

Diabetes, Heart Disease and Stroke in Oregon 2013



Oregon
Health
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PUBLIC HEALTH DIVISION
Health Promotion & Chronic
Disease Prevention Section

VOLUME 1:
Report Overview
Diabetes, Heart Disease
and Stroke in Oregon
2013

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EXECUTIVE SUMMARY



Diabetes, heart disease and stroke and their associated risk factors lead to more disability and death than any other conditions in Oregon. Combined, these diseases affect one in seven Oregonians, cost \$1.5 billion in hospitalizations, and cause more than a quarter of all deaths in Oregon annually.

This report presents data on diabetes, heart disease and stroke prevalence, deaths and hospitalizations. The report also explores common risk factors across these conditions in Oregon.

Diabetes, heart disease and stroke share common behavioral risk factors, and disproportionately affect some communities more so than others. Risk factors for diabetes, heart disease and stroke include cigarette smoking, obesity, high blood pressure, lack of physical activity, inadequate consumption of fruits and vegetables, excessive consumption of sodium and consumption of trans fats. People of lower socioeconomic status, African Americans and Native Americans have a higher prevalence of these risk factors compared to all other Oregon communities, and consequently have higher rates of diabetes, heart disease and stroke.

Key findings of this report include:

- ▶ In 2011, 15% of adults in Oregon reported having heart disease, stroke or diabetes.
 - There are approximately 278,000 adults with diabetes in Oregon.
 - Approximately 123,000 adults in Oregon have heart disease.
 - Approximately 87,000 adults in Oregon are stroke survivors.
- ▶ Shared risk factors for diabetes and heart disease are highly prevalent among adults in Oregon.
 - Sixty-three percent of Oregon adults are either obese, have high blood pressure or high cholesterol, and 8% of Oregon adults have all three of these conditions.
 - In 2011, approximately one in five (20%) of all Oregon adults were current cigarette smokers.





- ◆ Among adults with heart disease, stroke or diabetes, approximately one in four (25%) are also current cigarette smokers.
- Sixty-two percent of all Oregon adults are considered overweight or obese.
 - ◆ Among adults with heart disease or stroke, 74% are overweight or obese.
 - ◆ Among adults with diabetes, 83% are overweight or obese.
- ▶ Shared risk factors for heart disease, stroke and diabetes disproportionately affect some Oregon communities more than others.
 - Oregon adults with less than a high school education are nearly five times more likely to report current cigarette smoking compared to Oregon adults with a college degree.
 - The prevalence of obesity among adults with less than a high school education is nearly double that of adults with a college degree.
 - Oregon adults with less than a high school education are approximately 23% more likely to have high cholesterol and 24% less likely to have had a cholesterol screening in the past five years compared to Oregon adults with a college degree.
 - The prevalence of obesity among non-Latino American Indian and Alaska Native persons is approximately 56% higher than non-Latino white persons.

- The percentage of African American persons who reported high blood pressure is nearly double that of white persons.
- ▶ Together, diabetes, heart disease and stroke combined lead to more death and disability than any other conditions in Oregon, and are among the most costly health conditions.
 - Combined, diabetes, heart disease and stroke account for more than a quarter (28%) of all deaths in Oregon.
 - Nearly 48,000 hospitalizations were due to diabetes, heart disease and stroke in 2011, costing nearly \$1.5 billion.

The Oregon Heart Disease and Stroke Prevention, and Diabetes Prevention programs focus on developing and implementing comprehensive, community-wide interventions to prevent and control diabetes, heart disease and stroke.

The Health Promotion and Chronic Disease Prevention Section of the Oregon Public Health Division is working with local and state partners to prevent and control diabetes, heart disease and stroke by:

- ▶ Increasing availability of healthy foods and beverages in child care facilities, schools, worksites and neighborhoods;
- ▶ Increasing places where people can move more safely;
- ▶ Increasing the number of environments that are tobacco-free;
- ▶ Increasing referrals to self-management programs so that people with chronic disease can live well and take care of themselves;



- ▶ Improving delivery and use of quality health care services through the physician promotion of the ABCS — **A**1C checks, **B**lood pressure control, **C**holesterol control, **S**moking cessation and reduced **S**odium consumption.

This comprehensive, community-wide approach makes eating better, moving more, and living tobacco-free easier for all Oregonians wherever they live, work, play and learn.

VOLUME 1

Volume 1 will:

1. Define diabetes;
2. Define heart disease and stroke;
3. Introduce common risk factors that increase an individual's chance of developing diabetes, heart disease and stroke and proven interventions to help with prevention and management; and
4. Discuss community and health system efforts to help people take care of themselves.

VOLUME 2

Volume 2 will present detailed data tables and graphs showing the prevalence of risk factors for diabetes, heart disease and stroke across select demographics, chronic diseases and risk factors.

VOLUME 3

Volume 3 will present detailed data tables and graphs showing:

1. Diabetes prevalence across select demographics, chronic diseases and risk factors;
2. Diabetes hospitalizations and associated costs; and
3. Diabetes deaths.

VOLUME 4

Volume 4 will present detailed data tables and graphs showing:

1. Heart disease prevalence across select demographics, chronic diseases and risk factors;
2. Heart disease hospitalizations and associated costs; and
3. Heart disease deaths.

VOLUME 5

Volume 5 will present detailed data tables and graphs showing:

1. Stroke prevalence across select demographics, chronic diseases and risk factors;
2. Stroke hospitalizations and associated costs; and
3. Stroke deaths.



Diabetes, Heart Disease and Stroke in OREGON

Combined, these diseases affect

1 in 7
Oregonians

and cost \$1.5 billion in hospitalizations in 2011.



Diabetes, heart disease and stroke cause more than a quarter of all deaths in Oregon annually.

78% of Oregon adults have at least one risk factor.

Common risk factors (below) contribute to the development of diabetes and heart disease, and increase the risk of future heart attack and stroke.

Among Oregon adults:

- 1 in 4** is obese.
- 1 in 5** smokes cigarettes.
- 1 in 3** has high cholesterol.
- 1 in 4** has high blood pressure.
- 1 in 5** is physically inactive.

Risk factors for DIABETES, HEART DISEASE and STROKE affect some communities more than others.

Compared to adults with a college degree, adults with less than a high school education are:

2x more likely to be obese.

3x more likely to smoke cigarettes.

Compared to non-Latino whites, American Indian and Alaska Native adults are:

2x more likely to be obese.

2x more likely to smoke cigarettes.

Overview

For the first time, the Oregon Public Health Division is reporting jointly on diabetes, heart disease and stroke. This combined report addresses the connections between these conditions, including ways communities in Oregon can better support people with diabetes, heart disease and stroke in eating well, moving more, living tobacco-free, and having tools to help them take care of themselves.

Diabetes, heart disease and stroke lead to more death and disability than any other conditions in Oregon. In 2011, 15% of adults reported having heart disease, stroke or diabetes. Together, these three diseases are among the most costly health conditions in Oregon. Hospitalizations due to heart disease, stroke and diabetes cost Oregon nearly \$1.5 billion in 2011 and caused 28% of all deaths in Oregon.

These diseases are interrelated and complex. Heart disease and stroke are a major complication of diabetes and the leading cause of early death among people with diabetes.¹ People with uncontrolled diabetes have high amounts of glucose (sugar) in the blood, which over time can lead to increased deposits of fatty materials on the inside of the blood vessel walls. These deposits affect blood flow to the heart and brain, increasing the chance of clogging and hardening of the arteries, and consequently increasing the risk for heart disease and stroke. Adults with diabetes are two to four times more likely to have heart disease or suffer a stroke than people without diabetes.² Additionally, heart attacks in people with diabetes are more serious and more likely to result in death compared to those without diabetes.¹ Two out of three people with diabetes die of heart disease or stroke.²



In addition to those who already have these chronic conditions, many more Oregonians are at risk of developing them. In order to prevent or delay the onset of diabetes, heart disease and stroke, the following underlying risk factors of these diseases need to be addressed:

- ▶ Tobacco use;
- ▶ Exposure to secondhand smoke;
- ▶ Obesity;
- ▶ High blood pressure;
- ▶ High blood cholesterol;
- ▶ Inadequate consumption of fruits and vegetables;
- ▶ High sodium consumption;
- ▶ Consumption of trans fats;
- ▶ Lack of physical activity.





1.1 Diabetes

Diabetes is a chronic metabolic disease in which glucose (sugar) levels in the blood are above normal. High blood sugar occurs when the body does not produce insulin (Type 1 diabetes), or when the body resists and does not properly respond to insulin (Type 2 diabetes). Insulin is a hormone essential to regulation of blood sugar. An estimated 95% of all diabetes cases are classified as Type 2 diabetes, which is largely preventable.² If not carefully managed, high blood sugar can cause blindness, skin infections, nerve damage and kidney damage. Today, diabetes is the leading cause of kidney failure, new cases of blindness and non-traumatic lower-leg amputations among adults in the U.S.² Diabetes also contributes to high blood pressure and high cholesterol, both of which are primary risk factors for heart disease and stroke.

During the past 20 years, the prevalence of diabetes among adults in Oregon has more than doubled, increasing from 4% in 1990 to more than 8% in 2011 (Figure 1.1). Approximately 278,000 Oregon adults have diabetes, and it is estimated that another 35% of adults (over 1 million more adults) have prediabetes, a condition in which blood sugar levels are higher than normal but not high enough to be considered diabetes.² Diabetes is the seventh leading cause of death in Oregon, accounting for 3% of all deaths.

The total cost of diabetes in Oregon is estimated to be nearly \$3 billion per year.³ In 2011, there were 4,274 hospitalizations due to diabetes with an average cost of \$21,000 per hospitalization. The American Diabetes Association estimates

that nearly \$2.2 billion is spent in Oregon from excess medical expenditures associated with diabetes each year, averaging \$7,800 per person with diabetes. In addition, costs associated with reduced productivity from diabetes-related death and disability are estimated to be \$840 million.

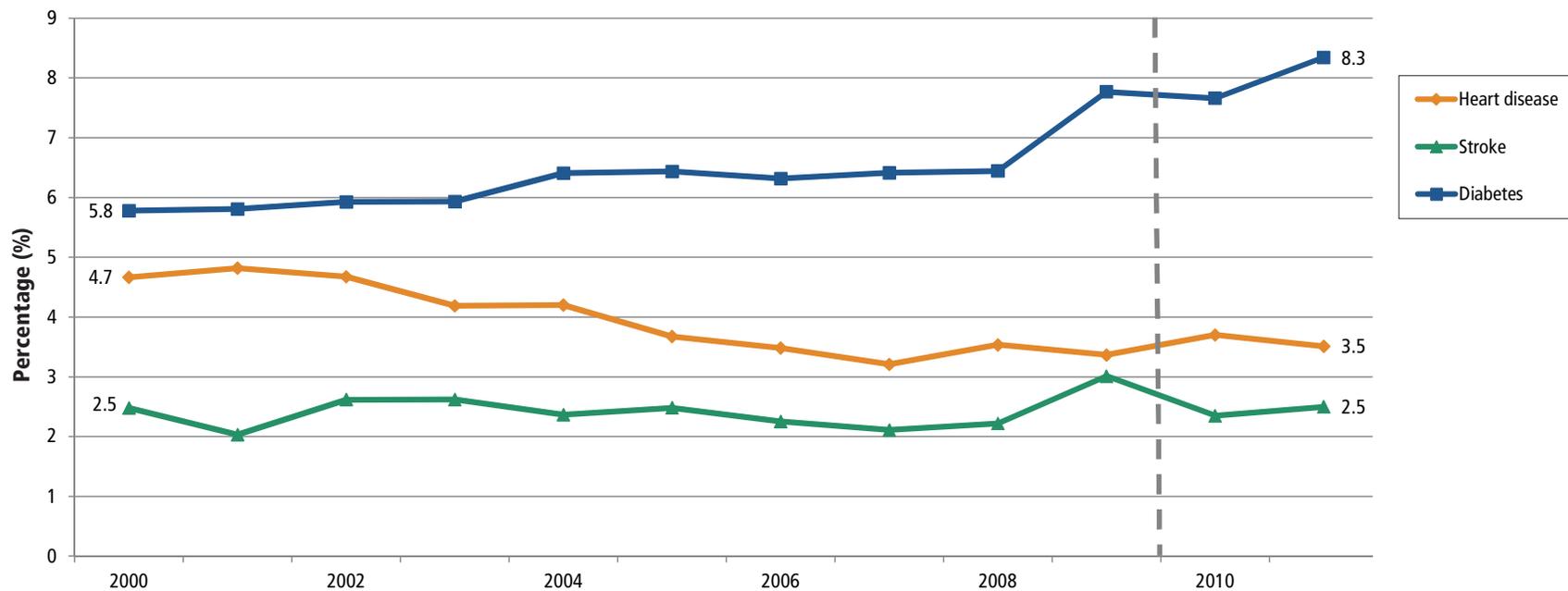
A healthy diet and regular physical activity may prevent or delay the onset of prediabetes and Type 2 diabetes. Once diagnosed, diabetes is usually a lifelong disease. Treatment includes eating better, moving more and taking medication, if prescribed, to manage blood sugar and reduce potentially harmful complications. Diabetes education programs can help people with diabetes learn how to take care of themselves and live better with their disease.

1.2 Heart disease and stroke

Cardiovascular disease is a class of diseases that involve the heart or blood vessels, which includes both heart disease and stroke.⁴ Heart disease most often involves the narrowing or blocking of arteries due to the buildup of cholesterol on the walls of the arteries. Blocked arteries can cause a heart attack, which occurs when a section of the heart muscle dies or is damaged due to reduced blood supply.⁵

There are two types of stroke, ischemic and hemorrhagic.⁶ An ischemic stroke occurs when blood flow to a part of the brain stops due to an obstruction, such as a fatty deposit or blood clot. If blood flow is stopped for longer than a few seconds, the brain cannot get blood or oxygen and brain cells can die, which can lead to permanent brain damage. Approximately 87% of all stroke cases in the U.S. are ischemic strokes.⁷ Hemorrhagic stroke occurs when a weakened blood vessel within the brain ruptures or leaks.⁶

FIGURE 1.1 DIABETES, HEART DISEASE AND STROKE AMONG ADULTS, OREGON, 2000–2011



Data source: Oregon Behavioral Risk Factor Surveillance System: National data from the National Behavioral Risk Factor Surveillance System.

Note: The vertical dashed line denotes a different adjustment method and inclusion of cellular phones in the sample. Starting in 2010, estimates are not comparable to earlier years. Estimates are age-adjusted.

In the past 12 years, the proportion of the adult population with heart disease has decreased by 25%, while the percentage of adults who have had a stroke has remained relatively unchanged (Figure 1.1). In 2011, 4% of Oregon adults had heart disease and 3% were stroke survivors.

During the past 20 years, Oregon has seen significant reductions in the rates of death due to heart disease and stroke. From 1990 to 2011, the heart disease death rate declined by 48%, and the stroke death rate declined by 42%. However, heart disease is still the second leading cause of death in Oregon, while stroke is the fourth leading cause of death. Combined, these two conditions account for 25% of all deaths in Oregon.

Heart disease and stroke are also among the most costly conditions to Oregonians. In 2011, there were 29,839 hospitalizations due to heart disease with an average cost of nearly \$39,000 per hospitalization; 7,762 stroke hospitalizations had an average cost of almost \$33,000 per hospitalization.

Clinical prevention efforts to reduce heart disease and stroke focus on appropriate aspirin therapy, blood pressure control, cholesterol control and quitting cigarette smoking.





1.3 Reducing risk factors for diabetes, heart disease and stroke through policy

Several health conditions and behaviors can increase the risk for developing diabetes, heart disease and stroke. Age, family history, race and ethnicity are all contributors to the development of diabetes, heart disease and stroke,⁸ but these contributing factors cannot be changed or controlled. However, many other risk factors for diabetes, heart disease and stroke are behaviors that people can change, including cigarette smoking and exposure to secondhand smoke, overweight and obesity, high blood pressure, high cholesterol, inadequate fruit and vegetable consumption, and lack of physical activity.⁹

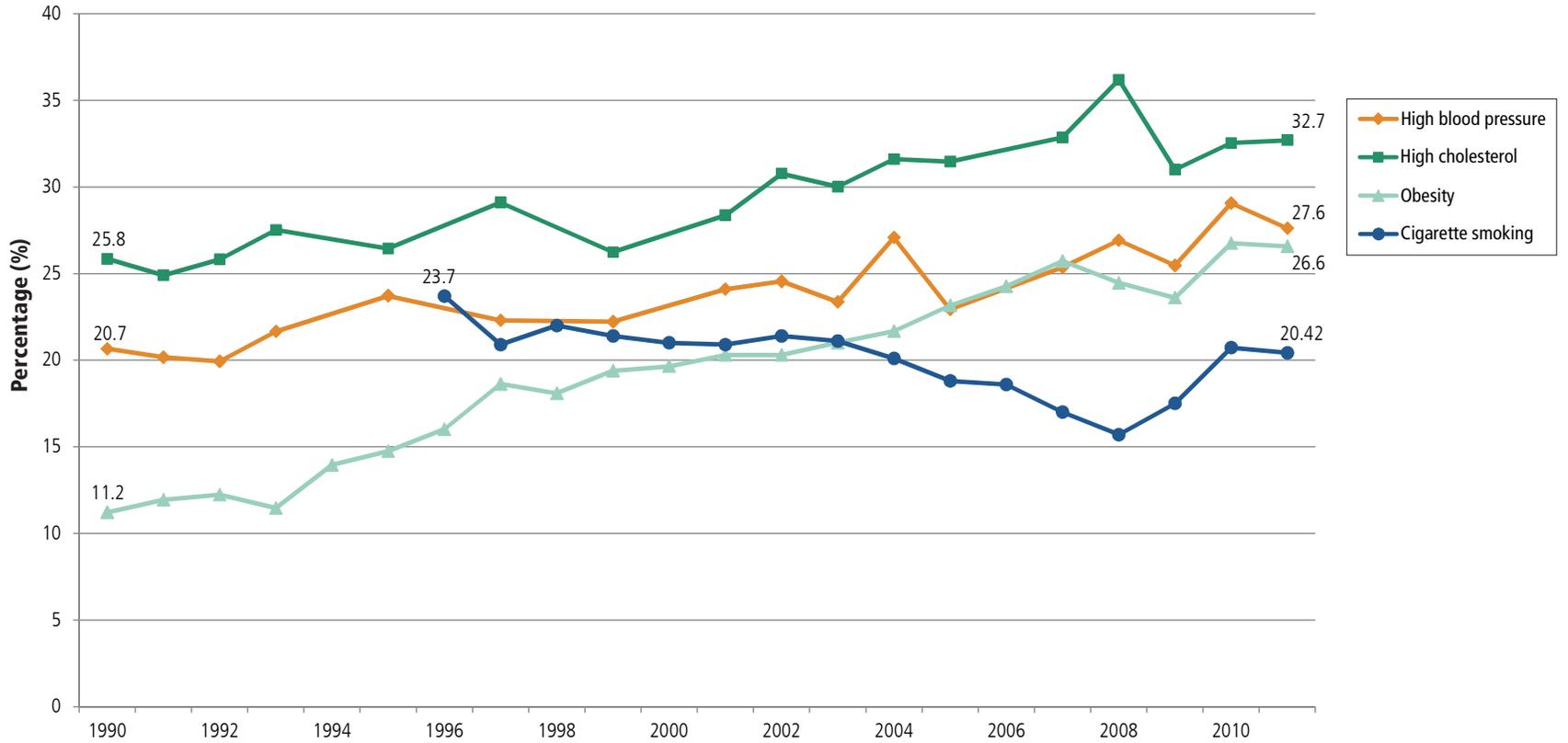
These risk factors affect some communities more so than others. People of lower socio-economic status, African Americans and Native Americans have a higher prevalence of these risk factors compared to other Oregon communities, and subsequently have a higher prevalence of diabetes, heart disease and stroke.

By implementing community-wide prevention strategies that have been proven to work, risk factors can be addressed well before chronic diseases develop. Policy, environmental and system changes have the potential to prevent or reduce heart disease and stroke, increase survival among those who have suffered a heart attack or stroke, and prevent and control diabetes.

The approaches in this report are included in the Health Promotion and Chronic Disease Prevention Section's strategic plan, and are drawn from best practice recommendations from the Centers for Disease Control and Prevention, as well as reports from Oregon task forces and committees, including the HB 3486 Advisory Committee's Strategic Plan to Slow the Rate of Diabetes in Oregon¹⁰ and the SB 931 Task Force for a Comprehensive Obesity Prevention Initiative's Policy Recommendations.¹¹ In addition, many of these approaches are included in the Oregon Public Health Division Strategic Plan for 2012–2017,¹² which includes strategic priorities around preventing tobacco use, decreasing overweight and obesity, and reducing the burden of heart disease and stroke.

Policy approaches to reduce diabetes, heart disease and stroke risk factors are discussed throughout this report. Strategies are included to increase access to evidence-based chronic disease self-management programs and lifestyle interventions to improve quality of life and reduce health care costs. Additional strategies addressed in this section include those aimed at improving delivery and use of quality community and health care services to prevent disease, detect disease early and manage risk factors.

FIGURE 1.2 HIGH BLOOD PRESSURE, HIGH CHOLESTEROL, OBESITY AND CIGARETTE SMOKING AMONG OREGON ADULTS, 1990–2011



Data source: Oregon Behavioral Risk Factor Surveillance System: National data from the National Behavioral Risk Factor Surveillance System.

Note: The vertical dashed line denotes a different adjustment method and inclusion of cellular phones in the sample. Starting in 2010, estimates are not comparable to earlier years. Estimates are age-adjusted.



Cigarette smoking and exposure to secondhand smoke

Cigarette smoking is a leading cause of heart disease and stroke and worsens the quality of life for people living with diabetes. Cigarette smoking decreases oxygen to the heart, increases blood pressure and heart rate, increases blood clotting and damages cells that line arteries and other blood vessels.¹³ Cigarette smoking doubles the risk of heart disease for people with diabetes.¹

In Oregon, 20% of adults smoke cigarettes. Oregon adults with less than a high school education are nearly five times more likely to report current cigarette smoking compared to Oregon adults with a college degree. One-quarter of those who report having heart disease, stroke or diabetes are current cigarette smokers. In 2011, 7% of Oregon eighth-graders and 12% of 11th-graders smoked cigarettes. Those exposed to secondhand smoke, including nonsmokers, are also at an increased risk of heart disease and stroke. In 2011, 13% of adult Oregonians reported exposure to secondhand smoke while at work.

Fortunately, the prevalence of cigarette smoking among Oregon adults and youth has declined over the last 15 years. From 1996 to 2011, cigarette smoking prevalence declined by 14% among adults (Figure 1.2). From 1996 to 2011, cigarette smoking prevalence declined by 69% among eighth-graders, and nearly 58% among 11th-graders.

In addition, exposure to secondhand smoke at work has declined due to comprehensive smoke-free workplace laws. Exposure to secondhand smoke in the home has also declined as more adults report instituting cigarette smoking bans within their homes. From 1998 to 2011, Oregon adults reporting that there is no cigarette smoking allowed in their home rose 21%, from 75% to 91%.



Policy strategies to reduce tobacco use and secondhand smoke exposure:

Increase the number of environments where Oregonians live, work, learn and play where tobacco use is prohibited. Tobacco-free policies in worksites and public places reduce exposure to secondhand smoke and support those who are trying to quit tobacco, contributing to the prevention of heart disease and stroke and complications related to diabetes.

Increase the price of tobacco products, with a portion dedicated to a comprehensive tobacco control program. Increasing the price of cigarettes has been shown to reduce youth cigarette smoking initiation and cigarette consumption. Raising the price of tobacco reduces demand and decreases the prevalence of tobacco use, thereby reducing associated death and disease. Investing in tobacco control also reduces overall tobacco use. Oregon's comprehensive Tobacco Prevention and Education Program funds local tobacco control efforts throughout Oregon focused on adults and youth, operates the Oregon Tobacco Quit Line, and conducts statewide education campaigns warning about the dangers of tobacco use and secondhand smoke exposure. Currently Oregon's Tobacco Prevention and Education Program receives approximately \$9 million per year for tobacco use prevention, which is \$39.3 million less than the annual funding level recommended by the U.S. Centers for Disease Control and Prevention.¹⁴



Obesity

People who are obese are at much higher risk for developing diabetes, heart disease and stroke. Having excess body weight causes the heart to work harder and increases the risk of high blood pressure and high cholesterol.¹⁵ Sixty-two percent (over 1.8 million) of Oregon adults are considered to be overweight or obese. The prevalence of obesity among adults with less than a high school education is nearly double that of adults with a college degree. The prevalence of obesity among non-Latino American Indian and Alaska Native persons is approximately 56% higher than non-Latino white persons.

While the percentage of Oregon adults who are overweight has remained relatively unchanged during the past 20 years, the percentage of adults who are obese has nearly doubled. Mirroring the rise in diabetes, adult obesity increased from 11% in 1990 to 27% in 2011 (Figure 1.2). Among adults with diabetes, 48% are obese, and 35% of people with heart disease or stroke are obese. Obesity contributes to the deaths of 1,500 Oregonians each year,¹⁶ making it second only to tobacco as the state's leading cause of preventable death. Among Oregon youth, approximately 17,500 Oregon eighth- and 11th-graders were overweight or obese in 2011.

Policy strategies to decrease overweight and obesity:

Increase the price of sugary drinks to discourage use, with a portion dedicated to a comprehensive obesity prevention and education program. Although the causes of obesity are complex, there are strong associations between consumption of sugary drinks and weight gain in adults and children.^{17,18,19,20} Consumption of sugary drinks is the largest contributor of calories and added sugars to the American diet.²¹ Raising the price of sugary beverages will reduce consumption.

Develop comprehensive obesity prevention and education programs to support efforts addressing diabetes, heart disease and stroke risk factors. Oregon needs an evidence-based, comprehensive obesity prevention program modeled on the state's successful comprehensive tobacco prevention program to effectively address the obesity epidemic. A comprehensive statewide obesity prevention and education program would coordinate efforts to establish policies and social norms that promote daily physical activity and healthful eating. A comprehensive program would also help Oregonians make physical activity and healthful eating a part of their everyday lives, which will prevent the development of serious chronic diseases caused by obesity, including diabetes, heart disease and stroke.



High blood pressure

High blood pressure is often referred to as the “silent killer” because many people do not realize they have it. Blood pressure is the force of blood against artery walls as it circulates through the body. Blood pressure normally rises and falls throughout the day, but it can cause health problems if it stays high for extended periods of time. Having high blood pressure increases risk for heart attack and stroke, and can be caused by cigarette smoking, overweight or obesity, and excessive sodium in the diet.²² Having diabetes also increases the risk of developing high blood pressure.²³ In Oregon, 68% of adults with diabetes and 56% of adults with heart disease

or stroke also have high blood pressure, compared with 28% of the general population. The percentage of African American persons who report high blood pressure is nearly double that of white persons. According to the Centers for Disease Control and Prevention, nearly one in three American adults (68 million people) has high blood pressure, and more than half of them do not have it under control.²⁴ During the last 20 years, high blood pressure in the Oregon adult population increased by 34%, from 21% in 1990 to 28% in 2011 (Figure 1.2).

Policy strategy to address high blood pressure, high cholesterol and low consumption of fruits and vegetables:

Reduce access to sugary beverages and foods high in sodium and trans fats by adopting and implementing nutrition standards for foods and beverages sold in cafeterias, stores and vending machines. Oregon can lower blood pressure and cholesterol levels in the population by reducing trans fats and sodium in the food supply. Overweight and obesity, risk factors for high blood pressure and high cholesterol, can be reduced by limiting access to sugary beverages and foods high in calories and low in nutritional value, and increasing availability of nutritious foods that meet the U.S. Dietary Guidelines. Child care settings, schools, worksites, health systems, and state and local governments can make it easier for individuals to choose healthy food and drink options through nutrition standards and policies that increase convenient access to fruits and vegetables and other healthy foods and drinking water. These policies should also decrease access to unhealthy foods and beverages.



High cholesterol

Cholesterol helps the body build new cells, insulate nerves and produce hormones. However, too much cholesterol in the blood can build up on the walls of arteries and block blood flow to vital organs such as the heart and brain, which can lead to heart disease and stroke.²⁵ High cholesterol is also an indicator for diabetes, as elevated levels of cholesterol are seen in people with insulin resistance. High cholesterol is caused by excess fat — particularly trans fats — in the diet, being overweight or obese, lack of physical activity and cigarette smoking. In Oregon, 64% of adults with diabetes and 67% of adults with heart disease or stroke have high cholesterol, compared with 33% of the general population. Oregon adults with less than a high school education are 23% more likely to have high cholesterol and 24% less likely to have had a cholesterol screening in the past five years compared to Oregon adults with a college degree. During the last 20 years, high cholesterol in the Oregon adult population increased by 26%, from 26% in 1990 to 33% in 2011.

Inadequate consumption of fruits and vegetables

Consuming a diet with an adequate amount of fruits and vegetables is associated with lower risks for overweight and obesity, which are risk factors for many chronic diseases including diabetes, heart disease and stroke.²⁶ The 2010 “Dietary Guidelines for Americans”²⁶ emphasize three major goals for adults and children: 1) Balance calories with physical activity to manage weight; 2) Eat more of certain foods and nutrients, such as fruits, vegetables, whole grains, fat-free and low-fat dairy products, and seafood; and 3) Eat foods lower in sodium (salt), saturated fats, trans fats, cholesterol, added sugars and refined grains. Following these guidelines can help people achieve and maintain a healthy body weight, which is a key prevention strategy for many chronic diseases and their associated risk factors. However, the percentage of Oregon adults who consume five or more servings of fruits and vegetables per day has remained relatively unchanged for 15 years (Figure 1.2). In 2011, only 22% of adults reported consuming five or more servings of fruits and vegetables each day, while 27% of Oregon eighth-graders and 19% of Oregon 11th-graders reported doing so.



Lack of physical activity

Daily physical activity can provide significant health benefits. Paired with a healthy diet, physical activity can promote weight loss and reduce the risk of overweight and obesity. It can also prevent diabetes, heart disease and stroke. Even without a dramatic decrease in weight, physical activity can improve blood pressure, blood glucose control and overall well-being.²⁷ Currently, the Centers for Disease Control and Prevention recommend that adults get at least two and one-half hours a week of moderate-intensity aerobic activity such as brisk walking, or one hour and 15 minutes a week of vigorous-intensity aerobic activity, such as jogging, or a combination of both. In 2011, 20% of adults reported participating in no physical activity outside of work.

In comparison, 33% of adults with heart disease and 32% of adults with diabetes reported participating in no physical activity outside of work. Among Oregon eighth-graders, 56% reported participating in a daily physical education class at school while only 39% of 11th-graders reported doing so.

Policy strategies to address lack of physical activity:

Increase physical activity through standards for physical activity and screen time. Physical activity, paired with a healthy diet, can improve blood pressure and blood glucose control, promote weight loss, and reduce the risk of overweight and obesity. Child care, schools, worksites, health systems, and state and local governments can provide physical activity opportunities for employees and students by encouraging active commuting. This can be done by installing bike racks or discounting public transportation; providing physical activity supports in the work environment, such as safe stairwells and onsite wellness centers; and allowing flexibility in schedules to give employees time for physical activity. Reducing or limiting screen time in child care and schools can also increase physical activity.

Prioritize health in transportation and land use planning initiatives. This strategy can increase opportunities for physical activity by increasing access to safe biking and walking routes, active transportation and recreation options.

1.4 Community and health system efforts to help people take care of themselves

In addition to the policy strategies discussed throughout this volume, diabetes, heart disease and stroke can be prevented or better managed through proven lifestyle intervention and chronic disease self-management programs. Quality community and clinical services can assist with the prevention, early detection and management of risk factors and chronic diseases.

Strategies to increase access to chronic disease self-management programs:

- ▶ *Prevent diabetes, heart disease and stroke and address related risk factors by increasing availability of evidence-based interventions.* Lifestyle interventions such as the National Diabetes Prevention Program can prevent or delay onset of Type 2 diabetes among people at high risk. Other evidence-based interventions include the Oregon Tobacco Quit Line, which provides tobacco cessation counseling and increases the chances of quitting successfully, and Walk with Ease, a gentle exercise program that increases walking among participants.
- ▶ *Support chronic disease self-management by increasing the availability of evidence-based programs.* Programs such as Living Well with Chronic Conditions and Tomando Control de su Salud are offered throughout Oregon to provide tools for living a healthy life with chronic health conditions,

including diabetes, heart disease, stroke, cancer, arthritis and asthma. Development of a sustainable delivery and funding infrastructure will ensure that an increased number of people with chronic diseases have access to self-management and prevention programs throughout Oregon, leading to improved health outcomes and health care cost savings.

Strategies to improve delivery and use of quality clinical and community services for prevention, early detection and management of risk factors and chronic diseases:

- ▶ Conduct screenings according to recommended guidelines for blood pressure, cholesterol and hemoglobin A1C.
- ▶ Increase clinical referrals to sustainable, evidence-based prevention and self-management education and support services for people with or at risk for diabetes, heart disease and stroke.
- ▶ Assess patients for tobacco use, providing advice to quit, and referring tobacco users to the Oregon Tobacco Quit Line, 1-800-QUIT-NOW (1-800-784-8669), and other evidence-based cessation benefits.
- ▶ Deliver health care for people with and at risk for diabetes, heart disease and stroke in accordance with clinical practice guidelines to improve control of shared risk factors for the diseases and their complications.^{27,28}
- ▶ Measure performance using standardized metrics to identify practice changes and improve quality.

Conclusions

Diabetes, heart disease and stroke are leading causes of death in Oregon and are among the most costly health conditions in the state. The risk factors for these diseases are increasingly common among adults in Oregon.

By implementing evidence-based prevention strategies, many risk factors can be addressed before chronic diseases develop. Policy, environmental and systems change strategies can prevent or reduce heart disease and stroke, increase survivability for those who have suffered a heart attack or stroke, and prevent, delay and control diabetes.

The Health Promotion and Chronic Disease Prevention Section of the Oregon Public Health Division is working with local and state partners to to prevent and control diabetes, heart disease and stroke by:

- ▶ Increasing availability of healthy foods and beverages in child care facilities, schools, worksites and neighborhoods;
- ▶ Increasing places where people can move more safely;
- ▶ Increasing the number of environments that are tobacco-free;
- ▶ Increasing referrals to self-management programs so that people with chronic disease can live well and take care of themselves;

- ▶ Improving delivery and use of quality health care services through the physician promotion of the **ABCS** — **A1C** checks, **B**lood pressure control, **C**holesterol control, **S**moking cessation and reduced **S**odium consumption.

This comprehensive, community-wide approach makes eating better, moving more and living tobacco-free easier for all Oregonians wherever they live, work, play and learn.



WHAT DOES A HEALTHY COMMUNITY LOOK LIKE?



Where you live, work,
play and learn

REFERENCES

1. National Diabetes Information Clearinghouse, National Institute of Diabetes and Digestive and Kidney Diseases. (2012.) *Diabetes, Heart Disease, and Stroke*. Bethesda, MD: U.S. Department of Health and Human Services, National Institutes of Health. Available at <http://diabetes.niddk.nih.gov/dm/pubs/stroke/>.
2. Centers for Disease Control and Prevention. (2011.) National diabetes fact sheet: National estimates and general information on diabetes and prediabetes in the United States, 2011. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention. Available at www.cdc.gov/diabetes/pubs/pdf/ndfs_2011.pdf.
3. American Diabetes Association. (2013.) Economic costs of diabetes in the U.S. in 2012. *Diabetes Care*. Apr; 36(4): 1033–1046.
4. Centers for Disease Control and Prevention (CDC). About Heart Disease. Available at www.cdc.gov/heartdisease/about.htm. Updated November 16, 2009. Accessed January 13, 2014.
5. Centers for Disease Control and Prevention (CDC). Coronary Artery Disease (CAD). Available at www.cdc.gov/heartdisease/coronary_ad.htm. Updated December 7, 2009. Accessed January 13, 2014.
6. Centers for Disease Control and Prevention (CDC). Types of Stroke. Available at www.cdc.gov/stroke/types_of_stroke.htm. Updated December 6, 2013. Accessed January 13, 2014.
7. Roger VL, Go AS, Lloyd-Jones DM, Benjamin EJ, Berry JD, Borden WB, et al. (2012.) Heart disease and stroke statistics—2012 update: a report from the American Heart Association. *Circulation*. 2012; 125(1): e2–220.
8. Centers for Disease Control and Prevention (CDC). Heart Disease Heredity. Available at www.cdc.gov/heartdisease/heredity.htm. Updated November 16, 2009. Accessed January 13, 2014.
9. Centers for Disease Control and Prevention (CDC). Heart Disease Behavior. Available at www.cdc.gov/heartdisease/heredity.htm. Updated November 16, 2009. Accessed January 13, 2014.
10. Oregon Health Authority Public Health Division Oregon Diabetes Program. Reversing the Trends of Obesity and Diabetes. Available at <http://public.health.oregon.gov/DiseasesConditions/ChronicDisease/Diabetes/Documents/hb3486/diabstratgicplnsm.pdf>. Accessed February 6, 2013.
11. Oregon Health Authority Public Health Division Obesity Prevention Task Force. SB 931: Task Force for a Comprehensive Obesity Prevention Initiative, Policy Recommendations. Available at <http://public.health.oregon.gov/PreventionWellness/ObesityPrevention/ObesityTaskForce/Documents/sb931obesitytaskforce2009final.pdf>. Accessed February 6, 2013.
12. Oregon Health Authority Public Health Division. Oregon Public Health Division Strategic Plan, 2012–2017. Available at <http://public.health.oregon.gov/About/Documents/phd-strategic-plan.pdf>. Accessed February 6, 2013.
13. U.S. Department of Health and Human Services. How Tobacco Smoke Causes Disease: The Biology and Behavioral Basis for Smoking-Attributable Disease: A Report of the Surgeon General. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, 2010. Available at www.surgeongeneral.gov/library/reports/tobaccosmoke/full_report.pdf.
14. Centers for Disease Control and Prevention Smoking and Tobacco Use programs. Best Practices for Comprehensive Tobacco Control Programs — 2007. Available at www.cdc.gov/tobacco/stateandcommunity/best_practices/pdfs/2007/BestPractices_Complete.pdf. Accessed February 6, 2013.

15. National Institutes of Health, National Heart, Lung, and Blood Institute Obesity Education Initiative. Clinical Guidelines on the Identification, Evaluation, and Treatment of Overweight and Obesity in Adults. Available at www.nhlbi.nih.gov/guidelines/obesity/ob_gdlns.pdf. Published September 1998. Accessed January 7, 2014.
16. Oregon Health Authority. CD Summary: What is Killing Oregonians: The Public Health Perspective(s). Available at <http://public.health.oregon.gov/DiseasesConditions/CommunicableDisease/CDSummaryNewsletter/Documents/2012/ohd6115.pdf>. Accessed February 6, 2013.
17. Malik VS, Schulze MB, Hu FB. (2006.) Intake of sugar-sweetened beverages and weight gain: A systematic review. *American Journal of Clinical Nutrition*. 84(2): 274–88.
18. Mozaffarian D, Hao T, Rimm EB, Willett WC, Hu FB. (2011.) Changes in diet and lifestyle and long-term weight gain in women and men. *New England Journal of Medicine*. 364: 2392–404.
19. Ebbeling CB, Feldman HA, Osganian SK, Chomitz VR, Ellenbogen SJ, Ludwig DS. (2006.) Effects of decreasing sugar-sweetened beverage consumption on body weight in adolescents: a randomized, controlled pilot study. *Pediatrics*. 117: 673–80.
20. Chen L, Appel LJ, Loria C, Lin PH, Champagne CM, Elmer PJ, Ard JD, Mitchell D, Batch BC, Svetkey LP, Caballero B. (2009.) Reduction in consumption of sugar-sweetened beverages is associated with weight loss: the PREMIER trial. *American Journal of Clinical Nutrition*. 89(5): 1299–306.
21. Institute of Medicine (IOM). (2012.) *Accelerating progress in obesity prevention: Solving the weight of the nation*. Washington, D.C.: The National Academies Press.
22. Centers for Disease Control and Prevention (CDC). High blood pressure. Available at www.cdc.gov/bloodpressure/behavior.htm. Updated February 10, 2010. Accessed January 7, 2014.
23. National Institutes of Health (NIH). (2003.) The Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure. Bethesda, MD: National Heart, Lung, and Blood Institute. Available at www.nhlbi.nih.gov/guidelines/hypertension/.
24. Centers for Disease Control and Prevention (CDC). (2011.) Vital signs: prevalence, treatment, and control of hypertension—United States, 1999–2002 and 2005–2008. *MMWR*. 60(4): 103–8.
25. Centers for Disease Control and Prevention (CDC). Heart Disease Conditions. Available at www.cdc.gov/heartdisease/conditions.htm. Updated January 27, 2012. Accessed January 7, 2014.
26. U.S. Department of Agriculture and U.S. Department of Health and Human Services. Dietary Guidelines for Americans, 2010. 7th Edition, Washington, DC: U.S. Government Printing Office, December 2010. Available at <http://health.gov/dietaryguidelines/dga2010/DietaryGuidelines2010.pdf>. Accessed January 7, 2014.
27. American Diabetes Association. (2013.) Standards of medical care in diabetes — 2013. *Diabetes Care*. 36(S1): S11–S66.
28. U.S. Department of Health & Human Services. National Heart, Lung, and Blood Institute. Clinical Practice Guidelines. Available at www.nhlbi.nih.gov/guidelines/index.htm. Accessed February 6, 2013.



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