

State of Illinois  
Rod R. Blagojevich, Governor

Department of Public Health  
Eric E. Whitaker, M.D., M.P.H., Director



# Heart Disease and Stroke in Illinois

Now Is the Time for Public Health Action



2007-2012 State Plan



Illinois Department of Public Health



# *Heart Disease and Stroke in Illinois*

Now Is the Time for Public Health Action

**2007-2012 State Plan**

*Everyone Plays a Role in Preventing Heart Disease and Stroke*

Illinois Department of Public Health

2007

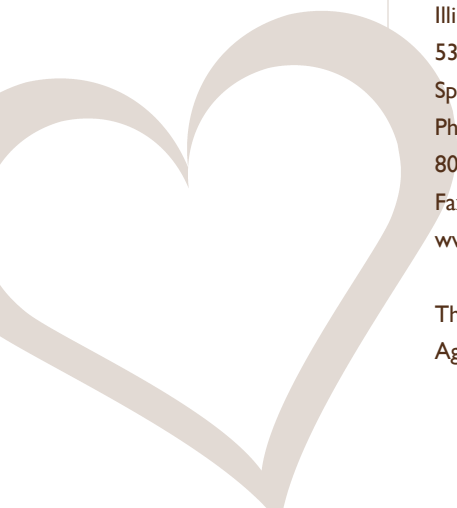


## Acknowledgments

As this document will make clear, the Illinois Department of Public Health's Heart Disease and Stroke Program has many partners to thank for their insightful and instructive dedication to preventing the mortality and morbidity caused by cardiovascular disease. Members of these advisory groups (see Appendix F) have worked diligently to find and develop strategies and interventions that will alleviate the disabilities, death and heavy costs associated with heart disease and stroke. The Department also would like to acknowledge the contributions made by the following individuals: Buddy Bates, P.J. Burtle-McCredie and Julie A. Harvill.

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June 2007

Dear Partners Interested in Heart Disease and Stroke Prevention:

Every hour in Illinois, approximately five people die from heart disease, stroke or other cardiovascular disease. In fact, cardiovascular disease is the state's leading cause of death. As the "baby boomer" population ages, the number of Illinoisans affected by heart disease and stroke is expected to grow and have a significant impact on the citizenry's health status and its health care needs.

The increased incidence of cardiovascular disease affects not only health and other quality of life issues, but it also carries a heavy economic cost. For example, in 2004, more than \$7.5 billion of hospital charges were attributed to cardiovascular diseases – accounting for nearly one-quarter of all hospital charges. Many victims who survive a heart attack or stroke often require long-term medical treatment, rehabilitation and, many times, specialized care, adding yet more to the economic burden of heart disease and stroke.

In light of such costs, it would seem appropriate that all Illinois citizens recognize the signs and symptoms that warn of a heart attack or stroke. Recognizing a heart attack or stroke can ensure a swifter emergency response, which means more victims will survive and have fewer long-term disabilities. Yet, most people cannot identify more than one or two signs of a heart attack or stroke.

A coordinated effort among health organizations, health professionals and other partners can reduce the burden of heart disease and stroke in Illinois. To accomplish this objective, all stakeholders must focus on modifying health behaviors (for example, tobacco use, nutrition and physical activity), on improving clinical preventive services, on improvements to emergency response, and on creating policies and promoting environments that support the good health of all of the state's citizens.

The benefits will be immense—improved quality of life, lower mortality rates and savings in health care dollars. Implementing the comprehensive, statewide approach outlined in this document, *Heart Disease and Stroke in Illinois: Now Is the Time for Public Health Action, 2007-2012 State Plan*, is a vital first step toward realizing these benefits.

Sincerely,



Eric E. Whitaker, M.D., M.P.H.,  
Director

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## Introduction

Despite decades of public education, heart disease and stroke continue to be the first and third causes of all deaths, respectively, for both men and women in Illinois. They are also the leading causes of premature, permanent disability in the workplace and, in 2003, were responsible for approximately 350,000 years of potential life lost. CVD taxes the state's health care system, accounting for more than 1.1 million days spent in hospitals with a price tag of more than \$7.5 billion. While the majority of deaths due to heart disease and stroke are among whites (which reflects the population demographics), African Americans and, in particular, African-American men, have the highest mortality rates.

Great strides have been made in reducing deaths due to heart attack and stroke, but this decline in mortality rates is slowing. To maintain the trend, heart disease and stroke prevention programs must focus on reducing a person's risk factors; on increasing public awareness of the warning signs of heart attack and stroke; on decreasing the time between when a person experiences any of these warning signs and when he/she receives appropriate medical attention; and on eliminating health disparities. This will require that strategies capable of reaching all populations be forged. All affected groups – employers, governments, communities and the public – must become involved in identifying their roles and in developing these strategies. The programs that nurture such collaboration will be the ones that are most successful in preventing heart disease and stroke.

The Illinois Heart Disease and Stroke Prevention program and its partners are looking at such a broad approach in its efforts to reduce heart disease and stroke and to promote healthy lifestyles. This approach goes beyond public education to look at policies and systemic changes that will make it easier for people to make heart-healthy choices – whether in their communities, at their workplaces or in the health care setting – and ensure quality of emergency and health care should a heart attack or stroke take place.

The plan highlights goals, objectives, priorities, settings and strategies. As a whole, it will guide efforts to reduce heart disease and stroke and the associated costs over the next five years. These efforts will yield important outcomes:

- ♦ greater awareness of the early warning symptoms and signs of a stroke and heart attack
- ♦ increased knowledge of the importance of accessing rapid emergency care by calling 911
- ♦ a decrease in risk factors (diabetes, high cholesterol, high blood pressure, poor nutrition, obesity and tobacco use) associated with heart disease and stroke
- ♦ decreased mortality rates due to heart disease and stroke
- ♦ greater capacity to implement evidence-based programs
- ♦ added opportunities for high-quality training for health care providers
- ♦ more policies that help to reduce risk factors for heart disease and stroke and to improve treatment options
- ♦ improved access to emergency response
- ♦ greater emphasis on eliminating health disparities

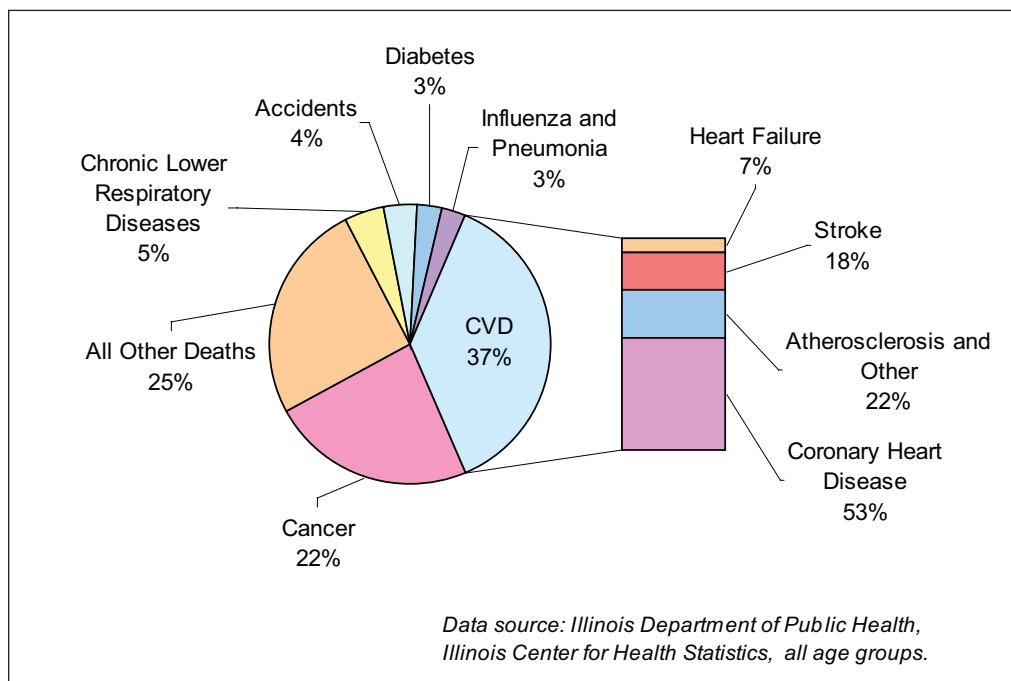


# Burden of Cardiovascular Disease in Illinois

Cardiovascular disease is a broad term which includes heart disease, stroke, high blood pressure, heart failure and congenital cardiovascular defects. Taken together, these diseases of the heart and blood vessels are the biggest killers in Illinois and in the United States. In fact, CVD accounts for more deaths in Illinois than any other single cause – equal to the combined deaths due to cancer, chronic lower respiratory diseases, accidents, diabetes and influenza/pneumonia (Figure 1). That heart disease and stroke, both of which are largely preventable, continue to exact this high toll is unacceptable.

Every hour in Illinois, approximately five people die from heart disease, stroke or other cardiovascular disease (CVD). This makes heart disease and stroke the state’s first and third, respectively, leading causes of death. In 2003, this translated into 39,079 deaths, or 37 percent of all deaths that year. CVD not only poses a heavy health burden, it also has high economic costs. In 2004, more than \$7.5 billion of hospital charges were attributable to cardiovascular diseases – accounting for nearly one-quarter of all charges. In addition, those who survive a heart attack or stroke often need long-term rehabilitation, lifelong medication and, in many instances, some level of specialized care. Such outcomes not only carry a high economic price, they also seriously compromise a person’s quality of life and his/her ability to contribute to the community.

Figure 1. Leading Causes of Death, Illinois, 2003



Every hour in Illinois, approximately five people die from heart disease, stroke or other cardiovascular disease.



## Cardiovascular Disease Mortality

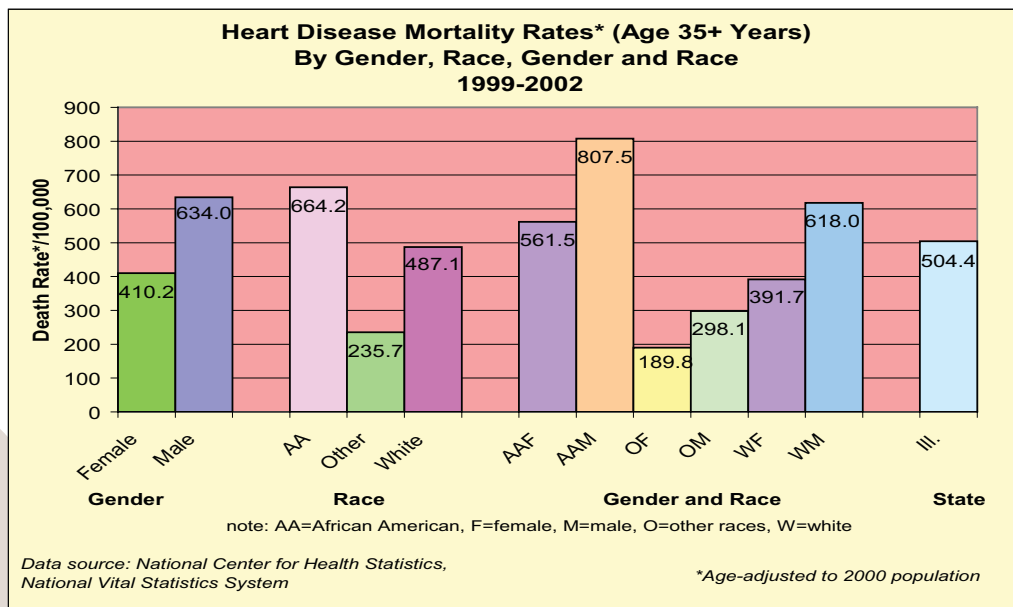
In both the United States and Illinois, CVD age-adjusted mortality rates are declining. Although there is no conclusive evidence to explain this decline, advancements in the treatment of heart disease and stroke may be important contributors.

- ♦ Illinois ranks 31 among the 50 states for age-adjusted CVD mortality rates.
- ♦ In 2003, CVD caused 38,771 deaths among men and women older than the age of 34 in the state.
- ♦ CVD mortality rates vary by race, gender and age.
  - ♦ In 2003, CVD was responsible for 32,707 deaths among whites; 5,679 among African Americans; and 385 among those of other races. African Americans have the highest mortality rates (863.0/100,000) and African-American men are especially at risk for dying from CVD (1,023.4/100,000), higher than any other race-gender group.
  - ♦ Although men have higher CVD mortality rates (801.3 per 100,000) than women (558.1 per 100,000), more women (21,000) died from CVD in 2003 than did men (18,000).

## Heart Disease Mortality

- ♦ Diseases of the heart are the leading cause of death in Illinois and the United States. In 2002, mortality rates for Illinois and the United States were 478.3/100,000 and 467.6/100,000, respectively.
- ♦ Gender, race and age have varying effects on heart disease mortality rates (Figure 2).
  - ♦ In 2003, 14,144 men and 15,310 women died of heart disease. Males (overall), African Americans (overall), white men, African-American women and African-American men have higher heart disease mortality rates than the state as a whole.

Figure 2. Heart Disease Age-adjusted Mortality Rates, by Gender and Race

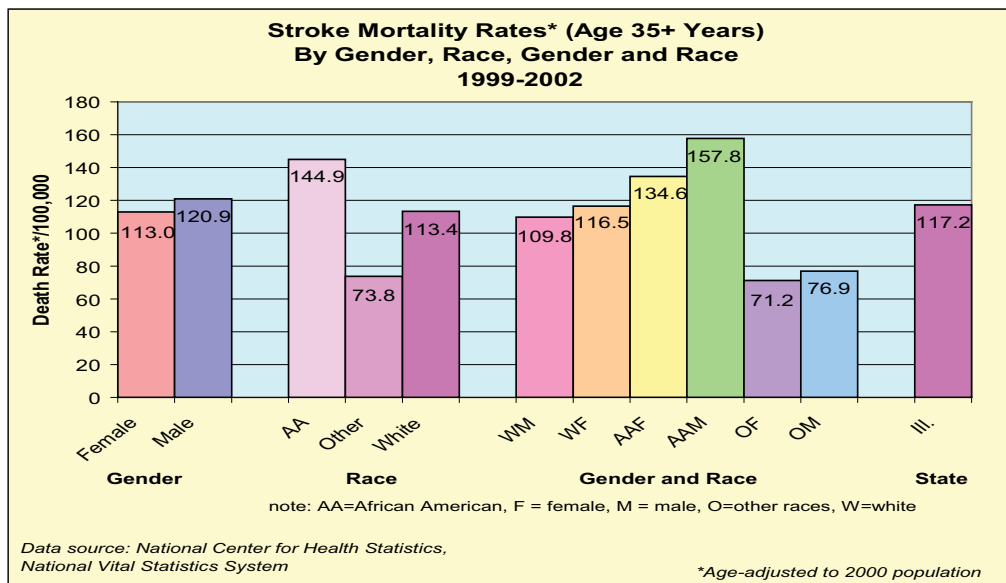


### Stroke Mortality

- ♦ Stroke is the third single leading cause of death in Illinois, accounting for 18 percent of all CVD-related deaths (Figure 1). Stroke mortality rates in Illinois have closely matched those for the United States over the last 20 years. Stroke also is a leading cause of disability in Illinois and the United States.
- ♦ Stroke mortality rates vary by gender, race and age (Figure 3).
  - ♦ In Illinois during 2003, many more women (4,260) die from stroke than men (2,585).
  - ♦ In 2003, more than 5,800 whites in Illinois died from stroke, compared to 959 African Americans and 85 of other races. Age-adjusted stroke mortality rates for African Americans are 27.8 percent greater than for whites, and 96.3 percent greater than for other races. Noticeable differences also are found if both gender and race are considered. Rates for African-American men are 43.7 percent higher than for white men, and the rates for African-American women are 15.5 percent greater than those for white women.
  - ♦ Stroke mortality disproportionately affects older populations (65+ years). In 2003, only 11 percent of all stroke deaths were among those 35-64 years of age. Furthermore, of the 6,845 stroke deaths among those 35 years and older in 2003, approximately 6,000 were among those older than 64. The age-adjusted stroke mortality rate for this latter group was 402.5/100,000, compared to 15.8/100,000 for those ages 35-64 years.

Stroke is the third single leading cause of death in Illinois, accounting for 18 percent of all CVD-related deaths (Figure 1)

Figure 3: Stroke, Age-adjusted Mortality Rates, by Gender and Race, Illinois, 1999-2002

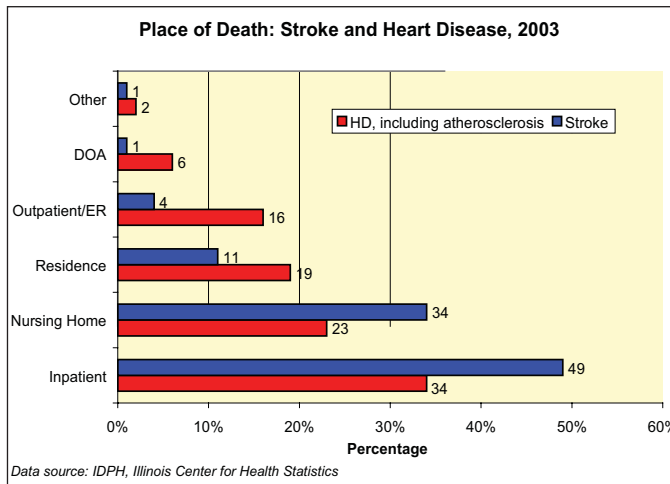




## Place of Death

Data concerning the places where stroke and heart attack victims die underscore the importance of rapid recognition and response to these emergency situations. Stroke and heart attack victims who reach a hospital shortly after experiencing symptoms are much more likely to survive and to avoid serious complications and disabilities.

**Figure 4. Place of Death**



In 2003, approximately 16,000 victims of heart disease died before reaching a hospital. This represents more than half of all deaths related to heart disease. In addition, almost half of the deaths that happened prior to reaching a hospital – 7,300 – occurred in a nursing home facility. Similarly, almost half (3,222) of all stroke deaths (6,845) in Illinois occurred before victims reached a hospital. Slightly more than one-third (34 percent) of stroke deaths occurred in nursing home facilities (2,323 deaths) and 10.6 percent (720) occurred at the victim’s home (Figure 4).

## Hospitalization Charges

**Figure 5. Billing Charges for Hospitalization in Illinois, 2004**

	Total Number of Days	Total Number of Discharges	Average Number of Days per Discharge	Total Cost	Average Cost per Discharge
<b>All Causes*</b>	7,664,127	1,675,166	4.6	\$32,444,352,642.51	\$19,367.84
<b>CVD</b>	1,122,087	238,518	4.7	\$7,543,232,864.56	\$31,625.42
Stroke	206,139	40,600	5.1	\$997,068,507.41	\$24,558.34
Heart Disease	795,445	174,610	4.6	\$5,750,036,828.83	\$32,930.74
Atherosclerosis	120,503	23,308	5.2	\$796,127,528.32	\$34,156.84

\*Primary diagnosis only

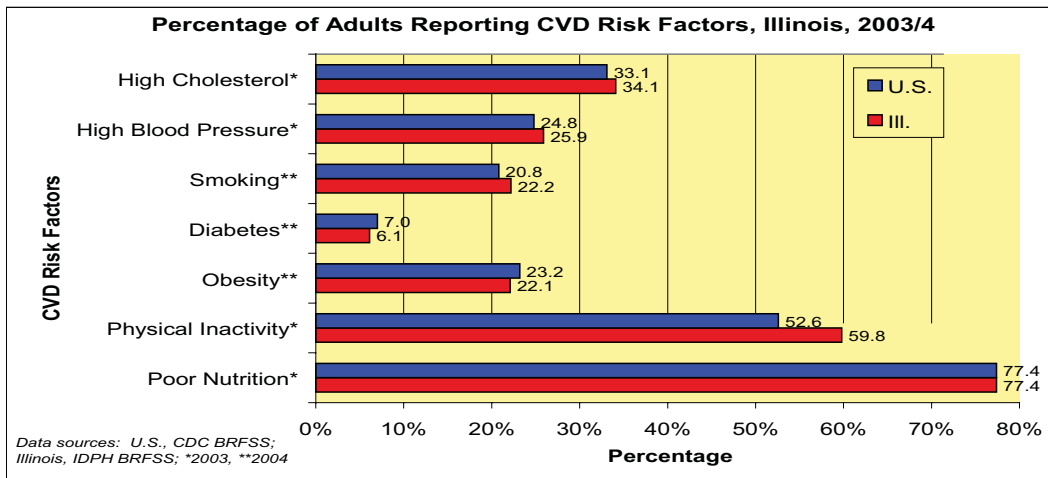
Data source: IDPH, Hospital Discharge Data, 2004, Division of Health Policy, Office of Policy, Planning and Statistics

In 2004, in Illinois, hospitals reported 238,518 inpatient primary discharges for CVD (atherosclerosis, heart disease and stroke), representing approximately 14 percent of all discharges. Average charge per CVD discharge was almost \$32,000, compared to a little more than \$17,000 for all other discharges except CVD. The total charge for hospital care for those with CVD was \$7.5 billion, or nearly one-quarter of the total cost for all causes. As startling as these data are, the figures should be considered lower estimates because only primary discharges coded as CVD were included (Figure 5).

### Risk Factors and Prevention

There are many risk factors for cardiovascular disease. Some – such as age, gender and family history – are beyond a person’s control. These are classified as nonmodifiable risk factors. Other risk factors can be controlled. These modifiable risk factors include high cholesterol levels, high blood pressure, smoking, diabetes, obesity, physical inactivity and poor nutrition. The more risk factors a person has, the greater the chances are for the development of CVD.

Figure 6. CVD Risk Factors among Adults, Illinois and United States, 2003-2004



The most common risk factors for heart disease and stroke among adults in Illinois are poor nutrition and physical inactivity (Figure 6). More than 77 percent of the adult population does not get the recommended five servings of fruits and vegetables a day, and 60 percent do not get the recommended amount of physical activity. These two risk factors have a synergistic effect on other risk factors including obesity, high cholesterol and high blood pressure. More than one-third (34.1 percent) of adults in Illinois have high cholesterol, and one in four has high blood pressure. Many adults (22.2 percent) in Illinois are current smokers, another factor that increases a person’s chances for developing heart disease and/or having a stroke.

### Awareness of Signs and Symptoms of a Heart Attack or Stroke

Less than half of all adults in Illinois can recognize all the signs and symptoms of a heart attack. Slightly more adults – 51 percent – can identify five to six signs and symptoms of stroke. Awareness of the signs and symptoms of a heart attack and stroke varies by gender, age, race/ethnicity, socioeconomic status, education and geography.

- ♦ Men and women are equally likely to recognize the signs and symptoms of a heart attack (approximately 47 percent). When it comes to stroke, men are more likely (52.6 percent) than women (49.6 percent) to recognize the signs and symptoms of a stroke.
- ♦ Only 39.9 percent of those between the ages of 30 and 39 years recognize the signs and symptoms of a heart attack; however, this jumps to 56.7 percent for those between 40 and 49 years of age. Greatest awareness of stroke symptoms is among those 40 to 69 years of age. Younger age groups were less aware; for example, only 41 percent of those between 18 and 29 knew the signs and symptoms of stroke. Surprisingly, however, those older than 70 years of age – with 44.7 percent – were only slightly more aware.

There are many risk factors for cardiovascular disease. Some – such as age, gender and family history – are beyond a person’s control.



- ◆ Nearly half of white non-Hispanics (51.6 percent) were able to recognize the signs and symptoms of a heart attack; only 31.9 percent of other race/ethnicities were able to do this.
- ◆ As income increases, so does awareness of the signs and symptoms of a heart attack: Just 32.2 percent of those in the low-income bracket (less than \$25,000 annually) could identify signs and symptoms. However, 57.2 percent of those in the highest income bracket (more than \$75,000 annually) could do so.
- ◆ Approximately 39 percent of those who had no more than a high school education were able to recognize the signs and symptoms of a heart attack, compared to approximately 52 percent of those with at least some college.
- ◆ The percentage of adults in Cook and the surrounding collar counties who recognize the symptoms of a heart attack is 45.3 percent, compared to 50.5 percent downstate. Awareness of stroke symptoms shows the same variation, with 55.4 percent of downstate adults correctly identifying all five signs of a stroke as opposed to only 48.7 percent of those in Cook and the surrounding collar counties.

## Health Disparities

While the majority of deaths due to heart disease and stroke are among whites (which reflects the population demographics), African Americans and, in particular, African-American men, have the highest mortality rates. Non-white, non-African-American people have the lowest heart disease and stroke mortality rates.

Individuals with low income and/or education status constitute a risk group that is unlikely to recognize the signs and symptoms of a heart attack or stroke. Nearly 70 percent of individuals with household incomes of less than \$25,000 cannot recognize all the signs and symptoms of a heart attack or stroke. The same is true for those with less than a high school education.

These facts highlight an important aspect of addressing heart disease and stroke. Successfully grappling with CVD will, at times, require that certain societal policies and systems be changed. Such changes will be necessary when confronting those sorts of social and environmental issues that are sometimes difficult to quantify and manage. Besides education and income levels, these factors include individual behaviors, family and social relationships, and community. Failure to acknowledge the impact of these socio-ecological factors will result in programs and initiatives that are unable to effectively address the health problems confronting various populations, thereby exacerbating existing health disparities and squandering precious resources.

# Illinois Heart Disease and Stroke Efforts - Past and Present

## History

Illinois is proud of its three decade-long commitment to the prevention of heart disease and stroke. Since passage of Illinois' High Blood Pressure Act in 1977, the state's Department of Public Health (IDPH), along with a network of local health departments, hospitals and health care providers, have focused on developing strategies and interventions that can effectively promote the prevention of cardiovascular disease.

In the early years, these prevention efforts were more closely focused. Initially, IDPH awarded grants to local health departments to implement programs to detect and monitor high blood pressure. By 1995, the Department had established the Illinois Cardiovascular Disease Prevention Program and charged it with enlarging the agency's CVD focus. Efforts were launched to discourage people from smoking – or to quit if they did. Others were intended to encourage more physical activity and healthier diets and to educate people about the preventive value of screening for blood pressure and cholesterol.

The Department received funding from the U.S. Centers for Disease Control and Prevention (CDC) in 2001 that enabled the agency to establish the Illinois Cardiovascular Health Program. Initially, the program refined and continued its previous efforts to prevent heart disease and stroke through its various tobacco, physical activity, nutrition and secondary prevention projects.

In 2005, the CDC moved to align its efforts concerning heart disease and stroke behind six priorities:

- ♦ Control high blood pressure, primarily in adults and older adults.
- ♦ Control high blood cholesterol, primarily in adults and older adults.
- ♦ Know the signs and symptoms of heart attack and stroke, and call 911.
- ♦ Improve emergency response.
- ♦ Improve quality of heart disease and stroke care.
- ♦ Eliminate disparities.

IDPH's current efforts, implemented through the Illinois Heart Disease and Stroke Prevention Program, address these six priorities by focusing on policy change, systems change, health education and awareness, and training and technical assistance.

## Partnerships

Because there are many facets to heart disease and stroke, no one organization can tackle this problem alone. To enhance its impact on the problem, IDPH has always recognized the importance of enlisting partners with needed expertise and experience. Partnerships also allow the Department to leverage additional resources and to coordinate the delivery of interventions related to heart disease and stroke and their risk factors. (See Appendix G for a listing of members for the following partnerships.)

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From 2001-2004, the **Illinois Cardiovascular Health Partnership**, facilitated by the Department and supported by federal funds, concentrated its efforts on physical activity, nutrition, tobacco and secondary prevention (as outlined by the CDC). The partnership was productive. Working with IDPH's tobacco program, it helped to develop statewide goals for discouraging the use of tobacco products. The group also collaborated with staff of the Department's Illinois Obesity Initiative in its efforts to promote physical activity and good nutrition. In addition, the partnership helped to develop plans focusing on secondary prevention.

In 2005, two important new partnerships emerged from unfunded mandates for heart disease and stroke. The Department, with funding from the CDC, was able to activate the Atherosclerosis Advisory Committee and the Illinois Stroke Task Force. These two groups exemplify the concept of partnership.

The Department convened the first meeting of the **Atherosclerosis Advisory Committee** on April 27, 2005. The composition of this group, which meets four times a year, reflected the acknowledgment that any approach to reducing the burden of heart disease and stroke would have to include partners whose expertise and experience would enrich the formulation of effective and appropriate strategies and programs. Committee membership was to include representatives from the American Heart Association; the Illinois Association for Health, Physical Education and Recreation; the Illinois Dietetic Association; the Illinois General Assembly; and the Prairie State Medical Society. Cardiologists were represented, as were local health departments, the public, and researchers. The fitness and health care industries also were among the committee's members.

During the committee's initial meetings, these members were canvassed to identify possible interventions and program initiatives. The committee's first initiative has been to advance the work of the CARDIA (Coronary Artery Risk Development in Young Adults) Study. This 15-year effort focuses on weight maintenance and its implications in reducing cardiac risk factors in young adult populations.

IDPH convened the **Illinois Stroke Task Force** on June 9, 2005. This diverse group, which meets three times a year, included representatives from 19 organizations involved in the prevention and treatment of stroke. The first meetings brought members together to develop and prioritize recommendations on how to improve stroke prevention and treatment efforts. The group worked to develop recommendations on five priority areas. There were several strategies identified for each recommendation. The Illinois HDSP program is currently coordinating and implementing those activities.

Also in 2005, the Department reached out to other state agencies and partnership members to survey their policy and environmental strategies related to heart disease and stroke prevention. The effort identified various programs and opportunities that have an impact on nutrition, physical activity, tobacco, blood pressure and cholesterol, etc., and the appropriate contact persons. The **Illinois Heart Disease and Stroke Coordinating Committee** arose from this effort and has become another means by which the Department enlists important stakeholders in strategy development. Its members come from other state agency programs that focus on heart disease and stroke prevention and from the American Heart Association. The committee meets twice a year (January and July) and shares program updates and progress reports in addition to its strategy development activities.



## Illinois Goals

The Illinois Heart Disease and Stroke Prevention Program continues to focus on effective and targeted efforts to reduce the morbidity and mortality associated with heart disease and stroke. All of the program's efforts are guided by 12 important goals:

1. To provide leadership in planning and coordinating statewide activities that involve public and private partners.
2. To initiate proven programs and policies.
3. To develop policy agendas at the state and local level.
4. To educate individuals, health care providers and payers, communities and worksites about the important role each plays in heart disease and stroke prevention, treatment and control.
5. To reduce risk factors related to heart disease and stroke (high cholesterol, high blood pressure and high/low blood sugar) through the promotion of healthy behaviors (good nutrition, physical activity, smoking cessation, mental health and oral health).
6. To encourage efforts for detection and treatment of risk factors.
7. To increase awareness of the warning signs and symptoms for heart attack and stroke, and of the need to call 911 immediately.
8. To promote access to and utilization of early detection and rapid treatment for heart disease and stroke events.
9. To prevent recurrent heart disease and stroke events through treatment and rehabilitation.
10. To eliminate disparities.
11. To improve quality of care and to monitor progress through data collection.
12. To monitor the impact and to measure progress toward objectives through an annual review of program effectiveness and analysis of data findings.

In its efforts to achieve these goals, the Heart Disease and Stroke Prevention Program is presently concentrating its attention on three components: capacity building, the Great Lakes Regional Stroke Network and the Illinois CAPTURE Stroke Registry.

The **capacity building** component focuses on health education and awareness, training and technical assistance, and policy and systems change. The range of related activities is wide. Some are quite complex and require long-term commitment. System and policy changes, for example, can only be achieved by working closely with advocacy groups, professional organizations and others who are capable of advancing these kinds of changes.

Other activities might be considered fairly simple. For example, during the months of February (American Heart Month), May (American Stroke Month and National High Blood Pressure Education Month) and September (Fruit and Vegetable Month, National Cholesterol Education Month and World Heart Day), the program highlights key heart disease and stroke messages and communicates them to local health departments, hospitals, nursing homes and other health care providers through awareness materials and promotional items.

Providing information is an important part of the Department's education and awareness effort. In this capacity, the program responds to many requests for materials, data and programmatic support from both consumers and health professionals. Responding to requests from the public for facts about heart disease and stroke led the program to produce a series of educational flyers. Available in both English and Spanish, the

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fact sheets have proven to be quite popular. Titles include –

- ♦ “Heart Attack”
- ♦ “Heart Disease, Stroke and Diabetes”
- ♦ “Heart, Disease, Stroke and Obesity”
- ♦ “Heart Disease, Stroke and Physical Activity”
- ♦ “Heart Disease, Stroke and Tobacco”
- ♦ “High Blood Pressure”
- ♦ “Know Your Numbers”
- ♦ “Stroke and Diabetes”
- ♦ “Stroke is a Brain Attack”
- ♦ “Warning Signs for Heart Attack and Stroke”

In addition, in 2006, the program published *Stroke = Brain Attack*, a rehabilitation, resource and information guide. Intended mainly for the general public, the document drew on the expertise of several important partners: the Great Lakes Regional Stroke Network, the Illinois CAPTURE Stroke Registry, the Illinois Stroke Task Force, the STARS Support Group at Elmhurst Memorial Hospital, and the Stroke Survivors Empowering Each Other Steering Committee. Each contributed insight and knowledge that made the project both comprehensive and useful.

Another outreach tool that is helping to further the educational focus and the training and technical assistance capabilities of the Heart Disease and Stroke Prevention Program is its Web site, launched during the summer of 2006: <[www.idph.state.il.us/heartstroke/index.htm](http://www.idph.state.il.us/heartstroke/index.htm)>. The site features links to important information for health care providers, fact sheets and other documents related to heart disease and stroke, statistics about heart disease and stroke, warning signs for heart attacks and strokes, and information on risk factors.

Its capacity building efforts have allowed IDPH to enlist a host of partners in developing a foundation for comprehensive heart disease and stroke prevention. Some of these collaborations have targeted specific groups. For example, in an effort to reach the many immigrant groups in the state, program staff have worked closely with the Coalition of Limited English Speaking Elderly (CLESE) in Chicago. While this organization primarily serves the elderly, most older immigrants live with their children; this intergenerational aspect effectively broadens the group’s reach. The coalition’s knowledge, strengths and resources have been of great value in translating and distributing two fact sheets (“Know Your Numbers” and “Warning Signs for Heart Attack and Stroke”) in 10 languages: Arabic, Assyrian, Bosnian, Chinese, Hindi, Korean, Polish, Russian, Spanish and Urdu.

Other efforts have involved important collaborations with national and state professional organizations. In conjunction with the American Heart Association, the program has helped to market the association’s *Get With the Guidelines* initiative to Illinois hospitals and has assisted with the initiative’s training efforts. Joining with the Illinois Academy of Family Physicians (IAFP), the program has assisted in providing continuing medical education (CME) to family physicians on women and cardiovascular disease. Reaching out to home health nurses and therapists, the program worked with the Illinois Home Care Council to present a day-long workshop titled “Best Practices for Stroke Prevention, Assessment and Treatment in Improving Home Health Outcomes.”

Over the last 12 years, the program has been able to reach out to an even larger audience through its help in planning and implementing a series of two-day conferences that have focused on cardiovascular disease. Both the Illinois Cardiovascular Health Conference and the Great Lakes Regional Cardiovascular Health Conference have sought to bring state-of-the-art CVD information to health practitioners, public health professionals, health educators and program planners from throughout the state and Great Lakes region. The Illinois Cardiovascular Health Conference was held in 1995, 1996, 1998 and 2000. Illinois helped to facilitate the Great Lakes conference in 2003.

A partnership between IDPH and the Illinois Prevention Research Center resulted in a comprehensive survey of CVD-related activities being conducted by the state's local health departments. The 100 percent response rate from these front-line local agencies produced an in-depth inventory of current public and private initiatives to prevent heart disease and stroke in Illinois. Survey results, which constitute important baseline data for future comparisons, revealed significant statewide activity in heart disease and stroke prevention. However, to achieve state and *Healthy People 2010* goals, additional efforts will be required. Recommendations pertaining to local health departments and their heart disease and stroke prevention activities were generated by the survey process and have been incorporated in the priorities section of this state action plan.

With guidance from the Illinois Stroke Task Force, the Illinois Heart Disease and Stroke Prevention Program surveyed 202 hospitals in Illinois regarding their stroke care and services. Survey topics included acute stroke care protocols, emergency medical service integration, support services, and continuous quality improvement and educational programs. The inventory was deployed between December 1 and December 22, 2006; 36.6 percent of the hospitals responded. Findings reveal that stroke care and services vary greatly. Highlights of the survey results can be found in Appendix D

The Emergency Medical Systems Inventory was a collaborative effort by the American Heart Association, the Great Lakes Regional Stroke Network, IDPH and the Illinois Stroke Task Force. The inventory sought an array of information concerning existing emergency medical systems in Illinois (for example, ownership type, staffing, licensure, urbanicity, training activities, protocols and continuous quality improvement activities). Conducted in July 2006, it drew a 61.7 percent response rate from the state's EMS medical directors. Survey results revealed that most of the EMS systems in Illinois are publicly owned; that system staff are almost equally split between full-time, paid workers and volunteers; that most systems are rural or some combination (e.g., rural/urban, suburban/urban); that most systems provide on-going training (with "other" type of training being most common); and that the majority do not conduct continuous quality improvement (CQI) practices for stroke patients.

In addition to capacity building, the program has focused on establishing and participating in two important projects related to stroke prevention: the Great Lakes Regional Stroke Network and the Illinois CAPTURE Stroke Registry Program. Program involvement with both of these efforts was made possible when Illinois successfully competed for supplemental CDC funds in 2004.



The **Great Lakes Regional Stroke Network (GLRSN)** is a joint effort launched by health department cardiovascular program staff and state stroke task force members in Illinois, Indiana, Michigan, Minnesota, Ohio and Wisconsin. Its overarching goal is to increase stroke awareness, prevention and control activities within and across the region. Working through a state advisory board, a steering committee, work groups and individual state stroke task forces/committees, the network strives to share experiences and resources across the six states. Ultimately, its intent is to implement a common public health plan for stroke that addresses burden, public education and quality improvement. The University of Illinois at Chicago (UIC) Center for Stroke Research facilitates the network's efforts.

**The Illinois CAPTURE (CAre and Prevention Treatment Utilization Registry)** Stroke Registry is another collaborative effort between IDPH and the UIC Center for Stroke Research and a random sample of acute care hospitals in Illinois. Its aim is to improve the care delivered to acute stroke patients in Illinois hospitals. One component of this effort is to encourage more detailed documentation of the items critical to stroke care delivery and to improved outcomes.

Hospital selection began in 2004. Using a stratified random sample, 22 acute care hospitals were chosen to participate. Each of the Department's seven regions (Champaign, Chicago, Edwardsville, Marion, Peoria, Rockford and West Chicago) is represented in the registry, as are small, medium and large hospitals. In the second year of the project, 19 additional hospitals (again located in all seven regions) were selected for participation. In the third year, another five hospitals were selected, for a current project total of 46 hospitals. As of December 31, 2006, more than 7,307 cases had been entered into the stroke registry's online data collection tool.

## Complementary State Programs

Because of their important contributions to the overall effort to address heart disease and stroke in Illinois, a number of other programs merit mention. Several programs/administrative units within the **Illinois Department of Public Health** address specific aspects of heart disease and stroke; two others are part of the **Illinois Department of Human Services**. Both departments also collaborate in providing comprehensive technical assistance and resources to other agencies around the state.

The Illinois Department of Public Health's **Center for Minority Health Services** was created to provide information and technical assistance regarding the health care needs of minority populations, and to develop, maintain and enhance health care services in minority communities. One of these communities comprises refugees in Illinois and immigrants in the Orderly Departure Program. The center's Refugee Program coordinates health assessment and screening for these groups and, when necessary, referral for treatment and follow-up of observed health problems. In addition, the center works with state and local entities to heighten awareness of minority health issues and services.

The Department's **Center for Rural Health** was formed in 1989 on the recommendation of the Governor's Rural Health Task Force. Its goal has been to improve access to primary health care in rural and underserved areas of Illinois and to encourage community involvement in health issues. Center staff offer consultation and technical assistance to community-based organizations and health care providers in identifying health care issues, in exploring potential solutions, and in developing and implementing plans of action. A vocal advocate, both in Illinois and nationally, the center strives to educate policy makers and the public about the problems rural communities face in their efforts to maintain and enhance health care access. Staff also serve on a number of boards and task forces, and maintain an information clearinghouse on rural health issues.



The IDPH **Division of Emergency Medical Systems and Highway Safety** administers the Heartsaver AED Fund (20 ILCS 2310/371 new). The fund provides matching grants for the purchase of automated external defibrillators (AED) for public places. Any school, university, college or park district required to have an AED pursuant to the Physical Fitness Facility Medical Emergency Preparedness Act (210 ILCS 74) is eligible to receive a grant from the fund. Eligible entities are limited to one matching grant from the fund.

The **Illinois Nutrition and Physical Activity Program to Prevent Obesity and Other Chronic Diseases** collaborates with the Atherosclerosis Advisory Committee and the Millennium Neighborhood project on strategies to control the incidence and prevalence of overweight and obesity in Illinois residents. Based on recommendations from these groups, the program has focused on three main goals:

- ♦ to increase physical activity,
- ♦ to improve healthy eating choice, and
- ♦ to improve health care management.

The **Illinois Tobacco-Free Communities** program brings together the state's Tobacco-Free Communities Partnership and local health departments to work towards eliminating tobacco use and its consequences through prevention strategies and policies at both the community level and statewide. The effort's goals are—

- ♦ to secure tobacco settlement and other funds consistent with meeting the CDC funding guidelines for Illinois;
- ♦ to prevent tobacco use initiation among youth and young adults;
- ♦ to eliminate exposure to secondhand smoke;
- ♦ to promote tobacco use cessation among adults and youth; and
- ♦ to identify and eliminate tobacco-related disparities.

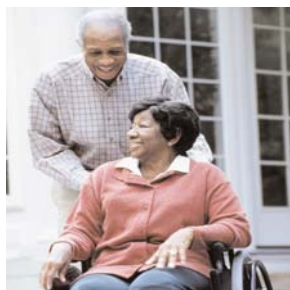
The **Illinois WISEWOMAN** (Well-Integrated Screening and Evaluation for Women Across the Nation) **Program**, an effort by IDPH's Office of Women's Health, aims to lower heart disease and other chronic disease risk factors among women who are enrolled in the Illinois Breast and Cervical Cancer Program. Developed as a 12-week screening and a lifestyle intervention program, WISEWOMAN teaches participants how to take better care of themselves. The women are taught ways to improve eating and physical activity habits, to identify and overcome barriers, to gain basic problem solving skills, to set goals, to develop stress management skills, to understand behavior, to learn stimulus control, and to recognize the importance of maintaining a supportive and healthy environment. The program is offered in English and in Spanish.

The **Illinois Department of Human Services** (DHS) administers the following two programs. Both are integral parts of any strategy aimed at controlling the risk factors for heart disease and stroke.

The **Illinois Coordinated School Health Program** brings together local health departments and schools in an effort develop a synchronous approach to improving the health of schoolchildren in targeted areas. Such coordinated school health programs include components that focus on –

- ♦ a healthy, safe school environment;
- ♦ health services;
- ♦ health education (planned, sequential K-12 curriculum);
- ♦ physical education;
- ♦ nutrition services;
- ♦ staff health promotion;

The  
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- ♦ counseling;
- ♦ psychological and social services; and
- ♦ family and community involvement.

Local health department staff facilitate the implementation of program components through faculty workshops, classroom teaching and “train the trainer” sessions, in addition to providing ongoing technical assistance.

The **Illinois Diabetes Prevention and Control Program (DPCP)** has five focus areas specifically related to improving health awareness and status among residents of the state who have been diagnosed with the disease or who are at risk of developing it:

- ♦ reduction of health disparities
- ♦ promotion of wellness
- ♦ surveillance
- ♦ disease management
- ♦ provision of essential public health services

The Illinois departments of Public Health and Human Services are working with the American Heart Association to develop and present a professional education program on diabetes and cardiovascular disease. Drawing on data from the Behavioral Risk Factor Surveillance Survey, Cornerstone MIS and other available health care data sources, the program is seeking to identify potential disparities in the identification, care, treatment and education of individuals/families with diabetes and cardiovascular disease. It also will provide education, resources and tools to health care professionals to increase their knowledge and ability to provide services to those with or at risk for diabetes and cardiovascular disease.

## National Goals

In 2003, the CDC and several partners developed A Public Health Action Plan to Prevent Heart Disease and Stroke. This document charted a course for all stakeholders – CDC, collaborating public health agencies, participating partners and the public at large – for preventing heart disease and stroke through 2020 and beyond. Implicit in the plan were the core functions of public health: assessment, policy development and assurance.

The foundation for the action plan – a strong alliance among partners – is reflected in both its vision statement (Working together for a heart-healthy and stroke-free society) and its mission statement (To provide leadership and encourage collaboration among organization committed to heart disease and stroke prevention). Nationally, the plan seeks to advance the following four-pronged goal for heart disease and stroke:

- ♦ prevention of risk factors (National Goal 1)
- ♦ detection and treatment of risk factors (National Goal 2)
- ♦ early identification and treatment of heart attacks and strokes (National Goal 3)
- ♦ prevention of recurrent cardiovascular events (National Goal 4)

CDC-funded state heart disease and stroke prevention programs are to document a direct impact on the second, third and fourth parts of this overarching goal. The first part of the goal is to be addressed through collaboration with partners.

It is imperative, in approaching heart disease and stroke prevention, that state programs engage the framework afforded by the socio-ecological model. This model takes into account influences such as individual behaviors, family and social relationships, community and environmental effects, and other societal impacts when formulating prevention strategies. Many times, in order for these strategies to effectively impact the health of a given population, policy or systems changes will be needed. This, in turn, will require collaborative partnerships with organizations – both public and private – that can assist in realizing such changes.

Full implementation of the national plan will allow Illinois and other states to strike a new balance in their health investment. By putting prevention first, public health agencies will transform themselves. Rather than waiting to treat the causes and consequences of heart disease and stroke, agencies would support the entire range of preventive strategies and approaches. Particularly when dealing with modifiable CVD risk factors, health agencies will become pre-emptive, rather than reactive. Implicit in this approach is the need for public health agencies to become effective instruments for policy and environmental change. Working collaboratively, the many agencies, organizations and individuals dedicated to alleviating the burden of CVD in the United States can achieve a nation that is heart healthy and stroke free.

To provide  
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stroke prevention





## Illinois' Priorities and Objectives

Following the lead of the national *Public Health Action Plan to Prevent Heart Disease and Stroke*, Illinois has moved to implement evidence-based public health practices in its programmatic approach to three of the component parts of the overriding national goal, namely, the detection and treatment of risk factors; the early identification and treatment of heart attacks and strokes; and the prevention of recurrent cardiovascular events. To help the state address the fourth component – prevention of risk factors – Illinois has turned to a wide variety of public agencies, private organizations and academic institutions and entered into important and productive collaborations with them.

The following priorities and objectives should enable Illinois to more actively pursue its goal of preventing heart disease and stroke in the health care area, at worksites and in the community. Particularly by targeting populations that are at increased risk of developing cardiovascular disease, this approach should help to eliminate some of the disparities evident now.

### Overarching Priorities

#### ♦ Reduce the number of deaths due to heart disease.

*Objective 1.* By 2012, reduce the coronary heart disease death rate to 425 deaths per 100,000. Baseline is 478 coronary heart disease deaths per 100,000 population (Illinois Center for Health Statistics, 2002). (National Goals 1-4; Illinois Goals 1-12)

#### ♦ Reduce the number of deaths due to stroke.

*Objective 1.* By 2012, reduce the stroke death rate to 88 deaths per 100,000. Baseline is 111 deaths per 100,000 population (Illinois Center for Health Statistics, 2002). (National Goals 1-4; Illinois Goals 1-12)

### Specific Priorities

#### Priority 1. Increase control of high blood pressure, primarily in adults and older adults.

*Objective 1.* By 2012, reduce to 18.0 percent the proportion of adults diagnosed with high blood pressure. Baseline is 25.5 percent (proportion of adults who reported having been told by a health professional that they had high blood pressure) (Illinois BRFSS, 2005). (National Goals 1, 2, 4; Illinois Goals 5, 6, 8, 9, 10)

#### Priority 2. Increase control of high blood cholesterol, primarily in adults and older adults.

*Objective 1.* By 2012, reduce the proportion of adults with high total blood cholesterol levels to 25.0 percent. Baseline is 36.2 percent (proportion of adults who reported having been told by a health professional that they had high total blood cholesterol levels [240 mg/dL or greater]) (Illinois BRFSS, 2005). (National Goals 1, 2, 4; Illinois Goals 5, 6, 8, 9, 10)



**Priority 3. Increase knowledge of signs and symptoms for heart attack and stroke, and the importance of calling 911.**

*Objective 1.* By 2012, increase the proportion of adults 18 years of age and older who are aware of the early warning symptoms and signs of a heart attack to 75 percent. Baseline is 47 percent (who recognize five to six symptoms and signs of a heart attack) (*Burden of Heart Disease and Stroke in Illinois*). (National Goals 3, 4; Illinois Goals 7, 10)

*Objective 2.* By 2012, increase the proportion of adults 18 years of age and older who are aware of the early warning symptoms and signs of a stroke to 75 percent. Baseline is 51 percent (who recognize five to six symptoms and signs of a stroke) (*Burden of Heart Disease and Stroke in Illinois*). (National Goals 3, 4; Illinois Goals 7, 10)

*Objective 3.* By 2012, increase the proportion of those 18 years of age and older who realize the importance of accessing rapid emergency care by calling 911 in the case of a heart attack or stroke to 95 percent. Baseline is 85.9 percent (2005 Point in Time Survey). (National Goals 3, 4; Illinois Goals 7, 10)

**Priority 4. Improve emergency response.**

*Objective 1.* By 2012, reduce the proportion of persons who delay or have difficulty in getting emergency medical care. Baseline to be established. (National Goals 3, 4; Illinois Goals 8, 10)

*Objective 2.* By 2012, increase the proportion of persons who have access to rapidly responding pre-hospital emergency medical services. Baseline to be established. (National Goals 3, 4; Illinois Goals 8, 10)

*Objective 3.* By 2012, increase the placement of automated external defibrillators (AEDs). Baseline to be established. (National Goals 3, 4; Illinois Goals 8, 10)

**Priority 5. Improve quality of heart disease and stroke care.**

*Objective 1.* By 2012, increase adherence to clinical guidelines and treatment protocols. Baseline to be established. (National Goal 2; Illinois Goals 1, 2, 3, 4, 6, 9)

*Objective 2.* By 2012, increase the number of sites using telehealth. Baseline to be established. (National Goals 1, 2, 3; Illinois Goals 1, 2, 3, 4, 8, 9, 10)

*Objective 3.* By 2012, increase the proportion of schools of medicine, schools of nursing and other health professional training schools whose basic curriculum for health care providers includes the core competencies in health promotion and prevention for heart disease and stroke. Baseline to be established. (National Goals 1, 2; Illinois Goals 1-12)

Illinois has  
moved to  
implement  
evidence-based  
public health  
practices



## **Priority 6. Eliminate disparities in terms of access based on geography or socio-economic status.**

*Objective 1.* By 2012, reduce the proportion of persons who delay or have difficulty in getting emergency medical care. Baseline to be established. (National Goals 1-4; Illinois Goals 1-12)

## *Strategies*

- ♦ Policy changes
- ♦ Systems changes
- ♦ Education/Public information
- ♦ Training and technical assistance

## *Settings and Approaches*

### **Health Care Setting**

**Promote policy and systems changes to ensure quality care through adherence to prevention guidelines.**

#### *Primary Care Practices*

- 1) Support the implementation of elements of the “chronic care model” (see Appendix E) through the development of health disparities collaboratives in federally-funded health centers and in private practices.
  - ♦ Provide technical and/or financial support to establish clinical information systems.
  - ♦ Provide training, technical assistance and/or financial support for sessions on the “Care,” “Learning” and “Improvement” models.
  - ♦ Facilitate community linkage by providing guidance on community resources and policies.
  - ♦ Encourage the sustainability and expansion of programs by providing technical assistance and/or financial support in the “Care,” “Learning” and “Improvement” models process.
  - ♦ Convene health care partners to improve coordination and to facilitate systems change.
- 2) Assist health plans in improving Health Plan Employer Data and Information Set (HEDIS) cardiovascular measures.

*Hospitals*

- 1) Provide leadership and collaborate on systems change interventions that support adherence to established guidelines and recommendations (e.g., development and implementation of patient information systems, use of decision support tools and protocols and feedback on provider performance).
  - ◆ Conduct training where needed.
  - ◆ Assist, if requested, in implementing patient management systems.
  - ◆ Promote linkages between emergency departments and pre-hospital emergency medical services (EMS).
  - ◆ Assist in disseminating information about sustainable cardiovascular care programs.
  - ◆ Support quality improvement initiatives, such as Get with the Guidelines (American Heart Association) for coronary artery disease, stroke and heart failure care and Guidelines Applied in Practice (American College of Cardiology) for heart attack and angina, and encourage eligible hospitals to participate in the Illinois CAPTURE Stroke Registry Program.

**Worksite/Purchaser Setting****Promote comprehensive worksite/purchaser policy and systems changes that support heart disease and stroke prevention.**

- 1) Promote health care coverage for employees and their families that includes heart disease and stroke prevention and rehabilitation services.
  - ◆ Promote programs that bring worksite and health care providers together to consider “pay for performance” as part of health care coverage.
- 2) Promote adequate coverage for medications required for prevention of heart disease and stroke.
  - ◆ Assist purchasers in developing cardiovascular disease management resources.
  - ◆ Work with decision makers to ensure medications are available to those most in need.
- 3) Assure employee awareness of signs and symptoms of heart attack and stroke, the need to call 911; encourage training in use of automated external defibrillators (AEDs) and cardiopulmonary resuscitation (CPR).
  - ◆ Use existing communication resources.
  - ◆ Collaborate with worksite coalitions.
  - ◆ Use a variety of methods to educate about signs and symptoms.
- 4) Assure that worksite policies and environments support heart disease and stroke prevention programs that address high blood pressure, high blood cholesterol and emergency response.
- 5) Provide education on strategies to change policies and enhance worksite environments.



## Community Setting

**Promote community policy and systems changes that support heart disease and stroke prevention.**

### *Local Health Departments\**

- 1) Collaborate to provide training to local health department personnel on –
  - ♦ building public awareness of the signs and symptoms of heart attack and stroke and of the need to call 911 through educational initiatives;
  - ♦ promoting enhanced 911 services;
  - ♦ developing community-based partnerships;
  - ♦ promoting policies, system changes and educational opportunities related to blood pressure and cholesterol management and the importance of heart health;
  - ♦ encouraging adherence to established guidelines and recommendations; and
  - ♦ promoting use of best practices for referral and follow-up.
- 2) Collaborate to provide emergency medical services training and protocols related to heart attack and stroke.
- 3) Collaborate with hospitals to improve response and quality of services for heart disease and stroke.
- 4) Improve efforts to reduce health disparities by targeting programs, developing programs to overcome linguistic and other barriers, and work closely with minority organizations to meet needs.

### *Emergency Medical Services*

- 1) Promote improved responsiveness of emergency medical services (EMS) systems for heart attack and stroke victims.
  - ♦ Facilitate inclusion of the IDPH Division of Emergency Medical Systems and Highway Safety when developing annual work plans (e.g., stroke systems of care).
  - ♦ Ensure emergency medical dispatchers receive training on stroke signs/symptoms, pre-hospital acute stroke assessment, and priority dispatching to hospitals that can comply with stroke treatment guidelines.
  - ♦ Promote protocols that ensure effective pre-hospital system management of cardiac and stroke patients.

\* Illinois is unique among states for its local health department certification process. To receive funding from the state, local health departments must participate in the Illinois Project for Local Assessment of Needs (IPLAN). This community health assessment and planning process is conducted every five years by each of the state's 95 local health departments. Based on the "Assessment Protocol for Excellence in Public Health" (APEX-PH) model, IPLAN is grounded in the core functions of public health and addresses public health practice standards. Its essential elements are an organizational capacity assessment, a community health needs assessment, and a community health plan focusing on a minimum of three priority health problems. Approximately two-thirds of all local health departments in Illinois have made heart disease and stroke prevention one their top three priorities.

- ♦ Advocate for state EMS licensing/certification requirements that ensure appropriate initial training and renewal standards based on the latest treatment guidelines for heart disease and stroke.
- ♦ Collaborate with EMS personnel and other first responders to increase awareness of signs/symptoms of heart attack and stroke.
- ♦ Assist the IDPH Division of Emergency Medical Systems and Highway Safety and other key partners in promoting universal, enhanced 911 coverage.
- ♦ Support forums for communication and coordination between state and local EMS programs.
- ♦ Promote data collection consistent with the National EMS Information System (NEMSIS) data set.

#### Rural Areas

- 1) Promote the use of telehealth technologies by –
  - ♦ fostering partnerships to create telehealth projects.
  - ♦ providing technical assistance.
  - ♦ evaluating the use of telehealth technologies and programs.
  - ♦ developing telehealth policy initiatives to improve access to quality health services.
  - ♦ promoting knowledge exchange about “best telehealth practices.”

The Illinois Heart Disease and Stroke Prevention Program will work with its collaborating partners to develop annual work plans relating to these settings and approaches. Those plans will include measurable benchmarks (short-, intermediate- and long-term). The setting will be identified, as will the related *Healthy People 2010* goals and priority, the population to be served, the strategies (policy changes, systems changes, education and public information, training and technical assistance) to be used, and the evaluation method(s).

### Eliminating Disparities Related to Heart Disease and Stroke

Major disparities in cardiovascular disease risk exist among population groups. A disproportionate burden of death and disability from cardiovascular disease is found in minority and low-income populations. Disparities also exist in the prevalence of cardiovascular risk factors. Racial and ethnic minorities have higher rates of hypertension, tend to develop hypertension at earlier ages, and are less likely to undergo treatment to control high blood pressure. The rates of regular screening for cholesterol show disparities for certain racial and ethnic minorities as well. Finally, many groups experience serious disparities in access to care and in health outcomes.

One of the program's 12 goals is to address the elimination of disparities in heart disease and stroke and the related risk factors using policy and systems change strategies. This is consistent with *Healthy People 2010* and its charge to eliminate racial and ethnic disparities through enhanced efforts at preventing disease, promoting health and delivering appropriate care.



## Addressing the Needs of Priority Populations

While the majority of deaths due to heart disease and stroke are among whites (which reflects the population demographics), African Americans and, in particular, African-American men, have the highest mortality rates. Non-white, non-African-American people have the lowest heart disease and stroke mortality rates.

Nearly 70 percent of individuals with household incomes of less than \$25,000 cannot recognize all the signs and symptoms of a heart attack or stroke. The same is true for those with less than a high school education.

These populations need to be encouraged to participate in existing programs and efforts. In some cases, intervention strategies will need to be tailored to the population. Success also will require the support of both public and private entities with expertise in reaching out to these populations and in educating them about the importance of good heart health. A multifaceted approach will yield great benefits:

- ♦ partnerships between local governments, community groups and private sector health care organizations;
- ♦ communities that address their most pressing health needs through targeted health screenings, education and awareness programs;
- ♦ communities that better understand the nature of health disparities among ethnic and racial groups; and
- ♦ identification and evaluation of interventions so that identified “best practices” can be shared with other high-risk Illinois communities.

Successfully realizing these benefits carries a larger societal good. The health of Illinoisans who now suffer disproportionately from disease and disability will undergo meaningful improvement. Healthier populations are more productive and require fewer health care dollars, thereby allowing existing resources to be redirected to areas of more pressing need.

# Evaluation Efforts

## Framework

Program evaluation is a systematic way of measuring the success of a given effort. One component used by the Illinois Heart Disease and Stroke Prevention Program to gauge the effectiveness of its efforts is a CDC-inspired evaluation framework. This practical tool consists of six steps and was designed to summarize and organize the essential elements of any program evaluation.

1. Engage stakeholders. Enlist the participation of those who might have an interest or stake in the issues addressed by the program during the beginning stages of the program.
2. Describe the program. The description should convey the mission and objectives of the program and set a frame of reference for evaluation decisions.
3. Focus the evaluation design. Identify issues of greatest concern to stakeholders and use them as a basis in formulating the questions to be asked in the evaluation; identify the methods to be used for data collection and analysis.
4. Gather credible evidence. Credible evidence makes for more convincing evaluation findings and recommendations.
5. Justify conclusions. Conclusions should be based on the evidence gathered, and the program's success should be judged against agreed-upon values or standards set by the stakeholders prior to conducting the evaluation.
6. Ensure that lessons learned are shared and applied. Program participants should make a deliberate effort to disseminate the process and findings of their evaluations so that other entities conducting cardiovascular health projects can learn from their experience.

The Illinois Heart Disease and Stroke Prevention Program will use these steps to measure progress in reaching its goals and objectives. Evaluation results will support state staff, local public health staff and health care providers as they work on prevention and treatment issues, and will assist all program partners in assessing progress, accomplishments and opportunities for improvement. Effective evaluation will allow the program to make necessary modifications as it evolves and gives it the needed flexibility to respond to emerging issues and other circumstances.

Evaluation criteria, to be assessed by 2012, include the following:

- ◆ increase in awareness of the early warning symptoms and signs of a stroke and heart attack
- ◆ increase in knowledge of the importance of accessing rapid emergency care by calling 911
- ◆ decrease in risk factors (high cholesterol, high blood pressure, tobacco use) associated with heart disease and stroke
- ◆ decrease in mortality rates due to heart disease and stroke

Program

evaluation is a  
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effort.



- ♦ increase in capacity to implement evidence-based programs
- ♦ increase in quantity and quality of training opportunities available for health care providers
- ♦ increase in policies that help to reduce risk factors for heart disease and stroke and to improve treatment options

The evaluation will focus on the completion of four overall goals:

- ♦ to document changes in Illinois' capacity to reduce risk factors for heart disease and stroke
- ♦ to document heart disease and stroke burden using surveillance data (progress made towards *Healthy People 2010* and Illinois objectives)
- ♦ to document changes in policies and environmental supports and, to the degree possible, their impact on heart disease and stroke
- ♦ to document the process and outcomes of the program's goals, objectives and activities

## Process Evaluation

This evaluation component involves tracking progress toward objectives and activities designed to bring about changes directly linked to the program's goals. The process evaluation will determine –

- ♦ the extent to which the plan is being implemented as intended;
- ♦ the degree to which objectives are progressing toward completion over the course of the five-year plan, including the assessment of strengths, weaknesses and lessons learned during plan implementation; and
- ♦ how the program appropriately focuses heart disease and stroke efforts, especially towards priority populations.

## Outcome Evaluation

The outcome evaluation determines whether changes are occurring and what their impact on the state might be. Intermediate outcomes may include community changes such as new services or policies or increased knowledge. All of the long-term outcomes specified in Illinois' action plan have been drawn from *Healthy People 2010* objectives. These include changes in the incidence of heart disease and stroke risk factors (for example, blood cholesterol, high blood pressure and tobacco use) and a reduction in mortality related to heart disease and stroke. The outcome evaluation will –

- ♦ determine changes in behavior, services and policies that have occurred as a result of the plan;
- ♦ assess the inroads in addressing health disparities;
- ♦ measure increases in public awareness of heart disease and stroke (e.g., its signs and symptoms) as a result of educational interventions;
- ♦ track the changes occurring in the state's cardiovascular disease burden and risk factors over time (as measured primarily through vital statistics, hospital discharge data, and the BRFSS); and
- ♦ track the extent to which changes in the outcomes contribute to achieving the *Healthy People 2010* objectives.

## Surveillance

Using existing data systems (such as the BRFSS), vital statistics, hospital discharge data and Illinois CAPTURE Stroke Registry data, the program has the capacity to track morbidity and mortality changes regarding heart disease and related risk factors. The program will continue to use these surveillance sources to monitor heart disease, stroke and CVD-related risk factors.



## Logic Models

Logic models provide a systematic way to visually depict a program. Key components include inputs (resources), outputs (activities and who is reached), and short-, intermediate- and long-term outcomes. The program currently uses logic models as tools for program design, management and evaluation. It will continue to incorporate the use of logic models for purposes of planning and evaluation.

## Data Sources

Process outcome (short-, intermediate- and long-term) measures will be collected on an on-going basis as activities are put into action. The timing of analyses of these measures will be coordinated with progress reporting timeframes that occur semi-annually. The data source for the collection of short and intermediate outcome measures will principally include an activity monitoring system. Sources for measuring long-term outcomes include the BRFSS, Illinois Hospital Discharge Data, Illinois CAPTURE Stroke Registry data and vital statistics. Other surveys will be developed as needed to collect outcome measures.

Process outcome

(short-,

intermediate- and

long-term)

measures will be

collected on an

on-going basis as

activities are put

into action.



## Disseminating the State Plan and Updating and Charting Progress

As this state plan has made evident, everyone has a role to play in preventing heart disease and stroke in Illinois. To facilitate such involvement, *Heart Disease and Stroke in Illinois, Now Is the Time for Public Health Action* will be distributed to all partners and key stakeholders and to anyone requesting a copy.

As the state plan unfolds over the next five years, the Illinois Heart Disease and Stroke Prevention program, in regular consultation with its partners and with continued support from the CDC, will evaluate progress. This evaluation will determine the extent to which the plan is being implemented as intended and the degree to which objectives are moving toward completion. The plan's strengths and weaknesses will be charted as will other lessons learned during implementation. Evaluation activities also will examine how the program appropriately focuses heart disease and stroke prevention efforts, especially toward priority populations.

Working with its collaborating partners, the Illinois Heart Disease and Stroke Prevention Program will use evaluation results to develop and refine annual work plans relating to its settings and objectives. The entire plan will be updated every five years, again with input from partners throughout the state.



## Call to Action

Everyone has a role to play in the prevention of heart disease and stroke. While each role is important, the parts played by those who influence or legislate decisions affecting communities across the state are critical. The governor, state legislators, health care leaders, employers and local officials all must become involved in promoting and implementing policy and systems changes at both the state and community levels.

The following recommendations are drawn from those developed by the U.S. Centers for Disease Control and Prevention:

### Statewide Recommendations

- 1) Prohibit all tobacco use in indoor areas and near building entrances and exits.  
Set an example by establishing a tobacco-free policy in public buildings, including schools and campuses. Support other tobacco-free policies such as prohibiting smoking in all enclosed workplaces, public places, government buildings, restaurants, bars and gaming facilities.
- 2) Promote office-based team incentives such as gift certificates and lower insurance premiums for employees who participate in health risk assessments, competitions and support groups that promote disease prevention measures (e.g., logging miles walked, quitting smoking, getting blood pressure checked, getting cholesterol checked).
- 3) Provide a health club membership or reimbursement for a health club membership for employees.
- 4) Negotiate health benefit plan designs that provide coverage for preventive services and emphasize quality, cost-effective medical care.
- 5) Provide coverage for FDA-approved medications to help employees quit using tobacco.
- 6) Establish worksite policies to support heart health.
- 7) Ensure coverage for prescription drugs used to prevent heart disease and stroke.
- 8) Promote components of coordinated school health programs that can prevent risk behaviors that contribute to heart disease and stroke by –
  - ♦ maintaining or adopting enhanced physical education classes;
  - ♦ serving and promoting heart-healthy food in cafeterias and vending machines;
  - ♦ implementing smoke-free schools and campuses; and
  - ♦ prohibiting withholding of recess as punishment.
- 9) Create policies that encourage use of mass transit, walking and biking.
- 10) Assess the status of or make changes to the Medicaid program to promote reimbursement for preventive services for cardiovascular disease that emphasize quality, cost-effective medical care.
- 11) Work with the state's insurance commissioner or department to monitor health insurance benefits and to ensure that they include services to prevent cardiovascular disease.
- 12) Support policies to make heart attacks and acute strokes reportable conditions so that the state health department can use these data to promote and evaluate improvements in emergency response and hospital care.
- 13) Work with small businesses and insurers to develop policies that allow small business groups to buy into group health plans, as self-insured organizations do.

Everyone has a  
role to play in  
the prevention of  
heart disease and  
stroke.



- 14) Work with the office that oversees the state health employee benefits plan to include preventive services and incentives for prevention. Ensure that school employees can participate in the health insurance program.
- 15) Recommend changes to the state's Medicaid program to promote reimbursement for preventive services that emphasize quality, cost-effective medical care.

## Local and Community Recommendations

- 1) Prohibit all tobacco use in indoor areas and near building entrances and exits.  
Set an example by establishing a tobacco-free policy in public buildings, including schools and campuses. Support other tobacco-free policies such as prohibiting smoking in all enclosed workplaces, public places, government buildings, restaurants, bars and gaming facilities.
- 2) Promote office-based team incentives such as gift certificates and lower insurance premiums for employees who participate in health risk assessments, competitions and support groups that promote disease prevention measures (e.g., logging miles walked, quitting smoking, getting blood pressure checked, getting cholesterol checked).
- 3) Provide a health club membership or reimbursement for a health club membership for employees.
- 4) Establish worksite policies to support heart health in local businesses.
- 5) Establish zoning laws for new communities that encourage high-density and mixed land use and require attention to walking/bike pathways, sidewalks and green spaces for physical activity.
- 6) Institute transportation policies that encourage mass transit, walking and biking.
- 7) Negotiate health benefits packages for city and county employees that include preventive services and incentives for preventing cardiovascular disease.

## Appendix A. Resources

### State Agency

#### **Illinois Department of Public Health**

535 W. Jefferson St.  
Springfield, IL 62761  
Telephone 217-782-3300  
Fax 217-782-1235  
[www.idph.state.il.us](http://www.idph.state.il.us)

### Heart Disease and Stroke

#### **American Diabetes Association**

ATTN: National Call Center  
1071 N. Beauregard St.  
Alexandria, VA 22311  
Telephone 800-DIABETES (800-342-2383)  
Monday – Friday, 8:30 a.m. – 8 p.m. (Eastern Standard Time)  
[www.diabetes.org/heart-disease-stroke.jsp](http://www.diabetes.org/heart-disease-stroke.jsp)

#### **American Heart Association**

National Center  
7272 Greenville Ave.  
Dallas, TX 75231  
Telephone 800-242-8721  
214-373-6300  
[www.americanheart.org](http://www.americanheart.org)

#### **American Stroke Association**

National Center  
7272 Greenville Ave.  
Dallas, TX 75231  
Telephone 888-4-STROKE (888-478-7653)  
[www.strokeassociation.org](http://www.strokeassociation.org)

#### **National Heart, Lung and Blood Institute**

National Heart Lung and Blood Institute  
NHLBI Information Center  
P.O. Box 30105  
Bethesda, MD 20824-0105  
Telephone 301-592-8573/800-575-9355  
Fax 301-592-8563  
[www.nhlbi.nih.gov](http://www.nhlbi.nih.gov)



**National Institute of Neurological Disorders and Stroke**

National Institutes of Health Neurological Institute  
P.O. Box 5801  
Bethesda, MD 20824  
Telephone 800-352-9424  
301-496-5751  
[www.ninds.nih.gov](http://www.ninds.nih.gov)

**National Stroke Association**

9707 E. Easter Lane  
Centennial, CO 80112-3747  
Telephone 800-Strokes (800-787-6537)  
303-649-9299  
Fax 303-649-1328  
[www.stroke.org](http://www.stroke.org)

*U.S. Centers for Disease Control and Prevention*

**Division for Heart Disease and Stroke Prevention**

4770 Buford Hwy, NE, MS K-47  
Atlanta, GA 30341-3717  
Telephone 770-488-8524  
[www.cdc.gov/dhdsp/](http://www.cdc.gov/dhdsp/)

**Behavioral Risk Factor Surveillance System**

<http://www.cdc.gov.brffs>

**Division of Nutrition and Physical Activity**

[www.cdc.gov/](http://www.cdc.gov/)

**National Center for Chronic Disease Prevention and Health Promotion**

[www.cdc.gov/cvh/](http://www.cdc.gov/cvh/)

**Office on Smoking and Health**

[www.cdc.gov/tobacco](http://www.cdc.gov/tobacco)

*Grant Opportunities*

**Health Resources and Services Administration**

<http://www.hrsa.gov/>

## *Risk Factors for Heart Disease and Stroke*

### **Cholesterol**

#### **National Cholesterol Education Program**

NHLBI Information Center

P.O. Box 30105

Bethesda, MD 20824-0105

Telephone 800-575-9355

Fax 301-592-8563

[www.nhlbi.nih.gov](http://www.nhlbi.nih.gov)

### **Diabetes**

#### **American Diabetes Association**

1660 Duke St.

Alexandria, VA 22314

Telephone 703-549-1500/800-342-2383

[www.diabetes.org](http://www.diabetes.org)

#### **American Diabetes Association, Greater Illinois Area**

2580 Federal Drive, Ste. 403

Decatur, IL 62526

Telephone 888-342-2383 Ext. 6643

Fax 217-875-6849

[www.diabetes.org](http://www.diabetes.org)

#### **Illinois Diabetes Control Program**

Illinois Department of Human Services

535 W. Jefferson St.

Springfield, IL 62761

Telephone 800-323-4769

[www.state.il.us/agency/dhs/diabetes/dhome3.htm](http://www.state.il.us/agency/dhs/diabetes/dhome3.htm)

#### **National Diabetes Education Program**

800-438-5383

<http://ndep.nih.gov>

### **High Blood Pressure**

#### **National High Blood Pressure Education Program**

NHLBI Information Center

P.O. Box 30105

Bethesda, MD 20824-0105

Telephone 800-575-9355

Fax 301-592-8563

[www.nhlbi.nih.gov](http://www.nhlbi.nih.gov)



### **Nutrition**

#### **Illinois Dietetic Association**

P.O. Box 26  
705 Richard St.  
Henry, IL 61537  
Telephone 309-364-2919  
Fax 309-364-2954  
[www.eatrightillinois.org](http://www.eatrightillinois.org)

#### **Illinois School Nutrition Association**

[www.isfsa.net](http://www.isfsa.net)

### **Obesity/Overweight**

#### **National Obesity Education Initiative**

NHLBI Information Center  
P.O. Box 30105  
Bethesda, MD 20824-0105  
Telephone 301-592-8573  
Fax 301-592-8563  
[www.nhlbi.nih.gov](http://www.nhlbi.nih.gov)

### **Physical Activity**

#### **American Alliance for Health, Physical Education, Recreation and Dance**

1900 Association Drive  
Reston, VA 20191-1599  
Telephone 800-213-7193 or 703-476-3410  
Fax 703-476-8316  
[www.aahperd.org/](http://www.aahperd.org/)

#### **National Association for Sport and Physical Education**

1900 Association Drive  
Reston, VA 20191-1599  
Telephone 800-213-7193 or 703-476-3410  
Fax 703-476-8316

#### **National Coalition for Promoting Physical Activity (NCPA)**

1900 Association Drive  
Reston, VA 20191-1599  
[www.ncppa.org/ncppa/](http://www.ncppa.org/ncppa/)

#### **Division of Nutrition and Physical Activity**

National Center for Chronic Disease Prevention and Health Promotion  
U.S. Centers for Disease Control and Prevention  
4770 Buford Highway  
Atlanta, GA 30341  
Telephone 800-CDC-4NRG  
[www.cdc.gov/](http://www.cdc.gov/)





**Tobacco****American Cancer Society Inc.**

1599 Clifton Road, N.E.  
Atlanta, GA 30329-4251  
Telephone 800-ACS-2345 or 404-320-3333  
[www.cancer.org/main.html](http://www.cancer.org/main.html)

**American Lung Association of Illinois**

3000 Kelly Lane  
Springfield, IL 62711  
Telephone 800-788-5864  
Fax 217-787-5916  
[www.lungil.org](http://www.lungil.org)

**Office on Smoking and Health**

U.S. Centers for Disease Control and Prevention  
2945 Flowers Road South, Mailstop K 67  
Atlanta, GA 30341  
Telephone 770-488-5705-800 Quit Now  
Fax 770-488-1157  
[www.cdc.gov/tobacco](http://www.cdc.gov/tobacco)

**Illinois Tobacco-Free Communities Program**

Illinois Department of Public Health  
Division of Chronic Disease Prevention and Control  
535 W. Jefferson St.  
Springfield, IL 62761  
Telephone 217-782-3300  
TTY (hearing impaired use only) 800-547-0466  
[www.idph.state.il.us](http://www.idph.state.il.us)

**Illinois Tobacco Quitline**

866-QUIT-YES  
866-784-8937



## Appendix B. Warning Signs and Symptoms of Heart Attack and Stroke

When a heart attack or stroke occurs, time truly is of the essence. The more quickly a person receives treatment, the greater the chances of survival and recovery. To improve outcomes, delays during the initial, critical phases of the event must be minimized or eliminated. One way to do this is to create greater public awareness of the signs and symptoms of heart attack and stroke. If more people come to recognize these important signs and symptoms, the time between onset and a call to 911 can be shortened. Currently, less than half of all adults in Illinois can recognize all the signs and symptoms of a heart attack. Slightly more adults – 51 percent – can identify five to six signs and symptoms of stroke.

### Heart Attack

- ◆ uncomfortable pressure, squeezing, fullness or pain in the center of the chest that lasts more than a few minutes, or goes away and comes back
- ◆ pain or discomfort in one or both arms, the back, neck, jaw, stomach
- ◆ shortness of breath along with, or before, chest discomfort
- ◆ other signs such as breaking out in a cold sweat, nausea or lightheadedness

### Cardiac arrest

- ◆ sudden loss of responsiveness. Person does not respond to gentle shaking.
- ◆ no normal breathing. The victim does not take a normal breath for several seconds.
- ◆ no signs of circulation. Person does not move or cough.

**If cardiac arrest occurs, call 911 and begin cardiopulmonary resuscitation (CPR) immediately. If an automated external defibrillator (AED) is available and someone trained to use it is nearby, involve that person.**

### Stroke

- ◆ sudden numbness or weakness of face, arm or leg, especially on one side of the body
- ◆ sudden confusion, trouble speaking or understanding
- ◆ sudden trouble seeing in one or both eyes
- ◆ sudden trouble walking, dizziness, loss of balance or coordination
- ◆ sudden severe headache with no known cause

**Call 911 if you see or have any of these symptoms. Treatment can be more effective if given quickly. Every minute counts!!**

Sources: American Heart Association 800-242-8721 [www.americanheart.org](http://www.americanheart.org)  
National Stroke Association 800-787-6537 [www.stroke.org](http://www.stroke.org)

## Appendix C. Treatment Guidelines

### Cardiovascular Disease

- ♦ American Heart Association, *Guidelines for Primary Prevention of Cardiovascular Disease and Stroke: 2002 Update Consensus Panel Guide to Comprehensive Risk Reduction for Adult Patients Without Coronary or Other Atherosclerotic Vascular Diseases*  
<http://circ.ahajournals.org/cgi/content/full/106/3/388>
- ♦ American Heart Association/American College of Cardiology, *Guidelines for Preventing Heart Attack and Death in Patients With Atherosclerotic Cardiovascular Disease: 2001 Update*  
<http://circ.ahajournals.org/cgi/content/full/104/13/1577>
- ♦ American Heart Association, *Guide for Improving Cardiovascular Health at the Community Level*  
<http://circ.ahajournals.org/cgi/content/full/107/4/645>
- ♦ American Heart Association, *Evidence-Based Guidelines for Cardiovascular Disease Prevention in Women*  
<http://circ.ahajournals.org/cgi/content/full/109/5/672>
- ♦ American Heart Association, *Recommendations for the Establishment of Stroke Systems of Care*  
<http://stroke.ahajournals.org/cgi/content/full/36/3/690>

### Cholesterol

- ♦ National Heart, Lung and Blood Institute, *Clinical Guidelines on Cholesterol Management in Adults (ATPIII)*  
<http://www.nhlbi.nih.gov/guidelines/cholesterol/index.htm>
- ♦ National Heart, Lung and Blood Institute, *Recommendations Regarding Public Screening for Measuring Blood Cholesterol*  
[http://www.nhlbi.nih.gov/guidelines/cholesterol/chol\\_scr.htm](http://www.nhlbi.nih.gov/guidelines/cholesterol/chol_scr.htm)

### Hypertension

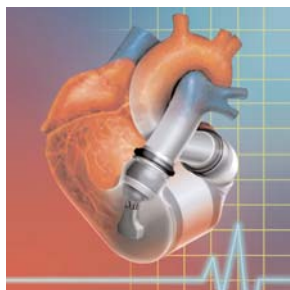
- ♦ National Heart, Lung and Blood Institute, *High Blood Pressure Guidelines (JNC 7)*  
<http://www.nhlbi.nih.gov/guidelines/hypertension/index.htm>
- ♦ National Heart, Lung and Blood Institute, *JNC 7 Quick Reference Card*  
<http://www.nhlbi.nih.gov/guidelines/hypertension/jnc7card.htm>
- ♦ National Heart, Lung and Blood Institute, *Fourth Report on High Blood Pressure in Children and Adolescents*  
[http://www.nhlbi.nih.gov/health/prof/heart/hbp/hbp\\_ped.htm](http://www.nhlbi.nih.gov/health/prof/heart/hbp/hbp_ped.htm)

### Nutrition

- ♦ American Heart Association, *AHA Dietary Guidelines. Revision 2000: A Statement for Healthcare Professionals from the Nutrition Committee of the American Heart Association*  
<http://circ.ahajournals.org/cgi/content/full/102/18/2284>

### Obesity

- ♦ National Heart, Lung and Blood Institute, *Clinical Guidelines on Overweight and Obesity*  
[http://www.nhlbi.nih.gov/guidelines/obesity/ob\\_home.htm](http://www.nhlbi.nih.gov/guidelines/obesity/ob_home.htm)



## *Appendix D. Hospital Stroke Inventory*

With guidance from the Illinois Stroke Task Force, the Illinois Heart Disease and Stroke Prevention Program invited 202 Illinois hospitals to respond to a survey on stroke care and services. Topics included acute stroke care protocols, emergency medical service (EMS) integration, support services, and continuous quality improvement and educational programs. The Web-based inventory, deployed online between December 1 and December 22, 2006, drew responses from 74 (36.6 percent) hospitals.

Findings reveal that stroke care and services vary greatly. Of the hospitals responding, 49 (66.2 percent) had an acute stroke team or other multi-disciplinary group available to evaluate a suspected stroke patient within 15 minutes of the patient's arrival. There was no intensive care unit (ICU) in 35.3 percent of the hospitals responding. Among those with an ICU, stroke care was provided most often in a general care ICU (91.4 percent), followed by care provided in a dedicated neuro-ICU (NICU) (15.1 percent), or by a neuro-intensivist in a general care ICU (11.8 percent). An acute stroke care unit was available in 22 (29.7 percent) of the hospitals. Of hospitals with a stroke care unit, 65 percent were located in a general ward and 42.9 percent were located in the ICU. A step-down unit is available in 68.2 percent of the hospitals with a stroke care unit.

Hospitals most frequently coordinate with EMS through contact in advance of arrival (91.8 percent) and through effective communication with EMS personnel in the pre-hospital setting (88.7 percent). Written receiving plans for stroke patients received via EMS are available in only 38.6 percent of hospitals. Most hospitals (68.5 percent) transfer acute stroke patients to another facility: hemorrhagic stroke patients are moved most often (50.0 percent), followed by severe ischemic stroke patients (31.1 percent), all stroke patients (14.9 percent), and mild ischemic stroke patients (4.1 percent).

Among the hospitals responding, written protocols or care pathways were in place for the following: orders for t-PA or other thrombolytics (71.2 percent), emergency care for diagnostic tests (68.5 percent), emergency care for initial stabilization (65.8 percent), emergency care for treatment (besides t-PA and related orders) (65.8 percent), and admission to and discharge from the hospital (53.4 percent).

Most hospitals provide functional evaluation of stroke patients by a physical therapist (95.8 percent), speech therapist (90.1 percent) or occupational therapist (89.7 percent). Less often is functional status evaluated by a psychiatrist/psychologist (69.4 percent), a physical medicine and rehabilitation physician (55.7 percent) or a neuro-psychologist (30.5 percent). However, because most hospitals transfer acute stroke patients to other facilities, it is likely that evaluations are done mainly on patients with milder strokes.

Annually, a minimum of eight hours of continuing stroke education is provided to 53.3 percent of stroke unit staff; to 44.3 percent of speech and 43.5 percent of occupational therapists; to 38.2 percent of physical therapists and 34.8 percent of emergency department staff; and to 28.1 percent of acute care physicians, 27.3 percent of NICU staff and 25.4 percent of acute care nurses.

## Appendix E. Chronic Care Model

### Overview

The chronic care model identifies the essential elements of a health care system that encourage high-quality chronic disease care:

- ◆ the community,
- ◆ the health system,
- ◆ self-management support,
- ◆ delivery system design,
- ◆ decision support, and
- ◆ clinical information systems.

Evidence-based change concepts related to each element combine to foster productive interactions between informed patients, who take an active part in their care, and providers, with their resources and expertise. The model can be applied to a variety of chronic illnesses, and in many health care settings and target populations. Ultimately, this model yields healthier patients, more satisfied providers and cost savings.

### Development of the Chronic Care Model

The staff at the MacColl Institute for Healthcare Innovation in Seattle, Washington, developed the model by drawing on available research about promising strategies for chronic illness management, and organizing the findings in a new, more accessible way. The model was further refined during a nine-month project supported by The Robert Wood Johnson Foundation (RWJF), and revised based on input from a large panel of national experts. It was then used to collect data and analyze innovative programs recommended by experts. RWJF then funded the MacColl Institute to test the model nationally across varied health care settings through a program called “Improving Chronic Illness Care” (ICIC).\*

### Refinements to the Chronic Care Model

In July 2003, ICIC staff and a small group of experts updated the model to reflect advances in the field of chronic care. The updates were based both on the research literature and on information gleaned from the scores of health care systems that implemented the model.

\* ICIC is a national program supported by The Robert Wood Johnson Foundation with direction and technical assistance provided by Group Health Cooperative's MacColl Institute for Healthcare Innovation. More information on the program can be found on the following Web sites:

[www.improvingchroniccare.org/index.html](http://www.improvingchroniccare.org/index.html)

[www.centerforhealthstudies.org/research/maccoll.html](http://www.centerforhealthstudies.org/research/maccoll.html)



Based on this more recent evidence, five new themes were incorporated into the chronic care model:

- ♦ patient safety (in Health System);
- ♦ cultural competency (in Delivery System Design);
- ♦ care coordination (in Health System and Clinical Information Systems);
- ♦ community policies (in Community Resources and Policies); and
- ♦ case management (in Delivery System Design).

The model element pages have been redesigned to reflect these updates. Each page describes the overall strategy for each element, and the health system change concepts necessary to achieve improvement in that component. The refinements have been emphasized in bold typeface for ready identification.

## Appendix F. Heart Disease and Stroke Advisory Boards

When facing an adversary as complex as heart disease and stroke, the Illinois Department of Public Health has always believed in the efficacy of enlisting the help of experts as it develops strategies and programs to educate health care and emergency medical services providers, employers, community groups, governments and the public about the critical need to recognize, prevent and treat cardiovascular disease. The Department is indebted to the following individuals and organizations for their willingness to collaborate on this pressing public health problem:

### Illinois Atherosclerosis Advisory Committee

Charles Baum, M.D.  
Takada Pharmaceutical

Nancy Anne Bluhm  
Adams County Health Department

Paul Carryon, M.D.  
Provident Hospital of Cook County

David Cooke, M.D.  
Central DuPage Hospital

Rep. Sara Feigenholtz  
Illinois General Assembly

Jennie A. Gilbert, Ph.D.  
Illinois State University

Kiang Liu, Ph.D.  
Northwestern University

Noel D. Nequin, M.D.  
Swedish Covenant Hospital

Lana Shepek  
Illinois Dietetic Association

Ralph R. Velazquez, M.D.  
OSF Health Plans

Edward B.J. Winslow, M.D.  
Northwestern University Medical School

### Illinois Cardiovascular Health Partnership (2001-2004)

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Illinois Department of Public Health/Office of  
Minority Health Services

Mark J. Alberts, M.D.  
Northwestern University Medical School

Anthony Amabile  
Fenton Community High School (District 100)

Jo Ambrose  
Illinois Department of Public Health/Youth Program  
Initiative

Dave Anderson  
Heart attack survivor/Mended Hearts, Bloomington  
Chapter

Jan Arnold  
YMCA of Metropolitan Chicago

Ed Barsotti  
League of Illinois Bicyclists

Laura Benson  
William Rainey Harper College

Kathleen Bovid  
Bristol Myers Squibb

Denise Boyd  
Hickory Hall HOWE Development Center



Claire Call  
Prairie Heart Institute

Andrew B. Carver  
Walk 4 Life

Jason Conviser  
Bally Total Fitness

Ray Cooke  
Illinois Public Health Association

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Illinois Department of Public Health/  
Office of Women's Health

Rosalind Dale  
University of Illinois

Stephen Devries, M.D.  
University of Illinois

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Division of Chronic Disease Prevention  
and Control

Scott Drabant  
Illinois Pharmacists Association

Harold Duckler  
Illinois Department of Public Health/Division of  
Health Policy

Jane R. Elliott  
Health Alliance Medical Plans

Ray Empereur  
Rockford Health Council/Illinois Public Health  
Association

Rep. Sara Feigenholtz  
Illinois General Assembly

Bryan Finn  
Cardiovascular Health and Rehabilitation Center

Jamie Gates  
Illinois Department of Public Health/Nutrition  
and Physical Activity Program to Prevent  
Obesity and Other Chronic Diseases

Heather Gavras  
American Heart Association

Meg Gulanick, Ph.D.  
Loyola University Chicago

Marita Hartwig  
Prairie Cardiovascular Consultants Ltd.

Jean Haynes  
OSF Health Plans

Arthur Hoffman, M.D.  
Rush University Medical Center

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of Oral Health

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Prairie Cardiovascular Consultants Ltd.

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Illinois Department on Aging

Tracy Kesinger  
Memorial Health System

Susan Kim  
Asian Health Coalition of Illinois

Tim Kostelnik  
Riverside HealthCare

Sarah Laufenberg  
Health Alliance Medical Plans

David Longo  
Tri-County State Park



Amy Madigan  
Illinois Department of Natural Resources

Cathy McMillan  
Illinois Association for Health Physical Education

Ron Miller  
Bristol-Myers Squibb

Thomas Murtha  
Chicago Area Transportation Study

Chandana Nandi  
Division of Chronic Disease Prevention and Control

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Swedish Covenant Hospital

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University of Illinois

Amy Panagopoulos  
Illinois Foundation for Quality Health Care

Laura Payne  
Illinois Association of Park Districts

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American Heart Association, Midwest Affiliate  
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University of Illinois at Chicago

Penny Roth  
Illinois Department of Human Services

Lynette Shaw  
Illinois Department of Public Health/Heart Disease and Stroke Prevention Program

Tiefu Shen, M.D., Ph.D.  
Illinois Department of Public Health/Division of Epidemiologic Studies

Lana Shepek  
St. Elizabeth's Hospital

Bruce Steiner  
Illinois Department of Public Health/Behavioral Risk Factor Surveillance System

Yvonne Stovall  
Stroke survivor/American Stroke Association volunteer

Jeff Sunderlin  
Illinois Department of Public Health/Nutrition and Physical Activity Program to Prevent Obesity and Other Chronic Diseases

Doris Turner  
Illinois Department of Public Health/Office of Minority Health Services

Helen Williams-Patton  
Blue Cross Blue Shield of Illinois

Deidra Wilson  
African-American Family Commission

Edward B. J. Winslow, M.D.  
Northwestern Illinois University

**Illinois Heart Disease and Stroke  
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*American Heart Association, Greater Midwest  
Affiliate*

Peggy Jones

**Illinois Department of Healthcare and Family  
Services**

Stephanie Hanko



## **Illinois Department of Human Services**

Cheryl Metheny  
Illinois Diabetes Prevention and Control Program

Penny Roth  
Bureau of Family Nutrition Programs

## **Illinois Department of Public Health**

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Youth Program Initiative

Pamela W. Balmer  
Office of Women's Health

Brenda Blasko  
Office of Women's Health

Julie Casper  
Center for Rural Health

Rhonda Clancy  
Illinois Arthritis Initiative

Julie Doetsch  
Division of Chronic Disease Prevention and Control

Mark Flotow  
Center for Health Statistics

Marc Gibbs  
Center for Rural Health

Aaron Golitko  
Illinois CAPTURE Stroke Registry

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## Appendix G. Glossary

**Age-adjusted death rate** – The number of deaths occurring per 100,000 population per year, calculated in accordance with a standard age structure to minimize the effect of age differences when rates are compared between populations or over time.

**Assessment** – The obligation of every public health agency to monitor the health status and needs of its community regularly and systematically; one of the three core functions of public health.

**Assurance** – The guarantee by government to provide agreed-upon, high-priority, personal and community health services to every member of the community by qualified organizations; one of the three core functions of public health.

**Atherosclerosis** – A pathological condition affecting the medium-sized and larger arteries, especially those that supply the heart (the coronary arteries), the brain (the carotid and cerebral arteries) and the lower extremities (the peripheral arteries), as well as the aorta; underlies the occurrence of heart attacks, many strokes, peripheral artery disease, and dissection or rupture of the aorta.

**Behavioral change** – An intervention approach that uses public information and education to promote behavioral patterns favorable to health for the population as a whole; also includes interventions (e.g., counseling) at the group or individual level for the same purpose.

**Blood cholesterol** – The concentration of a family of lipid or “fatty” molecular compounds obtained directly from the diet or produced in the body from fatty dietary components found in the blood. It is a contributing factor in the development of atherosclerosis. Total cholesterol concentration is classified as “high” if it is >200 mg/dl. Subtypes of cholesterol differ in their relation to CVD risk, with high-density lipoprotein (HDL) cholesterol considered “good” and low-density (LDL) cholesterol considered “bad.”

**Blood pressure** – See “*High blood pressure.*”

**Capacity** – The ability of a community (e.g., organizations, businesses, groups, etc.) to utilize its maximum number of assets and resources.

**Capacity building** – The process of improving or increasing the ability of communities, organizations and groups to identify, mobilize and address cardiovascular health through the cultivation and use of transferable knowledge, skills, systems and resources that affect changes at the community and individual levels.

**Cardiovascular disease(s)** – May refer to any of the disorders that can affect the circulatory system, but often means coronary heart disease (CHD), heart failure and stroke, taken together.

**Cardiovascular disease prevention** – A set of interventions designed to prevent first and recurrent CVD events (e.g., heart attack, heart failure, stroke). For CVD, primary prevention refers to detection and control risk factors, whereas secondary prevention includes long-term case management for survivors of CVD events. CVD prevention complements cardiovascular health promotion.

**Cholesterol** – See *Blood cholesterol*.

**Community** – A social unit that usually encompasses a geographic region in which residents live and interact socially, such as a political subunit (e.g., a county or town) or a smaller area (e.g., a neighborhood or housing complex). A community also may be a social organization. An individual may be a member of several communities or subgroups defined by a variety of factors such as age, sex, occupation, socio-economic status, activities, culture or history.

**Comprehensive public health strategy** – An approach to a major health problem in the population that identifies and employs the full array of potential public health interventions, including health promotion and disease prevention.

**Congestive heart failure** – See *Heart failure*.

**Core functions of public health** – The three main areas of responsibility of official public health agencies as defined by the Committee for the Study of the Future of Public Health: assessment, policy development and assurance.

**Coronary heart disease** – Heart disease caused by impaired circulation in one or more coronary arteries; often manifests as chest pain (angina pectoris) or heart attack.

**Diabetes (or diabetes mellitus)** – A metabolic disorder resulting from insufficient production or utilization of insulin, commonly leading to cardiovascular complications.

**Disparities** — See *Health disparities*.

**Emergency care** – Treatment for people who have experienced a first or recurrent acute CVD event (e.g., heart attack, heart failure, stroke) that is designed to increase their probability of survival and to minimize associated damage or disability.

**Environment** – A community-level setting for which policies, social atmosphere and physical space can be manipulated at some level. Examples include retail businesses (e.g., restaurants, grocers) and public spaces such as parks, sidewalks and green ways. Environmental changes would, therefore, be those necessary to foster and maintain individual-level behavior to improve cardiovascular health (e.g., improve physical activity, nutrition, tobacco cessation, control hypertension).

**Epidemiology** – The study of the causes and prevention of disease in populations or communities, making it the main source of evidence for public health decision making.

**Evaluation** – A system that measures components critical to the success of the CVH state program, including surveillance, program monitoring and formative evaluation. Evaluation should address capacity building, strategy implementation, and changes in policies and the physical and social environments affecting cardiovascular health.



**Health disparities** – Differences in the burden and impact of disease among distinct populations, defined, for example, by sex, race or ethnicity, education or income, disability, place of residence or sexual orientation.

**Health promotion** – Efforts to promote wellness lifestyles and choices in order to prevent disease and/or disease causing factors.

**Healthy People 2010** – A document that presents health-related goals and objectives for the United States to be achieved by the year 2010.

**Heart attack** – An acute event in which the heart muscle is damaged because of a lack of blood from the coronary arteries, typically accompanied by chest pain and other warning signs but sometimes occurring with no recognized symptoms (i.e., “silent heart attack”).

**Heart disease** – An affliction that impairs the structure or function of the heart (e.g., atherosclerotic and hypertensive disease, congenital heart disease, rheumatic heart disease and cardiomyopathies).

**Heart failure** – Impairment of the pumping function of the heart as a result of heart disease; heart failure often causes physical disability and increased risk for other CVD events.

**High blood pressure** – A condition in which the pressure during arterial circulation is greater than desired; associated with increased risk for heart disease, stroke, chronic kidney disease and other conditions; blood pressure is considered “high” if systolic pressure (measured at the peak of contraction of the heart) is >140 mm Hg or if diastolic pressure (measured at the fullest relaxation of the heart) is >90 mm Hg.

**Hypertension** – See *High blood pressure*.

**Incidence** – The number of new cases of disease occurring in a population of given size within a specified time interval (e.g., the average annual incidence of stroke for women in Rochester, Minnesota, during 1985-1989 was approximately 12/100,000 population).

**Infrastructure** – The supports, footings or framework needed to sustain the cardiovascular prevention interventions proposed in the statewide plan.

**Mission statement** – Describes the purpose of the statewide cardiovascular plan and provides overall direction.

**Modifiable risk factors** – Factors related to CVD risks that are amenable to change (e.g., diet, physical activity, smoking), in contrast to those that are intrinsic to the individual (e.g., age, sex, race, genetic traits).

**Mortality** – Rate of death expressed as the number of deaths occurring in a population of given size within a specific time interval (e.g., 265 annual deaths from heart disease per 100,000 U.S. Hispanic women, 1991-1995).

**Obesity** – Usually defined in terms of body mass index (BMI). To calculate BMI, multiply body weight in pounds by 703; then, multiply height in inches by height in inches. Divide the first number by the second and

that is the BMI. Adults with a BMI of 30 or higher are considered “obese” and those with a BMI of 25-29 are considered “overweight.” In children, overweight is defined as BMI greater than the 95th percentile value for the same age and sex group.

**Overweight** – See *Obesity*.

**Physical inactivity** – Lack of habitual activity sufficient to maintain good health, resulting in an unfavorable balance between energy intake and expenditure, and fostering the development of overweight or obesity and other risk factors for heart disease and stroke.

**Policy** – Public policy is a formal statement of standards by a public official, a legislative body or by the general election of the public; organizational policy is a formal rule and/or regulation that governs behavior and practice within an organization or setting.

**Policy and environmental change** – An intervention approach to reducing the burden of chronic diseases that focuses on enacting effective policies (e.g., laws regulations, formal and informal rules) or promoting environmental change (e.g., changes economic, social or physical environments).

**Population-based strategies** – Interventions that focus on an identified population (e.g., women ages 35-65) or community (e.g., residents of a specific county) rather than individual behavior change. They include policy and environmental or educational approaches to increase awareness of the need for policy and environmental changes to support heart health.

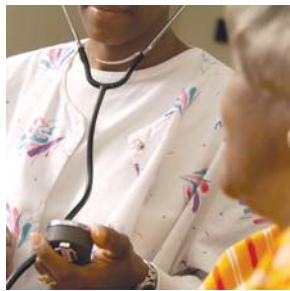
**Prevalence** – The frequency of a particular condition within a defined population at a designated time (e.g., 12.6 million Americans living with heart disease in 1999 or 36.4 percent of African-American men ages 20-74 years found to have hypertension in a survey conducted in 1988-1994).

**Primary prevention** – The first line of prevention for heart disease directed toward populations that are considered healthy or have unhealthy lifestyle behaviors such as tobacco use, sedentary lifestyles and poor dietary habits but no clinical diagnoses of cardiovascular risk factor or disease. Primary prevention interventions would address diet/nutrition, physical activity and tobacco prevention/cessation. The goal of primary prevention is to keep people at low risk for cardiovascular disease.

**Priority populations** – Groups at especially high risk for CVD (e.g., those identified by sex, race or ethnicity, education, income, disability, place of residence or sexual orientation). Also defined as population groups that have a higher documented rate of cardiovascular disease and related risk factors, lack access to services and represent greater socio-economic disparities when compared to the general population.

**Rehabilitation** – An intervention approach designed to limit disability among survivors of CVD events and to reduce their risk for subsequent events.

**Risk factors** – An individual characteristic associated with increased frequency of specified health problems; for example, high LDL cholesterol, high blood pressure and diabetes are all associated with CVD. Also defined as determinants whose presence is connected with an increased chance that disease will develop later.



**Secondary prevention** – Activities that promote treatment or rehabilitation of people with established disease, or who have had a heart attack or stroke, to prevent further cardiovascular disease and to promote cardiovascular health. CVH state programs can coordinate secondary prevention activities through statewide partnerships with a focus on policies and environments.

**Settings** – The location or channel where interventions are implemented.

**Stroke** – Sudden interruption of blood supply to the brain cause by an obstruction or the rupture of a blood vessel.

**Vision** – The future long-term description that serves as a focus for goal setting and strategy development; a rallying point for community members.





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