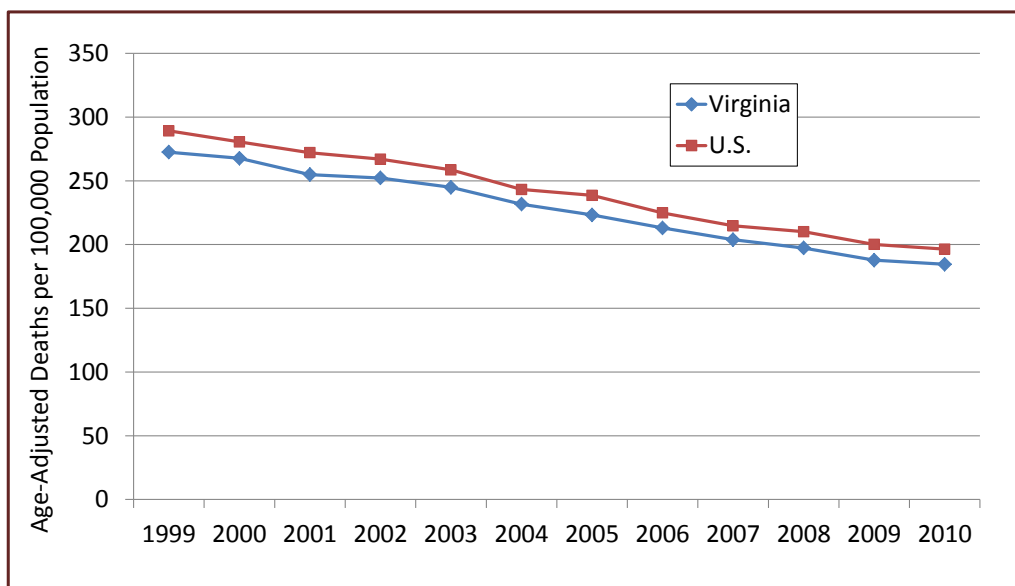


## Cardiovascular Disease in Virginia

Cardiovascular disease is the most common cause of acute and chronic illness globally, in the U.S. and in Virginia. Affecting the heart and blood vessels, cardiovascular disease can be prevented and managed by controlling many of the risk factors which cause the group of disorders which comprise cardiovascular disease. Because Cerebrovascular Disease (stroke) is an important disease of the blood vessels impacting a significant proportion of the population, it will be described in a separate report in this series.

### Key Cardiovascular Disease Facts:

- Cardiovascular disease (CVD) represents the most significant cause of disease in the U.S. and in Virginia, with an estimated 5.9% of the population or 365,842 Virginians living with a variety of cardiovascular diseases.
- Age adjusted death rates from CVD have declined across the U.S. over the past decade, from 289.2 per 100,000



in 1999 to 196.4 in 2010 due to significant improvements in management of risk factors and CVD; in Virginia, death rates declined from 272.5 to 184.5 during those same years.

- Cardiovascular disease resulted in 94,126 hospitalizations and 31,251 potential years of life lost (PYLL) in Virginia in 2011.
- Diseases of the heart were responsible for the deaths of 13,332 individuals in Virginia in 2010; in addition, cerebrovascular disease (stroke) killed 3,259 people for a total of 16,591 deaths from both heart disease and stroke in Virginia in 2010.
- The 2010 age adjusted death rate per 100,000 for diseases of the heart were lower in Virginia (184.5) than in the rest of the U.S. (196.4).
- While the age-adjusted death rate from cardiovascular disease has decreased in the last decade in the U.S. and in Virginia, the number of deaths has increased, due to the growth in the population; the number of deaths due to heart disease increased from 14,613 in 1999 to 16,642 in 2010.

- There were 94,126 discharges from Virginia hospitals for cardiovascular disease, excluding cerebrovascular disease (stroke) in 2011, with total inpatient hospital charges of \$3,641,846,913, indicating the significant medical cost, the highest for any group of diseases.

MS DRG GROUP	Discharges	Charges
AMI + Cardiac Arrest	6,905	\$204,620,541
Coronary Artery Bypass Graft	3,361	\$447,981,164
Congenital Abnormalities + Valves	2,591	\$409,758,466
Electrophysiology	16,890	\$557,200,619
Heart Failure	19,882	\$431,816
Hypertension	2,099	\$30,570,781
Medical Cardiology	21,595	\$395,220,491
Other procedures	10,602	\$504,418,910
Percutaneous Procedures	10,201	\$660,259,437
Total Cardiovascular Discharges	94,126	\$3,641,846,913

Source: VHI via Intellimed, MDC 5, Calendar Year 2011

**Definitions and Types of CVDs:** Cardiovascular Disease includes diseases of the heart and blood vessels/circulatory system:

- **Coronary Heart Disease:** diseases of the blood vessels supplying the heart muscle
- **Cerebrovascular Disease:** diseases of the blood vessels supplying the brain (stroke)
- **Valve Disease:** damage to the valves of the heart
- **Dysrhythmias:** damage to the electrical conduction system of the heart
- **Heart Failure:** deterioration of the heart muscle
- **Peripheral Artery Disease:** diseases of the blood vessels supplying the arms and legs

Other CVDs include rheumatic heart disease, congenital heart disease, deep vein thrombosis and pulmonary embolism and many other less prevalent diseases of the heart and circulatory system.

**Warning Signs and Symptoms of Cardiovascular Disease:**

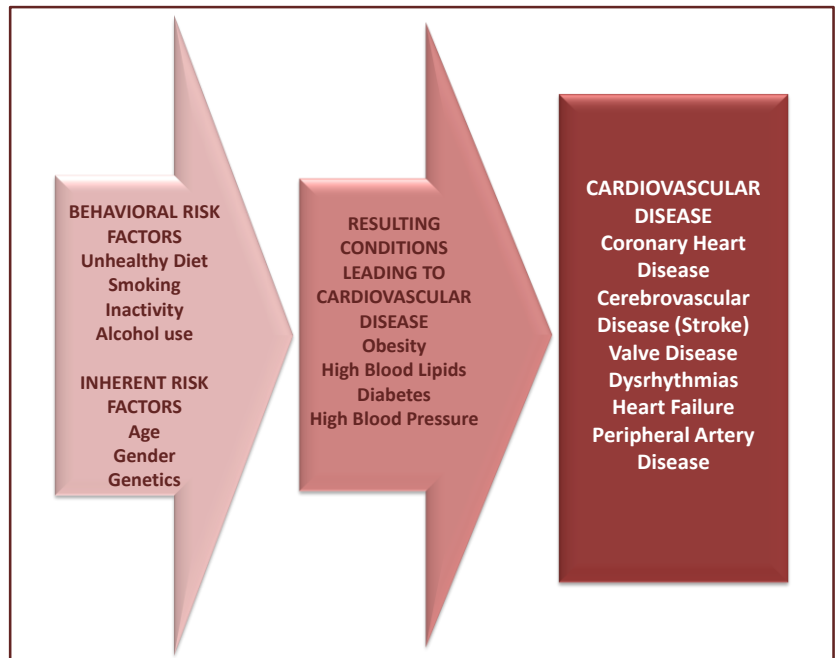
Because rapid access to medical services is essential to manage heart attacks, arrhythmias and other serious cardiovascular problems, knowledge of the signs and symptoms is essential. Symptoms may be sudden and intense, or they may be mild and progressive but in either case, it is important to call for EMT assistance by dialing 911. Some typical symptoms include:

- **Chest discomfort:** lasting more than a few minutes or recurring, this can feel like uncomfortable pressure, squeezing, fullness or pain.
- **Discomfort in other areas of the upper body:** pain or discomfort in the arms, back neck, jaw or stomach which can be confused with gastrointestinal problems.
- **Shortness of breath:** may or may not include chest pain.
- **Other signs:** cold sweat, nausea, lightheadedness or dizziness.

Symptoms in women may be slightly different, with more likelihood of feeling shortness of breath, nausea and back or jaw pain.

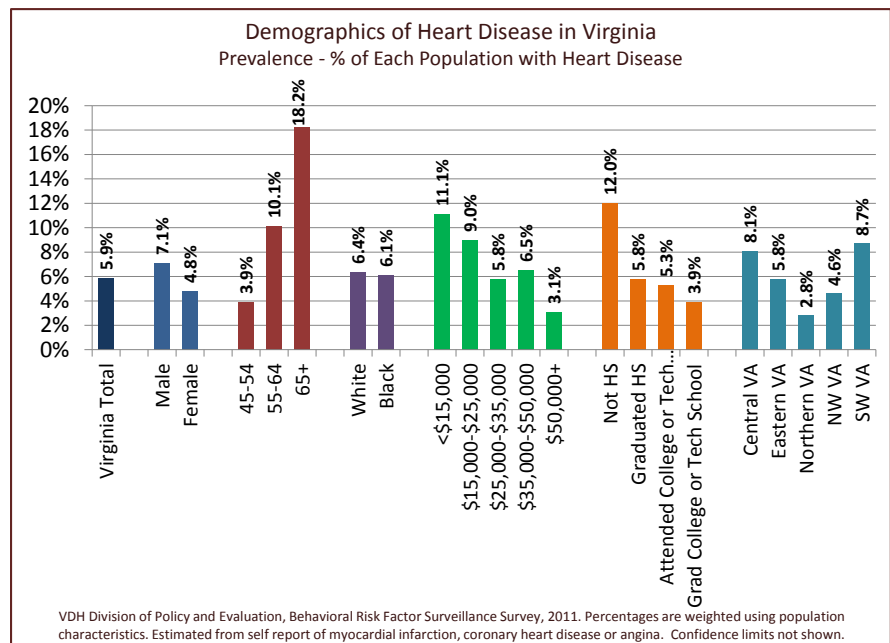
**Risk Factors:** Most CVD results from a shared group of innate and behavioral risk factors that also lead to many other chronic conditions besides CVD, but are of particular importance to CVD because they either cause CVD directly or cause a series of conditions which lead to CVD.

- **Behavioral risk factors** are those which lead to conditions which place the individual at high risk of developing CVD; it is estimated that these behaviors are responsible for about 80% of coronary heart disease; these behaviors include unhealthy diet including high fat and excess salt intake, physical inactivity, smoking and alcohol use, all of which may result in conditions which can then develop into CVD.
- **Inherent or innate risk factors** are those over which the individual has no control, including gender, age, genetic predisposition, poverty, stress and urbanization.
- **Intermediate Conditions or Risk Factors** which lead to CVD include overweight and obesity, high blood lipids and glucose, diabetes and high blood pressure.



**Socio-Demographics of Cerebrovascular Disease in Virginia:** Overall, 5.9% of Virginians or 365,842 people live with at least one type of heart disease, but there is disproportionately high prevalence in certain populations.

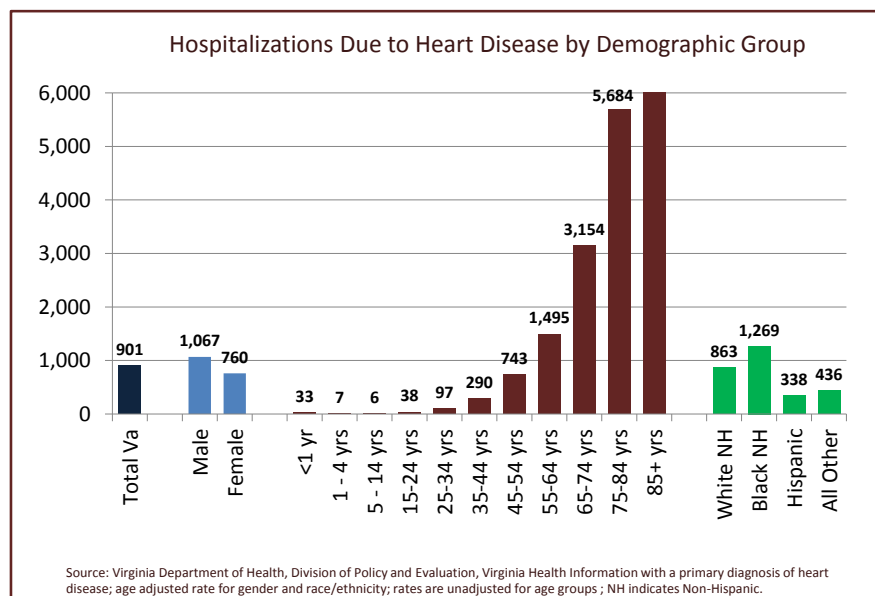
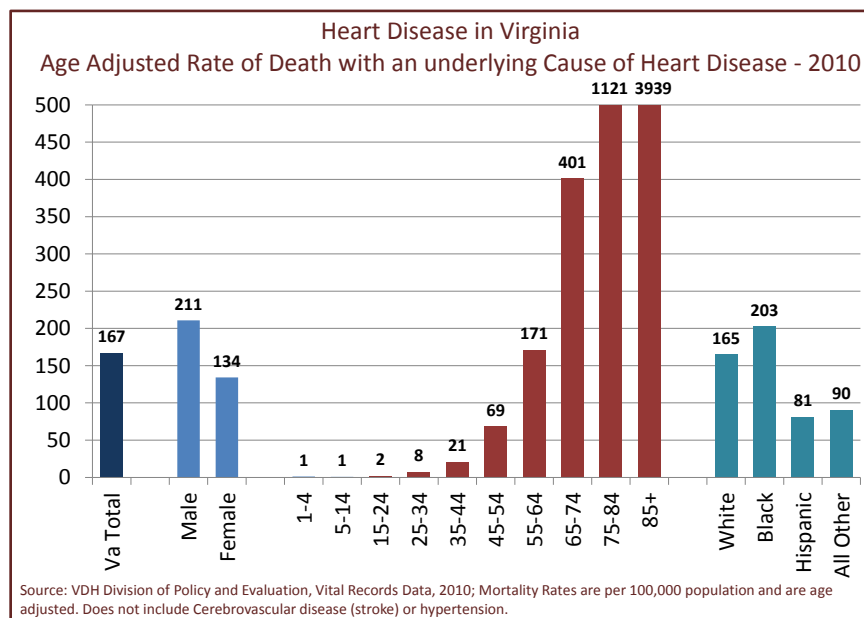
- **Gender:** Men have higher rates compared with women.
- **Aging** is a key factor in CVD, with over 18% of the 65+ population living with CVD.
- **Race** is an important determinant, with Hispanics and other racial groups having lower rates than blacks or whites.
- **Income** is an important factor; those in poverty have double the prevalence rate of the total population and more than triple the rate of those earning over \$50,000 each year.



- **Education level** is a key factor, with higher prevalence among those who have not graduated from high school (8.6%), lower rates as educational levels increase, with a low of 4.1% for those who have graduated from college or technical school.
- **Location** within Virginia is also important, with Southwest and Central Virginian having higher prevalence.

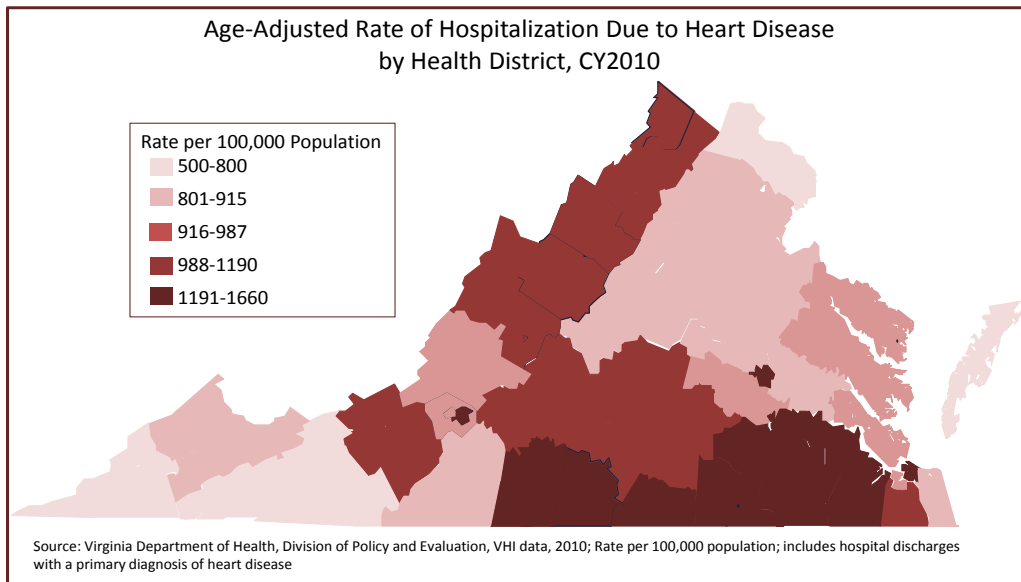
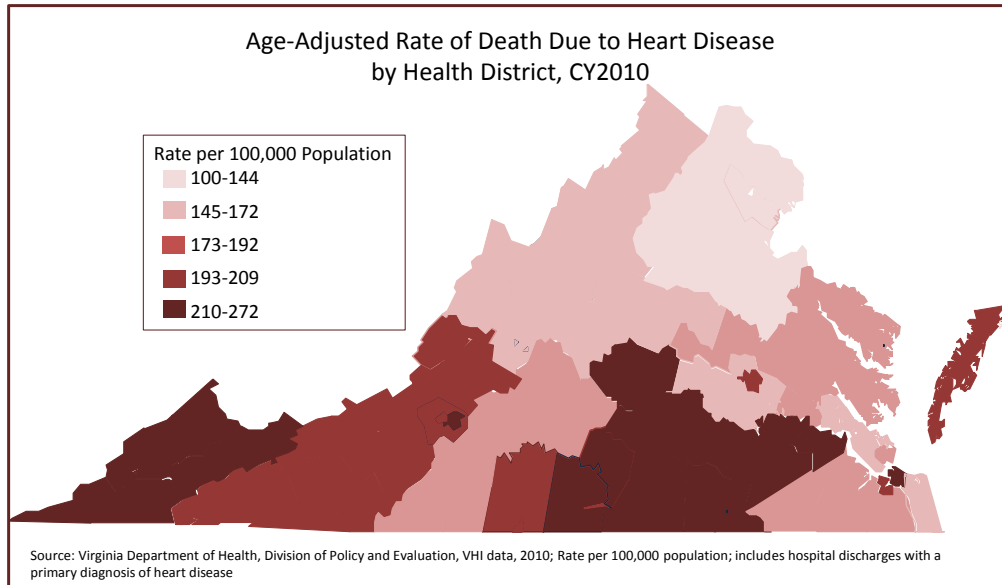
**Morbidity and Mortality of Cardiovascular Disease:** Rates of hospitalization and death from CVD vary widely across different populations in Virginia

- Advanced age is the strongest predictor of both hospitalization and death from heart disease in Virginia, increasing with age group;
- Males show significantly higher rates for both death and hospitalization compared with females;
- Hispanic and other racial groups have lower values compared with White non-Hispanic and Black non-Hispanic groups; Black non-Hispanics have the highest rates among the racial groups.



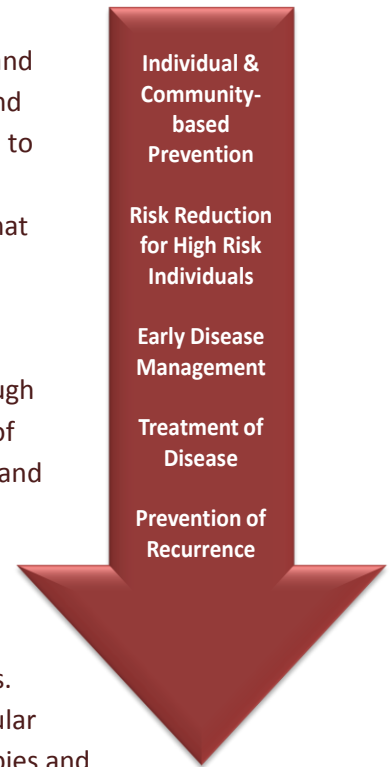
**Regionality of Cardiovascular Disease in Virginia:** The distribution of CVD varies widely across Virginia, with age-adjusted rates showing some differences but also showing some shared features:

- Age-adjusted death rates due to heart disease, shown below by Health Districts, is clearly higher in the Southwestern and Southern regions of Virginia, with rates almost double those of the northern districts.
- Age-adjusted hospitalization rates are also high in the southeastern districts, but also through central Virginia and extending throughout the northwestern Shenandoah Valley.
- Urban regions, particularly the cities of Roanoke, Richmond and Norfolk show higher death and hospitalization rates than the surrounding areas.



### Prevention and Treatment:

- Healthy diet, physical activity and smoking cessation are key to the prevention of cardiovascular disease in the general population; successful improvements in diet and exercise can result in reductions in obesity, high cholesterol, high blood pressure and diabetes. Reductions in smoking and excessive alcohol use are also important steps to reduce the burden of cardiovascular disease.
- Population-based approaches include local, regional and statewide interventions that control or influence the use of tobacco, high calorie, high salt or high fat foods; in addition, construction of walking, biking and other exercise facilities can encourage physical activity in communities.
- Individuals at high risk of cardiovascular disease can be identified and treated through collaboration with their primary care providers; medical interventions such as use of statins to reduce cholesterol and drugs to reduce hypertension are easily available and not costly.
- Immediate intervention is essential to the successful treatment of acute cardiovascular events and may include surgery and procedures such as coronary artery bypass, balloon angioplasty, valve repair and replacement, pacemakers and other electrophysiological procedures and use of medical interventions and devices.
- Those individuals who have experienced heart attacks, strokes or other cardiovascular events must receive ongoing care to prevent recurrence or death; combined therapies and interventions are focused on reduction in cholesterol and blood pressure, prevention of blood clots and other medical services that can reduce risk of recurrence.



### Data Sources:

1. VDH Division of Policy and Evaluation, Behavioral Risk Factor Surveillance Survey, 2011
2. VDH Division of Policy and Evaluation, Virginia Health Information, 2010
3. VHI Inpatient Data via Intellimed
4. VDH Vital Records data, 2010 (Table 13, Resident Deaths from Fourteen Leading Causes of Death with Age-Adjusted Rates per 100,000 Population by Planning District and City or County, 210
5. World Health Organization Media Center, Fact Sheet Number 317, September 2012; [www.who.int/mediacentre/factsheets/fs317/en/index.html](http://www.who.int/mediacentre/factsheets/fs317/en/index.html)
6. Healthy People 2020, Heart Disease and Stroke, U.S. Department of Health and Human Services
7. CDC WONDER Compressed Mortality tables; [www.wonder.cdc.gov](http://www.wonder.cdc.gov)