

Theory and Delivery of Health Programming in the Community: The Pawtucket Heart Health Program¹

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The Pawtucket Heart Health Program is one of the community studies examining whether population-based efforts to lower cardiovascular risk factors will reduce cardiovascular morbidity and mortality. The Pawtucket Heart Health Program intervention is based on a blend of social learning theory, community organization models, community psychology tenets, and diffusion research. This model allows for multifaceted programs that target individuals, groups, organizations, and the entire community to alter their cardiovascular risk through managing blood pressure, lowering blood cholesterol, quitting smoking, increasing fitness, and maintaining desirable weight levels. A dominant feature of the intervention is the emphasis that it places on volunteers for program delivery. The role of volunteers in providing direct services to help citizens lower their blood pressure and lose weight is highlighted to demonstrate the feasibility and effectiveness of these services. In addition, church-based programming which utilizes volunteers to manage and direct programs is also presented as an example of community-based health promotion efforts that promote collective efficacy. © 1987 Academic Press, Inc.

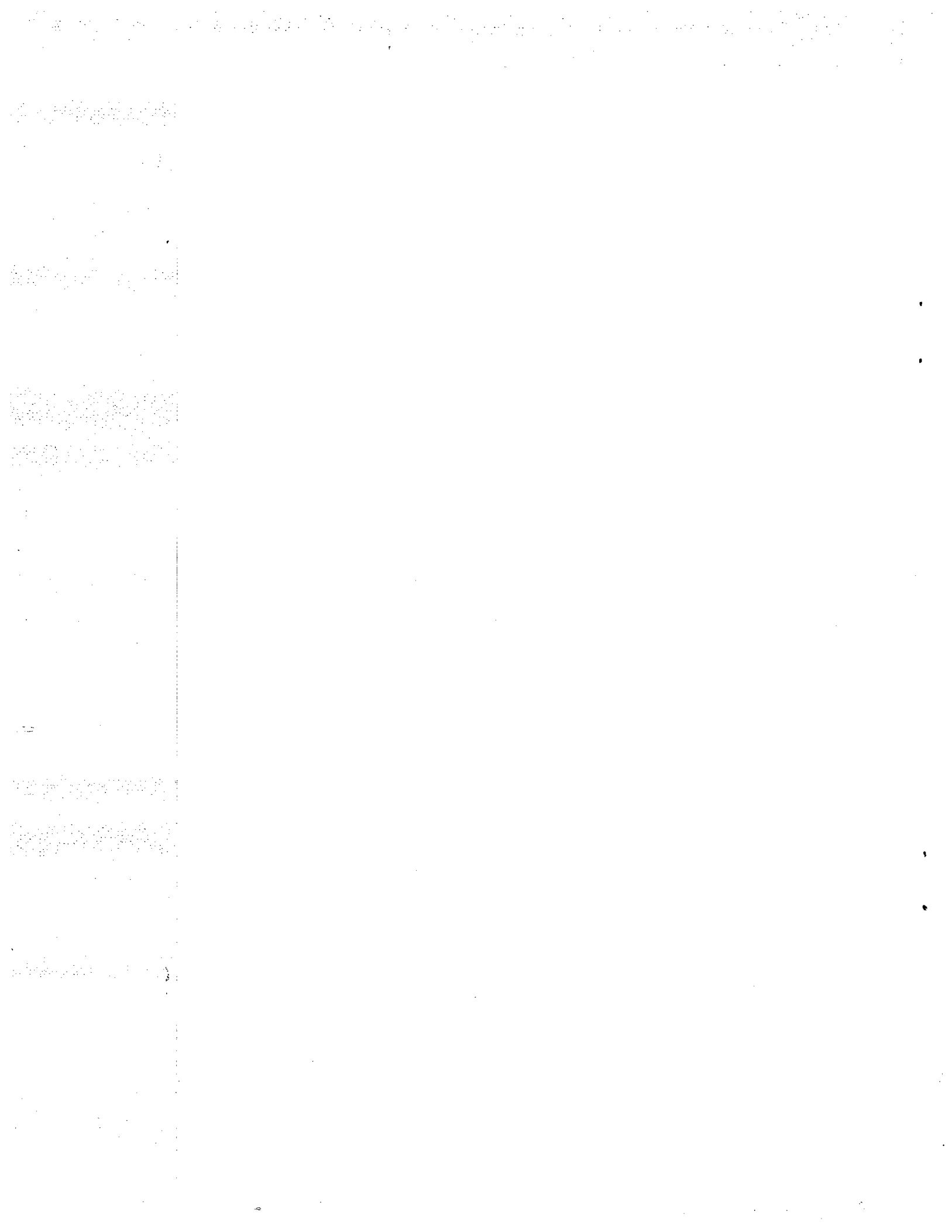
INTRODUCTION

Cardiovascular diseases (CVD) account for almost 50% of all deaths and the largest number of days of hospitalization, and are the major cause of disability in the United States. The economic burden of CVD is enormous: Direct health care expenditures for CVD were \$33.2 billion in 1980, with \$14.6 billion spent on coronary heart disease (CHD) alone. Nearly two-thirds of direct health costs for CHD are in hospital care: In 1984, \$4 billion went to pay for coronary bypass surgeries—the most frequently performed major surgical procedure after hospital-based births (15, 23).

Explanations for the vast prevalence of CVD center principally around the concept of risk factors: both host and environmental factors that have been demonstrated to relate probabilistically to future disease in a number of epidemiologic studies of various populations, animal experiments, clinical investigations, and clinical trials (1). Among the better documented of these risk factors are cigarette smoking, high blood cholesterol, and high blood pressure. Data from the National Health and Nutrition Examination Survey (NHANES) indicate that one or more

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of these risk factors are present in 57–77% of the U.S. population, depending on gender and race (15). Risk status was defined in NHANES as systolic blood pressure of at least 160 mm Hg and/or diastolic blood pressure of 95 mm Hg, serum cholesterol of at least 260 mg/dl, and current smoker. The more recent statement on cholesterol and heart disease, which defined risk categories for blood cholesterol even more stringently, may add as much as another 15% of the population to these figures (22). The prevalence of these risk factors is alarmingly high, despite the fact that their rates actually have decreased over the past 20 years (15). Many experts are convinced that the mass prevalence of risk factors is the primary contributor to the CHD epidemic and that the only way to reduce the burden of heart disease is to modify, on a population-wide basis, the prevalence of risk behaviors—e.g., to ask people to stop smoking, make dietary changes, increase physical activity, avoid being overweight, and manage blood pressure (5, 7, 9, 24). Several studies have demonstrated the efficacy of the community approach for modifying risk factors (11, 12) and reducing CVD (17).

Currently, three community-based demonstration projects in the United States are examining whether alteration of risk factors among entire populations is feasible and will result in lower CHD morbidity and mortality. The Stanford Five-City Study (10), the Minnesota Heart Health Program (6), and the Pawtucket Heart Health Program (PHHP) (13) all involve epidemiologic surveillance of CVD in their respective intervention and comparison communities to detect changes in morbidity and mortality that may be attributable to intervention/education efforts in the target cities. We describe here the PHHP intervention strategy which is focused in Pawtucket, Rhode Island. The 1980 U.S. Census data characterized Pawtucket as a city of 71,204 inhabitants, with a median age of 33.6 years, a median education level of 11.9 years (49.8% are high school graduates), a mean family income of just over \$19,000, and where 44% of persons over age 16 are employed in manufacturing industries. It is also a very stable population: Nearly 69% of the sampled population reported being born in Rhode Island, and 63% lived in the same house as they did in 1975 (an additional 29% lived in Rhode Island in 1975—but in a different house). When these data are compared with those of the control community, very few differences are noted other than the control community's larger population—98,478.

The PHHP is one of the three community research and demonstration studies in CVD prevention in the United States funded by the National Heart, Lung, and Blood Institute of the National Institutes of Health. The PHHP initial funding cycle commenced in August 1980, and is currently planned through July 1991. Five primary hypotheses are its focus:

- (a) Community health change using lay volunteers is feasible and effective.
- (b) Health-promoting, population-wide risk factor behavior change will occur through a process of community activation with involvement by individuals, groups, organizations, and the entire community.
- (c) The creation of social networks in support of behavior change will result in altered attitudes concerning risk factor behavior-related change, and in maintenance of these changes.

(d) Actual risk factor intensity or prevalence, measured in successive random samples of the population, will decrease.

(e) The reduced estimated cardiovascular risk will later be manifest as a reduction in atherosclerosis-related morbidity and mortality in Pawtucket compared with changes in a reference city.

The evaluation of the PHHP includes biennial random household risk factor surveys in Pawtucket and the reference city and continuous surveillance of myocardial infarction (ICD-9 410-414, 786.5-786.59) and stroke (ICD-9 430-437) in eight community hospitals. In addition, a Formative and Process (F&P) Evaluation section conducts community process tracking to provide ongoing assessment of intervening variables, impact variables, and use of new or existing programs. This is accomplished through content analysis of the major newspaper in each city for health-related articles and cigarette advertisements, and annual interviews with a variety of health agencies to document the secular trends for CVD risk factor interventions carried out by other agencies and their participation rates. The F&P section is also responsible for conducting formative studies on the effectiveness of new intervention methods. Finally, F&P tracks the process of the PHHP intervention through the use of a specially designed "contact card" that is completed by every individual who participates in a PHHP-sponsored activity. Each contact card is specifically coded for the type of activity being conducted, where the activity is held, and the date of the event. The tracking system is used to determine the sociodemographic profile of participants in various programs, document the number of exposures to the PHHP that each participant receives during the course of the project, refine and target intervention programs, assess the immediate and long-term impacts of PHHP programs through follow-up telephone interviews with random samples of participants, and provide an historical record of the entire PHHP intervention effort.

After the commencement of funding in August 1980, baseline and biennial random household surveys of risk factors began in February 1981. To avoid seasonal confounds, each survey is conducted over an entire year. The 1981-1982 year, during the baseline surveys, was devoted to planning and piloting the intervention. Field intervention efforts did not begin until the spring of 1982. During the first 3 years of intervention efforts, the PHHP has involved over 15,000 persons in heart health behavior change programs. We present the PHHP intervention model and review several of its components that demonstrate the underlying theoretical base.

THEORETICAL ELEMENTS OF PAWTUCKET HEART HEALTH PROGRAM

PHHP intervention activities are theory driven. The essential intervention strategy is one of community activation—mobilizing community involvement in all aspects of heart health program planning, implementation, evaluation, and management by crafting a volunteer-based delivery system. This approach targets the development of an optimal community environment for heart health behaviors, or what has been referred to as "systems-level/competence-enhancement" (14). Historically, different methods of community organization have been

drawn upon to conceptualize community-level interventions including locality development and social planning (19). The locality-development model underscores the necessity to involve a broad spectrum of people in goal determination and action for effective community change. Democratic procedures, voluntary cooperation, training of indigenous leaders, and educational self-help methods are the hallmarks of such an approach.

Social planning represents an alternative view of community organization. From this perspective, social change is planned by designated experts who employ their technical skills to guide change processes. Rational deliberation and problem-solving skills are used to provide goods and services to people who need them. A major difference between this approach and the locality-development model is in terms of the client role; social planning conceives of citizens as being passive recipients of services, whereas the locality-development method encourages active participation of the citizenry in all phases of the change process. Moreover, the practitioner role of "expert" in social planning strategies contrasts markedly with the "enabler" posture of locality developers.

Although these two methods are quite discrete in theory, the PHHP in practice has blended both approaches to fit the presenting community context. At some times, one model may be more emergent than the other, and on other occasions, they may be indistinguishable. A third model presented by Rothman (19), social action (or reform), may best represent the current community organization practice of the PHHP. Here, goal determination and action strategies are generated by external agents much like the social planning model. However, the change strategy is different: These experts then seek to organize coalitions of concerned interests to attack the problem. The change techniques that are employed include campaign tactics; employment of facts; and persuasion within the context of voluntary associations, mass media, and legislative bodies to change institutional and community policies and norms. In this approach, citizens can be either recipients or agents of action, while the practitioner role is defined more as that of a coalition builder, fact gatherer, and policy analyst. A cogent example of this model, discussed below, is the PHHP's work with churches as heart health delivery systems.

Throughout the community organization process, regardless of the theoretical slant that may pervade the salient intervention, a community activation orientation is maintained. This process is embodied in the volunteer—a strategy that is elaborated on later in this article. To a large extent, the amount of community activation engendered by an activity is the behavioral index of the entire community's commitment to heart health programming. It is postulated that the process of community activation will lead to a situation in which long-term management of heart health programs (i.e., after research funding ceases) will continue by trained volunteers from the community and be supported by local institutions (e.g., businesses, schools, nonprofit groups). Indeed, the transfer of a professionally managed intervention project to a community-owned prevention program is a major goal of the PHHP.

Within this encompassing strategy are programs designed to stimulate, facilitate, and maintain behavior changes. Target behaviors include control of blood

pressure at levels of 120/80 mm Hg or less, achievement of blood cholesterol levels under 200 mg/dl in adults over 30 years of age (under 180 mg/dl for ages 18–29), smoking cessation, regular aerobic physical activity, and maintenance of desirable body weight. All intervention activities are consonant with the tenets of social learning theory. As presented by Bandura (2, 3), social learning theory assumes that reciprocal deterministic relationships exist among an individual's thought processes, his/her behavior, and the environment. These relationships are mediated and governed by the cognitive mechanism of self-efficacy—a person's belief in his/her own competence to perform specific behaviors. PPHP intervention efforts are thus focused on increasing people's belief in their sense of heart health self-efficacy (i.e., in their ability to perform specific behaviors that will reduce their risk of CVD). PPHP efforts include an emphasis on behavior change through direct behavior change techniques, targeting of relevant cognitive variables (e.g., motivational, attentional, and retentional processes) as part of the behavior-change process, and strategic alterations of the environment to stimulate, reinforce, and encourage the generalization and maintenance of desired behavior changes. In addition, the PPHP intervention promotes what Bandura (4) refers to as "collective efficacy," or bringing together people who are individually high in personal efficacy who then, as a group, can work to effect changes in groups, organizations, and the community at large. This process allows for the blending of both individual and community-oriented change strategies in planning heart health intervention.

Operationalization of community organization and social learning theory has led to the intervention cube depicted in Fig. 1. For each risk factor, three major behavior-change phases are emphasized: a *promotion/motivation* phase to interest people in changing the specific risk behavior, a two-stage *skills training* phase in which specific behavior-change skills are acquired and support networks to maintain the new behavior are developed, and a *maintenance/generalization*

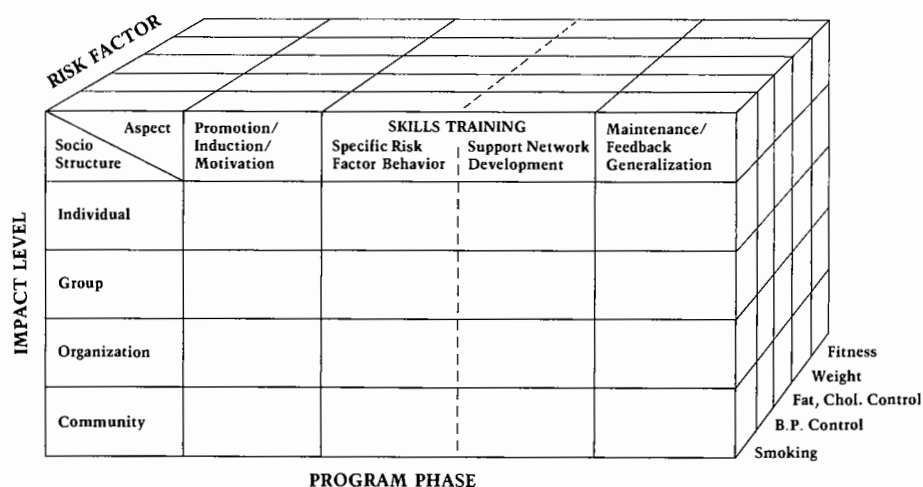


FIG. 1. The Pawtucket Heart Health Program Intervention Cube: Risk factor change targeted at different levels of impact across program phases.

phase, in which active efforts are undertaken to continue the process of behavior-change generalization to all aspects of the milieu and across time. For each risk factor, and across all of the change process phases, PHHP has developed intervention protocols targeting the individual, group, organization, and/or community. The primary operational outcomes for each of these focus levels are shown in Table 1.

Although each intervention level has discrete outcomes (i.e., changes in behaviors, social networks, policies, structures, and norms), these levels are not necessarily independent. Rather, they are all interrelated in a reciprocal, deterministic manner. Such relationships allow PHHP to effect changes in all parts of the Pawtucket social environment through a variety of channels. That is, targeting any level of the environment can have direct effects on the immediately adjacent social grouping, and indirect reverberations on other levels of the community through the process of diffusion along existing social networks (18, 20). The PHHP intervention is predicated on the idea that simultaneous concerted use of multiple-change strategies directed across risk factors, phases of the change process, and focus levels will bring about the most effective and lasting changes in the community health risk status.

When one translates these theoretical elements into programs, several principles of behavioral community psychology (8) can serve as a template. Among these principles are:

(a) *Ease of adoption.* Intervention procedures should be easily adoptable by the vast majority of community residents, rather than being accessible to only certain segments (e.g., white, middle-aged, upper middle-class).

(b) *Flexibility.* Programs should be adaptable to the specific needs of subgroups, and responsive to program evaluation feedback and new scientific information.

(c) *Low cost.* Effective materials and procedures should minimize economic barriers to implementation.

(d) *Acceptability.* Intervention efforts need to be cognizant of prevailing community norms and values, and the development of programs should proceed accordingly.

(e) *Visibility.* Programs that are highly visible to community residents will enhance community adoption of them.

(f) *Community involvement.* All phases of programming should involve community leaders and residents to influence program structure and function to best

TABLE 1
PRIMARY OPERATIONAL OUTCOMES OF THE PAWTUCKET HEART HEALTH PROGRAM
MULTILEVEL APPROACH

Impact level	Target
Individual	Behavior
Group	Social network
Organizational	Policies/structures
Community	Norms/structures

fit the needs of the community and its residents, and to further stimulate community activation and eventual ownership of PHHP.

Once programs are developed from these theoretical bases, then they are tailored to the PHHP volunteer delivery system. Before reviewing how PHHP manages this novel approach to preventive health-care delivery, we examine the theoretical and practical importance of a volunteer delivery system for community-based interventions.

There are at least eight reasons to involve volunteers in preventive heart health programs. First, and perhaps most important, volunteers can serve as peer models for heart health cognitive and behavioral change. A voluminous literature documents that models who are similar to oneself are those most likely to be imitated (21). Second, being a heart health volunteer provides the person with the chance to perform heart healthy behaviors on a regular basis (e.g., learning to measure blood pressure, being a nutrition counselor). Third, volunteers also provide a support network for themselves and others who are making heart health behavioral changes through both formal structures (e.g., volunteer staff meetings, small group programs, organizational task forces) and informal mechanisms.

Fourth, volunteers promote the diffusion of heart health information by spreading the word to other residents with whom they come in contact through their daily activities. Fifth, volunteers who are high in individual efficacy can be identified, and networked, to help change organizational and community structures and norms by pooling and sharing resources (i.e., collective efficacy). Sixth, a volunteer delivery system promotes community ownership through active recruitment of, and participation by, citizens in the planning, implementation, evaluation, and management of heart health programs. Seventh, volunteer delivery systems can also be cost-effective methods to obtain heart healthy behavior changes (16). And finally, the use of volunteers to deliver behavior-change programs multiplies the reach of professional staff into the community to effect risk behavior modification.

The richness of the theoretical model is reflective of the challenge of community health promotion. The PHHP experience of developing this model, and of operationalizing it in a multitude of behavior-change programs, has been a rewarding one. The model serves as a useful guide to conceptualizing and planning community-based programs in Pawtucket. Although some elements of the model may be site specific, many of the tenets should be generalizable to other locations and other health-related goals.

THE VOLUNTEER DELIVERY SYSTEM

Recruitment of volunteers occurs through a variety of channels. These include direct solicitation of individuals and groups through personal contact by either PHHP staff or other volunteers (e.g., speaking engagement/recruitment at social organizations such as the Lions or Kiwanis Club), recruitment booths or displays at community activities and sites (e.g., the public library, health fairs), and announcements in the local paper. Through these various strategies, most of which are aimed at the entire community, the PHHP has recruited 881 volunteers in its

first 3 years of intervention. These volunteers include 218 males ages 12–75 years ($\bar{x} = 38.85$) and 663 females ages 11–82 years ($\bar{x} = 37.68$).

Volunteers serve in a variety of roles including administrative volunteers (primarily clerical duties), behavior-change counselors (direct intervention activities), and heart health coordinators (persons in organizations who coordinate heart health intervention activities). In addition, many institutions and groups voluntarily support and/or implement heart health programs through donation of their resources. Examples of such activities include a worksite conducting a risk factor campaign internally with indigenous resources and a social group volunteering to conduct a community-wide risk factor screening under the auspices of the PHHP. The focus of this discussion is on the volunteer delivery of intervention programs, activities in which 72% of all PHHP volunteers are involved.

Volunteers who are involved in implementing behavior-change programs are trained by PHHP staff according to standard protocols and are certified by oral, written, and/or practical demonstrations of requisite knowledge and skills. After certification, these trained volunteers continue to be supervised by individual PHHP staff, usually risk factor specialists, and are recertified in their area of training each year. Volunteers are involved in two kinds of direct intervention activities. First, they are trained to lead behavior-change groups in weight loss, nutrition, smoking cessation, fitness, and stress management. This includes group instruction and supervised experience in co-leading a group in a specific risk behavior area. The effectiveness of volunteers in conducting such groups has been reported previously (16).

Volunteers are also trained to be risk factor screeners and counselors. In some instances, this may be limited to training in taking accurate and reliable height and weight measurements, learning to measure expired-air carbon monoxide with an Ecolyzer, conducting the step test for fitness evaluation, or drawing capillary blood samples with an Autolet and capillary collection tubes for blood cholesterol determinations. However, many other volunteers are trained through both didactic and performance-based methods to conduct screening, counseling, and referral events (SCOREs) in the community. These brief intervention activities have been designed by the PHHP to promote awareness of one's risk factor status, provide information to stimulate behavior change, present focused education on making necessary behavior changes and reinforce healthful changes. SCOREs exist for blood pressure ("Screening Plus"), cholesterol/nutrition ("Rate Your Plate"), smoking ("Smoke Out"), obesity ("Weigh-In"), and fitness ("Fit Check"). Moreover, a multiple risk factor SCORE, "Heart Check," incorporates all of the above risk factors into one complete screening and counseling event. Volunteers learn to take the physiological measurements, interpret this information accurately, counsel people as to any action that is necessary, and make referrals to physicians or other health professionals if indicated. As with group leaders, these screeners are also supervised by PHHP staff and recertified on a yearly basis.

During the first 3 years of intervention, volunteers have been trained to provide direct intervention to community residents through one or both of these methods (volunteers may be trained to deliver more than one type of program). As shown in Table 2, the largest proportion of certifications has been in blood pressure

TABLE 2
 NUMBER OF VOLUNTEERS TRAINED TO CONDUCT SCORES AND/OR GROUP BEHAVIOR-CHANGE PROGRAMS, BY RISK FACTOR, THE PAWTUCKET HEART HEALTH PROGRAM (MARCH 1982-DECEMBER 1985)

Risk factor	SCORE	Group	Total
Blood pressure	323	—	323
Exercise	30	64	94
Nutrition	46	29	75
Smoking	26	102	128
Stress management	—	53	53
Weight loss	—	51	51
Multiple	258	28	286

Note. SCOREs = screening, counseling, and referral events. See text for further discussion.

(32%), 28% have been in multiple risk factor SCOREs or group programs, 13% in teaching smoking cessation methods, and 9% in exercise-related activities; nutrition sessions have accounted for 7% of volunteer training, and the remainder of trained volunteers have been trained as either stress-management (5%) or weight-loss (5%) group leaders.

The success of these recruitment and training efforts is perhaps best reflected by the acceptance of the volunteers by both the lay community and medical professionals. Very few volunteers bring to the PHHP any kind of technical or professional training in health-related areas. Yet, we have found no resistance by participants to having their risk factors measured by, and receiving brief counseling from, trained volunteers, nor have we experienced any negative reactions from the physician community—with respect to either the PHHP or its use of lay volunteers.

We have also found that people volunteer for a variety of reasons, ranging from college students looking for career-related experience to senior citizens seeking productive ways to spend their time; many also volunteer because of a desire to help others. Their various motives are reflected in their staying with the PHHP. The turnover rate varies: One volunteer has been with the organization since its inception, while others are designated as "special events" volunteers who participate in only one activity (such as helping register people at a weekend SCORE at their church). At any given time, 150–250 people are active PHHP volunteers.

What follows are several examples that illustrate how volunteers play a major role in the development, implementation, evaluation, and management of PHHP intervention programs.

Walk-In Blood Pressure Stations

As seen in Table 2, blood pressure trainings are one of the PHHP's most popular and sought-after programs: 323 volunteers have been trained to take blood pressure measurements reliably. A number of these people have then gone on to help staff 14 walk-in blood pressure stations in Pawtucket, including a private medical emergency service, an area drug store, two local supermarkets, two fire

stations, a bakery in the heart of the Portuguese community, the city's Department of Parks and Recreation office, and the offices of Progreso Latino. These locations are strategically located in 13 of the 14 Pawtucket neighborhoods as part of the geographic strategy employed by the PHHP to make heart health programs, with continuing follow-up, easily accessible to all segments of the community. Between 600 and 1,000 blood pressure readings are taken monthly at these 14 locations by volunteers. All individuals measured receive a blood pressure record card, and brief counseling on maintaining a healthy blood pressure level, or are referred to medical personnel if their personal blood pressure record card shows elevated readings on two or more occasions. The efficacy of this program is evidenced in ongoing surveys of all participants in PHHP programs, which indicate that 94% have had their blood pressure measured in the previous 6 months.

Community Weigh-In

In April 1983, the PHHP sponsored a community-wide contest for people to lose weight. This program was stimulated by the need for the PHHP to develop community-level programs for weight loss that could both reach more people and be more cost effective than traditional small group-oriented approaches. The Community Weigh-In was held on four occasions at two local high schools. People who attended the Weigh-In viewed a film about weight loss, were weighed, set weight-loss goals, and then pledged money toward their goal as an incentive for weight loss. They also received a weight-loss kit put together by the PHHP, and had the opportunity to have their blood pressure and blood cholesterol measured and/or join a weight-loss group (40% did so). Ten weeks later, 138 residents (66%) returned for the "weigh-out": 1,061 pounds were lost by this group, and money was refunded in proportion to the extent that people reached their weight-loss goals. In addition, 102 of the weigh-out participants had a second cholesterol measurement: The average reduction was 27.4 mg/dl; $t = 9.83$, $P < 0.001$.

Six months later, a follow-up interview was conducted with 70% ($n = 148$) of the 211 original participants. Nearly 80% reported having lost weight during the contest (although not all had attended the official weigh-out), and 75% of the sample reported that they were continuing to lose weight. The success of this program in achieving substantial weight loss in a large number of persons with minimal professional involvement led to the initiation of an ongoing monthly Weigh-In program.

This program is directed by a volunteer "program manager" who devotes 2-4 hr/week to contacting participants, planning special activities for the Weigh-In, maintaining participants' records, and attending weekly supervision sessions with one of the PHHP's dietitians. The assistant manager devotes about 2 hr/week to programming details. On the nights of a Weigh-In, these two individuals are assisted by 10 additional volunteers who they have recruited and trained. The volunteers split two 2-hr shifts among them to staff a registration table, a height/weight station, a booth where weight-loss goals for the month are set and pledge money is collected, a blood pressure measurement site, and an information desk

TABLE 3
SUMMARY OF PARTICIPANTS IN EACH BLOOD PRESSURE (BP) CATEGORY FOR ALL SCREENING PLUS PROGRAMS CONDUCTED DURING EACH REPORT QUARTER, THE PAWTUCKET HEART HEALTH PROGRAM

	Quarter							Total
	1	2	3	4	5	6	7	
Total number screened ^a	463	825 ^b	409	629	415	431	432	3,604
BP (mm Hg)								
I Below 140/90	339	455	287	462	295	332	332	2,502
II Below 140/90 (on medication)	25	90	38	26	21	30	30	260
III 140/90-180/100	86	82	50	109	98	69	70	564
IV Above 180/100	13	28	34	32	1	—	—	108

^a Total eligible per quarter: 2,418.

^b Missing data in categories.

with weight-loss, nutrition, and exercise materials. From August 1983 to May 1985, an additional 292 participants lost 1,033 pounds. In addition, the program is economically independent in that unreimbursed pledge money is put back into the program to pay for advertisements, materials, and special events.

Screening Plus

Screening Plus is a worksite blood pressure management program developed by PHHP in close collaboration with the Rhode Island Affiliate Chapter of the American Heart Association and the Rhode Island Department of Health. It is designed not only to offer blood pressure measurement, but also to provide long-term follow-up with people who have elevated blood pressure. The program is available to worksites in Pawtucket and in all of Rhode Island, regardless of size, that send a designated person (or persons) to three 1½-hr training sessions (provided at no cost to the company). The coordinators learn blood pressure measurement techniques, guidelines for counseling and referral of persons with elevated readings, utilization of the Screening Plus recordkeeping system, and procedures for filing statistical reports of their activities.

In the first 2 years of Screening Plus, 14 Pawtucket companies sent 23 coordinators to training sessions, with the smallest site having 12 employees and the largest more than 1,400 people. Of more than 5,700 employees eligible for participation in Screening Plus, 3,604 were screened. Based on the coordinators' quarterly summaries (Table 3), it is evident that the program has been very successful in reducing the prevalence of blood pressure readings greater than 180/100 mm Hg (from a high of 34 among 409 persons screened, to 0 among the 863 seen during the last two quarters for which data are available).

This program is continuing to expand in both popularity and eligible participants and is now being implemented in several churches, seven of the walk-in blood pressure stations, and additional area worksites.

Church Advisory Board

One arena in which the PHHP has been particularly well received and sup-

ported has been the Pawtucket religious community. In its formative stages, the PPHP identified a total of 48 religious institutions in Pawtucket, or the immediate environs, which had over 39,000 members. All of these groups were approached by PPHP to implement organization-based programming. Several religious groups had too few members to support heart health activities (e.g., a Bahai Temple), or did not wish to participate (e.g., an orthodox Jewish synagogue). All of the remaining religious organizations were either Protestant or Catholic churches. Thus, when discussing this area of intervention, we refer to "churches" although this does not imply that heart health programs would not be supported by other religious groups elsewhere.

The sheer number of persons served by these area churches, and the potential number of repeated contacts with individuals (nearly two-thirds of all program participants report that they attend church at least once a week) are sufficient practical reasons to intervene at these locations. However, there are a number of other compelling reasons for initiating church-based health programs: (a) churches are often a focal point of neighborhood activity; (b) many churches have facilities that can be used to support programs; (c) they have operational mini-media, such as Sunday bulletins, that can be used for heart health promotion; (d) churches offer a natural support network for many of their parishioners; (e) they have a high concern for the welfare of others; (f) members have experience in voluntary activities; and (g) churches typically have experience organizing, delivering, and maintaining volunteer-based programs.

Early attempts to involve churches with the PPHP focused on establishing heart health coordinating groups in each church before intervention activities could begin. Only two such groups were established in the first year of intervention. This low response led to a convening of volunteers from 17 area churches and PPHP staff to discuss alternative ways to plan programming efforts. The outcome of this conference, entitled "Heart and Soul," was a loosening of the protocol to allow for program delivery without prior establishment of a coordinating group, and the formation of the Church Advisory Board (CAB).

The CAB is a formal network of church leaders (clergy and lay people) who provide resources to area parishes that want to be involved in heart health programming. For instance, one church makes available its sizable gymnasium to other churches that would like to have an exercise class but do not have the necessary space. Other churches provide volunteer group leaders—church members who have been trained by the PPHP in leading a risk factor change group and who in turn provide their services to other churches that wish to have a group program but have no members trained to lead it.

There currently are eight churches represented on the CAB with ongoing recruitment of others by the members. Thirteen other area churches also had PPHP programs in 1984. Table 4 categorizes intervention events in churches by their membership status on the CAB. Although non-CAB churches have had more events than CAB churches, 76% of these have been SCOREs (82% of these for blood pressure). Blood pressure SCOREs are a preferred "first" event by many different types of organizations. However, as can also be seen in Table 4, very few non-CAB churches are involved in more intensive programs (i.e., risk

TABLE 4
NUMBER OF INTERVENTION EVENTS WITHIN CHURCHES BY CHURCH ADVISORY BOARD (CAB)
STATUS, THE PAWTUCKET HEART HEALTH PROGRAM

Church advisory board status	Event type			Total
	Screening	Group	Skills training ^a	
Member (<i>n</i> = 8)	17	10	12	39
Nonmember (<i>n</i> = 13)	34 ^b	3	8	45

^a Includes both screening, counseling, and referral events, and group leader training sessions.

^b 82% (28) of the 34 screenings in nonmember churches were blood pressure screenings as opposed to 61% (8) of the screenings in CAB churches which were multiple risk factor screenings.

factor change groups or leader training groups) in which CAB membership emerges as a relevant feature for intervention. Over half of all PHHP events in CAB-member churches are of the more intensive variety, which we believe indicates a greater commitment to heart health goals.

These conclusions are reinforced by the data shown in Table 5: Nearly 73% of all participant contacts in churches are through CAB members. In addition, CAB-member churches have provided 1,713 hr of volunteer time to the PHHP; nonmember churches lag far behind, with 392 hr. These data support the notion that formal networks do enable greater penetration of the community with heart health messages. The CAB initiative also demonstrates the operationalization of the collective efficacy idea advanced by Bandura. Based on the PHHP experience to date, such an approach to large structural changes in the community does appear viable.

SUMMARY

The programs that have been presented serve only as illustrations of the PHHP intervention. Many others could also highlight the use of social learning theory, behavioral community psychology, and community activation methods based on volunteer program delivery in fashioning innovative and effective cardiovascular risk reduction programs. It is evident from the PHHP experience that all of these programs work to support the others. That is, the multiple methods employed by the PHHP reinforce risk reduction in a variety of settings by exposing residents to heart health through a variety of channels. Therefore, the programs outlined here should be viewed in the context of a city where:

TABLE 5
NUMBER OF PARTICIPANT CONTACTS IN PAWTUCKET HEART HEALTH PROGRAM ACTIVITIES BY
CHURCH ADVISORY BOARD (CAB) STATUS

Church advisory board status	Screenings	Groups
Member (<i>n</i> = 8)	780	137
Nonmember (<i>n</i> = 13)	317	27
Total	1,097	164

- (a) children are involved in Heart Health Clubs, smoking prevention programs, and classroom heart health education;
- (b) parents learn to raise heart healthy children;
- (c) people shop at grocery stores where shelf labels identify foods low in salt, fat, and calories, and eat in Four-Heart³ restaurants offering good-tasting menu items that are low in fat, sodium, and cholesterol;
- (d) senior citizens are active in Walk-Jog Clubs and exercise programs; and
- (e) all residents attend community events such as Octoberfest or "Meet Us in the Park" weekends where the PHHP Heart Check trailer and van are prominently located.

The PHHP has learned that early community involvement in the planning of health promotion is essential for program acceptance. Programming efforts must be flexible to adapt successfully to different kinds of people (i.e., those ready to change and those only seeking information) and organizations. The PHHP has also spent a great deal of effort in becoming part of the community environment; this is facilitated because The Memorial Hospital, which is the primary health care facility in the area, is very committed to community service. Linkages with other health agencies, co-sponsoring of events with the city government, and participation in such large community events as the annual St. Patrick's Day parade, Octoberfest, and Meet Us in the Park family weekends (initiated by PHHP with the Pawtucket Arts Council and the city's Department of Parks and Recreation) all serve to facilitate the project's acceptance by the community. The intervention is a dynamic one: It not only attempts to change the community but is fashioned by the response of the community as well. The volunteer delivery system that has been developed is effective: It recruits capable people, trains them well, supervises them in their intervention work, and increases their job responsibilities as they gain experience so that community residents and institutions will be ready to manage the heart health program when federal funding ceases.

In its first 3 years, the PHHP has had over 30,000 contacts with people seeking to improve their heart health. Volunteers have invested over 30,000 hr in the program. This fact demonstrates the feasibility and effectiveness of a community activation approach for preventing cardiovascular disease based on social learning theory and principles of behavioral community psychology. The PHHP intervention is accelerating rapidly with the help of committed volunteers who are part of our community. To summarize the PHHP intervention model, we believe that our multifaceted behavior-change programs, by increasing individuals' beliefs that they can perform behaviors which lower their risk for cardiovascular events, as well as by increasing the community's sense of collective efficacy in dealing with this major public health problem, will decrease both the prevalence of CVD risk factors and the incidence of fatal and nonfatal CVD events in Pawtucket.

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³ Four Heart designates local restaurants that participate in the PHHP menu-labeling program.

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