High Blood Cholesterol Among Upstate New York Adults

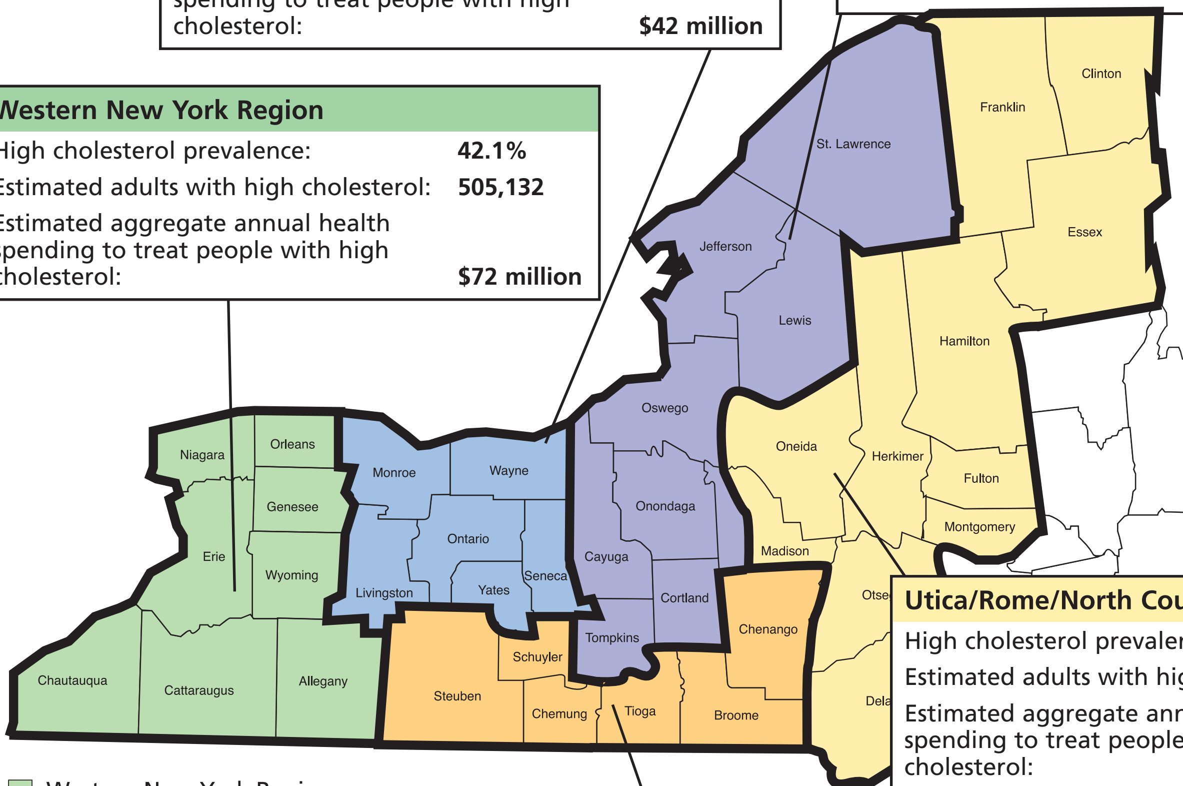
Upstate New York	
High cholesterol prevalence:	40.3%
Estimated adults with high cholesterol:	1.5 million
Estimated aggregate annual health spending to treat people with high cholesterol:	$221 million

New York State	
High cholesterol prevalence:	37.7%
Estimated adults with high cholesterol:	5.6 million
Estimated aggregate annual health spending to treat people with high cholesterol:	$819 million

Finger Lakes Region	
High cholesterol prevalence:	36.1%
Estimated adults with high cholesterol:	292,251
Estimated aggregate annual health spending to treat people with high cholesterol:	$42 million

Central New York Region	
High cholesterol prevalence:	43.4%
Estimated adults with high cholesterol:	358,351
Estimated aggregate annual health spending to treat people with high cholesterol:	$51 million

Western New York Region	
High cholesterol prevalence:	42.1%
Estimated adults with high cholesterol:	505,132
Estimated aggregate annual health spending to treat people with high cholesterol:	$72 million



Utica/Rome/North Country Region	
High cholesterol prevalence:	41.5%
Estimated adults with high cholesterol:	248,335
Estimated aggregate annual health spending to treat people with high cholesterol:	$35 million

Southern Tier Region	
High cholesterol prevalence:	36%
Estimated adults with high cholesterol:	141,877
Estimated aggregate annual health spending to treat people with high cholesterol:	$20 million

Upstate New York refers to the New York counties highlighted in the map above and figures are based on 2007 data[1,2]

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Nationally, high cholesterol affects more than a quarter of the American adult population - 59.4 million people - making it the second leading chronic morbidity in the United States.[3] Cholesterol is a waxy substance found throughout the body, some of which is needed. However, an excess can accumulate and block the arteries leading to the heart and brain (vascular disease). A 10 percent decrease in the prevalence of high cholesterol could reduce the incidence of heart disease by an estimated 30 percent.[4]

High cholesterol also is linked to other chronic conditions, such that only one in seven people with high cholesterol has no other chronic condition.[5] Since it usually has no symptoms, many are unaware that they have high cholesterol, highlighting the importance of appropriate screening and treatment.

This fact sheet reviews the prevalence of high cholesterol and screening patterns among adults in upstate New York (ages 18 and older) using data from the New York State Department of Health's 2007 Behavioral Risk Factor Surveillance System (BRFSS).[6] This is an ongoing, annual data collection program that covers health risk behaviors and is administered by individual states. Supported and compiled by the U.S. Centers for Disease Control and Prevention, the BRFSS surveys a random sample of non-institutionalized, civilian adults each year.

Expenses to treat people with high cholesterol were extrapolated from a recent cost study of medical conditions in the U.S.[7] and population denominators were U.S. Census-based.

Cholesterol guidelines

The National Cholesterol Education Program, a widely recognized expert panel, classifies cholesterol levels as shown in the table below.[8] Generally, a total cholesterol level of 200 mg/dL or below is considered desirable, but guidelines vary for the different components of total cholesterol (cholesterol levels are measured in milligrams (mg) per deciliter (dL) of blood). For example, low-density lipoprotein (LDL or "bad") cholesterol is ideally below 100 mg/dL. In addition, interventions are influenced by whether one has other condition(s), such as heart disease or diabetes, and by the presence of other risk factors.

Cholesterol level guidelines			
Total Cholesterol (mg/dL)*		**LDL Cholesterol (mg/dL)***	
		<100	Optimal
<200	Desirable	100-129	Near optimal/above optimal
200-239	Borderline high	130-159	Borderline high
≥240	High	160-189	High
		≥190	Very high

*Cholesterol levels are measured in milligrams (mg) of cholesterol per deciliter (dL) of blood.

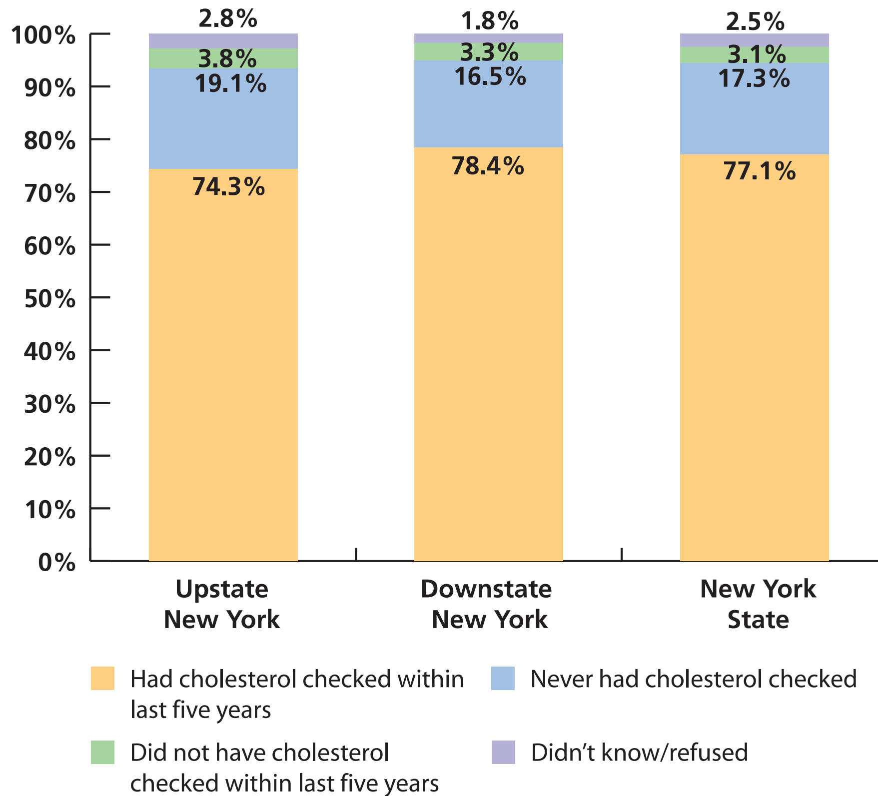
Source: The National Institutes of Health: *Third Report of the National Cholesterol Education Program (NCEP). Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults.* September 2002, pages II-5: http://www.nhlbi.nih.gov/guidelines/cholesterol/atp3full.pdf.

Risk factors

Though genes affect whether one develops high cholesterol, lifestyle also influences one's risk. Researchers have identified several risk factors:[9]

- Cigarette smoking
- Hypertension (blood pressure greater than or equal to 140/90 millimeters of mercury (mmHg) (Blood pressure is measured in millimeters (mm) of mercury (Hg) on a sphygmomanometer)
- Obesity (body mass index greater than or equal to 30)
- A diet high in saturated fat
- Lack of exercise
- Diabetes
- Family history of heart disease (a first-degree relative who developed the disease before age 55).

Cholesterol awareness:
Are upstate New York adults receiving recommended screening?



Sources: Obtained from: The New York State Department of Health, Behavioral Risk Factor Surveillance System, 2007 (to request access: http://www.health.state.ny.us/nysdoh/brfss/).

The Behavioral Risk Factor Surveillance System survey asks:

- ***Cholesterol is a fatty substance found in the blood. Have you ever had your blood cholesterol checked?***

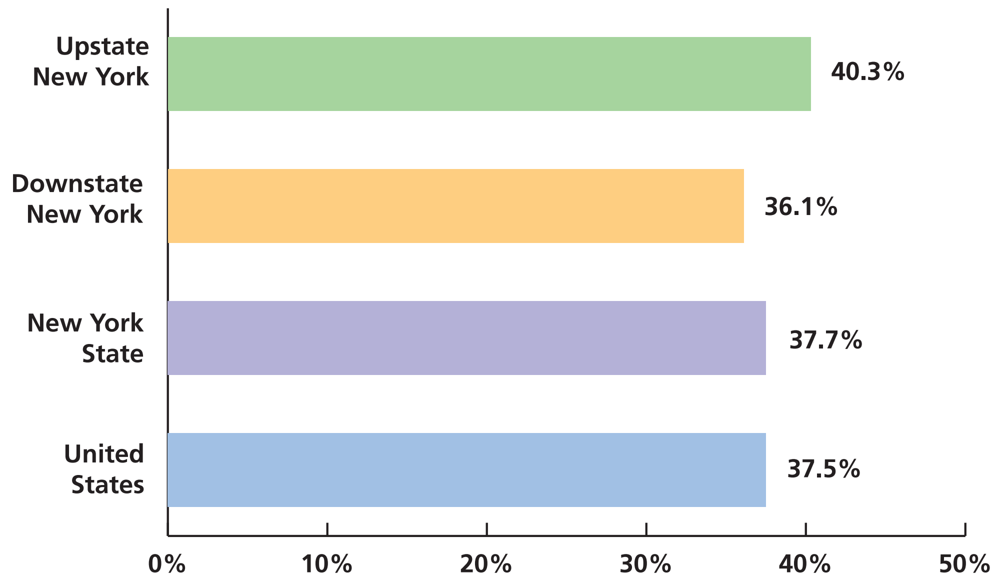
  [For those who have had cholesterol screening]:
- ***About how long has it been since you last had your blood cholesterol checked?***

The National Cholesterol Education Program recommends that adults (ages 20 and older) be screened at least every five years. The BRFSS statistics show that:

- In upstate News York, 19.1 percent of adults have never had their cholesterol checked;
- The vast majority (74.3 percent) of upstate adults have been tested within the past five years;
- Compared to upstate adults, a lower percentage (16.5 percent) of downstate adults has never had their cholesterol checked;
- Statewide, 17.3 percent of adults have never had their cholesterol checked and 77.1 percent of adults have had screening within the past five years;
- In the U.S., 21.5 percent of adults have never had their cholesterol checked (data not shown).[10]

High cholesterol prevalence

Percent who have had their cholesterol checked and have been told it was high: Upstate and Downstate New York, NYS, and US adults, (ages 18+), 2007



Sources: Obtained from: The New York State Department of Health, Behavioral Risk Factor Surveillance System, 2007 (to request access: http://www.health.state.ny.us/nysdoh/brfss/). and The United States Centers for Disease Control and Prevention, Behavioral Risk Factor Surveillance System: http://apps.nccd.cdc.gov/BRFSS/list.asp?cat=CA&yr=2007&qkey=4392&state=All.

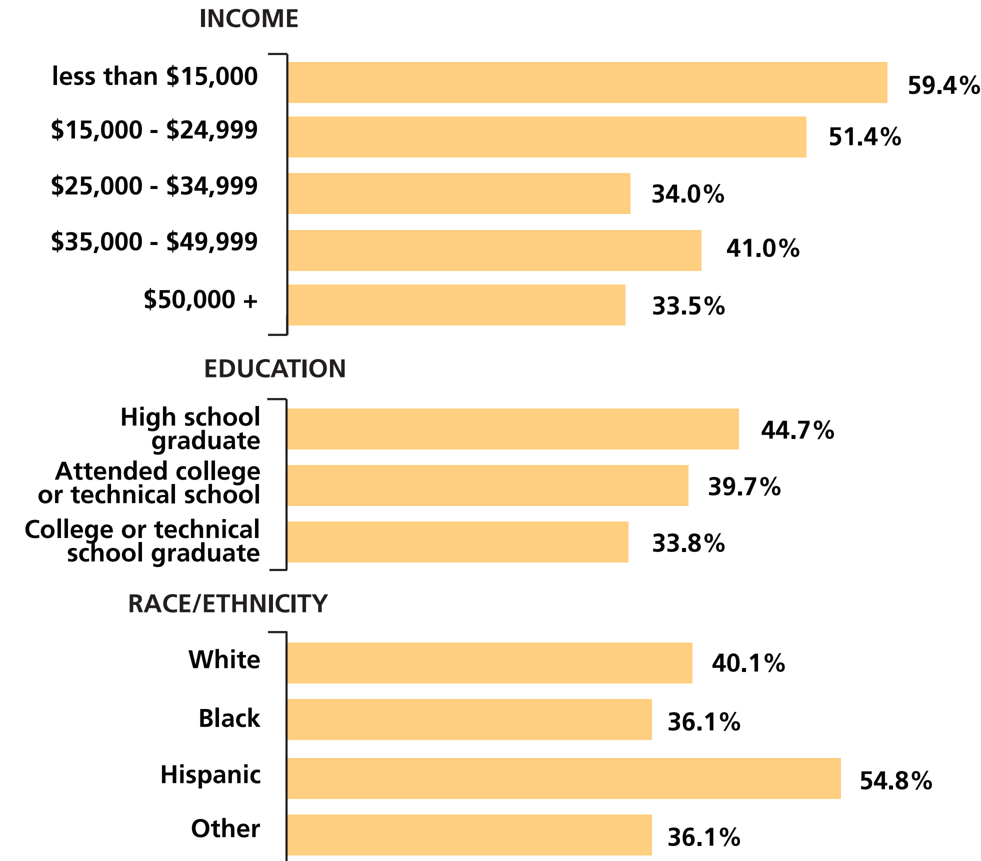
The BRFSS survey asks respondents who report having had cholesterol screening in the past:

Have you ever been told by a doctor, nurse or other health professional that your blood cholesterol is high?

- Approximately 40.3 percent of upstate New Yorkers who have had screening have been diagnosed with high cholesterol;
- Across upstate regions, high cholesterol prevalence ranges from 36.0 percent in the Southern Tier to 43.4 percent in Central New York (see map on page 1);
- Downstate, approximately 36.1 percent of those ever screened have been told by a medical professional that their cholesterol was high. The statewide percentage is 37.7.

Socioeconomic disparities in high cholesterol prevalence

High cholesterol prevalence by socio-demographic factors: Upstate New York adults, (ages 18+), 2007



Sources: Obtained from: The New York State Department of Health, Behavioral Risk Factor Surveillance System, 2007 (to request access: http://www.health.state.ny.us/nysdoh/brfss/).

Occurrence of high cholesterol in upstate adults differs by economic and socio-demographic factors. In general, high cholesterol prevalence:

- **Decreases with income.** Approximately 59.4 percent of adults with an annual household income less than $15,000 have a high cholesterol diagnosis. In contrast, of those whose income is $50,000 or higher, 33.5 percent reported this diagnosis.
- **Decreases with increasing education.** Of those educated through high school, 44.7 percent have reported a high cholesterol diagnosis versus 33.8 percent of college or technical school graduates;
- **Is higher among adults of Hispanic origin.** Close to 55 percent of Hispanic adults have high cholesterol, while 40.1 percent of white (non-Hispanic) adults have high cholesterol;

Costs

Aggregate and per resident spending to treat adult high cholesterol in Upstate New York, by region, ages 18+, 2007

Region	Estimated aggregate annual health spending	Estimated annual spending per adult resident
Central New York	$51 million	$62
Finger Lakes Region	$42 million	$52
Southern Tier	$20 million	$51
Utica/Rome/North Country	$35 million	$59
Western New York	$72 million	$60
Upstate New York	**$221 million**	**$58**

Health service spending categories include: hospital care, physician and clinical services, prescription drugs, home health care, nursing home care, dental care, and other professional services.

Source: U.S. health spending: Roehrig C., Miller G., Lake, C., Bryant J.: National health spending by medical condition. Health Affairs, February 24, 2009.

Treatment costs are among the burdens of high cholesterol. Though healthy diet and other lifestyle choices are often effective, prescription therapy is advised in many cases and comprises the bulk of immediate treatment expenses. Advancing age and the likely presence of co-morbid conditions is inflationary. By one estimate, there is more than a two-fold rise in expenditures for those with two (compared to no) co-existing chronic conditions.[11] Finally, other costs include clinical/professional services, lost productivity and downstream pain and suffering.

On average, annual health costs to treat those with high cholesterol are an estimated $142 per affected person.[12] This figure, applied to 2007 population and prevalence in upstate New York, translates to aggregate annual health spending of $221 million. As applied similarly across upstate regions, aggregate costs range from $20 million in the Southern Tier to $72 million in Western New York. Annual health spending per adult upstate resident averages $58.

End Notes

[1] The Behavioral Risk Factor Surveillance System (accessed by request through: http://www.health.state.ny.us/nysdoh/brfss/) was used to calculate prevalence estimates. These prevalence estimates were then combined with inflation-adjusted high cholesterol healthcare spending figures from a recent national study[2] to calculate estimated costs for New York state and upstate New York. Relevant population bases were obtained from Census Bureau (American Community Survey): http://www.census.gov/acs/www/index.html and the Empire State Data Center: http://www.empire.state.ny.us/nysdc/popandhous/ESTIMATE.asp.

[2] Roehrig C., Miller G., Lake, C., Bryant J.: *National health spending by medical condition*. Health Affairs, February 24, 2009. The cost estimates in this fact sheet assume that the 19 percent average annual inflation (1996-2005) found in this study occurred in 2006 and 2007. The resulting figures were applied to the population of each region. Calculated aggregate spending figures equal national per capita costs multiplied by the number of affected people in a region. Calculated per capita (resident) costs equal aggregate costs for a region divided by the number of adult residents in that region. Cost estimates also were inflated to account for the estimated one percent prevalence among children[5] who were included the study's cost estimates, but not in the BRFSS prevalence data. The complete study is at: http://content.healthaffairs.org/cgi/content/abstract/28/2/w358 (subscription required for full access). Its methodology is at: http://www.academyhealth.org/files/2009/tuesday/RoehrigC.pdf.

[3] Mendes, E: *High Blood Pressure, Cholesterol Burden at least one in four*. Gallup-Healthways: April 14, 2009, Page 1: http://www.gallup.com/poll/117454/high-blood-pressure-cholesterol-burden-least.aspx.

[4] The Council of State Governments: (Healthy States Trends Alert), *Costs of Chronic Diseases: What Are States Facing?* 2006. Page 15: http://www.healthystates.csg.org/NR/rdonlyres/DA24108E-B3C7-4B4D-875A-74F957BF4472/0/ChronicTrendsAlert120063050306.pdf

[5] Partnership for Solutions (led by Johns Hopkins University and The Robert Wood Johnson Foundation), *High cholesterol: Common Co morbidities*, July 2004. Page 1: http://www.partnershipforsolutions.org/DMS/files/High_Cholesterol_Fact_Sheet.doc.

[6] To request access to the BRFSS data, see: http://www.health.state.ny.us/nysdoh/brfss/.

[7] Roehrig C., et al., 2009.

[8] The National Institutes of Health: *Third Report of the National Cholesterol Education Program (NCEP). Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults (Adult treatment panel III) Final Report.* September 2002. Page II-5: http://www.nhlbi.nih.gov/guidelines/cholesterol/atp3full.pdf

[9] Mayo Clinic staff, *High blood cholesterol*: http://www.mayoclinic.com/health/high-blood-cholesterol/DS00178/DSECTION=risk-factors.

[10] State and national BRFSS data can be accessed through the Centers for Disease Control and Prevention: http://apps.nccd.cdc.gov/BRFSS/list.asp?cat=CA&yr=2007&qkey=1488&state=All.

[11] The Partnership for Solutions, July 2004. Page 2.

[12] Roehrig C., et al., 2009.