health Educ. Behav.* 24:812–28
 28. Fawcett SB, Paine-Andrews A, Francisco VT, Schultz JA, Richter KP, et al. 1996. Empowering community health initiatives through evaluation. In *Empowerment Evaluation: Knowledge and Tools for Self-Assessment and Accountability*, ed. DM Fetterman, SJ Kaftarian, A Wandersman, pp. 161–87. Thousand Oaks, CA: Sage
 29. Fawcett SB, Paine-Andrews A, Francisco VT, Schultz JA, Richter KP, et al. 2000. Evaluating community initiatives for health and development. In *Evaluating Health Promotion Approaches*, ed. I Rootman, D McQueen, et al. Copenhagen, Denmark: WHO Eur. In press
 30. Fawcett SB, Paine-Andrews A, Francisco VT, Vliet M. 1993. Promoting health through community development. In *Promoting Health and Mental Health in Children, Youth and Families*, ed. DS Glenwick, LA Jason, pp. 233–55. New York: Springer-Verlag
 31. Fawcett SB, Sterling TD, Paine-Andrews

- A, Harris KJ, Francisco VT, et al. 1995. *Evaluating Community Efforts to Prevent Cardiovascular Diseases*. Atlanta, GA: Cent. Dis. Control Prev., Natl. Cent. Chronic Dis. Prev. Health Promot. 197 pp.
32. Flores G, Bauchner H, Feinstein AR, Nguyen USDT. 1999. The impact of ethnicity, family income, and parental education on children's health and use of health services. *Am. J. Public Health* 89:1066–71
33. Florin P, Mitchell R, Stevenson J. 1993. Identifying training and technical assistance needs in community coalitions: a developmental approach. *Health Educ. Res.* 8:471–32
34. Francisco VT, Paine AL, Fawcett SB. 1993. A methodology for monitoring and evaluating community health coalitions. *Health Educ. Res.* 8:403–16
35. Freudenberg N, Golub M. 1987. Health education, public policy and disease prevention: a case history of the New York City coalition to end lead poisoning. *Health Educ. Q.* 14:387–401
36. Fullilove MT. 1998. Comment: abandoning "race" as a variable in public health research—an idea whose time has come. *Am. J. Public Health* 88:1297–98
37. Furlong MJ, Casas JM, Corral C, Gordon M. 1997. Changes in substance use patterns associated with the development of a community partnership project. *Eval. Program Plan.* 20:299–305
38. Gabriel RM. 1997. Community indicators of substance abuse: empowering coalition planning and evaluation. See Ref. 37, pp. 335–43
39. Gardner JW. 1990. *On Leadership*. New York: Free Press. 220 pp.
40. Gerry M, Fawcett SB, Richter K. 1996. Community health and wellness systems for all of our children. In *Providing Universal Health Insurance Coverage to Children: Four Perspectives*, pp. 127–90. Princeton, NJ: Robert Wood Johnson Found.
41. Glasgow RE, Sorensen G, Giffen C, Shipley RH, Corbett K, Lynn W. 1996. Promoting worksite smoking control policies and actions: the community intervention trial for smoking cessation. *Prev. Med.* 25:186–94
42. Goodman RM, Steckler A, Hoover S, Schwartz R. 1993. A critique of contemporary community health promotion approaches: based on a qualitative review of six programs in Maine. *Am. J. Health Promot.* 7:208–20
43. Goodman RM, Wandersman A, Chinman M, Imm P, Morrissey E. 1996. An ecological assessment of community-based interventions for prevention and health promotion: approaches to measuring community coalitions. *Am. J. Community Psychol.* 24:33–61
44. Goodman RM, Wheeler FC, Lee PR. 1995. Evaluation of the Heart to Heart project: lessons from a community-based chronic disease prevention project. *Am. J. Health Promot.* 9:443–55
45. Gottlieb NH, Brink SG, Gingiss PL. 1993. Correlates of coalition effectiveness: the smoke free class of 2000 program. *Health Educ. Res.* 8:375–84
46. Granger RC. 1998. Establishing causality in evaluation of comprehensive community initiatives. In *New Approaches to Evaluating Community Initiatives*. Vol. 2: *Theory, Measurement, and Analysis*, ed. K Fulbright-Anderson, AC Kubish, JP Connell, pp. 221–46. Washington, DC: Aspen Inst.
47. Green LW, Kreuter MW. 1991. *Health Promotion Planning: An Educational and Environmental Approach*. Mountain View, CA: Mayfield. 605 pp. 2nd ed.
48. Grube JW. 1997. Preventing sales of alcohol to minors: results from a community trial. *Addiction* 92:251–60 (Suppl. 2)
- 48a. Gruenewald PJ. 1997. Analysis approaches to community evaluation. *Eval. Rev.* 21: 209–30

49. Harris KJ, Paine-Andrews A, Richter KP, Lewis RK, Johnston JA, et al. 1997. Reducing elementary school children's risks for chronic diseases through school lunch modifications, nutrition education, and physical activity interventions. *J. Nutr. Educ.* 29:196–202
50. Harris KJ, Richter KP, Paine-Andrews A, Lewis RK, Johnston JA, et al. 1997. Community partnerships: review of selected models and evaluation of two case studies. *J. Nutr. Educ.* 29:189–95
51. Hawe P, Stickney EK. 1997. Developing the effectiveness of an intersectoral food policy coalition through formative evaluation. *Health Educ. Res.* 12:213–25
52. Herman KA, Wolfson M, Forster JL. 1993. The evolution, operation, and future of Minnesota SAFPLAN: a coalition for family planning. *Health Educ. Res.* 8:331–44
53. Himmelman AT. 1992. *Communities working collaboratively for a change*. Humphrey Inst. Public Aff., Univ. Minn., Minneapolis. 74 pp.
54. Holder H, ed. 1997. *Addiction: A Community Prevention Trial to Reduce Alcohol-Involved Traumas*, Vol. 92 (Suppl. 2). 310 pp.
55. Holder HD, Reynolds RI. 1997. Application of local policy to prevent alcohol problems: experiences from a community trial. *Addiction* 92:285–92 (Suppl. 2)
56. Holder HD, Saltz RF, Grube JW, Treno AJ, Reynolds RI, et al. 1997. Summing up: lessons from a comprehensive community prevention trial. *Addiction* 92:293–302 (Suppl. 2)
57. Holder HD, Saltz RF, Grube JW, Voas RB, Gruenewald PJ, et al. 1997. A community prevention trial to reduce alcohol-involved accidental injury and death: overview. *Addiction* 92:155–71 (Suppl. 2)
- 57a. Holder HD, Treno AJ. 1997. Media advocacy in community prevention: news as a means to advance policy change. *Eval. Rev.* 21:189–200
58. Holder HD, Treno AJ, Saltz RF, Grube JW. 1997. Recommendations and experiences for evaluation of community-level prevention programs. *Eval. Rev.* 21:268–78
59. Hollister RG, Hill J. 1995. Problems in the evaluation of community-wide initiatives. In *New Approaches to Evaluating Community Initiatives: Concepts, Methods, and Contexts*, ed. JP Connell, AC Kubish, LB Schorr, CH Weiss, pp. 127–72. Washington, DC: Aspen Inst. 225 pp.
60. Howell EM, Devaney B, McCormick M, Raykovick KT. 1998. Back to the future: community involvement in the Healthy Start Program. *J. Health Polit. Policy Law* 23:291–317
- 60a. Israel BA, Schulz AJ, Parker EA, Becker AB. 1998. Review of community-based research: assessing partnership approaches to improve public health. *Ann. Rev. Public Health* 19:173–202
61. Johnston JA, Marmet PF, Coen S, Fawcett SB, Harris KJ. 1996. Kansas LEAN: an effective coalition for nutrition education and dietary change. *J. Nutrit. Educ.* 28:115–18
62. Kaftarian SJ, Hansen WB, eds. 1994. Community Partnership Program Center for Substance Abuse Prevention. *J. Community. Psychol.* (SCAP special issue). 205 pp.
63. Kaplan GA, Pamuk E, Lynch JW, Cohen RD, Balfour JL. 1996. Income inequality and mortality in the United States. *Br. Med. J.* 312:999–1003
64. Kass D, Freudenberg NY. 1997. Coalition building to prevent childhood lead poisoning. In *Community Organizing and Community Building for Health*, pp. 278–88. New Brunswick, NJ: Rutgers Univ. Press
65. Kawachi I, Kennedy BP. 1999. Income inequality and health: pathways and mechanisms. *Health Serv. Res.* 34:215–27

66. Kawachi I, Kennedy BP, Lochner K, Prothrow-Stith D. 1997. Social capital, income inequality, and mortality. *Am. J. Public Health* 87:1484-90
67. Kegler MC, Steckler A, Malek SH, McLeroy K. 1998. A multiple case study of implementation in 10 local project ASSIST coalitions in North Carolina. *Health Educ. Res.* 13:225-38
68. Kegler MC, Steckler A, McLeroy K, Malek SH. 1998. Factors that contribute to effective community health promotion coalitions: a study of 10 project ASSIST coalitions in North Carolina. *Health Educ. Behav.* 25:338-53
69. Koo HP, Duntzman GH, George C, Green Y, Vincent M. 1994. Reducing adolescent pregnancy through school and community-based intervention: Denmark, South Carolina, revisited. *Fam. Plan. Perspect.* 26:206-11
70. Kreuter MW. 1992. PATCH: its origin, basic concepts, and links to contemporary public health policy. *J. Health Educ.* 23:135-47
71. Kreuter M, Lezin N. 1998. *Are consortia/collaboratives effective in changing health status and health systems? A critical review of the literature.* Atlanta: Health 2000. 47 pp.
72. Kumpfer KL, Turner C, Hopkins R, Librett J. 1993. Leadership and team effectiveness in community coalitions for the prevention of alcohol and other drug abuse. *Health Educ. Res.* 8:359-74
73. Lewis RK, Paine-Andrews A, Fawcett SB, Francisco VT, Richter KP, et al. 1996. Evaluating the effects of a community coalition's efforts to reduce illegal sales of alcohol and tobacco products to minors. *J. Community Health* 21:429-36
74. Lewis RK, Paine-Andrews A, Fisher J, Custard C, Fleming-Randle M, Fawcett SB. 1999. Reducing the risk for adolescent pregnancy: evaluation of a school/community partnership in a midwestern military community. *Fam. Community Health* 22:16-30
75. Manley MW, Pierce JP, Gilpin EA, Rosbrook B, Berry C, Wun LM. 1997. Impact of the American stop smoking intervention study on cigarette consumption. *Tob. Control* 6:12-16 (Suppl.)
76. Mansergh G, Rohrbach LA, Montgomery SB, Pentz MA, Anderson Johnson C. 1996. Process evaluation of community coalitions for alcohol and other drug abuse prevention: a case study comparison of researcher- and community-initiated models. *J. Community Psychol.* 24:118-35
77. Marmot MG, Smitt GD, Stansfield S, Patel C, North F, et al. 1991. Health inequality among British civil servants: the Whitehall II study. *Lancet* 337:1387-93
78. Mattessich PW, Monsey BR. 1992. *Collaboration: What Makes It Work, A Review of Research Literature on Factors Influencing Successful Collaboration.* St. Paul, MN: Amherst H. Wilder Found. 53 pp.
79. Mattessich P, Monsey B, Roy C. 1997. *Community Building: What Makes It Work. A Review of Factors Influencing Successful Community Building.* St. Paul, MN: Amherst H. Wilder Found. 102 pp.
80. Mayer JP, Soweid R, Dabney S, Brownson C, Goodman RM, Brownson RC. 1998. Practices of successful community coalitions: a multiple case study. *Am. J. Health Behav.* 22:368-77
81. McAlister A, Puska P, Salonen JT, Tuomilehto J, Koskela K. 1982. Theory and action for health promotion: illustrations from the North Karelia project. *Am. J. Public Health* 72:43-50
82. McLeroy KR, Bibeau D, Steckler A, Glanz K. 1988. An ecological perspective on health promotion programs. *Health Educ. Q.* 15:351-77
83. McLeroy KR, Kegler M, Steckler A, Burdine JM, Wisotzky M. 1994. Community coalitions for health promotion: summary and further reflections. *Health Educ. Res.* 9:1-11

84. McQueen DV, Anderson LM. 2000. What counts as evidence? Issues and debates on evidence relevant to the evaluation of community health promotion programs. In *Evaluation in Health Promotion: Principles and Perspectives*, ed. I Rootman, M Goodstadt, L Potvin, J Springett, D McQueen, E Ziglio. Copenhagen, Denmark: WHO Eur. In press
85. Millar AB, Gruenewald PJ. 1997. Use of spatial models for community program evaluation of changes in alcohol outlet distribution. *Addiction* 92:273–83 (Suppl. 2)
86. Mittlemark MB, Hunt MK, Heath GW, Schmid TL. 1993. Realistic outcomes: lessons from community-based research and demonstration programs for the prevention of cardiovascular diseases. *J. Public Health Policy* 14:437–62
87. Nezelek JB, Galano J. 1993. Developing and maintaining state-wide adolescent pregnancy prevention coalitions: a primary investigation. *Health Educ. Res.* 8:433–47
88. Paine-Andrews A, Fawcett SB, Richter KP, Berkley JY, Williams EL, Lopez CM. 1996. Community coalitions to prevent adolescent substance abuse: the case of the "Project Freedom" replication initiative. *J. Prev. Interv. Community* 14:81–99
89. Paine-Andrews A, Fisher JL, Harris KJ, Lewis RK, Fawcett SB, et al. 1999. School/community initiatives for preventing adolescent pregnancy: exploring a working hypothesis. Presented at Biannu. Meet. Soc. Community Res. Action, New Haven, CT
90. Paine-Andrews A, Francisco VT, Fawcett SB. 1994. Assessing community health concerns and implementing a microgrant program for self-help initiatives. *Am. J. Public Health* 84:316–18
91. Paine-Andrews A, Francisco VT, Fawcett SB, Johnston J, Coen S. 1996. Health marketing in the supermarket: using prompting, product sampling, and price reduction to increase customer purchases of lower-fat items. *Health Mark. Q.* 14:85–99
92. Paine-Andrews A, Harris KJ, Fawcett SB, Richter KP, Lewis RK. 1997. Evaluating a statewide partnership for reducing risks for chronic diseases. *J. Community Health* 22:343–59
- 92a. Paine-Andrews A, Harris KJ, Fisher JL, Lewis RK, Williams EL, et al. 1999. Effects of a replication of a school/community model for preventing adolescent pregnancy in three Kansas communities. *Fam. Plan. Perspect.* 31:182–89
93. Paine-Andrews A, Vincent ML, Fawcett SB, Campuzano MK, Harris KJ, et al. 1996. Replicating a community initiative for preventing adolescent pregnancy: from South Carolina to Kansas. *Fam. Community Health* 19:14–30
94. Parker EA, Eng E, Laraia B, Ammerman A, Dodds J, et al. 1998. Coalition building for prevention: lessons learned from the North Carolina community-based public health initiative. *J. Public Health Manage. Pract.* 4:25–36
95. Pentz MA, Dwyer JH, MacKinnon DP, Flay BR, Hansen WB, et al. 1989. A multi-community trial for primary prevention of adolescent drug abuse. *JAMA* 261:3259–66
96. Peterson L. 1986. Prevention and community compliance to immunization schedules. *Prev. Human Serv.* 5:79–95
97. Plough A, Olafson F. 1994. Implementing the Boston Healthy Start initiative: a case study of community empowerment and public health. *Health Educ. Q.* 21:221–34
98. Potapchuk WR, Crocker JP, Boogaard D, Schechter WH. 1998. *Building Community: Exploring the Role of Social Capital and Local Government*, Program Community Probl. Solving, Washington, DC. 31 pp.
99. Puska P, Nissinen A, Tuomilehto J, Salonen JT, Koskela K, et al. 1985. The community-based strategy to prevent coronary heart disease: conclusions from the ten years of North Karelia project. *Annu. Rev. Public Health* 6:147–93

100. Putnam RD. 1995. Bowling alone: America's declining social capital. *J. Democr.* 6:64-78
101. Rogers T, Howard-Pitney B, Feighery EC, Altman DG, Endres JM, Roeseler AG. 1993. Characteristics and participant perceptions of tobacco control coalitions in California. *Health Educ. Res.* 8:345-57
102. Rohrbach LA, Johnson CA, Mansergh G, Fishkin SA, Neumann FB. 1997. Alcohol-related outcomes of the day one community partnership. *Eval. Program Plan.* 20:315-22
103. Rosenberg Z, Findley S, McPhillips S, Penachio M, Silver P. 1995. Community-based strategies for immunizing the "hard-to-reach" child: the New York state immunization and primary health care initiative. *Am. J. Prev. Med.* 11:14-20
104. Rothman J, Tropman JE. 1987. Models of community organization and macro practice perspectives: their mixing and phasing. In *Strategies of Community Organization: Macro Practice*, ed. FM Cox, JL Erlich, J Rothman, JE Tropman, 4:3-26. Itasca, IL: Peacock
105. Rowe W. 1997. Changing ATOD norms and behaviors: a Native American community commitment to wellness. *Eval. Program Plan.* 20:323-33
106. Saltz RF, Stanghetta P. 1997. A community-wide responsible beverage service program in three communities: early findings. *Addiction* 92:237-50
107. Saxe L, Reber E, Hallfors D, Kadushin C, Jones D, et al. 1997. Think globally, act locally: assessing the impact of community-based substance abuse prevention. *Eval. Program Plan.* 20:357-66
108. Schooler C, Farquhar JW, Fortmann SP, Flora JA. 1997. Synthesis of findings and issues from community prevention trials. *Ann. Epidemiol.* 7:54-68 (Suppl.)
109. Schorr LB. 1997. *Common Purpose: Strengthening Families and Neighborhoods to Rebuild America*. New York: Doubleday. 482 pp.
110. Shaw RA, Rosati MJ, Salzman P, Coles CR, McGeary C. 1997. Effects on adolescent ATOD behaviors and attitudes of a 5-year community partnership. *Eval. Program Plan.* 20:307-13
111. Shea S. 1992. Community health, community risks, community action. *Am. J. Public Health* 82:785-87
112. Shea S, Basch CE. 1990. A review of five major community-based cardiovascular disease prevention programs. II. Intervention strategies, evaluation methods, and results. *Am. J. Health Promot.* 4:279-87
113. Shediak-Rizkallah MC, Bone LR. 1998. Planning for the sustainability of community-based health programs: conceptual frameworks and future directions for research, practice and policy. *Health Educ. Res.* 13:87-108
114. Sorenson G, Emmons K, Hunt MK, Johnston D. 1998. Implications of the results of community intervention trials. *Annu. Rev. Public Health* 19:379-416
115. Steckler A, Goodman RM. 1989. How to institutionalize health promotion programs. *Am. J. Health Promot.* 3:34-44
116. Stokols D. 1992. Establishing and maintaining healthy environments: toward a social ecology of health promotion. *Am. Psychol.* 47:6-22
117. Susser M. 1995. Editorial: the tribulations of trials-intervention in communities. *Am. J. Public Health* 85:156-58
118. Tarlov AR, Kehrner BH, Hall DP, Samuels SE, Brown GS, et al. 1987. Foundation work: the health promotion program of the Henry J. Kaiser Family Foundation. *Am. J. Health Promot.* 2:74-80
119. Thompson B, Wallack L, Lichtenstein E, Pechacek T. 1991. Principles of community organization and partnership for smoking cessation in the community intervention trial for smoking cessation. *Int. Q. Community Health Educ.* 11:187-203
120. Treno AJ, Holder HD, eds. 1997. Evaluation design for a community trial to

- reduce alcohol-involved trauma: an environmental approach to prevention. *Eval. Rev.* 21:1–277 (entire issue)
121. Treno AJ, Holder HD. 1997. Community mobilization: evaluation of an environmental approach to local action. *Addiction* 92:173–87 (Suppl. 2)
 122. Vincent ML, Clearie AF, Schluchter MD. 1987. Reducing adolescent pregnancy through school and community-based education. *JAMA* 257:3382–86
 123. Voas RB, Holder HD, Gruenewald PJ. 1997. The effect of drinking and driving interventions on alcohol-involved traffic crashes within a comprehensive community trial. *Addiction* 92:221–36 (Suppl. 2)
 124. Wagenaar AC, Gehan JP, Jones-Webb R, Toomey TL, Forster, et al. 1999. Communities mobilizing for change on alcohol: lessons and results from a 15-community randomized trial. *J. Community Psychol.* 27:315–26
 125. Waller JB. 1990. Epidemiology for identifying community problems. *Henry Ford Hosp. Med. J.* 38:158–59
 126. Wilkinson RG. 1996. *Unhealthy Societies: The Afflictions of Inequality*. London: Routledge. 255 pp.
 - 126a. Winkleby MA, Jatulis DE, Frank E, Fortmann SP. Socioeconomic status and health: how education, income, and occupation contribute to risk factors for cardiovascular disease. *Am. J. Public Health* 82:816–20
 127. Yin RK. 1991. *Case Study Research: Design and Methods*. Newbury Park, CA: Sage. 166 pp.
 128. Yin RK, Kaftarian SJ. 1997. Introduction: challenges of community-based program outcome evaluations. *Eval. Program Plan.* 20:293–97
 129. Yin RK, Kaftarian SJ, Yu J, Jansen MA. 1997. Outcomes from CSAP's community partnership program: findings from the national cross-site evaluation. *Eval. Program Plan.* 20:345–55
 130. Zapka JG, Marrocco GR, Lewis B, McCusker J, Sullivan J, et al. 1992. Inter-organizational responses to AIDS: a case study of the Worcester AIDS consortium. *Health Educ. Res.* 7:31–46



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