



2001

Maryland Cardiovascular Disease Surveillance

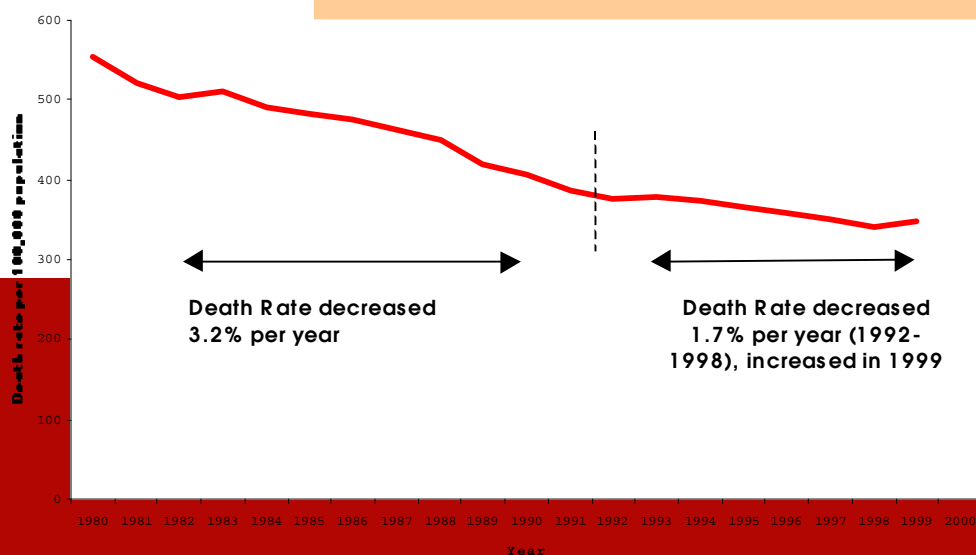
Statistics for Cardiovascular Disease

Cardiovascular Disease (CVD) including heart disease and stroke, is the number one killer in every city and county in the state. More Marylanders die each year from cardiovascular disease than from all forms of cancer, AIDS, suicides, and traffic injuries combined.

Cardiovascular Disease Age-Adjusted Death Rates in Maryland, 1980-1999

Decline in Maryland CVD Death Rate Leveling Off

Between 1980 and 1992, the average rate of decline of cardiovascular disease mortality in Maryland decreased from 3.2% per year (1980-1992) down to 1.7% per year (1992-1998). 1999 saw an increase in the rate.



Selected Demographic Information

Maryland and United States

	Maryland	United States
Population (1999)	5,171,634	272,690,813
Population Density (1999)(Persons/square mile)	525.7	77.1
Median Age (1999)	35.7	35.5
Percentage of Population		
Age ≥ 65 Years (1999)	11.5	12.7
Age ≥ 85 Years (1999)	1.3	1.5
Percentage of Population Male/Female (1999)	48.6/51.4	48.9/51.1
Percentage of Population Below Poverty Level	7.3	11.8
Racial/Ethnic Distribution of Population (1999)		
Percentage White	67.5	82.4
Percentage Black	28.1	12.8
Percentage Asian/Pacific Islander	4.0	4.0
Percentage American Indian/Native American	0.3	0.9
Percentage Hispanic	3.9	11.5
Educational Attainment (1999) (Age ≥ 25 years)		
High school graduate or more	84.7	83.4
Completed bachelor's degree or more	34.7	25.2
Number of Counties (1999)	23	3,083
Number of Local Health Departments	24	2,930

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Executive Summary

- Cardiovascular disease (CVD), including heart disease and stroke, was the number one killer of Marylanders in 1999, accounting for almost 40 percent of all deaths.
- CVD is a major cause of hospitalization in Maryland, accounting for 94,711 hospitalizations in 1999. Charges from these hospital stays totaled \$890 million.
- For both men and women, CVD death rates are higher for blacks than whites.
- In Maryland, more women die from CVD than men.
- CVD is not just a disease of old age: One in five Marylanders who died from CVD in 1999 was younger than 65 years of age.
- Much of the burden of premature death and disability from CVD is potentially avoidable.
- More Marylanders are less active now than 10 years ago.
- More than half of Marylanders are either overweight or obese.
- One in five of Maryland's adults smoke; this rate has remained constant despite public awareness of the detrimental effects of smoking.
- The slowing of the trend in improvement of CVD death rates in Maryland may be caused by the worsening pattern of risk factors for heart attacks and stroke, such as smoking, high blood pressure, overweight, and lack of physical activity.

NOTE:

All data are for 1999 unless indicated for 2000.

Cardiovascular Disease Surveillance Report

Introduction

Cardiovascular diseases (CVD) comprise the major disorders of the heart and the arterial circulation supplying the heart, brain, and peripheral tissues. Their common occurrence, and the attendant mortality, loss of independence, impaired quality of life, and social and economic costs are compelling reasons for public health concern.

In 1999, 16,151 Marylanders died of cardiovascular disease and related causes of death and disability in Maryland for both men and women. Coronary heart disease, which may result in heart attack, accounts for more than half of all cardiovascular disease. Stroke is the number three cause of death in Maryland.

Both heart disease and stroke are significant contributors to increasing health care costs. In Maryland, there were 94,711 hospitalizations for CVD in 1999, and hospital charges for the same year totaled \$890 million.

Data from Maryland Vital Statistics Annual Report

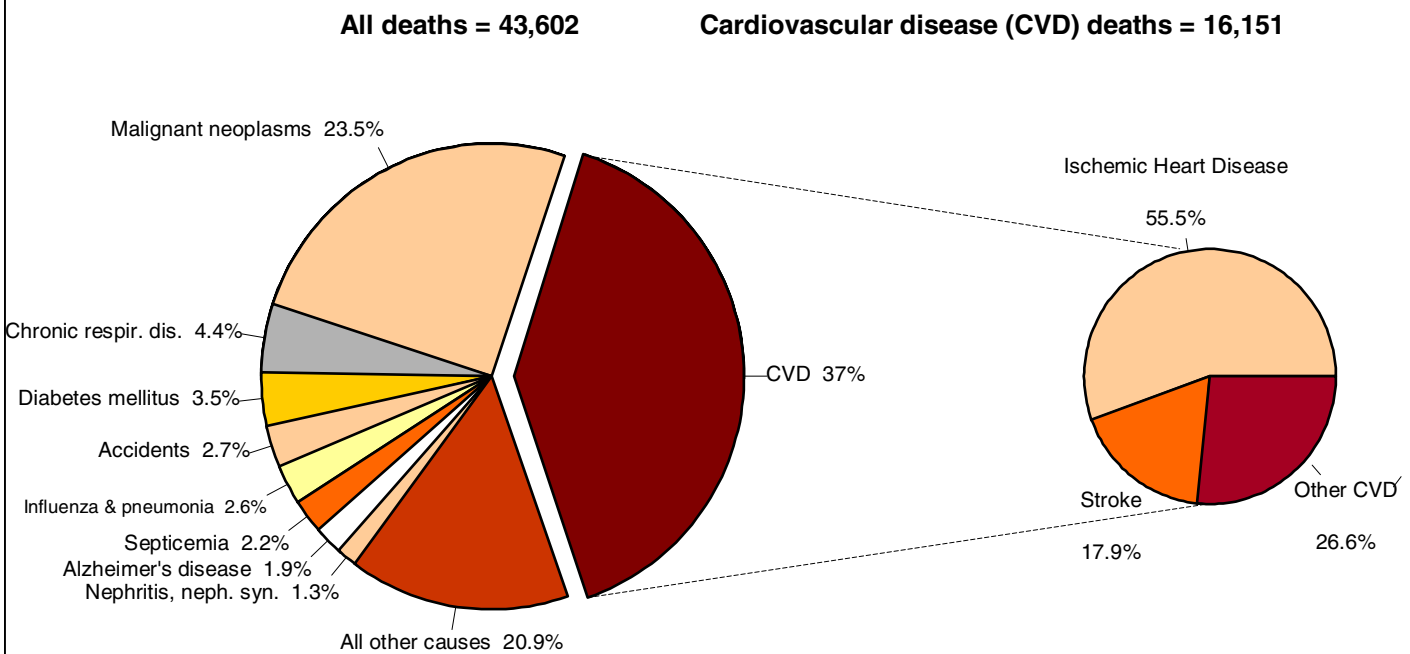
1999 confirm that heart disease death rates in Maryland adults are highest for men; higher for African-American men than for white men; and higher for African-American women than for white women. While national and state trends in CVD death rates have declined in the past two decades recent data have shown a leveling off of these rates.

Death and disability from CVD are related to a number of modifiable risk factors, including high blood pressure, high blood cholesterol, smoking, lack of regular physical activity, diabetes, and overweight. By adopting healthier lifestyles, Marylanders can reduce much of the burden of death and disability from cardiovascular disease.

This report describes the burden of CVD in Maryland. Its purpose is to present a brief overview of CVD death rates in the past two decades; report the approximate cost of CVD in terms of hospitalizations, including statistics for each county; and describe the prevalence of CVD risk factors in Maryland for the past decade.

Much of the burden of death and disability from CVD is potentially avoidable.

Fig. 1—Leading Causes of Death in Maryland, 2000





Trends in Cardiovascular Disease in Maryland

Cardiovascular disease rates have declined in both Maryland and the U.S. over the past two decades. The decline in CVD death rates can be attributed to improvements in medical care, heightened public awareness, and widespread use of health innovations resulting in healthier lifestyles. Maryland's rates closely reflect the trends seen nationally during this period (Figure 2). Maryland's CVD death rate ranks 24th in the nation.

Although the Maryland CVD death rate continues to decline, the rate of decline is slowing. From 1980-1992 the CVD death rate decline by an average of 3.2 percent per year. In contrast, from 1992-1999, the rate of decline had slowed to 1.7 percent per year (see figure on cover).

CVD deaths rates differ by race and sex. In Maryland, as in the U.S., the racial disparity in the risk for dying from CVD is pronounced. In 1999, the risk was 20 percent higher for black men than white men, and 29 percent higher for black women compared to white women (Fig. 3). The reasons for higher rates among blacks are related in part to high blood pressure, and factors related to poverty, such as poor diet or decreased access to health care.

As noted previously, males have a higher risk than females for dying from CVD. However, in terms of absolute numbers, there are actually more deaths among females than males. In 1999, there were 5,513 deaths among males, but 6,627 deaths among females. This difference exists because women tend to live to older ages when CVD is more common. Additionally, women generally experience poorer prognoses following a major heart event.

International comparisons demonstrate that high blood pressure and elevated blood lipids are not inevitable consequences of aging. Risk of premature death from CVD can be decreased with appropriate behavioral and pharmacological interventions.

CVD, however, is not just a disease of aging. Nearly one in five Marylanders who died from CVD in 1999 was younger than 65 years of age

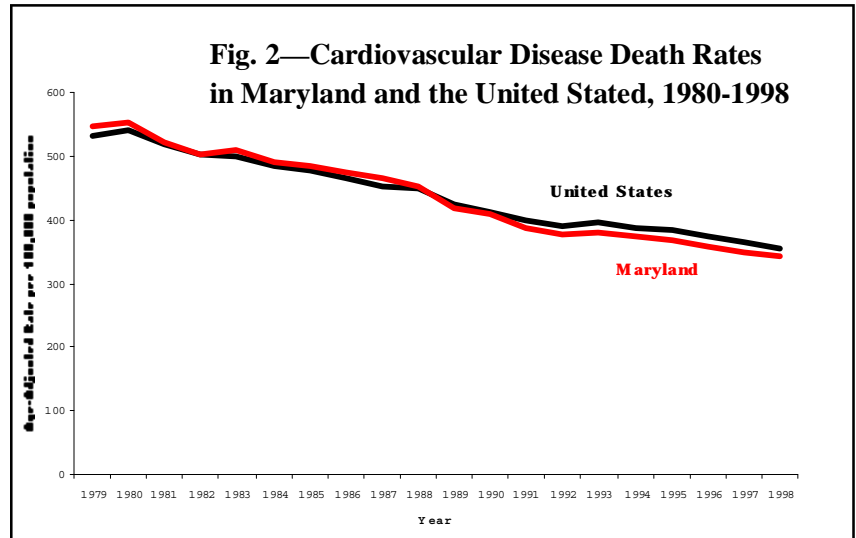
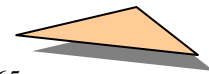


Table 1 - Premature Cardiovascular Disease (CVD) Deaths in Maryland by Race and Sex, 1999

	Percent of CVD deaths before age 65 years
Black Males	41.4%
White Males	20%
Black Females	25.2%
White Females	7.7%

(Figure 4).



The percentage of deaths occurring before 65 years of age is one measure of premature death. Table 1 reveals considerable disparities in the burden of premature death from CVD among blacks and whites in Maryland. Of those who die from CVD, 41% of black men, 20% of white men, 25.2% of black women, and 7.7% of white women die before age 65. These deaths occur during the most productive years of life, and dispel the myth that CVD is a concern only for the elderly.

Trends...continued

Fig. 3—Age Adjusted Death Rate for CVD for Maryland Residents by Race and Sex, 1999

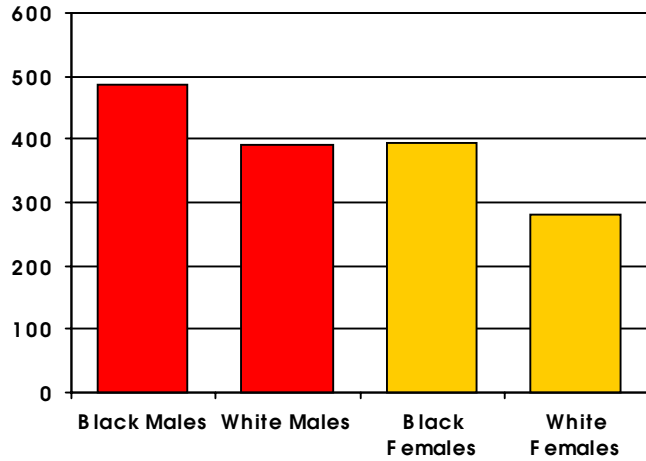
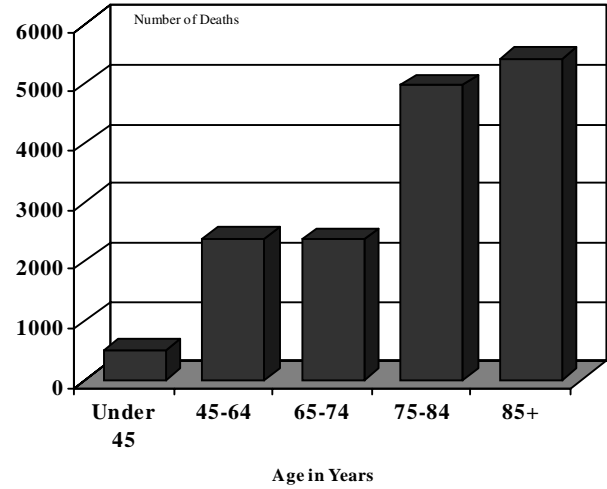


Fig. 4—Cardiovascular Disease Deaths for Maryland Residents by Age, 2000



Hospitalizations for Cardiovascular Disease

In addition to the high death toll caused by CVD each year, many more Marylanders experience a heart attack, stroke, or other CVD event, but do not die from the condition. For most of these CVD survivors, their lives are forever changed. Most will need to take medications for the rest of their lives, and some are left with permanent, severe disabilities such as the loss of speech or the inability to move an arm or leg. We can estimate the burden of non-fatal CVD in Maryland by examin-

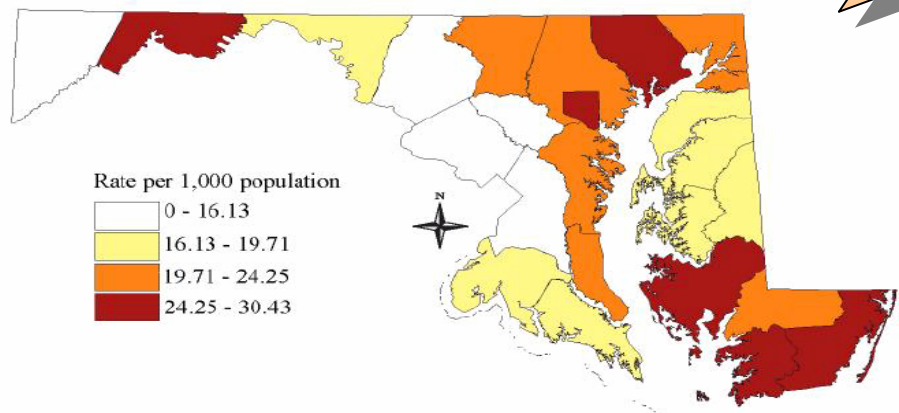
ing hospitalizations.

In 1999, there were 94,711 hospitalizations for CVD among Maryland residents. These hospitalizations consumed enormous health and financial resources. Maryland residents spent 448,729 days in the hospital because of CVD, and the charges for these admis-

sions totaled \$890 million. The average charge for a hospital stay was \$9,397, and this does not include physicians fees. In addition to hospital charges, other costs associated with CVD include long-term care and rehabilitation, lost productivity and lost family resources.

CVD is an expensive disease: There were 94,711 hospitalizations for CVD in 1999, and hospital charges totaled \$890 million.

Hospitalizations for Cardiovascular Disease, Age-Adjusted per 1,000 Population, 1999



Source: Health Services Cost Review Commission, DHMH, 1999.

Cardiovascular Disease Surveillance Report

Cardiovascular Disease Statistics by County

The map below illustrates the geographic differences in CVD mortality rates across Maryland. Maryland's western region, Baltimore city, and parts of the eastern shore have the highest rates of cardiovascular disease deaths. These areas vary widely in demographic and geographic characteristics, thus pointing to a multifaceted and diverse spectrum of related causes. This information may serve as a useful tool in guiding policy and prevention efforts.

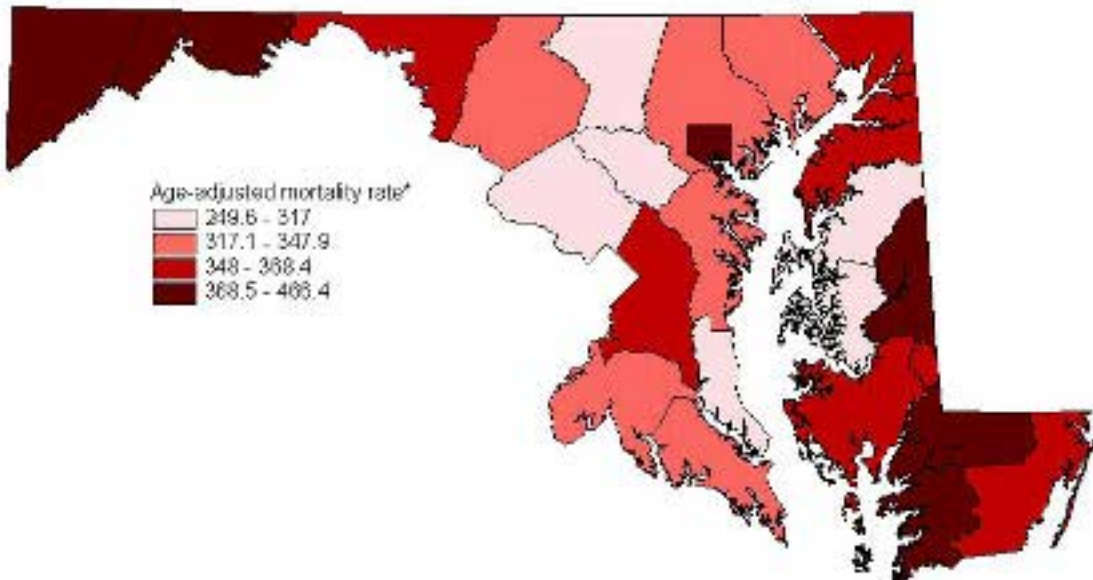
For Maryland and each county, Table 2 (next page) shows the regional/political subdivision (column 1), the 3 year average number of CVD deaths, (column 2), and the CVD age-adjusted death rates (column 3). Five counties with the highest CVD death rates are shown in red. Death rates were calculated for a three-year period since counties with small population had too few CVD deaths to calculate a death rate

accurately for a shorter interval. Caution should be used when making comparisons among county death rates because counties with small populations are more likely to have wide variations in death rates from year to year simply because of chance.

The next three columns of Table 2 show the number of hospitalizations for CVD in 1999 (column 9), the total number of days in 1999 that CVD patients spent in the hospital (column 10), and the total cost of stay for 1999 CVD hospitalizations (column 11, the far right-hand column). Hospitalization data are based on county of residence, not location of hospital. Caution should also be used when making comparisons among county hospitalization statistics because Marylanders hospitalized outside of Maryland are not included in Table 2. This fact may be especially important for counties in the Washington D.C. area, and those counties bordering other states.

Fig. 5—

Comparison of County Age-Adjusted Mortality Rates for Major Cardiovascular Diseases
by Quartile, Maryland, 1997-99 (3-year average).



* Per 100,000 population. Age-adjusted to the projected 2000 population.

Cardiovascular Disease Death Rates By County



Table 2—Cardiovascular Disease Deaths, Death Rates, and Hospitalizations by County

Region & Political Subdivision	CARDIOVASCULAR DISEASE DEATHS, 1999					CVD HOSPITALIZATIONS				
	No. of CVD deaths ¹	Age-adjusted death rate 1997-99	Rate in top 5?	No. of CVD deaths < 65	% of Total CVD deaths	No. of CVD deaths 65+	% of Total CVD deaths	No. of Hospitalizations	Total days	Total cost of stay
All Maryland	46,676	343.6						94,711		
Northwest	4,782	376.1								
Allegany	1,333	430.2	YES	156	12%	1177	88%	2,640	13,683	\$ 16,981,143
Garrett	425	418.8	YES	59	14%	366	86%	524	2,156	\$ 2,981,897
Frederick	1,470	346.4		222	15%	1248	85%	2,363	10,997	\$ 18,098,316
Washington	1,554	360.7		214	14%	1340	86%	2,373	10,791	\$ 19,130,520
BaltoMetro	24,716	362.8								
Anne Arundel	3,607	344.5		614	17%	2993	83%	8,525	35,614	\$ 77,087,414
BaltoCity	9,026	466.4	YES	2156	24%	6870	76%	19,247	96,868	\$ 203,563,640
Balto. County	8,108	325.1		1118	14%	6990	86%	18,151	84,081	\$ 189,216,855
Carroll	1,121	289.2		149	13%	972	87%	2,751	11,783	\$ 24,428,889
Harford	1,636	347.9		268	16%	1368	84%	5,024	20,927	\$ 43,472,137
Howard	1,218	309.6		200	16%	1018	84%	2,268	9,928	\$ 22,442,262
Nat'l Capital	10,951	296.6								
Montgomery	5,693	249.7		710	12%	4983	88%	8,457	43,947	\$ 81,248,707
Prince Georges	5,258	365.9		1434	27%	3824	73%	8,911	48,084	\$ 86,044,816
Southern Area	1,736	324.3								
Calvert	473	317		90	19%	383	81%	1,271	5,105	\$ 8,053,247
Charles	676	332.5		163	24%	513	76%	1,520	7,221	\$ 10,737,321
St. Mary's	587	322.8		127	22%	460	78%	1,229	5,071	\$ 7,440,298
Eastern Shore	4,491	355.4								
Caroline	361	381		67	19%	294	81%	619	2,633	\$ 4,634,217
Cecil	715	359.6		132	18%	583	82%	1,556	6,025	\$ 10,198,546
Dorchester	435	368.3		74	17%	361	83%	1,012	4,559	\$ 8,267,582
Kent	293	366.9		31	11%	262	89%	510	2,486	\$ 4,605,621
Queen Anne's	348	304.1		61	18%	287	82%	755	3,131	\$ 6,065,102
Somerset	323	393.1	YES	54	17%	269	83%	700	3,059	\$ 5,495,346
Talbot	465	296.4		38	8%	427	92%	843	3,636	\$ 6,815,033
Wicomico	907	379.2	YES	148	16%	759	84%	1,955	10,454	\$ 19,512,050
Worcester	644	361.7		100	16%	544	84%	1,507	6,490	\$ 13,639,178
TOTAL								94,711	448,729	\$ 890,160,135



Cardiovascular Disease Risk Factors

Some CVD risk factors are “modifiable”, meaning that individuals who control these factors can slow, or even reverse, the process of arterial blockage and decrease their risk of having a heart attack or stroke. Modifiable risk factors include smoking, high blood pressure, high blood cholesterol levels, diabetes, being overweight, and lack of regular physical activity.

Some CVD risk factors cannot be changed, such as old age, male gender, a family history of heart attacks at a young age, and most importantly, having had a previous heart attack or stroke. Individuals with unmodifiable risk factors should be particularly diligent in avoiding or controlling the modifiable risk factors. The leveling off of the Maryland CVD death rate may be related to the trends in CVD risk factors.

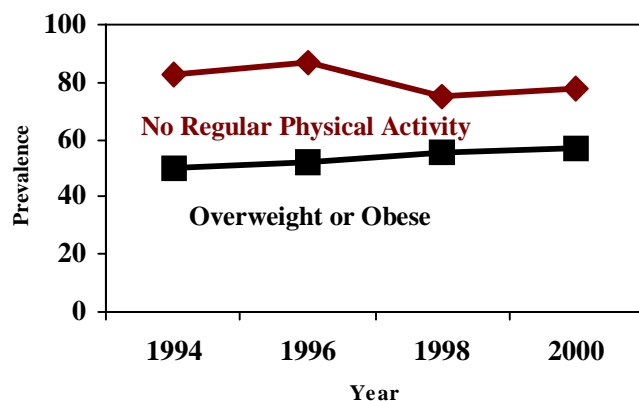
Physical Inactivity

Many Marylanders are not physically active on a regular basis. Four out of every five Maryland adults do not get regular physical activity (at least 30 minutes of moderate intensity activity, such as walking at a brisk pace, each day on five or more days a week). The percentage of Maryland adults who are not regularly active appears to be increasing. The graph below (Fig. 6) suggests a relationship between increasing inactivity and rising overweight and obesity.

Overweight and Obesity

There has been a steady increase in the percentage of overweight (see appendix for details) or obese (see appendix for details) adults in Maryland. Within just four years the prevalence of overweight and/or obesity increased by 12%, from 50.0 in 1994 to 56.7 in 2000. Behaviors related to the development of overweight and obesity develop early in life, however, data on risk factors in youth is lacking.

Fig. 6—Percent of Marylanders Reporting No Regular Physical Activity and Overweight or Obese, 1994—2000



Smoking

The prevalence of smoking among Marylanders has hovered around 20 percent over the past decade. Giving up smoking rapidly reduces the chance of developing CVD by as much as 50-70% within 5 years of quitting. Lowering smoking rates is a fundamental public health priority.

High Blood Pressure & High Cholesterol

High blood pressure is a major risk factor for both heart disease and stroke. The percentage of Marylanders who reported having been told they had high blood pressure appears to be steadily increasing from 21.1 in 1993 to 24.5 in 1999. Currently, one in four Maryland adults have been told they have high blood pressure.

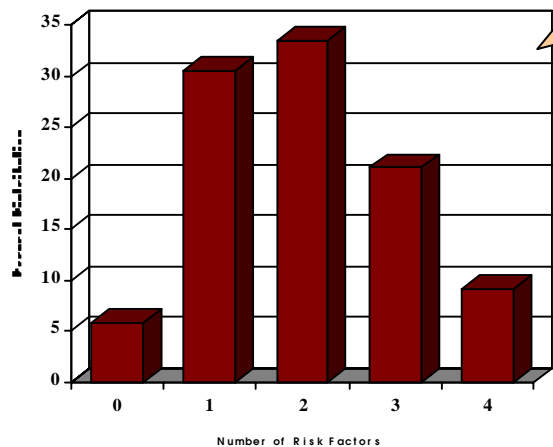
High cholesterol contributes to the process known as atherosclerosis, the gradual build up of fatty plaques in the arteries that can lead to heart attack and stroke. The prevalence of Marylanders who reported having been told that they

had high blood cholesterol was 30.6 in 1999, an increase of 4.4 in just 6 years.

Multiple Risk Factors

In Maryland, most adults report at least one or more risk factors for CVD (Fig. 7). Persons with 3 or more CVD risk factors are nearly four times as likely to die from CVD as a person with no risk factors. Nearly all persons with 3 or more CVD risk factors are either overweight or physically inactive or both. Addressing only one or two risk factors can improve health dramatically.

Fig. 7—Multiple CVD Risk Factors Among Maryland Adults, 1999



Conclusions

This report summarizes the most recent information available on cardiovascular disease deaths and hospitalizations in Maryland. The data presented clearly demonstrate the need for continued vigilance in the effort to prevent and delay cardiovascular disease. The trend in CVD deaths is leveling off, and even more alarming is the apparent increase in unhealthy behaviors that put individuals at risk for heart disease and stroke.

Appendix: methods and definitions

The source of the number of deaths in Maryland was the Vital Statistics Administration, Division of Health Statistics. CVD death rates were age-adjusted using the direct method; the US 2000 population was used as the standard. The source of the Maryland population estimates was the US Bureau of the Census.

The source of the national rates was the National Center for Health Statistics, CDC WONDER. The most recent year for which the US CVD death rate was available was 1998. ICD 9 codes used for the category cardiovascular disease are 390-448.

The source of Maryland CVD rates was the Maryland Department of Health and Mental Hygiene, Division of Health Statistics, the Office of Public Health Assessment, the Office of Injury & Disability Prevention, and the Office of Chronic Disease Prevention.

Risk factor data are from the Maryland Behavioral Risk Factor Surveillance System, a telephone survey conducted annually on a representative sample of adults in the state. CVD risk factors were defined as follows:

Risk Factor: A habit, characteristic or finding on clinical examination that is consistently associated with increased probability of a disease or complications from that disease.

A lack of regular physical activity: Defined as not getting either at least 30 minutes of moderate intensity physical activity 5 or more days a week; or getting at least 20 minutes of vigorous physical activity 3 or more days a week.

Overweight: Defined as a body mass index [BMI] greater than 25.0 kg/m²; **Obesity:** Defined as a BMI greater than 30.0 kg/m². Using weight (in kilograms) and height (in centimeters), BMI equals weight divided by the square of the height. Using weight (in pounds) and height (in inches), BMI equals 705 times weight divided by the square of height.

Current smoking: Defined as someone who has smoked at least 100 cigarettes in one's lifetime and smokes now.

High blood pressure: Defined as having been told by a health professional that one's blood pressure was high.

High blood cholesterol: Defined as having been told by a health professional that one's cholesterol was high.

Acknowledgements (alphabetical by last name)

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