

The Role of Data-Driven Planning and Coalition Development in Preventing Cardiovascular Disease

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Synopsis

Cardiovascular disease (CVD) is the leading cause of morbidity and mortality in the United

States. Effective programs for the prevention and control of CVD need to include data-based planning and evaluation at the State and local levels. The authors describe the development of data-driven planning and intervention strategies in Missouri. Statewide planning activities have resulted in the formation of an advisory committee and development of a State plan, a resource directory, and training courses.

Analysis of mortality data revealed an unusual concentration of CVD deaths in the southeast portion of the State. Local coalitions are being developed in each of six counties in this region to reduce the prevalence of CVD risk factors. A regional behavioral risk factor survey of 1,006 adults identified key risk factors that will be addressed by the coalitions. These data suggested that physical inactivity, obesity, and hypertension are especially acute problems in the area. Key components of the local coalition development included providing localized data and obtaining the strong commitment of the local health departments.

Expanded use of chronic disease surveillance data for planning and evaluation will increase the probability that localities, States, and the nation will achieve Year 2000 Health Objectives. The data-based planning process is described as a possible model for use by other States and localities.

CARDIOVASCULAR DISEASE (CVD) mortality has declined nearly 40 percent during the past 20 years (1), but remains the leading cause of death, disability, and health care expenditures in the United States and in Missouri (2, 3).

The category of CVD includes ischemic heart disease, cerebrovascular disease (stroke), hypertension, peripheral vascular disease, and rheumatic heart disease (1). Current estimates suggest that more than one in four Americans suffer some form of CVD, with estimated economic costs of \$94.5 billion annually (4).

The three major modifiable risk factors for CVD are cigarette smoking, high blood pressure, and high levels of cholesterol in the blood (1, 2, 4). Reduction of smoking rates through prevention and intervention, and detection and control of high blood pressure and high cholesterol levels are

major public health priorities for the nation (5). Prevention and control of other CVD risk factors, such as physical inactivity, diabetes, and obesity, also are important public health objectives.

State health departments can play critical roles in the prevention and control of CVD (6) and have access to a wide variety of relevant data sets. These include data on mortality, hospital discharges, and specialized risk factor surveys. The data sets can be used to help prioritize and plan CVD control efforts, evaluate the effectiveness of intervention strategies, and educate policy makers and the public on the significance of CVD. In the past, these data have not been fully developed or used in program planning and evaluation. There are numerous reasons for this deficiency, including a lack of resources to develop and maintain surveillance data, a lack of expertise in chronic disease epidemi-

ology, and program planning based on historical or political considerations (7).

Local health departments play key roles in CVD control, as well as in communicable disease control, sanitation, laboratory services, maternal and child health, and vital statistics (8). However, the control of many communicable diseases, coupled with the growing importance of chronic diseases such as CVD, suggest that local health priorities should be expanded to include CVD control. Local health departments are a key to CVD control efforts because they have the ability to mobilize and coordinate the resources of voluntary health agencies, community health centers, hospitals, schools, and civic organizations.

In 1988, the Missouri Department of Health began a project to reduce the prevalence of CVD risk factors. The project included a statewide component focusing on planning efforts to assess CVD control priorities and strategies and a regional component utilizing surveillance data to target a certain region of the State for intervention. The regional portion addresses high-risk populations and utilizes a coalition approach coordinated through local health departments. We describe the data-based planning process that is being used to develop a program to help control CVD in Missouri.

Data Collection and Analysis

Several different data sets are being used to provide planning and evaluation data for the project. These include both existing data and new data collected specifically for the project.

Mortality data. Data from the Missouri Center for Health Statistics were used to examine the magnitude and distribution of CVD in Missouri (personal communication from Bruce Gibson, Missouri Department of Health, 1989). The category of all CVD was that defined by the International Classification of Diseases, 9th Revision (ICD-9) (9), codes 390–448. Among the diagnoses are ischemic heart disease, 410–414; cerebrovascular disease, 430–438; hypertension, 401–404; and rheumatic fever and rheumatic heart disease, 390–398. CVD accounted for 23,211 deaths in 1988, which was 46 percent of all deaths (3).

Ischemic heart disease was the cause of death in slightly more than half (54 percent) of all deaths from CVD. In order to provide reliable mortality rates by county, age-adjusted rates were pooled and averaged for the 10-year period 1979–88. Rates for

each of the 115 counties were categorized according to their presence in the highest decile and whether they were statistically significant at $P = 0.05$.

A significantly high rate for ischemic heart disease was found for five counties, Dunklin, New Madrid, Stoddard, Mississippi, and Scott, clustered in the six-county southeast region of the State known as the Bootheel. A significantly high rate, in the highest decile, for cerebrovascular disease was identified in another county in the Bootheel, Pemisnot. The Bootheel is bordered by Arkansas and is across the Mississippi River from Tennessee, Kentucky, and Illinois.

Hospital discharge data. Hospital discharge data are collected by the Missouri Department of Health, in conjunction with the Missouri Hospital Association. The records for 1987 were used to estimate the potentially significant impact of CVD on the health care system statewide (3). The total of 97,363 discharges related to CVD diagnoses in 1987 was 15 percent of all discharges for that year. The mean hospital length of stay for CVD diagnoses was 8 days.

Behavioral risk factor data. In planning local demonstration projects for the six-county Bootheel, the need for region-specific risk factor data became apparent. Therefore, a specialized risk factor survey was undertaken. The sample selection, survey methods, and study questionnaire were based on those of the Behavioral Risk Factor Surveillance System (10). A copy of the questionnaire is available on request.

From January through March 1990, computer-assisted telephone interviews were conducted with 1,006 adults 18 years of age and older. Study subjects were randomly selected from residents of the six Bootheel counties. A two-stage, random digit dialing technique (11) was used to collect data from residents. The response rate among eligible households was 85 percent.

The definitions for various risk factors used in the survey were

- Physically inactive: respondent reported less than 20 minutes of exercise 3 times per week in the month preceding the survey,
- Cholesterol not checked: respondent replied *no* when asked whether the respondent had ever a cholesterol check,
- Current smoker: respondent reported currently smoking cigarettes,
- Overweight: body mass index (weight [kg] di-

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vided by height [m^2]) ≥ 27.3 for men and ≥ 27.8 for women, and

- Hypertensive: respondent had been told of high blood pressure measurement more than once, or respondent currently taking hypertension medication.

Results from the special risk factor survey are shown in the table. The study area data, when compared with behavioral risk factor data statewide for 1989, showed that substantial numbers of residents were at risk of developing CVD. More study area respondents, compared with residents statewide, were physically inactive (68 percent and 62 percent), overweight (28 percent and 19 percent), and hypertensive (28 percent and 17 percent). The risk factor data were self-reported and we thought them likely to be underestimated.

Survey data suggested that low-income and minority populations may be at higher risk for CVD. For example, the prevalence of physical inactivity was 75 percent among respondents making less than \$10,000 per year and 60 percent among those reporting incomes of \$35,000 or more. Similarly, the prevalence of hypertension was 45 percent among those with incomes less than \$10,000 and 18 percent among respondents with incomes of \$35,000 or more. The prevalence of hypertension was 39 percent among blacks, compared with 27 percent among whites.

Provider group surveys. Many people and organizations have the ability to apply state-of-the-art knowledge and prevention practices in CVD control. Among these providers are primary care physicians, local health department staff members, and school teachers. To better understand the CVD control activities and priorities among them, we conducted random mail surveys of 500 primary care physicians, 400 elementary school teachers, and each of the 119 local and district health departments in Missouri.

The major areas covered in the surveys included demographic factors, personal preventive practices, knowledge of CVD risk factors, activity levels in CVD prevention, possible barriers or constraints to CVD control, and preferred types of educational materials and patient counseling methods.

Analysis of these data is currently being completed and is expected to provide the basis for planning and prioritizing activities to enhance CVD control endeavors among these providers.

Statewide Planning Components

State-level planning for CVD prevention and control involves a series of activities to provide the framework for a successful CVD control program. The major components of the statewide planning process are shown in the accompanying box.

Cardiovascular health task force. To provide input on state-level planning, a 30-member task force was formed. Represented on the task force are physicians, nurses, health educators, voluntary health agency staff, local health department staff and specialists in tobacco control, physical activity, and nutrition. The major function of the task force is to establish statewide priorities in CVD control. In addition, the task force is actively supporting state legislative issues related to CVD control, such as restriction on smoking in public places, banning of tobacco sales to minors, and nutrition education. Several additional data sets are being used to provide support for legislative efforts, including a statewide survey of tobacco use among youth (12) and a study of the health and economic costs of smoking in Missouri (13).

Cardiovascular health plan. The work of the task force is embodied in a State plan (14). The plan includes a review of the scope of CVD, risk factors for CVD, and Objectives for the Year 2000. Year 2000 objectives were modeled in part after the Healthy People 2000 Objectives for the Nation (5) and model standards for the year 2000 (15). Priority areas in the plan were largely determined by analysis of the CVD data sets discussed earlier.

Cardiovascular disease resource directory. A statewide directory of CVD control resources is being developed. The directory will include both printed materials and videos from several sources, including the American Heart Association; the National Heart, Lung, and Blood Institute; and the U.S. Department of Agriculture. The directory will list

more than 400 materials, computerized to allow indexing and sorting by risk factor or target audience. A narrative section will provide a brief description of each entry. The format of the directory is being modeled after an analogous publication that was developed for cancer control resources (16).

Training courses. A serial training course is being developed to highlight knowledge and control strategies related to CVD. The target audience for the courses will be CVD care provider groups such as those surveyed earlier, physicians, teachers, and local health department staff. The courses may include a section on grant writing skills, which has been determined as an unmet need by many public health professionals. In addition to new training courses, presentations on CVD prevention and control may be added to existing courses that are routinely conducted by the State health department or to meetings of professional societies.

Local Coalition Development

Local coalitions to help control CVD are being developed in the survey area. The decision to develop coalitions in this region was motivated by the review of existing mortality data discussed earlier, data on the lack of medical services in the region, and the perceived need for CVD control programs by local health department staff. Development of these coalitions is being guided by the principles of the Centers for Disease Control's Planned Approach to Community Health (PATCH) Program (17). The major components of the PATCH process include community mobilization, community diagnosis, community intervention, and evaluation (17). Several large-scale CVD control interventions (18-20) have used similar methods.

Separate CVD control coalitions are being developed in each of six Bootheel counties. A project coordinator, stationed in this region, began extensive groundwork to develop broad-based support for CVD control in the area.

Community mobilization was stimulated by involvement in the planning process by community groups and local leaders. Prior to coalition formation, support and involvement for the projects were sought and obtained from local health department staff members, voluntary health agencies, local medical societies, university extension services, city officials, the Chamber of Commerce, news media, and religious leaders. Support was obtained

Estimated prevalence of cardiovascular disease risk factors in the six-county study area of the Missouri Bootheel, and statewide, 1989-90

<i>Risk factor</i>	<i>Percent in study area</i>	<i>Percent statewide</i>
Physically inactive	68	62
Cholesterol not checked	40	47
Current smoker	26	26
Overweight	28	19
Hypertensive	28	17

NOTE: The 6 Missouri Bootheel counties are Dunklin, New Madrid, Stoddard, Mississippi, Scott, and Pemiscot.

Major Planning Components in a State-wide Cardiovascular Disease Control Program, Missouri, 1989-90

Task force
 Assess cardiovascular disease data
 Establish statewide priorities
 Determine action steps to achieve Year 2000 Objectives
 Monitor progress of local CVD demonstration projects

State plan
 Review scientific basis for cardiovascular disease control
 Set objectives for the Year 2000

Resource directory
 Provide an indexed listing and description of cardiovascular disease control resource materials

Training courses
 Educate professionals on state-of-the-art cardiovascular disease control strategies

through personal meetings with key leaders of each of these groups. A series of public service announcements and newspaper articles was used to highlight the importance of CVD and its associated risk factors. Information about coalition activities is shared through a newsletter to all participating organizations.

Following meetings with local leaders, planning meetings for each coalition were held. At these meetings, data sets were reviewed and input was sought from the residents of each community. Coalition members were asked their perception of the communities' needs related to CVD control. As

coalition development continues, the coalitions will use the available data to develop their own CVD control objectives and intervention strategies. When possible, intervention plans will build on existing programs. Small grants (\$5,000 to \$8,000 each) are being provided to each of six coalitions.

To begin the process of community diagnosis, data were obtained for each community on socio-demographics, health care services, educational institutions, local philanthropic organizations, labor statistics, recreational facilities, and churches.

Outcome evaluation of the local projects will be accomplished primarily by repeating the behavioral risk factor survey. Additional process evaluation will be the responsibility of the leaders of each local project.

Discussion

Analysis and dissemination of surveillance data have proven valuable in developing a CVD control program in Missouri. In most cases, CVD data had already been collected, as a result of statutory requirements or in conjunction with other projects, which makes analysis of these data a logical, cost-effective progression. The exception was our special risk factor survey that used relatively rigorous methods to collect local data. Other methods to estimate local CVD risk factor prevalence were available; however, specific local data are proving valuable in local coalition development and in project evaluation. Cardiovascular disease data have been disseminated through a variety of forums including articles in the State medical journal (3, 21, 22), press releases, interviews for radio and television, and fact sheets.

Providing local planning data, such as our behavioral risk factor survey, has been helpful in local coalition development. The ability to provide local data has helped foster early local identification with community-based projects, which is a key element for success.

Another key component in coalition formation has been the initial commitment and continued support of the local health departments, which have unique abilities to convene diverse groups and provide clinical services, such as blood pressure and cholesterol screenings. There have been spin-off benefits from our process of coalition development. Owing in part to the CVD coalition formation process, local interest has been stimulated in community-based prevention projects addressing diabetes control and reduction of infant mortality.

Appropriate development and use of chronic

disease surveillance data must be increased if States and the nation are to achieve health Healthy People 2000 objectives (5). The crucial need for chronic disease surveillance data was illustrated in a recent survey of State health agencies' chronic disease control programs, in which 85 percent of these programs indicated they lacked adequate surveillance data for planning and evaluation (unpublished data from Alison Chacon, Program Associate, Public Health Foundation, Washington, DC, January, 1991). In a number of State health departments, data-based planning has proven to be an effective tool for enhancing cancer control activities (7). Similar success can be achieved for CVD control programs through systematic use of surveillance data.

Since many of the data sets we have discussed are readily available or are relatively inexpensive to assemble, we believe our program is a useful model for other States and localities for planning and evaluating effective CVD control interventions.

References.....

1. Public Health Service: Disease prevention/health promotion. The facts. Bull Publishing Company, Palo Alto, CA, 1988.
2. Public Health Service: Positioning for prevention: an analytical framework and background document for chronic disease activities. Centers for Disease Control, Chronic Disease Planning Group, Atlanta, GA, 1986.
3. Brownson, R. C., Van Tuinen, M., and Smith, C. A.: Cardiovascular disease in Missouri: mortality, hospital discharges, and risk factors. *Missouri Med* 87: 225-227 (1990).
4. American Heart Association: 1990 heart facts. American Heart Association, National Center, Dallas, TX, 1990.
5. Public Health Service: Healthy people 2000: national health promotion and disease prevention objectives. DHHS Publication No. (PHS) 91-50212. Office of the Assistant Secretary for Health, Office of Disease Prevention and Health Promotion. U.S. Government Printing Office, Washington, DC, 1990.
6. Havas, S., and Walker, B., Jr.: Massachusetts' approach to the prevention of heart disease, cancer, and stroke. *Public Health Rep* 101: 29-39, January-February 1986.
7. Boss, L. P., and Suarez, L.: Uses of data to plan cancer prevention and control programs. *Public Health Rep* 105: 354-360, July-August 1990.
8. Brumback, C. L., and Christakis, G.: Local health department activities in heart disease control. *J Public Health Policy* 16: 64'82 (1980).
9. Department of Health and Human Services: International classification of diseases, 9th revision, clinical modification. U.S. Department of Health and Human Services, DHHS Publication No. 80-1260, Washington, DC, 1980.
10. Remington, P. L., et al.: Design, characteristics, and usefulness of state-based behavioral risk factor

surveillance: 1981-87. Public Health Rep 103: 366-375, July-August 1988.

11. Waksberg, J.: Sampling methods for random digit dialing. J Am Stat Assoc 73: 40-46 (1978).
12. Brownson, R. C., DiLorenzo, T. M., Van Tuinen, M., and Finger, W. W.: Patterns of cigarette and smokeless tobacco use among children and adolescents. Prev Med 19: 170-180 (1990).
13. Davis, J. R., Eischen, M. H., and Brownson, R. C.: The health and economic burden of smoking in Missouri. Missouri Med 87: 877-880 (1990).
14. Missouri Department of Health: The Missouri cardiovascular health plan, a focus on prevention, 1991. Division of Chronic Disease Prevention and Health Promotion, Columbia, MO, 1991.
15. American Public Health Association: Healthy communities 2000: model standards. Washington, DC, 1991.
16. Missouri Department of Health: Missouri cancer control resource directory, 1988. Bureau of Cancer Epidemiology and Control, Columbia, MO, 1988.
17. Planned approach to community health. Coordinator guide. Centers for Disease Control, Center for Chronic Disease Prevention and Health Promotion, Atlanta, GA, 1990.

18. Farquhar, J. W., et al.: The Stanford five-city project: an overview. In Behavioral health. A handbook of health enhancement and disease prevention, edited by J.D. Matarazzo, et al. John Wiley and Sons, Inc., New York, NY, 1984, pp. 1154-1165.
19. Lasater, T., et al.: Lay volunteer delivery of a community-based cardiovascular risk factor change program: The Pawtucket Experiment. In Behavioral health. A handbook of health enhancement and disease prevention, edited by J.D. Matarazzo, et al. John Wiley and Sons, Inc., New York, N.Y., 1984, pp. 1166-1170.
20. Blackburn, H., et al.: The Minnesota Heart Health Program: a research and demonstration project in cardiovascular disease prevention. In Behavioral health. A handbook of health enhancement and disease prevention, edited by J.D. Matarazzo, et al. John Wiley and Sons, Inc., New York, N.Y., 1984, pp. 1171-1178.
21. Pratt, M., and Brownson, R. C.: The prevalence of nonpharmacologic measures of blood pressure control in Missouri. Missouri Med 87: 818-821 (1990).
22. Brownson, R. C., Smith, C. A., Horton, J., and Bagby J. R.: Racial differences in cardiovascular disease mortality and risk factors. Missouri Med. In press.

Geriatric Education Centers Address Medication Issues Affecting Older Adults

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Synopsis

Serious problems have been identified in the prescribing of medications for elderly patients and

use of prescription and nonprescription drugs by older persons. Overuse, underuse, and inappropriate use of drugs by the elderly have been widely documented, and the harmful consequences have been described. This paper reviews information concerning the need for action to improve health professionals' knowledge and skills with respect to drugs and the elderly and activities being undertaken by geriatric education centers (GECs) to enhance these capacities.

Grant support for the centers from the Health Resources and Services Administration, a Public Health Service component agency, began in 1983. In fiscal year 1992 there are 31 centers operating in 26 States. The centers are multi-institutional and conduct four types of educational activities. These include review of pharmacological issues for multi-disciplinary groups, specialized training for pharmacists, discipline-specific programs focusing on medication issues, and activities aimed at educating the public. Examples of the GECs' educational activities are given.

OLDER PERSONS, WHO HAVE HIGHER rates of chronic disease and use more health services than the total population, are major users of prescrip-

tion and nonprescription drugs. Persons ages 65 and older compose approximately 12 percent of the population but use about 30 percent of all prescrip-