

REFLECTIONS ON COMMUNITY HEALTH  
CAMPAIGNS: SECULAR TRENDS AND  
THE CAPACITY TO EFFECT CHANGE

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Summarizing the history of public campaigns a decade ago, Rogers and Storey (1987) proposed that researchers' experience could be described in three developmental periods. The first was the minimal effects era (1940s–1950s) distinguished by some spectacular campaign failures and recognition of the limited and often indirect role of mass media in generating campaign effects. This era nevertheless pointed toward a more sophisticated understanding of campaign effects and how to achieve them strategically and tactically (Cartwright, 1949, 1954; Hyman & Sheatsley, 1947; Starr & Hughes, 1950).<sup>1</sup>

The second period, the 1960s and 1970s, was characterized as the “campaigns CAN succeed” era. Here, some of the lessons of the previous era were applied successfully, especially in health campaign settings. For example, the North Karelia (Finland) Study’s and the Stanford Three-City Project’s achievement of significant cardiovascular behavior and risk factor

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<sup>1</sup>The Rogers and Storey description of campaign effects parallels how “media effects” have been conceived over time. The so-called limited effects era of media research was subsequently followed in the 1960s by an emphasis on cognitive outcomes and recognition that media can have powerful effects on such outcomes. However, some critics have argued that the proponents of limited effects have understated the media effects and that later scholars may have overinterpreted the qualified and careful conclusions of research in 1940s and 1950s. For a discussion, see Becker, McCombs, and McLeod (1975); Chaffee and Hocheimer (1985); and Gitlin (1978).

change as part of quasi-experimental community designs suggested a bright future for campaigns that employed multiple intervention strategies during an extended period of time (Maccoby, Farquhar, Wood, & Alexander, 1977; Puska, Tuomilehto, Nissinen, & Vartiainen, 1995; Stern, Farquhar, Maccoby, & Russell, 1976).

Rogers and Storey described the third era, the 1980s, as one of "moderate effects." During this period, health campaigns especially flourished, continuing to grow more sophisticated in their application of theory and planning frameworks, and in their use of multiple-strategy, community-based campaigns. Although the period was notable for some major campaign failures, there were notable successes as well, both in the United States and internationally.

Since the Rogers and Storey analysis first appeared, has a fourth era begun? If so, should the period since 1987 be characterized as one of reflection on the capacity to affect change through health campaigns? This has been driven by the publication of the results of the nation's three largest heart disease prevention community trials at Stanford, Minnesota, and Pawtucket; some later generation studies; and by the experience of HIV/AIDS prevention. This period has been characterized by deep reflection on the capacity of campaigns to achieve population behavior change. This period has been moving toward reconsideration of traditional campaign models driven by reassessments of the following factors:

- "secular" trends in population health behavior change and related community variables
- expansion of the communication system, especially since the 1980s
- expectations by public health campaign planners of achievable population behavior change
- the limits of traditional campaign evaluation models to measure and detect effects differences
- the failure of low socioeconomic status (SES) groups to benefit equally from secular change in heart disease patterns compared to higher SES groups
- public health efforts to explore intervention models where outcomes are not individual behavior change per se, but change in public policy with the potential to affect population behavior; and widespread dissemination of effective behavior change strategies and programs

## SECULAR TRENDS AND HEART DISEASE CAMPAIGNS

The first generation of major American community trials was funded by the National Heart, Lung and Blood Institute (NHLBI) beginning in the late 1970s to test the hypothesis that community-based, multiple strategy

public health campaigns could reduce cardiovascular disease risk in whole communities (Blackburn, 1981; Maccoby & Farquhar, 1975). These studies followed on the initial successes of the North Karelia (Finland), Stanford (California) Three-City, and North Coast (Australia) projects, which demonstrated that population-based community campaigns could be effective in reducing heart disease risk and mortality (Egger, Fitzgerald, & Frappe, 1983; Maccoby et al., 1977; Salonen, Puska, & Kortke, 1981).

Design characteristics of the first generation of American trials including the Minnesota Heart Health Program (MHHP), the Stanford Five-City Project, and the Pawtucket (Rhode Island) Heart Health Program are displayed in Table 16.1. The studies were similar in their quasi-experimental controlled designs that made use of baseline surveys and multiple follow-up cohort (panel) and cross-sectional surveys. Intervention strategies were also similar. Each utilized multiple approaches, including a wide range of community organization, interpersonal, group, mass media, and small media strategies, during an intervention period of between 5 and 7 years (Farquhar, Fortmann, Maccoby, et al., 1985; Jacobs et al., 1986; Mittelmark et al., 1986).

Results of these studies on heart disease risk factors were reported between 1990 and 1995. Although each study showed some significant but modest risk factor-specific effects (Table 16.1), these were attenuated by strong secular changes in reference communities (Carleton et al., 1995; Farquhar et al., 1990; Luepker et al., 1994). That is, the studies were frequently able to observe significant change in intervention communities for a time in selected risk factors, but secular trends in reference communities

TABLE 16.1  
Study Design Characteristics of Early American  
Community Trials in Heart Disease Prevention

Characteristics	Stanford	Minnesota	Pawtucket
Funding period	1978-1996	1980-1993	1980-1996
Locale	CA	MN, ND, SD	RI, MA
Communities	5	6	2
Treatment	2	3	1
Baseline surveys	1	2-4	1
Follow-up cross-sectional surveys	3	4-5	4
Follow-up cohort surveys (panels)	3	3	4
Intervention period	1980-1986	1981-1989	1984-1991
Years of intervention in treatment communities	5	5-6	7
Significant risk factor changes ( $p < .05$ )	Body Mass Index Diastolic BP (women) 1990	Smoking prevalence (women in treatment cohort) 1994	Body Mass Index 1995
Risk factor results published			

often closed the gaps by campaigns' end (Luepker et al., 1994). A joint analysis by Winkleby, Feldman, and D. M. Murray (1997) pooled risk factor data from the three trials and confirmed the same phenomenon—modest risk factor changes attenuated by unexpectedly strong secular trends that frequently eliminated significant differences by the studies' close.

Paradoxically, many strategy-specific, experimental substudies nested within the larger community trials demonstrated strong effects in changing heart disease risk behaviors and factors (Fortmann et al., 1995; Luepker et al., 1994; Mittelmark, Hunt, Heath, & Schmid, 1993). In Minnesota, for example, several controlled substudies showed significant effects on cardiovascular disease (CVD) related behavior and risk factors. Murray and colleagues (Murray, Luepker, Pirie, & Grimm, 1986), in a controlled study of the effects of a risk factor screening center, demonstrated significant change in blood cholesterol, diastolic blood pressure, resting heart rate, and the use of blood pressure medication. They later demonstrated the effectiveness of direct mail at two levels of exposure compared to a control group in encouraging blood pressure follow-up with a physician, and in several other related behaviors.

Perry, Kelder, D. M. Murray, and Klepp (1992) demonstrated the effectiveness of school-based programs combined with a community campaign on the smoking, nutrition, and physical activity behavior of adolescents. Among the most impressive findings were that high school seniors (tracked from sixth grade) were 40% less likely to be smoking in the intervention community compared to their counterparts in the reference community (the effect was even greater for young women). There were also significant changes in physical activity and eating patterns.

How does one account for the results of these community trials and what insights may be gained into the capacity of campaigns to effect change?

The principal argument has several parts as follows:

1. Significant secular change in heart disease mortality and risk factors has been occurring in the United States since the early 1960s and accelerated sharply during the period of the large community trials due to improvements in clinical diagnoses and treatment of people with existing heart disease, and increasing adoption of preventive behaviors by the public.
2. This accelerated change was propelled in part by a dramatic increase in heart disease news coverage by the mass media, but also because of changes in the U.S. communication system, expanding the number of television and other information channels through which news disseminates.
3. Increases in heart disease treatment and prevention news coverage were stimulated by the influential role of federal and state government agencies, private health groups, public health advocates, and scientists in placing

heart disease high on the media's, and therefore the public's, agenda of important health issues. This occurred through the funding, conduct, and reporting of heart disease research, the creation of scientific consensus conference documents, treatment guidelines, and other policies.

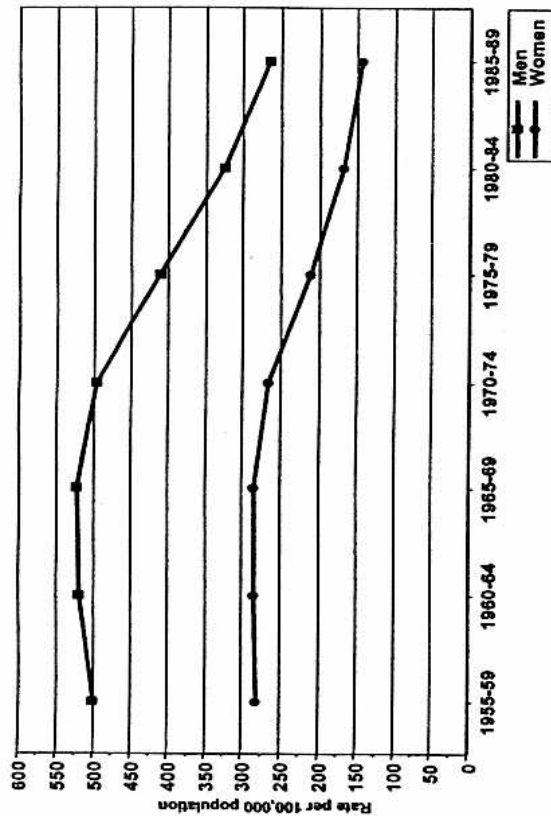
4. The traditional campaign evaluation models of the large American community trials were framed in expectation of relatively little change in reference communities. That is, the power to detect difference hinged in part on relatively stable reference community trends. In a highly dynamic secular trend, the models lacked power to detect difference as a function of the limited number of assigned units (communities); and the limited number of measurement points over time (community-by-year means).

5. The campaign intervention models of the large American community trials were framed also in the expectation of relatively little change in reference communities, especially in exposure to heart disease prevention information and programs. They did not anticipate either major changes in community media systems or the increased dissemination of heart disease prevention news, information, and programming, and in any case were unable to sustain a significant difference in exposure over time.

## SECULAR TRENDS IN CVD MORTALITY AND RISK FACTORS

Evidence of secular change in heart disease mortality and risk factor levels is provided in Figs. 16.1 and 16.2. Figure 16.1 displays ischemic heart disease mortality in the United States as consecutive, 5-year adjusted rates among men and women from 1955 through 1989. The data show that heart disease peaked in the United States in the early 1960s and has been declining since that time. For example, analyses performed by the NHLBI have shown that heart attack mortality alone reached a peak in 1963. And, by 1992, it had declined by 57%, a reduction of some 2% to 3% annually (NHLBI, 1994).

A number of studies have sought to locate the causes of this remarkable decline. For example, investigators have hypothesized regarding heart attack mortality that there may be both lower incidence of new events and improved survival due to changes in medical and emergency treatment of heart attacks. Studies to date suggest a combined effect is responsible (NHLBI, 1994). Regarding declines in heart disease more generally, investigators have hypothesized that they may be due to improved clinical diagnoses and treatment, but also to population changes in preventive behavior. Figure 16.2, for example, shows trends in U.S. population prevalence from 1962 to 1993 in three key risk factors directly linked to atherosclerotic processes: hypertension, high blood cholesterol, and cigarette

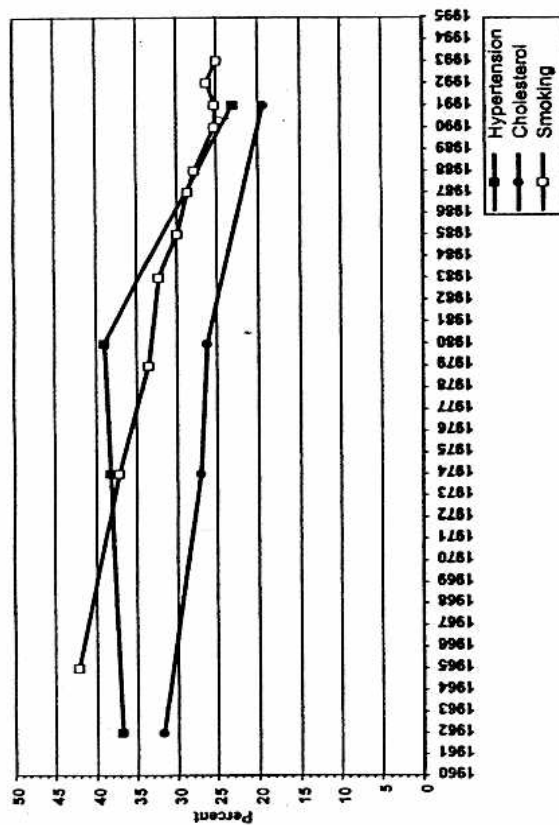


Includes ICD-9 codes 410-414; rates calculated on the basis of at least 2 year's data for each 5-year period. From *International Mortality Chartbook, 1955-1991*. National Center For Health Statistics, Centers For Disease Control, Atlanta, GA.

FIG. 16.1. Age-adjusted 5-year mortality rates for ischemic heart disease in the United States, 1955-1989.

smoking. The general trend is a decline in population prevalence of the three risk factors over the past 30 years. Between 1965 and 1994, smoking among U.S. adults age 18 and older declined from about 43% to about 25%. Similarly, from 1962 through 1991, persons with high blood cholesterol declined from about 32% to 21%. Hypertension, however, showed a slightly different pattern. In 1962, U.S. population prevalence of hypertension was about 37%. This actually rose slightly through 1980 to about 40% before a steep decline set in to reach less than 25% in 1991.

Hunink and colleagues (1997) reviewed U.S. data from 1980 to 1990 to estimate the contribution to declining heart disease mortality of improved risk factor levels as well as improvements in medical treatment. The study developed a computer simulation to model the U.S. population between age 35 and 84 to forecast mortality and risk factor trends. They found in part that actual coronary mortality in 1990 was about 34% lower than would be predicted if coronary risk factor levels, case fatality, and event rates had remained the same as in 1980 (among those with and without diagnosed heart disease). When secular changes in these factors were included in the model, coronary mortality in 1990 was predicted to within



\*Hypertension  $\geq 140/90$  mmHg (20-74 years old; age adjusted), High cholesterol  $\geq 200$  mg/dl (20-74 years old; age adjusted), Smoking = current smokers ( $\geq 18$  years old; age adjusted). From National Center for Health Statistics (CDC).

FIG. 16.2. Trends in U.S. population prevalence of hypertension, high blood cholesterol, and cigarette smoking, 1962-1993.

3% of the observed mortality. The study also concluded that about 50% of the decline in heart disease mortality between 1980 and 1990 could be explained by primary and secondary risk factor reduction. More than 70% of the decline in mortality occurred among people with diagnosed heart disease, suggesting the effects of risk factor and behavior change, and improved clinical treatment and management. About 25% of the decline was explained by primary prevention, that is, risk factor behavior change among persons without diagnosed heart disease.

## PUBLIC OPINION AND MEDIA PUBLICITY ABOUT HEART DISEASE

Has media publicity about heart disease played a role in propelling these secular trends in the United States generally and in affecting the results of the community trials in particular? Several theoretical points about the role of the mass media and several observations about population exposure to heart disease information suggest that it has had an effect.



From a theoretical perspective, investigators have noted that the mass media play a significant role in establishing the public agenda of important issues (Hilgartner & Bosk, 1988; McCombs & Shaw, 1977). Strong media attention to an issue tends to increase or at least reinforce the salience of an issue as perceived by the public. The media's role in public discourse extends beyond attention to, and amplification of, a particular issue, to also defining how to think about an issue and why an issue is a "social problem" (Blumer, 1971; Entman, 1993; Faupel, Bailey, & Griffin, 1991; Mauss, 1975). The cumulative effect of long-term media attention to an issue may eventually affect changes in public knowledge and perceptions as some dimensions of an issue become nearly universally accepted (Viswanath, Finnegan, Hannan, & Luepker, 1991). For example, Donohue, Olien, and Tichenor (1990) examined U.S. public opinion about the health effects of smoking from 1954 through 1981. In a national Gallup Poll conducted in 1954, about 41% of American adults believed that smoking was a cause of lung cancer. By 1981, this had increased to about 83% (Table 16.2) and by 1987 to about 89%. Similarly, polls have found that between 1964 and 1987, the belief among U.S. adults that smoking causes heart disease increased from 40% to 77%.

Public opinion and knowledge of other aspects of heart disease risk have also changed. Table 16.3, for example, presents results of U.S. public opinion surveys on several heart disease-related issues. From 1983 to 1995, adults reporting they had ever heard of high blood cholesterol rose from 77% to 93%. Knowledge of the ideal cholesterol level rose from about 16% in 1986 to about 69% in 1995. In 1983, about 35% of adults reported having their blood cholesterol checked. This increased to 75% by 1995. Polls from 1985 through 1992 show that a fairly steady 85% of the adult population reported having had their blood pressure checked at least once per year, with about 56% reporting more than one blood pressure check per year during the same period.

What is the evidence for media attention to the issue of heart disease? Figure 16.3 shows media news coverage of heart disease for the period from 1980 to 1992 in eight major market U.S. daily newspapers and three major television networks. The period was selected because it coincided with the period of most intense intervention in the three American community trials. The newspapers were selected based on the availability of indexes during the entire period and also to include major newspapers from across the country. The data showed that whereas heart disease is a "repetitive" health story for the news media (i.e., a story that receives more or less constant attention at some average level of coverage), there were large spikes in news coverage that occurred from about the third quarter of 1982 through the first quarter of 1988, a period of about 5 years. A major factor in this news coverage was the reporting of results from major trials

TABLE 16.2  
Public Opinion About Smoking and Disease, 1954-1987

Question	Survey, Year	All Adults "Yes" (%)	Low Education "Yes" (%)	Medium Education "Yes" (%)	High Education "Yes" (%)
Smoking causes lung cancer	Gallup, 1954	41%	39.9%	40.2%	48.9%
	Gallup, 1957	50%	45.1%	45.8%	60.4%
	AUTS, 1964	66%	—	—	—
	AUTS, 1966	66%	—	—	—
	Gallup, 1969	71%	64.3%	69.7%	79.8%
	Gallup, 1971	71%	—	—	—
	Gallup, 1977	81%	71.9%	79.8%	91.0%
	Gallup, 1981	83%	72.7%	84.1%	91.7%
	AUTS, 1986	92%	—	—	—
	Gallup, 1987	87%	—	—	—
	NHIS, 1987	89%	—	—	—

(Continued)

TABLE 16.3  
Public Opinion and Self-Reported Behavior  
About Blood Pressure and Blood Cholesterol

Question	Survey, Year	All Adults "Yes" (%)
Ever heard of high blood cholesterol?	NCEP, 1983	77%
	NCEP, 1986	81%
	NCEP, 1990	95%
	NCEP, 1995	93%
Know that cholesterol below 200 mg/dl is desirable?	NCEP, 1983	—
	NCEP, 1986	16%
	NCEP, 1990	65%
	NCEP, 1995	69%
Had cholesterol checked?	NCEP, 1983	35%
	NCEP, 1986	46%
	NCEP, 1990	65%
	NCEP, 1995	75%
Have blood pressure checked at least once per year?	Harris, 1985	86%
	Harris, 1986	84%
	Harris, 1987	84%
	Harris, 1988	82%
Have blood pressure checked more than once per year?	Harris, 1989	84%
	Harris, 1991	84%
	Harris, 1992	85%
	Harris, 1985	57%
	Harris, 1986	55%
	Harris, 1987	57%
	Harris, 1988	54%
	Harris, 1989	54%
	Harris, 1991	56%
	Harris, 1992	56%

Note. Data from National Cholesterol Education Program (NCEP), National Institutes of Health (1995); Harris Poll collection, Institute For Research in Social Science (IRSS), University of North Carolina at Chapel Hill.

and research studies, including the Multiple Risk Factor Intervention Trial (MRFIT), the Hypertension Prevention Trial (HPT), the Lipid Research Trial (LRT), the Framingham Study, the Coronary Primary Prevention Trial (CPPT), and many other group and clinical studies and consensus conference results that appeared in medical journals or were reported at major national meetings. The major spikes in news coverage of heart disease (sometimes representing many-fold increases in coverage over usual levels) occurred during the period of most intense intervention in the three American trials that themselves generated both local and national news coverage. Along these lines, Finnegan, Viswanath, Kahn, and Hannan (1993) reported that surveys of the MHP reference communities showed significant increases from 1980 through 1990 in the public's reporting of

Note. Data from U.S. Surgeon General (1989). Reducing the health consequences of smoking: 25 years of progress; G. A. Donohue, C. N. Olien, and P. J. Tichenor (1990, May 19). Knowledge gaps and smoking behavior. Paper presented to the annual conference of the American Association for Public Opinion Research, Lancaster, PA; and Harris Poll collection, Institute For Research in Social Science (IRSS), University of North Carolina at Chapel Hill.

Question	Survey, Year	All Adults "Yes" (%)	Low Education "Yes" (%)	Medium Education "Yes" (%)	High Education "Yes" (%)
Smoking causes heart disease	AUTS, 1964	40%	—	—	—
	AUTS, 1966	42%	—	—	—
	Gallup, 1969	54%	56.5%	56.5%	68.5%
	Gallup, 1977	68%	61.1%	67.7%	73.6%
	Gallup, 1978	68%	—	—	—
	Gallup, 1981	74%	64.2%	73.6%	86.6%
	NHIS, 1985	90%	—	—	—
	AUTS, 1986	78%	—	—	—
	NHIS, 1987	77%	—	—	—
	Harris, 1966	36%	—	—	—
Smoking causes cancer and heart disease	Harris, 1966	36%	—	—	—
	Harris, 1969	50%	—	—	—
	Harris, 1974	74%	—	—	—
	Harris, 1975	74%	—	—	—
	Harris, 1986	88%	—	—	—

TABLE 16.2  
(Continued)

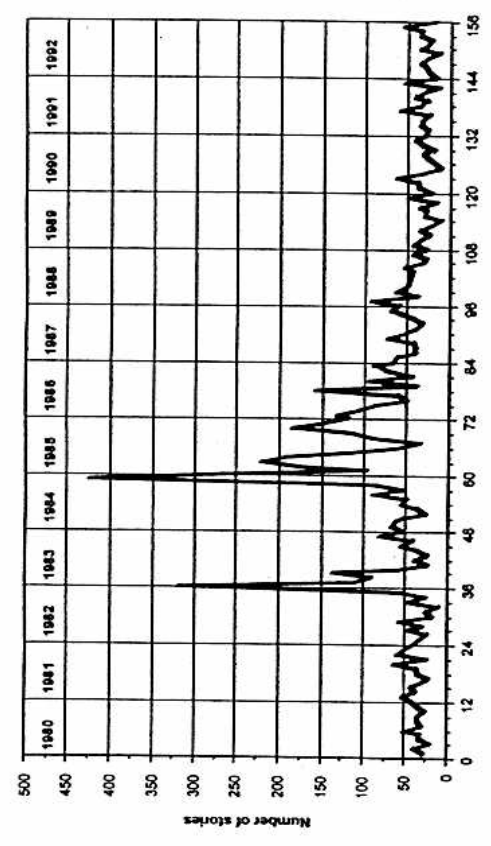


FIG. 16.3. Heart disease news coverage in 8 major-market newspapers and 3 TV networks, 1980-1992. Data from *New York Times*, *Washington Post*, *Detroit Free Press*, *Chicago Tribune*, *New Orleans Times-Picayune*, *St. Louis Post-Dispatch*, *LA Times*, *San Francisco Chronicle*, ABC, CBS, NBC.

the number of sources from which they could recall receiving heart disease information.

### CHANGES IN MEDIA INFRASTRUCTURE

At the same time that news coverage of heart disease showed temporal spikes, profound changes in the nation's communication infrastructure were also occurring (and continue to occur). The availability of consumer satellite television receivers, consumer videocassette recorders (VCRs), and cable television systems increased dramatically during the period after 1980. For example, cable television increased exponentially from about 4,000 systems in 1980 to about 12,000 systems nationwide in 1992 (*Broadcasting & Cable Yearbook*, 1994). Whereas cable systems originated in the 1950s to rebroadcast local television signals to hard-to-reach areas, in the 1980s they expanded across the country to carry dozens of channels to more than 6 of 10 U.S. households. The expansion of this capacity coincided with the development of national news and entertainment channels now estimated to reach some 63% of American households by cable alone (*Broadcasting & Cable Yearbook*, 1996). Finnegan et al. (1993) reported that the communities of the MHHP entered the study in 1980 with small cable television systems (12 local channels or fewer) or

none at all. By the close of the intervention almost 10 years later, each of the six communities possessed cable systems of 30 or more channels, including most of the available national news and entertainment channels. The effect of this growth in communication infrastructure was that even relatively small communities received the same cable programming as large metropolitan communities. Finnegan and colleagues (1993) also discussed the effect of this change on the public's reporting of media sources of heart disease information in the MHHP reference communities. They found that irrespective of community size (small town, regional city, metropolitan area suburb), there was a significant increase over time in reporting television as a source of heart disease information. Thus, not only was there an increase in heart disease news coverage during the period, there was also an increase in the number of media channels with the potential to disseminate such information.

### SETTING THE MEDIA'S AGENDA

Media message production research notes that although the mass media may act independently at times in the generation of news, routine news gathering and production processes endow news sources with a central role in influencing the media's agenda of important issues in the first place (Finnegan & Viswanath, 1997; Gandy, 1982; Sigal, 1973). News sources typically include representatives of important, established social institutions, organizations, and groups seeking to mobilize media and therefore public attention to issues they regard as important (Hilgartner & Bosk, 1988). Studies have demonstrated that much—if not most—news content can be traced to the organized activity of various interests seeking to increase the importance of an issue on the public agenda as part of their efforts to guide social change (Shoemaker & Reese, 1991). Research in this vein also notes that news sources not only help to define important issues for the media, but also help to define the "framework" of meaning in which the issue is reported (Entman, 1993).

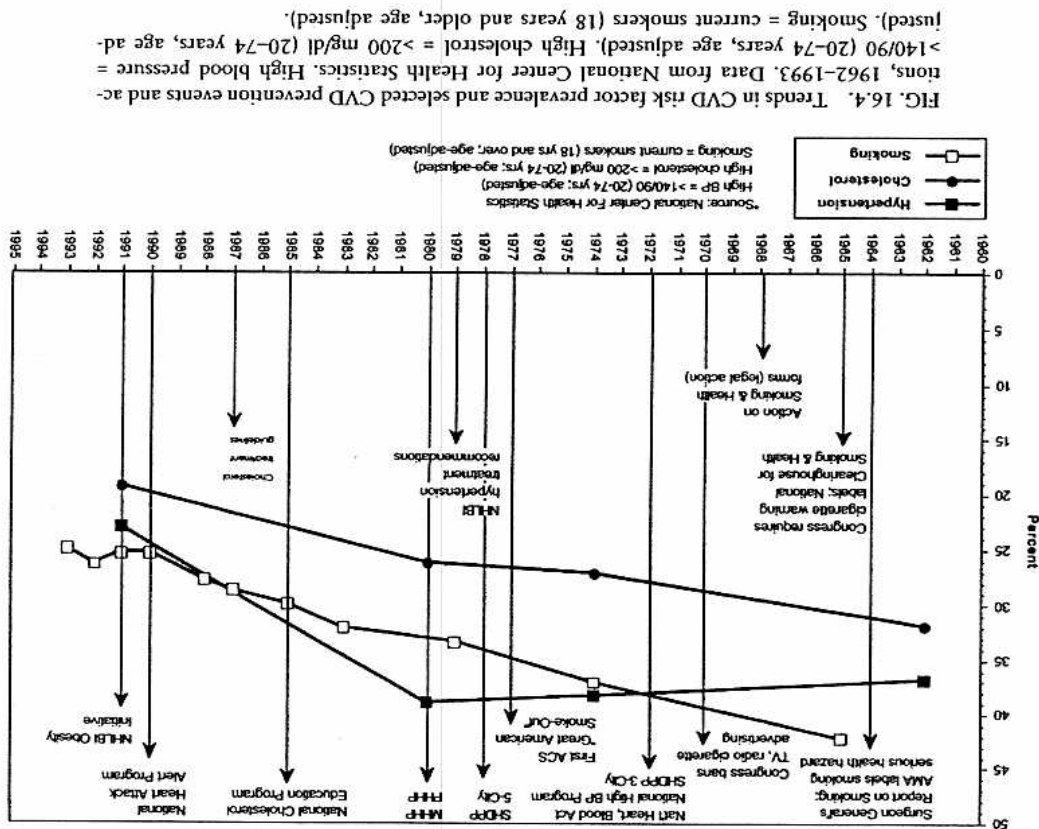
Increased news coverage of heart disease was likely propelled by the influential role of medical and public health institutions, including government agencies, the network of scientist-researchers, and public health advocacy groups seeking to identify heart disease as a national problem, and through their influence, to channel public attention, resources, and power to reduce its impact. Some sense of this considerable, guided social change activity can be gleaned from Fig. 16.4. Although by no means comprehensive, it charts population prevalence changes in three key heart disease risk factors (smoking, hypertension, and high blood cholesterol) contrasted

with the occurrence of important public policy events and activities aimed at reducing the impact of heart disease.

Take the issue of smoking, for example. Researchers began to note a link between smoking and its damaging effects to health prior to World War II, and the American Medical Association (AMA) itself publicized the growing body of scientific evidence against smoking in 1954. However, it was not until 1964, with the publication of the U.S. surgeon general's first report on smoking and health that the issue began to climb in importance on the national agenda of health issues. The surgeon general's report was a benchmark of growing consensus among government agencies, researchers, and health advocacy and professional groups, including the AMA, the American Heart Association (AHA), the American Lung Association (ALA) and the American Cancer Society (ACS), that smoking was a menace to the nation's health that needed to be reduced. As Fig. 16.4 indicates, this report was shortly followed by public policy requiring warning labels on cigarette packages and advertising; the establishment of a National Clearinghouse for Smoking and Health, an organization emphasizing legal action against smoking; and the banning of cigarette advertising on radio and television. National education efforts, such as the ACS's Great American Smokeout, soon followed and have continued as part of this guided social change effort ever since.

Similarly, growing scientific and policy consensus about the importance of reducing high blood pressure resulted in congressional passage of the National Heart, Blood, Vessel, Lung and Blood Act in 1972. This united government and public and private health agencies in expanding the authority of the National Heart, Lung and Blood Institute (NHLBI), part of the National Institutes of Health. It established the National High Blood Pressure Education Program (NHBPEP) and poured millions of federal dollars into hypertension research and public and professional education (NHBPEP, 1992). State coalitions also developed and were funded for local hypertension detection and treatment efforts. Many studies and trials in the 1970s demonstrated the benefits of reducing blood pressure, often through the use of newly developed drugs. In 1979, these led to the development of consensus conference recommendations designed to accelerate adoption of more effective hypertension treatment and prevention protocols in the medical community. These activities coincided with a steady decrease in hypertension since 1980 (Fig. 16.4).

Scientists since before World War II have studied the role of blood lipids and diet in the development of heart disease. However, consensus about its contribution did not coalesce into clear policy directions until the mid-1980s following dramatic results of large cholesterol-lowering drug trials such as the Coronary Primary Prevention Trial (CPPT) and others. Based on this research, the National Cholesterol Education Program was





established by the NHLBI in 1985, and was followed in 1987 by consensus conference guidelines on treatment and prevention to accelerate uptake of new diagnosis and treatment protocols in the medical community.

Thus, policy advocacy activity by the network of government agencies, scientists, and public health advocates not only generated substantial media attention, it also led to the expansion of guided social change capacity for the prevention of heart disease, an important lesson for health communication campaigns (Viswanath & Finnegan, 1998). This can be seen in policy advocacy activities that expanded the NHLBI to focus on hypertension and other heart disease risk factors through increased research and many subsequent national public and professional education programs. Private organizations, such as the American Heart Association (AHA), expanded their research and public and professional education enterprises as well.

There is also evidence that the media themselves responded to increased health policy and research activity (and reader interest) by expanding their capacity to report health news. An increasing number of newspapers, for example, reported establishing special health, medicine, and science news sections during the 1980s and also hired specialist reporters (Locke, 1984).

### EFFECT ON THE COMMUNITY TRIALS: DESIGN AND EFFECTS EXPECTATIONS

The American community trials occurred in this context of an increasingly influential scientific and public health enterprise that generated widespread dissemination of heart disease information propelled in part by expansion of the media system itself. The American community trials were a natural incremental outgrowth of heart disease prevention research strategies increasingly focusing on population health. They were also themselves part of the larger secular trend.

However, the designs of American community trials in heart disease prevention did not anticipate dynamic secular trends in information dissemination into reference communities, let alone major secular changes in risk factor behavior and mortality. This had two effects. First, intervention efforts were unable to sustain significant exposure over time to exceed exposure trends in reference communities. Second, the studies' evaluation designs were less able to detect intervention-reference differences in the face of dynamic secular trends.

For example, Fig. 16.5 shows patterns of exposure to heart disease prevention information and programs in the MHHP communities drawn from cross-sectional surveys in each MHHP community. Data were based on questions framed so that respondents in both intervention and reference communities could indicate to what heart disease prevention programs and information they had been exposed at each time point. The data show an

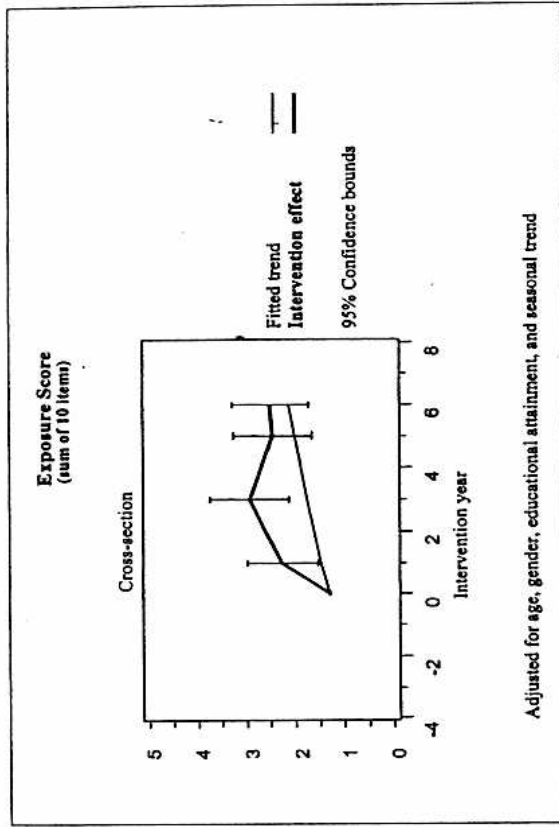


FIG. 16.5. Exposure to heart disease prevention messages and programs in the Minnesota Heart Health Program, 1980-1989.

increasing secular trend in such exposure over the 5 years of active intervention in the MHHP. Intervention communities were able to exceed the trend in the reference communities at a statistically significant level only through year 3 of the intervention. By years 5 and 6, the difference in exposure between intervention and reference communities was not statistically significant.

Luepker and his colleagues (1994) and D. M. Murray (1997) suggested that in the face of dynamic secular trends, the MHHP and other American trials faced limits in their evaluation to detect differences in outcomes. D. Murray (1997) suggested that the American trials' designs were likely underpowered to detect anything less than a medium to large effect difference between intervention and reference communities.

Along these same lines, Fishbein (1996) noted that public health campaigns using controlled designs are usually powered to detect medium to large effect differences in outcomes (on the order of a half to a full standard deviation, or a 20%-60% change in a proportion). In comparison to effect sizes commonly achievable and regarded as successful in the commercial realm (e.g., a 1%-2% increase in market share), he argued that public health expectations of achievable behavior change are unrealistic and unwarranted. Designs that will detect only medium to large effect sizes distort any sense of "substantively meaningful" and realistically achievable changes in health outcomes of 5% to 10%.

### DIFFERENTIAL IMPACT OF SECULAR TRENDS

Secular trends in heart disease prevention from 1980 to 1992 included large amounts of media-generated news and information that might have contributed to the modest outcomes detected by the American community trials. Yet, it is important to point out that the impact of secular trends is differential across population subgroups, as has been identified repeatedly by several scholars (Viswanath & Finnegan, 1996). In particular, the primary beneficiaries of such changes, in general, are members of higher socioeconomic status compared to the members of lower socioeconomic status. Such differential impact in the realm of public health was documented on several risk factors, including smoking (Donohue, Olien, & Tichenor, 1990; Millar, 1996), number and variety of sources of CVD information (Finnegan et al., 1993), campaign effects (Davis, Winkleby, & Farquhar, 1995), and improvement in heart disease outcomes (Anderson, Sorlie, Backlund, Johnson, & Kaplan, 1997; Iribarren, Luepker, McGovern, Arnett, & Blackburn, 1997; McDonough, Duncan, Williams, & House, 1997; Sorlie, Backlund, & Keller, 1995; Smith, Wentworth, Neaton, R. Stamler, & J. Stamler, 1996; Williams & Collins, 1995; Winkleby, 1997; Winkleby, Jatulis, Frank, & Fortmann, 1992). Data from various studies suggest that the benefits of changes in the environment facilitating healthy behavior accrue differentially among population subgroups with those from higher social class usually benefiting the most.

### SUMMARY

In summary, although the discrete data provided in support of the propositions herein do not make direct causal linkages, they do suggest that it is necessary to account for the totality of the environment and its influences on health behavior. In conceptualizing campaign effects, therefore, effects must be thought of in terms of the larger social context in which they may occur. Within such an environment, campaigns are thought to be one factor contributing to changes in risk behavior. Media coverage may influence public knowledge; efforts of social groups and scientists may influence public policy and media coverage; and media coverage may also influence public policy and vice versa, all of which may influence public knowledge leading to changes in health behavior. Data have been provided that suggest that each of these elements co-occurred and acted on public behavior in the MHHP. For example, Fig. 16.3 showed that media coverage of risk factors had been a steady repertoire for journalists and even increased during 1981-1986, which corresponds with a decrease in hypertension and cholesterol (Figs. 16.2, 16.4), and an increase in the percent-

age of people who were aware of high cholesterol and people who had their cholesterol checked (Table 16.3). Similarly, increased activity in public and policy arenas coincided with decreases in risk factors such as smoking (Fig. 16.4). The surgeon general's report on smoking, followed by other activities such as warning labels and a ban on cigarette advertising on electronic media, correlated with the declining proportion of smokers in the population (Fig. 16.2). At the same time, public knowledge about the harmful effects of smoking increased, steadily (Table 16.2). The co-occurrence of these factors fostered an atmosphere that encouraged changes in risk behavior, which led to the results that were found.

### CONCLUSIONS

The outcomes of the American community trials in heart disease prevention have theoretical and methodological ramifications. On a theoretical level, campaign planners, evaluators, and other stakeholders should consider expanding their definition of campaign effects; take into consideration the social and secular context of campaigns; and include variables that potentially impede campaign effects among all social groups. Methodologically, campaign designs should have the power to detect smaller or even subtle shifts in the dependent variables.

Secular trends in heart disease prevention and health promotion may be interpreted as a dynamic process of open social systems. Community-based campaigns are conducted in field settings that allow little or no control over the secular environment. In such open systems, secular trends are composed and generated by two interrelated forces: the mobilization of social institutions and social elites, and the subsequent mobilization of the mass media to focus on a particular issue (Viswanath & Demers, 1999). In the case of heart disease, characteristics of this process included: ongoing identification, definition, and redefinition of heart disease as a public health problem by scientists and researchers; development of strategies for ameliorating and preventing modifiable aspects of risk; mobilization for its amelioration and prevention by the network of scientists, government agencies, and public and private advocacy groups; allocation of resources and expansion of social system capacity for prevention and health promotion; and channeling of media and public attention.

Remember that this process occurred over a long period of time (since at least the end of World War II) and in the larger context of an increasing national preference for planned social change (Tichenor, Donohue, & Olien, 1980). Organization and mobilization on campaign topics by public and policy institutions, social movement organizations (SMOs), and scientific communities have played a crucial role in identifying and defining heart disease as a social problem warranting action by community mem-

bers. The role of scientific reports in peer-reviewed journals, workshops, and conferences organized by such groups serve as instructive examples of how information sources can initiate and generate secular trends. Their efforts, in turn, engage media attention.

Extensive media coverage of scientific issues and the ubiquitous nature of contemporary media systems means that information on subjects of campaign interest spread quickly and widely, leading to "contamination" of experimental settings. Dynamic secular trends could be speedily generated with the right degree of mobilization by organized and powerful forces in the system. Looking beyond campaign settings, an advantage of such secular trends is that synergy could be generated among social groups and institutions to mobilize the communities on public health issues. Perhaps such synergy may be necessary to counter the multibillion dollar advertising and promotional efforts of the forces encouraging unhealthy behaviors among the public.

The mass media's role in this setting is to provide crucial links among the various elements of the social system. As mobilization (for heart disease prevention) waxes among social institutions and elites, so too does media attention to the issue. Media attention links mobilized institutions and elites to the public by increasing the salience of an issue by means of news and information dissemination that also influence public knowledge. However, the media also link mobilized social institutions and elites to those not yet mobilized on an issue. For example, media reporting of mobilization activity by some institutions and elites may influence other institutions to join the movement, or even to allocate resources to help solve a problem (Zald & McCarthy, 1979). In the case of heart disease prevention, mobilization of scientists and the public and private health community ultimately influenced Congress to allocate greater resources that expanded national capacity to address the problem. It is important to point out that in an open systems framework, this is a process that repeats so long as powerful groups remain mobilized. It is also important to point out that expanded system capacity to deal with a specific problem (heart disease) likely bears some generalizability to at least other health problems, and perhaps to other social problems more broadly. Thus, the collective general capacity of the social system to strategize and solve problems is supported and refined by specific problem-solving experience in more limited issue areas.

Finally, the history of public health campaigns also documents that when attention to prevention wanes, risk and mortality tend to increase. Also, there is good reason to be concerned that lower socioeconomic groups may be left behind when public attention to prevention wanes. Without sufficient attention to the factors of social systems that impede benefits to the lowest socioeconomic status (SES) groups, it can be expected that worsening health and mortality will affect the lowest SES groups first and foremost,

just as the highest SES groups may have benefited first and most from mobilization efforts thusfar. Although this chapter focused on making an argument for the general process through which media may have influenced cardiovascular risk behavior, there remains the substantial issue of differential effects among social groups, which must be examined.

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