

2022

NORTH DAKOTA 2009–2018 BURDEN OF CANCER REPORT



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This booklet was a joint effort of the North Dakota Cancer Coalition and the Health Promotion & and Chronic Disease Prevention Unit within the North Dakota Department of Health and Human Services.

This publication is available on the North Dakota Department of Health and Human Services' Comprehensive Cancer Control Program website at www.health.nd.gov/compccancer/data-and-reports.

Photography provided by North Dakota Tourism Gallery

North Dakota Comprehensive Cancer Control (2022) Burden of Cancer Report

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This publication was supported by the Grant or Cooperative Agreement Number, 1 NU58DP007108, 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 U.S. Department of Health and Human Services.



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FORWARD

“We all have been impacted in some way by cancer, and we all can work together to make a difference. The **North Dakota Burden of Cancer Report** provides an overview of North Dakota priority cancer statistics, including incidence, mortality, and screening recommendations for early detection. Data-driven responses can help guide healthcare professionals and partners throughout North Dakota in setting priorities and making progress to reduce the burden of cancer.”

*Julie Garden-Robinson, Ph.D., R.D., L.R.D., F.A.N.D.
Chair, North Dakota Cancer Coalition*



INTRODUCTION

Half of all men and one-third of all women in the U.S. will develop cancer during their lifetime.¹ Cancer is the second leading cause of death behind cardiovascular disease in North Dakota.³ With statistics like these, it is likely that you or someone you love has or will be affected by cancer.

This report on the burden of cancer is a look at the impact that cancer currently has on the citizens of North Dakota. Within, you will find general information on cancer in North Dakota and information on the seven North Dakota Cancer Coalition priority cancers. The data in this report is the most recent available as cancer data is on a two to three year lag.

The impact of cancer in North Dakota can be measured in disease and financial burden. This report focuses on the burden of disease based on prevalence in our state. The cost of cancer is important in the larger discussion of insurance, services, access to care, and employment. In North Dakota, the costs of cancer topped 484 million dollars in 2021.⁴

Cancer: Definition and Causes

Cancer is not a single disease, but a group of diseases that are characterized by the uncontrolled growth and spread of abnormal cells. Many types of cancer form a lump or mass called a tumor.

While the exact cause of why someone develops cancer may not always be known, there are certain risk factors that increase the chance that a person will develop cancer. The most common risk factors for cancer are:

- Growing older
- Tobacco use
- UV (ultraviolet) exposure
- Some viruses and bacteria
- Alcohol
- Family history of cancer
- Poor diet
- Lack of physical activity

Many of these risk factors can be avoided or prevented. Others, such as age or family history, cannot be avoided. People can help protect themselves by avoiding known risk factors whenever possible.

CANCER IN NORTH DAKOTA

Overview

According to the most recent data available from the North Dakota Statewide Cancer Registry (NDSCR), the combined 2009-2018 age-adjusted cancer incidence rate for all cancer sites in North Dakota was 452.3 per 100,000 population. This means that from 2009-2018, there was an average of 3,586 new cases of cancer diagnosed each year. The recent trend for cancer incidence in North Dakota has been stable.

The combined 2009-2018 age-adjusted cancer mortality rate in North Dakota for all cancer sites was 155.2 per 100,000 population, or about 1,287 deaths per year. Cancer mortality overall has seen a modest decline over the most recent five years of data.

The most commonly diagnosed invasive cancers for the years 2009-2018 were prostate for men and breast for women. Lung and colorectal cancers came in as the second and third most common for both men and women. During this time period, lung cancer continued to have the highest death rate, which is consistent with past time periods.

Top Cancers in North Dakota by Incidence, 2009-2018

Cancer	Incidence	Mortality
Breast	129.4	18.1
Prostate	118.2	18.0
Lung & Bronchus	58.0	34.0
Colorectal	41.0	13.4
Uterus	26.3	4.6
Melanoma	23.7	2.0
Bladder	19.6	3.5
Non-Hodgkin Lymphoma	18.5	5.1
Kidney & Renal Pelvis	17.7	3.5
Thyroid	17.2	0.7

Rates per 100,000, age-adjusted

Source: ND Statewide Cancer Registry

Cancer Staging

Cancer staging is the process of finding out how much cancer is in a person's body and where it is located. The summary stage process is used by many cancer registries. It groups cancer cases into five main categories:

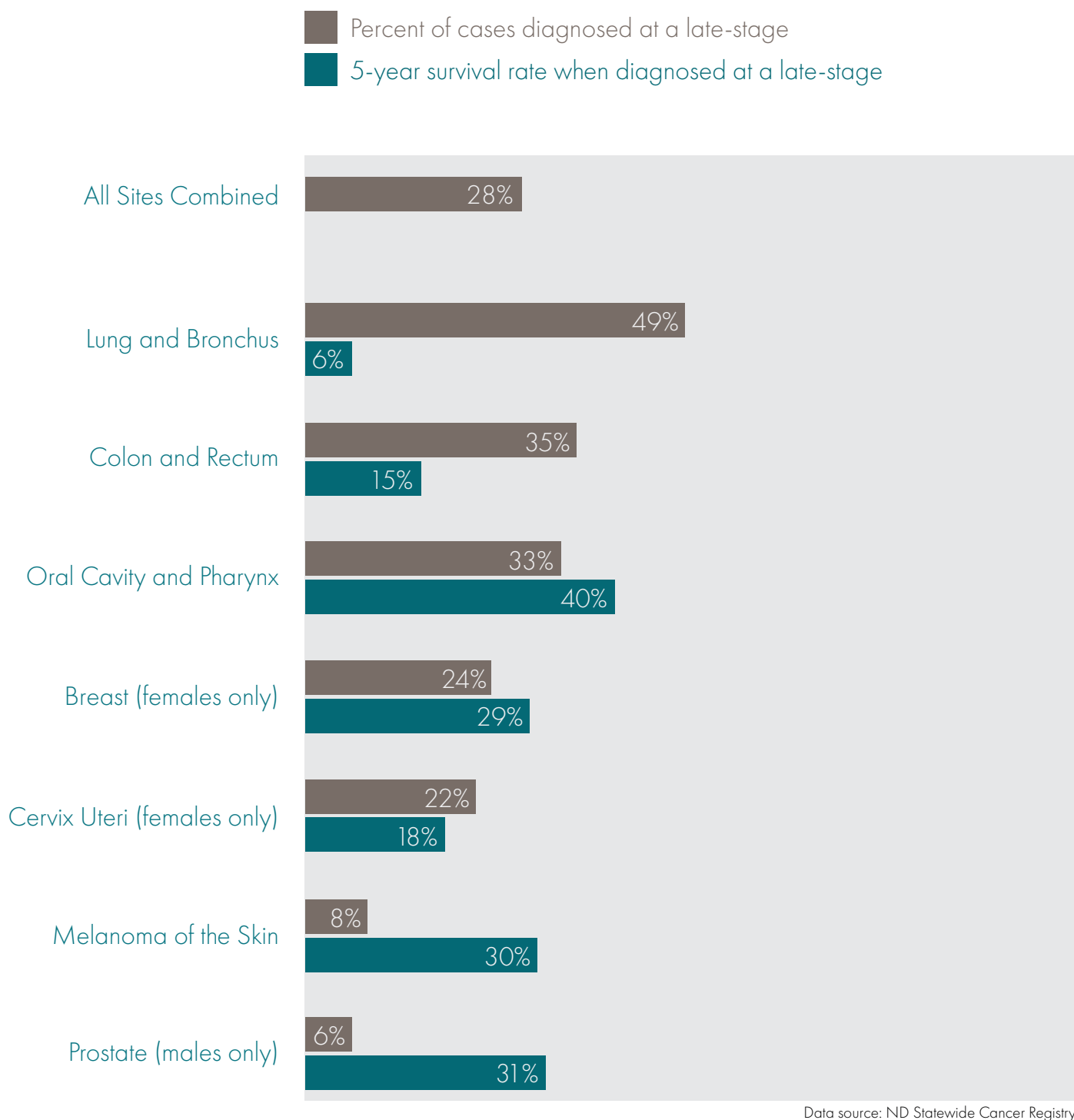
- **In situ:** Abnormal cells are present only in the layer of cells in which they developed.
- **Localized:** Cancer is limited to the organ in which it began, without evidence of spread.
- **Regional:** Cancer has spread beyond the primary site to nearby lymph nodes or tissues and organs.
- **Distant:** Cancer has spread from the primary site to distant tissues or organs or to distant lymph nodes.
- **Unknown:** There is not enough information to determine the stage.

Late-stage cancer refers to cancer that is far along in its growth and has spread to the lymph nodes or other places in the body. When a cancer goes undiagnosed until it reaches a late stage, the survival rate can be severely impacted. For example, the five-year relative survival rate for breast cancer at the local stage is 99%. However, at the distant stage the survival rate falls to 29%.⁵

In North Dakota, lung cancer has the highest rate of late-stage diagnosis. Lung cancer also has the highest mortality rate in North Dakota. In 2021, the United States Preventative Services Task Force (USPSTF) updated screening guidelines for adults aged 50 to 80 years who have a 20 pack-year smoking history and currently smoke or have quit within the past 15 years. Colorectal cancer is second for late-stage diagnosis in North Dakota. The USPSTF updated screening guidelines in 2021 reducing the age at which to start colorectal cancer screening to 45 for those of average risk due to the rising number of cases among younger age groups.



A Late-Stage Diagnosis Corresponds with a Much Lower Five-Year Survival Rate



NORTH DAKOTA PRIORITY CANCERS

There are seven different cancers which the North Dakota Comprehensive Cancer Control Program and the North Dakota Cancer Coalition have identified as priorities: breast, cervical, colorectal, lung, melanoma, oral-pharyngeal, and prostate. These cancers have been given priority based on several factors including incidence, mortality, ability to screen, and controllable risk factors.



Breast Cancer

Definition

Cancer that forms in tissues of the breast, usually the ducts and lobules. It occurs in both men and women, although male breast cancer is rare.

A small number of cancers start in other tissues in the breast. These cancers are called sarcomas and lymphomas and are not really thought of as breast cancers.

Incidence and Mortality

Data source: ND Statewide Cancer Registry

Breast cancer is the most diagnosed cancer for women in North Dakota.

The average incidence rate for the years 2009-2018 is 127.1 cases per 100,000. This is a total of 5,117 cases for that period. Breast cancer incidence rates have been stable for this period.

The average mortality rate for the years 2009-2018 is 18.5 cases per 100,000. The total number of deaths due to breast cancer in this period was 842. The longterm trend for breast cancer mortality in North Dakota has been falling from 20.4 deaths per 100,000 in 2009 to 17.3 in 2018.

Screening and Early Detection

Data source: ND Statewide Cancer Registry

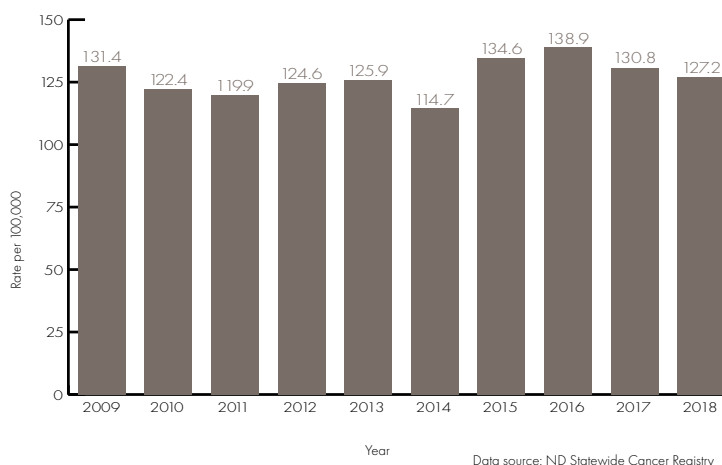
Breast cancer, if detected early, is highly treatable. Breast cancer screening tests, such as mammography, can find breast cancer before it is big enough to feel or cause symptoms. When cancer is detected earlier, treatment can be started earlier in the course of the disease, possibly before it has spread.

The United States Preventive Services Task Force (USPSTF) recommends biennial mammograms for women aged 50 to 74 years. The decision to begin screening mammography before age 50 is an individual one that should be discussed with a healthcare provider.

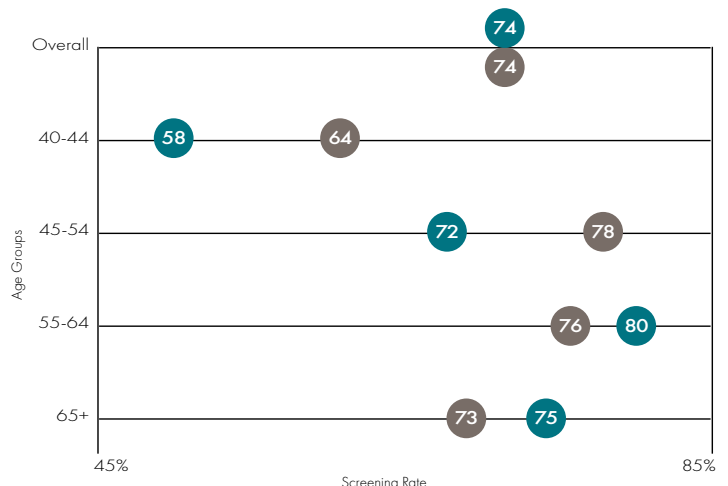
Mammography rates in North Dakota are currently lowest in the 40-44 age range and both the 55-64 and 65+ age groups have shown some decline from 2012 to 2020. Screening is currently highest in the 45-54 age range. Overall, mammography screening rates have stayed consistent.

Over time, screening guidelines for breast cancer have changed. The USPSTF currently recommends beginning screening at age 50. The American Cancer Society recommends screening starting at age 45. The changes and discrepancies in screening guidelines may be a contributing factor for a decline in screening seen in 2014-2018, especially in the younger than 50 age groups. Screening rates in the younger age groups have since rebounded.

Breast cancer incidence rates were stable between 2009 and 2018.



Mammography screening rates have stayed consistent between 2012 and 2020.



Cervical Cancer

Definition

Cancer that forms in tissues of the cervix (the organ connecting the uterus and vagina). It is usually a slow-growing cancer that may not have symptoms, but can be found with regular Pap tests. Cervical cancer is almost always caused by human papillomavirus (HPV) infection. It is preventable and curable if detected early.

Incidence and Mortality

Data source: ND Statewide Cancer Registry

Incidence and mortality of cervical cancer continues to stay low relative to other cancers. This is due to a number of factors including high rates of regular screening and the increasing use of vaccines that prevent the spread of HPV.

The average incidence rate for the years 2009-2018 is 5.7 cases per 100,000. This is a total of 195 cases for that period. While there is year-to-year variability due to low overall numbers, the long-term trend is stable.

The average mortality rate for the years 2009-2018 is 1.2 cases per 100,000. The total number of deaths due to cervical cancer in this period was 50. Due to small numbers and suppression of data, a trend for mortality is not able to be established.

Screening and Early Detection

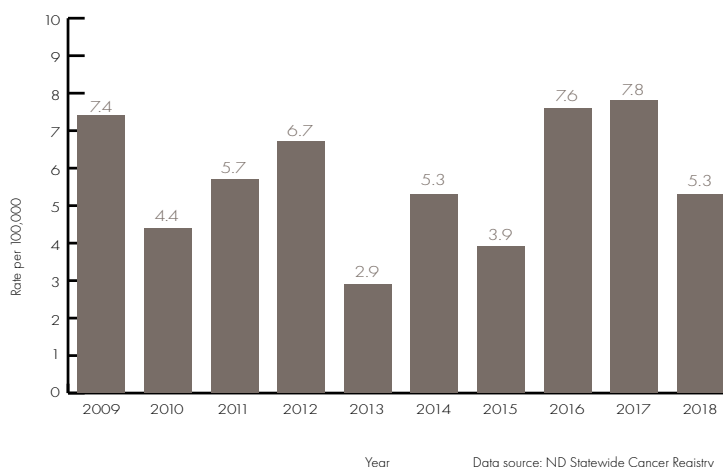
Data source: ND Statewide Cancer Registry

The USPSTF recommends all women begin cervical cancer screening at age 21. Women aged 21 to 29, should have a Pap test every 3 years. For women aged 30 to 65 years, the USPSTF recommends screening every 3 years with a Pap test alone or a Pap test combined with a HPV test every 5 years as long as the test results are normal. Between 2012 and 2020, the overall screening rate dipped slightly, but remains high. However, the 25-34 and 55-64 age groups saw significant declines.

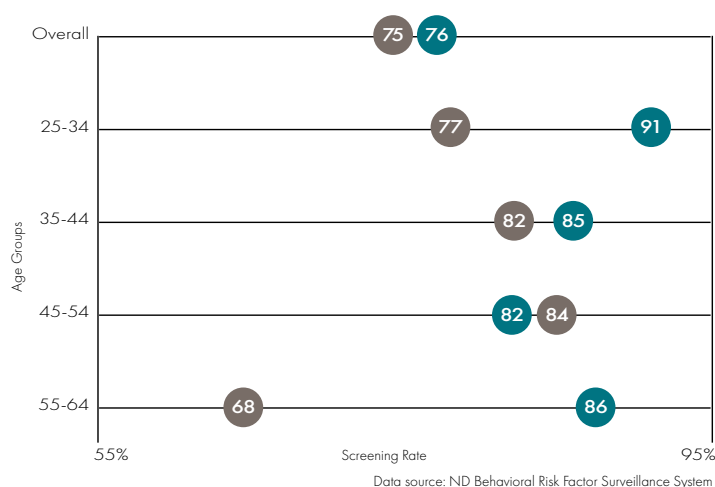
Micro Elimination

The World Health Organization (WHO) established that cervical cancer should no longer be considered a public health problem when the age-adjusted incidence rate is less than 4 per 100,000. The North Dakota elimination goal currently being discussed is 1 per 100,000. This goal is achievable through continued efforts to increase HPV vaccination uptake and screening. The WHO has a goal of 90% of girls and young women (ages 11 to 26) fully vaccinated by 2030. North Dakota is currently discussing target goals to reach micro elimination.

Cervical cancer incidence rates were stable between 2009 and 2018.



Pap test screening rates dipped slightly between 2012 and 2020.



Colorectal Cancer

Definition

Cancer of the large intestine (colon), the lower part of your digestive system. Rectal cancer is cancer of the last several inches of the colon. Together, they're often referred to as colorectal cancers.

Most cases of colon cancer begin as small, noncancerous (benign) clumps of cells called adenomatous polyps. Over time, some of these polyps become colon cancers.

Incidence and Mortality

Data source: ND Statewide Cancer Registry

Colorectal cancer is the second most diagnosed cancer that affects both men and women in North Dakota.

The average incidence rate for the years 2009-2018 is 44.1 cases per 100,000. This is a total of 3,618 cases for that period. There is a downward trend in incidence due to an increase in screening.

The average mortality rate for the years 2009-2018 is 14.2 cases per 100,000. The total number of deaths due to colorectal cancer in this period was 1,224. The data indicates a downward trend in colorectal cancer mortality in North Dakota.

Screening and Early Detection

The USPSTF now recommends screening for colorectal cancer using high-sensitivity fecal occult blood testing, sigmoidoscopy, or colonoscopy beginning at age 45 and continuing until age 75. The American Cancer Society guidelines also recommend screening starting at age 45.

People at higher risk of developing colorectal cancer should begin screening at a younger age, and may need to be tested more frequently. The decision to be screened after age 75 should be made on an individual basis in consultation with a health care provider.

Recommended screening tests and intervals are—

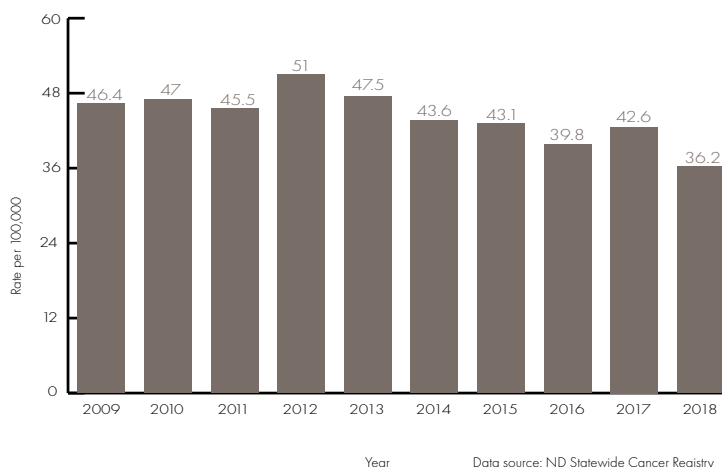
High-sensitivity fecal occult blood test (FOBT), should be done every year.

Flexible sigmoidoscopy, should be done every five years with FOBT every three years.

Colonoscopy, should be done every 10 years.

The North Dakota Department of Health and Human Services has signed on to the National Colorectal Cancer Roundtable (NCCRT) 80% in Every Community initiative and supports that screening goal for North Dakota.

Colorectal cancer incidence rates decreased between 2009 and 2018.



Colorectal cancer screening rates increased between 2012 and 2020.



Lung Cancer

Definition

Cancer that forms in tissues of the lung, usually in the cells lining air passages. The two main types are small cell lung cancer and non-small cell lung cancer. These types are diagnosed based on how the cells look under a microscope. About 80 to 85% of lung cancers are non-small cell lung cancer while 10 to 15% are small cell lung cancer. These types of lung cancer are treated differently.

Incidence and Mortality

Data source: ND Statewide Cancer Registry

Lung cancer is the most diagnosed cancer that affects both men and women in North Dakota.

The average incidence rate for the years 2009-2018 is 57.8 cases per 100,000. This is a total of 4,795 new cases for that period. The trend for incidence is stable with moderate year-to-year variance.

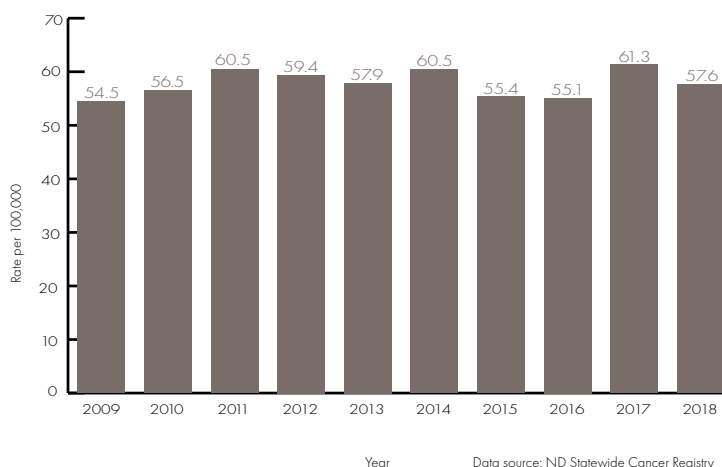
The average mortality rate for the years 2009-2018 is 37.6 cases per 100,000. The total number of deaths due to lung cancer in this period was 3,153. Of the seven priority cancers, lung cancer has the highest mortality rate and lowest five-year survival rate. However, the long-term trend for lung cancer mortality is falling.

Screening and Early Detection

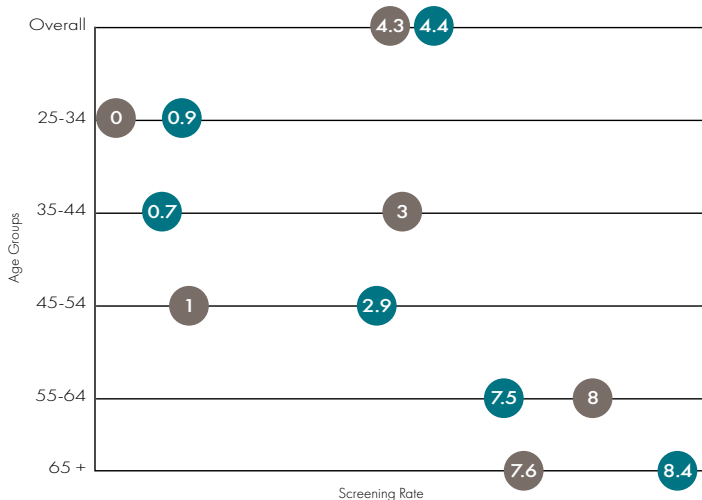
The USPSTF recommends annual screening for lung cancer with low-dose computed tomography (LDCT) in adults aged 55 to 80 years who have a 30-packs per-year smoking history and currently smoke or have quit within the past 15 years. Screening should be discontinued once a person has not smoked for 15 years or develops a health problem that substantially limits life expectancy or the ability or willingness to have curative lung surgery. Statewide data collection for lung cancer screening through the Behavioral Risk Factor Surveillance System began in 2019 with the most current 2020 rate being 4.3.

Currently, 49% of lung cancer cases are diagnosed at a late stage where the disease has spread to other parts of the body. The five-year survival rate for those diagnosed with lung cancer at a late stage is about 6%.

Lung cancer incidence rates were stable between 2009 and 2018.



Lung cancer screening rates were stable between 2019 and 2020.



Melanoma

Definition

A form of skin cancer that begins in melanocytes (cells that make the pigment melanin). It may begin in a mole (skin melanoma), but can also begin in other pigmented tissues, such as in the eye or in the intestines.

While melanoma is more rare than other forms of skin cancer, it is more likely to invade nearby tissues and spread to other parts of the body.

Incidence and Mortality

Data source: ND Statewide Cancer Registry

Melanoma is the least common, but most deadly skin cancer. It accounts for only about 1% of all cases, but is responsible for the majority of skin cancer deaths. The average incidence rate for the years 2009-2018 is 23.2 cases per 100,000. This is a total of 1,809 new cases for that period.

The trend for incidence was increasing from 2005-2010, but has since become more stable. The average mortality rate for the years 2009-2018 is 2.2 cases per 100,000. The total number of deaths due to melanoma in this period was 181. The trend for mortality has been stable.

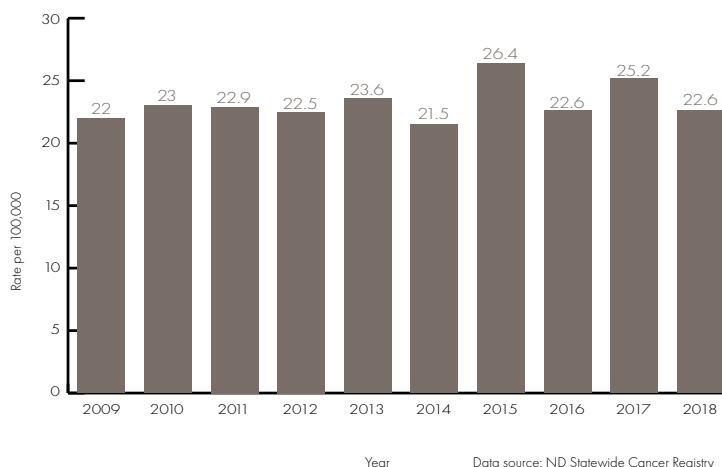
Screening and Early Detection

Although there is no recommended routine screening for melanoma, people of all ages are encouraged to see their health care provider or dermatologist if they identify changes in moles, freckles, or skin that are concerning. That could mean that a mole or freckle is changing in size, color, or shape.

Prevention

The risk of developing skin cancer can be significantly reduced by engaging in sun safety practices such as using sunscreen while outdoors and reapplying regularly; wearing clothing such as hats, long sleeves, pants, and sunglasses to cover your skin; staying in shaded areas; and avoiding tanning beds.

Melanoma incidence rates increased then stabilized between 2009 and 2018.



Oral Cavity and Pharynx Cancer

Definition

Cancer that forms in tissues of the oral cavity (the mouth) or the oropharynx (the part of the throat at the back of the mouth). The oral cavity and oropharynx help you breathe, talk, eat, chew, and swallow.

While there are multiple types of cancer that can affect the oral cavity and pharynx, in recent years, there has been a rise in cases that are linked to HPV infection.

Incidence and Mortality

Data source: ND Statewide Cancer Registry

Cancers of the oral cavity and pharynx are more than twice as common in men than in women.

The average incidence rate for the years 2009-2018 is 12.0 cases per 100,000. This is a total of 989 new cases for that period. The trend for oral and pharynx cancer incidence in North Dakota is stable.

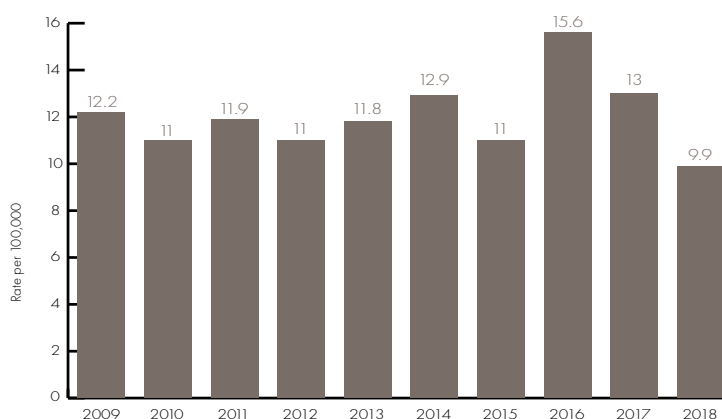
The average mortality rate for the years 2009-2018 is 2.0 cases per 100,000. The total number of deaths due to oral and pharynx cancer in this period was 168. The trend for mortality is also stable.

Screening and Early Detection

There are no routine screenings for oral-pharyngeal cancer. Many dentists will do a visual check for signs such as sores, lumps, and lesions during an oral exam but it is not required, routine, or diagnostic. Individuals are encouraged to see their health care provider if they notice sores and ulcers that persist beyond two weeks, discoloration of mouth tissues, difficult/painful swallowing, swollen tonsils, pain when chewing, persistent sore throat or hoarseness, swelling or lumps in the mouth, and several others.

Late-stage diagnosis of oral cavity and pharynx cancers occurs in over one-third of all new cases.

Oral cavity and pharynx cancer incidence rates were stable between 2009 and 2018.



Year

Data source: ND Statewide Cancer Registry

Prostate Cancer

Definition

Cancer that forms in tissues of the prostate gland in the male reproductive system. Prostate cancer usually occurs in older men. Some prostate cancers can grow and spread quickly, but most grow slowly.

Almost all prostate cancers are adenocarcinomas. These cancers develop from the gland cells (the cells that make the prostate fluid that is added to the semen).

Screening and Early Detection

There is currently no recommended routine screening test for prostate cancer. However, there are several tests that are being studied, including digital rectal exam, prostate-specific antigen test, and a prostate cancer gene 3 RNA test. Because the current guidelines do not recommend any screening tests, decisions to screen for prostate cancer and what test to use should be a shared process between patients and their health care provider based upon individual risk factors.

Incidence and Mortality

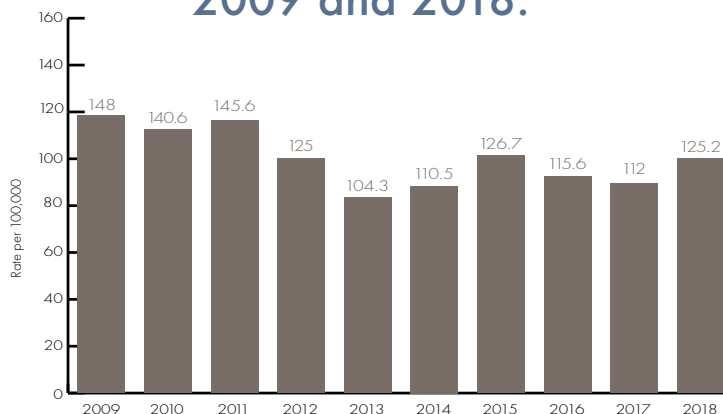
Data source: ND Statewide Cancer Registry

Prostate cancer is the most diagnosed cancer that affects only men in North Dakota as well as being one of the most diagnosed of all cancers. Although the number of men with prostate cancer is large, most men diagnosed with this disease do not die from it.

The average incidence rate for the years 2009-2018 is 125.1 cases per 100,000. This is a total of 5,168 new cases for that period. The trend for incidence of prostate cancer in North Dakota is falling.

The average mortality rate for the years 2009-2018 is 19.6 cases per 100,000. The total number of deaths due to prostate cancer in this period was 726. The trend for mortality due to prostate cancer has been falling in North Dakota.

Prostate cancer incidence rates have been falling between 2009 and 2018.



Year

Data source: ND Statewide Cancer Registry

REFERENCES

1. Centers for Disease Control and Prevention. United States Cancer Statistics.
<https://www.cdc.gov/cancer/uscs/>
2. National Cancer Institute (NCI). <http://www.cancer.gov>.
3. North Dakota Department of Health, Division of Vital Records. North Dakota Fast Facts 2018.
<https://www.health.nd.gov/sites/www/files/documents/Files/Vital/ff2020.pdf>
4. Mariotto AB, Enewold L, Zhao JX, Zeruto CA, Yabroff KR. Medical Care Costs Associated with Cancer Survivorship in the United States. *Cancer Epidemiol Biomarkers Prev.* 2020;29(7):1304-12.
5. American Cancer Society. Cancer Facts & Figures 2022. Atlanta: American Cancer Society
6. United States Preventive Services Task Force. Cancer screening guidelines.
<https://www.uspreventiveservicestaskforce.org/uspstf/>

ACKNOWLEDGEMENTS

Special thanks to:

Alice Musumba, Director of North Dakota Behavioral Risk Factor Surveillance System, for providing data sets pertaining to screening and detection.

Christina Oancea, Epidemiologist for the North Dakota Statewide Cancer Registry, for providing cancer incidence and mortality statistics.

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