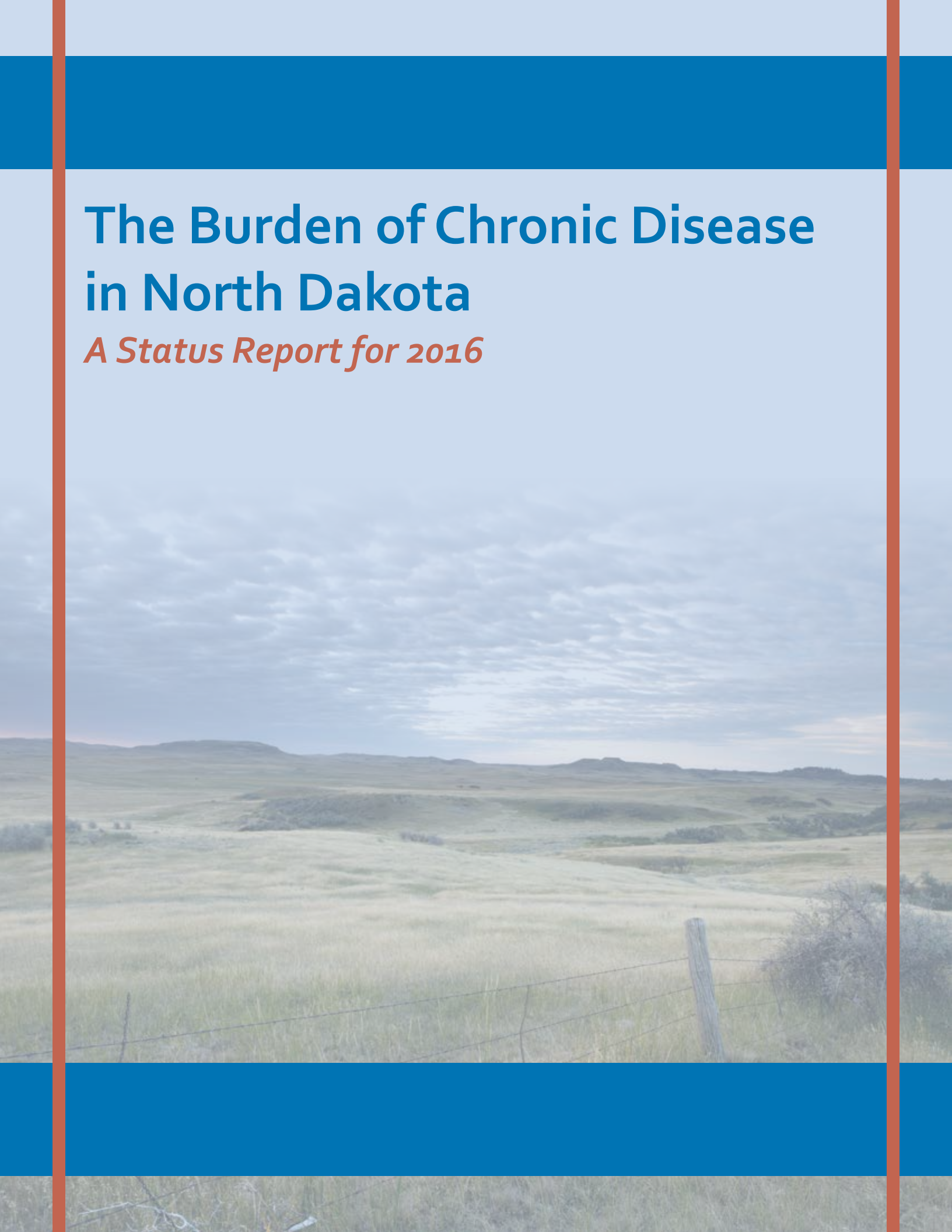
The Burden of Chronic Disease in North Dakota

A Status Report for 2016



This publication was supported by Cooperative Agreement Number DP4825-04-1, and funded by the Centers for Disease Control and Prevention. Its contents are solely the responsibility of the authors and do not necessarily represent the official views of the Centers for Disease Control and Prevention or the Department of Health and Human Services.

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A Status Report for 2016

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NORTH DAKOTA
DEPARTMENT *of* HEALTH

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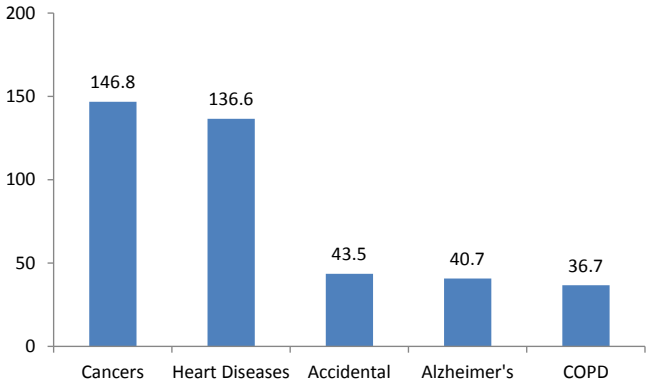
Executive Summary

Chronic diseases – such as heart disease, stroke, cancer, and diabetes – are among the most common, costly, and preventable of all health problems in the U.S. The purpose of this report is to highlight the burden of chronic disease, as well as the prevalence of associated risk and protective factors in North Dakota.

Highlights of the report include:

- Fewer than one in six North Dakota adults consume five or more servings of fruits and vegetables per day.
- More than half of North Dakota adults do not meet the recommended guidelines for physical activity.
- Two-thirds of North Dakota adults are overweight or obese.
- About one in five North Dakota adults currently smoke cigarettes.
- Over half of all adult cigarette smokers in North Dakota have stopped smoking for one or more days during the past year in an attempt to quit.
- Since 2007, the percentage of North Dakota high school students (grades 9-12) who smoke cigarettes has nearly been cut in half, falling to 11.7 percent in 2015.
- Tobacco-related illnesses account for about 1,100 deaths per year among North Dakota residents.
- Nearly one in three North Dakota adults has been diagnosed with high blood pressure, and over 80 percent of those with high blood pressure take antihypertensive medication.
- Approximately one in four North Dakota adults have never had a blood cholesterol test.
- Among North Dakota adults who have been tested for blood cholesterol, more than one in three has been diagnosed with high blood cholesterol.
- In 2015, an estimated 22,731 North Dakota adults reported ever being told they have had a heart attack or acute myocardial infarction.
- In 2015, an estimated 14,471 North Dakota adults reported ever being told they have had a stroke.
- From 2004-2013, more than one in three of all cancer cases diagnosed in North Dakota were during the late stage.
- Breast cancer is the most frequently diagnosed malignancy among North Dakota women, while prostate cancer is the most frequently diagnosed among North Dakota men; lung and colorectal cancers are the second and third most common diagnoses for both men and women.
- Nearly one in 12 North Dakota adults has been diagnosed with diabetes.
- Among North Dakota adults, diabetes is more than five times more likely among those who are obese compared to those of healthy weight.
- More than half of North Dakota students in grades 9-12 reported texting or emailing while driving a car or other vehicle on at least one of the last 30 days.
- Nearly three in four North Dakota third-grade students have experienced tooth decay while it is untreated in more than one in four of them.
- Families of about 9,500 children with special health care needs in North Dakota reported significant difficulties due to their children's health needs in 2009-2010.

Figure 1: Five leading causes of death in North Dakota per 100,000, 2015



Source: ND Resident Vital Event Summary Data, 2015

Introduction

Chronic diseases – such as heart disease, stroke, cancer, and diabetes – are among the most common, costly, and preventable of all health problems in the U.S.

It is now widely recognized that health outcomes are deeply influenced by a variety of social factors outside of health care. The dramatic differences in disease, death, and risk factors that researchers have documented within and between countries are patterned after classic social determinants of health, such as education and income, as well as characteristics of the physical and social environment in which people live and the structural policies that shape them.

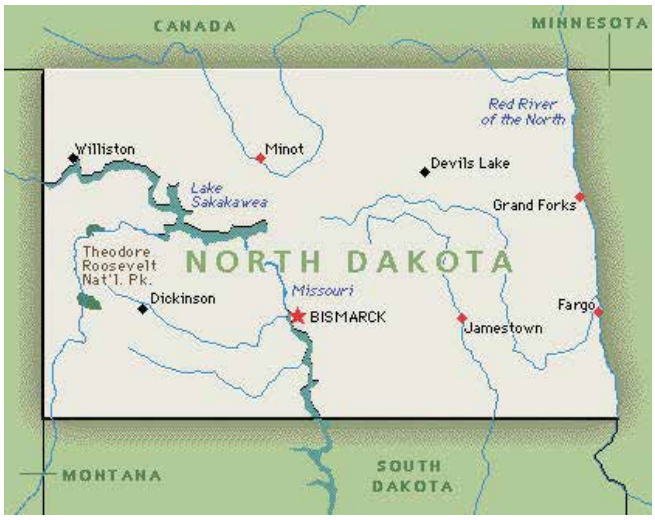
Certain health behaviors and conditions known as risk factors are associated with increased chances of developing chronic disease. "Non-modifiable" risk factors are those that people are not able to change, such as age, gender, race and heredity or family history. American Indian children, women, and families are disproportionately affected by both chronic disease risk factors and disease burden.

"Modifiable" risk factors are those factors that people can modify or control through lifestyle changes. These modifiable risk factors include dietary habits; breastfeeding; weight status; physical activity; smoking/tobacco use and exposure to secondhand smoke; management of blood pressure, cholesterol and diabetes; avoiding injuries; and maintaining oral health.

The purpose of this report is to highlight the burden of chronic disease in North Dakota, as well as the prevalence of associated risk and protective factors. Data from a variety of sources are presented throughout this report, including the North Dakota Behavioral Risk Factor Surveillance System (BRFSS), the Youth Risk Behavior Survey (YRBS), North Dakota death certificates and the North Dakota Cancer Registry.

This report is a collaborative effort among programs within the North Dakota Department of Health (NDDoH). These programs include Heart Disease and Stroke Prevention, Comprehensive Cancer Control, Diabetes Prevention and Control, Children's Special Health Services, Maternal and Child Health, Oral Health, Tobacco Prevention and Control, Injury Prevention and Control, Nutrition and Physical Activity, and Vital Records.

A Demographic Profile



According to the US Census, the population of North Dakota was 756,927 people in 2015 and the racial distribution was:

- 88.6 percent white
- 5.5 percent Native American/Alaska Native
- 2.4 percent black
- 3.5 percent Asian, Native Hawaiian/Pacific Islander, or two or more races

Additionally, 3.5 percent of North Dakota residents also identified as Hispanic ethnicity in 2015. (These residents are included in the racial distribution indicated above.)

In 2015, about one in nine (11.5%) North Dakotans were below the poverty level. In 2014, 9 percent of women and 13 percent of children under the age of 18 lived in poverty. About 24 percent of pregnant women in the state received food/nutritional items through the Women, Infants, and Children Program, geared towards low income pregnant women and families of infants and children younger than the age of 5.

1n 2015, 91.3 percent of North Dakota adults ages 25 and older had at least a high school degree (source: US Census).

In 2014, 9.5 percent of North Dakota adults reported not having health care coverage. Of those who had coverage, 79.7 percent reported having private insurance while 24.2 percent reported having public insurance, and 3.9 percent had both public and private insurance. (Source: US Census). Approximately 21 percent of North Dakota children and 26 percent of pregnant women were insured by Medicaid. Seven percent of children younger than age 18 were uninsured.

In 2015, 86.1 percent of North Dakotans ages 18 years and older reported their health status as excellent, very good or good, while 13.9 percent reported their health status as fair or poor (source: ND BRFSS).

According to North Dakota vital statistics, in 2015, 17 percent of all deaths were among adults ages 45-64 years old while the average age at death for all North Dakotans was 75.6 years.

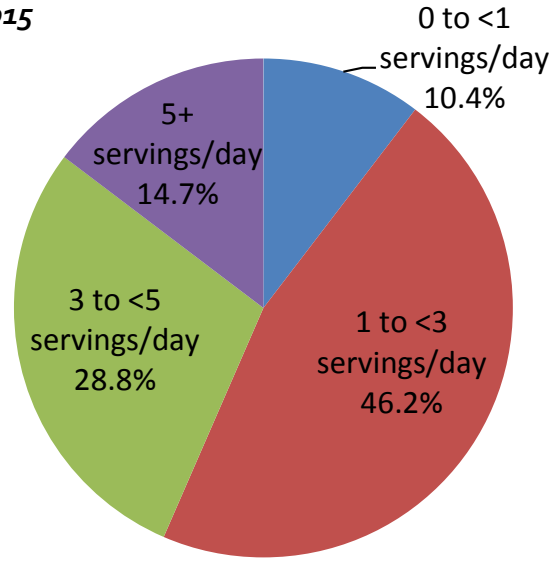
Fruit and Vegetable Consumption

Compared to people who only eat small amounts of fruits and vegetables, those who eat more generous amounts tend to have reduced risk of chronic diseases, including cardiovascular disease, stroke, type 2 diabetes, and some types of cancer.

According to the 2015-2020 Dietary Guidelines for Americans, a diet at the 2,000-calorie level recommends 2½ cup-equivalents of vegetables per day and 2 cup-equivalents of fruits per day.

Despite these recommendations, fewer than one in six adults consume five or more servings of fruits and vegetables per day (Figure 2) and fewer than one in 10 high school students (grades 9-12) consume both fruit two times or more per day and vegetables three times or more per day (Source: ND Youth Risk Behavior Survey (YRBS) 2015).

Figure 2: Adults' consumption of fruits and vegetables by servings per day, North Dakota, 2015



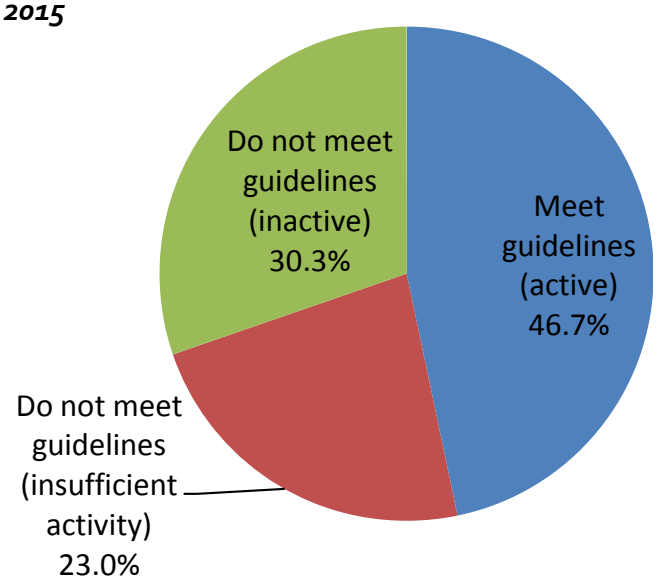
Source: ND BRFSS 2015

Physical Activity

Regular physical activity can help to control body weight and reduce the risk of cardiovascular disease, type 2 diabetes, and some cancers. According to the 2008 Physical Activity Guidelines for Americans (these guidelines will be updated in 2018), adults ages 18-64 years should engage in muscle-strengthening activities on two or more days plus 150 minutes per week of moderate physical activity or 75 minutes per week of vigorous physical activity or an equivalent combination of moderate and vigorous physical activity.

Unfortunately, slightly more than half of North Dakota adults do not meet the recommended guidelines for physical activity (Figure 3).

Figure 3: Adults meeting/not meeting 2008 Physical Activity Guidelines, North Dakota, 2015



Source: ND BRFSS 2015

Breastfeeding

Breastfeeding is recognized as the ideal source of food for newborns. Infants who were breastfed have lower rates of asthma, obesity, ear infection, and lower respiratory infections, etc. Additionally, women who breastfeed experience lower rates of type 2 diabetes, and ovarian and breast cancers.

In 2014, approximately four in five (80%) of infants born in the state were breastfed at birth.

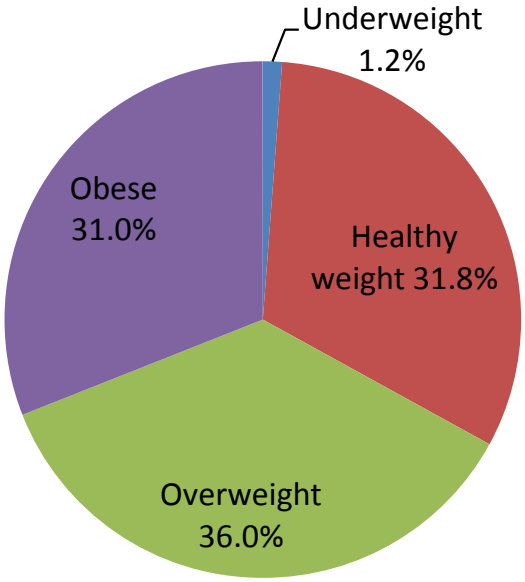
However, according to 2014 projections of the 2012 National Survey of Children's Health, only about 48 percent of new mothers reported breastfeeding at six months.

Overweight and Obesity

Overweight and obesity are measured by an individual's body mass index (BMI) which is calculated as weight in kilograms ÷ (height in meters) 2. Overweight (BMI 25.0-29.9) and obese (BMI ≥30) individuals are at increased risk for many health conditions, including hypertension, type 2 diabetes, coronary heart disease, stroke, and some cancers. Modest weight loss, such as 5 to 10 percent of total body weight, is proven to produce health benefits.

In North Dakota, two in three adults are overweight or obese (Figure 4) while slightly more than one in four high school students (grades 9-12) are overweight or obese (Source: ND YRBS 2015).

Figure 4: Adults' weight status, North Dakota, 2015



Source: ND BRFSS 2015

To learn more about nutrition, physical activity and preventing obesity, visit www.ndhealth.gov/NutrPhyAct/.

High Blood Pressure (Hypertension)

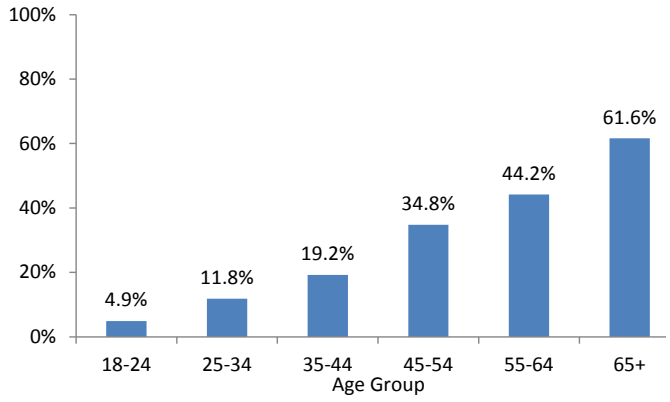
Blood pressure is the force of blood against the walls of the arteries, or in other words, the pumping action of the heart to sustain circulation. High blood pressure (also referred to as hypertension) occurs when an individual has a systolic blood pressure at or above 140 mm/Hg (millimeters of mercury) and/or a diastolic blood pressure at or above 90 mm/Hg. High blood pressure is a serious health concern that raises the risk for heart disease, stroke, and kidney failure. Unfortunately, high blood pressure often goes undetected or is not properly controlled.

According to the Centers for Disease Control and Prevention (CDC), approximately 70 million American adults (one in three) have high blood pressure while about half (52%) have it under control. Also, nearly one in three American adults have pre-hypertension – blood pressure numbers that are higher than normal but not yet in the high blood pressure range. High blood pressure costs the nation $46 billion each year. This total includes the cost of health care services, medications to treat high blood pressure, and missed days of work.

Nearly one in three (30.4%) North Dakota adults have been diagnosed with high blood pressure and four in five (80.6%) of them take antihypertensive medication.

The older a person gets, the more likely they are to have hypertension (Figure 5).

Figure 5: Percentage of North Dakota adults who reported ever being diagnosed with high blood pressure, by age group



Source: ND BRFSS 2015

To learn more about preventing and controlling high blood pressure, visit www.ndhealth.gov/heartstroke.

High Cholesterol

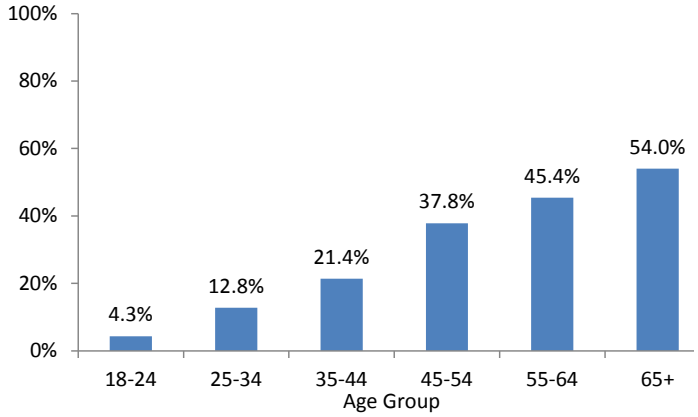
Cholesterol is a waxy, fat-like substance found in the walls of cells in all parts of the body. Excess cholesterol in the blood can become trapped in artery walls and form plaque, which can lead to atherosclerosis (or hardening of the arteries). Atherosclerosis, in turn, can result in poor blood circulation, which negatively affects all organs, including the heart.

High blood cholesterol is a major risk factor for heart disease, especially peripheral vascular disease (restriction of blood supply to the legs) and myocardial infarction (heart attack), and should be kept below 200 mg/dL. Fortunately, healthy cholesterol levels can usually be maintained through regular physical activity, healthy eating, weight control, and a variety of lipid-lowering drugs. The National Institutes for Health (NIH) recommends that adults in America should have their cholesterol checked at least every five years.

Nearly one in four (23.7%) North Dakota adults report never having a blood cholesterol screening. Of those that reported ever having a blood cholesterol screening, more than one in three (35.0%) reported being diagnosed with high blood cholesterol (Source: ND BRFSS 2015).

Along with high blood pressure, as adults age they are more likely to have high blood cholesterol (Figure 6).

Figure 6: Percentage of North Dakota adults who reported ever being diagnosed with high blood cholesterol, by age group

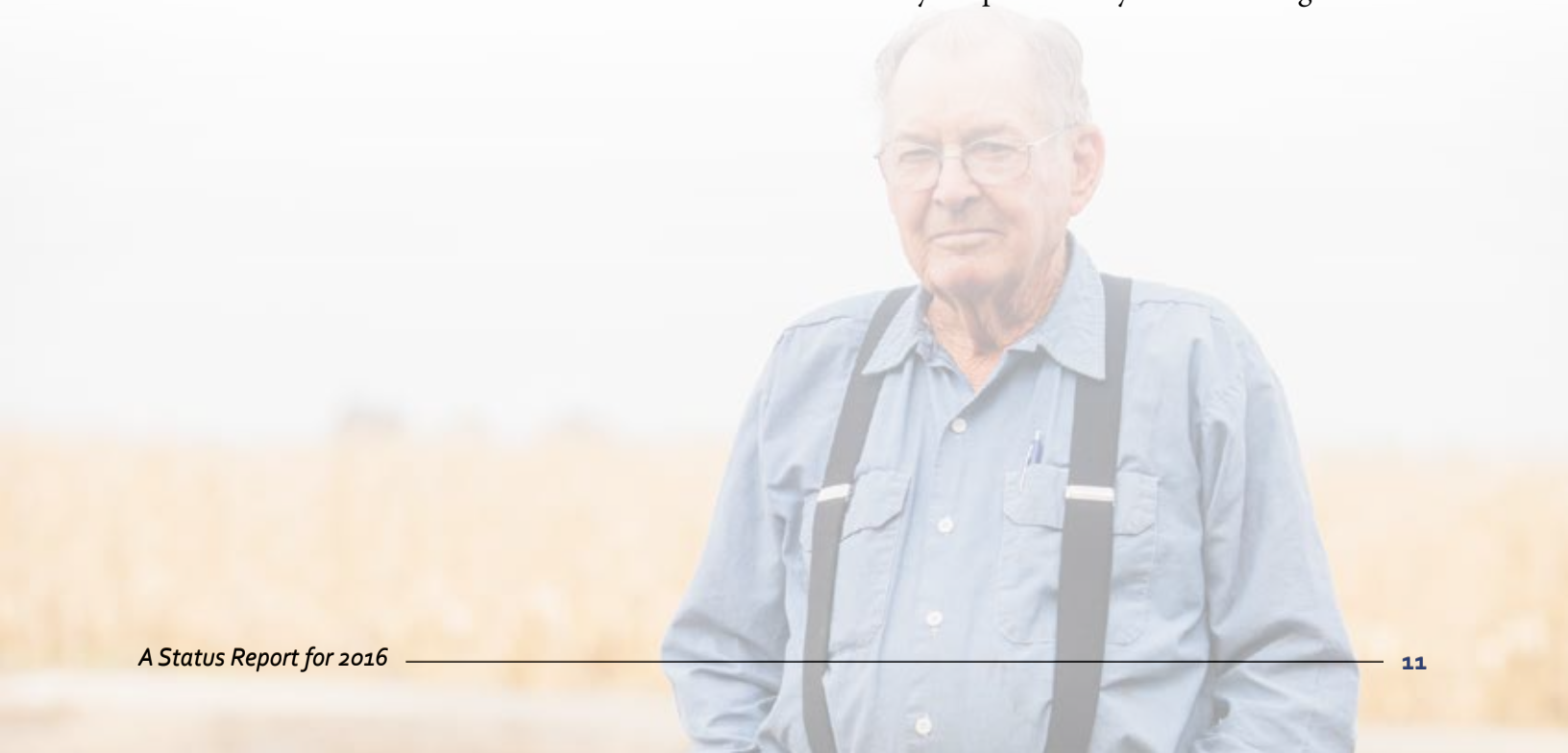


Source: ND BRFSS 2015

Tobacco Use

Tobacco use is the leading preventable cause of disease and death in the United States (Source: 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, 2014). Each year, on average, approximately 1,100 North Dakotans die from tobacco-related diseases. Tobacco use causes a variety of health conditions, including cancers of the lung, kidney, pancreas, cervix, stomach, esophagus, and uterus; cardiovascular disease, including heart diseases, atherosclerosis, and aortic aneurysm; and respiratory diseases including bronchitis, emphysema, and chronic airway obstruction.

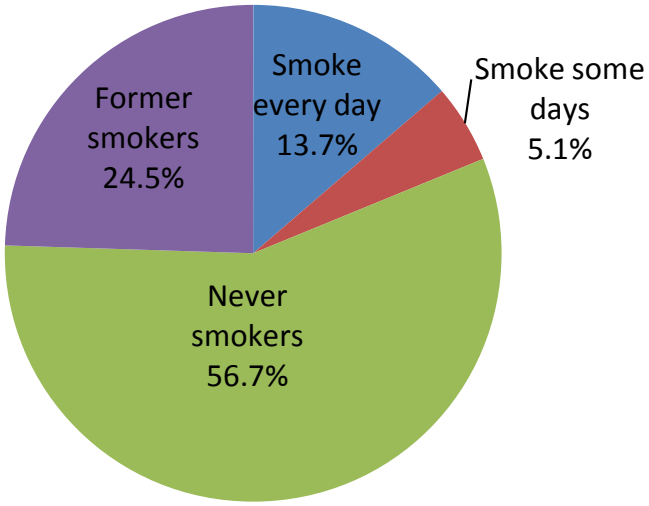
Tobacco-related diseases contribute significantly to high health care expenditures, lost productivity, and years of life lost. It is estimated that smoking-related medical costs in North Dakota total $326 million annually, while smoking-attributable lost productivity costs are estimated at $232.6 million annually (Source: Campaign for Tobacco-Free Kids). Also, in 2016, the Campaign for Tobacco Free Kids projects that 14,000 of North Dakota's children now younger than 18 will ultimately die prematurely from smoking.



Despite the negative health consequences associated with smoking, about one in five (18.7%) North Dakota adults reported currently smoking cigarettes in 2015 (Figure 7).

Current smoking was reported in 2015 more by males, American Indians, those with less than a high school education, and those with an income less than $15,000/year.

Figure 7: Percentage of North Dakota adults who were current, former, or never smokers in 2015



Source: ND BRFSS 2015

Among North Dakota high school students (grades 9-12), the prevalence of current smoking has declined from 21.1 percent in 2007 to 11.7 percent in 2015 (Source: ND YRBS). Additionally, in 2015 the reported current use of chewing tobacco or snuff/dip among high school students was 10.6 percent, with a much higher prevalence reported among males (17.6%) than females (3.1%).

NDQuits
1.800.QUIT.NOW
www.ndhealth.gov/ndquits

Cessation

Over half of current adult smokers (55.8%) stopped smoking for one or more days in the past year in an attempt to quit (Source: ND BRFSS 2015). NDDoH's tobacco cessation program, NDQuits, is available to tobacco users who want to quit. The 30-day sustained quit rate in 2015 for those who completed telephone counseling and/or were sent medication from NDQuits was 28.4 percent at seven months post-enrollment.

Secondhand Smoke Exposure

According to the 2010 U.S. Surgeon General's Report, ***How Tobacco Smoke Causes Disease: The Biology and Behavioral Basis for Smoking-Attributable Disease,*** "Cigarette smoke contains more than 7,000 chemicals and compounds. Hundreds are toxic and at least 69 cause cancer. Tobacco smoke itself is a known human carcinogen."

Increasingly, North Dakotans have adopted smoke-free policies in their homes to prevent exposure to secondhand smoke. In 2015, 87.6 percent of North Dakotans had adopted smoke-free rules for their homes, while 83.7 percent reported no exposure to someone else's smoke during the past seven days (Source: 2015 North Dakota Adult Tobacco Survey).

North Dakota's smoke-free air law, which protects North Dakotans from secondhand smoke in public, went into effect in December 2012.

To learn more about the health effects of tobacco use and how to quit, visit the NDQuits tobacco cessation program at www.ndhealth.gov/ndquits.

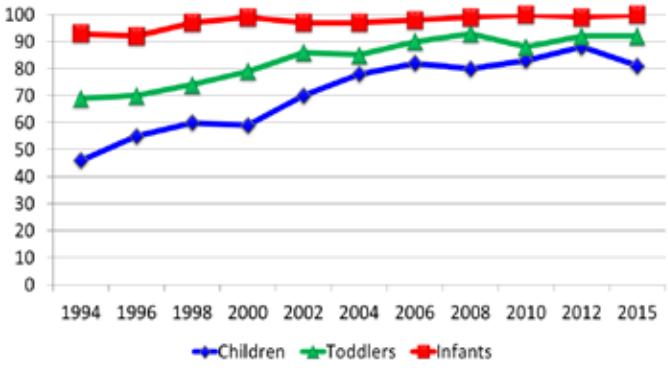
Injury

Injuries can increase a person's risk for chronic illnesses in a number of ways. A significant proportion of disabilities are caused by injuries including those which result from traffic crashes, falls, and burns. A strong relationship exists between disability and poor health.

Buckling children in age- and size-appropriate car seats, booster seats, and seat belts reduces the risk of serious and fatal injuries.

Although proper use of car seats, booster seats, and seat belts for children is improving in North Dakota over time, it still decreases as children age (Figure 8).

Figure 8: North Dakota child safety restraint use, 1994-2015



Source: ND Dept. of Health, Observational Studies)

Nearly one in five (18%) U.S. vehicle crashes in which someone was injured involved distracted driving in 2013 (Source: National Highway Traffic Safety Administration, 2015). Also, more than half (58%) of North Dakota students in grades 9-12 reported texting or emailing while driving a car or other vehicle on at least one of the last 30 days before the survey (Source: 2015 ND YRBS).

According to the Centers for Disease Control and Prevention, one in five falls causes a serious injury such as a broken bone or a head injury. These injuries can make it hard for a person to get around, do everyday activities, or live on their own.

Acts of violence, such as intimate partner and/or sexual violence also increase a person's risk for chronic illnesses. A growing body of science is consistently linking violence (both the experience with and/or the fear of) with risk for and incidence of a range of serious physical health problems. A brief list of disorders associated with experiencing violence such as child abuse, family violence, sexual violence, and community violence includes, but is not limited to:

- Heart disease and hypertension
- Gastrointestinal disorders
- Diabetes
- Neurological and musculoskeletal diseases
- Lung disease including asthma and chronic obstructive pulmonary disease
- Chronic pain
- Migraines and other frequent headaches
- Cervical cancer

According to the CDC's 2008 Morbidity and Mortality Weekly Report (MMWR), ***Adverse Health Conditions and Health Risk Behaviors Associated with Intimate Partner Violence***, "Women who have experienced domestic violence are 80 percent more likely to have a stroke, 70 percent more likely to have heart disease, 60 percent more likely to have asthma and 70 percent more likely to drink heavily than women who have not experienced intimate partner violence."

In 2015, 20 domestic violence/rape crisis agencies served 1,041 primary victims of sexual assault; 5,356 new victims of domestic violence and 2,215 children were impacted by domestic violence (Source: North Dakota Council on Abused Women Services).

Integrating efforts to prevent violence into healthy eating and active living strategies, thereby further reducing the risk for chronic illnesses, include creating safe spaces, promoting community development and employment, and fostering social cohesion.

To learn more about injury prevention and control, visit www.ndhealth.gov/injury/.

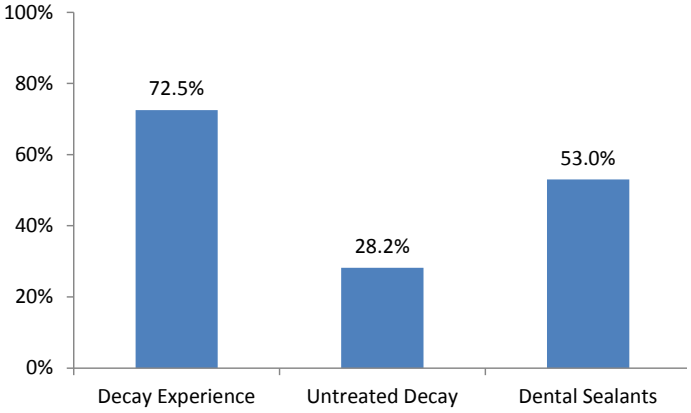
Oral Health

Good oral health is a critical health indicator over the life course. North Dakota faces numerous challenges in efforts to prevent oral disease and promote oral health. These challenges include the enormity of the disease burden, and limited resources for reducing that burden.

According to the CDC, tooth decay (cavities) is one of the most common chronic conditions of childhood in the United States. Untreated tooth decay can cause pain and infections that may lead to problems with eating, speaking, playing, and learning. Even though tooth decay can be prevented, most children in North Dakota still get cavities.

Nearly three in four (72.5%) North Dakota 3rd-grade students have experienced tooth decay while it is untreated in more than one in four (28.2%) of them. Also, about half (53.0%) of 3rd-grade students have had a dental sealant (Figure 9).

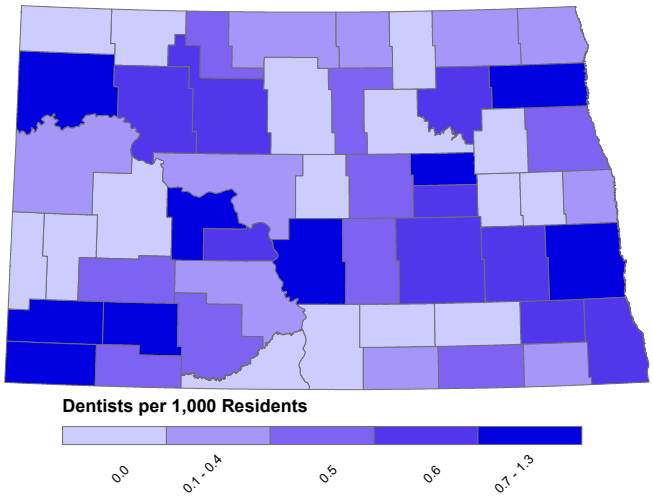
Figure 9: Prevalence of decay experience, untreated decay, and dental sealants in North Dakota 3rd-grade children, 2014-2015



Source: ND Oral Health Basic Screening Survey 2014-2015

Access to dental care is a major barrier to good oral health. As of 2014, the majority of the dental workforce in the state (56%) was concentrated in the three major urban counties: Burleigh, Cass, and Grand Forks Counties. Sixteen of the 53 counties in the state had no dentist (Figure 10).

Figure 10: North Dakota dental workforce distribution by county, 2014



Source: ND BRFSS 2012-2014, ND Board of Dental Examiners 2014

Overall, about 60 percent of North Dakota's Long Term Care (LTC) facility residents had a regular dentist; 48 percent had dental insurance through ND Medicaid and 8 percent stated that Medicare was their dental insurer. About 32 percent of residents were edentulous (complete tooth loss); and those insured by Medicaid had a significantly higher rate of edentulism than the privately insured (41.1% vs. 17.1%).

Additionally, 31 percent of those with no dental insurance and/or insured by Medicare were edentulous. Of the dentate (with teeth) residents, 23 percent had untreated decay; 30 percent had substantial oral debris; and 34 percent needed early/urgent dental care. Among the dentate residents, male gender, rural location of facility and Medicaid enrollment were risk factors for higher rates of decay. These findings indicate a significant statewide need for dental professional access and adequate dental insurance coverage for older adults residing in a LTC facility.

To learn more about oral health, visit www.ndhealth.gov/oralhealth/.

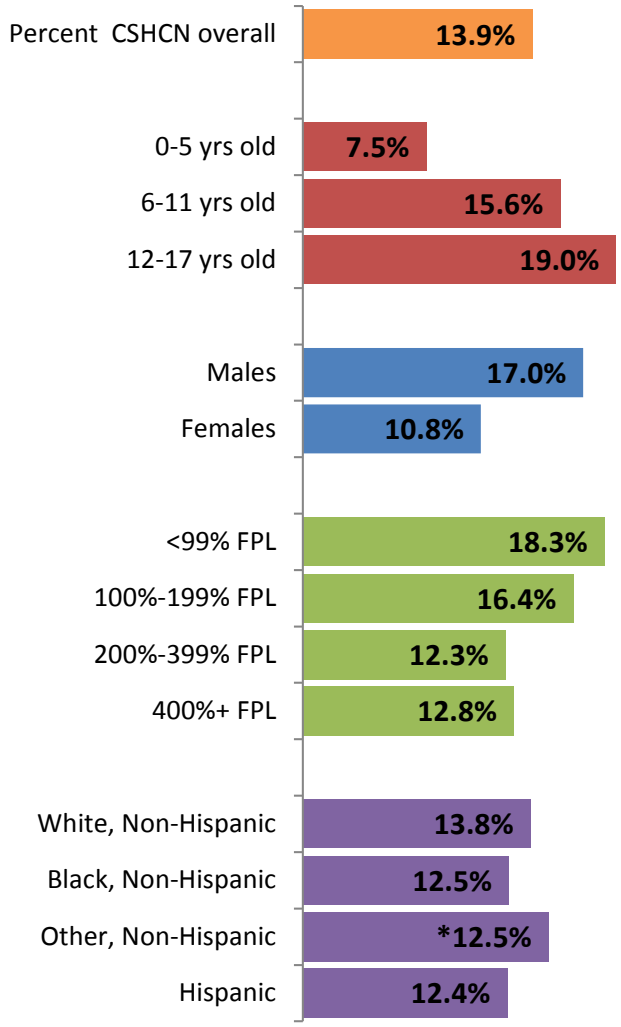
Children with Special Health Care Needs

The federal Maternal and Child Health Bureau (MCHB) defines children with special health-care needs (CSHCN) as:

"…those who have or are at increased risk for a chronic physical, developmental, behavioral, or emotional condition and who also require health and related services of a type or amount beyond that required by children generally."

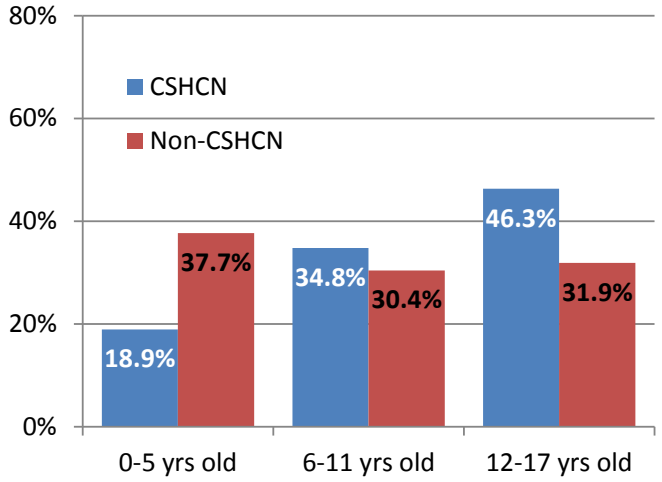
According to the 2009-2010 National Survey of Children with Special Health Care Needs (NS-CSHCN), CSHCN prevalence in North Dakota is increasing. The prevalence of CSHCN in 2009-2010 (13.9%) is higher than the NS-CSHCN in 2005-2006 (12.2%) and in 2001 (12.4%) (Figure 11).

Figure 11: Prevalence of children with special health care needs in North Dakota, 2009-2010



Compared to children not identified as having special health care needs, CSHCN in North Dakota are more likely to be male, older, and school-aged. Also, the prevalence of CSHCN in North Dakota is similar among children of different races/ethnicities and is higher among those with household incomes below 200 percent of the federal poverty level (FPL).

Figure 12: Age distribution within CSHCN vs. non-CSHCN in North Dakota, 2009-2010



Children with Special Health Care Needs Impact on Families

Living with a child with special health care needs can have a profound impact on the entire family. Parents may find that in order to meet the demands of caring for their child, they need to reduce their work hours or give up a job, or that expensive medications, equipment or services are not covered by their health insurance. The time and energy required to provide care directly, or arrange for and coordinate their child's care, is another issue typically faced by families of CSHCN.

Several questions in the 2009-2010 NS-CSHCN were designed to assess how having a CSHCN affects finances and employment availability. Responses to these questions were used to construct the four indicators of family impact (Figure 13).

Figure 13: Family impact of CSHCN, 2009-2010

Impact on Family of CSHCN (%)	ND	US
Whose families pay $1,000 or more out of pocket medical expenses per year for the child	26.7	22.1
Whose condition caused financial problems for the family	22.2	21.6
Whose families spend 11 or more hours per week providing or coordinating child's health care	10.1	13.1
Whose condition caused family members to cut back or stop working	21.6	25.0

Families of about 9,500 CSHCN in North Dakota reported significant difficulties due to their children's health needs in 2009-2010.

In North Dakota, 48.2 percent of CSHCN met at least one of the four family impact indicators, slightly higher than nationwide (47.4%). Among CSHCN, nearly one in four (22.9%) met only one family impact indicator, and nearly one in five (17.7%) met two indicators.

The proportion of North Dakota CSHCN affected ranges from 10.1 percent whose family members spend 11 or more hours providing or coordinating medical care, to 26.7 percent with $1,000 or more annual out-of-pocket medical expenses.

The other two measures, family financial problems and cutting back hours or quitting work, affected just over one-fifth of CSHCN in the state (22.2% and 21.6%, respectively).

To learn more about children with special health care needs, visit www.ndhealth.gov/cshs/.

Cardiovascular Disease

Cardiovascular disease (CVD) includes all diseases of the heart and blood vessels, including coronary heart disease, stroke, congestive heart failure, hypertensive disease, and atherosclerosis. CVD is also commonly referred to as "diseases of the circulatory system." Cardiovascular disease is a chronic disease, with an onset that often extends decades after exposure to one or more risk factors.

Coronary heart disease (or coronary artery disease) is a narrowing of the small blood vessels that supply blood and oxygen to the heart (coronary arteries). Coronary disease usually results from the build-up of fatty material and plaque (atherosclerosis). As the coronary arteries narrow, the flow of blood to the heart can slow or stop. The disease can cause chest pain (stable angina), shortness of breath, heart attack, or other symptoms.

Stroke is another type of cardiovascular disease. It affects the arteries leading to and within the brain. A stroke occurs when a blood vessel that carries oxygen and nutrients to the brain is either blocked by a clot or bursts. When that happens, part of the brain cannot get the blood (and oxygen) it needs, so brain tissue starts to die.

The risk factors for CVD include high blood pressure, smoking, high blood cholesterol, physical inactivity, unhealthy eating, being overweight or obese and/or having diabetes.

Prevalence

In 2015, an estimated 22,731 (3.9%) North Dakota adults reported having ever been told they have had a heart attack or myocardial infarction. (Source: 2015 ND BRFSS). During the same year, an estimated 14,471 (2.5%) North Dakota adults reported having ever been told they have had a stroke.

Mortality

In 2015, there were 1,271 deaths from coronary heart disease, for an age-adjusted mortality rate of 136.6 deaths per 100,000 people (Source: ND Vital Statistics). During this same time period, there were 286 deaths from stroke, for an age-adjusted mortality rate of 29.3 deaths per 100,000 people.

Prevention and Control

Nearly one in three (30.4%) North Dakota adults have ever been diagnosed with high blood pressure, and four in five (80.6%) North Dakotans with high blood pressure are taking medication for their blood pressure (source: ND BRFSS 2015). However, one in five adults with high blood pressure still don't know they have it (Source: Mozzafarian D, Benjamin EJ, Go AS, et al. Heart Disease and Stroke Statistics-2015 Update: a report from the American Heart Association. Circulation. 2015;e29-322).

Despite the benefits of cholesterol screening, about one in four (23.7%) North Dakota adults reports never having a blood cholesterol screening. Of those who have had a blood cholesterol screening, about one in 20 (5.5%) has not had one in the past five years (Source: 2015 ND BRFSS).

Costs

In 2015, medical costs in North Dakota involving coronary heart disease were an estimated $332 million while medical costs in North Dakota involving stroke were estimated to be $193 million (Source: Chronic Disease Cost Calculator – Version 2, Centers for Disease Control and Prevention).

To learn more about preventing cardiovascular disease and stroke, visit www.ndhealth.gov/heartstroke.

Cancer

Cancer is the second leading cause of death behind cardiovascular disease in North Dakota. Every day, roughly nine North Dakotans are diagnosed with cancer and four die from the disease.

What is Cancer?

Cancer is not a single disease, but a collection of related diseases defined by the uncontrolled growth and spread of cells into surrounding tissue. Cancer cells can spread to other parts of the body through the blood and lymph systems, which may lead to death if not controlled. Most cancers are named for the organ or type of cell in which they start. For example, cancer that begins in the colon is called colon cancer; cancer that begins in basal cells of the skin is called basal cell carcinoma.

Though people of all ages are diagnosed with cancer, it is primarily an older person's disease. Over three-quarters of all cancers are diagnosed in men and women ages 55 and older.

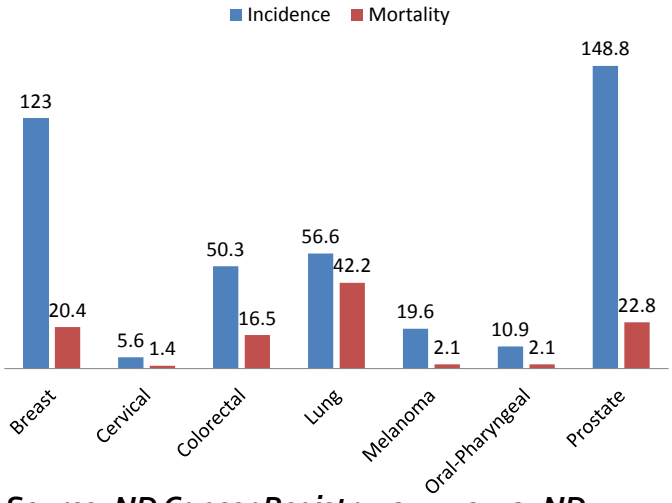
Incidence

From 2004 to 2013, the most commonly diagnosed cancers among North Dakotans included cancer of the prostate (males only), female breast, lung and bronchus, and colon and rectum.

Mortality

From 2004 to 2013, there were 107.5 annual cancer deaths per 100,000 people in North Dakota. Cancer of the lung was the leading cause of cancer deaths among North Dakota men and women during this time period, accounting for 42.2 deaths per 100,000 persons each year (Figure 14).

Figure 14: Cancer incidence and mortality rates per 100,000, North Dakota, 2004-2013



Source: ND Cancer Registry, 2004-2013; ND death certificates, 2004-2013

Preventing Cancer

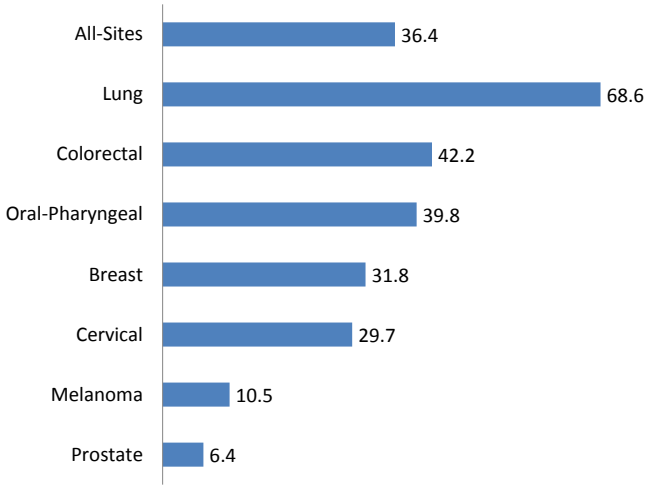
In order to focus the fight against cancer, the North Dakota Cancer Coalition and North Dakota Comprehensive Cancer Control Program have identified seven cancers as priorities for prevention efforts. These are breast cancer, cervical cancer, colorectal cancer, lung cancer, prostate cancer, melanoma, and oral-pharyngeal cancer. The selection of these seven priorities is based on factors relating to their incidence, mortality, ability to screen, and controllable risk factors.

Screening

Cancer staging describes the severity of a person's cancer based on the size and/or extent of the original tumor and whether or not the cancer has spread to other parts of the body. Stages are assigned when a person is first diagnosed and help determine prognosis and treatment options.

A cancer that is diagnosed as late-stage is far along in its growth and has spread to lymph nodes or other places in the body. Oftentimes, symptoms may not appear until a cancer is late-stage. Compared to a cancer found early, the late-stage prognosis will be worse and survival rates severely impacted. In North Dakota, from 2004 to 2013, 36.4 percent of all cancer cases were diagnosed at a late-stage. Among the top two were lung cancer and colorectal cancer, with 68.6 percent of lung cancer and 42.2 percent of colorectal cancer cases being diagnosed at late-stage (Figure 15).

Figure 15: Percent of cancer cases diagnosed at the late stage, North Dakota, 2004-2013



Source: ND Cancer Registry, 2004-2013

Timing is essential when it comes to detecting cancer. Screening tests are a way to look for cancers well before a person has any symptoms and find cancers at an early stage when it may be easier to treat or cure. A screening test usually does not diagnose cancer, but may prompt follow-up tests to check whether an abnormal test result is cancer or not. Five of the seven priority cancers – colorectal cancer, breast cancer, cervical cancer, melanoma, and prostate cancer – have screening tests that can find a cancer before it is too late.

The NDDoH encourages cancer screening in order to detect cancer as early as possible. Although screening tests exist, other factors such as access to a health care provider, availability of the test, insurance coverage, time, and fear also influence whether or not a person actually gets screened.

Costs

In 2015, medical costs in North Dakota involving all cancers combined were an estimated $361 million (Source: Chronic Disease Cost Calculator – Version 2, CDC).

Cancer Survivors

Improvements in early detection and cancer treatment have resulted in more people living longer after being diagnosed with the disease. As a result of their diagnosis and treatment, cancer survivors face a host of short- and long-term physical, emotional, spiritual, and financial challenges that can impact their quality of life. Access to health care, pain control, supportive, and/or end-of-life care services are among the chief concerns of the estimated 35,200 cancer survivors living in North Dakota (Source: www.cancer.org/acs/groups/content/@research/documents/document/acspc-042801.pdf).

To learn more about preventing and screening for cancer, please visit www.ndhealth.gov/compcancer/.

Diabetes

Individuals diagnosed with diabetes are unable to produce enough insulin or use their own insulin efficiently, causing blood glucose levels that are higher than normal. There are several types of diabetes:

Type 1 Diabetes develops mostly in young individuals but can also develop in adults. Type 1 is an autoimmune disorder characterized by high blood glucose levels as a result of the loss of insulin production, requiring insulin administration for blood glucose control and sustainment of life. About 5 to 10 percent of all people with diabetes have type 1.

Type 2 Diabetes is a condition characterized by high blood glucose levels that result from a deficiency of or a resistance to insulin that develops gradually. A sedentary lifestyle, obesity, and genetic factors contribute to the risk for type 2 diabetes. About 90 percent of all people with diabetes have type 2.

Gestational Diabetes can develop in a woman at approximately the 24th week of gestation. Decreased insulin sensitivity results in elevated blood glucose. Once pregnancy is complete, glucose most often returns to normal. Women with gestational diabetes are at a higher risk for prediabetes and type 2.

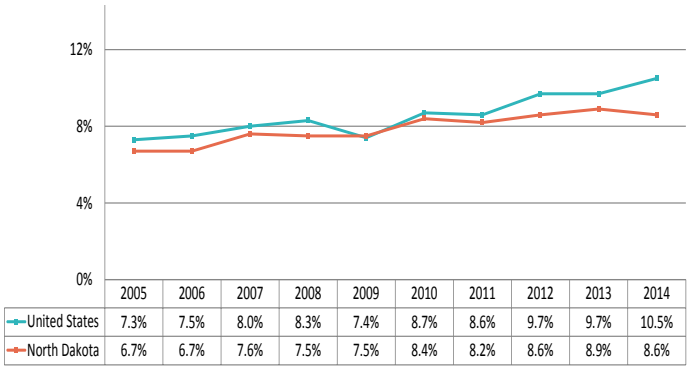
Diabetes is the seventh leading cause of death in the United States.

Diabetes in North Dakota

From 2005 to 2014, the prevalence of diagnosed diabetes among adults (18 and older) in North Dakota has increased from 6.7 percent to 8.6 percent (Figure 16).

In 2014, approximately 49,000 North Dakota adults were diagnosed with diabetes and an additional 18,961 adults had undiagnosed diabetes (Source: Centers for Disease Control, National Diabetes Statistics Report, 2014).

Figure 16: Percent of adults with diabetes, US and North Dakota, 2005-2014

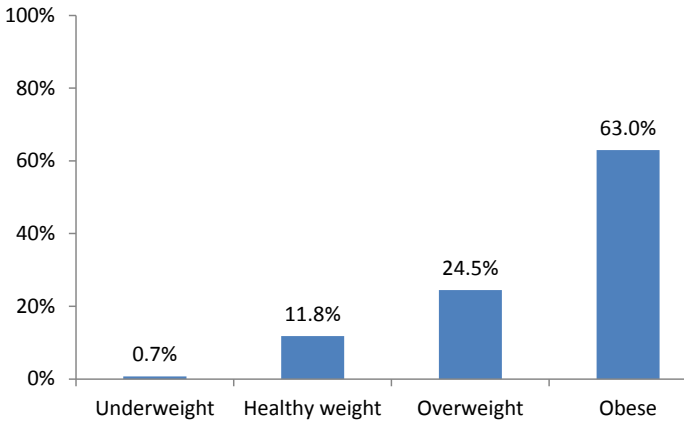


	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
United States	7.3%	7.5%	8.0%	8.3%	7.4%	8.7%	8.6%	9.7%	9.7%	10.5%
North Dakota	6.7%	6.7%	7.6%	7.5%	7.5%	8.4%	8.2%	8.6%	8.9%	8.6%

Source: Centers for Disease Control, National Diabetes Statistics Report, 2014

In 2015, one in 11 North Dakota adults reported ever being diagnosed with diabetes (Source: ND BRFSS 2015). Adults who report ever being told they have diabetes are much more likely to be obese (Figure 17).

Figure 17: Percentage of North Dakota adults who have ever been diagnosed with diabetes, by weight status, 2015



Source: ND BRFSS 2015

Prediabetes

Prediabetes occurs when the blood glucose level is higher than normal, but not high enough to be diagnosed as type 2 diabetes. About four out of 10 adults in North Dakota have prediabetes but only one out of 10 know they have it. Fifteen to 30 percent of people with prediabetes will go on to develop type 2 diabetes within five years. It is estimated that more than 200,000 adults in North Dakota currently have prediabetes. The risk factors for prediabetes are the same as for type 2 diabetes, discussed earlier.

Research for the National Diabetes Prevention Program (NDPP) found that small steps produced big rewards. Moderate weight loss (seven percent of body weight) and increased physical activity (30 minutes five times per week):

- Reduced the incidence of type 2 diabetes by 58 percent during a three-year period
- Reduced the incidence of type 2 diabetes by 71 percent among subjects age 60+

(Source: Centers for Disease Control, National Diabetes Prevention Program).

Complications

Health complications of diabetes include eye problems, nerve damage, foot problems, dental problems, kidney disease, and cardiovascular disease. Symptoms of diabetes include frequent urination, excessive thirst, unexplained weight loss, extreme hunger, extreme tiredness, and irritability. Often, people with type 2 diabetes have no symptoms.

Mortality

In 2015, there were a total of 181 deaths in North Dakota, or 20.3 deaths per 100,000 persons, attributed to diabetes (Source: ND Vital Statistics).

Management of Diabetes

The American Diabetes Association recommends that persons with diabetes undergo several examinations by health professionals to prevent complications associated with their condition. Unfortunately, not all persons with diabetes are following recommended management practices.

For example, in North Dakota:

- 81.7 percent of adults with diabetes reported having their feet examined for sores and irritations at least once by a health professional during the past year
- 5.2 percent of adults with diabetes reported that they checked their blood glucose at least once per day
- 67.7 percent of adults with diabetes reported having a dilated eye exam within the past year
- 63.9 percent of adults with diabetes reported ever having a pneumonia vaccination
- 60.8 percent of adults with diabetes reported having an influenza vaccination within the past year

(Source: ND BRFSS 2015)

Economic Impact of Diabetes

Estimates of the cost of diabetes have been studied by the American Diabetes Association in 2002, 2007 and 2012, using consistent methodology (Source: Yang W, Dal T, Halder P, Gallo P, Kowal S, Hogan P. Economic Costs of Diabetes in the US in 2012, Diabetes Care 36: 1033-1046, 2013).

The total estimated cost of diagnosed diabetes in 2012 in the U.S. was $245 billion, including $176 billion in direct medical costs and $69 billion in reduced productivity. The largest components of medical expenditures are:

- Hospital inpatient care (43% of medical cost)
- Prescription medications to treat the complications of diabetes (18%)
- Antidiabetic agents and diabetes supplies (12%)
- Physician office visits (9%)
- Nursing/residential facility stays (8%)

People with diagnosed diabetes:

- Incur average medical expenditures of approximately $13,700 per year
- Have medical expenditures approximately 2.3 times higher than those without diabetes

Diabetes imposes a significant cost to society. Intangibles from pain and suffering, resources from care provided by nonpaid caregivers, and the burden associated with undiagnosed diabetes are not included in the estimate above.

To learn more about preventing and managing diabetes please visit www.diabetesnd.org/.

For more information, contact:

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