
HEART DISEASE AND STROKE IN RURAL AMERICA

by Miguel Zuniga, D’Arcie Anderson, and Kristie Alexander

SCOPE OF PROBLEM

- Disease of the heart is the first ranking among the leading causes of death in 1999.²⁹
- Stroke is the third ranking leading cause of death in 1999.²⁹
- Heart diseases are the most frequently first-listed diagnoses for hospital discharges nationally.²⁶
- Heart failure and stroke is the most frequent diagnostic category among hospitalized rural elderly Medicare beneficiaries.²⁷
- Congestive heart failure, hypertension, and angina are “ambulatory-care-sensitive” conditions.²⁸
- Pacemaker insertion, coronary artery bypass surgery, and coronary angioplasty are “referral-sensitive” conditions.²⁸

GOALS AND OBJECTIVES

Combating heart disease and stroke are pivotal to improving the nation’s health. Given this disease is the leading cause of death in the United States,¹ a key goal of the Healthy People 2010 heart disease and stroke objective is to “improve cardiovascular health and quality of life through the prevention, detection, and treatment of risk factors; early identification and treatment of heart attacks and strokes; and prevention of recurrent cardiovascular events.”² Despite a 50 percent reduction in coronary heart disease and stroke in the past 30 years,³ mostly attributable to advances in therapy and technology, disparities among certain subgroups have become more exaggerated.⁴ Among these vulnerable subgroups include rural populations,^{5, 6} particularly those in the South and Appalachian region.⁴ According to the Rural Healthy People 2010 survey, this disease was ranked second only to access as a top rural health concern by the four groups of rural health leaders across the states.⁷

The objectives² addressed in the heart disease and stroke review are as follows:

- 12-1. Reduce coronary heart disease deaths.
- 12-3. Increase artery-opening therapy.
- 12-7. Reduce stroke deaths.
- 12-9. Reduce the proportion of adults with high blood pressure.
- 12-12. Increase blood pressure monitoring.
- 12-15. Increase blood cholesterol screening.

PREVALENCE

Approximately 61 million individuals in the United States suffer from some form of cardiovascular disease, which includes heart disease and stroke.⁸ Although heart disease is sometimes considered a disease mostly affecting men, half of all cardiovascular disease deaths occur in women.⁸ The highest rates of heart disease deaths among women occur in northeastern large urban areas followed by the South’s most rural counties. For men, the highest heart disease-related deaths occur in the South’s most rural counties.⁹ For women and men, the lowest death rates from heart disease occur in the West.⁹

The death rate for African-American males from cardiovascular disease is 42 percent higher than white males.

The death rate for African-American males from cardiovascular disease is 42 percent higher than white males, and the rate for African-American females is 65 percent higher than white females.¹⁰ Other vulnerable populations to heart disease and stroke include older Hispanic Americans,³ individuals of lower socioeconomic status,¹¹ and

rural populations,^{5,6} particularly those in the South and Appalachian region.^{4,12}

According to self-reported data in the 1996 National Health Interview Survey, heart disease, cerebrovascular disease, and hypertension were more prevalent in nonmetropolitan than metropolitan areas.¹³ From 1985–

1995, declines in mortality rates for premature coronary heart disease in African Americans and whites were found to be slower in the rural South than their counterparts in other geographic areas.¹²

Vulnerable populations to heart disease and stroke include older Hispanic Americans,³ individuals of lower socioeconomic status,¹¹ and rural populations.^{5,6}

IMPACT

Heart disease and stroke are respectively the first and third leading causes of death in the United States.¹ In 1999, there were 725,192 heart disease deaths and 167,366 stroke deaths. The age-adjusted death rate for heart disease was 265.9 deaths per 100,000, and for stroke was 61.4 deaths per 100,000.¹⁴

Other measures of the effects of cardiovascular disease are the associated long-term costs. Heart disease and stroke are leading causes of disability, annually costing the United States an estimated \$19 billion and \$5.6 billion, respectively.¹⁵ With both heart disease and stroke, there is an increased likelihood of recurrence and other macrovascular complications.¹⁶ Depression is also significantly associated with both heart disease¹⁷ and stroke.^{18,19}

BARRIERS AND CHALLENGES

Rural populations are faced with certain behaviors, attitudes, and access challenges that may contribute to their heightened risks of coronary heart disease and stroke. Among these include a comparatively decreased rate of lifestyle change from behaviors associated with heart disease such as smoking, high-

fat diets, sedentary lifestyle,⁵ and decreased perception of heart disease risk especially among older rural women.²⁰ Other factors include long travel distances to comprehensive post discharge care for heart failure,²¹ limited access to screening services, variances in utilization of antithrombotic therapy,^{22,23} availability of technology and specialists,²⁴ and limited access to cardiac rehabilitation services.⁶

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PROPOSED SOLUTIONS

Modifiable risk factors such as smoking, high cholesterol, hypertension, physical activity, obesity, diabetes, and stress⁵ can be influenced through evidence-based preventive measures. Assessing the presence of risk factors and targeting modifiable risk factors should begin as early as 20 years of age.²⁵ Secondary prevention strategies are those that increase the likelihood of early diagnosis, such as through screening efforts and warning-sign information dissemination, and those that address the treatment of the disease.

Tertiary prevention strategies are those that aggressively treat heart disease and stroke, endeavoring to decrease their severity and occurrence of complications, such as through antithrombotic therapy.

Heart disease and stroke are respectively the first and third leading causes of death in the United States.¹

SUMMARY AND CONCLUSIONS

Heart disease and stroke are the leading causes of morbidity and mortality. Rates of reduction are varied, and certain populations are particularly vulnerable, including rural populations. Several modifiable risk factors for heart disease and stroke are more predominant in rural areas; however, access to services and preventive measures, such as screening, are not as readily available. This disease will continue to be a priority health issue in rural areas as long as access to quality care and prevention efforts are not addressed and modifiable risk factors are not effectively changed.

MODELS FOR PRACTICE

The following models for practice are examples of programs utilized to address this rural health concern.

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MODELS FOR PRACTICE

FOCUS AREA: HEART DISEASE AND STROKE

Program Name: Western Maine Center for Heart Health
Location: Farmington, Maine
Problem Addressed: Heart Disease and Stroke
Healthy People 2010 Objective: 12-1, 12-11, 12-15
Web Address: <http://www.fchn.org> (click “Heart Health”) and
<http://www.franklinscorekeeper.org>

SNAPSHOT

The Western Maine Center for Heart Health (WMCHH) reflects collaboration between the county’s 70-bed hospital, doctors, business leaders, and community residents. The center, which is a department within Franklin Memorial Hospital, is composed of four main divisions: HeartWarmers (for highest risk people with cardiovascular disease), Franklin ScoreKeeper (for individual children and adults at all risk levels), Research and Development, and Consultation and Training (to help other organizations and communities implement similar programs). The center works closely with the Healthy Community Coalition to promote healthy behaviors related to tobacco, nutrition, and physical activity. The mission of the center is to reduce the health and economic burdens of cardiovascular disease through coordinated community approaches. The death rate in Franklin County went from the fifth highest to the lowest in Maine, despite the county being poor and rural.

The center works closely with the Healthy Community Coalition to promote healthy behaviors related to tobacco, nutrition, and physical activity.

THE MODEL

Blueprint: WMCHH, an individual department in a not-for-profit hospital, works with other entities, such as physician practices, school systems, employers, insurers, Bureau of Health, Maine Cardiovascular Health, universities, and research departments. The center’s mission is to develop coordinated community approaches to reduce the health and economic burdens of cardiovascular disease in rural West-Central Maine.

WMCHH is composed of four main divisions: HeartWarmers, Franklin ScoreKeeper, Research and Development, and Consultation and Training. The Franklin HeartWarmers program offers education, supervised exercise, lifestyle modification, and emotional support following a heart attack, bypass surgery, unstable angina, or congestive heart failure through a unique program that integrates traditional cardiac rehabilitation and sustained nurse-managed telephonic contacts with enrolled clients. The program began four years ago, and the model has been adopted by 34 of Maine’s 36

hospitals, creating the Maine Cares Coalition. Among HeartWarmers patients, 90 percent have achieved LDL-cholesterol levels below 100 mg/dl, well above the national average for this important risk factor.

The Franklin ScoreKeeper system is an innovative cardiovascular disease prevention program based on decades of documented success by the Franklin Cardiovascular Wellness Program in reducing cardiovascular mortality in West Central Maine. The program is founded on research endorsed by the American Heart Association and focuses on identifying five risk factors specific to cardiovascular disease: high blood pressure, high total cholesterol and/or low HDL cholesterol, smoking, physical inactivity, and overweight. The program works by promoting five behaviors for heart healthy living including: a heart healthy diet, regular physical activity, being tobacco free, using medications as directed, and improving coping skills and managing stress. Franklin ScoreKeeper software reflects the “Franklin Health Model” of care; has guidelines based on internal logic; is intuitive and easy to use; and efficiently shapes, tracks, documents, reports, and evaluates both process and outcomes of risk factor screening and control in multiple settings. ScoreKeeper nurses and other counselors provide one-on-one screening, counseling, and follow-up services in many community settings, including schools, worksites, medical practices, hospital, and community. The client/patient leaves the session with an individualized cardiovascular risk and behavior “ScoreCard,” an action plan for heart-healthy living, pertinent educational materials, linkage to community resources, and an appropriate follow-up strategy.

The Consultation and Training portion of the center involves leaders and staff of the center welcoming the opportunity to share their knowledge and expertise based on over a quarter of a century of experience in developing and implementing successful community programs that integrate public health and medical practice. Consultation may be provided at a location and via media of the client’s choice, i.e., face-to-face, telephone, electronically, or by mail.

The center treats citizens of West Central Maine of all ages and ethnicities. No patient is turned away, and insurance is not a consideration. Currently, the center has eight full and part-time employees, including two co-directors. In addition, students do preceptorships and internships from University of Maine and elsewhere.

Making a Difference: The death rate in Franklin County went from the fifth highest in the state to the absolute lowest, despite the county being poor and rural. In particular, the death rate from heart attacks and strokes has plummeted. It went from being slightly above the state average in the 1960s to 10 percent below the state average over the next 25 years. The smoking rate dropped to the lowest in Maine. Only 15 percent of residents smoke, compared to a statewide average of 23 percent. In 1997, Franklin County

had the very lowest rate of preventable hospitalizations among Medicare and Medicaid enrollees. If the rest of Maine had the same rate of cardiovascular hospitalization charges as Franklin, Maine payers might have saved \$88 million in 1997.

Beginnings: In the early 1970s, a group of idealistic, young doctors with new ideas about health care and medical organization assembled in Farmington, forming a group called Rural Health Associates (RHA). They believed there were new ways to bring medicine to rural people, especially the uninsured, who typically have not had equal access to medical services. At the time, the idea of doctors in the area forming a group practice was unusual and controversial.

The idea of the group innovation was underscored by the formation of the state's first HMO in the late 1970s. Designed to give more people health care, it failed financially in the mid-1980s because it did not achieve sufficient scale.

Dr. Burgess Record, one of the young RHA doctors, wanted to do more than help people when they became ill. He and his wife, Sandy, a nurse, decided to take their blood-pressure cuffs and other equipment to grocery stores, businesses, and fairs to screen for problems and talk about prevention measures. The number of screenings grew when Record, who had Army Reserve duty every month in Auburn, asked if he could spend half of his required time performing screenings and counseling back in Franklin County. His superiors agreed but asked him to get approval of the hospital's medical staff. The medical staff's endorsement provided a foundation for the program to develop medical community support and minimal political opposition.

Thus the Franklin Cardiovascular Health Program has served the region continuously for 29+ years. The high blood pressure program was implemented in 1974; cholesterol was added in 1986, smoking in 1988, and Center for Heart Health in 1998. The mortality impact of this integrated community program has been reported in the *American Journal of Preventive Medicine* (Record, N.B.; et al. *American Journal of Preventive Medicine* 19(1):30-38, 2000) and highlighted by the American College of Cardiology in the report of its 33rd Bethesda Conference (Task Force #3, Preventive cardiology: How can we do better? Presented at the 33rd Bethesda Conference, Bethesda, MD, December 18, 2001, *Journal of the American College of Cardiology* 40:579-651, 2002).

Challenges and Solutions: Paul Judkins, former RHA head, asserts that the program is completely replicable. In addition, he points out that the biggest ingredient for any area trying to replicate the program is for community leaders to have the will. Lastly, he points out that the RHA

doctors were community leaders and were interested in doing this for the people, not to make "bundles of money."

Other issues that may be encountered include funding and physician/administrator buy-in. The Center is constantly looking for funds. Originally, funding was 33 percent fee-for-service, 33 percent external state grants, and 33 percent in-kind contributions. Now, with its focus on environmental and policy changes, Maine's Bureau of Medical Services no longer provides financial support for direct one-on-one service. A three-year Rural Health Outreach Grant just ended, and currently the center is without grant funding. The center hopes to become financially self-sufficient by providing consultation and training and selling licenses for its innovative Franklin ScoreKeeper software. Nurturing supportive relationships with community physicians is an ongoing process. Having active health professional champions and institutional support have been crucial for program success.

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MODELS FOR PRACTICE

FOCUS AREA: HEART DISEASE AND STROKE

Program Name: Well Valdosta-Lowndes County

Location: Valdosta, Georgia

Problem Addressed: Chronic Disease including Heart Disease

Healthy People 2010 Objective: 12

Web Address: <http://www.lcpfh.org>

SNAPSHOT

The Well Valdosta-Lowndes County program was developed to combat the problems associated with preventable chronic disease within the community. The program targets risky behaviors with a three-fold approach designed to guide individuals through a continuum of change that results in a healthier lifestyle. The program utilizes a proven model called the Well Workplace that was developed by the Wellness Councils of America. As an incentive to implementing the Well Workplace model, a company, church, or school may apply to be recognized nationally as a Well Workplace once it has fully implemented all seven steps. In addition to recognizing individual entities as Well Workplaces, the Well Councils of America will recognize the community as a Well City if 20 percent of the workforce is employed by companies that have been designated as Well Workplaces.

The program targets risky behaviors with a three-fold approach designed to guide individuals through a continuum of change that results in a healthier lifestyle.

THE MODEL

Blueprint: The Well Valdosta-Lowndes County program is a collaborative effort between Lowndes County Partnership for Health, Public Health, South Georgia Medical Center, Smith Hospital, Valdosta State University, two public school systems, local industry representatives, and other health-related organizations. The project targets risky behaviors with a three-fold approach designed to guide individuals through a continuum of change that results in a healthier lifestyle. Services are delivered at the place of employment, schools, or churches. The first approach focuses on awareness through health screens, literature distribution, newsletters, posters, and paycheck stuffers that are designed to help individuals realize the benefits of a healthier lifestyle. The second approach is education and motivation, which concentrates on education programs such as seminars and lunch-and-learns. The final component of the model concerns intervention. This includes nutrition and physical activity courses along with individual case management for individuals who recognize the need to change and are ready to take action to implement the desired changes.

In 1999, the Lowndes County Partnership for Health (LCPH) received a three-year Federal Rural Health Outreach grant to combat cardiovascular disease in Lowndes County. This program utilizes the above-mentioned methods and was successfully implemented in five of the larger employers in Lowndes County, 10 local African-American churches, and a public middle school.

The Well Valdosta-Lowndes County project was developed to build upon the success of the Rural Health Outreach grant project. To successfully implement this project, LCPH is utilizing a proven model called the Well Workplace developed by the Wellness Councils of America. The Well Workplace program outlines seven basic steps that a company, church, or school should take to implement a health management program that addresses all aspects of disease prevention. The seven-step (or seven C's) Well Workplace model includes:

- concentrating of senior level support,
- creating cohesive wellness teams,
- collecting data to drive programming efforts,
- crafting an operating plan,
- choosing appropriate interventions,
- creating a supportive environment, and
- consistently evaluating outcomes.

The program is staffed with three full-time salaried staff members, 20 nursing students, four community volunteers, and is overseen by a 24 member board of directors.

Making a Difference: The program was initiated after LCPH received a three-year Federal Rural Health Outreach grant to combat cardiovascular disease in Lowndes County. The program will be sustained through a combination of grants and fee-for-service programs. Currently, 18 companies, 20 churches, and a local middle school are participating in the project (over 10,900 adults and students). Additional companies and churches will be added to the project, and there are plans to begin a childhood obesity clinic within the next two years.

Currently, success is measured by the number of companies that have signed up to participate in the project. Most worksite wellness programs require three to five years of operation before measurable results are available. As the program progresses, success will be measured by health screen data and progress through the stages of behavior change by individuals.

Beginnings: The program began in November 2001 after a community health needs assessment identified chronic disease as a problem in Lowndes County. The organization is a 501(c)(3) with a hired executive director, board of directors, and elected officers. The original stakeholders include the Lowndes County Partnership for Health, Public Health, South Georgia Medical Center, Valdosta State University, Georgia Power, and Langdale Forest Products. New stakeholders continue to be added.

Challenges and Solutions: The primary challenge facing the program today is keeping up with the demand for services. The program is the only agency providing worksite wellness programs, and demand at this point is overwhelming.

The original program was funded through Georgia's Indigent Care Trust Fund. Also, the program received a Federal Rural Health Outreach grant to implement a program called the Well City Diabetes Initiative.

The program is brought to the attention of potential funders through grant proposals and speaking engagements. The program is publicized to the public through company and church communication channels, newspaper articles, speaking engagements, and through the board of directors' contacts with state officials.

Currently, the program has received the endorsement of the Mayor and City Council, the County Commissioners, and the Chamber of Commerce.

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MODELS FOR PRACTICE

FOCUS AREA: HEART DISEASE AND STROKE

Program Name: Healthy Hearts Program

Location: Ellaville, Georgia

Problem Addressed: Heart Disease and Stroke

Healthy People 2010 Objective: 12-8

Web Address: None

SNAPSHOT

The Healthy Hearts Program was developed by the Ellaville Primary Medicine Center (EPMC), a hospital-based rural health clinic, to identify and reduce modifiable risk factors for heart disease in Schley County. The program is a collaborative effort between EPMC, Georgia Southwestern State University School of Nursing, Schley County Board of Education, and Schley County Health Department. The program conducts screening and health education for employers, and elementary and high school students. In addition, the program assists with the purchase of hypertension medications. Local industries participate in the program by having employees screened at work and also receiving health education during working hours.

The Healthy Hearts Program is a collaborative effort designed to identify and reduce modifiable risk factors for heart disease.

THE MODEL

Blueprint: The Healthy Hearts Program is a collaborative effort designed to identify and reduce modifiable risk factors for heart disease in Schley County through screening and health education for employers, and elementary and high school students. EPMC provides overall project responsibility and coordination while the School of Nursing is responsible for developing the Healthy Hearts nutrition program at the Schley County Elementary School. The Schley County Board of Education provides space for screenings, notifies parents of the program, and obtains permission for student participation. The Schley County Health Department works with EPMC to develop and implement a referral system for clients who are identified as hypertensive but cannot access the Georgia State Hypertension program. In addition, the program assists with the purchase of hypertension medications. The local pharmacy agreed to charge the program Medicaid rates on all drugs. The patient is responsible for half of the cost of the medication, and the grant purchases the other half.

The project was designed by EPMC to allow nurse practitioners (NPs) together with registered nurses (RNs) to provide screening, health education, and follow up. The services are offered at the clinic and in a community setting, such as schools and industries. Outreach is also provided to local

churches, senior citizen centers, and recreation programs. Services are available to the entire community, and the outreach programs are targeted to county elementary and high school students, and factory employees. Bilingual outreach workers assist with health education to those with limited English proficiency. NPs manage chronic, stable, and common acute episodic health problems at EPMC and refer more complicated medical problems to a physician, who like EPMC, provides care on a sliding fee scale. Eight local industries agreed to participate in the program by allowing employees to be screened at work and receive health education during working hours.

A Federal Rural Health Outreach grant supports the program. It is funded for three years, with decreasing funding over the course of the grant's life. The program supports an NP (0.5 full-time employee [FTE]), half-time RN, and licensed practical nurse (0.5 FTE). Office personnel are paid by EPMC, while three health outreach workers are paid from a Migrant Health Program federal/state grant. In addition, there are limited in-kind donations from a local internal medicine doctor and pediatrician in the community.

Making a Difference: The program was fully implemented in September 2001. Currently, the program works with local industries to develop an ongoing work wellness program. The program intends to measure success by:

- meeting the action plan objectives;
- increasing participation in health screening;
- increasing individual employee and student participation in health promotion activities and focus groups; and
- demonstrating a measurable and sustained change in modifiable risk factors, such as how many people have stopped smoking, how many people have controlled hypertension, and how many people have reached their targeted weight.

Beginnings: The program, in the demonstration phase, was initiated in May 2001 and fully implemented in September after the family nurse practitioner and health outreach workers began health screenings at the local industries and elementary school. The screening results showed that there were a high number of adults and children who had modifiable risk factors, undiagnosed or untreated hypertension.

The program was developed by EPMC, which enlisted the help of the above mentioned network members. Local industries participated in the program by having employees screened at work and receiving health education during working hours.

Challenges and Solutions: Currently, the program faces challenges relating to the participating employer setting aside time and space for the program to do the screening. It is also difficult to coordinate efforts with the School of Nursing. The school did not have nursing classes scheduled during the summer and did not have a “community health” nursing course, so students were not always available.

The program only works with clients in Schley County. The clinic is well established and known in the community and the surrounding area. The targeted work force is reached through flyers. The program also uses local newspapers and radio to announce other events. In addition, the project has been presented at a national conference.

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MODELS FOR PRACTICE

FOCUS AREA: HEART DISEASE AND STROKE

Program Name: Oregon County Heart Health Coalition

Location: Alton, Missouri

Problem Addressed: Heart Disease and Stroke

Healthy People 2010 Objective: 12-1, 12-11

Web Address: <http://www.dhss.state.mo.us>

SNAPSHOT

The Oregon County Heart Health Coalition began in May 2001 and primarily addresses heart disease, diet/meal planning, and fitness and health. The program is a collaborative effort between the BB Road Fire Department, Oregon County Health Department, senior citizens, and local churches. The coalition's goal is to provide the community with education, equipment, literature, videos, smoking cessation classes, and water aerobics classes. Services are delivered through individual coalition members.

The coalition's goal is to provide the community with education, equipment, literature, videos, smoking cessation classes, and water aerobics classes.

THE MODEL

Blueprint: The Oregon County Heart Health Coalition serves all age groups, with a primary emphasis on senior citizens. The Oregon County Health Department assisted in the initiation of the program by providing start-up money and staff support. Currently, the program staff includes three registered nurses (RNs), one licensed practical nurse, one health educator, five paid staff, one donated staff person, and one retired RN who provides exercise programs on a volunteer basis.

Making a Difference: Historically, the Health Department provides health education to the community. The coalition anticipates that other agencies will initiate the other aspects of the program, and outside funding will not be needed. The program will measure outcomes based on attendance of programs initially and, in the long run, will reevaluate the health statistics.

Beginnings: The program was initiated in Oregon County in May 2001 after an assessment of county statistics and lifestyle factors identified heart disease as the number one cause of death in the county for individuals 45 years and up. Several counties around the state have been providing similar successful programs for several years. The Oregon County program mirrors these successful programs.

Challenges and Solutions: This program is still in its infancy. Major challenges have not been encountered because the coalition is made up of

individuals who are concerned about the health of their county. As the program matures, issues of funding may surface.

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