CARDIOVASCULAR DISEASE

Cardiovascular disease is the leading cause of death in Georgia. Cardiovascular disease (CVD) includes all diseases of the heart and blood vessels, including ischemic heart disease, stroke, congestive heart failure, hypertension, and atherosclerosis.

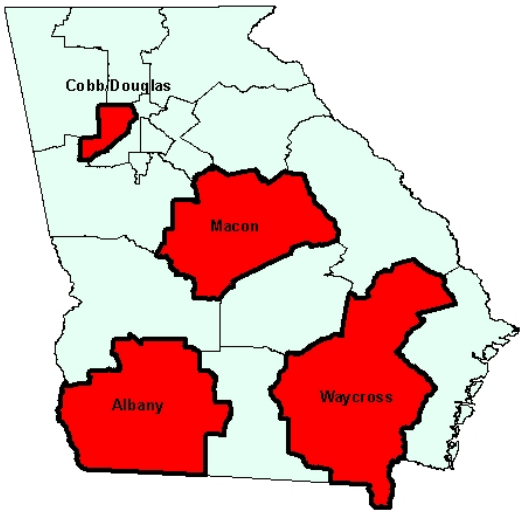
CARDIOVASCULAR HEALTH INITIATIVE

Since 2004, the Georgia Cardiovascular Health Initiative (CVHI) has worked diligently to refine and improve the the Centers for Disease Control and Prevention's (CDC's) four goal areas of the Heart Disease and Stroke Program:

1. Prevention of the risk factors associated with CVD
2. Detection and treatment of CVD risk factors
3. Early identification and treatment of CVD
4. Prevention of recurrent CVD events

The CVHI relies on successful partnerships with the Georgia Coverdell Acute Stroke Registry (GCASR), the Stroke and Heart Attack Prevention Program, the American Heart Association (AHA), and the Health Districts. Recent highlights include a local community leader from Macon health district's Faith Network Program of Excellence being recognized twice by the national AHA: once in New York as a National Power to End Stroke Ambassador, and once in Dallas for working with lay health educators from the Faith Network Program of Excellence. Macon Health District's Faith Network Program of Excellence was also selected to present a poster session at the American Public Health Association Conference in Virginia in November 2010.

The Georgia CVHI provides over $200,000 annually to support policy and environmental change initiatives in partnership with Health Districts. The work occurs across three domains - worksites, community, and healthcare – with examples below.



Worksites (Policy and Environmental Changes):
Four Health Districts (Albany, Cobb-Douglas, Macon, and Waycross) worked with local worksites to adopt seven formal health-promoting policies. Five worksites adopted policies prohibiting tobacco use and two adopted healthy eating and physical activity policies. Six worksites implemented environmental changes that included a walking path, healthy vending machine options, physical fitness breaks, quarterly fitness challenges, and CPR training for staff.

Staff from the Savannah Health District worked with 34 schools in two school systems to conduct worksite wellness activities for faculty and staff. Activities included educational sessions on heart disease and stroke, CPR classes, seminars on blood pressure and cholesterol control, and heart disease awareness campaigns targeting black females.

CARDIOVASCULAR DISEASE

Community:
Program of Excellence (Policy and Environmental Changes): The Valdosta Health District initiated a Faith-Based Program of Excellence in the city of Valdosta that includes a Faith Network of initial churches that adopted formal wellness policies, a strategic plan for network members, and a faith-based Wellness Center that offers health screenings, exercise classes, chronic disease education classes, heart healthy and diabetic cooking classes, and a community garden for the local community.

In the Macon Health District, the North Central Georgia Task Force partnered with ten churches to adopt formal health-promoting policies. Five churches adopted comprehensive 100% tobacco-free, healthy eating, and physical activity policies. Two additional churches adopted a physical activity policy and three adopted a 100% tobacco-free campus policy. Eight churches implemented environmental changes, including walking trails, aerobics classes, healthy food options for all events, and tobacco-free campus signage. The network also added another Wellness Center site in Wilkinson County, for a total of five sites.

The Macon Health District partnered with the AHA Georgia State Alliance Director to initiate a Stroke System of Care Program of Excellence. This led to the establishment of the Central Georgia Stroke Coalition. Coalition members include Macon Health District, local hospitals, EMS providers, universities, community members, stroke survivors, and family caregivers. The coalition developed a two-year strategic plan to guide their activities.

Healthcare (Policy and Environmental Changes):
Recent efforts in four Health Districts (Albany, Dublin, Lawrenceville, and Valdosta) led to the following accomplishments:

- 17 new EMS providers sponsored Advanced Stroke Life Support (ASLS) trainings
- 598 EMS staff were trained in ASLS
- Four healthcare professionals were certified as ASLS instructors
- Fairview Hospital from the Dublin health district adopted part of the ASLS curriculum, the Miami Emergency Neurologic Deficit (MEND) exam, as their neurological assessment and triage admission assessment tool
- South Georgia Medical Center from the Valdosta health district joined the GCASR
- Four EMS providers from the Lawrenceville Health District added ASLS training to their annual training requirements, including Gwinnett Fire Department, Gwinnett Tech, Gwinett Medical, and Rockdale National EMS and
- Three county EMS providers from the Albany Health District adopted the ASLS as part of annual orientation, including providers from Lee, Dougherty, and Thomas Counties

Statewide, 48 hospital staff from GCASR's participating hospitals received ASLS training to improve their stroke knowledge.

DEFINITIONS

Atherosclerosis: the hardening and narrowing of the arteries caused by deposits of cholesterol and other substances.

Blood Pressure: the force of the blood against artery walls. Blood pressure measurements include systolic and diastolic pressure measurements.

Cardiovascular Disease (CVD): includes all diseases of the heart and blood vessels, including ischemic heart disease, stroke, congestive heart failure, hypertensive disease, and atherosclerosis.

Diastolic Pressure: blood pressure measurement between contractions, when the heart chambers are filling with blood.

Hemorrhage: severe bleeding.

Hypertension: high blood pressure, which is defined as above the 140/90 threshold.

Infarct: an area of dead tissue resulting from insufficient blood flow.

Ischemic Heart Disease (IHD): also known as coronary heart disease, refers to narrowing of the coronary arteries, which reduces blood flow and oxygen to the heart. IHD includes myocardial infarction (MI) and complications from a previous MI.

Myocardial Infarction: also known as a heart attack, occurs when the heart muscle is damaged due to insufficient coronary blood supply.

Stroke (Cerebrovascular Disease: refers to an infarct or hemorrhage in the brain.

Systolic Pressure: blood pressure measurement during contraction of the heart, when blood is pushed through the arteries.

Thrombus: a clot that blocks blood flow in an artery or vein.

CARDIOVASCULAR DISEASE (CVD) BURDEN

CVD-RELATED DEATHS[1]

- CVD accounted for **30%** of deaths in Georgia during 2008, with **21,042** CVD deaths
- In 2007, Georgia's CVD death rate was **9% higher** than the national rate

CVD-Related Causes of Death, Georgia, 2008

Cause	# Deaths
Heart Disease	15,669
Stroke	3,775
Hypertension	940
Atherosclerosis	179
Other	479
CVD-Related Deaths (total)	**21,042**

CVD-RELATED HOSPITALIZATIONS

- In 2010, approximately **137,000** hospitalizations occurred among Georgia residents due to CVD
- The average hospitalization length of stay for CVD was **5 days** in 2010, similar to the national average (2006 data)

CVD-RELATED ESTIMATED COSTS

- In 2010, the average charge per CVD-related hospitalization in Georgia was **$40,135**
- Total hospital charges for CVD in Georgia increased by over **$2.1 billion** between 2003 and 2010, from **$3.4 billion to $5.5 billion**
- During 2007, the cost of CVD in Georgia was estimated to be **$7.5 billion**, including direct health care costs and lost productivity from premature mortality (indirect costs)[2]

1 Reliability issues may exist for the 2008 Georgia Vital Records data due to revisions in the death certificate form and resultant missing data issues. For more information, please see p. 40 of the following report: Miniño, AM, Murphy, SL, Xu, J, et al. Deaths: Final Data for 2008. National Vital Statistics Reports, Vol. 59, No. 10. Available at: http://www.cdc.gov/nchs/data/nvsr/nvsr59/nvsr59_10.pdf
2 Derived from national estimates published by the American Heart Association, Heart Disease and Stroke Statistics – 2011 Update, Dallas, TX: American Heart Association; 2011.

STROKE BURDEN

STROKE-RELATED DEATHS[1]

- In 2008, stroke was the third most frequent cause of death in Georgia, accounting for 5% of all deaths (with **3,775** deaths)
- In 2008, strokes were responsible for **18%** of all cardiovascular deaths in Georgia
- In 2007, Georgia's stroke death rate was **17%** higher than the national rate
- In 2008:
  - **4%** of Georgia's stroke deaths were due to ischemic stroke, or stroke caused by blockage or constriction of blood vessels supplying blood to the brain
  - **27%** of Georgia's stroke deaths were due to hemorrhagic stroke, or stroke caused by a rupture in the blood vessels supplying blood to the brain

STROKE-RELATED HOSPITALIZATIONS

- In 2008, approximately **20,400** hospitalizations occurred among Georgia residents due to stroke
- In 2008, **76%** of stroke hospitalizations were due to ischemic stroke, while **17%** were due to hemorrhagic stroke
- In Georgia, the average hospitalization length of stay for stroke was **6 days** in 2008, compared to a national average of 5 days (2006 data)

STROKE-RELATED ESTIMATED COSTS

- In 2008, the average charge per stroke hospitalization in Georgia was **$35,200**
- In 2008, total hospital charges for stroke in Georgia were **$718 million**, accounting for **15%** of all CVD hospital charges
- During 2007, the cost of stroke in Georgia was estimated at **$1.1 billion**, which included direct health care costs and premature mortality (indirect costs)[2]

ISCHEMIC HEART DISEASE (IHD) BURDEN

IHD-RELATED DEATHS[1]

- In 2008, heart disease was the leading cause of death in Georgia, accounting for **23%** of all deaths (with 15,669 deaths)
- In 2008, IHD was responsible for **47%** of all heart disease deaths in Georgia (with **7,383** deaths)
- In 2007, Georgia's IHD death rate was **20%** lower than the national rate

Heart Disease-Related Cause of Death, Georgia, 2008

Heart Disease Type	# Deaths
Ischemic Heart Disease	7,383
Hypertensive Heart Disease	1,234
Other Heart Disease	7,052
Heart Disease Deaths (total)	**15,669**

IHD-RELATED HOSPITALIZATIONS

- In 2008, approximately **42,200** hospitalizations occurred among Georgia residents due to IHD
- In 2008, the average hospitalization length of stay for IHD was **4 days**, similar to the national average (2006 data)

IHD-RELATED ESTIMATED COSTS

- In 2008, the average charge per IHD hospitalization in Georgia was **$44,300**
- In 2008, total hospital charges for IHD in Georgia were **$1.9 billion**, accounting for **39%** of all CVD hospital charges
- During 2007, the cost of all heart diseases in Georgia was estimated at **$4.5 billion**, including direct health care costs and lost productivity from premature mortality (indirect costs)2

CARDIOVASCULAR DISEASE DISPARITIES BY SEX, RACE, AGE, AND GEOGRAPHY IN GEORGIA

SEX

- CVD death rates were **1.4** times **highe**r for men than women in 2008
- Stroke death rates were **similar** for men and women in 2008
- IHD death rates were **1.8** times **higher** for men than women in 2008

RACE

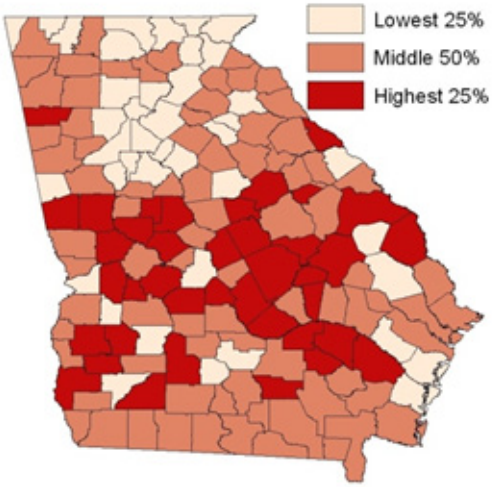
- CVD death rates were **1.3** times **higher** for blacks than whites in 2008
- Stroke death rates were **1.4** times **higher** for blacks than whites in 2008
- IHD death rates were **similar** for blacks and whites in 2008

AGE

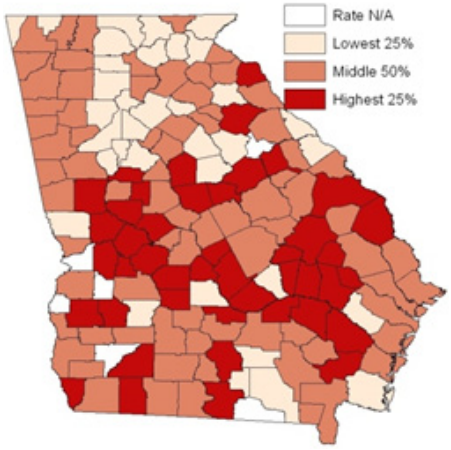
- CVD death rate increases with age, but **1 in 4 persons** who died from CVD in 2008 was less than 65 years of age
- Black males are at particularly high risk for premature death from CVD. Almost **1 in 2** black males who died from CVD in 2008 was less than 65 years of age
- **22%** of persons dying from stroke in Georgia in 2008 were less than 65 years old
- **27%** of persons dying from IHD in Georgia in 2008 were less than 65 years old

GEOGRAPHY

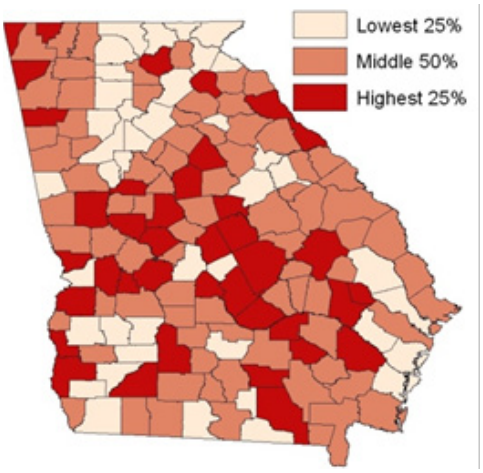
Age-Adjusted CVD Death[1] Rates by County, Georgia, 2004-2008



Age-Adjusted Stroke Death[1] Rates by County, Georgia, 2004-2008



Age-Adjusted IHD Death[1] Rates by County, Georgia, 2004-2008



[1] Reliability issues may exist for the 2008 Georgia Vital Records data due to revisions in the death certificate form and resultant missing data issues. For more information, please see p. 40 of the following report:
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CARDIOVASCULAR DISEASE RISK FACTORS

More than 2.3 million Georgia adults (33%) do not know the modifiable risk factors for cardiovascular disease.[3]

SMOKING

- Among adults ages 35 or older **2,949** deaths due to CVD were attributable to smoking in 2007
- Quitting smoking greatly reduces the risk for heart disease and stroke
- In Georgia, **16%** of adults aged 35 or older reported smoking cigarettes in 2009

LACK OF PHYSICAL ACTIVITY

- Lack of physical activity increases the risk for heart disease and stroke
- Regular physical activity helps to maintain proper body weight and improves health
- In 2010, **25%** of adults in Georgia had no leisuretime activity in the past 30 days

POOR EATING HABITS

- Poor eating habits such as a high-fat diet can lead to obesity, ischemic heart disease, stroke, and other chronic diseases
- Eating five or more servings of fruits and vegetables a day can help prevent heart disease, cancer, and other chronic conditions
- The majority **(76%)** of adults in Georgia did not consume the recommended five or more daily servings of fruits and vegetables in 2010

OBESITY

- Obesity, which is present in **30%** of adults in Georgia, increases the risk for cardiovascular disease

HIGH BLOOD PRESSURE

- High blood pressure can be controlled through lifestyle changes such as physical activity and healthy diet and, if necessary, medications
- The percentage of adults in Georgia who have high blood pressure increased from **26%** in 1999 to **31%** in 2009

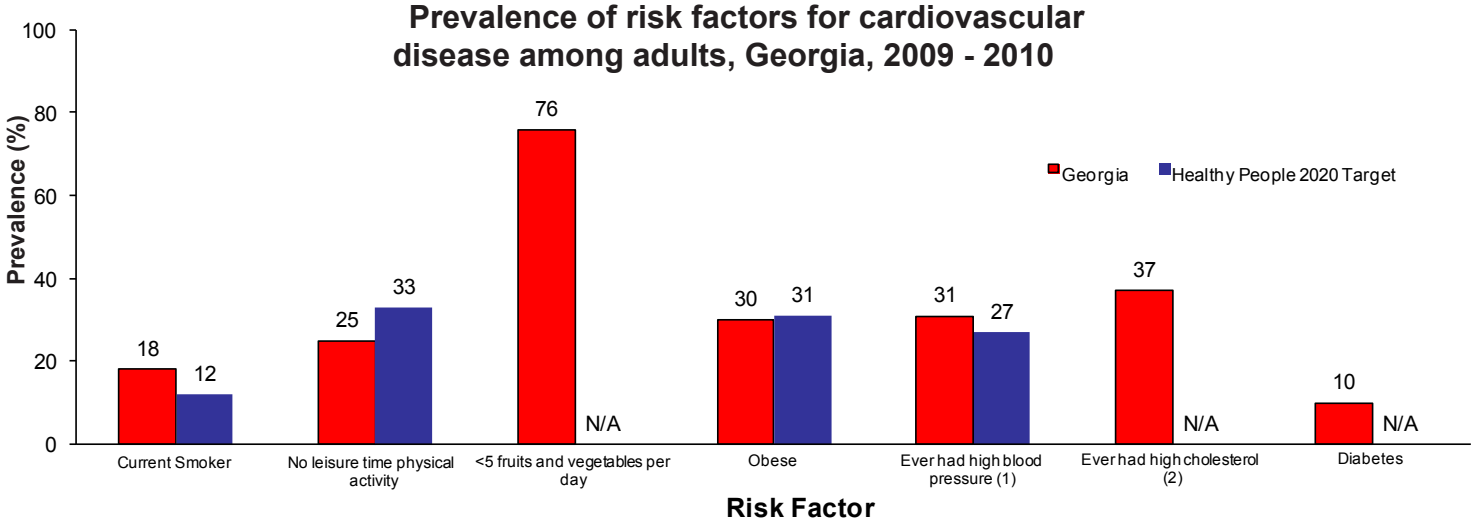
HIGH CHOLESTEROL

- Many people can control high cholesterol by modifying their diet. For those who cannot, medication can lower blood cholesterol levels
- The percentage of adults in Georgia who have been told that they have high cholesterol increased from **29%** in 1999 to **37%** in 2009

DIABETES

- Diabetes can cause atherosclerosis, also known as hardening of the arteries
- Diabetes increases the risk for CVD death
- The percentage of adults who report having diabetes increased from **7%** in 2000 to **10%** in 2010

Prevalence of risk factors for cardiovascular disease among adults, Georgia, 2009 - 2010



(1) The percentage of Georgians who reported having been told they had high blood pressure
(2) Of persons who had their blood cholesterol level checked, the percentage told they had high cholesterol
Data Source: Behavioral Risk Factor Surveillance System 2009 and 2010

[3] Data Source: 2006 Georgia Stroke and Heart Attack Awareness Survey

STROKE AND HEART ATTACK PREVENTION PROGRAM (SHAPP)

SHAPP is an education, screening, and treatment control program designed to reduce morbidity and mortality from cardiovascular disease associated with hypertension.

OVERVIEW OF SHAPP

- Funded by the Georgia General Assembly since 1974
- An education, screening, and treatment program that targets low-income, uninsured, or underinsured patients over the age of 18 who have high blood pressure
- The program seeks to identify people at risk and to teach them how to manage their lifestyle to prevent complications and avoid further illness
- An in-depth evaluation conducted by the Research Triangle Institute for the Centers for Disease Control and Prevention concluded that SHAPP is a successful, cost-effective program targeting an unfulfilled need for the state of Georgia[4]

THE ROLE OF HIGH BLOOD PRESSURE MANAGEMENT IN STROKE AND HEART ATTACK PREVENTION

- Blood pressure is defined as “controlled” if the systolic and diastolic readings are below 140 and 90 mm Hg, respectively
- Some people can control their high blood pressure with lifestyle changes such as diet modification, increasing physical activity, and smoking cessation
- For those who are unable to decrease their blood pressure by lifestyle modification alone, medications prescribed by a physician can often successfully control high blood pressure successfully
- Adults with increased blood pressure have reduced life expectancy and more time spent living with cardiovascular disease. Life expectancy for those with controlled blood pressure is 5.1 years longer for men and 4.9 years longer for women compared to those with uncontrolled blood pressure[5]

SHAPP CLINICS

- SHAPP services are available in **14** of the 18 Georgia Health Districts

SHAPP Patients by service type, Georgia, 2010

Service Type	# patients served
High Blood Pressure Screening	5,998
Counseling on:	
Blood Pressure Medications	4,609
Nutrition	4,539
Physical Activity	4,226
Weight Management	3,611
Tobacco Cessation	1,353

- **66%** of patients were African-American
- **88%** of patients were less than 65 years old

SHAPP CONTROL RATES

- SHAPP clinics have varying blood pressure control rates, ranging from 48% to 78% with a median control rate of **68%**
- Private health insurance plans in Georgia had a range of control rates from 47% to 68% with a median control rate of **60%** for patients treated in a private setting[6]
- Nationally, **53%** of patients undergoing treatment for high blood pressure are controlled[7]

[4]Rein DB, Constantine RT, Orenstein D et al. A cost evaluation of the Georgia Stroke and Heart Attack Prevention Program. Prev Chronic Dis [Internet]. 2006 Jan; 3(1).
[5]Franco et al. Blood Pressure in Adulthood and Life Expectancy with Cardiovascular Disease in Men and Women. Life Course Analysis. Hypertension. 2005; 46: 280-286.
[6]Based on performance indicators on the Health Plan Employer Data and Information Set (HEDIS), implemented by the National Committee for Quality Assurance.
[7]Hajjer I, Kotchen TA. Trends in Prevalence, Awareness, Treatment, and Control of Hypertension in the United States, 1988-2000. JAMA 2003; 290: 199-206.

GEORGIA COVERDELL ACUTE STROKE REGISTRY

PROGRAM OVERVIEW

- Funded by the Centers for Disease Control and Prevention (CDC) as part of the Paul Coverdell National Acute Stroke Registry
- Named in honor of the late Senator Paul Coverdell of Georgia who died of a massive stroke in 2000
- Partnership between Georgia Department of Public Health, Emory University, American Heart Association/ American Stroke Association, Georgia Medical Care Foundation, Georgia Hospital Association, CDC, and participating hospitals

GOALS

- Reduce fatalities and disability due to stroke and the incidence of recurrent stroke in Georgia by:
  - Monitoring and improving the quality of acute stroke care in hospitals
  - Encouraging collaboration among hospitals and other institutions in Georgia concerned with stroke care quality improvement

QUALITY IMPROVEMENT ACTIVITIES

- Individualized stroke care quality improvement consultation for participating hospitals
- Monthly registry-wide telephone conference calls and bimonthly newsletters sharing best practices among hospitals
- Annual meetings and trainings to exchange best practices
- Acute Stroke Life Support (ASLS) training
- Quality improvement efforts initially emphasized deep vein thrombosis (DVT) prophylaxis, then on dysphagia screening, now on thrombolytic treatment

DATA COLLECTION

- Data on stroke patient characteristics and care received during hospital stay are collected by participating hospitals for patients admitted with acute stroke or transient ischemic attack
- The purpose of data collection is to monitor the quality of stroke care delivered at hospitals in Georgia and to guide quality improvement effort

HOSPITAL SAMPLING AND PARTICIPATION

- Hospitals were recruited in three stages:
  - Cohort 1 (26 hospitals) started in November 2005
  - Cohort 2 (27 hospitals) started in October 2006
  - Cohort 3 (11 hospitals) started in March 2008
  - Cohort 4 (16 hospitals) started in May 2010
  - Cohort 5 (8 hospitals) started in December 2011
- There are 61 currently participating hospitals, of which 27 are Joint Commission-certified primary stroke centers, representing about 70% of stroke admissions in Georgia

Georgia Coverdell Acute Stroke Registry (GCASR) Facilities by County, November 2011