

Cancer in First Nations People in Ontario

INCIDENCE, MORTALITY, SURVIVAL AND PREVALENCE



Acknowledgments

This report was prepared jointly by staff from the following organizations:

Health Research Sector, Chiefs of Ontario
Aboriginal Cancer Control Unit and Population Health and Prevention,
Cancer Care Ontario
Institute for Clinical Evaluative Sciences

© 2018
ISBN 978-1-4868-1849-5 Print
ISBN 978-1-4868-1850-1 PDF

Permission to reproduce: Except as otherwise specifically noted, the information in this publication may be reproduced, in part or in whole and by any means, without charge or further permission for non-commercial purposes, provided that due diligence is exercised in ensuring the accuracy of the information reproduced; that the Chiefs of Ontario, Cancer Care Ontario and Institute for Clinical Evaluative Sciences are identified as the source institutions; and that the reproduction is not represented as an official version of the information reproduced, nor as having been made in affiliation with, or with the endorsement of, the Chiefs of Ontario, Cancer Care Ontario or the Institute for Clinical Evaluative Sciences.

For permission to reproduce the information in this publication for commercial redistribution, please contact:

Communications, Cancer Care Ontario

620 University Avenue, Toronto, Ontario, M5G 2L7
Telephone: 416-971-9800
www.cancercare.on.ca
communications@cancercare.on.ca

Need this information in an accessible format?

1-855-460-2647 / TTY (416) 217-1815, publicaffairs@cancercare.on.ca

How to cite this publication:

Chiefs of Ontario, Cancer Care Ontario and Institute for Clinical Evaluative Sciences. Cancer in First Nations People in Ontario: Incidence, Mortality, Survival and Prevalence. Toronto, 2017.

This report is available at cancercareontario.ca/firstnationscancerreport

Contents

6

Executive Summary

10

Endorsement Letters

14

About this Report

16

Background and Context

19

**Cancer in First Nations People in Ontario:
An Overview**

31 Lung Cancer

38 Colorectal (Large Intestine) Cancer

47 Breast Cancer

57 Prostate Cancer

65 Kidney Cancer

72 Cervical Cancer

81 Other Genital Cancers

89 Bladder Cancer

95 Blood Cancers

102 Other Digestive Cancers

110 Head and Neck Cancer

117 Other Less Common Cancers

122

**Reducing the cancer burden: Travelling the
road to hope**

136

References

139

Glossary

140

Appendix: Governance, Methods and Limitations

144

Timeline

Hope

I sit waiting, with others who wait
Younger, older, some just babies

All are represented, there is no discrimination
Many fighting back tears, trying to be strong for their loved ones

Trying to smile as their heart quietly breaks
Their pillows silent and sole witness, as the grief overcomes them in the dark

They watch their loves at night
Not knowing, what the future holds

If I am gone who will care for them
Who will love them, wipe their eyes, dry their tears, who will comfort them

The dawn breaks and it is time to begin again
To smile and laugh, to pretend and hope

To come to this room
Or a room, somewhere else, very much like this one

Resigned to the diagnosis
Yes, we all have it, we all know it

We will all fight, many of us will win
Still, some of us will not

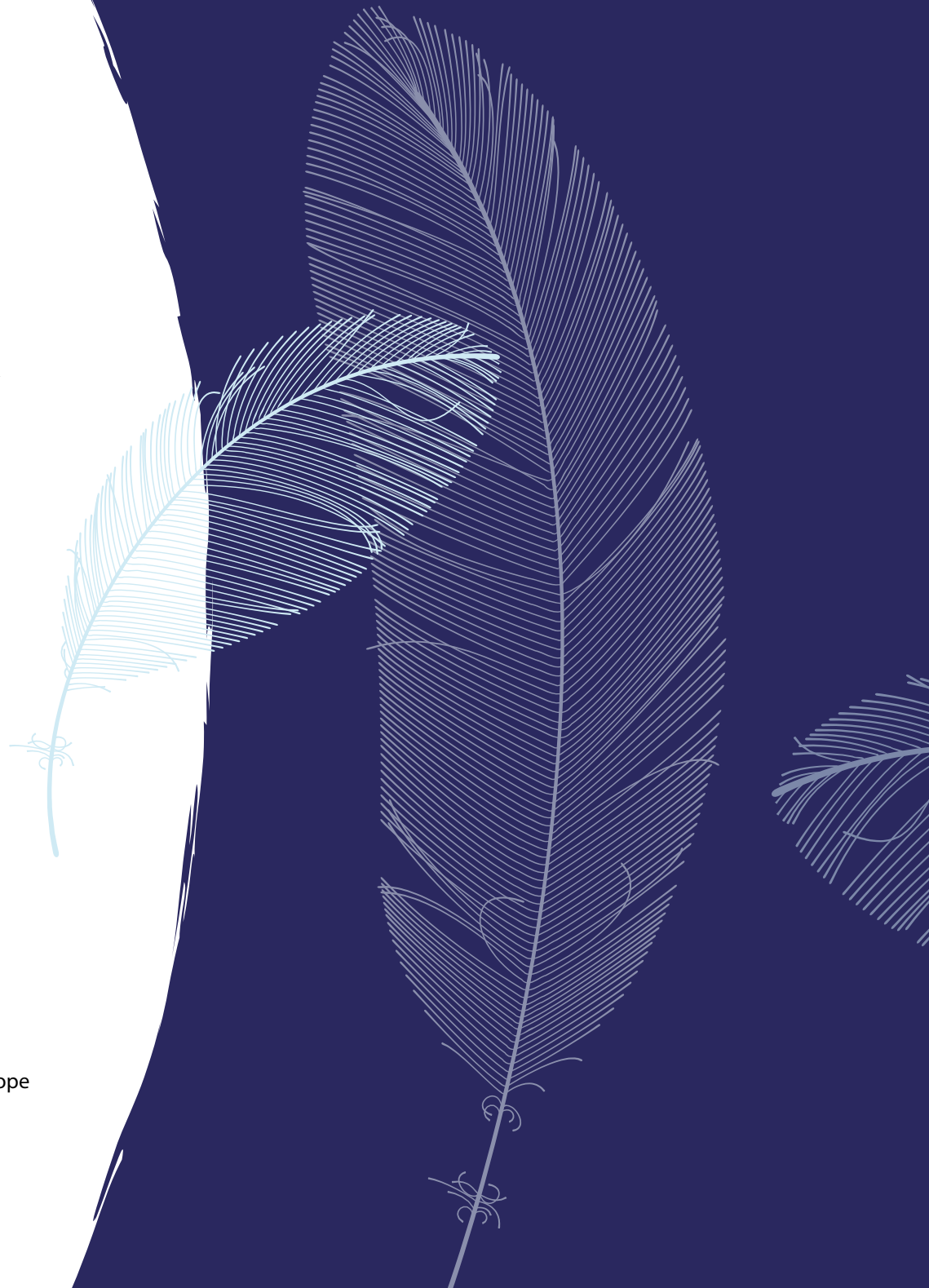
For the winners life will go on, and we will see hope in every sunrise
We will have won, but we will always fear the unknown, what if it is not done

For the others, the sunrises and sunsets will be few
And loved ones left behind must find a way to cope, or at least live

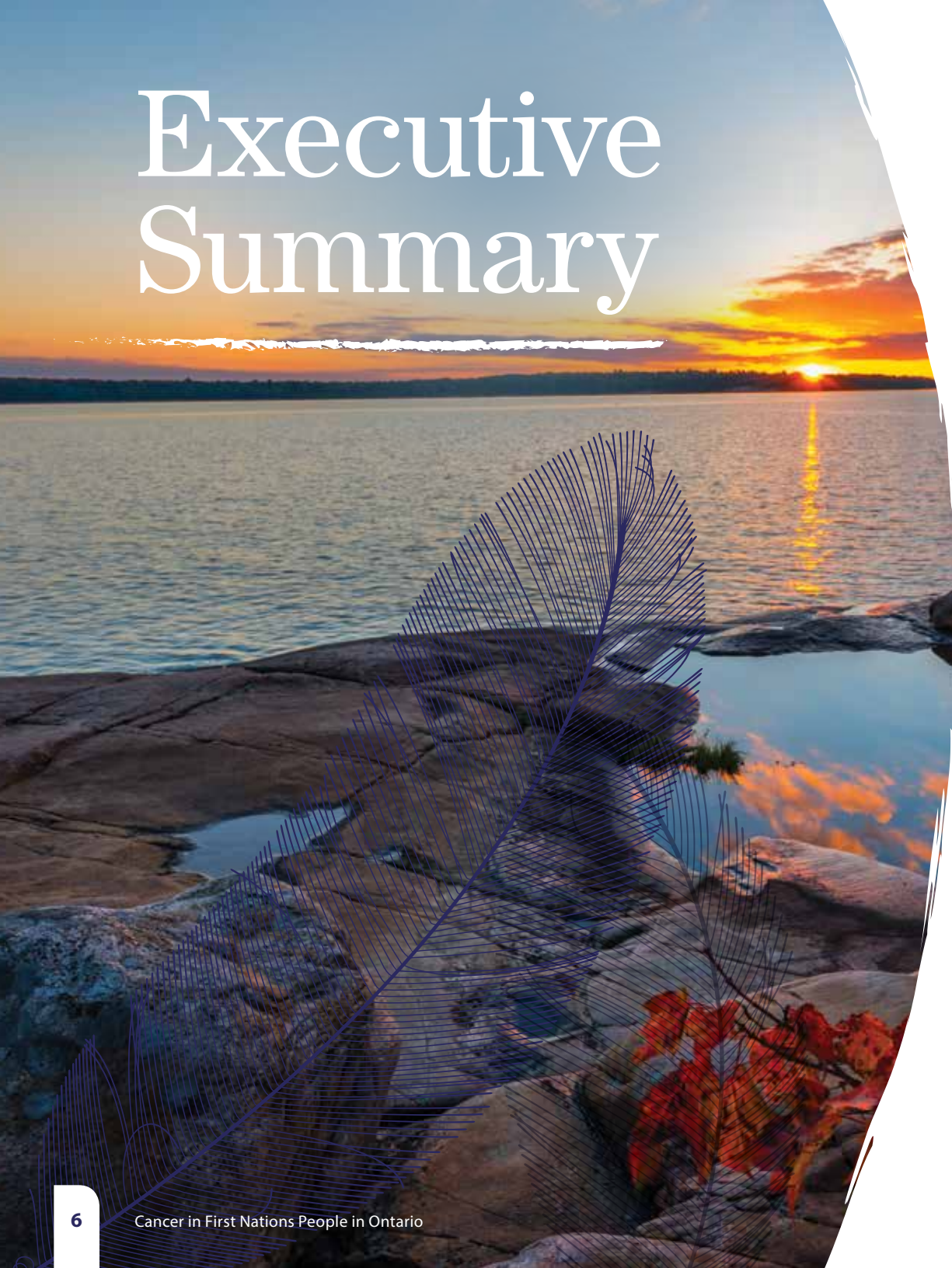
For now, we all sit here as survivors, we all have hope
It is the one thing we cling hardest too

We come into this world crying but with hope, we leave it quietly but with hope
And we travel the road of life with hope

-Chief R. Stacey Laforme







Executive Summary

This report reflects over 10 years of collaboration between Cancer Care Ontario, the Chiefs of Ontario and the Institute for Clinical Evaluative Sciences to update what is known about cancer in First Nations people in Ontario from 1991 to 2010.

These updated cancer surveillance estimates are being presented to First Nations communities to equip them with the information needed to set priorities and plan effective health programs that aim to improve the health and wellbeing of their people. It will also act as a starting point for communities to consider relevant research questions to explore the reasons for the observed differences between First Nations people and others in the province.

Key Findings

Cancer Incidence (New Cases)

- Lung cancer had the highest incidence of any cancer type among First Nations people (both sexes combined), accounting for over 1000 new cases in 1991 to 2010. Lung cancer incidence was higher among First Nations males and females than other males and females in Ontario.
- Colorectal cancer incidence was higher among First Nations people of all age groups and for both sexes compared to other people in Ontario. Colorectal cancer in First Nations males and females increased by six and seven percent respectively from 1991 to 2010, whereas for other people in Ontario, the incidence stayed the same (males) or decreased (females).
- Kidney cancer incidence was higher among First Nations males and females and increased more rapidly from 1991 to 2010.
- Cervical cancer incidence was higher in First Nations females, but declined significantly over time, approaching the incidence in other females in Ontario.
- Breast cancer incidence was lower among First Nations females compared to other females, however it increased by 25 percent from 1991 to 2010 and is approaching the incidence found among other females in Ontario.

Less exposure to cancer risk factors in the past results in fewer new cases of cancer. More exposure to cancer risk factors (for example: smoking, being overweight or physically inactive) will result in more new cancer cases being diagnosed. For more information on what affects cancer incidence and why it matters, visit cancercare.on.ca/measuringcancerfnim.

Cancer Mortality (Deaths)

- Lung cancer was the leading cause of cancer death among First Nations people. Lung cancer mortality was higher for First Nations males and females compared to other males and females in Ontario.
- First Nations people (males and females) had higher mortality than other people in Ontario for lung, colorectal, liver and kidney cancers. First Nations females also had higher mortality for cervical cancer than other females in Ontario.
- First Nations females had lower mortality from breast cancer than other females in Ontario and First Nations males had lower mortality from leukemia than other males in Ontario.

If a cancer becomes more common, it will probably cause more deaths. Getting better at catching cancer early and treating it results in fewer people dying of cancer. For more information on what affects cancer mortality and why it matters, visit cancercare.on.ca/measuringcancerfnim.

Cancer Survival (Chances Of Living After Diagnosis)

- Among First Nations people, survival was best for female breast and male prostate cancers. Compared to others in Ontario, First Nations people had poorer survival from these cancer types than other people in Ontario, however the survival in First Nations people was improved in the most recent time period (2001-2010).
- In addition to breast cancer, survival was poorer for First Nations females diagnosed with cancers of the uterus and cervix, as well as non-Hodgkin lymphoma and leukemia.
- In addition to prostate cancer, survival was poorer for First Nations males diagnosed with cancers of the oral cavity and pharynx, and lung, as well as non-Hodgkin lymphoma and myeloma.

More cancers being caught early, before they spread to other parts of the body, results in improved cancer survival (for example, when more people get screened for breast, cervical and colorectal cancers). New cancer treatments that help people with cancer live longer also result in improved cancer survival. For more information on what affects cancer survival and why it matters, visit cancercare.on.ca/measuringcancerfnim.

Cancer Prevalence (New And Existing Cases)

- About 2,300 First Nations people were living with a past diagnosis of cancer as of January 1st, 2011 (about one percent of the population).
- Female breast and male prostate cancer were the most prevalent cancer types among First Nations people. Over 700 First Nations people in Ontario were living with a past diagnosis of one of these cancer types.
- The next most prevalent cancer type was colorectal cancer in First Nations males and females.
- Fewer people were living with a past diagnosis of lung cancer, despite the high incidence of this cancer in First Nations people, because the chances of surviving very long after a lung cancer diagnosis are poor.

More new cancer cases (increasing incidence) results in more people living with cancer in a population. When people diagnosed with a type of cancer are able to live longer after being diagnosed (improved survival), more people with cancer will be alive in a population. For more information on what affects cancer prevalence and why it matters, visit cancercare.on.ca/measuringcancerfnim.

Calls to Actions

Behavioural risk factors

- Our findings call for the development of culturally tailored or community-led cancer prevention programs that emphasize the four main behavioural risk factors for cancer: commercial tobacco, alcohol, diet (inadequate vegetable and fruit intake) and physical inactivity.
- Efforts to reduce these risk factors among First Nations people will improve not only the incidence of cancer, but also incidence of other chronic disease, including heart and respiratory diseases, and diabetes.
- Addressing the determinants of health is necessary when planning risk reduction efforts on individual behaviour for significant and lasting impacts on health. Initiatives that reflect cultural distinctions, including public health policy and community programming, are required to help reduce the prevalence of behavioural risk factors.

Cancer screening

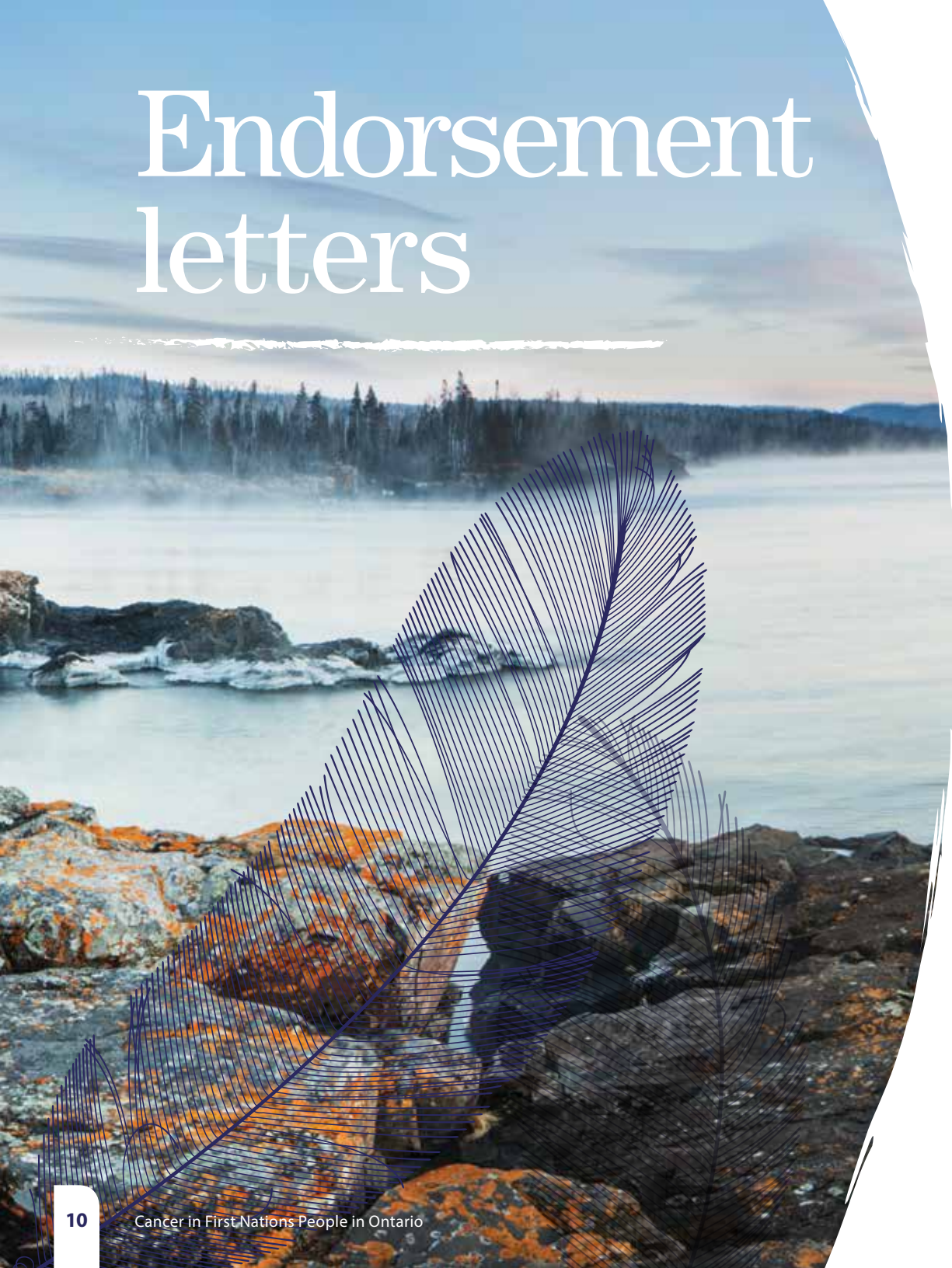
- Given the increasing incidence of breast and colorectal cancer and poorer survival from breast, colorectal and cervical cancers in First Nations people, our findings call for actions to improve access, education and awareness of Ontario's cancer screening programs and services to enhance participation in cancer screening and follow-up of abnormal test results.
- More data and research are needed to understand the effectiveness of Ontario's organized cancer screening programs for breast, colorectal and cervical cancer for the First Nations population in Ontario.

Need for data

- This report presents important information for cancer control planning and priority-setting, however more data is needed to understand the reasons for the apparent inequalities in cancer rates between First Nations people and other people in Ontario.
- Communities should continue to build their research capacity and create research questions that are meaningful to them—questions that will help develop the best approaches for cancer prevention, surveillance, screening, access to care, diagnosis, treatment and palliative services.



Endorsement letters



A collaboration between
Cancer Care Ontario,
Chiefs of Ontario
and Institute for Clinical
Evaluative Sciences



Message from Patrick Wedaseh Madahbee

GRAND COUNCIL CHIEF ANISHINABEK NATION CHAIR
ONTARIO CHIEFS COMMITTEE ON HEALTH

It is with great pleasure as the Chair of the Ontario Chiefs Committee on Health to mark another milestone in providing valuable information on cancer rates for First Nations people in Ontario.

This project has been a long journey and the work that has been completed will benefit our Ontario First Nations. The data and information contained in this report will assist our communities in planning cancer services needed at the local level. These strategies will complement existing healthcare programs in our First Nations.

The Chiefs of Ontario and Cancer Care Ontario released a joint report, called *Cancer in First Nations in Ontario: Risk Factors and Screening* in March 2016. In addition, Cancer Care Ontario released *Path to Prevention—Recommendations for Reducing Chronic Disease in First Nations, Inuit and Métis* in June 2016. The *Path to Prevention* report featured several First Nations leadership-endorsed policy recommendations. The recommendations were meant to inform the Government of Ontario on reducing chronic diseases in the province's First Nations. These two reports equip our communities with the necessary information and data that will empower our citizens to take control of their individual holistic health and well-being. We look forward to our communities developing their own action plans to battle cancer at the grassroots level.

As we are all aware, there is much more hard work that still needs to be done. We cannot forget that our people are suffering from a higher incidence of several types of cancer compared to other people in Ontario. Our people are continuing to die prematurely from certain preventable and treatable cancers. The accumulated

effect of life circumstances—over which our people have had no control—are responsible for these inequities. Factors such as colonialism, social exclusion and self-determination need to be considered in developing policies and programs to improve the performance of the cancer system for First Nations people.

I want to take this opportunity to say **chi miigwetch** (thank you) to the hard working individuals that have been part of this project at the Chiefs of Ontario, Cancer Care Ontario and the Institute for Clinical Evaluative Sciences. This project would not have happened if it wasn't for the dedicated staff that kept this important work going.

These efforts will only be effective if our relationship with each other remains strong. We extend our heartfelt thanks to those working with us and for sharing our vision towards building happy, healthier communities.

Patrick Wedaseh Madahbee



Message from Michael Sherar

PRESIDENT & CEO
CCO

As the Ontario government's principal advisor on cancer, Cancer Care Ontario is committed to ensuring health equity for all Ontarians, and First Nations, Inuit and Métis peoples are an important focus of our work.

For over a decade, Cancer Care Ontario, the Chiefs of Ontario and the Institute for Clinical Evaluative Sciences have been working together to develop a strategy to learn about and track cancer patterns in First Nations people in Ontario. Cancer in *First Nations People in Ontario: Incidence, Mortality, Survival and Prevalence* is an important outcome of this collaboration.

The information in this report provides a greater understanding of how cancer affects First Nations people in Ontario. It does this by highlighting specific inequalities, such as the higher incidence (new cases) of several cancer types and poorer survival for certain cancers in First Nations people, compared to other people in Ontario.

Continuing to build on this knowledge base will support First Nations communities, decision-makers

and partners in developing effective health policies and implementing recommendations set forth in Cancer Care Ontario's Path to Prevention—*Recommendations for Reducing Chronic Disease in First Nations, Inuit and Métis* (released June 2016). Cancer Care Ontario is committed to supporting these initiatives through our third Aboriginal Cancer Strategy, which places a priority on building productive relationships, research and surveillance, prevention, screening, palliative and end-of-life care, and education.

I am delighted to join with the Chiefs of Ontario and Institute for Clinical Evaluative Sciences in releasing this important report, and look forward to continuing to work towards our shared vision of improving the health and well-being of First Nations communities in Ontario.

A handwritten signature in black ink that reads "Michael Sherar". The signature is fluid and cursive, with a long horizontal stroke at the end.

Michael Sherar



Message from Michael Schull

PRESIDENT & CEO
INSTITUTE FOR CLINICAL EVALUATIVE SCIENCES

I am pleased to join with the Chiefs of Ontario and Cancer Care Ontario in presenting *Cancer in First Nations People in Ontario: Incidence, Mortality, Survival and Prevalence*.

This report is a product of more than a decade of collaboration, driven by a shared commitment to improving the health and well-being of people in First Nations communities. This report is an outcome of our work together and provides important knowledge discovered by blending community partnership and research excellence.

The value of this partnership cannot be overstated. The Institute for Clinical Evaluative Sciences is a community of research, data and clinical experts who share a passion for exploring important questions. We are invested in supporting First Nations to use data to answer questions and promote well-being, healing and effective policy. Through our partnership with the Chiefs of Ontario and Cancer Care Ontario, we respect the insights, experience and agency of the First Nations communities involved.

Collaborative research and reports like this one can influence the design, implementation and evaluation of health policy and the delivery of healthcare. By providing decision-makers with a greater understanding of the particular ways cancer affects the First Nations population, this research is an important step towards addressing inequalities in the health of First Nations.

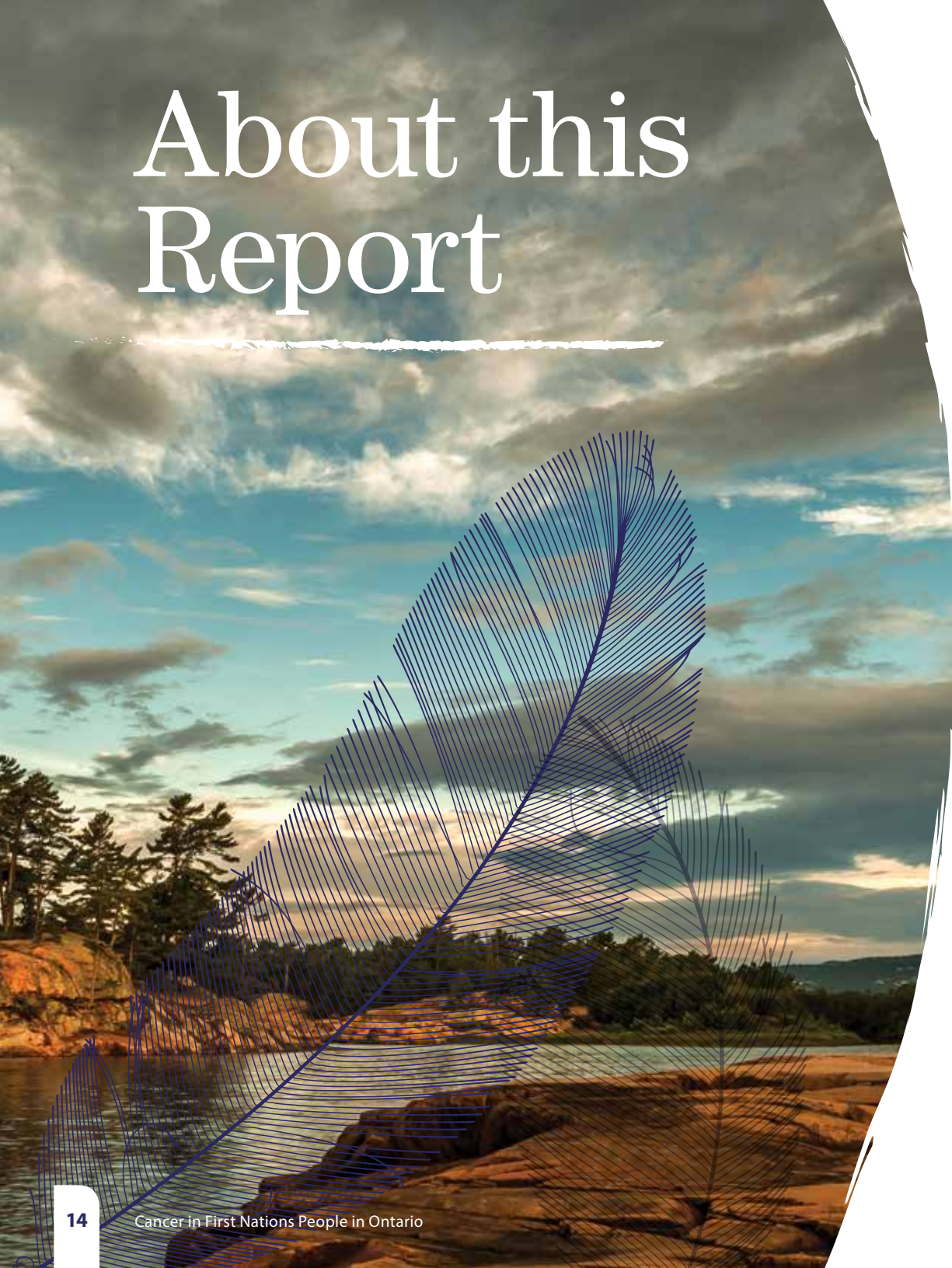
My colleagues and I are grateful for the strong partnership that has overseen this respectful use of First Nations data to produce this report. We will remain a committed partner in producing evidence that makes policy better, healthcare stronger and people healthier.

Sincerely,

A handwritten signature in black ink that reads "Michael Schull". The signature is fluid and cursive, with the first and last names being more prominent.

Michael Schull

About this Report



Outline

This report is about how cancer has been affecting First Nations people registered under the Indian Act (hereafter referred to as First Nations people) in Ontario from 1991 to 2010. Specifically, it provides:

- context about First Nations people in Ontario, including history, demographics and health;
- information about cancer, including risk factors, and symptoms;
- statistics about cancer in First Nations people in Ontario over a 20-year time period (1991 to 2010) organized into chapters, by cancer type; and
- what these statistics may mean for prevention, policies and programs.

Purpose

It is anticipated that this information will provide First Nations communities and decision-makers with a greater understanding of how each cancer type affects First Nations people in Ontario, and equip them with the information needed to set priorities and plan initiatives that can address areas of concern.

Overview

Over the past decade, Cancer Care Ontario and First Nations have been working together to build a strategy to learn about and track cancer patterns in First Nations people. Mandated by the All Ontario Chiefs in Assembly, the strategy involved forming a partnership between Cancer Care Ontario, the Chiefs of Ontario and the Institute for Clinical Evaluative Sciences, and submitting a joint application to Aboriginal Affairs and Northern Development Canada (now called, Indigenous and Northern Affairs Canada) for access to the Indian Registration System data file.

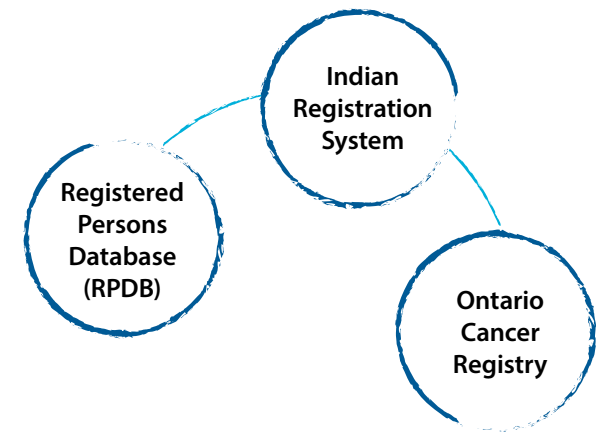
The partnership is guided by the First Nations principles of OCAP® (Ownership, Control, Access and Possession)—a set of standards that establishes how First Nations data should be collected, protected, used or shared. A Data Governance Agreement and two Data Sharing Agreements say how the partners will work together to ensure that the OCAP® principles are met.

Process

The main source of cancer information is the Ontario Cancer Registry—a secure data file maintained by Cancer Care Ontario that includes all newly diagnosed cancers and deaths following a cancer diagnosis in people living in Ontario. There are strict rules in place to protect the privacy of this personal health information. The Ontario Cancer Registry provides a lot of useful information about cancer, but there is no way to know whether someone diagnosed with cancer identifies as First Nations from the cancer registry information alone. There is also no information about people's exposure to risk factors—the Ontario Cancer Registry does not include information about how people lived (e.g., what they ate, whether they smoked) before getting cancer.

To identify First Nations people in Ontario who have cancer, the Indian Registration System (a data file of all First Nations people who are registered under the Indian Act) was connected to the Registered Persons Database (a list of all people with Ontario health insurance numbers) and the Ontario Cancer Registry through a process called record linkage. Combined, these datasets comprise a group of registered First Nations people in Ontario, and also those registered First Nations people who have cancer. Their cancer statistics were calculated and are presented in this report.

Refer to Appendix: Governance, Methods and Limitations for more information.



Combined, these datasets comprise a group of registered First Nations people in Ontario, and also those registered First Nations people who have cancer. Their cancer statistics were calculated and are presented in this report.

Background and Context

First Nations people in Ontario

Canada's Constitution Act of 1982 recognizes "existing Aboriginal and treaty rights of the [Aboriginal] peoples of Canada" explicitly defined as "the Indian [now referred to as "First Nations"], Inuit and Métis peoples."¹ First Nations—the largest of these three Peoples—are a young and rapidly growing population, with a median age of 26, compared to 41 for non-Aboriginal people in Ontario.² In 2011, there were 186,825 First Nations people registered under the Indian Act (also referred to as status or registered First Nations people) living in Ontario.³

Brief historical context

First Nations have unique histories, worldviews, cultures and ways of life. Before their contact with Europeans, First Nations in what is now Ontario existed as diverse and stable communities whose economy and governance structures were sound and thriving. Chronic disease was rare; for illnesses that did occur, highly respected healers used treatments based on tested knowledge passed down through generations of teaching. First Nations people lived well, with a balanced diet, active lifestyle and well-developed concepts of well-being and medicine.⁴ Following contact with Europeans in the 1600s, the healthy life balance practiced by First Nations communities was dramatically altered. Foreign communicable diseases, such as smallpox, measles, typhoid fever and tuberculosis, were introduced and spread with devastating speed. It is estimated that in some areas of Canada the First Nations population was reduced by as much as 95 percent.⁵

The persistence of colonization in the late 1700s brought about an imposition of European religions, value systems, social structures and orders of governance. The resulting policies of assimilation in the 19th and 20th centuries—including the Indian Act and residential schools—had a profound effect on the First Nations way of life. The consequences for First Nations communities were disruptions to the established foundations of their society, ultimately resulting in systemic barriers to building healthy communities.⁶

First Nations people have shown an ability to survive—and thrive—in the face of these overwhelming challenges. Factors such as personal and community resilience, restoring and promoting First Nations identity, keeping cultures and languages alive, and self-governance have had protective effects on counterbalancing the past and present day injustices and long-term inequities.⁷

Health overview

First Nations practices embrace health in a holistic way that reflects the physical, spiritual, emotional and mental health of an individual, family and community. While there has been progress in developing effective First Nations health initiatives, some of which incorporate a holistic way of looking at health,⁸ significant health inequalities remain. At a national level, First Nations men and women have life expectancies that are four and six years lower, respectively, than life expectancies of non-Aboriginal men and women.⁹ Overall, First Nations people experience higher rates of some chronic diseases¹⁰ and mental health conditions,¹¹ as well as significant barriers to equitable care.¹²

These inequalities can, in part, be explained by determinants of health that are unique to Indigenous peoples. These determinants have been described using the metaphor of a tree, where each part is dependent not only upon the other parts for sustenance and support, but also upon the environment that nourishes and sometimes damages them.¹³ At the root of the tree are distal factors (e.g., historical, social, political, ideological foundations), which are deeply embedded and from which all other determinants evolve. At the trunk or core of the tree

are the intermediate determinants (e.g., healthcare systems, community resources and capacities) that influence an individual's ability to achieve and maintain good health. Finally, the proximal determinants (e.g., health behaviours, physical environment and culture) represent the leaves and branches of the tree, which influence health in the most obvious and direct ways. While this report focuses primarily on proximal factors—where there is established evidence that these factors play a role in a person's risk for developing cancer—there is an undeniable need to also address the distal and intermediate determinants to effectively reduce the risk of chronic disease.

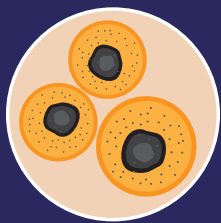
Determinants of health have also been linked to positive outcomes. Some studies in this emerging field of research have shown that cultural identity plays a supportive role in promoting First Nations health in general,¹⁴ promoting children's health,¹⁵ reducing youth suicide rates¹⁶ and contributing to improved academic achievement.¹⁷ Other research has found that participation in cultural activities reduces depression, and lowers substance and alcohol abuse.¹⁸

Cancer Care Ontario's *Path to Prevention—Recommendations for Reducing Chronic Disease in First Nations, Inuit and Métis* has 22 recommendations aimed at helping the Ontario government develop policies for reducing the risk of chronic disease in First Nations, Inuit and Métis.¹⁹ Approaches to reducing health inequities by addressing the determinants of health are embedded in the recommendations. The goal of *Path to Prevention* is to help create supportive and healthier environments that empower First Nations, Inuit and Métis peoples of Ontario by building on the strengths of individuals, families, communities and organizations. The last several decades have seen a resurgence of action by First Nations people to reclaim their cultures, assert their rights and determine their own futures.²⁰ The approach taken in the *Path to Prevention* report aligns with this positive direction and supports the broader agenda of healing and reconstruction advanced through First Nations-led collaboration with the Government of Ontario and other key stakeholder organizations.

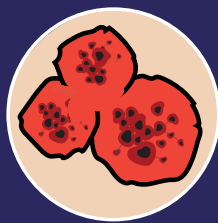
What is cancer?

Every cancer starts in a cell. When a cell is damaged, the body tries to repair it. If repairs don't work, the body removes the damaged cell. However, sometimes damaged cells aren't removed, and then they divide and copy themselves. Cancer develops when a damaged cell grows and makes more damaged cell copies.

There are over 200 types of cancer, usually named after the organ where the cancer starts (for example, breast cancer is a cancer starting in the breast). Every cancer develops differently. Some grow quickly. Others grow slowly or rarely spread beyond the original organ.



Normal cell



Cancer cell

Risk factors for cancer

Risk factors are exposures, behaviours or individual characteristics that affect someone's risk of developing a disease. Risk factors can cause the kind of cell damage that can lead to cancer. Cell damage can also happen naturally over time with normal cell growth and aging. Other causes of cell damage include not living a healthy life, environmental toxins and genes that might be passed down from family.²¹

Behavioural factors—smoking or chewing commercial tobacco, drinking alcohol, eating a poor diet and being physically inactive—play an established role in the risk of developing cancer.^{21, 22}

Environmental factors can also play a role in the risk of developing cancer, but in general, cause fewer cancer cases each year than the behavioural factors described above. The environmental risk factors associated with the greatest number of cancer cases in Ontario are ultraviolet radiation from the sun, radon gas from the ground and outdoor particulate air pollution. The level of exposure to any given environmental risk factor may vary across different regions of the province.

How cancer is found

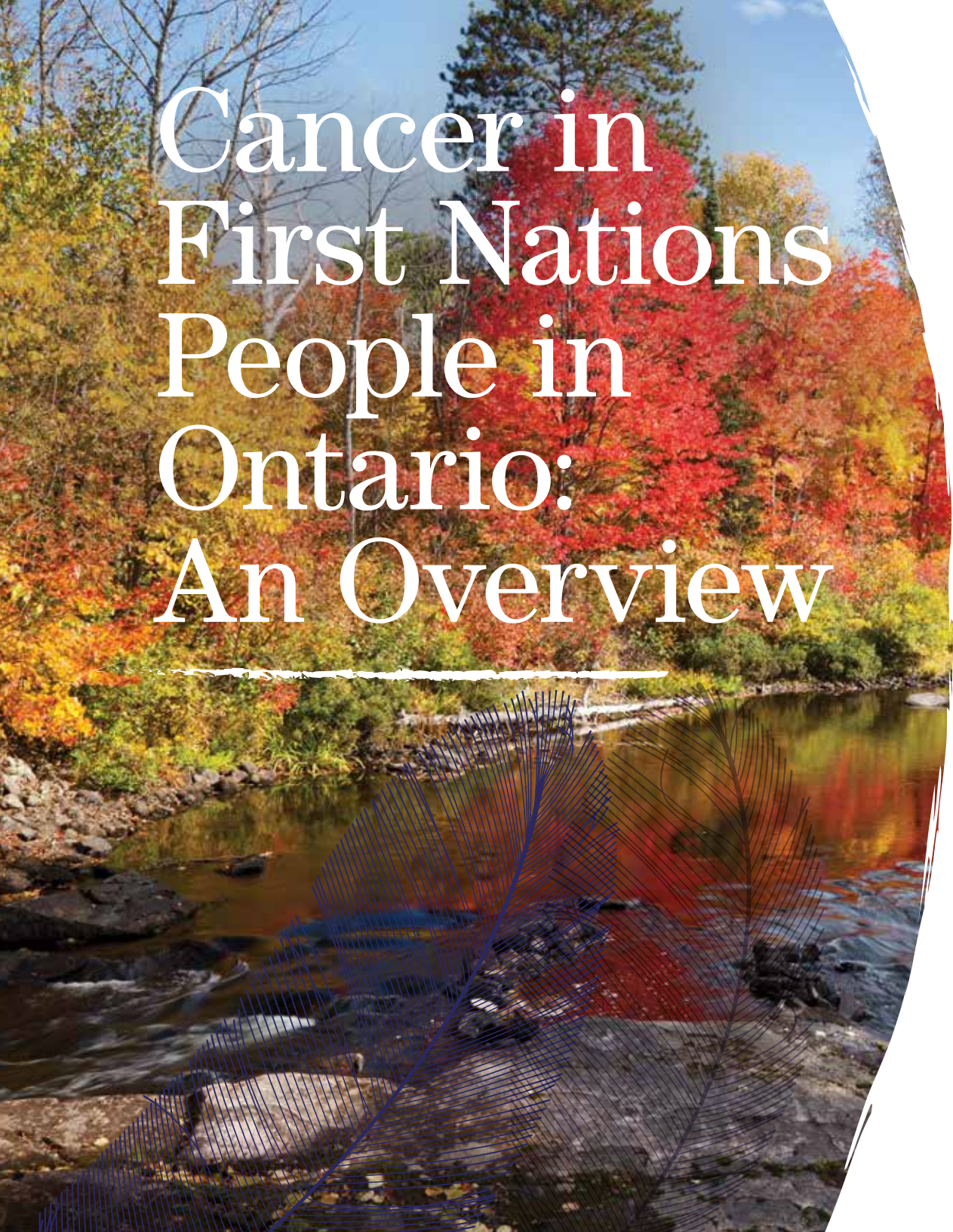
Cancer starts in one place in the body, at the cell level. The earlier that the cancer is found and treated, the better the chances are for recovery. Sometimes small cell changes that could lead to cancer can be found and treated very early to prevent cancer from developing altogether.

However, cancer is not always obvious. There may be no symptoms. Sometimes people find a lump themselves or have unusual symptoms. Visiting a doctor or nurse may help find an existing cancer during a regular check-up.

Screening tests help find cancer early, before someone has symptoms and when the cancer is easier to treat. Ontario has screening programs for breast cancer (screening mammogram), cervical cancer (Pap test) and colorectal cancer (test for blood in the stool, colonoscopy or flexible sigmoidoscopy).

People do survive cancer!

More people are surviving cancer now, particularly when it is found and treated early. Some of the most common cancers grow slowly or are less likely to spread. People with prostate or breast cancer, for example, tend to live almost as long as people without cancer. There are still some cancers—such as lung cancer or pancreatic cancer—that can shorten people's lives. For these cancers, there are very few early symptoms, so by the time a cancer is found, it is harder to treat. The most important factor in cancer survival is early diagnosis. Getting a regular check-up and participating in cancer screening programs are the first steps to diagnosing cancer early.



Cancer in First Nations People in Ontario: An Overview

Before this report, the most recent population-level information on cancer in First Nations people in Ontario came from a study by Marrett and Chaudhry (2003)²⁴ that connected the Indian Registration System to the Ontario Cancer Registry using record linkage.

The study looked at cancers diagnosed from 1968 to 1991 and found that registered First Nations people had lower cancer rates, but their rates were rising more quickly than they were for other people in Ontario, in particular for lung and colorectal cancers.²⁵

Follow-up studies found that First Nations people had worse cancer survival than non-First Nations people in Ontario, in particular for colorectal, female breast, male lung and prostate cancer.^{26, 27} This research found that First Nations women diagnosed with breast cancer were more likely to be diagnosed at a later stage when the cancer is more difficult to treat, and to have another chronic condition (e.g., diabetes) in addition to their cancer. These differences may partially explain why First Nations women had poorer survival from breast cancer.

There is no terminology for cancer in most First Nations languages. In some First Nations communities, cancer is a taboo subject surrounded in secrecy and fear because historically cancer was rare among First Nations people. Historical and cultural contexts have contributed to unique views of, and a generally pessimistic attitude towards, cancer. These views may impact the receptiveness to cancer education, prevention and delivery of care.^{23, 24}

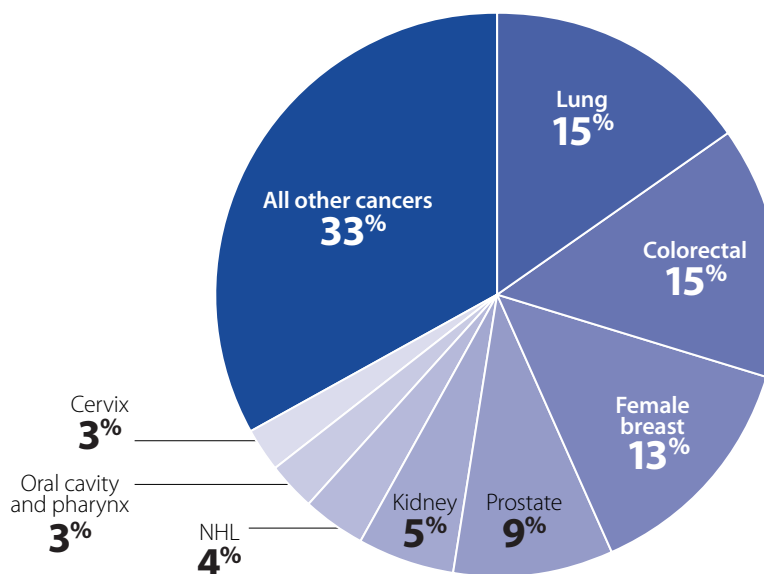
In this report, the Chiefs of Ontario, Cancer Care Ontario and the Institute for Clinical Evaluative Sciences partnered to update these statistics from 1991 to 2010 (see Appendix A for information on Governance, Methods and Limitations). In this time period, there were 6,859 cancers diagnosed in 194,392 First Nations people. About half of these cancers were diagnosed in females (3,707 cancer cases in 94,947 females) and half in males (3,152 cancer cases in 99,445 males).

The rest of this section provides a detailed summary of the incidence, mortality, survival and prevalence of cancer in First Nations people

Most common cancer types

- The four most common cancers in First Nations people in Ontario were lung, colorectal, breast and prostate, accounting for over 50 percent of all cancers diagnosed in 1991–2010 (Figure 1). The same four cancer types were also most common in other people in Ontario.
- The fifth most common cancer diagnosed among First Nations people was kidney cancer, whereas for other people in Ontario, kidney cancer ranks much lower (12th overall).

FIGURE 1: Most common cancers in First Nations people in Ontario, all ages, 1991–2010 (of a total 6,859 cancers*)



Notes: "All other cancers" includes a variety of cancers each of which affects fewer people, such as cancer of the liver, stomach, pancreas and gallbladder.

*This number reflects cancer cases, not individuals. An individual may have been diagnosed with more than one cancer type. NHL=non-Hodgkin lymphoma

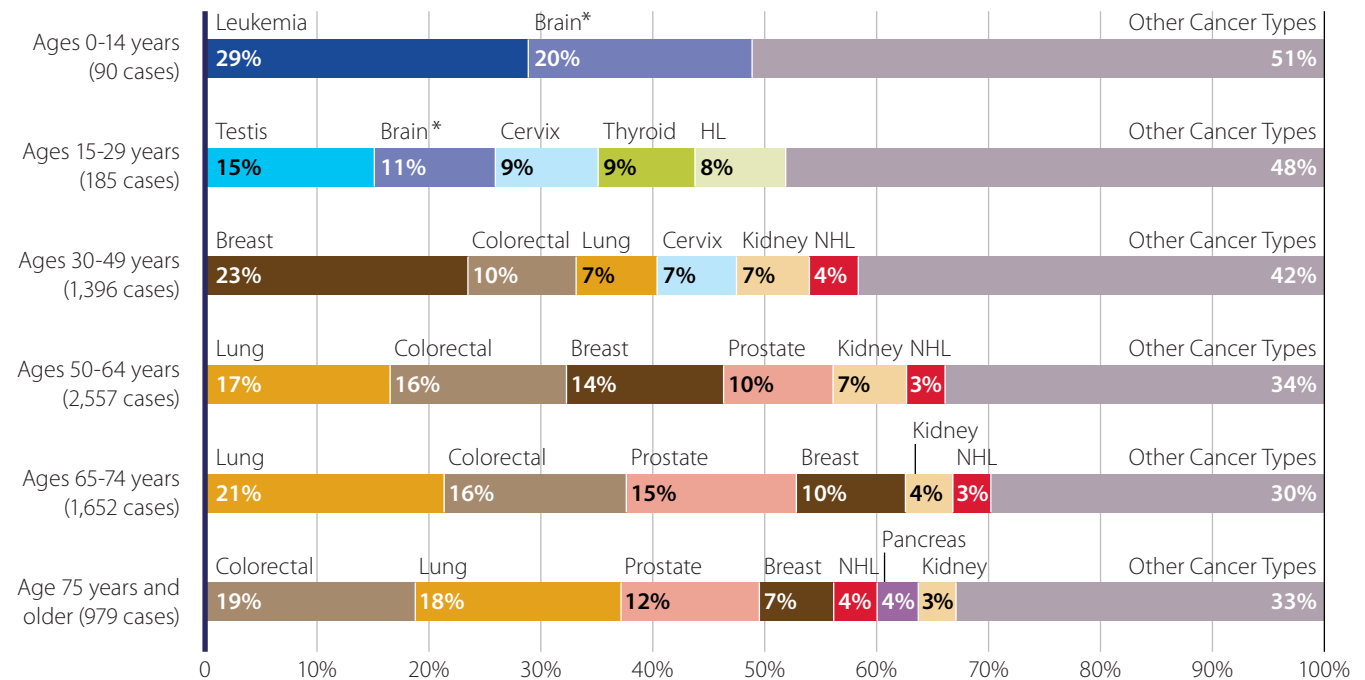
Data sources: Indian Registration System, Ontario Cancer Registry

Most common cancer types by age (Figure 2)

The most common types of cancer vary with age.

- Among First Nations children (ages 0 to 14) and young adults (ages 15 to 29), leukemia, testis and brain were among the most commonly diagnosed cancer types.
- Among First Nations people ages 15 to 29 and 30 to 49, cervical cancer was the third and fourth most common cancer, respectively. Kidney cancer was the fifth most common cancer among First Nations people ages 30 to 49.
- Among First Nations older adults (age 50 and older), the same four cancer types occurred most commonly across all age groups: female breast, colorectal, lung and prostate. These four cancers make up over 50 percent of all cancers diagnosed. Kidney cancer was the fifth most common cancer in First Nations adults ages 30 to 74.

FIGURE 2: Most common cancers in First Nations people in Ontario, by age and cancer type, 1991–2010



Notes: "Other Cancer Types" in each age group includes a variety of cancers each of which affects fewer people. In children and young adults examples include cancers of soft tissue, and bones and joints. In older adults, examples include cancers of the stomach, liver and bladder.

HL=Hodgkin lymphoma

NHL=non-Hodgkin lymphoma

*Includes brain and other central nervous system cancers.

Data sources: Indian Registration System, Ontario Cancer Registry

Someone's risk of getting cancer increases with age. Most cases of cancer (61 percent) were diagnosed in First Nations people ages 50 to 74. Cancer is less common in children and young adults—only four percent of all cancers occurred in First Nations people under 30 years old.

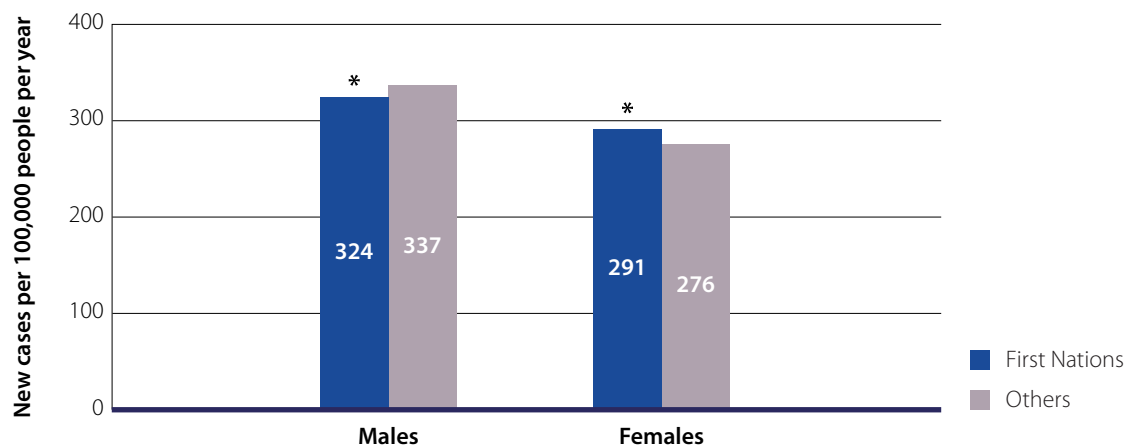
Cancer incidence (new cases)

i Cancer incidence is the number of people who are newly diagnosed with cancer in a specific population over a set period of time. The higher the incidence rate in a population, the more common the disease. For a more detailed explanation of incidence, visit cancercares.on.ca/measuringcancerFNIM.

Cancer incidence (new cases) by sex (Figure 3)

- From 1991 to 2010, about 324 cases of cancer per 100,000 First Nations males (or slightly more than three per 1,000) and 291 cases of cancer per 100,000 First Nations females (or slightly less than three per 1,000) were diagnosed each year.
- First Nations males had lower cancer incidence than other males in Ontario.
- First Nations females had higher cancer incidence than other females in Ontario.

FIGURE 3: Cancer incidence (new cases) in First Nations people and other people in Ontario, all ages, by sex, 1991–2010



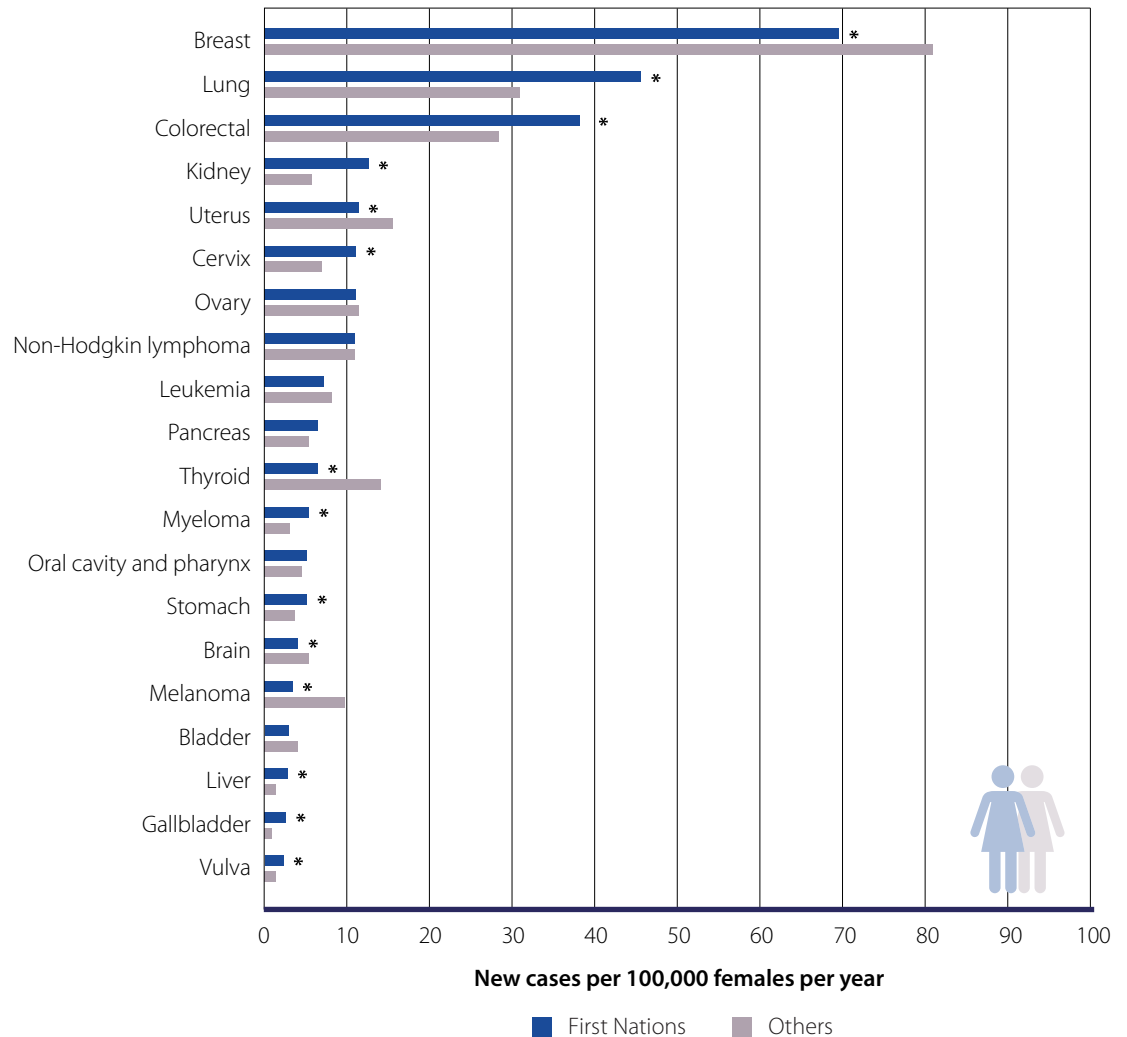
Notes: * Indicates incidence for First Nations people is significantly different than for other people in Ontario. Age-standardized to the 1960 World Standard population.

Data sources: Indian Registration System, Ontario Cancer Registry

Cancer incidence (new cases) in First Nations females by cancer type (Figure 4)

- In First Nations females, breast, lung, and colorectal cancers had the highest incidence rates. In other females in Ontario, these three cancer types also had the highest incidence rates.
- First Nations females had **lower** incidence rates of breast, uterus, thyroid and brain cancers, as well as melanoma, than other females in Ontario.
- First Nations females had **higher** incidence rates of lung, colorectal, kidney and cervical cancers, myeloma, and cancers of the stomach, liver, gallbladder and vulva than other females in Ontario.

FIGURE 4: Cancer incidence (new cases) in First Nations females and other females in Ontario, all ages, by cancer type, 1991–2010



Notes: Includes cancer types with 30 or more cancers diagnosed in First Nations females.

* Indicates incidence for First Nations females is significantly different than for other females in Ontario.

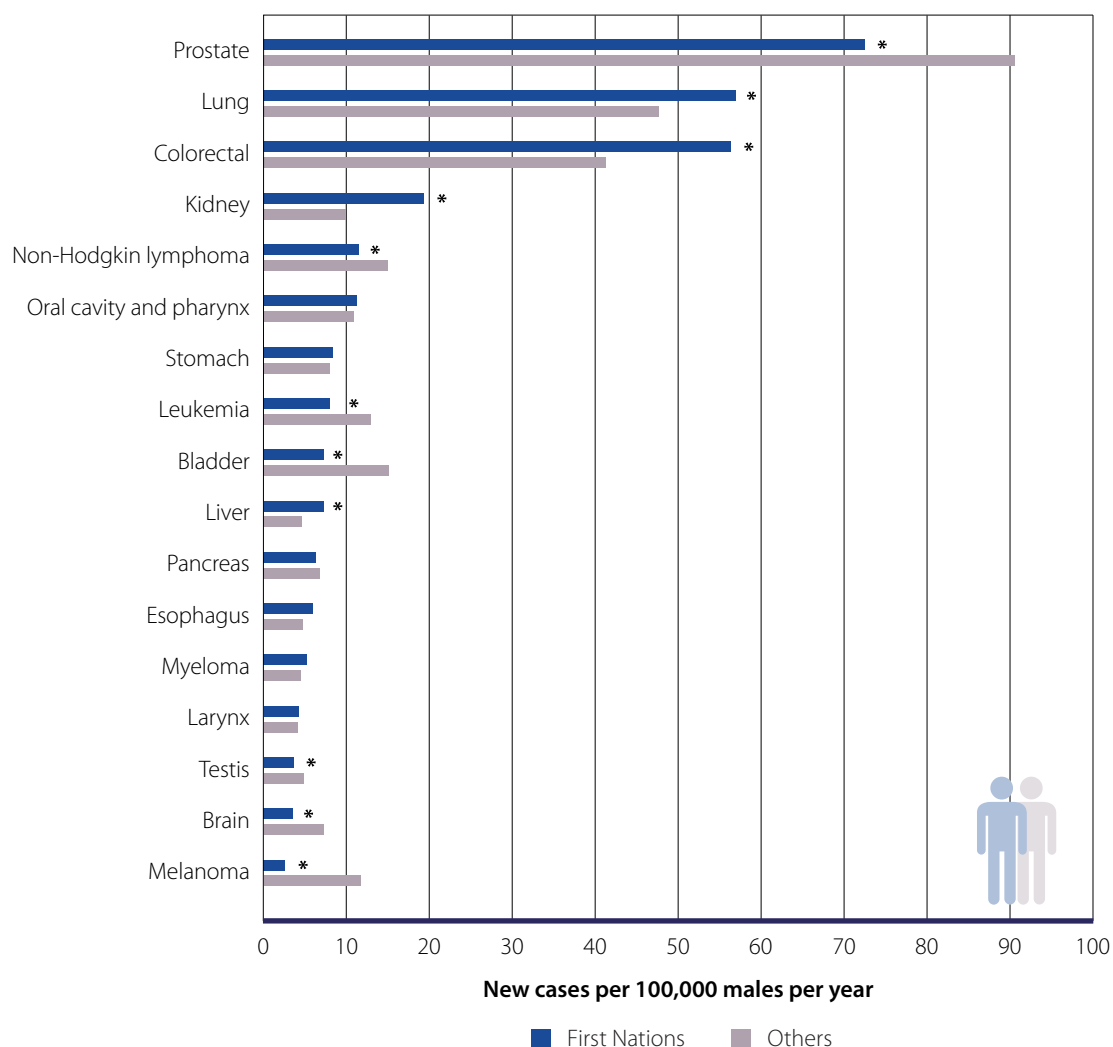
Age-standardized to the 1960 World Standard.

Data sources: Indian Registration System, Ontario Cancer Registry

Cancer incidence (new cases) in First Nations males by cancer type (Figure 5)

- In First Nations males, prostate, lung and colorectal cancer had the highest incidence rates. In other males in Ontario, the same three cancer types also had the highest incidence rates.
- First Nations males had **lower** incidence rates of prostate cancer, non-Hodgkin lymphoma, leukemia, cancers of the bladder, testis and brain, and melanoma than other males in Ontario.
- First Nations males had **higher** incidence rates of lung, colorectal, kidney and liver cancers than other males in Ontario.

FIGURE 5: Cancer incidence (new cases) in First Nations males and other males in Ontario, all ages, by cancer type, 1991–2010



Notes: Includes cancer types with 30 or more cancers diagnosed in First Nations males.

* Indicates incidence for First Nations males is significantly different than for other males in Ontario.

Age-standardized to the 1960 World Standard.

Data sources: Indian Registration System, Ontario Cancer Registry

Cancer mortality (deaths)

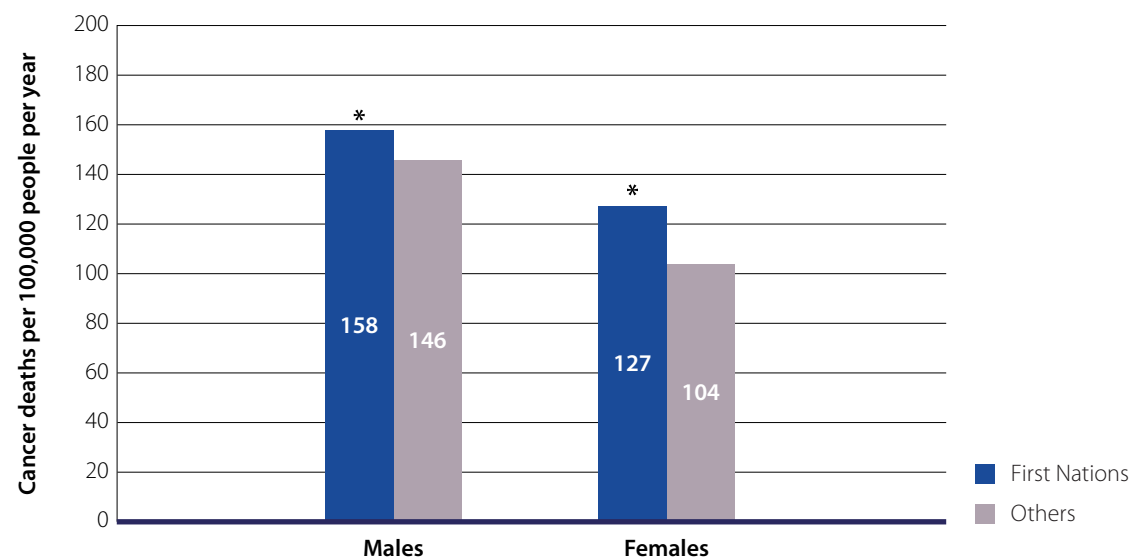


Mortality is the number of deaths in a population over a set period of time. Cancer mortality is lower when fewer people are being diagnosed and/or when more people are living longer after a cancer diagnosis. For a more detailed explanation of incidence, visit cancercare.on.ca/measuringcancerFNIM.

Cancer mortality (deaths) by sex (Figure 6)

- From 1991 to 2010, about 158 cancer deaths per 100,000 First Nations males (or slightly less than two per 1,000) and 127 cancer deaths per 100,000 First Nations females (or slightly more than one per 1,000) occurred each year.
- First Nations people had higher cancer mortality than other people in Ontario in 1991–2010.

FIGURE 6: Cancer mortality (deaths) in First Nations people and other people in Ontario, all ages, by sex, 1991–2010



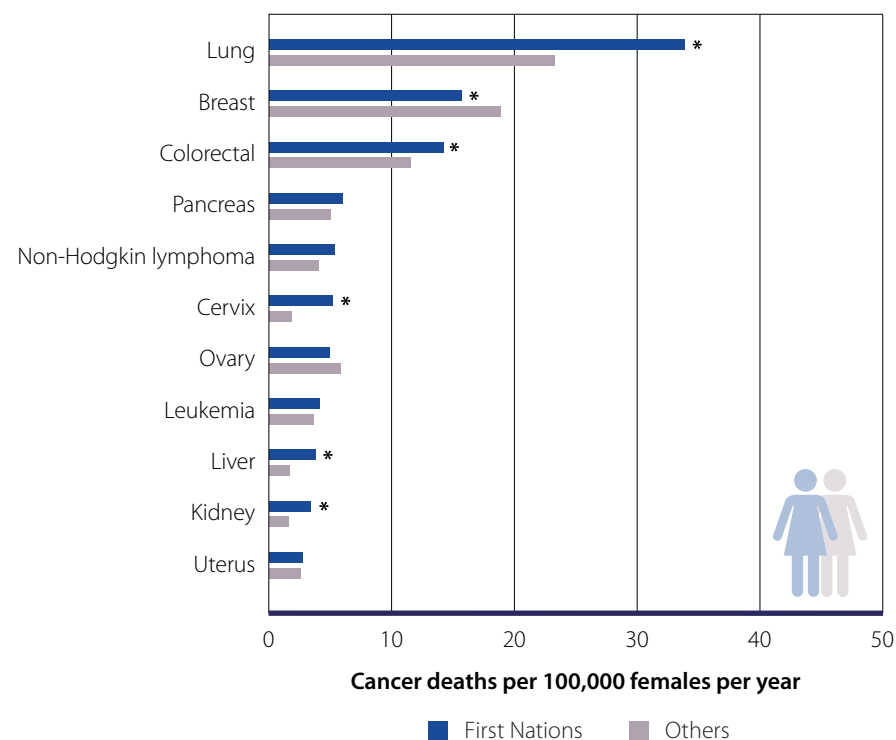
Notes: * Indicates mortality for First Nations people is significantly different than for other people in Ontario. Age-standardized to the 1960 World Standard.

Data sources: Indian Registration System, Ontario Cancer Registry

Cancer mortality (deaths) by sex and type (Figures 7 and 8)

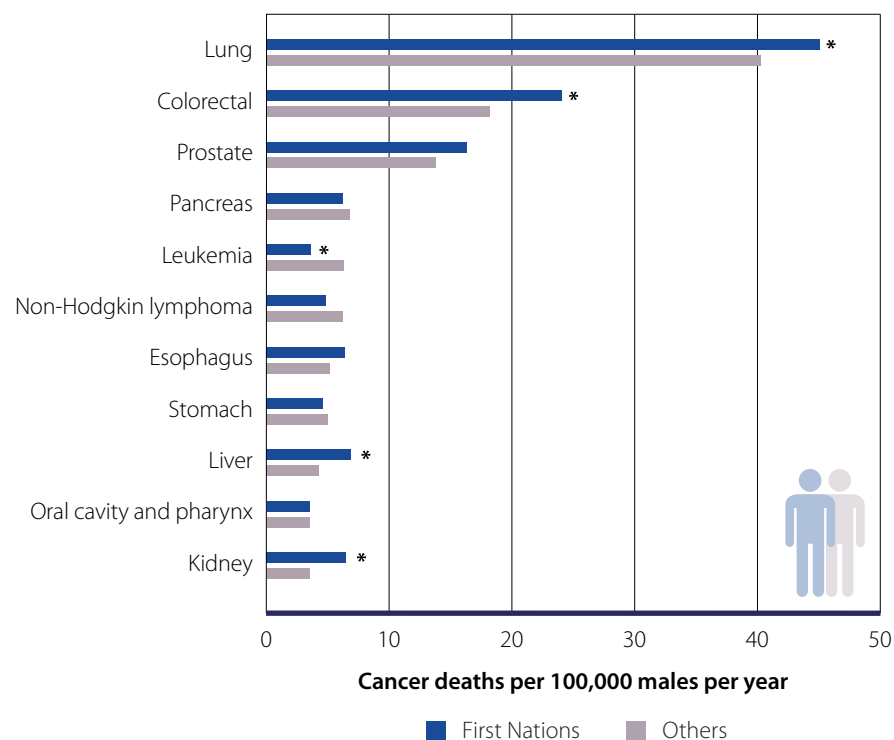
- The leading cause of cancer death in 1991 to 2010 was lung cancer for First Nations people (males and females) and for other people in Ontario.
- First Nations people (males and females) had higher mortality than other people in Ontario for lung, colorectal, liver and kidney cancers. First Nations females also had higher mortality for cervical cancer than other females in Ontario.
- First Nations females had lower mortality from breast cancer than other females in Ontario and First Nations males had lower mortality from leukemia than other males in Ontario.

FIGURE 7: Cancer mortality (deaths) in First Nations females and other females in Ontario, all ages, by cancer type, 1991–2010



Notes: Includes cancer types with 30 or more cancer deaths in First Nations females.
 * Indicates mortality for First Nations people is significantly different than for other people in Ontario.
 Age-standardized to the 1960 World Standard.
Data sources: Indian Registration System, Ontario Cancer Registry

FIGURE 8: Cancer mortality (deaths) among First Nations males and other males in Ontario, all ages, by cancer type, 1991–2010



Notes: Includes cancer types with 30 or more cancer deaths in First Nations males.
 * Indicates mortality for First Nations people is significantly different than for other people in Ontario.
 Age-standardized to the 1960 World Standard.
Data sources: Indian Registration System, Ontario Cancer Registry

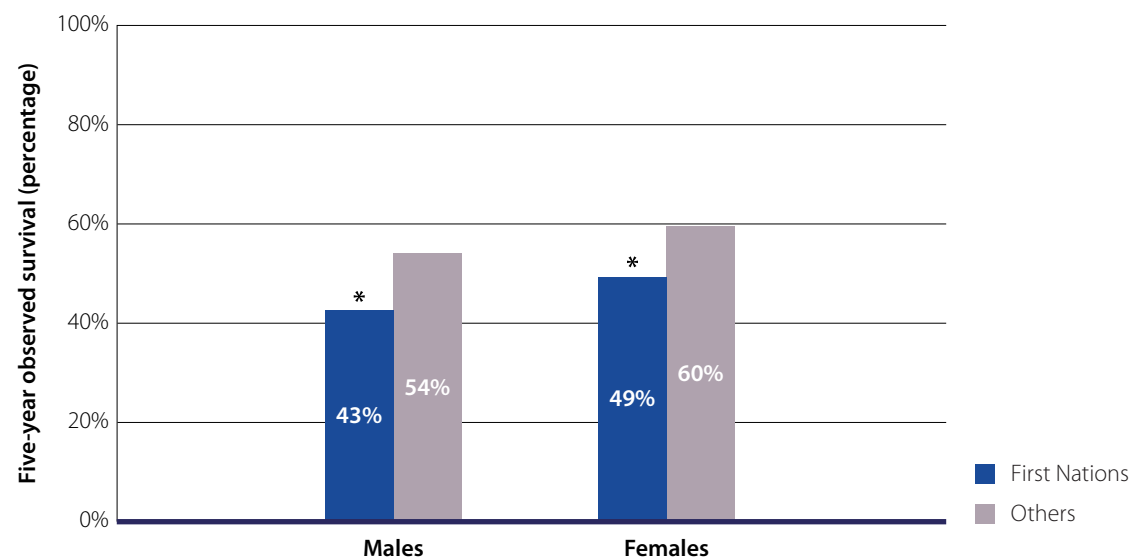
Cancer survival (chances of living after diagnosis)

i Cancer survival is the percentage of people still alive for a set time period after being diagnosed with cancer (usually five years). Survival improves when more cancers are caught early—before they spread to other parts of the body—and when there are improvements in cancer treatment that help people with cancer live longer. For a more detailed explanation of incidence, visit cancercare.on.ca/measuringcancerFNIM.

Cancer survival (chances of living after diagnosis) by sex (Figure 9)

- Fewer than half of First Nations males (43 percent) and females (49 percent) survived for five years or longer after their cancer diagnosis, compared to over half of other males (54 percent) and females (60 percent) in Ontario.

FIGURE 9: Cancer survival five years following diagnosis in First Nations people and other people in Ontario, ages 15–74 at diagnosis, by sex, 1991–2010

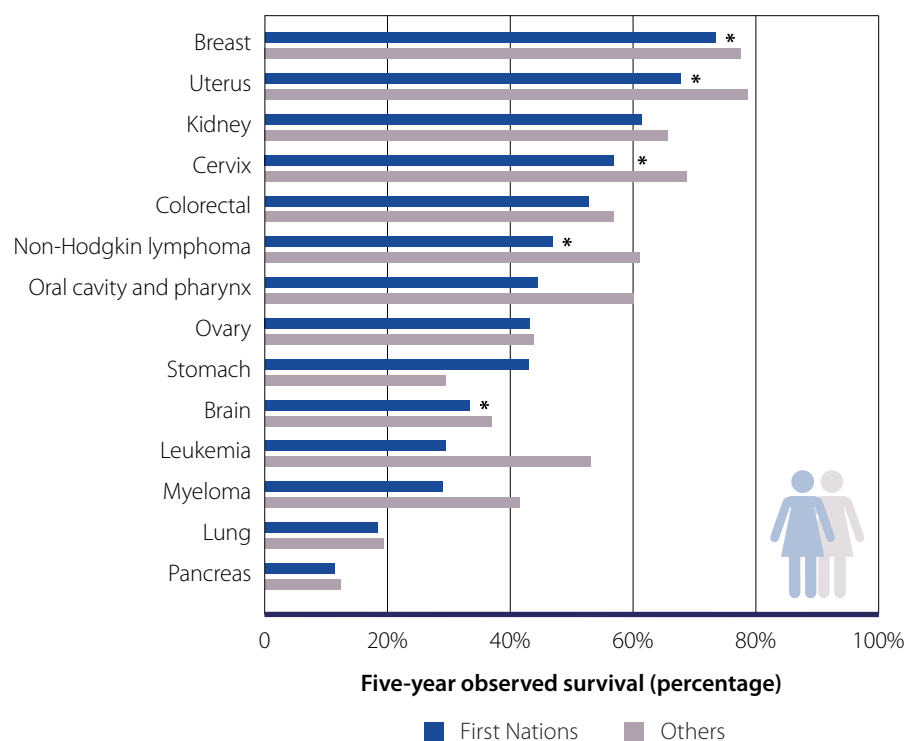


Notes: * Indicates survival for First Nations people is significantly different than for other people in Ontario. Age-standardized to the International Cancer Survival Standards.
Data sources: Indian Registration System, Ontario Cancer Registry

Cancer survival (chances of living after diagnosis) by sex and type (Figures 10 and 11)

- Survival was best for female breast and male prostate cancers. About three-quarters of First Nations people with one of these cancer types lived for five years or longer after their cancer diagnosis.
- Survival was poorest for cancers of the lung and pancreas in males and females. Less than 20 percent of First Nations people with one of these cancer types lived five years or longer after their cancer diagnosis.
- Survival was poorer for First Nations females diagnosed with cancers of the breast, uterus and cervix, as well as non-Hodgkin lymphoma and leukemia compared to other females in Ontario.
- Survival was also poorer for First Nations males diagnosed with cancers of the prostate, oral cavity and pharynx, and lung, as well as non-Hodgkin lymphoma and myeloma compared to other males in Ontario.

FIGURE 10: Five-year survival among First Nations females and other females in Ontario, ages 15–74 at diagnosis, by cancer type, 1991–2010

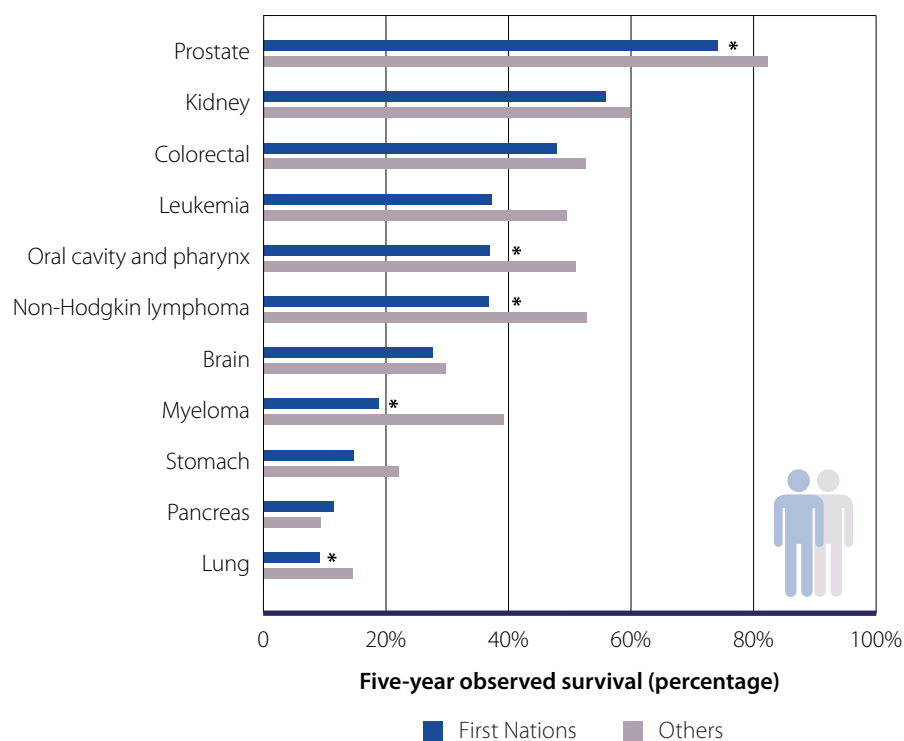


Notes: Includes cancer types with 30 or more cases in First Nations males and 30 or more cases in First Nations females.
 * Indicates survival for First Nations females is significantly different than for other females in Ontario.

Age standardized to the International Cancer Survival Standard.

Data sources: Indian Registration System, Ontario Cancer Registry

FIGURE 11: Five-year survival among First Nations males and other males in Ontario, ages 15–74 at diagnosis, by cancer type, 1991–2010



Notes: Includes cancer types with 30 or more cases in First Nations males and 30 or more cases in First Nations females.
 * Indicates survival for First Nations males is significantly different than for other males in Ontario.

Age standardized to the International Cancer Survival Standard.

Data sources: Indian Registration System, Ontario Cancer Registry

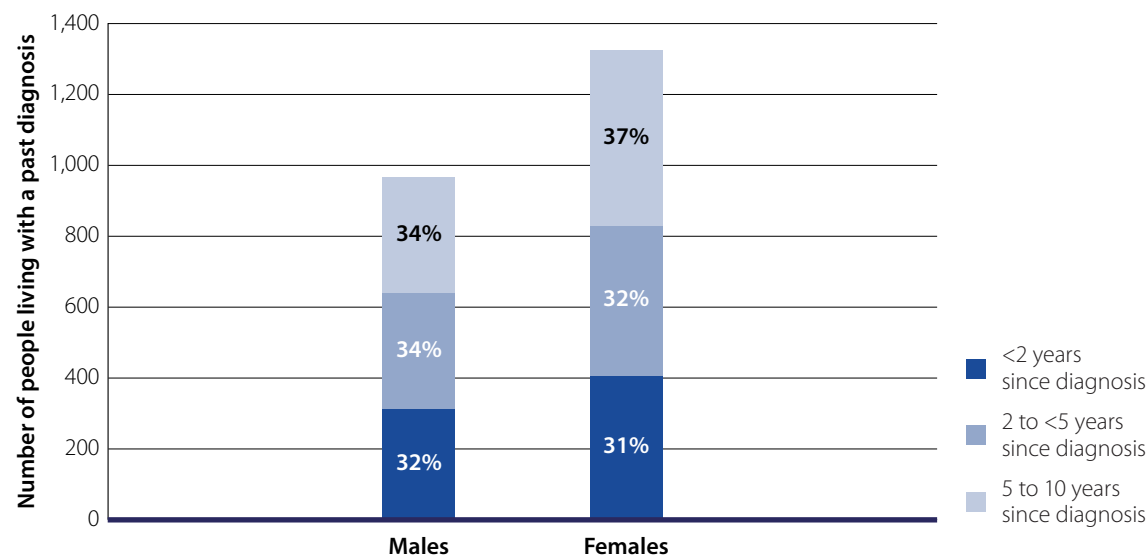
Cancer prevalence (new and existing cases)

i Cancer prevalence is defined as the number of people living with a past diagnosis of cancer in a set time period. A high prevalence of any given cancer might be explained by a high incidence (i.e., the cancer is very common) and/or high survival (i.e., someone is more likely to live long after being diagnosed). For a more detailed explanation of incidence, visit cancercare.on.ca/measuringcancerFNIM.

Cancer prevalence (new and existing cases) by sex (Figure 12)

- As of January 1, 2011, there were 966 First Nations males (about one percent) and 1,324 First Nations females (slightly more than one percent) living with a diagnosis of cancer sometime in the previous ten years, i.e., sometime between 2000 and 2010.
- About one-third of First Nations people living with cancer were recently diagnosed (i.e., alive within two years of a diagnosis), including 32 percent of males and 31 percent of females.
- Another third of First Nations people with cancer were alive two to five years after diagnosis and might still be receiving treatment, including 34 percent of males and 32 percent of females.
- The remaining group of people with cancer are those who could be considered cancer survivors (alive five to 10 years after diagnosis), including 34 percent of males and 37 percent of females.

FIGURE 12: Cancer prevalence in First Nations people in Ontario as of January 1, 2011, all ages, by sex and time since diagnosis

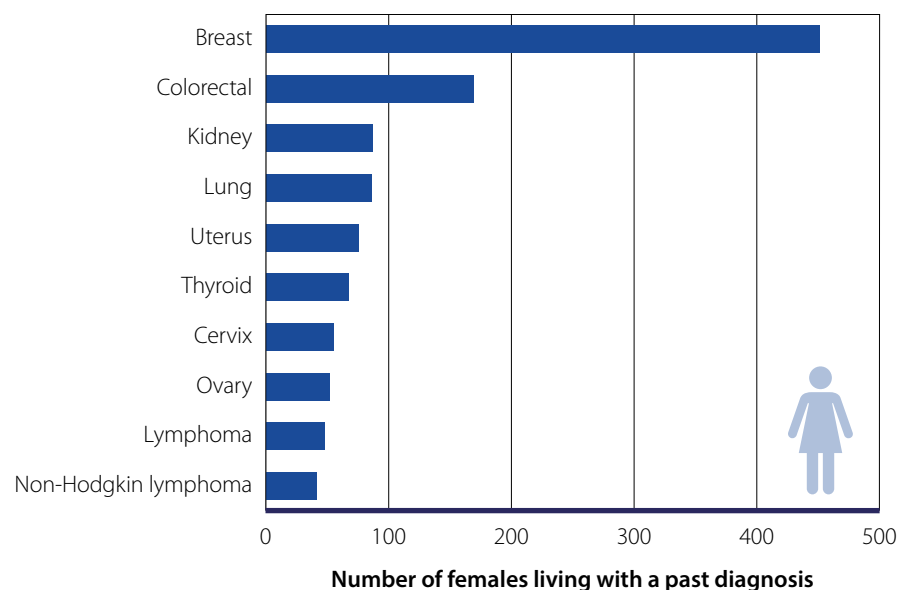


Data sources: Indian Registration System, Ontario Cancer Registry

Cancer prevalence (new and existing cases) by sex and type (Figures 13 and 14)

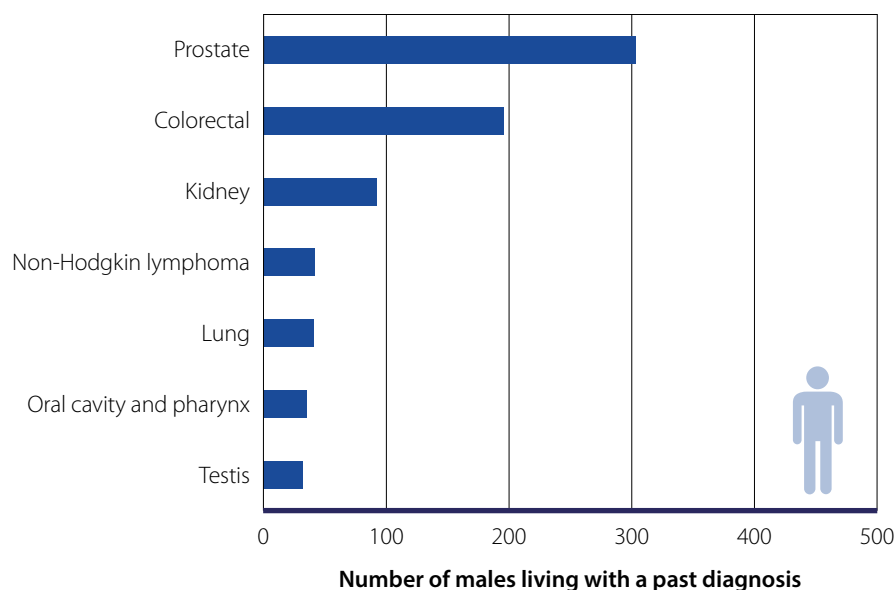
- As of January 1, 2011, breast cancer was the most prevalent cancer type among First Nations females and prostate cancer was the most prevalent cancer type among First Nations males. There were 451 First Nations females living with a past diagnosis of breast cancer and 303 First Nations males living with a past diagnosis of prostate cancer sometime between 1991 and 2010. Some of these people may have been diagnosed recently and are still undergoing cancer treatment, while others may have been alive over five years after being diagnosed and might now be considered cancer-free.
- The next most prevalent cancer type was colorectal cancer in males and females. All three of these cancer types also have high incidence (many new cases) and good survival.
- Fewer people were living with a past diagnosis of lung cancer, despite the high incidence of this cancer in First Nations people, because the chances of surviving very long after a lung cancer diagnosis are poor.

FIGURE 13: Ten-year cancer prevalence among First Nations females in Ontario as of January 1, 2011, all ages, by cancer type



Notes: Includes cancer types where 30 or more people are living with a past diagnosis.
Data Sources: Indian Registration System, Ontario Cancer Registry

FIGURE 14: Ten-year cancer prevalence among First Nations males in Ontario as of January 1, 2011, all ages, by cancer type



Notes: Includes cancer types where 30 or more people are living with a past diagnosis.
Data Sources: Indian Registration System, Ontario Cancer Registry

Lung Cancer

in First Nations People in Ontario

What is lung cancer?

Lung cancer starts when cells in the lung change, grow out of control and group together to form a tumour, or lump. The most common reason lung cells change is because they are exposed to dangerous chemicals that people breathe, such as smoke from commercial tobacco (e.g., cigarettes), radon gas in the home or outdoor air pollution.

Even people who were exposed to these chemicals a long time ago are still at risk for lung cancer. It may take years for lung cancer to grow and there are often no symptoms early on. Most new cases of lung cancers are among adults 50 years or older.

Risk factors

The risk factors for lung cancer described in this section are exposures, behaviours or individual characteristics that affect someone's risk of developing this disease. Although they are not described in detail here, factors that individuals have little control over such as access to care, community infrastructure, and the lasting effects of colonialism are as important as or more important than individual risk factors to determining someone's likelihood of getting cancer.

Some of the factors that can increase the risk of lung cancer include:

- **Smoking commercial tobacco:** Smoking is the main risk factor for lung cancer. In Ontario, cigarette smoking causes 71 percent of all lung cancer cases diagnosed each year.²⁸ Half of on-reserve First Nations adults and 43 percent of off-reserve First Nations adults smoke cigarettes, compared to only 22 percent of non-Aboriginal adults.²⁹ Smoking is also more common among First Nations teens living on-reserve (30 percent) and off-reserve (14 percent) compared to non-Aboriginal teens in Ontario (five percent).
- **Second-hand smoke:** Even people who don't smoke can have a higher risk of lung cancer if they breathe in the cigarette smoke of others (second-hand smoke or environmental smoke).³⁰ People can breathe in second-hand smoke in public places or in more private spaces, such as a home or a car.
- **Environmental factors:** Although breathing in commercial tobacco is the cause of most lung cancer cases in Ontario, there are other environmental risk factors associated with a much smaller number of lung cancer cases each year. In Ontario, about 10 percent of lung cancer cases are caused by breathing in radon gas in homes or other buildings.³¹ Other environmental risk factors for lung cancer in Ontario that cause an even smaller number of cancers each year are breathing in particulate air pollution or asbestos (an insulation material formerly used in buildings and homes), and eating foods or drinking water containing arsenic.
- **Radiation:** Being exposed to radiation (e.g., through medical radiation therapy), particularly on the chest, can increase the risk of developing lung cancer.³²

Factors described in this section that can increase the risk of lung cancer

- Commercial tobacco use
- Exposure to second hand smoke
- Exposure to radon gas in homes or other buildings, particulate air pollution or asbestos.
- Radiation

Symptoms

There are many symptoms of lung cancer, which can also be caused by other health conditions (see the full list at cancer.ca). People with any unusual symptoms should visit a doctor or healthcare provider. For example, some of the symptoms of lung cancer include a cough that gets worse or doesn't go away, chest pain that doesn't go away and is made worse by deep breathing or coughing, blood-stained mucus coughed up from the lungs, shortness of breath, wheezing and fatigue.

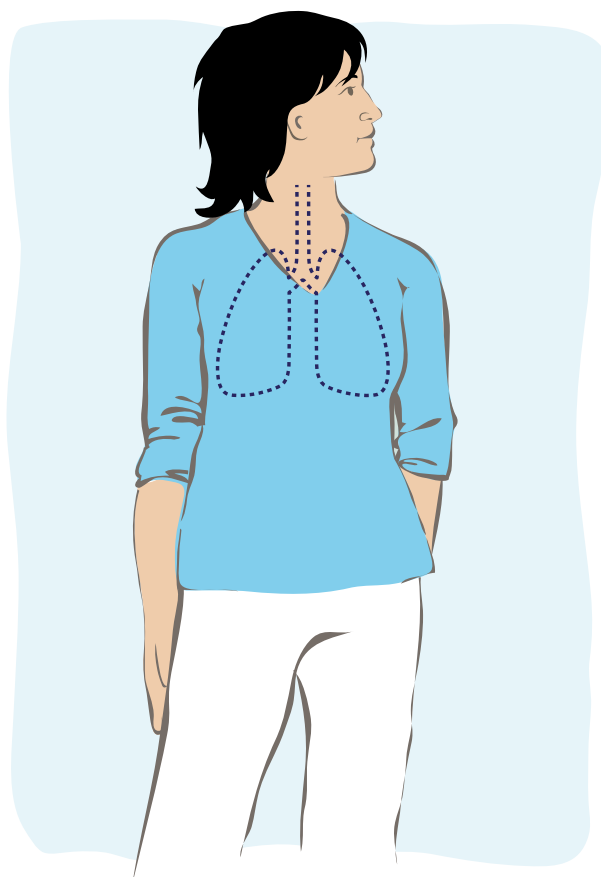
Once a diagnosis of cancer is made, First Nations people are connected with Cancer Care Ontario's Aboriginal Navigator program. Navigators help facilitate and coordinate access to cancer services and resources, and work to address the cultural and spiritual needs of people with cancer and their families. The treatment for each type of cancer is different, so everyone's cancer experience is unique. First Nations people diagnosed with cancer should work with their Navigator and health care providers to come up with a cancer plan that is right for them.

Snapshot of lung cancer in First Nations people

From 1991 to 2010, lung cancer was the most commonly diagnosed cancer in First Nations people, accounting for over 1,000 new cases. For other people in Ontario, lung cancer was the third most common cancer diagnosed in this time period.

Lung cancer was also the leading cause of cancer death in First Nations people—as it is in other people

in Ontario. About one in seven (14 percent) First Nations people with lung cancer survived for at least five years after their cancer diagnosis, compared to one in six (17 percent) other people in Ontario. Five-year survival following a lung cancer diagnosis is poor for First Nations people and for other people in Ontario because most lung cancers are found at a late stage when they are hard to treat.



To many First Nations people, tobacco is a sacred plant that has spiritual and medicinal purposes. It is important to promote respect for traditional uses of tobacco through education of the cultural benefits and teachings associated with traditional and ceremonial uses of tobacco. However, the recreational use of commercial tobacco (e.g., smoking cigarettes) has no connection to First Nations spirituality. —*Traditional Teachings of First Nations People*²⁹

Top five cancers diagnosed in First Nations people in Ontario, 1991–2010	Top five cancers diagnosed in other people in Ontario, 1991–2010
Lung	Prostate
Colorectal	Female breast
Female breast	Lung
Prostate	Colorectal
Kidney	Non-Hodgkin lymphoma

Lung cancer incidence (new cases)

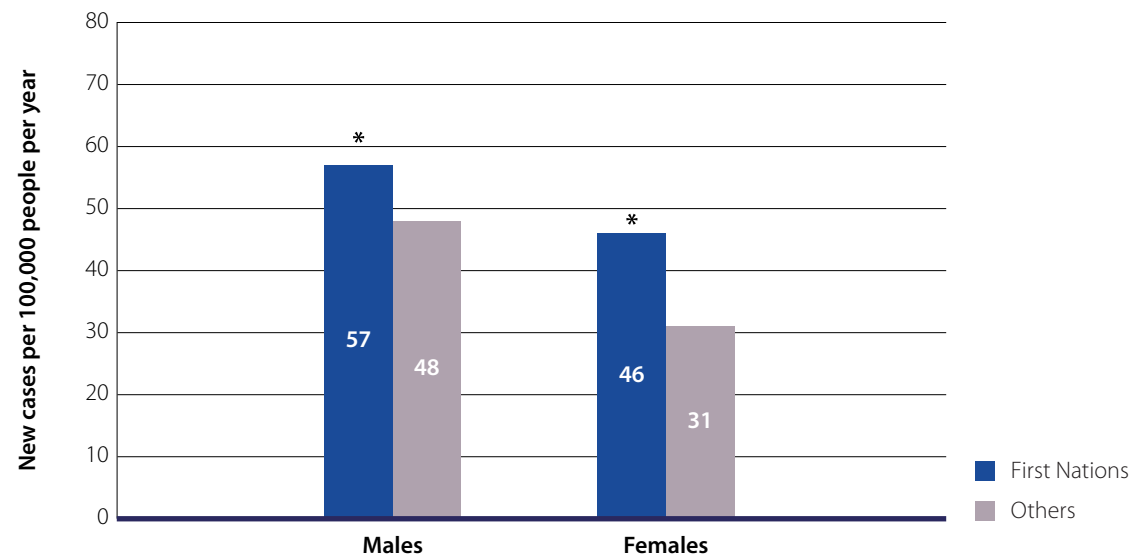


Cancer incidence is the number of people who are newly diagnosed with cancer in a specific population over a set period of time. The higher the incidence rate in a population, the more common the disease. For a more detailed explanation of incidence, visit cancercare.on.ca/measuringcancerFNIM.

Lung cancer incidence (new cases), all ages, by sex (Figure 15)

- From 1991 to 2010, about 57 lung cancers per 100,000 First Nations males and 46 lung cancers per 100,000 First Nations females occurred each year.
- First Nations males and females had a higher incidence of lung cancer than other males and females in Ontario.
- Males had higher lung cancer incidence than females (among First Nations people and other people in Ontario).

FIGURE 15: Lung cancer incidence (new cases) in First Nations people and other people in Ontario, all ages, by sex, 1991–2010



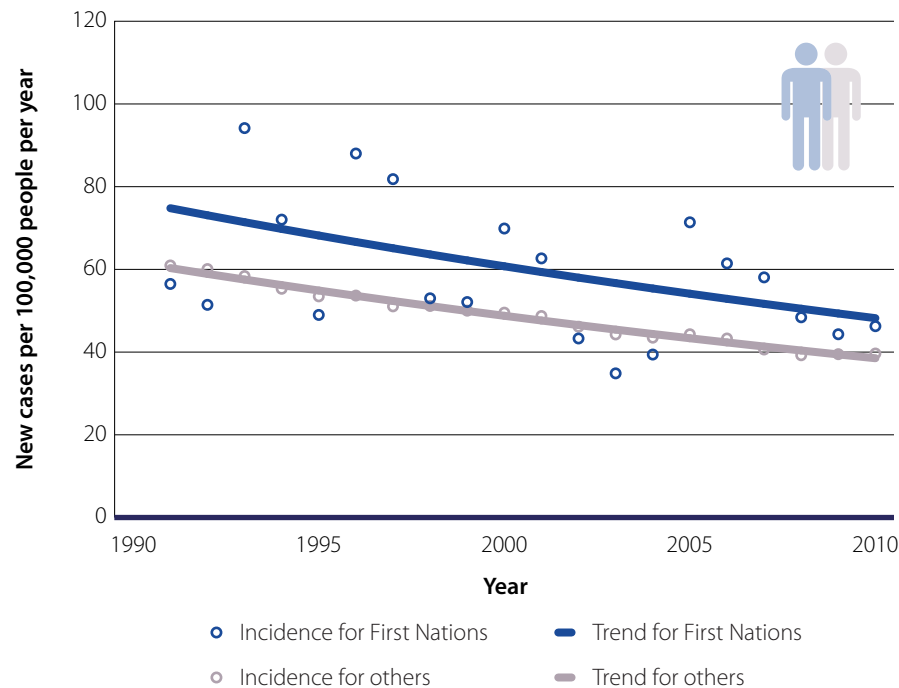
Notes: * Indicates incidence for First Nations people is significantly different than for other people in Ontario. Age-standardized to the 1960 World Standard Population.

Data sources: Indian Registration System, Ontario Cancer Registry

Lung cancer incidence (new cases) over time (Figures 16 and 17)

- From 1991 to 2010, lung cancer incidence decreased by 36 percent based on the trend for First Nations males. Lung cancer incidence also decreased in other Ontario males in this time period.

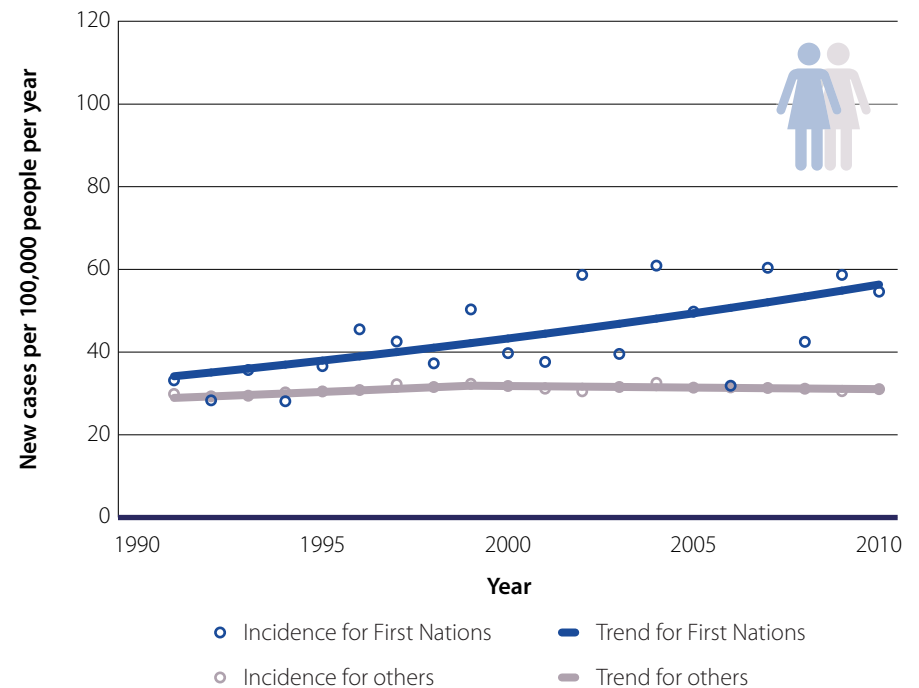
FIGURE 16: Lung cancer incidence (new cases) in First Nations males and other males in Ontario, all ages, by year of diagnosis, 1991–2010



Notes: Age-standardized to the 1960 World Standard Population.
Data sources: Indian Registration System, Ontario Cancer Registry

- Lung cancer incidence increased by 39 percent from 1991 to 2010 based on the trend for First Nations females, while in other females in Ontario it stayed approximately the same over time.

FIGURE 17: Lung cancer incidence (new cases) in First Nations females and other females in Ontario, all ages, by year of diagnosis, 1991–2010



Notes: Age-standardized to the 1960 World Standard Population.
Data sources: Indian Registration System, Ontario Cancer Registry

Lung cancer mortality (deaths)

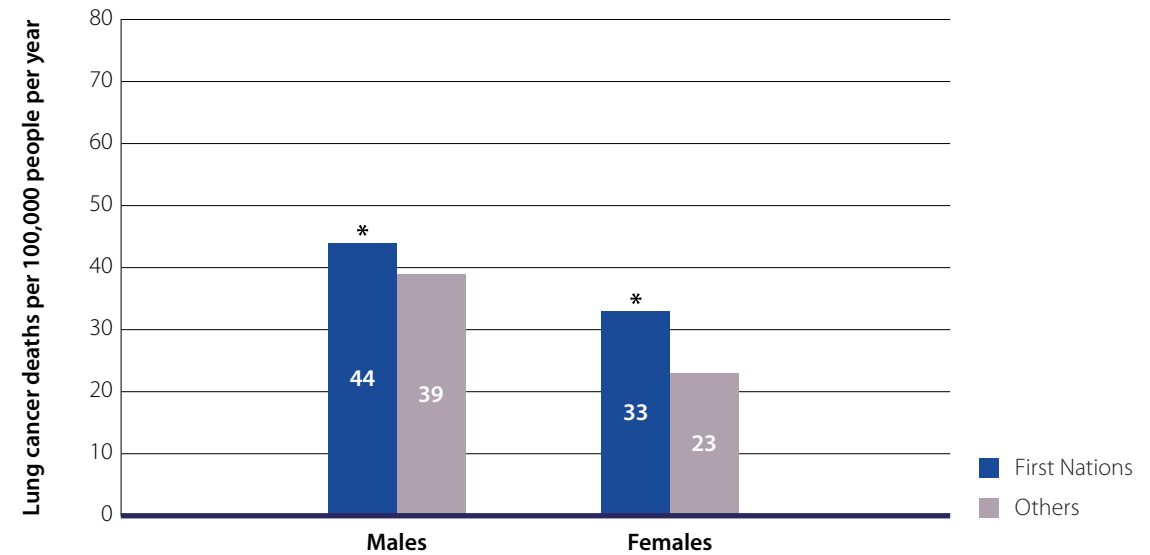


Mortality is the number of deaths in a population over a set period of time. Cancer mortality is lower when fewer people are being diagnosed with cancer or when more people are living longer after a cancer diagnosis. For a more detailed explanation of mortality, visit cancercare.on.ca/measuringcancerFNIM.

Lung cancer mortality (deaths) by sex (Figure 18)

- From 1991 to 2010, about 44 lung cancer deaths per 100,000 First Nations males and 33 lung cancer deaths per 100,000 First Nations females occurred each year.
- Males had higher lung cancer mortality than females (among First Nations people and other people in Ontario).
- First Nations people had higher lung cancer mortality than other people in Ontario (among males and females).

FIGURE 18: Lung cancer incidence (new cases) in First Nations people and other people in Ontario, all ages, by sex, 1991–2010



Notes: * Indicates incidence for First Nations people is significantly different than for other people in Ontario. Age-standardized to the 1960 World Standard Population.

Data sources: Indian Registration System, Ontario Cancer Registry

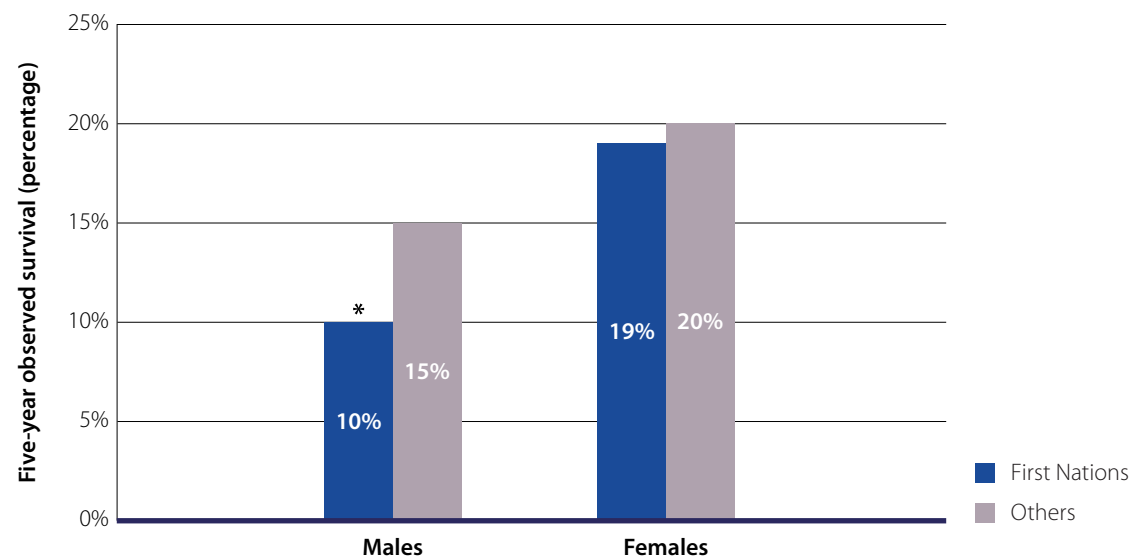
Lung cancer incidence (new cases)

i Cancer survival is the percentage of people still alive for a set time period after being diagnosed with cancer (usually five years). Survival improves when more cancers are caught early—before they spread to other parts of the body—and when there are improvements in cancer treatment that help people with cancer live longer. For a more detailed explanation on survival, visit cancercare.on.ca/measuringcancerFNIM.

Lung cancer survival by sex (Figure 19)

- About 10 percent of First Nations males and 19 percent of First Nations females survived five years or longer following a lung cancer diagnosis.
- First Nations males had worse lung cancer survival than other Ontario males.
- First Nations females had similar survival to other Ontario females.

FIGURE 19: Five-year lung cancer survival in First Nations people and other people in Ontario, ages 15–74 at diagnosis, by sex, 1991–2010



Notes: * Indicates survival for First Nations people is significantly different than for other people in Ontario. Age-standardized to the International Cancer Survival Standard (ages 15–74).

Data sources: Indian Registration System; Ontario Cancer Registry

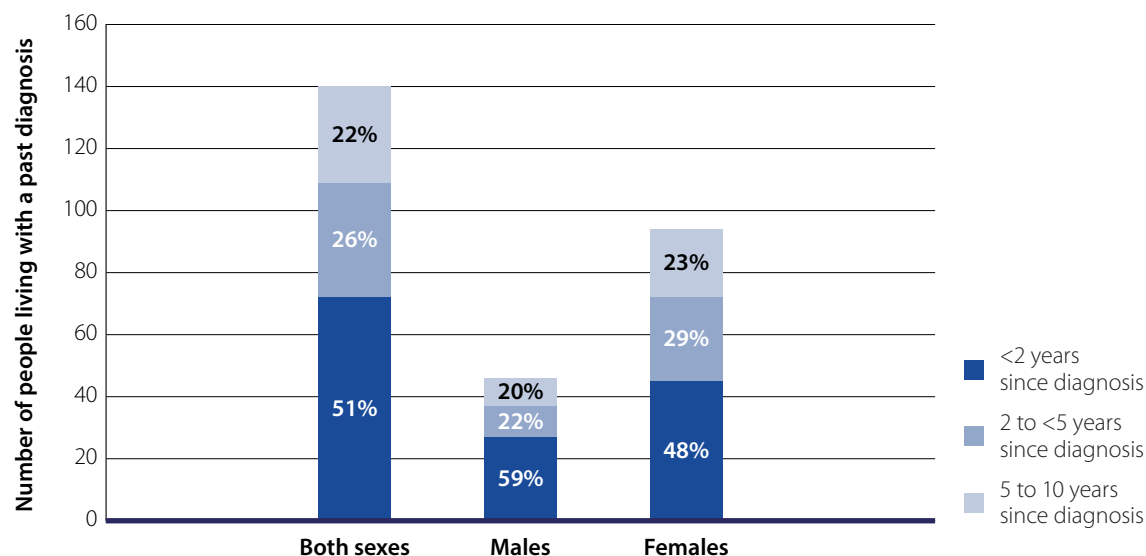
Lung cancer prevalence (new and existing cases)

i Cancer prevalence is defined as the number of people living with a past diagnosis of cancer in a set time period. A high prevalence of any given cancer might be explained by a high incidence (i.e., the cancer is very common) and/or high survival (i.e., someone is more likely to live long after being diagnosed). For a more detailed explanation of prevalence, visit cancercare.on.ca/measuringcancerFNIM.

Lung cancer prevalence by sex (Figure 20)

- As of January 1, 2011, there were 46 First Nations males and 94 First Nations females in Ontario living with a diagnosis of lung cancer in the previous 10 years (i.e., sometime between 2000 and 2010).
- Most people living with a past diagnosis of lung cancer were diagnosed recently (i.e., alive within two years of a diagnosis). Less than one quarter of people diagnosed with lung cancer survived longer than five years (20 percent of males, 23 percent of females).
- There were twice the number of females as there were males living with a past diagnosis of lung cancer, which is due to better lung cancer survival among females.

FIGURE 20: Lung cancer prevalence among First Nations people in Ontario as of January 1, 2011, all ages, by sex and time since diagnosis



Notes: Indian Registration System; Ontario Cancer Registry

Colorectal (Large Intestine) Cancer

in First Nations People in Ontario

What is colorectal cancer?

The colon and rectum are a part of the large intestine in the digestive system. They are made of the same tissues, so cancers that grow in the colon or rectum are often grouped together as colorectal cancer. Colorectal cancer starts when cells in the colon or rectum change, grow out of control and group together to form a tumour, or lump.

As with many other cancers, the most common reason colon and rectum cells change is due to age. The older a person gets, the more their cells lose the ability to repair damage over time. Colorectal cancer is more common among adults age 50 or older and occurs more in men than women.

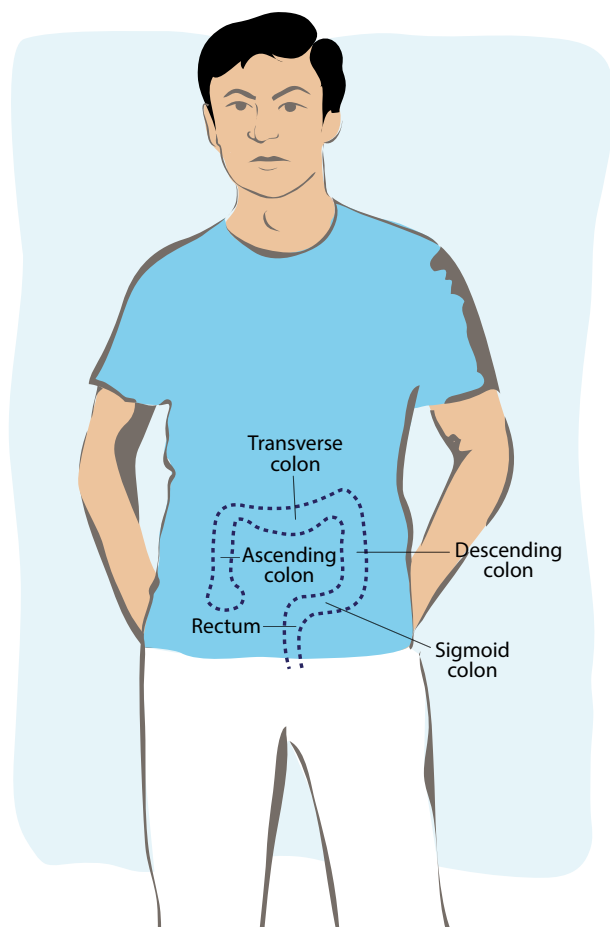
Risk factors

The risk factors for colorectal cancer described in this section are exposures, behaviours or other individual characteristics that affect someone's risk of developing this disease. Although they are not described in detail here, factors that individuals have little control over, such as access to care, community infrastructure and the lasting effects of colonialism are as important as or more important than individual risk factors to determining someone's likelihood of getting cancer.

Some of the risk factors that can increase the risk of developing colorectal cancer include:

- **Drinking alcohol:** alcohol consumption can cause cancers of the colon and rectum. While avoiding alcohol is the best way of reduce your risk of cancer, if you are going to drink, men should limit themselves to two drinks per day and women to one drink per day.²² First Nations adults (30 percent for on-reserve and 19 percent for off-reserve) are more likely to binge drink (have five or more drinks on one occasion two to three times per month) than non-Aboriginal adults in Ontario (13 percent).^{1, 2}
- **Smoking cigarettes:** can also cause cancers of the colon and rectum.³² Half of on-reserve First Nations adults and 43 percent of off-reserve First Nations adults smoke cigarettes, compared to only 22 percent of non-Aboriginal adults. Smoking is also more common among First Nations teens living on-reserve (30 percent) and off-reserve (14 percent) compared to non-Aboriginal teens in Ontario (five percent).^{29, 32}
- **Diet:** Eating processed or red meats can increase someone's risk of colorectal cancer.³²
- **Excess body weight:** Being overweight or obese is a risk factor for colorectal cancer. Obesity is more common among First Nations adults (50 percent on-reserve and 30 percent off-reserve) and teens (16 percent on-reserve and eight percent off-reserve) than non-Aboriginal adults (17 percent) and teens (five percent).^{29, 32}
- **Being sedentary:** Long periods of physical inactivity, such as watching television, playing video games, sitting at a desk are another risk factor for developing colorectal cancer.³³
- **Family history:** Having a close blood relative (i.e., mother, father or sibling) with colorectal cancer increases someone's risk of developing the disease.
- **Genetic conditions:** There are some conditions inherited through a person's genes that can increase their risk of colorectal cancer.³⁴

- **Medical conditions:** People with pre-existing medical conditions including inflammatory bowel disease and diabetes are at an increased risk for colorectal cancer. Diabetes is significantly more common in First Nations people than in non-First Nations people.³⁵ Diabetes and cancer have similar risk factors (e.g., obesity, diet, physical inactivity), and often diabetes can complicate treatment for cancer, as well as affect survival.³⁶



Certain lifestyle behaviours can help reduce the risk of colorectal cancer:

- **Physical activity:** Participating in one hour of light activity or 20 minutes of vigorous activity a day can reduce the risk of colon cancer by 20 to 25 percent.^{34,37} Only 35 percent of on-reserve First Nations and 54 percent of off-reserve First Nations adults are at least moderately active.²⁹
- **Dietary fibre:** Having a diet that is high in fibre (e.g., eating legumes, grains, certain vegetables and fruit) reduces the risk of colorectal cancer, particularly colon cancer.^{34,37} Adequate vegetable and fruit consumption is significantly lower among First Nations adults (15 percent on-reserve and 25 percent off-reserve) than non-Aboriginal adults (30 percent).²⁹

“

My message to everyone would be to follow all the directions given to you by your health care providers to make sure you increase your chances of getting better quicker. If you think something is wrong be persistent in making sure that all the correct tests are being done. Only you can look after you for a better more positive outcome.”

Robert
Cancer survivor

Factors described in this section that can increase risk of colorectal cancer

- Drinking alcohol
- Smoking cigarettes
- Diet
- Excess body weight
- Being sedentary
- Family history
- Genetic conditions
- Medical conditions

Factors described in this section that can reduce the risk of colorectal cancer

- Physical activity
- Dietary fibre

Symptoms

There are many symptoms of colorectal cancer, which can also be caused by other health conditions (see the full list at cancer.ca). People experiencing any unusual symptoms should visit a doctor or other healthcare provider to discuss. Some of the signs of colorectal cancer include diarrhea, constipation, stools that are narrower than usual, blood in the stool or bleeding from the rectum.

Once a diagnosis of cancer is made, First Nations people are connected with Cancer Care Ontario's Aboriginal Navigator program. Navigators help facilitate and coordinate access to cancer services and resources, and work to address the cultural and spiritual needs of people with cancer and their families. The treatment for each type of cancer is different, so everyone's cancer experience is unique. First Nations people diagnosed with cancer should work with their Navigator and health care providers to come up with a cancer plan that is right for them.

Top five cancers diagnosed in First Nations people in Ontario, 1991–2010	Top five cancers diagnosed in other people in Ontario, 1991–2010
Lung	Prostate
Colorectal	Female breast
Female breast	Lung
Prostate	Colorectal
Kidney	Non-Hodgkin lymphoma

Cancer Screening

Screening tests help find cancer early, before someone has symptoms and when the cancer is easier to treat. ColonCancerCheck is a province-wide screening program run by Cancer Care Ontario and the Ontario Ministry of Health and Long-Term Care.

ColonCancerCheck recommends that Ontarians ages 50 to 74 without a family history of colorectal cancer (average risk) get screened once every two years for the disease with an at-home test called the fecal occult blood test (FOBT).

ColonCancerCheck is in the process of switching from FOBT to a better at-home test called the fecal immunochemical test (FIT). People at average risk for colorectal cancer who choose to be screened with flexible sigmoidoscopy (a medical examination of the lower part of the large intestine and rectum) should be screened every 10 years.

ColonCancerCheck recommends that people with a family history of colorectal cancer (i.e., a parent, child or sibling with the disease) get screened with colonoscopy beginning at age 50, or 10 years earlier than the age their relative was diagnosed, whichever occurs first.

The Screen for Life coach is a bus that travels across Hamilton Niagara Haldimand Brant and northwestern Ontario to make cancer screening services more accessible and convenient. The coach offers breast, cervical and colorectal cancer screening, including handing out FOBT kits to people ages 50 to 74. Please visit the Screen for Life coach web page for additional information and schedules:

cancercareontario.ca/en/find-cancer-services.

Snapshot of colorectal cancer in First Nations people

From 1991 to 2010, colorectal cancer was the second most commonly diagnosed cancer in First Nations people with almost 1,000 new cases in this 20-year period. It was the fourth most common cancer diagnosed among all other people in Ontario.

Colorectal cancer was also the second leading cause of cancer death in First Nations people, as it was in all other people in Ontario. About half of people with colorectal cancer (50 percent for First Nations people and 54 percent for other people) survived for at least five years after their cancer diagnosis. Someone is more likely to survive for five years after being diagnosed with colorectal cancer if the cancer is caught at an earlier stage when it is easier to treat.

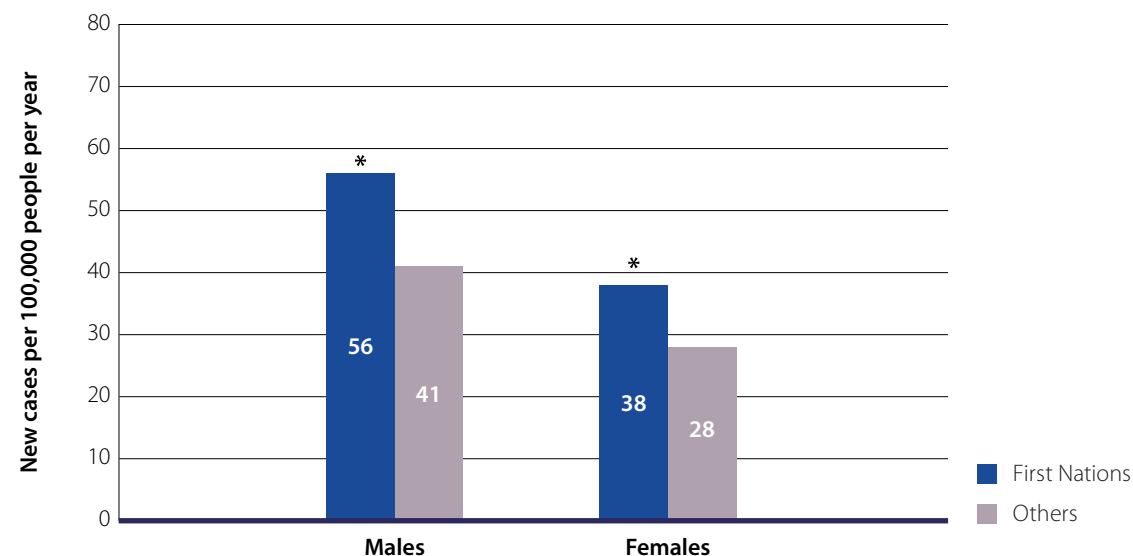
Colorectal cancer incidence (new cases)

i Cancer incidence is the number of people who are newly diagnosed with cancer in a specific population over a set period of time. The higher the incidence rate in a population, the more common the disease. For a more detailed explanation of incidence, visit cancercare.on.ca/measuringcancerFNIM.

Colorectal cancer incidence (new cases) by sex (Figure 21)

- First Nations males and females had a higher incidence of colorectal cancer than other males and females in Ontario.
- Males had higher incidence of colorectal cancer than females (among First Nations people and other people in Ontario).
- From 1991 to 2010, about 56 colorectal cancers per 100,000 First Nations males and 38 colorectal cancers per 100,000 First Nations females were diagnosed each year.

FIGURE 21: Colorectal cancer incidence (new cases) in First Nations people and other people in Ontario, all ages, by sex, 1991–2010



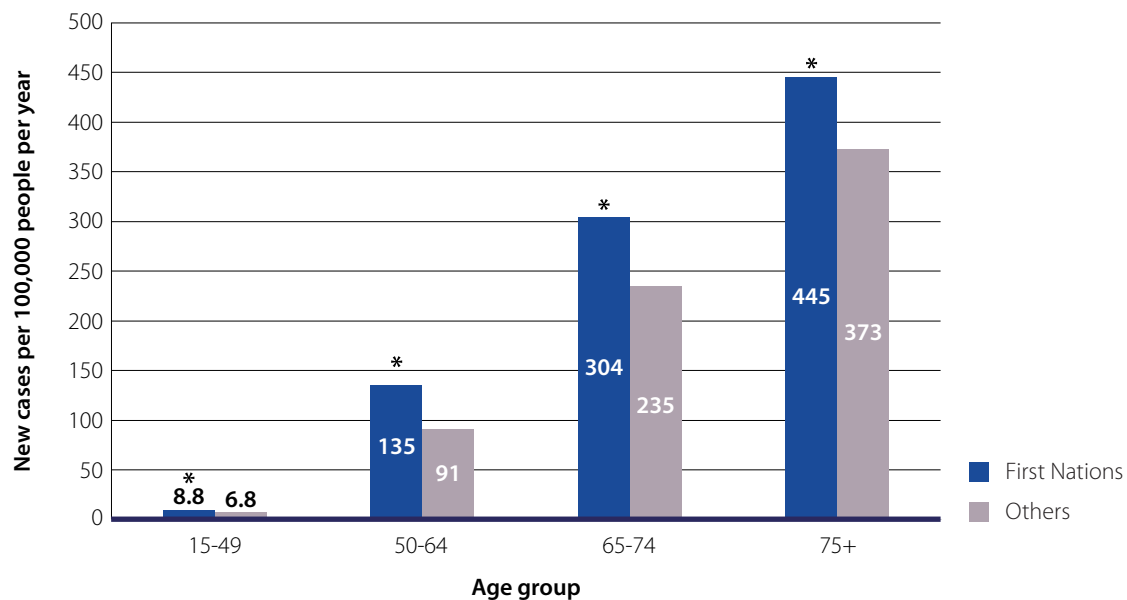
Notes: * Indicates that incidence for First Nations people is significantly different than for other people in Ontario. Age-standardized to the 1960 World Standard population.

Data sources: Indian Registration System, Ontario Cancer Registry

Colorectal cancer incidence (new cases) by age group (Figure 22)

- First Nations people had a higher incidence of colorectal cancer than other people in Ontario across all age groups, including age groups that were younger than the colorectal screening guidelines (i.e., under age 50).

FIGURE 22: Colorectal cancer incidence (new cases) in First Nations people and other people in Ontario, all ages, by sex, 1991–2010

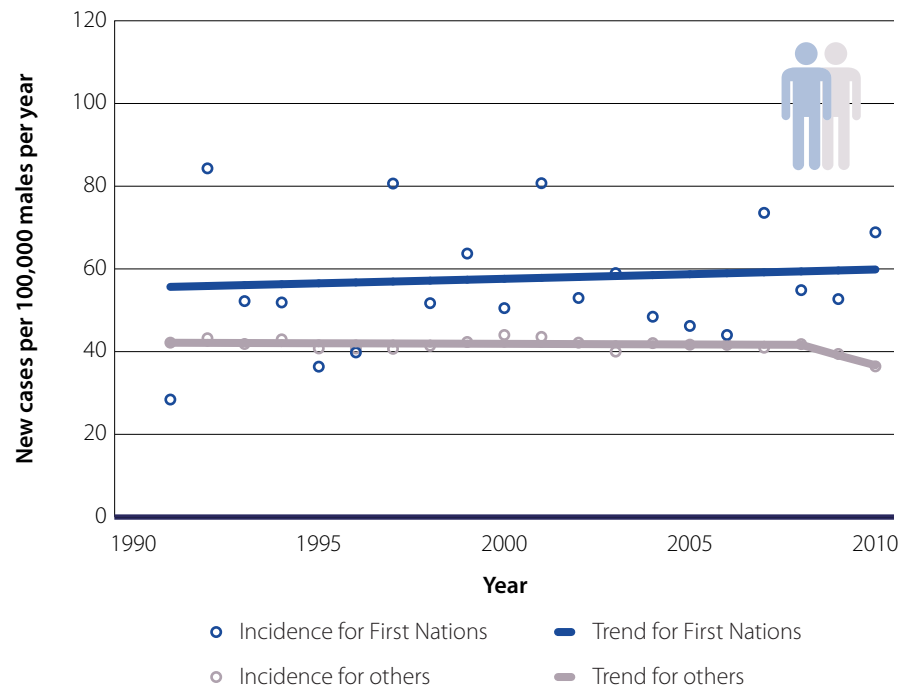


Notes: * Indicates that incidence for First Nations people is significantly different than for other people in Ontario.
Age-standardized to the 1960 World Standard population.
Data sources: Indian Registration System, Ontario Cancer Registry

Colorectal cancer incidence (new cases) over time (Figures 23a and 23b)

- From 1991 to 2010, colorectal cancer incidence increased by seven percent based on the trend among First Nations males, whereas colorectal cancer incidence has stayed the same in other males in Ontario.

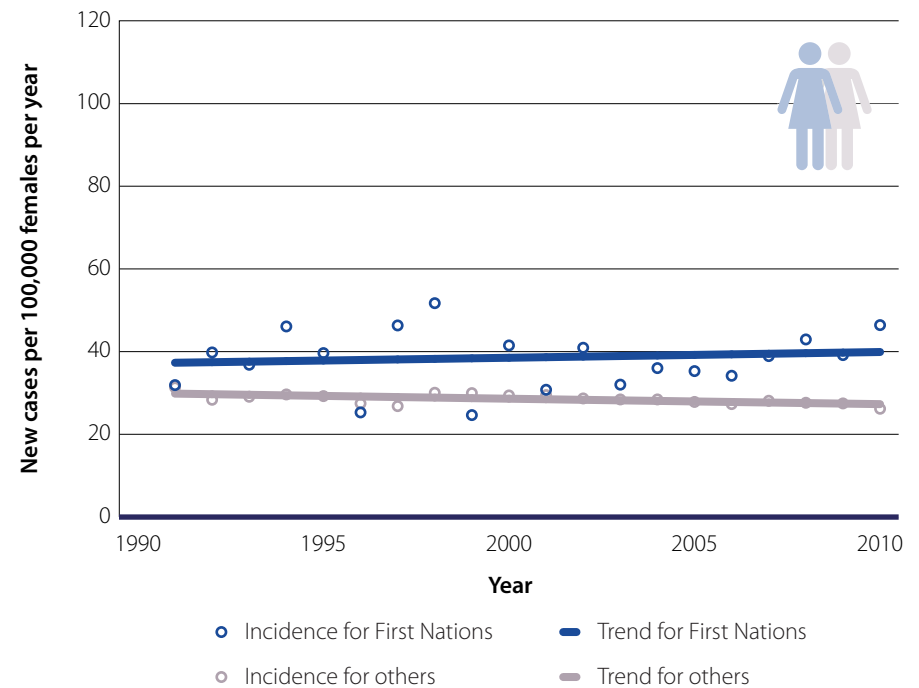
FIGURE 23A: Colorectal cancer incidence (new cases) in First Nations males and other males in Ontario, all ages, by year, 1991–2010



Notes: Age-standardized to the 1960 World Standard population.
Data sources: Indian Registration System, Ontario Cancer Registry

- Colorectal cancer incidence has increased by almost six percent from 1991 to 2010 among First Nations females, while colorectal cancer incidence has decreased among other females in Ontario.

FIGURE 23B: Colorectal cancer incidence (new cases) in First Nations females and other females in Ontario, all ages, by year, 1991–2010



Notes: Age-standardized to the 1960 World Standard population.
Data sources: Indian Registration System, Ontario Cancer Registry

Colorectal cancer mortality (deaths)

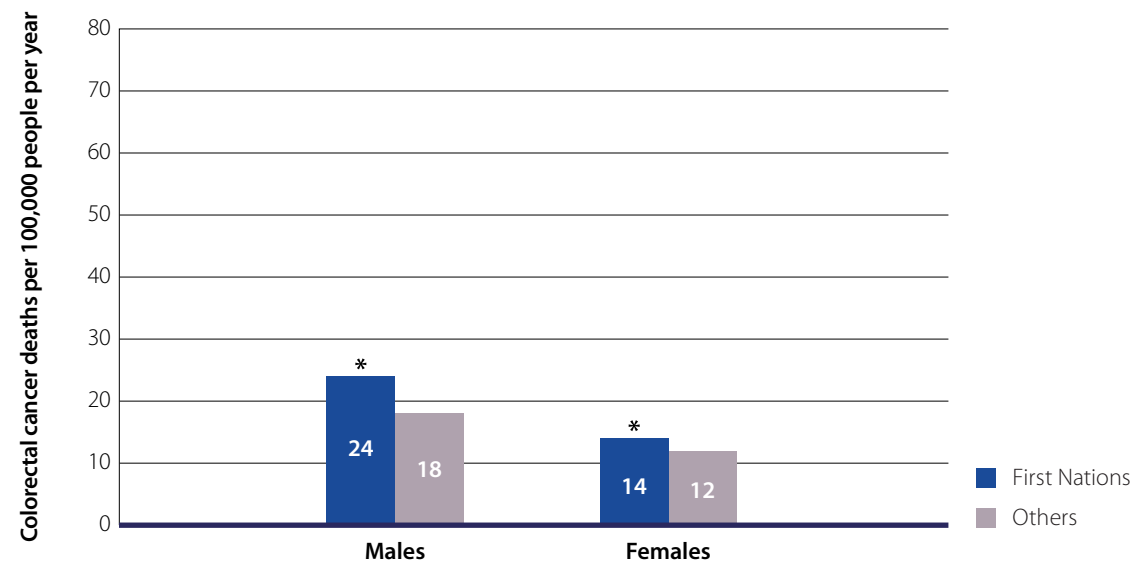


Mortality is the number of deaths in a population over a set period of time. Cancer mortality is lower when fewer people are being diagnosed with cancer or when more people are living longer after a cancer diagnosis. For a more detailed explanation of mortality, visit cancercare.on.ca/measuringcancerFNIM.

Colorectal cancer mortality (deaths) by sex (Figure 24)

- From 1991 to 2010, there were about 24 colorectal cancer deaths per 100,000 First Nations males and 14 colorectal cancer deaths per 100,000 First Nations females each year.
- Males had higher colorectal cancer mortality than females (among First Nations people and other people in Ontario).
- First Nations males and females had higher colorectal cancer mortality than other males and females in Ontario.

FIGURE 24: Colorectal cancer mortality (deaths) in First Nations people and other people in Ontario, all ages, by sex, 1991–2010



Notes: * Indicates that mortality for First Nations people is significantly different than for other people in Ontario. Age-standardized to the 1960 World Standard population.

Data sources: Indian Registration System, Ontario Cancer Registry

Colorectal cancer survival (chances of living after diagnosis)

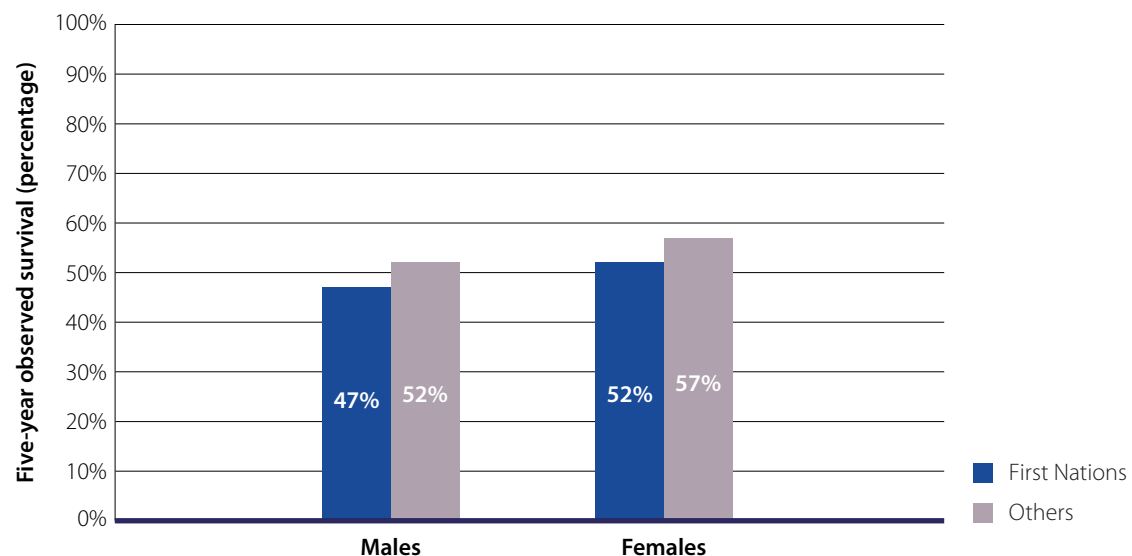


Cancer survival is the percentage of people still alive for a set time period after being diagnosed with cancer (usually five years). Survival improves when more cancers are caught early—before they spread to other parts of the body—and when there are improvements in cancer treatment that help people with cancer live longer. For a more detailed explanation on survival, visit cancercare.on.ca/measuringcancerFNIM.

Colorectal cancer survival by sex (Figure 25)

- From 1991 to 2010, about 47 percent of First Nations males and 52 percent of First Nations females survived five years or longer after a colorectal cancer diagnosis.
- Colorectal cancer survival in First Nations people was similar to the survival of other people in Ontario.

FIGURE 25: Five-year colorectal cancer survival in First Nations people and other people in Ontario, ages 15–74 at diagnosis, by sex, 1991–2010



Notes: Age-standardized to the International Cancer Survival Standard (ages 15 to 74).
Data sources: Indian Registration System; Ontario Cancer Registry

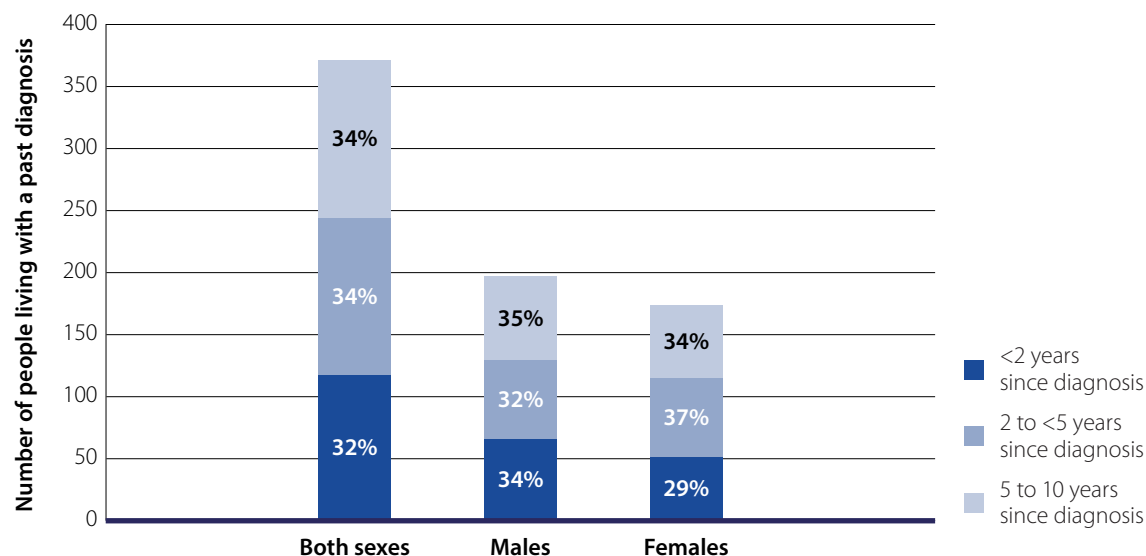
Colorectal cancer survival (new and existing cases)

i Cancer prevalence is defined as the number of people living with a past diagnosis of cancer in a set time period. A high prevalence of any given cancer might be explained by a high incidence (i.e., the cancer is very common) and/or high survival (i.e., someone is more likely to live long after being diagnosed). For a more detailed explanation of prevalence, visit cancercare.on.ca/measuringcancerFNIM.

Colorectal cancer prevalence by sex (Figure 26)

- As of January 1, 2011, there were 197 First Nations males and 194 First Nations females in Ontario who had been living with a diagnosis of colorectal cancer in the previous 10 years (i.e., they were diagnosed sometime between 2000 and 2010). Some of these people may have been diagnosed recently and be still undergoing cancer treatment, while others may have been alive over five years after being diagnosed and might be considered cancer-free.
- There were about as many people living with colorectal cancer less than two years after being diagnosed as there were people who were alive two to five years after being diagnosed and five to 10 years after being diagnosed.

FIGURE 26: Colorectal cancer prevalence in First Nations people in Ontario as of January 1, 2011, all ages, by sex and time since diagnosis



Data sources: Indian Registration System; Ontario Cancer Registry

Breast Cancer

in First Nations Females in Ontario

What is breast cancer?

Breast cancer starts when cells in breast tissue change, grow out of control and group together to form a tumour, or lump. Some types of breast cancer may make breast tissue feel thicker or harder. Breast cancer is the most commonly diagnosed cancer among women, but among men, it is rare, accounting for less than one percent of all cases.

As with many other cancers, the most common reason breast cells change is due to aging. The older a person gets, the more their cells lose the ability to repair damage over time. About one in eight Canadian women will develop breast cancer in her lifetime and breast cancer typically occurs in women ages 50 to 69. However, it is also one of the most common cancers diagnosed in women under age 50. Breast cancer survival is relatively good when it is found at an early stage before it has spread to other parts of the body.³⁸

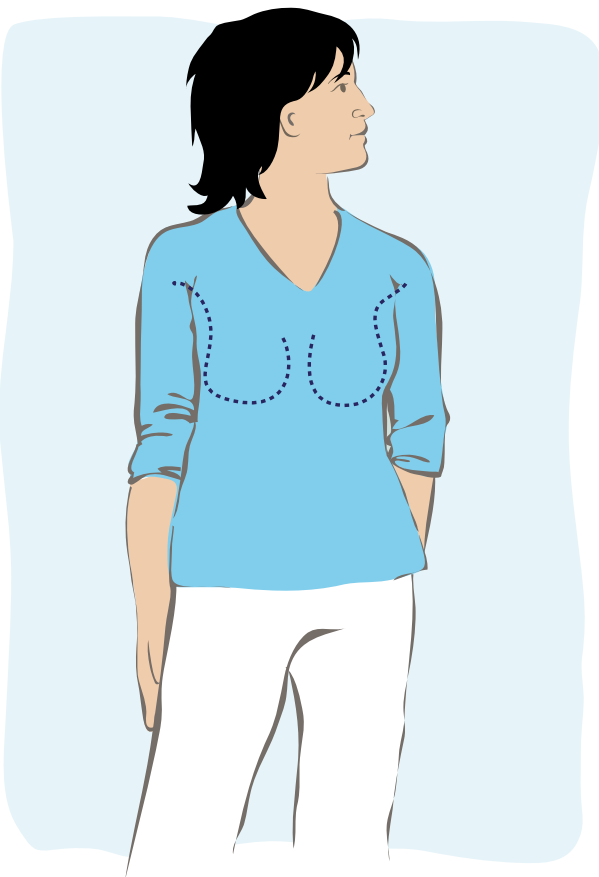
Risk factors

The risk factors for breast cancer described in this section are exposures, behaviours or individual characteristics that affect someone's risk of developing this disease. Although they are not described in detail here, factors that individuals have little control over such as access to care, community infrastructure, and the lasting effects of colonialism are as important as or more important than individual risk factors to determining someone's likelihood of getting cancer.

Some of the risk factors that can increase the risk of developing breast cancer include:

- **Drinking alcohol:** alcohol consumption can cause cancers of the female breast. While avoiding alcohol is the best way to reduce your risk of cancer, if you are going to drink, men should limit themselves to two drinks per day and women to one drink per day.²² First Nations women (14 percent for on-reserve and off-reserve) are more likely to binge drink (have five or more drinks on one occasion two to three times per month) than non-Aboriginal women in Ontario (eight percent).^{29, 32}
- **Excess body weight:** Being overweight or obese can increase the risk of breast cancer for post-menopausal women. Almost half (49 percent) of on-reserve First Nations women are obese, compared to 28 percent of off-reserve and 16 percent of non-Aboriginal women.^{29, 32}
- **Natural body changes:** There are several natural bodily changes triggered by hormones that can increase the risk of breast cancer. Hormones are chemicals that send messages throughout the body. These changes include a woman getting her first menstrual period at a younger age, giving birth to her first child at an older age and reaching menopause at an older age.³⁹
- **Medications:** Using oral contraceptives (birth control pills) and hormone replacement therapy can also increase the risk for breast cancer. These hormone-related risk factors are mainly linked to changing levels of estrogen in the body over time.^{40, 41}
- **Radiation:** Being exposed to radiation (e.g., through medical radiation therapy), particularly on the chest, can increase the risk of developing breast cancer.³²
- **Family history:** Having a close blood relative with breast cancer, such as a mother or sibling, can also increase the risk of developing the disease.⁴²
- **Genetic conditions:** Changes to genes, called BRCA1 and BRCA2 mutations, can be passed down from family members and can increase cancer risk by speeding up the growth of cancer cells. About five to 10 percent of breast cancers are caused by an inherited gene mutation.⁴³

- **Diabetes:** People with pre-existing diabetes are at an increased risk for breast cancer. Diabetes is significantly more common in First Nations people than in non-First Nations people. Diabetes and cancer have similar risk factors (e.g., obesity, diet, physical inactivity) and often diabetes can complicate treatment for cancer, which, in turn, impacts survival.¹⁰



Certain factors can protect against the risk of developing breast cancer:

- **Physical activity:** Participating in one hour of light activity or 20 minutes of vigorous activity a day can help protect against developing breast cancer. Only 27 percent of on-reserve First Nations women are physically active, compared to 50 percent of off-reserve First Nations and 48 percent of non-Aboriginal women.^{29, 37}
- **Giving birth and breastfeeding:** Women who have given birth multiple times and women who breastfeed their children have a lower risk of developing breast cancer.^{32, 39}

Factors described in this section that can increase risk of breast cancer

- Drinking alcohol
- Excess body weight
- Natural body changes
- Medications
- Radiation
- Family history
- Genetic conditions
- Diabetes

Factors described in this section that can reduce the risk of breast cancer

- Physical activity
- Giving birth and breastfeeding

Cancer Screening

Screening tests help find cancer early, before someone has symptoms and when the cancer is easier to treat⁴⁴ The Ontario Breast Screening Program (OBSP) recommends that women ages 50 to 74 have a screening mammogram every two years. When a woman turns 50 years old, Cancer Care Ontario, which operates the province-wide OBSP, will send her a letter inviting her to get screened for breast cancer and giving her information on how and where to get screened.

Women ages 30 to 69 who are at high risk for breast cancer (have a breast cancer-related genetic mutation or strong family history of breast cancer) are advised to have a mammogram and breast magnetic resonance imaging (MRI) every year. Women are referred to this high risk screening program by their physician based on their medical history.

The Screen for Life coach is a bus that travels across Hamilton Niagara Haldimand Brant and northwestern Ontario to make cancer screening services more accessible and convenient. The coach offers breast, cervical and colorectal cancer screening. Please visit the Screen for Life web page for additional information and schedules: cancercareontario.ca/en/find-cancer-services.

Symptoms

There are many symptoms of breast cancer (see the full list at cancer.ca). People with any unusual symptoms should visit a doctor or other healthcare provider. Symptoms of breast cancer often occur when the cancer has spread to other parts of the body or when the tumour is large enough to feel as a lump in the breast. The lump is often firm and tender, but not painful. There are other forms of breast cancer that make the tissue in the breast feel thicker or harder instead of forming a lump. Other symptoms of breast cancer can include a lump in the armpit, changes in the shape or size of the breast, changes to the nipple or discharge from the nipple without squeezing it. Examples of late symptoms of breast cancer can include bone pain, weight loss, nausea and loss of appetite.

Once a diagnosis of cancer is made, First Nations people are connected with Cancer Care Ontario's Aboriginal Navigator program. Navigators help facilitate and coordinate access to cancer services and resources, and work to address the cultural and spiritual needs of people with cancer and their families. The treatment for each type of cancer is different, so everyone's cancer experience is unique. First Nations people diagnosed with cancer should work with their Navigator and health care providers to come up with a cancer plan that is right for them.

Snapshot of breast cancer in First Nations females

From 1991 to 2010, breast cancer was the most commonly diagnosed cancer among First Nations females, accounting for over 900 new cases. It was also the most commonly diagnosed cancer among other females in Ontario in the same 20-year period.

Breast cancer was the second leading cause of cancer death in First Nations females and other females in Ontario; however, breast cancer mortality was lower in First Nations females than other females in Ontario. This mortality rate may be because fewer First Nations women were being diagnosed with breast cancer. There is a very good chance of surviving five years or longer following a breast cancer diagnosis. From 2001 to 2010, about five out of every seven First Nations females diagnosed with breast cancer (73 percent) survived five years or longer. A similar percentage of other Ontario women with breast cancer survived five years or longer during the same time period.

Top five cancers diagnosed in First Nations females in Ontario, 1991–2010	Top five cancers diagnosed in other females in Ontario, 1991–2010
Breast	Breast
Lung	Lung
Colorectal	Colorectal
Kidney	Uterus
Uterus	Thyroid

“

I wasn't ready to deal with talking about cancer and I was ready to walk out of the first meeting we had with Mat talking about the different types of cancer. We also had a very kind doctor attend a few of our meetings to answer any questions we had. I really started to look forward to the meetings and when the tour for the cancer centre came up, I thought this is great...”

Velva
Wife & Caregiver

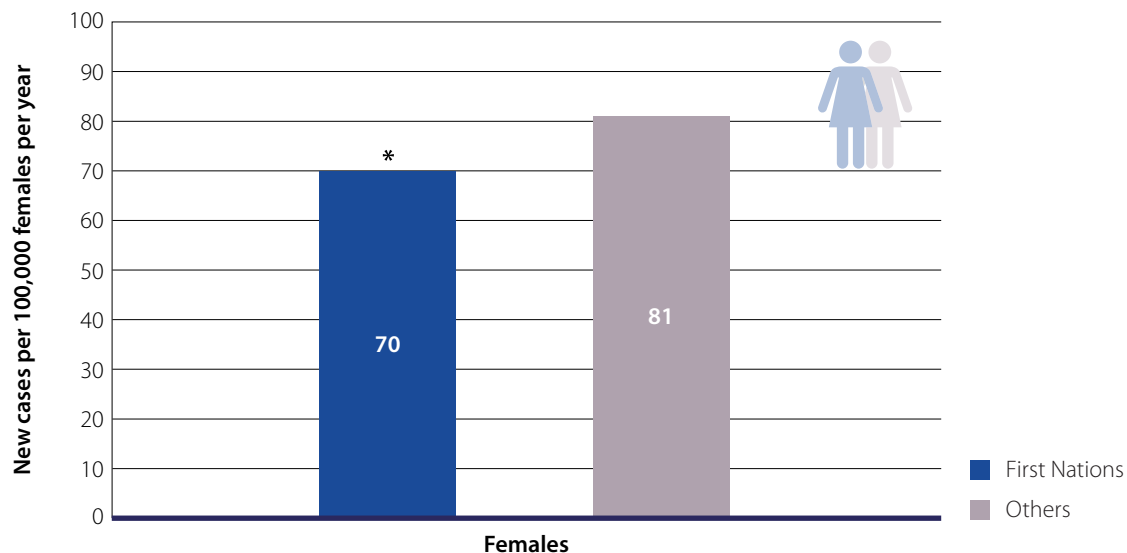
Breast cancer incidence (new cases)

i Cancer incidence is the number of people who are newly diagnosed with cancer in a specific population over a set period of time. The higher the incidence rate in a population, the more common the disease. For a more detailed explanation of incidence, visit cancercare.on.ca/measuringcancerFNIM.

Breast cancer incidence (new cases) (Figure 27)

- First Nations females had a lower incidence of breast cancer than other females in Ontario.
- From 1991 to 2010, about 70 cases of breast cancer per 100,000 First Nations females were diagnosed each year.

FIGURE 27: Breast cancer incidence (new cases) in First Nations females and other females in Ontario, all ages, 1991–2010

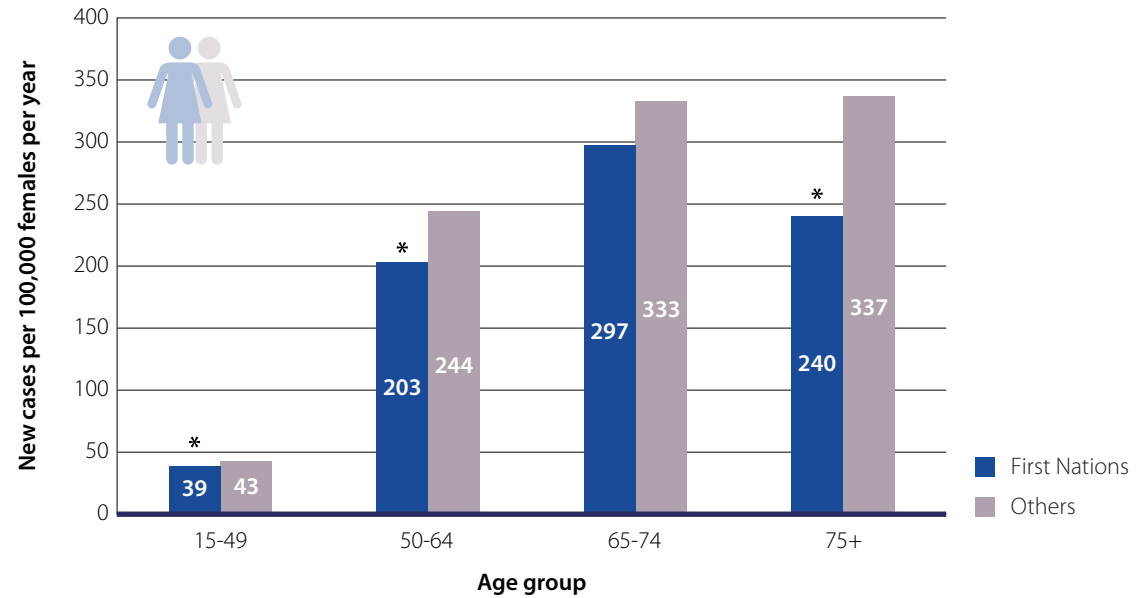


Notes: * Indicates that incidence for First Nations females is significantly different than for other females in Ontario. Age-standardized to the 1960 World Standard population.
Data sources: Indian Registration System, Ontario Cancer Registry

Breast cancer incidence (new cases) by age group (Figure 28)

- First Nations females had a lower incidence of breast cancer than other females in Ontario across most age groups, except among women ages 65 to 74.

FIGURE 28: Breast cancer incidence (new cases) in First Nations females and other females in Ontario, all ages, 1991–2010



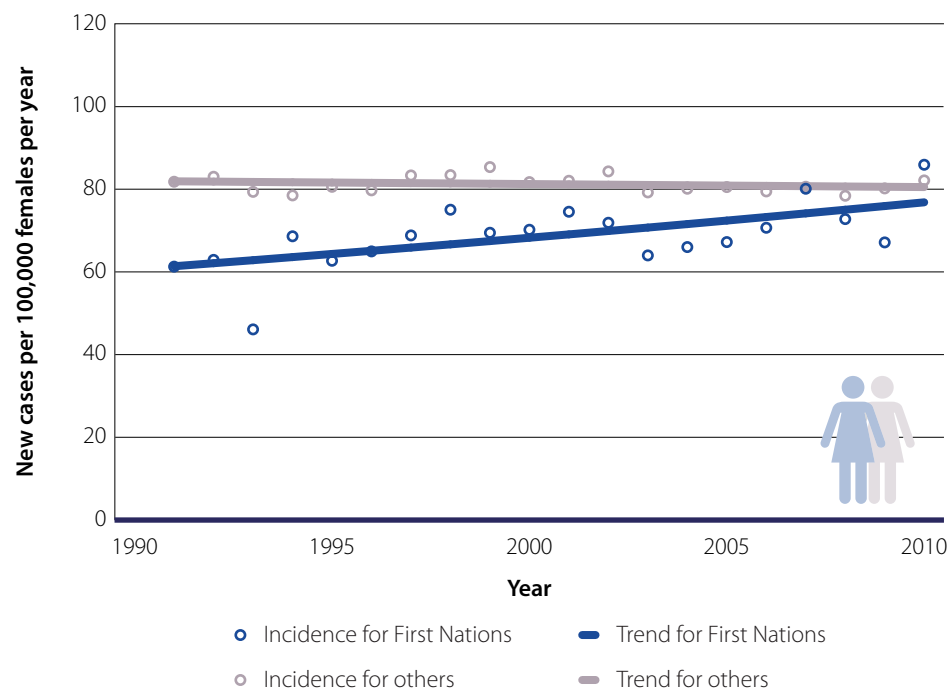
Notes: * Indicates that incidence for First Nations females is significantly different than for other females in Ontario. Age-standardized to the 1960 World Standard population.

Data sources: Indian Registration System, Ontario Cancer Registry

Breast cancer incidence (new cases) over time (Figure 29)

- Breast cancer incidence increased by 25 percent from 1991 to 2010, based on the trend for First Nations females but it remained approximately the same in other females in Ontario over this 20-year period.
- The trend shows that by 2010, breast cancer incidence in First Nations females in Ontario was approaching the incidence found among other females.

FIGURE 29: Breast cancer incidence (new cases) in First Nations females and other females in Ontario, all ages, by year, 1991–2010



Notes: Age-standardized to the 1960 World Standard population.
Data sources: Indian Registration System, Ontario Cancer Registry

Breast cancer mortality (deaths)

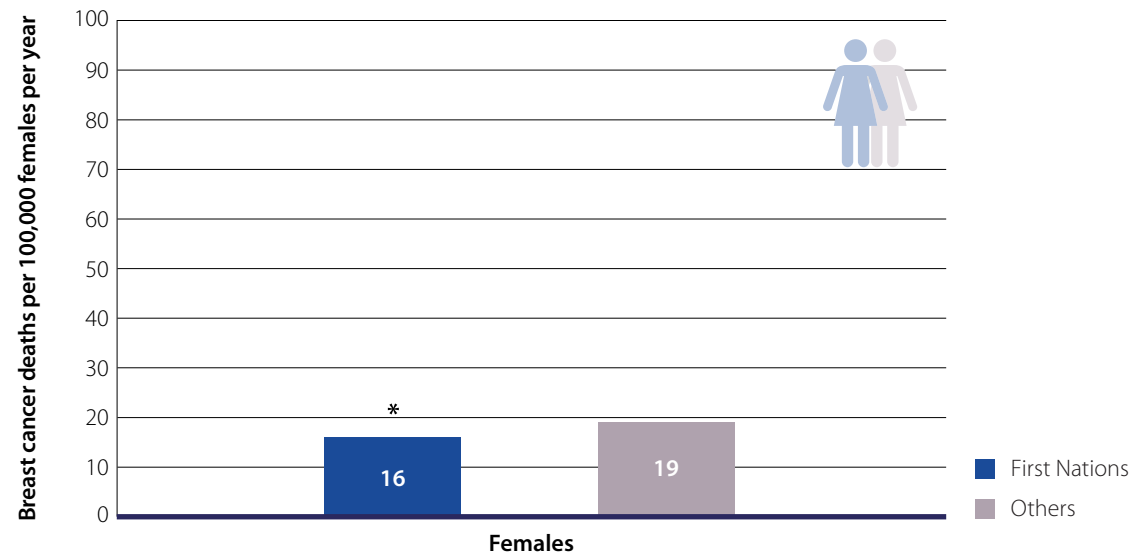


Mortality is the number of deaths in a population over a set period of time. Cancer mortality is lower when fewer people are being diagnosed with cancer or when more people are living longer after a cancer diagnosis. For a more detailed explanation of mortality, visit cancercare.on.ca/measuringcancerFNIM.

Breast cancer mortality (deaths) (Figure 30)

- From 1991 to 2010, about 16 breast cancer deaths per 100,000 First Nations females occurred each year.
- First Nations females had lower breast cancer mortality than other females in Ontario.

FIGURE 30: Breast cancer mortality (deaths) in First Nations females and other females in Ontario, all ages, 1991–2010



Notes: * Indicates that mortality for First Nations females is significantly different than for other females in Ontario. Age-standardized to the 1960 World Standard population.

Data sources: Indian Registration System, Ontario Cancer Registry

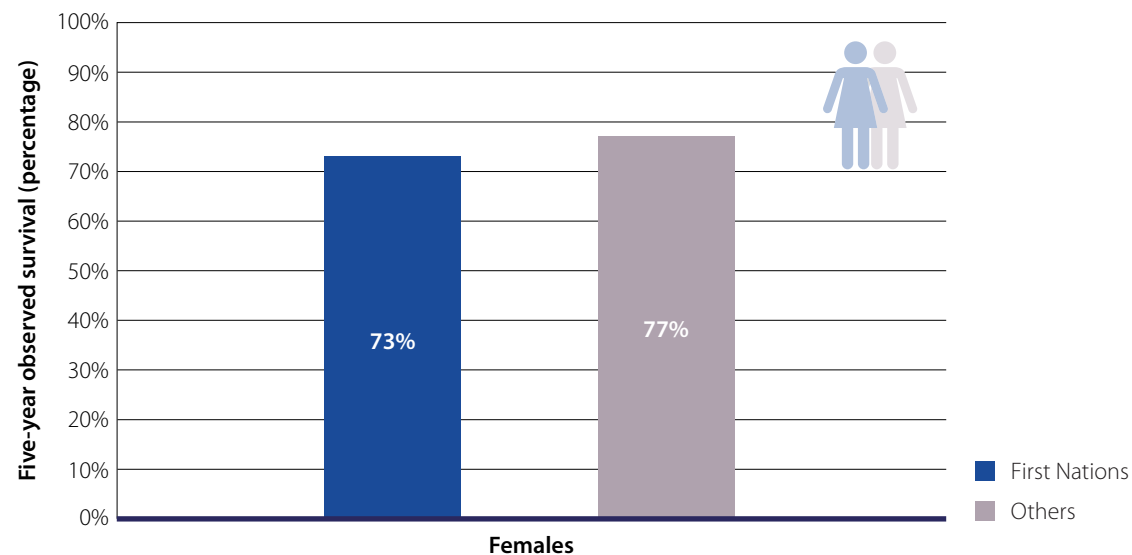
Breast cancer prevalence (new and existing cases)

i Cancer survival is the percentage of people still alive for a set time period after being diagnosed with cancer (usually five years). Survival improves when more cancers are caught early—before they spread to other parts of the body—and when there are improvements in cancer treatment that help people with cancer live longer. For a more detailed explanation on survival, visit cancercare.on.ca/measuringcancerFNIM.

Breast cancer survival (Figure 31)

- About 73 percent of First Nations females survived five years or longer after a breast cancer diagnosis.
- Breast cancer survival in First Nations females was similar to survival among other females in Ontario.

FIGURE 31: Five-year breast cancer survival in First Nations females and other females in Ontario, ages 15–74 at diagnosis, 1991–2010

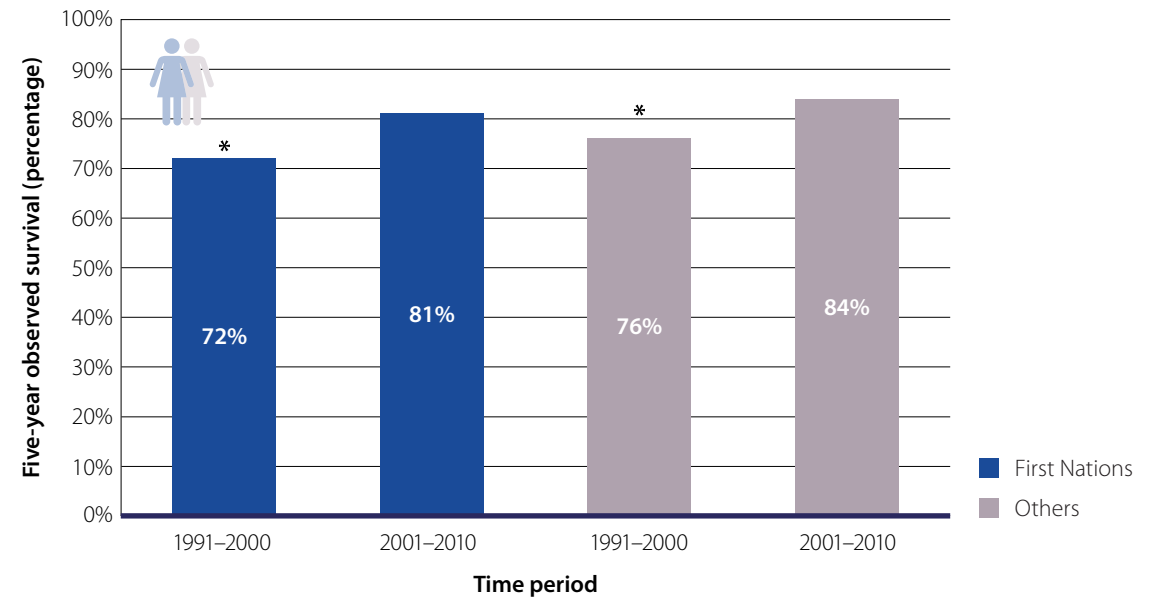


Notes: Age-standardized to the International Cancer Survival Standard (ages 15 to 74).
Data sources: Indian Registration System; Ontario Cancer Registry

Breast cancer survival by time period (Figure 32)

- Breast cancer survival has improved over time for First Nations females and other females in Ontario.
- In the most recent time period (2001 to 2010), 81 percent of First Nations females survived five years or longer after a breast cancer diagnosis, compared with 72 percent from 1991 to 2000.

FIGURE 32: Five-year breast cancer survival in First Nations females and other females in Ontario, ages 15–74 at diagnosis, 1991–2010



Notes: * Indicates that survival for First Nations females is significantly different than for other females in Ontario. Age-standardized to the International Cancer Survival Standard (ages 15 to 74).
Data sources: Indian Registration System; Ontario Cancer Registry

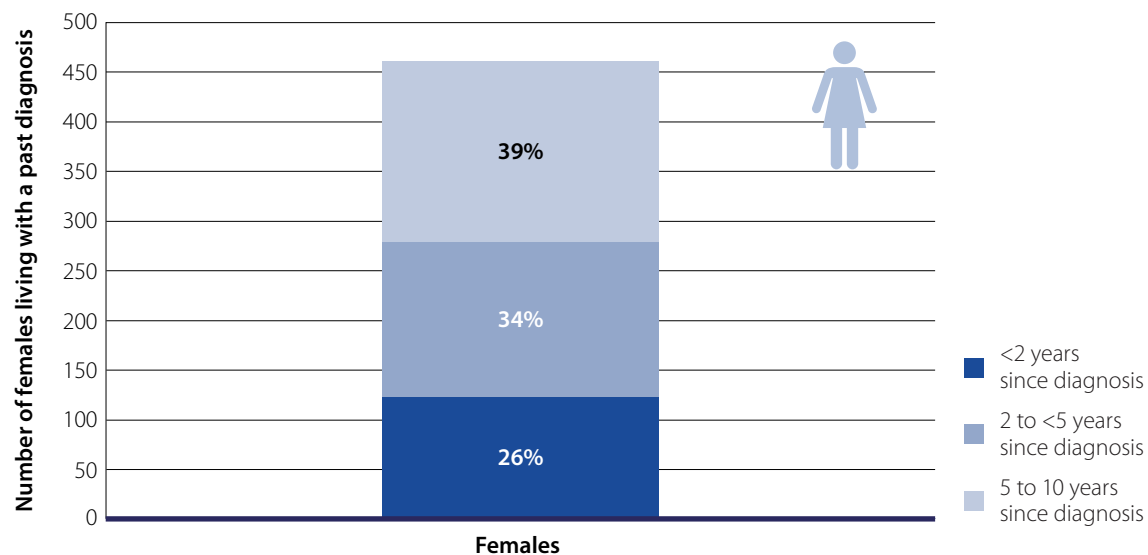
Breast cancer prevalence (new and existing cases)

i Cancer prevalence is defined as the number of people living with a past diagnosis of cancer in a set time period. A high prevalence of any given cancer might be explained by a high incidence (i.e., the cancer is very common) and/or high survival (i.e., someone is more likely to live long after being diagnosed). For a more detailed explanation of prevalence, visit cancercare.on.ca/measuringcancerFNIM.

Breast cancer prevalence (Figure 33)

- As of January 1, 2011, there were 461 First Nations females in Ontario who had been living with a diagnosis of breast cancer in the previous 10 years (i.e., sometime from 2001 to 2010).
- Most females living with a past diagnosis of breast cancer were alive two or more years after being diagnosed, which is a result of the relatively high survival for breast cancer.

FIGURE 33: Breast cancer prevalence in First Nations females in Ontario as of January 1, 2011, all ages, by time since diagnosis



Data sources: Indian Registration System, Ontario Cancer Registry

Prostate Cancer

in First Nations People in Ontario

What is prostate cancer?

The prostate is a small gland (about the size of a walnut) located below the bladder that makes up part of the male reproductive system. Prostate cancer starts when cells in the prostate change, grow uncontrollably and group together to form a tumour, or lump. As with many other cancers, the most common reason prostate cells change is due to age.

The older a man gets, the more his cells lose the ability to repair damage over time. These age-related changes can lead to non-cancerous conditions, such as prostatitis (swelling of the prostate) or sometimes prostate cancer. It may take years for prostate cancer to develop and it often does not cause symptoms early on. When prostate cancer is found and treated early, survival is typically very good because this cancer usually grows slowly.

Risk factors

The risk factors for prostate cancer described in this section are exposures, behaviours or other individual characteristics that affect someone's risk of developing this disease. Although they are not described in detail here, factors that individuals have little control over, such as access to care, community infrastructure and the lasting effects of colonialism are as important as or more important than risk factors to determining someone's likelihood of getting cancer. In the case of prostate cancer, we know very little about what increases or reduces cancer risk.

Some of the few known risk factors for prostate cancer include:

- **Age:** Prostate cancer risk increases with age, especially after age 50. Prostate cancer is often diagnosed in men over age 65.³⁸
- **Family history:** Having a close blood male relative, such as a father or brother with prostate cancer can increase a man's risk of developing the disease. Family history plays a role in about five to 10 percent of all prostate cancer cases.
- **Being sedentary:** Long periods of physical inactivity, such as watching television, playing video games and sitting at a desk can increase a man's risk of developing the disease. However, the evidence linking sedentary behaviour with prostate cancer is limited.³³

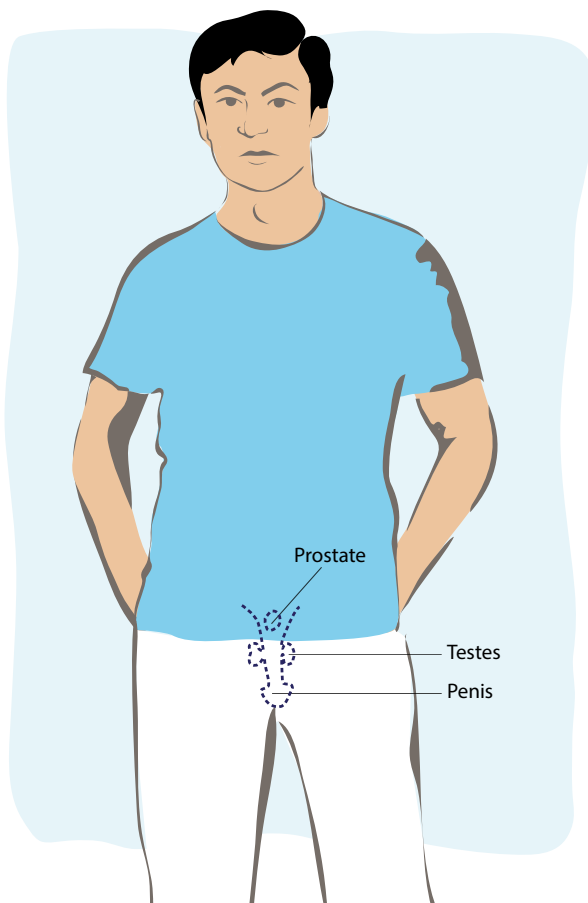
Factors described in this section that can increase the risk of prostate cancer

- Age
- Family history
- Being sedentary (limited evidence)

“

I had no idea that I was even sick.”

Robert
Cancer survivor



Symptoms

There are many prostate cancer symptoms, which can also be caused by other health conditions (see the full list at cancer.ca). People experiencing any unusual symptoms should visit a doctor or other healthcare provider to discuss. Some of the earlier symptoms of prostate cancer include changes in bladder habits (e.g., needing to urinate often, inability to urinate, weak or decreased flow of urine, burning or pain when urinating) and blood in the urine or semen. Examples of late symptoms include bone pain, weakness or numbness in the legs, and the loss of bowel or bladder control.

Once a diagnosis of cancer is made, First Nations people are connected with Cancer Care Ontario's Aboriginal Navigator program. Navigators help facilitate and coordinate access to cancer services and resources, and work to address the cultural and spiritual needs of people with cancer and their families. The treatment for each type of cancer is different, so everyone's cancer experience is unique. First Nations people diagnosed with cancer should work with their Navigator and health care providers to come up with a cancer plan that is right for them.

Snapshot of prostate cancer in First Nations people

From 1991 to 2010, prostate cancer was the most commonly diagnosed cancer for First Nations males and other males in Ontario. There were 636 cases of prostate cancer diagnosed in First Nations males during this time period. Prostate cancer commonly occurs in older men. Prostate cancer was the third leading cause of cancer death, with most deaths occurring in men over age 80 because this cancer normally grows quite slowly. About three in four (74 percent) First Nations males and four in five (82 percent) other males in Ontario with prostate cancer survived for at least five years after being diagnosed with cancer. Survival after a prostate cancer diagnosis is good because prostate cancer is often found early (before growing or spreading to other parts of the body) and effective treatments are available.

Top five cancers diagnosed in First Nations males in Ontario, 1991–2010	Top five cancers diagnosed in other males in Ontario, 1991–2010
Prostate	Prostate
Lung	Lung
Colorectal	Colorectal
Kidney	Bladder
Non-Hodgkin lymphoma	Non-Hodgkin lymphoma

Prostate cancer incidence (new cases)

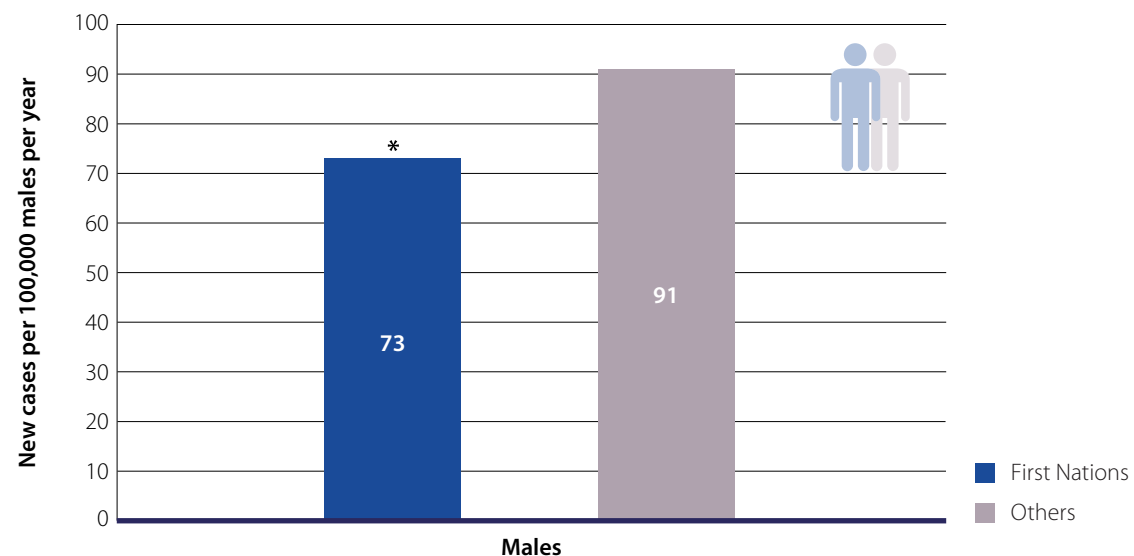


Cancer incidence is the number of people who are newly diagnosed with cancer in a specific population over a set period of time. The higher the incidence rate in a population, the more common the disease. For a more detailed explanation of incidence, visit cancercare.on.ca/measuringcancerFNIM.

Prostate cancer incidence (new cases) (Figure 34)

- From 1991 to 2010, about 73 prostate cancers per 100,000 First Nations males occurred each year (Figure 34).
- First Nations males had a lower incidence of prostate cancer than other Ontario males.

FIGURE 34: Prostate cancer incidence (new cases) in First Nations males and other males in Ontario, all ages, 1991–2010



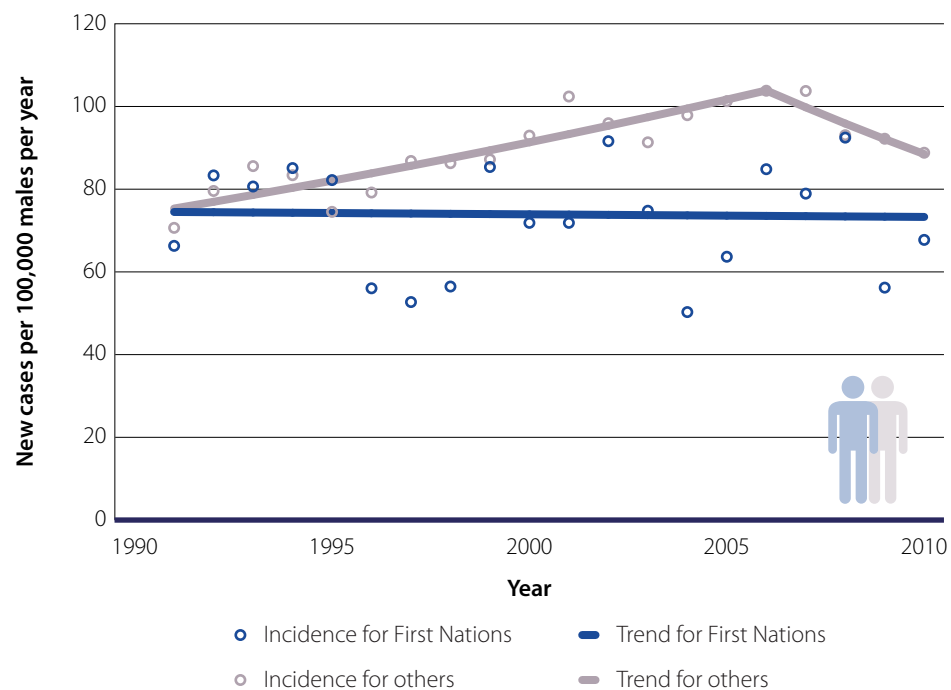
Notes: * Indicates that incidence for First Nation males is significantly different than for other males in Ontario. Age-standardized to the 1960 World Standard population.

Data sources: Indian Registration System, Ontario Cancer Registry

Prostate cancer incidence (new cases) over time (Figure 35)

- Prostate cancer incidence in First Nations males was relatively stable from 1991 to 2010.
- However, prostate cancer incidence in other males in Ontario increased significantly from 1991 to 2005 and then began to decrease.

FIGURE 35: Prostate cancer incidence (new cases) in First Nations males and other males in Ontario, by year of diagnosis, all ages, 1991–2010



Notes: Age-standardized to the 1960 World Standard population.
Data sources: Indian Registration System, Ontario Cancer Registry

Prostate cancer mortality (deaths)

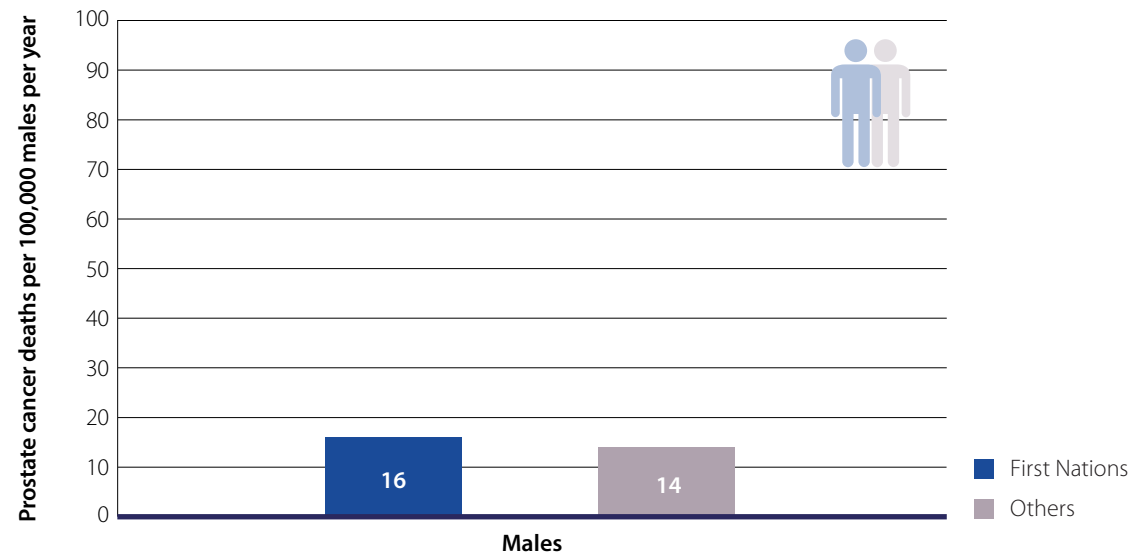


Mortality is the number of deaths in a population over a set period of time. Cancer mortality is lower when fewer people are being diagnosed with cancer or when more people are living longer after a cancer diagnosis. For a more detailed explanation of mortality, visit cancercare.on.ca/measuringcancerFNIM.

Prostate cancer mortality (deaths) (Figure 36)

- From 1991 to 2010, about 16 prostate cancer deaths per 100,000 First Nations males occurred each year.
- Although First Nations males had a lower incidence of prostate cancer, they had significantly higher prostate cancer mortality than other males in Ontario.

FIGURE 36: Prostate cancer mortality (deaths) in First Nations males and other males in Ontario, all ages, 1991–2010



Notes: * Indicates that mortality for First Nation males is significantly different than for other males in Ontario. Age-standardized to the 1960 World Standard population.

Data sources: Indian Registration System, Ontario Cancer Registry

Prostate cancer survival (chances of living after diagnosis)

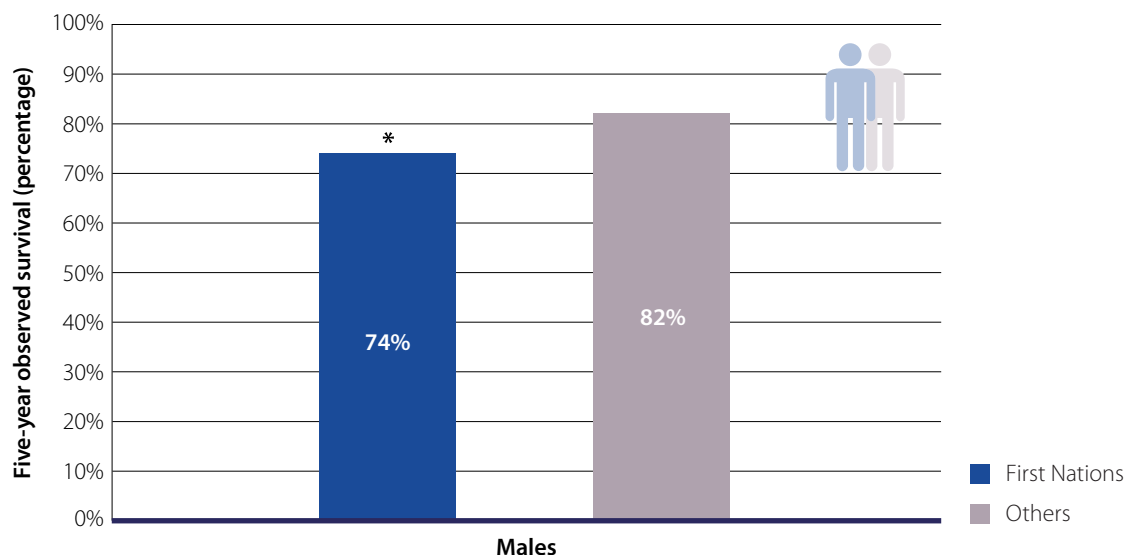


Cancer survival is the percentage of people still alive for a set time period after being diagnosed with cancer (usually five years). Survival improves when more cancers are caught early—before they spread to other parts of the body—and when there are improvements in cancer treatment that help people with cancer live longer. For a more detailed explanation on survival, visit cancercare.on.ca/measuringcancerFNIM.

Prostate cancer survival (Figure 37)

- About 74 percent of First Nations males survived five years or longer after a prostate cancer diagnosis.
- First Nation males had worse prostate cancer survival than other Ontario males.

FIGURE 37: Five-year prostate cancer survival in First Nations males and other males in Ontario, ages 15–74, 1991–2010



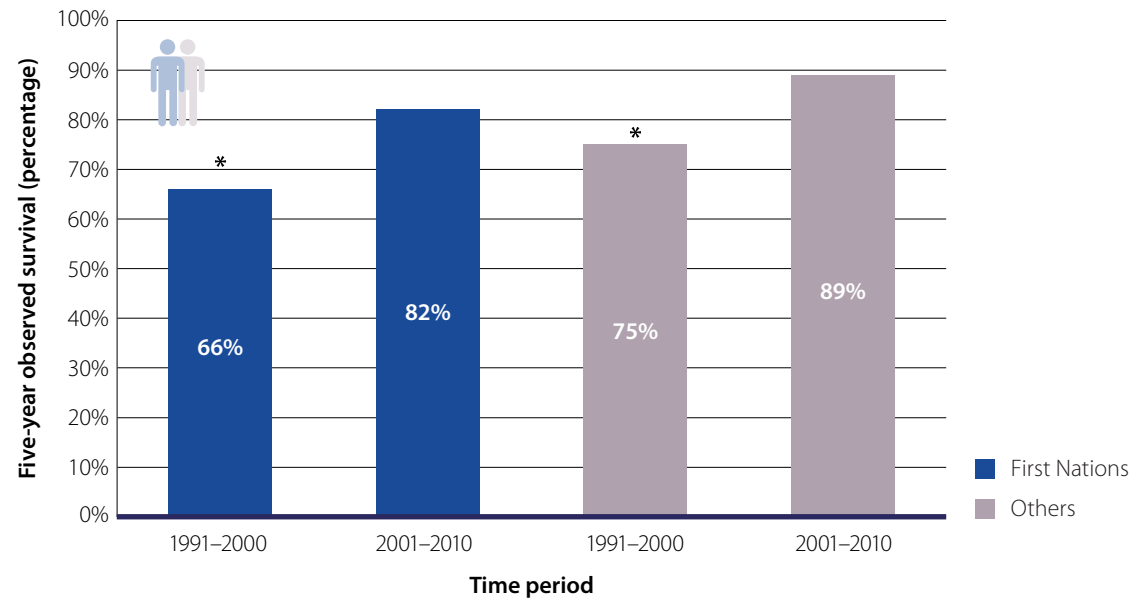
Notes: * Indicates that survival for First Nation males is significantly different than for other males in Ontario. Age-standardized to the International Cancer Survival Standard (ages 15 to 74).

Data sources: Indian Registration System, Ontario Cancer Registry

Prostate cancer survival over time (Figure 38)

- Survival from prostate cancer has improved over time for First Nations males and other males in Ontario.
- In the most recent time period (2001 to 2010), 82 percent of First Nations males survived five years or longer after a prostate cancer diagnosis, compared with 66 percent from 1991 to 2000.

FIGURE 38: Five-year prostate cancer survival in First Nations males and other males in Ontario, ages 15–74 at diagnosis, 1991–2010



Notes: * Indicates that percentage from 1991 to 2000 is significantly different from 2001 to 2010.
Age-standardized to the International Cancer Survival Standard (ages 15 to 74).
Data sources: Indian Registration System, Ontario Cancer Registry

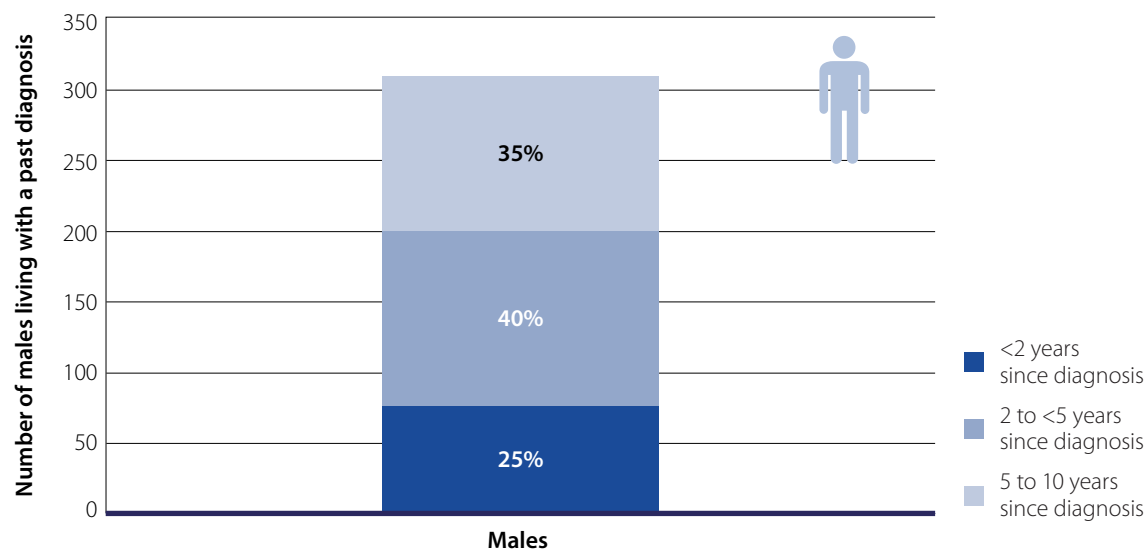
Prostate cancer prevalence (new and existing cases)

i Cancer prevalence is defined as the number of people living with a past diagnosis of cancer in a set time period. A high prevalence of any given cancer might be explained by a high incidence (i.e., the cancer is very common) and/or high survival (i.e., someone is more likely to live long after being diagnosed). For a more detailed explanation of prevalence, visit cancercare.on.ca/measuringcancerFNIM.

Prostate cancer survival (Figure 39)

- As of January 1, 2011, there were 308 First Nations males in Ontario who had been living with a diagnosis of prostate cancer in the previous 10 years (i.e., sometime from 2001 to 2010).
- Most people living with a past diagnosis of prostate cancer were alive more than two years after being diagnosed.
- Because prostate cancer has a high incidence (many new cases) and good survival, prostate cancer typically has a high prevalence.

FIGURE 39: Prostate cancer prevalence among First Nations males in Ontario as of January 1, 2011, all ages, by time since diagnosis



Data sources: Indian Registration System, Ontario Cancer Registry

Kidney Cancer

in First Nations People in Ontario

What is kidney cancer?

The kidneys are part of the urinary system, which includes the bladder, ureters, urethra and kidneys. There are two kidneys, located in the abdomen, which are responsible for removing waste from the body, filtering blood and making urine. Kidney cancer starts when cells in a kidney change, grow out of control and group together to form a tumour. There are a number of reasons that normal kidney cells become cancerous.

As with many other cancers, the most common reason kidney cells change is due to age. The older a person gets, the more their cells lose the ability to repair damage.

It may take years for kidney cancer to grow and it often does not cause symptoms early on. When kidney cancer is found and treated early, before it has spread to other parts of the body, survival can be very good. Surviving kidney cancer also depends on the specific type of kidney cancer—some types grow faster than others.

Risk factors

The risk factors for kidney cancer described in this section are exposures, behaviours or other individual characteristics that affect someone's risk of developing this disease. Although they are not described in detail here, factors that individuals have little control over, such as access to care, community infrastructure and the lasting effects of colonialism are as important as or more important than risk factors to determining someone's likelihood of getting cancer.

Some risk factors for kidney cancer include:

- **Smoking cigarettes:** can increase someone's risk of developing kidney cancer. Half of on-reserve First Nations and 43 percent of off-reserve First Nations adults smoke cigarettes, compared to only 22 percent of non-Aboriginal adults. Smoking is also common among First Nations teens living on-reserve (30 percent) and off-reserve (14 percent) compared to non-Aboriginal teens in Ontario (five percent).^{29, 32}
- **Excess body weight:** Being overweight or obese can increase someone's risk of developing kidney cancer. Obesity is more common among First Nations adults (50 percent on-reserve and 30 percent off-reserve) and teens (16 percent on-reserve and eight percent off-reserve) than non-Aboriginal adults (17 percent) and teens (five percent).^{22, 29}
- **High blood pressure:** High blood pressure can increase someone's risk of developing kidney cancer. It is also a common risk factor for other chronic conditions (e.g., heart disease) and is typically high in First Nations people.^{11, 45}
- **Radiation:** Being exposed to high levels of medical radiation (e.g., having radiotherapy for a different type of cancer) can increase someone's risk of developing kidney cancer.³²

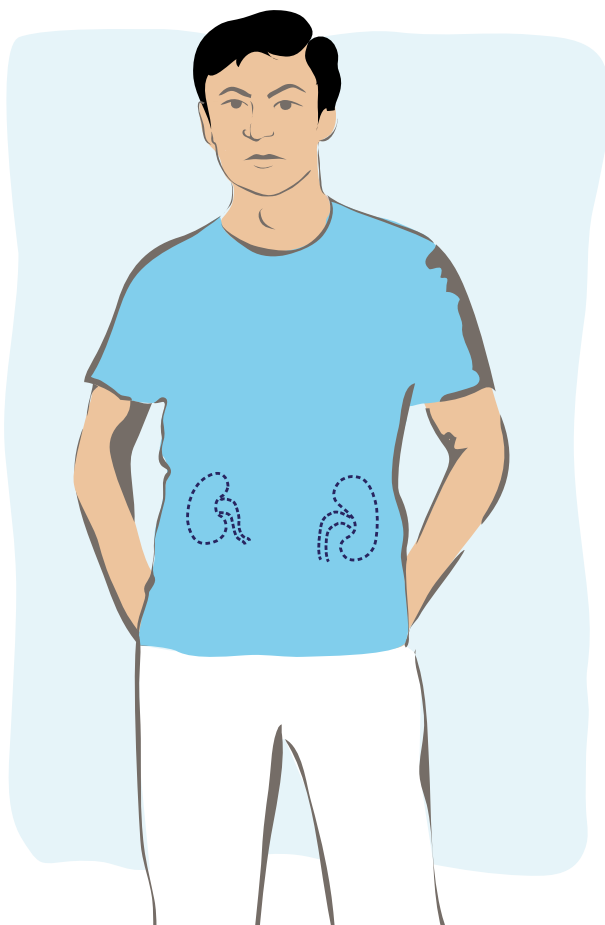
“

My husband passed not knowing all the symptoms he had the past 4 years were related to cancer.”

Velva
Wife & Caregiver

Factors described in this section that can increase the risk of kidney cancer

- Smoking cigarettes
- Excess body weight
- High blood pressure
- Radiation



Symptoms

There are many kidney cancer symptoms, which can also be caused by other health conditions (see the full list at cancer.ca). People experiencing any unusual symptoms should visit a doctor or other healthcare provider to discuss. Some of the earlier symptoms of kidney cancer include blood in the urine, pain in the back and side of the abdomen, a lump that can be felt in the abdomen, and swelling in the legs and ankles. Examples of late symptoms include high blood pressure, fatigue, night sweats, paleness and a general feeling of discomfort or illness (called malaise) caused by having low levels of red blood cells (anemia).

Once a diagnosis of cancer is made, First Nations people are connected with Cancer Care Ontario's Aboriginal Navigator program. Navigators help facilitate and coordinate access to cancer services and resources, and work to address the cultural and spiritual needs of people with cancer and their families. The treatment for each type of cancer is different, so everyone's cancer experience is unique. First Nations people diagnosed with cancer should work with their Navigator and health care providers to come up with a cancer plan that is right for them.

Snapshot of kidney cancer in First Nations people

From 1991 to 2010, kidney cancer was the fifth most commonly diagnosed cancer in First Nations people, with 371 cases. This disease was more common among First Nations people than among other people in Ontario (twelfth most common cancer type), which has resulted in a greater number of deaths from kidney cancer in First Nations people. Kidney cancer has a relatively good survival rate compared to other cancer types. Nearly 60 percent of First Nations males and females survived at least five years after being diagnosed with kidney cancer. Because kidney cancer is common in First Nations people and the chances of surviving are relatively good, there are also relatively large numbers of people living with a past diagnosis of kidney cancer.

Top five cancers diagnosed in First Nations people in Ontario, 1991–2010	Top five cancers diagnosed in other people in Ontario, 1991–2010
Lung	Prostate
Colorectal	Female breast
Female breast	Lung
Prostate	Colorectal
Kidney	Non-Hodgkin lymphoma

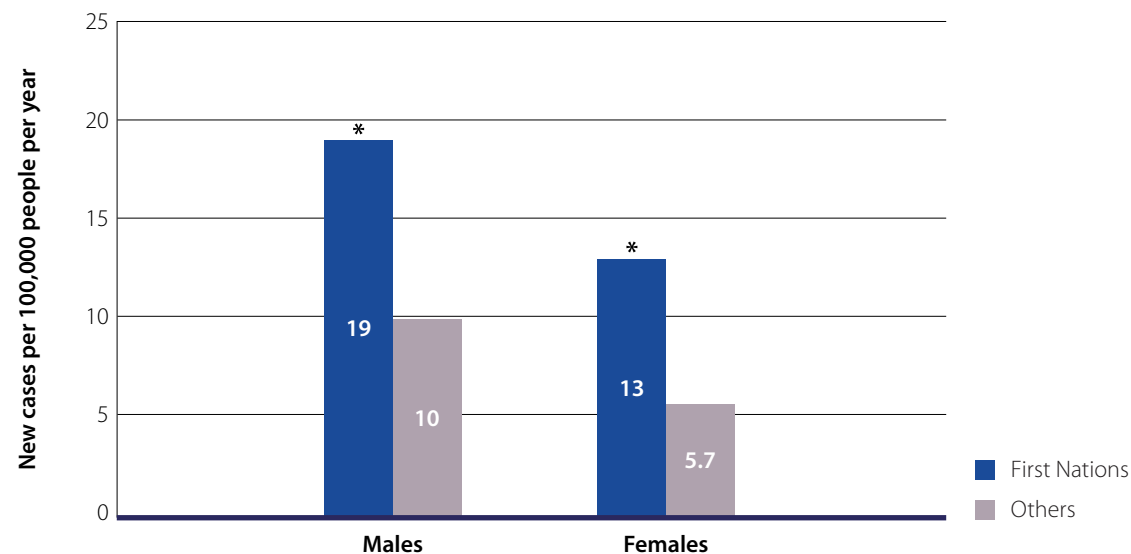
Kidney cancer incidence (new cases)

i Cancer incidence is the number of people who are newly diagnosed with cancer in a specific population over a set period of time. The higher the incidence rate in a population, the more common the disease. For a more detailed explanation of incidence, visit cancercare.on.ca/measuringcancerFNIM.

Kidney cancer incidence (new cases), all ages, by sex (Figure 40)

- From 1991 to 2010, about 19 kidney cancers per 100,000 First Nations males and 13 kidney cancers per 100,000 First Nations females occurred each year (Figure 40).
- Males had a higher incidence of kidney cancer than females (among First Nations people and other people in Ontario).
- First Nations males and females had a higher incidence of kidney cancer than other males and females in Ontario.

FIGURE 40: Kidney cancer incidence (new cases) in First Nations people and other people in Ontario, all ages, by sex, 1991–2010



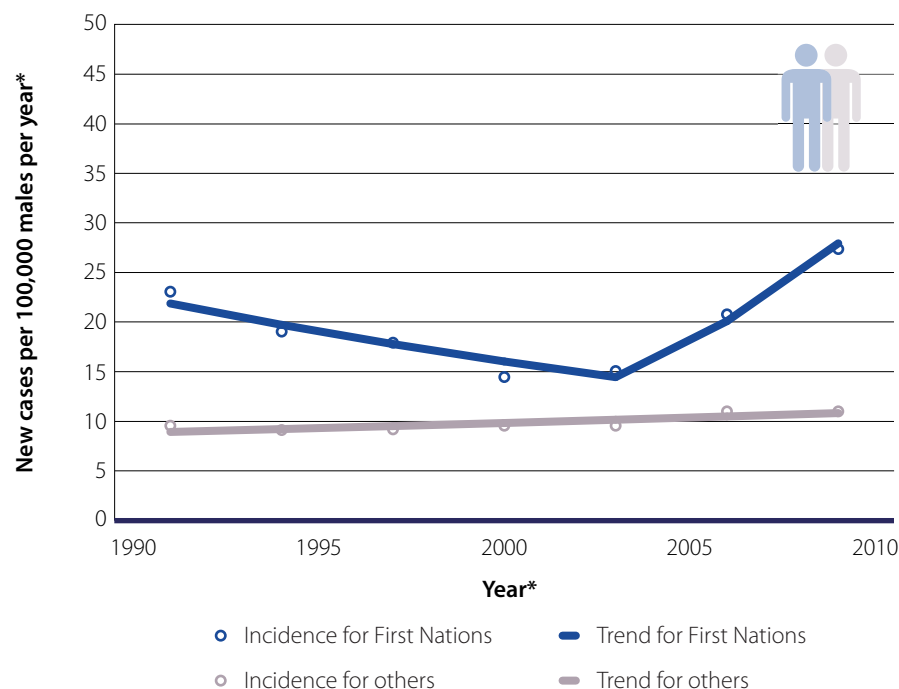
Notes: * Indicates that incidence for First Nations people is significantly different than for other people in Ontario. Age-standardized to the 1960 World Standard population.

Data sources: Indian Registration System, Ontario Cancer Registry

Kidney cancer incidence (new cases) over time (Figures 41a and 41b)

- Kidney cancer incidence in First Nations males decreased significantly from 1991 to 2003 and then began to increase, whereas kidney cancer incidence in other Ontario males increased by three percent from 1991 to 2010.

FIGURE 41A: Kidney cancer incidence (new cases) in First Nations males and other males in Ontario, by year, all ages, 1991–2010



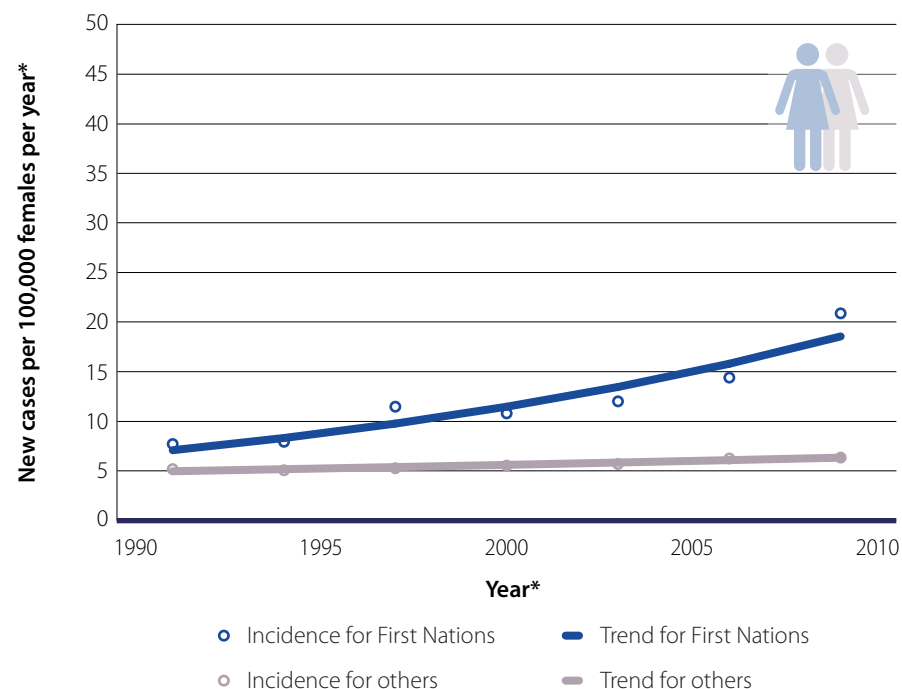
Notes: *Each data point on this graph represents three combined years due to the small number of cancers diagnosed in First Nations males.

Age-standardized to the 1960 World Standard population.

Data sources: Indian Registration System, Ontario Cancer Registry

- Kidney cancer incidence increased in First Nations females and other Ontario females from 1991 to 2010. In First Nations females, kidney cancer incidence more than doubled from 1991 to 2010.

FIGURE 41B: Kidney cancer incidence (new cases) in First Nations females and other females in Ontario, by year, all ages, 1991–2010



Notes: *Each data point on this graph represents three combined years due to the small number of cancers diagnosed in First Nations females.

Age-standardized to the 1960 World Standard population.

Data sources: Indian Registration System, Ontario Cancer Registry

Kidney cancer mortality (deaths)

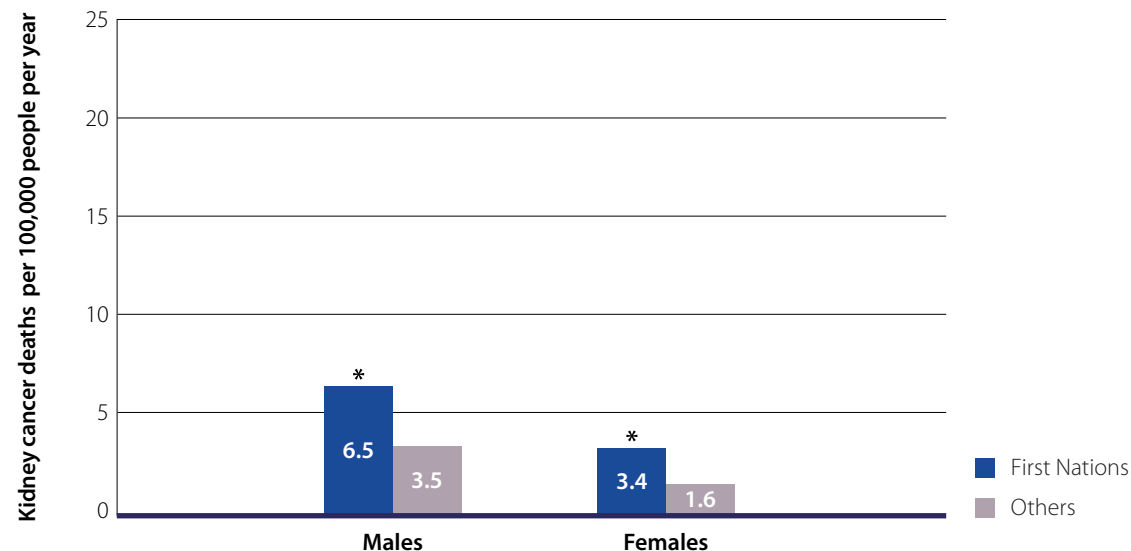


Mortality is the number of deaths in a population over a set period of time. Cancer mortality is lower when fewer people are being diagnosed with cancer or when more people are living longer after a cancer diagnosis. For a more detailed explanation of mortality, visit cancercare.on.ca/measuringcancerFNIM.

Kidney cancer mortality (deaths) (Figure 42)

- From 1991 to 2010, about seven kidney cancer deaths per 100,000 First Nations males and three kidney cancer deaths per 100,000 First Nations females occurred each year.
- Males had higher kidney cancer mortality than females (among First Nations people and other people in Ontario).
- First Nations males and females had higher kidney cancer mortality than other males and females in Ontario.

FIGURE 42: Kidney cancer mortality (deaths) in First Nations people and other people in Ontario, all ages, by sex, 1991–2010



Notes: * Indicates that mortality for First Nations people is significantly different than for other people in Ontario. Age-standardized to the 1960 World Standard population.

Data sources: Indian Registration System, Ontario Cancer Registry

Kidney cancer survival (chances of living after diagnosis)

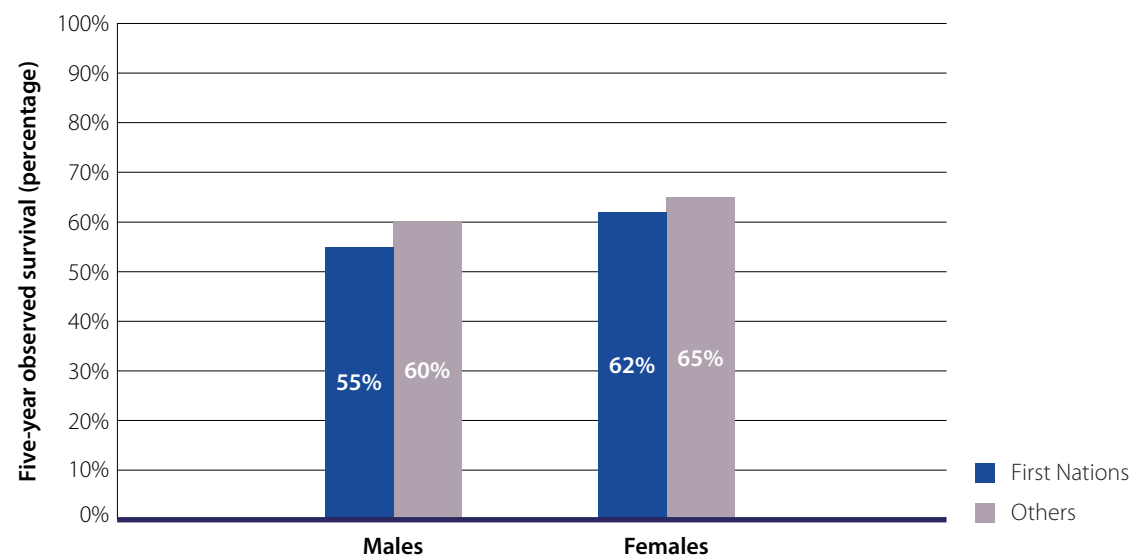


Cancer survival is the percentage of people still alive for a set time period after being diagnosed with cancer (usually five years). Survival improves when more cancers are caught early—before they spread to other parts of the body—and when there are improvements in cancer treatment that help people with cancer live longer. For a more detailed explanation on survival, visit cancercares.on.ca/measuringcancerFNIM.

Kidney cancer survival by sex (Figure 43)

- About 55 percent of First Nations males and 62 percent of First Nations females survived five years or longer after a kidney cancer diagnosis.
- There were no significant differences in kidney cancer survival between First Nations males and females, and other males and females in Ontario from 1991 to 2010.

FIGURE 43: Five-year kidney cancer survival in First Nations people and other people in Ontario, ages 15–74 at diagnosis, by sex, 1991–2010



Notes: * Indicates that survival for First Nations people is significantly different than for other people in Ontario. Age-standardized to the International Cancer Survival Standard (ages 15 to 74).

Data sources: Indian Registration System, Ontario Cancer Registry

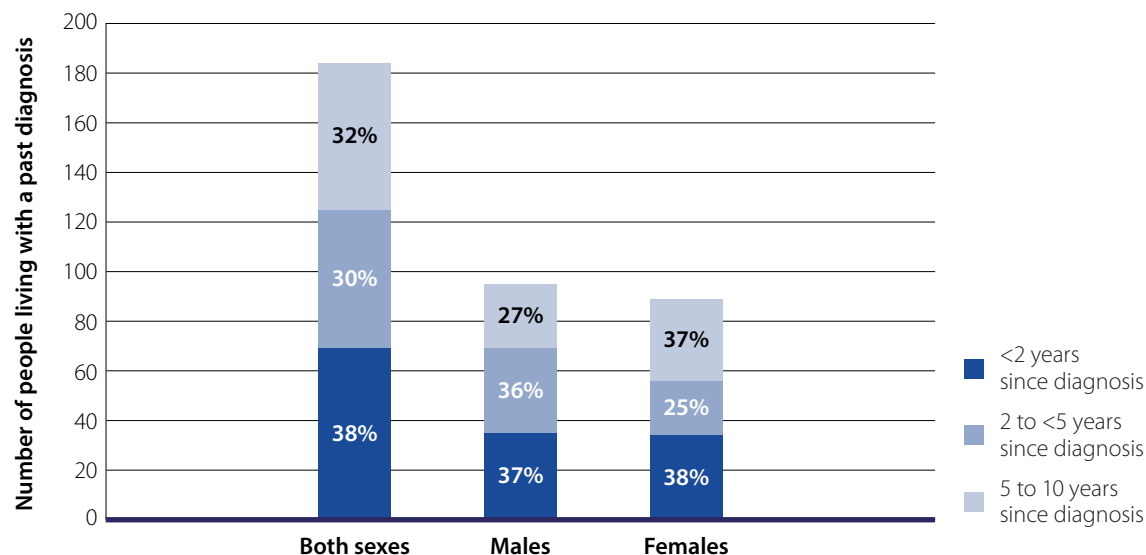
Kidney cancer prevalence (new and existing cases)

i Cancer prevalence is defined as the number of people living with a past diagnosis of cancer in a set time period. A high prevalence of any given cancer might be explained by a high incidence (i.e., the cancer is very common) and/or high survival (i.e., someone is more likely to live long after being diagnosed). For a more detailed explanation of prevalence, visit cancercare.on.ca/measuringcancerFNIM.

Kidney cancer prevalence by sex (Figure 44)

- As of January 1, 2011, there were 95 First Nations males and 89 First Nations females in Ontario who had been living with a diagnosis of kidney cancer in the previous 10 years (i.e., sometime between 2000 and 2010).
- About one in three (32 percent) First Nations people living with kidney cancer were alive five to 10 years after being diagnosed. A similar number of people were alive two to five years after being diagnosed (30 percent) and less than two years after being diagnosed (38 percent).
- There were about as many females as there were males living with a past diagnosis of kidney cancer.

FIGURE 44: Kidney cancer prevalence among First Nations people in Ontario as of January 1, 2011, all ages, by sex and time since diagnosis



Data sources: Indian Registration System, Ontario Cancer Registry

Cervical Cancer

in First Nations females in Ontario

What is cervical cancer?

The cervix is the narrow opening at the bottom of a woman's uterus (womb) and makes up part of the female reproductive system. The cervix connects the uterus to the vagina and widens during childbirth to allow a baby to pass through. Cervical cancer starts when cells in the cervix change, grow out of control and group together to form a tumour.

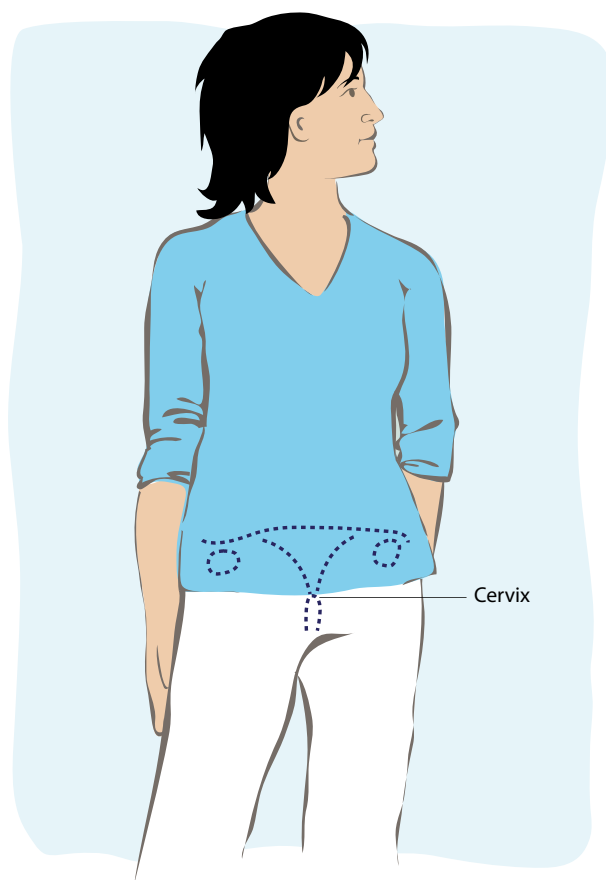
These cell changes can then lead to pre-cancerous lesions, and if left untreated, cervical cancer. It may take years for cervical cancer to grow, and there are often no symptoms early on. Most cases of cervical cancer are seen in younger women (those under age 50). When pre-cancerous cells on the cervix are found and treated, cervical cancer can be prevented.

Risk factors

The risk factors for cervical cancer described in this section are exposures, behaviours or individual characteristics that affect someone's risk of developing this disease. Although they are not described in detail here, factors that individuals have little control over, such as access to care, community infrastructure and the lasting effects of colonialism, are as important as or more important than individual risk factors to determining someone's likelihood of getting cancer.

Some of the factors that increase the risk of cervical cancer include:

- **Drinking alcohol:** alcohol consumption can cause cancers of the female breast. While avoiding alcohol is the best way of reduce your risk of cancer, if you are going to drink, men should limit themselves to two drinks per day and women to one drink per day.²² First Nations women (14 percent for on-reserve and off-reserve) are more likely to binge drink (have five or more drinks on one occasion two to three times per month) than non-Aboriginal women in Ontario (eight percent).^{29, 32}
- **Human papillomavirus (HPV):** HPV is a common infection that is spread from person to person, usually through sexual contact. In most cases, HPV causes no symptoms and HPV infections often go away on their own. However, in some cases, infection with some types of HPV can cause cervical cancer. All women who get cervical cancer will have had an HPV infection at some point in their past that did not clear up on its own. Because HPV is an infection spread through sexual contact, being sexually active increases a woman's risk of getting HPV and, as a result, cervical cancer.⁴⁶
- **Smoking cigarettes:** Smoking can also increase cervical cancer risk in women who have HPV. HPV infections often go away on their own without treatment, but the damage caused to cells by smoking cigarettes increases the risk of HPV staying in the body and can lead to the development of cervical cancer in the future. Nearly half of on-reserve First Nations women and 41 percent of off-reserve First Nations women smoke cigarettes, compared to only 18 percent of non-Aboriginal women.⁽²⁹⁾ Smoking is also more common among First Nations teens living on-reserve (30 percent) and off-reserve (14 percent) than among non-Aboriginal teens in Ontario (five percent).
- **Giving birth:** Women who have given birth have a higher risk of cervical cancer.³⁴
- **Oral contraceptives:** Using birth control pills increases the risk of cervical cancer. This may be because women who use birth control are more likely to be sexually active and therefore at risk of getting the human papillomavirus (HPV).³⁴



Some lifestyle changes can help reduce the risk of developing cervical cancer:

- **HPV immunization:** Having the HPV vaccine protects against the main types of HPV that can cause cervical cancer. Children in grade 7 are eligible for HPV vaccination through school-based programs.⁴⁷
- **Cancer screening:** Cervical cancer screening using the Pap test can lower a woman's risk of cervical cancer. Regular Pap testing can prevent cervical cancer by finding abnormal cells that could become cancer if left untreated.⁴⁶
- **Older age at first birth:** Women who give birth to their first child at an older age can have a lower risk of cervical cancer.³⁴

Factors described in this section that can increase the risk of cervical cancer

- Human papillomavirus (HPV)
- Smoking cigarettes
- Giving birth
- Oral contraceptives

Factors described in this section that can protect against the development of cervical cancer

- HPV immunization
- Cancer screening
- Later age at first birth

Cancer Screening

Cervical cancer is almost entirely preventable with regular screening, appropriate and timely follow-up of abnormal cells.

Although screening with the Pap test has been happening in Ontario for many decades, the Ontario Cervical Cancer Screening Program (OCCSP) only started in 2000. OCCSP is a province-wide initiative that aims to provide women with access to comprehensive, coordinated, high-quality cervical cancer screening. The OCCSP recommends cervical cancer screening with a Pap test for women ages 21 and 69 every three years if they are or have ever been sexually active. Screening can stop at 70 years of age in women who have been regularly screened and have had three or more normal tests in the prior 10 years.

Symptoms

There are many symptoms of cervical cancer, which can also be caused by other health conditions (see the full list at cancer.ca). People experiencing any unusual symptoms should visit a doctor or other healthcare provider to discuss. Some of the earlier symptoms of cervical cancer include pale, watery, pink, brown or bloody discharge from the vagina between periods, unusually long or heavy periods, bleeding after having sex, bleeding or bloody discharge from the vagina after menopause, pain during sex or foul-smelling discharge from the vagina. Examples of late symptoms include difficulty urinating, loss of bladder control (called incontinence), blood in the urine, difficulty having a bowel movement, urine or feces leaking from the vagina, pain in the pelvic area or lower back that may go down one or both legs, swelling of the legs, bone pain and fatigue.

Once a diagnosis of cancer is made, First Nations people are connected with Cancer Care Ontario's Aboriginal Navigator program. Navigators help facilitate and coordinate access to cancer services and resources, and work to address the cultural and spiritual needs of people with cancer and their families. The treatment for each type of cancer is different, so everyone's cancer experience is unique. First Nations people diagnosed with cancer should work with their Navigator and health care providers to come up with a cancer plan that is right for them.

Snapshot of cervical cancer in First Nations females

From 1991 to 2010, cervical cancer was the sixth most commonly diagnosed cancer among First Nations females, accounting for 169 new cases. This disease was more common among First Nations females than among other females in Ontario (10th most common cancer type), which has resulted in a greater number of deaths from cervical cancer in First Nations people.

Cervical cancer has relatively good survival compared to other cancer types. Nearly 60 percent of females survived at least five years after being diagnosed with cervical cancer. Because cervical cancer is common in First Nations females and the chances of surviving are good, there are also large numbers of women living with a past diagnosis of cervical cancer.

“

I am so grateful to have had the opportunity to learn all this information about cancer, I walked away with a lighter heart and understanding of the treatment.”

Velva
Wife & Caregiver

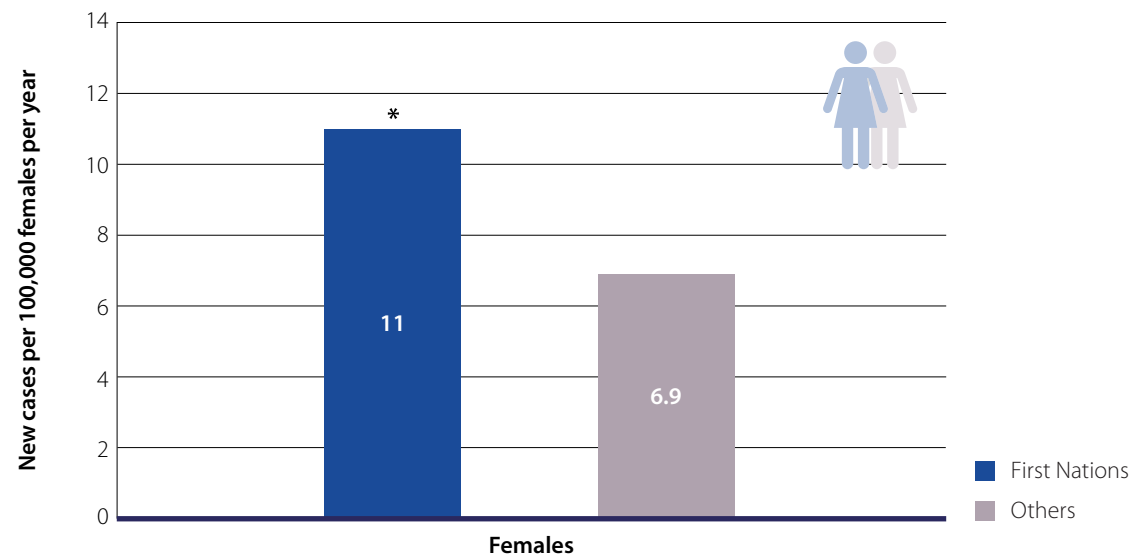
Cervical cancer incidence (new cases)

i Cancer incidence is the number of people who are newly diagnosed with cancer in a specific population over a set period of time. The higher the incidence rate in a population, the more common the disease. For a more detailed explanation of incidence, visit cancercare.on.ca/measuringcancerFNIM.

Cervical cancer incidence (new cases), all ages (Figure 45)

- From 1991 to 2010, about 11 cases of cervical cancer per 100,000 First Nations females were diagnosed each year.
- First Nations females had a higher cervical cancer incidence than other females in Ontario.

FIGURE 45: Cervical cancer incidence (new cases) in First Nations females and other females in Ontario, all ages, 1991–2010



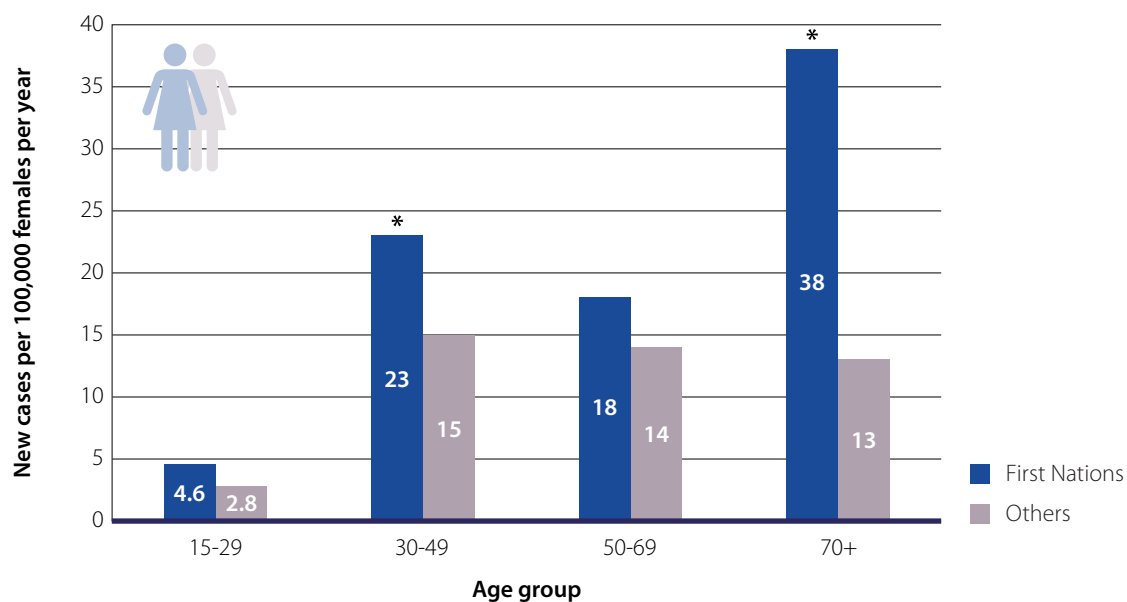
Notes: * Indicates that incidence for First Nations females is significantly different than for other females in Ontario. Age-standardized to the 1960 World Standard population.

Data sources: Indian Registration System, Ontario Cancer Registry

Cervical cancer incidence (new cases) by age group (Figure 46)

- First Nations females had a higher incidence of cervical cancer than other females in Ontario among females ages 30 to 49 and those in the oldest age group (ages 70 and older).

FIGURE 46: Cervical cancer incidence (new cases) in First Nations females in Ontario, by age group, 1991–2010



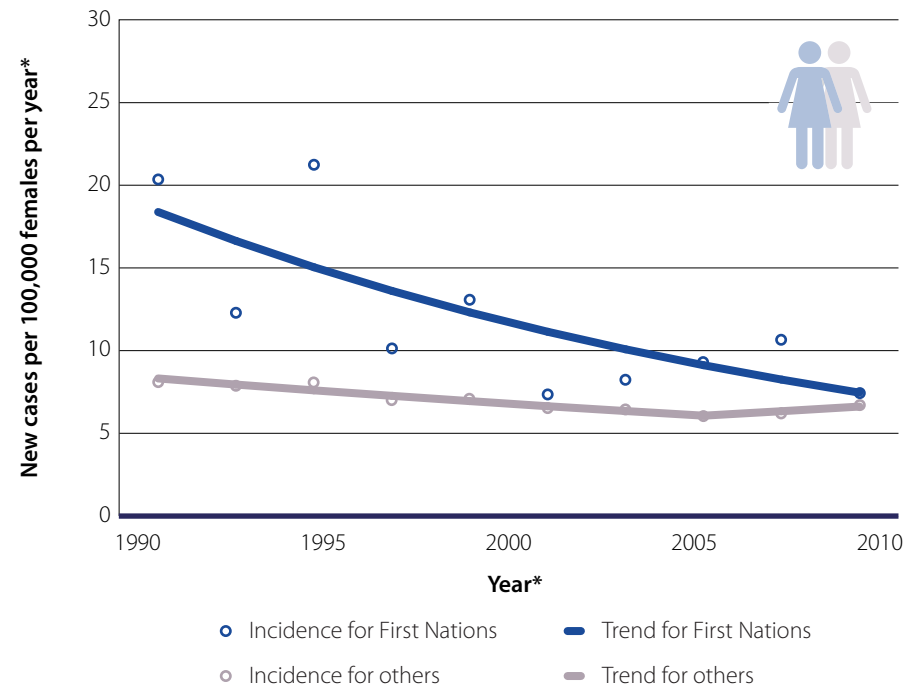
Notes: * Indicates that incidence for First Nations females is significantly different than for other people in Ontario. Age-standardized to the 1960 World Standard population.

Data sources: Indian Registration System, Ontario Cancer Registry

Cervical cancer incidence (new cases) over time (Figure 47)

- Cervical cancer incidence decreased significantly from 1991 to 2010 in First Nations females. In other Ontario females, cervical cancer incidence decreased significantly from 1991 to 2006 and then stayed the same. As a result, incidence was very similar in the two populations by 2010.

FIGURE 47: Cervical cancer incidence (new cases) in First Nations females and other females in Ontario, all ages, by year* of diagnosis, 1991–2010



Notes: *Each data point on this graph represents three combined years due to the small number of cancers diagnosed in First Nations females. Age-standardized to the 1960 World Standard population.

Data sources: Indian Registration System, Ontario Cancer Registry

Cervical cancer mortality (deaths)

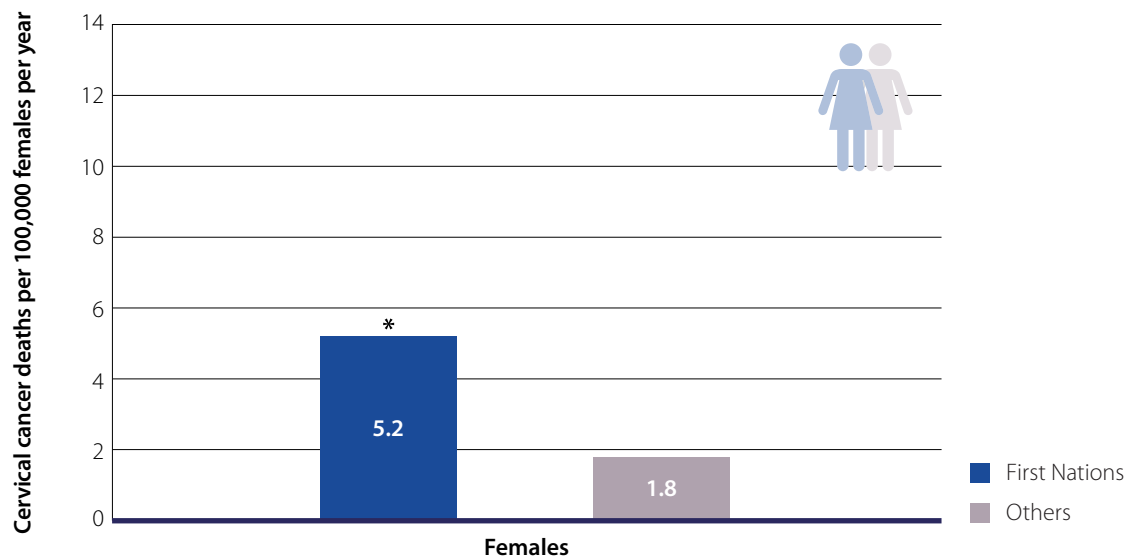
i Mortality is the number of deaths in a population over a set period of time. Cancer mortality is lower when fewer people are being diagnosed with cancer or when more people are living longer after a cancer diagnosis. For a more detailed explanation of mortality, visit cancercare.on.ca/measuringcancerFNIM.

Cervical cancer mortality (deaths) (Figure 48)

- From 1991 to 2010, about five cervical cancer deaths per 100,000 First Nations females occurred each year.

First Nations females had higher cervical cancer mortality than other females in Ontario.

FIGURE 48: Cervical cancer mortality (deaths) in First Nations females and other females in Ontario, all ages, 1991–2010



Notes: * Indicates that mortality for First Nations females is significantly different than for other females in Ontario. Age-standardized to the 1960 World Standard population.

Data sources: Indian Registration System, Ontario Cancer Registry

Cervical cancer survival (chances of living after diagnosis)

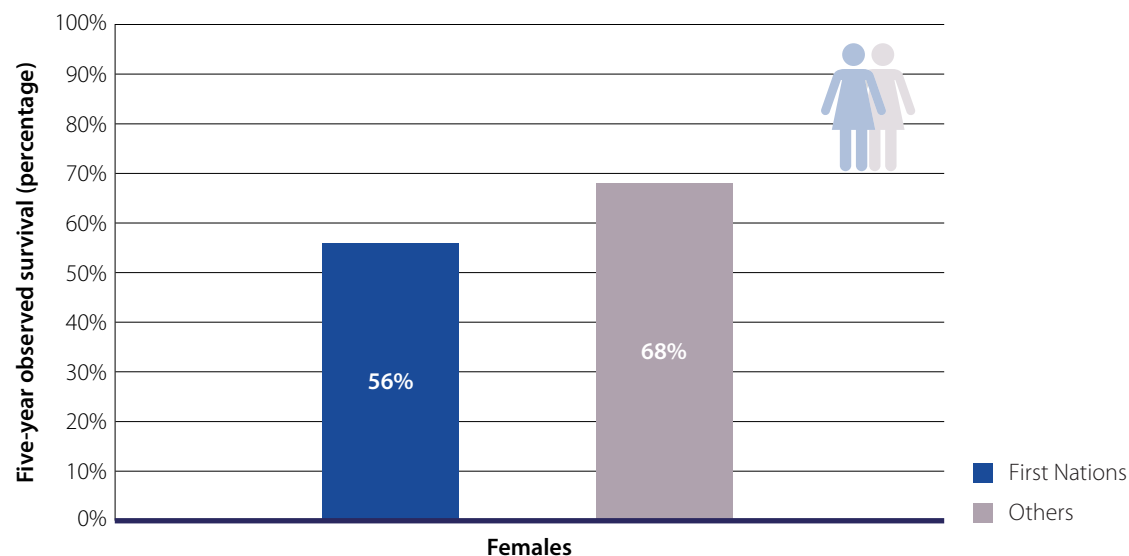


Cancer survival is the percentage of people still alive for a set time period after being diagnosed with cancer (usually five years). Survival improves when more cancers are caught early—before they spread to other parts of the body—and when there are improvements in cancer treatment that help people with cancer live longer. For a more detailed explanation on survival, visit cancercare.on.ca/measuringcancerFNIM.

Cervical cancer survival (Figure 49)

- About 56 percent of First Nations females survived five years or longer after a cervical cancer diagnosis.
- Cancer survival in First Nations females was not significantly different from the survival of other females in Ontario.

FIGURE 49: Five-year cervical cancer survival in First Nations females and other females in Ontario, ages 15–74 at diagnosis, 1991–2010



Notes: Age-standardized to the International Cancer Survival Standard (ages 15 to 74).

Data sources: Indian Registration System; Ontario Cancer Registry

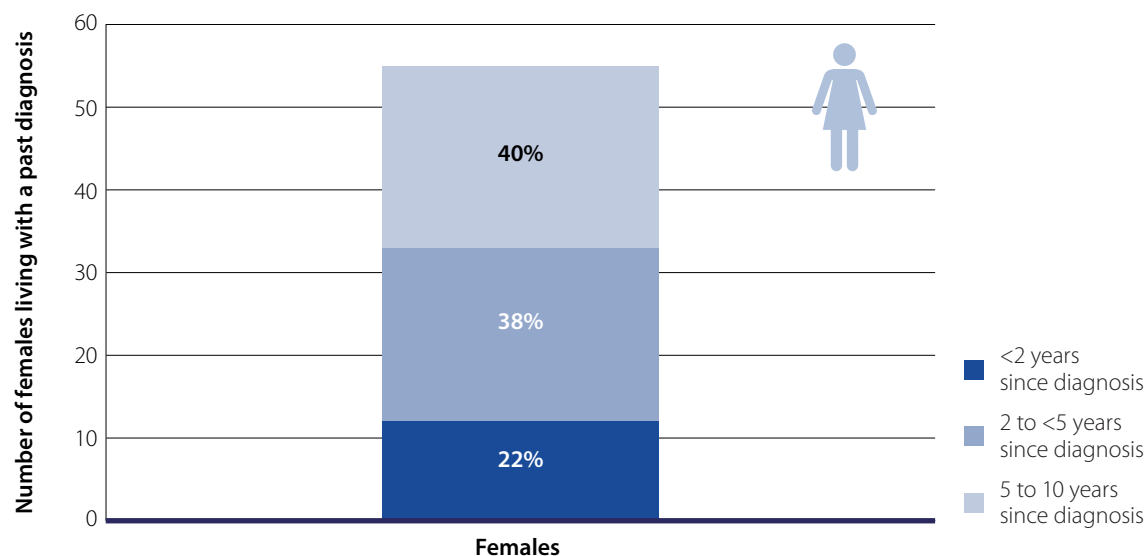
Cervical cancer prevalence (new and existing cases)

i Cancer prevalence is defined as the number of people living with a past diagnosis of cancer in a set time period. A high prevalence of any given cancer might be explained by a high incidence (i.e., the cancer is very common) and/or high survival (i.e., someone is more likely to live long after being diagnosed). For a more detailed explanation of prevalence, visit cancercare.on.ca/measuringcancerFNIM.

Cervical cancer prevalence (Figure 50)

- As of January 1, 2011, there were 55 First Nations females in Ontario who were living with a diagnosis of cervical cancer in the previous 10 years (that is, sometime between 2001 and 2010).
- Most people living with a past diagnosis of cervical cancer were alive two or more years after being diagnosed, which is a result of the relatively high survival for cervical cancer.

FIGURE 50: Cervical cancer prevalence in First Nations females in Ontario as of January 1, 2011, all ages, by time since diagnosis



Data sources: Indian Registration System; Ontario Cancer Registry

Other Genital Cancers

in First Nations People in Ontario

What are genital cancers and what are their symptoms?

The genitals are the sex organs of the body. Some of these organs are inside the body (e.g., within the pelvis), while others are found outside it. Male genitals include the penis and testes, and female genitals include the ovaries, uterus, vulva, vagina, cervix and fallopian tubes.

Cervical cancer is the most common type of genital cancer and is covered in a separate chapter of this report. The genitals are involved in sex and reproduction.

This section describes four types of genital cancer (ovarian, uterine, vulvar and testicular), including some of its common symptoms. People with any unusual symptoms should visit a doctor or other healthcare provider to discuss.

Ovarian cancer

The ovaries are part of the female reproductive system. Women have two ovaries that are found in the pelvis on either side of the uterus (womb). The ovaries are responsible for producing ova (eggs), as well as certain hormones. Ovarian cancer starts when cells in the ovaries change, grow out of control and group together to form a lump (tumour). Ovarian cancer is more common in women older than age 50. There are many symptoms of ovarian cancer, which can also be caused by other health conditions (see the full list at cancer.ca). Some of the symptoms of ovarian cancer include abnormal vaginal bleeding, a lump that can be felt in the pelvic or abdominal area, feeling of pressure in the pelvic or abdominal area, bloating and changes in digestion.

Uterine (womb) cancer

The uterus, or womb, is a part of the female reproductive system found in the pelvis. The uterus is a pear-shaped organ where a fetus grows during pregnancy. Sometimes cells inside the uterus change, grow and group together, leading to either uterine cancer or benign (non-cancerous) tumours, called uterine fibroids. Uterine cancer usually grows in the lining of the uterus. In rarer cases, uterine cancer may grow in the muscles of the uterus. There are many symptoms of uterine cancer, which can also be caused by other health conditions (see the full list at cancer.ca). Some of the symptoms of uterine cancer include changes in menstruation (heavier or more frequent periods, bleeding between periods or after menopause, spotting) unusual discharge from the vagina and pelvic pain or pressure.

Vulvar cancer

The vulva is the part of the female reproductive system found on the outside of the body around the opening of the vagina. The vulva includes the clitoris and the labia. Vulvar cancer starts when cells in the vulva change, grow out of control and cluster together to form a lump (tumour). There are many symptoms of vulvar cancer, which can also be caused by other health conditions (see the full list at cancer.ca). Some of the symptoms of vulvar cancer include itching of the vulva that lasts a long time, discoloured areas, scaly patches or sores, a lump or mass on the vulva that doesn't go away and unusual bleeding or discharge.

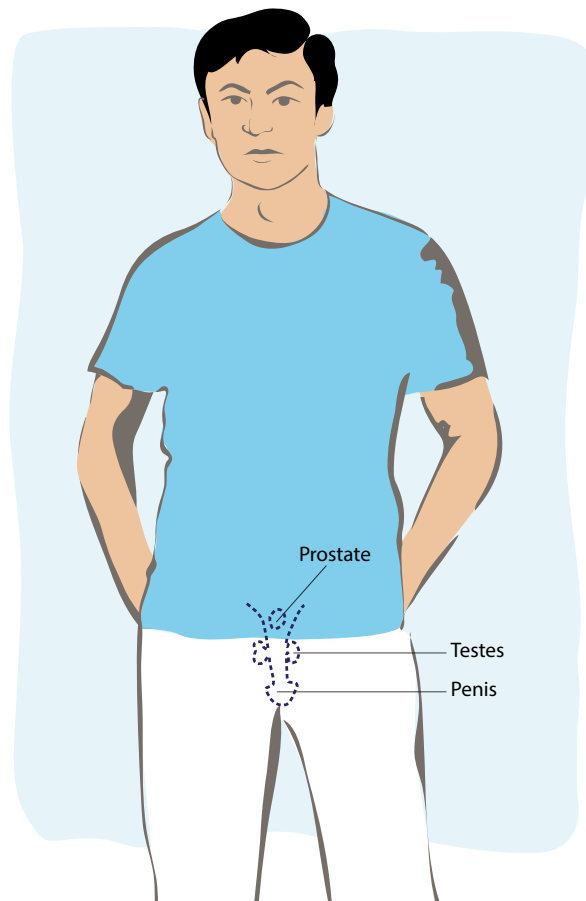
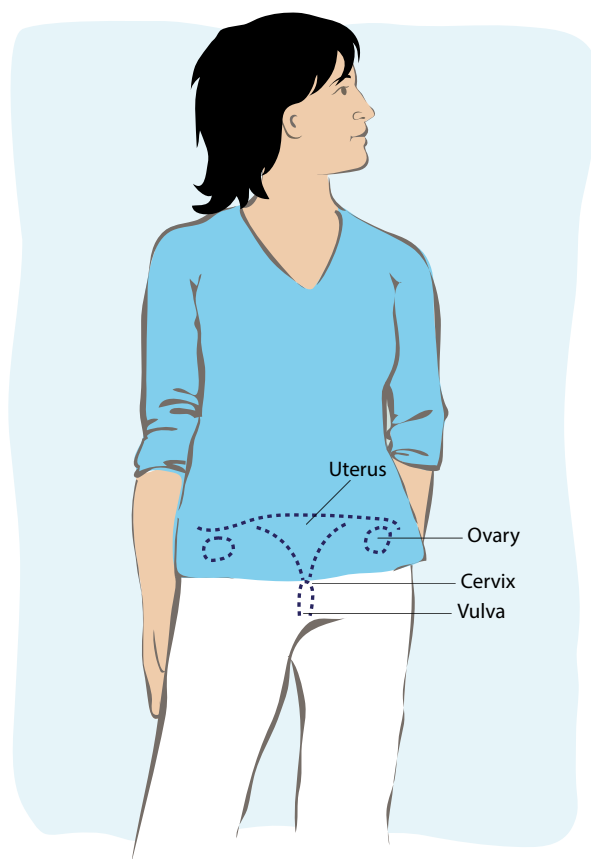
Testicular cancer

The testicles are part of the male reproductive system found below the penis. Men have two testicles that are responsible for making sperm and the hormone testosterone. Testicular cancer starts when cells in the testicles change, grow out of control and group together to form a lump (tumour). Testicular cancer is more common in younger men ages 15 to 40. There are many symptoms of testicular cancer, which can also be caused by other health

conditions (see the full list at cancer.ca). Some of the symptoms of testicular cancer include a painless lump in the testicle, swelling that makes the testicle larger than usual, pain in the testicle or a buildup of fluid in the scrotum (skin surrounding the testicles).

Once a diagnosis of cancer is made, First Nations people are connected with Cancer Care Ontario's Aboriginal Navigator program. Navigators help facilitate and

coordinate access to cancer services and resources, and work to address the cultural and spiritual needs of people with cancer and their families. The treatment for each type of cancer is different, so everyone's cancer experience is unique. First Nations people diagnosed with cancer should work with their Navigator and health care providers to come up with a cancer plan that is right for them.



“
All said and done, I was very
lucky my body healed quickly
and I was home after 5 days.”

Robert
Cancer survivor

Risk factors

The risk factors for genital cancers described in this section are exposures, behaviours or individual characteristics that affect someone's risk of developing these diseases. Although they are not described in detail here, factors that individuals have little control over such as access to care, community infrastructure and the lasting effects of colonialism are as important as or more important than individual risk factors to determining someone's likelihood of getting cancer.

Factors described in this section that can increase the risk of genital cancers	Associated cancer type
• Smoking cigarettes • Genetic conditions • Asbestos	Ovarian
• Excess body weight • Natural body changes • Hormone Replacement Therapy • Diabetes	Uterine
• Human papillomavirus	Vulvar
• Undescended testicle	Testicular
Factors described in this section that can protect against the development of genital cancers	Associated cancer type
• Giving birth • Oral contraceptives	Ovarian and uterine

Some risk factors for ovarian cancer include:

- **Smoking cigarettes:** Smoking is a known risk for ovarian cancer. Half of on-reserve First Nations adults and 43 percent of off-reserve First Nations adults smoke cigarettes, compared to only 22 percent of non-Aboriginal adults.²⁹ Smoking is also more common among First Nations teens living on-reserve (30 percent) and off-reserve (14 percent) than non-Aboriginal teens in Ontario (five percent).
- **Genetic conditions:** Changes to genes (genetic mutations) can be passed down from family members (inherited). These genetic changes (e.g., BRCA1 and BRCA2 mutations) can increase cancer risk by speeding up the growth of cancer cells. About five to 10 percent of ovarian cancers are caused by an inherited gene mutation.⁴³
- **Asbestos:** Women who have been exposed to asbestos (an insulation material formerly used in buildings and homes) have a higher risk of ovarian cancer.³⁴ Exposure to asbestos occurs when buildings containing asbestos deteriorate, or are disturbed or damaged.

Some risk factors for uterine cancer include:

- **Excess body weight:** Being overweight or obese can increase a woman's risk of uterine cancer. Almost half (49 percent) of on-reserve First Nations women are obese, compared to 28 percent of off-reserve and 16 percent of non-Aboriginal women.^{29, 32}
- **Natural body changes:** There are several natural bodily changes triggered by hormones that can increase the risk of uterine cancer. Hormones are chemicals that send messages throughout the body. These changes include a woman getting her first menstrual period at a younger age and reaching menopause at an older age. These hormone-related risk factors are mainly linked to the changing levels of estrogen in the body over time.³⁹⁻⁴¹
- **Hormone Replacement Therapy:** Hormone replacement therapy can also increase the risk of uterine cancer.
- **Diabetes:** The prevalence of diabetes is significantly higher among First Nations than non-First Nations.³⁵ Diabetes and cancer have similar risk factors (e.g., obesity, diet, physical inactivity) and often diabetes can complicate treatment for cancer, which, in turn, impacts survival.³⁶

Certain factors can reduce the risk of developing ovarian and uterine cancer:

- **Giving birth:** Women who have given birth have a lower risk of ovarian and uterine cancer.^{32, 39}
- **Oral contraceptives:** Using birth control pills reduces the risk of ovarian and uterine cancer.

The main risk factor for vulvar cancer is infection with the human papillomavirus (HPV). HPV is a common infection that is spread from person to person, usually through sexual contact. In most cases, HPV causes no symptoms and HPV infections often go away on their own. However, in some cases, infection with some types of HPV can cause vulvar cancer. Because HPV is an infection spread through sexual contact, being sexually active increases a woman's risk of getting HPV and, as a result, vulvar cancer.⁴⁶

Some risk factors for testicular cancer include:

- **Undescended testicle:** Testicles form in the abdomen of boys while they are in the womb. Normally they move down into the scrotum before birth. In some cases, the testicles do not descend until after birth or have to be moved using a medical operation. Men who have had an undescended testicle are at a higher risk for testicular cancer.³⁴

Snapshot of genital cancers in First Nations people

Uterine cancer is the sixth most commonly diagnosed cancer in First Nations females, with 148 cancer cases diagnosed from 1991 to 2010. Ovarian and vulvar cancers are less common, with 140 ovarian and 31 vulvar cancers diagnosed in First Nations females from 1991 to 2010. Testicular cancer is relatively rare in First Nations males, with 58 new testicular cancer cases diagnosed from 1991 to 2010. It is the 15th most commonly diagnosed cancer in First Nations males.

Compared to other females in Ontario, First Nations females had a lower incidence of uterine cancer and a higher incidence of vulvar cancer. First Nations males had a lower incidence of testicular cancer than other males in Ontario.

Less than half of First Nations females diagnosed with ovarian cancer survived five years or longer.

Compared to other people in Ontario, First Nations females had poorer uterine cancer survival.

Because of the small number cases diagnosed in First Nations people, mortality, survival and prevalence could not be calculated for some types of genital cancer.

“

My message to everyone would be to follow all the directions given to you by your health care providers to make sure you increase your chances of getting better quicker. If you think something is wrong be persistent in making sure that all the correct tests are being done. Only you can look after you for a better more positive outcome.”

Robert
Cancer survivor

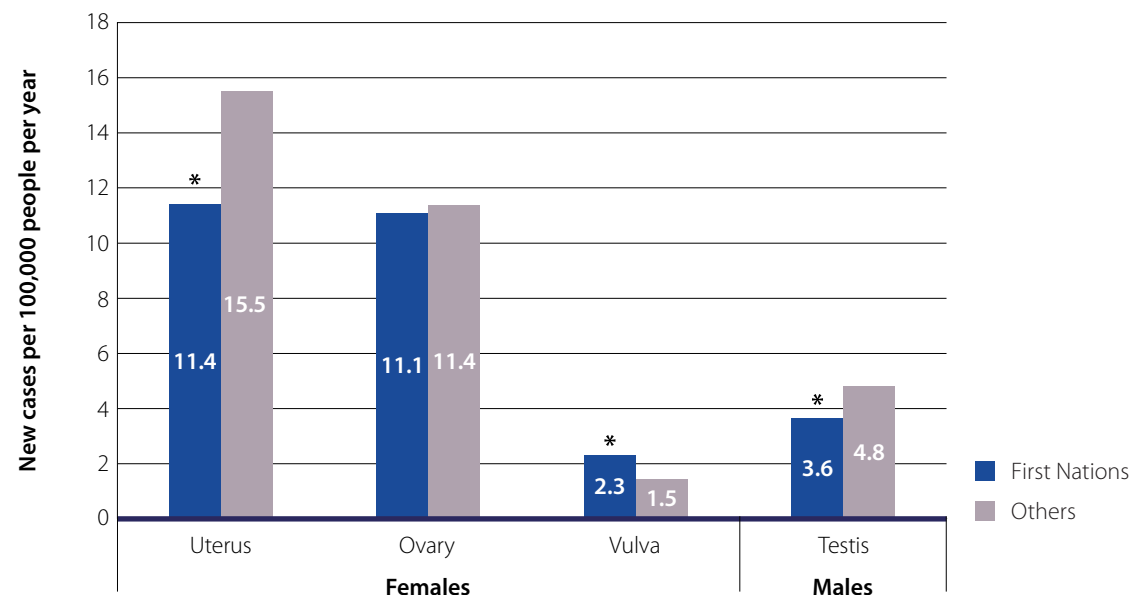
Genital cancer incidence (new cases)

i Cancer incidence is the number of people who are newly diagnosed with cancer in a specific population over a set period of time. The higher the incidence rate in a population, the more common the disease. For a more detailed explanation of incidence, visit cancercare.on.ca/measuringcancerFNIM.

Genital cancer incidence (new cases), all ages, by sex (Figure 51)

- Uterine cancer is one of the most commonly diagnosed genital cancers in First Nations females, and vulvar cancer is one of the least common. From 1991 to 2010, about 11 cases of uterine cancer per 100,000 females and only two cases of vulvar cancer per 100,000 females were diagnosed each year.
- From 1991 to 2010, about four cases of testicular cancer per 100,000 males were diagnosed each year.
- First Nations females had a higher incidence of uterine and a lower incidence of vulvar cancer than other females in Ontario.
- Ovarian cancer incidence in First Nations females was similar to ovarian cancer incidence in other females in Ontario.
- First Nations males had a lower incidence of testicular cancer than other males in Ontario.

FIGURE 51: Genital cancer incidence (new cases) in First Nations people and other people in Ontario, all ages, by sex and type, 1991–2010



Notes: * Indicates that incidence for First Nations people is significantly different than for other people in Ontario. Age-standardized to the 1960 World Standard population.
Data sources: Indian Registration System, Ontario Cancer Registry

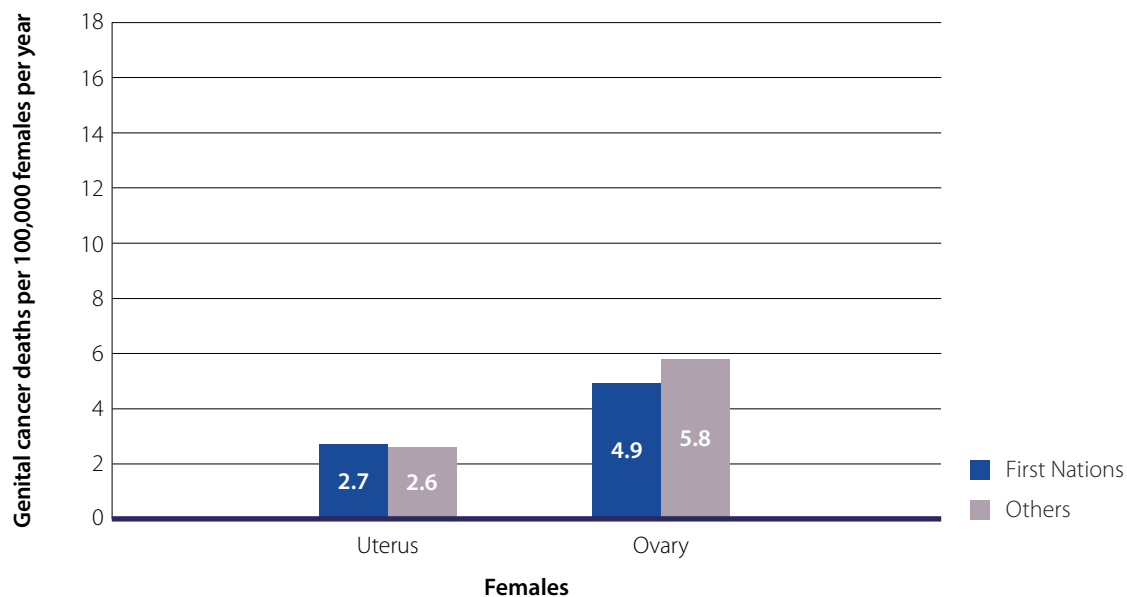
Genital cancer mortality (deaths)

i Mortality is the number of deaths in a population over a set period of time. Cancer mortality is lower when fewer people are being diagnosed with cancer or when more people are living longer after a cancer diagnosis. For a more detailed explanation of mortality, visit cancercare.on.ca/measuringcancerFNIM.

Genital cancer mortality (deaths), all ages (Figure 52)

- From 1991 to 2010, there were about five ovarian cancer deaths and two uterine cancer deaths per 100,000 First Nations females each year.
- First Nations females had similar uterine and ovarian cancer mortality to other females in Ontario.

FIGURE 52: Genital cancer mortality (deaths) in First Nations females and other females in Ontario, by type, 1991–2010



Notes: Age-standardized to the 1960 World Standard population.
Data sources: Indian Registration System, Ontario Cancer Registry

Genital cancer survival (chances of living after diagnosis)

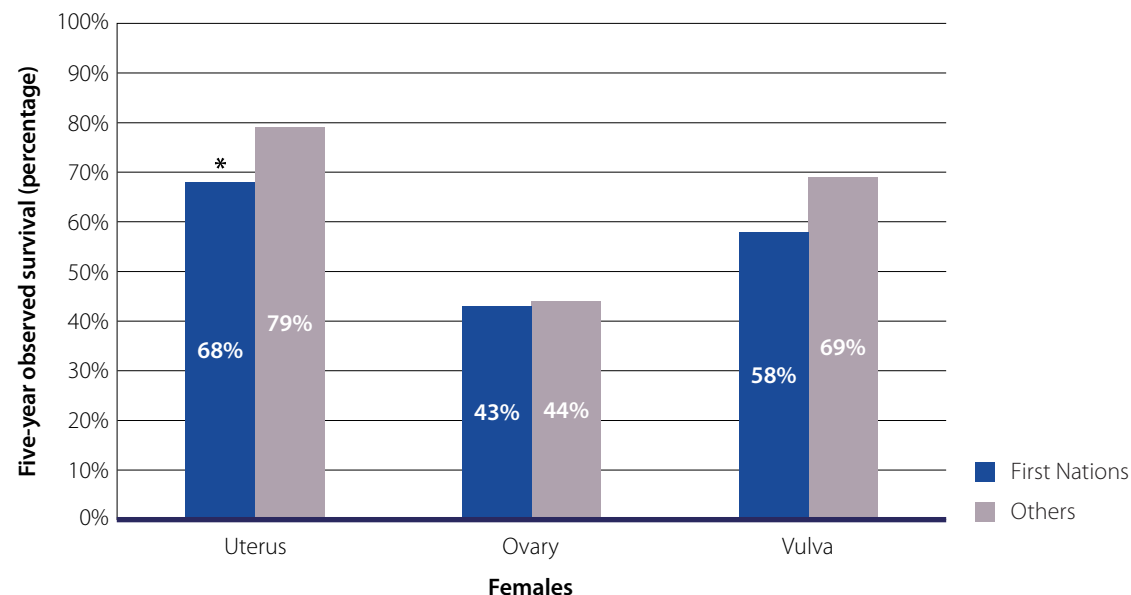


Cancer survival is the percentage of people still alive for a set time period after being diagnosed with cancer (usually five years). Survival improves when more cancers are caught early—before they spread to other parts of the body—and when there are improvements in cancer treatment that help people with cancer live longer. For a more detailed explanation on survival, visit cancercare.on.ca/measuringcancerFNIM.

Genital cancer survival (Figure 53)

- Uterine cancer had the best survival of any female genital cancer type. Two-thirds of First Nations females diagnosed with uterine cancer (68 percent) survived five years or longer.
- Ovarian cancer had the poorest survival of any female genital cancer type. Of the First Nations females diagnosed with ovarian cancer, 43 percent survived five years or longer.
- First Nations females had poorer uterine cancer survival than other females in Ontario.

FIGURE 53: Five-year genital cancer survival in First Nations females and other females in Ontario, ages 15–74 at diagnosis, by type, 1991–2010



Notes: * Indicates that survival for First Nations females is significantly different than for other females in Ontario. Age-standardized to the International Cancer Survival Standard (ages 15 to 74).
Data sources: Indian Registration System; Ontario Cancer Registry

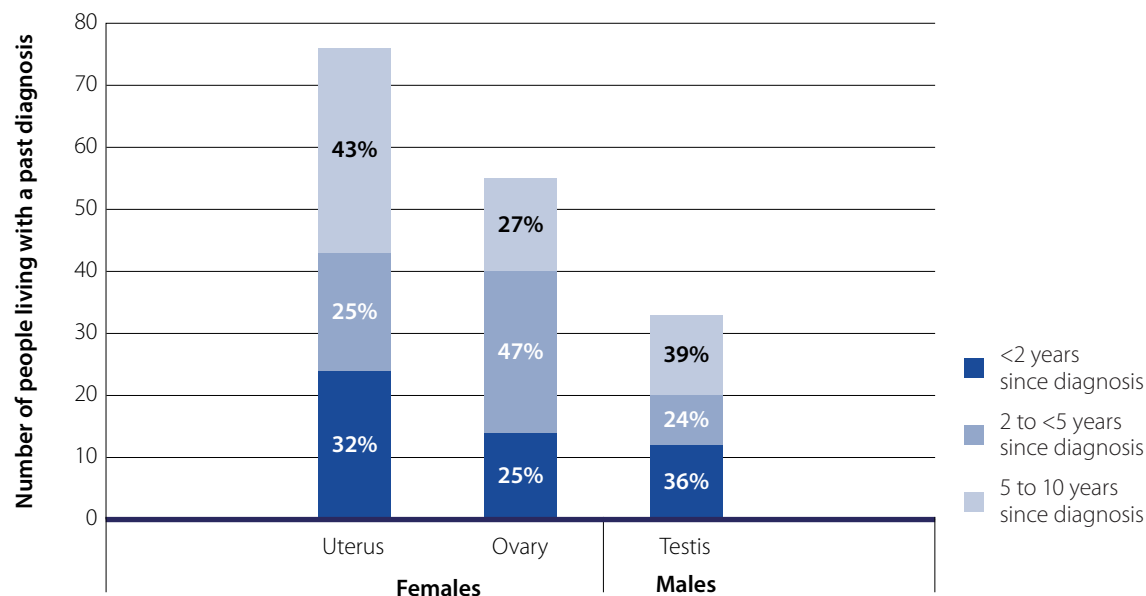
Genital cancer prevalence (new and existing cases)

i Cancer prevalence is defined as the number of people living with a past diagnosis of cancer in a set time period. A high prevalence of any given cancer might be explained by a high incidence (i.e., the cancer is very common) and/or high survival (i.e., someone is more likely to live long after being diagnosed). For a more detailed explanation of prevalence, visit cancercare.on.ca/measuringcancerFNIM.

Genital cancer prevalence (Figure 54)

- As of January 1, 2011, there were 76 First Nations people living with a diagnosis of uterine cancer, 55 living with a diagnosis of ovarian cancer and 33 living with a diagnosis of testicular cancer.
- Most people living with a past diagnosis of genital cancer (uterus, ovary and testis) were alive two or more years after being diagnosed.

FIGURE 54: Genital cancer prevalence in First Nations people in Ontario as of January 1, 2011, all ages, by time since diagnosis



Data sources: Indian Registration System; Ontario Cancer Registry

Bladder Cancer

in First Nations People in Ontario

What is bladder cancer?

The bladder is a hollow, balloon-shaped organ that is part of the urinary system. The bladder is located in the pelvis and is responsible for storing urine. Bladder cancer starts when cells in the bladder change, grow out of control and group together to form a lump (tumour).

Bladder cancer is more common in men than in women and usually affects people over age 65.

Risk factors

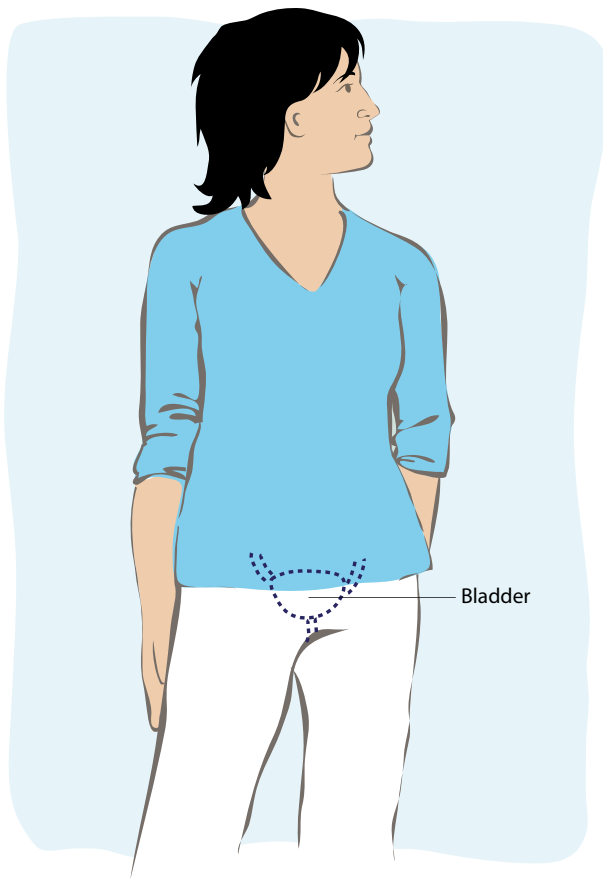
The risk factors for bladder cancer described in this section are exposures, behaviours or individual characteristics that affect someone's risk of developing this disease. Although they are not described in detail here, factors that individuals have little control over such as access to care, community infrastructure and the lasting effects of colonialism are as important as or more important than individual risk factors to determining someone's likelihood of getting cancer.

Some of the factors that can increase the risk of developing bladder cancer include:

- **Smoking cigarettes:** Smoking is the main risk factor for bladder cancer. Half of on-reserve First Nations adults and 43 percent of off-reserve First Nations adults smoke cigarettes, compared to only 22 percent of non-Aboriginal adults.²⁹ Smoking is also more common among First Nations teens living on-reserve (30 percent) and off-reserve (14 percent) than non-Aboriginal teens in Ontario (five percent).
- **Chemicals:** People exposed to certain chemicals in the following industries are at increased risk of developing bladder cancer: professional painting, rubber manufacturing, aluminum and metal production, textile and dye manufacturing and transportation. Arsenic, which can be found in contaminated foods or drinking water, can also increase bladder cancer risk.³⁴
- **Radiation:** Exposure to radiation (through medical treatment or occupation) near the abdomen or pelvis can increase the risk of bladder cancer.
- **Diabetes:** People with pre-existing diabetes are at an increased risk for bladder cancer. Diabetes is significantly more common in First Nations people than in non-First Nations people. Diabetes and cancer have similar risk factors (e.g., obesity, diet, physical inactivity) and often diabetes can complicate treatment for cancer, which, in turn, impacts survival.¹⁰

Factors described in this section that can increase the risk for bladder cancer

- Smoking commercial tobacco
- Chemicals
- Radiation
- Diabetes



Symptoms

There are many symptoms of bladder cancer, which can also be caused by other health conditions (see the full list at cancer.ca). People experiencing any unusual symptoms should visit a doctor or other healthcare provider to discuss. The most common symptom for bladder cancer is blood in the urine (from pale yellow-red to bright rusty red). Other symptoms of bladder cancer include the need or urge to urinate often, trouble urinating or a burning sensation during urination. Late signs and symptoms include loss of appetite, weight loss, anemia (low red blood cell count), fever, a change in bowel habits, pain in the pelvis or anus, lump in the pelvis, or swelling in the legs, scrotum (pouch of skin below the penis that contains testicles) or vulva.

Once a diagnosis of cancer is made, First Nations people are connected with Cancer Care Ontario's Aboriginal Navigator program. Navigators help facilitate and coordinate access to cancer services and resources, and work to address the cultural and spiritual needs of people with cancer and their families. The treatment for each type of cancer is different, so everyone's cancer experience is unique. First Nations people diagnosed with cancer should work with their Navigator and health care providers to come up with a cancer plan that is right for them.

Snapshot of bladder cancer in First Nations people

Bladder cancer accounted for just over 100 new cases among First Nations from 1991 to 2010. It is less common in First Nations people (particularly in males) than in other people in Ontario. Deaths from bladder cancer are also less common among First Nations males than other males in Ontario. Sixty-three percent of First Nations people survived at least five years after being diagnosed with bladder cancer. Since bladder cancer is less common in First Nations people (especially in females), there are relatively few people living with a past diagnosis, most of whom are male.

“

The doctors felt I was strong enough to go through the surgery because I had enjoyed good health up until this point, strong heart and healthy lungs.”

Robert
Cancer survivor

Bladder cancer incidence (new cases)

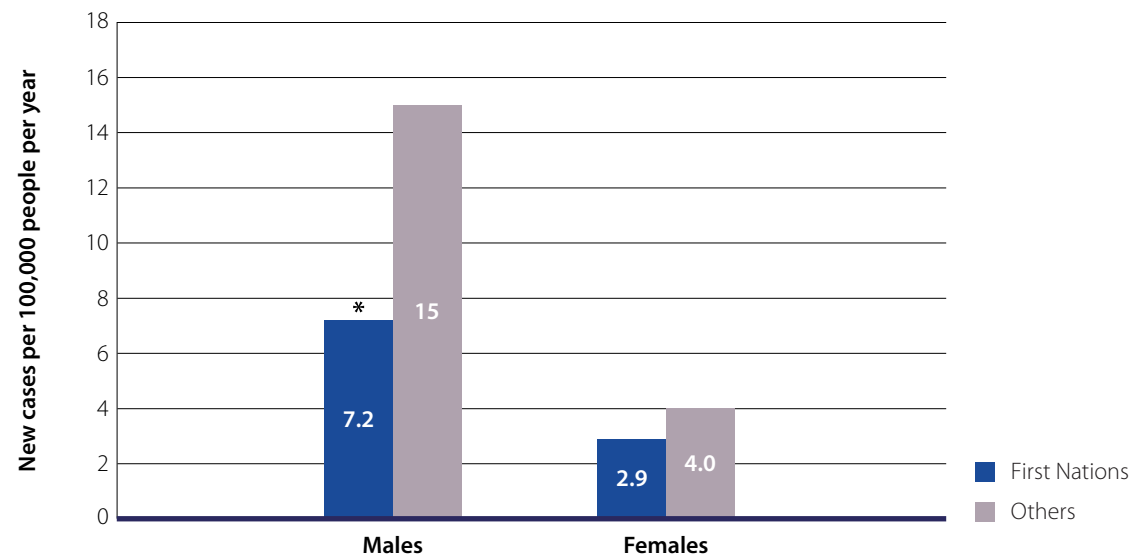


Cancer incidence is the number of people who are newly diagnosed with cancer in a specific population over a set period of time. The higher the incidence rate in a population, the more common the disease. For a more detailed explanation of incidence, visit cancercare.on.ca/measuringcancerFNIM.

Bladder cancer incidence (new cases) by sex (Figure 55)

- From 1991 to 2010, about seven bladder cancers per 100,000 First Nations males and three bladder cancers per 100,000 First Nations females were diagnosed each year.
- Males had a higher incidence of bladder cancer than females (among First Nations people and other people in Ontario).
- First Nations males had a lower incidence of bladder cancer than other males in Ontario.

FIGURE 55: Bladder cancer incidence (new cases) in First Nations people and other people in Ontario, all ages, by sex, 1991–2010



Notes: * Indicates that incidence for First Nation people is significantly different than for other people in Ontario. Age-standardized to the 1960 World Standard population.

Data sources: Indian Registration System, Ontario Cancer Registry

Bladder cancer mortality (deaths)

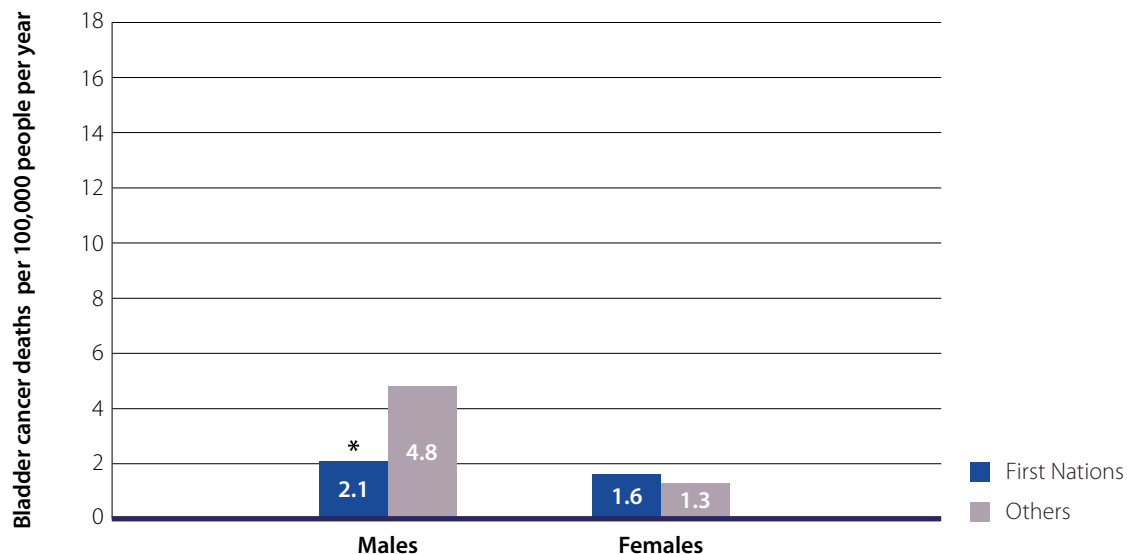


Mortality is the number of deaths in a population over a set period of time. Cancer mortality is lower when fewer people are being diagnosed with cancer or when more people are living longer after a cancer diagnosis. For a more detailed explanation of mortality, visit cancercare.on.ca/measuringcancerFNIM.

Bladder cancer mortality (deaths) by sex (Figure 56)

- From 1991 to 2010, about two bladder cancer deaths per 100,000 First Nations males and females occurred each year.
- First Nations males had lower bladder cancer mortality than other males in Ontario.
- First Nations females and other females in Ontario had similar bladder cancer mortality.

FIGURE 56: Bladder cancer mortality (deaths) in First Nations people and other people in Ontario, all ages, by sex, 1991–2010



Notes: * Indicates that mortality for First Nation people is significantly different than for other people in Ontario. Age-standardized to the 1960 World Standard population.

Data sources: Indian Registration System, Ontario Cancer Registry

Bladder cancer survival (chances of living after diagnosis)

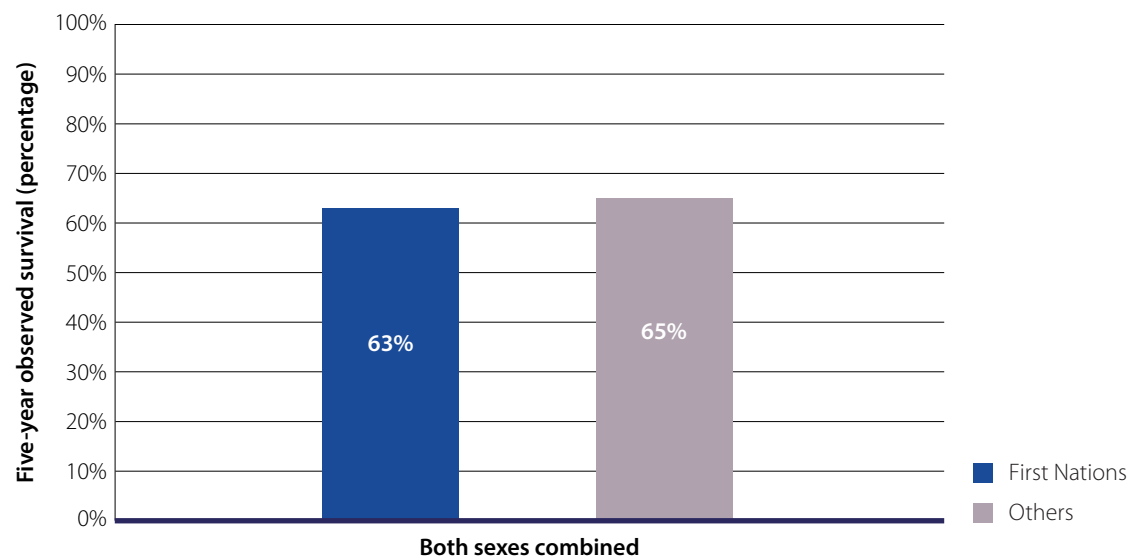


Cancer survival is the percentage of people still alive for a set time period after being diagnosed with cancer (usually five years). Survival improves when more cancers are caught early—before they spread to other parts of the body—and when there are improvements in cancer treatment that help people with cancer live longer. For a more detailed explanation on survival, visit cancercare.on.ca/measuringcancerFNIM.

Bladder cancer survival (Figure 57)

- Sixty-three percent of First Nations people survived five years or longer after a bladder cancer diagnosis (both sexes combined).
- First Nations people and other people in Ontario had similar bladder cancer survival.

FIGURE 57: Five-year bladder cancer survival in First Nations people and other people in Ontario, ages 15–74 at diagnosis, 1991–2010



Notes: Age-standardized to the International Cancer Survival Standard (ages 15–74).
Data sources: Indian Registration System, Ontario Cancer Registry

Bladder cancer prevalence (new and existing cases)

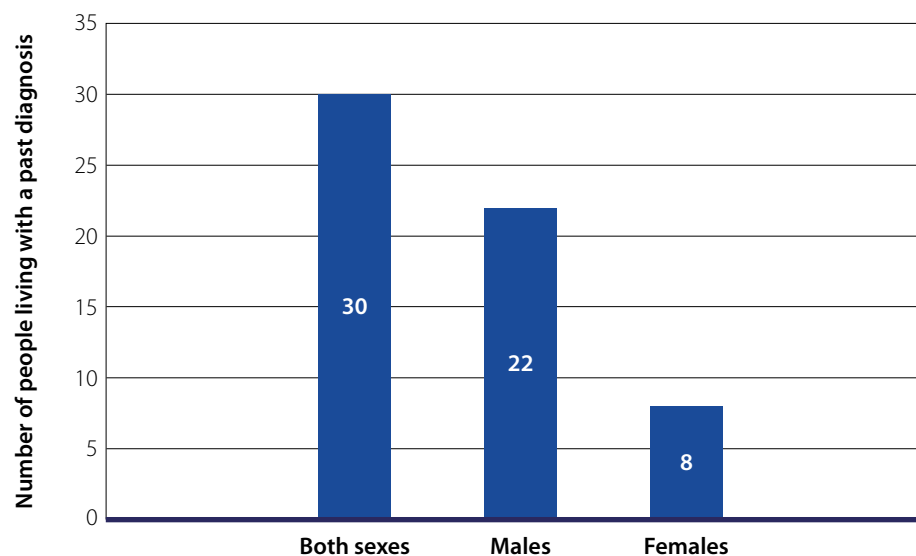


Cancer prevalence is defined as the number of people living with a past diagnosis of cancer in a set time period. A high prevalence of any given cancer might be explained by a high incidence (i.e., the cancer is very common) and/or high survival (i.e., someone is more likely to live long after being diagnosed). For a more detailed explanation of prevalence, visit cancercare.on.ca/measuringcancerFNIM.

Bladder cancer prevalence by sex (Figure 58)

- As of January 1, 2011, there were 30 First Nations people in Ontario living with a diagnosis of bladder cancer in the previous 10 years (that is, sometime between 2000 and 2010).
- Over 70 percent of First Nations people living with bladder cancer were males.

FIGURE 58: Bladder cancer prevalence in First Nations people in Ontario as of January 1, 2011, all ages, by sex



Data sources: Indian Registration System, Ontario Cancer Registry

Blood Cancers

in First Nations People in Ontario

What are blood cancers and what are their symptoms?

The bone marrow is the soft inner part of some bones and is where blood cells are made. It contains immature cells that develop into three main components: red blood cells, white blood cells and platelets. Blood cancers affect the growth and function of blood cells, preventing them from performing their regular functions, like fighting off infections (white blood cells), carrying oxygen throughout the body (red blood cells) and stopping bleeding (platelets).

This section describes the three main types of blood cancer, including some of the common symptoms. People with any unusual symptoms should visit a doctor or other healthcare provider to discuss.

Lymphoma

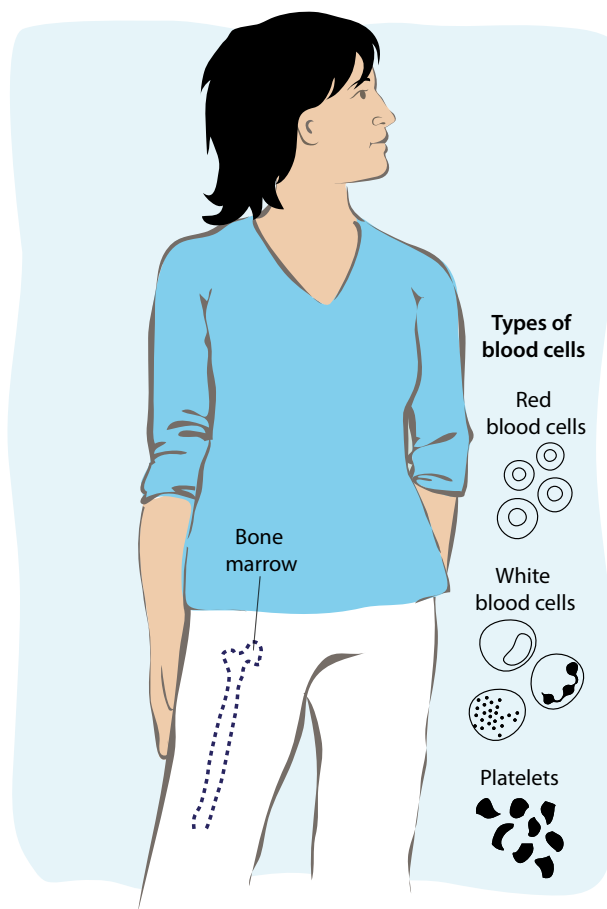
Lymphoma is a cancer that affects a specific type of white blood cell, called a lymphocyte. Lymphocytes start in the bone marrow and then move throughout the body to fight diseases. When lymphocytes are damaged, they can form tumours, called lymphomas. There are two main types of lymphoma: Hodgkin lymphoma and non-Hodgkin lymphoma. Non-Hodgkin lymphoma is more common; it is especially common among men and most frequently occurs in adults age 50 and older. Hodgkin lymphoma is less common than non-Hodgkin lymphoma, but it tends to occur in young people; it is the fifth most common cancer in young adults (ages 15 to 29). Hodgkin lymphoma's very large lymphocytes are what make it different from non-Hodgkin lymphoma and it is considered one of the most treatable cancers. More than 90 percent of people survive five years or longer with a diagnosis of Hodgkin lymphoma.

There are many symptoms of lymphoma, which can also be caused by other health conditions (see the full list for non-Hodgkin lymphoma and Hodgkin lymphoma). In general, the most common lymphoma symptom is swollen or enlarged lymph nodes in the neck, armpit or groin. Other symptoms include itchy skin as well as unexplained fatigue, fever or weight loss. There may also be additional symptoms depending on where in the body the lymphoma occurs.

Leukemia

Leukemia is a cancer that starts in the immature cells of the bone marrow before they develop into blood cells. Different types of leukemia may be classified into four main categories: first, as acute or chronic depending on how quickly they grow and spread, and then as lymphocytic or myeloid, depending on the type of blood cell they affect. Most types of leukemia occur in older adults (ages 50 to 74); however, one type—called acute lymphocytic leukemia—is more common in children and young adults (less than 20 years old).

The symptoms of leukemia vary depending on the type (see the full list at cancer.ca). The acute forms of leukemia may cause symptoms that are similar to the flu and come on suddenly, within days or weeks. Chronic forms of leukemia cause only a few symptoms or none at all and develop very gradually; they are often found during a routine blood test.



Myeloma

Myeloma is a cancer that affects a specific type of white blood cell, called a plasma cell. Plasma cells help the body fight infection and are mainly found in the bone marrow. The most common type of myeloma, called multiple myeloma, develops when there is a buildup of abnormal plasma cells in the bone marrow. Most people diagnosed with multiple myeloma are men. The risk of getting this disease increases with age and it primarily affects adults age 65 or older.

Myeloma may not cause any symptoms in its early stages (see the full list at cancer.ca). Generally symptoms occur once the cancer grows in the bone marrow or somewhere outside of the bone marrow, commonly in the kidney. Symptoms can include bone pain or weakness, general fatigue, shortness of breath, dizziness and paleness (caused by low red blood cell counts), and kidney problems (including kidney failure, constipation and loss of appetite).

Once a diagnosis of cancer is made, First Nations people are connected with Cancer Care Ontario's Aboriginal Navigator program. Navigators help facilitate and coordinate access to cancer services and resources, and work to address the cultural and spiritual needs of people with cancer and their families. The treatment for each type of cancer is different, so everyone's cancer experience is unique. First Nations people diagnosed with cancer should work with their Navigator and health care providers to come up with a cancer plan that is right for them.

Factors described in this section that can increase the risk of blood cancers	Associated cancer type
• Epstein-Barr virus	Non-Hodgkin lymphoma and Hodgkin lymphoma
• <i>Helicobacter pylori</i> (<i>H.pylori</i>)	Non-Hodgkin lymphoma
• Hepatitis C virus	
• Previous cancer treatment	
• Smoking cigarettes	Leukemia
• Formaldehyde	
• Being overweight or obese	Myeloma

“I am thankful the staff worked really hard to try to figure out what was wrong with me.”

Robert
Cancer survivor

Risk factors

The risk factors for blood cancers described in this section are exposures, behaviours or individual characteristics that affect someone's risk of developing a disease. Although they are not described in detail here, factors that individuals have little control over such as access to care, community infrastructure and the lasting effects of colonialism are as important as or more important than individual risk factors to determining someone's likelihood of getting cancer.

Some of the factors that can increase the risk of non-Hodgkin lymphoma or Hodgkin lymphoma include:

- **Epstein-Barr virus (EBV):** EBV is a risk factor for a subtype of non-Hodgkin lymphoma called Burkitt lymphoma and for Hodgkin lymphoma. EBV infection is very common in the Ontario population, and usually occurs in childhood. It is passed from person to person, most commonly through contact with infected saliva. Normally the virus does not cause any serious health issues. However, in some cases it can cause lymphoma. In Ontario, less than 25 percent of Hodgkin lymphomas and of Burkitt lymphomas are caused by EBV infection.⁽⁵⁴⁾ EBV is more likely to cause cancer in people who are immunocompromised, such as those infected with human immunodeficiency virus (HIV) or transplant recipients.
- ***Helicobacter pylori* (H.pylori):** *H.pylori* is a small bacterium commonly found in the stomach that, in some rare cases, can lead to non-Hodgkin lymphoma of the stomach. *H.pylori* is transmitted from person to person by exposure to contaminated saliva, feces or water. Research has shown that the prevalence of *H.pylori* infection is higher among First Nations people than the general population.^{2, 55}

- **Hepatitis C virus (HCV):** Infection with HCV can cause non-Hodgkin lymphoma. HCV is passed from person to person most commonly through contact with infected blood through shared needles and other injection drug use equipment. Less frequently, infection of HCV can occur through sexual activity or between a mother and her child during pregnancy or childbirth. In Ontario, less than two percent of non-Hodgkin lymphoma cases are caused by HCV infection.⁵⁴ HCV infection rates are higher among First Nations people than the general population.⁵²
- **Previous cancer treatment:** People who have had chemotherapy, with or without radiation therapy, for another type of cancer have a higher risk of developing non-Hodgkin lymphoma.

Some of the factors that can increase the risk of developing leukemia include:

- **Smoking cigarettes:** Smoking is a risk factor for a particular type of leukemia called acute myeloid leukemia. Half of on-reserve First Nations adults and 43 percent of off-reserve First Nations adults smoke cigarettes, compared to only 22 percent of non-Aboriginal adults.²⁹ Smoking is also more common among First Nations teens living on-reserve (30 percent) and off-reserve (14 percent) than non-Aboriginal teens in Ontario (five percent).
- **Formaldehyde:** Formaldehyde is a chemical associated with an increased risk of leukemia.¹⁹ People are exposed to formaldehyde primarily through breathing indoor air. Formaldehyde is released into the air from combustion sources, cigarette smoke, building products and furniture.

There are very few known risk factors for myeloma. Some evidence suggests that being overweight or obese may increase a person's risk for myeloma. Having a family history (parent or sibling) who has had myeloma can also increase someone's risk for the disease.

Snapshot of blood cancers in First Nations people

Non-Hodgkin lymphoma is the sixth most commonly diagnosed cancer in First Nations people, with 290 cancer cases diagnosed from 1991 to 2010. Leukemia, myeloma and Hodgkin lymphoma are less common; there were 178 cases of leukemia, 118 cases of myeloma and 30 cases of Hodgkin lymphoma diagnosed in First Nations people from 1991 to 2010.

Compared to other people in Ontario, First Nations people (males and females) had a lower incidence of blood cancers, the only exception being that myeloma incidence was higher for First Nations females.

Less than half of First Nations people diagnosed with blood cancers survived five years or longer. Compared to other people in Ontario, First Nations people had poorer survival for non-Hodgkin lymphoma, leukemia (females only) and myeloma (males only).

Because of the small number of cases diagnosed in First Nations people, mortality, survival and prevalence of Hodgkin lymphoma could not be calculated.

Blood cancer incidence (new cases)

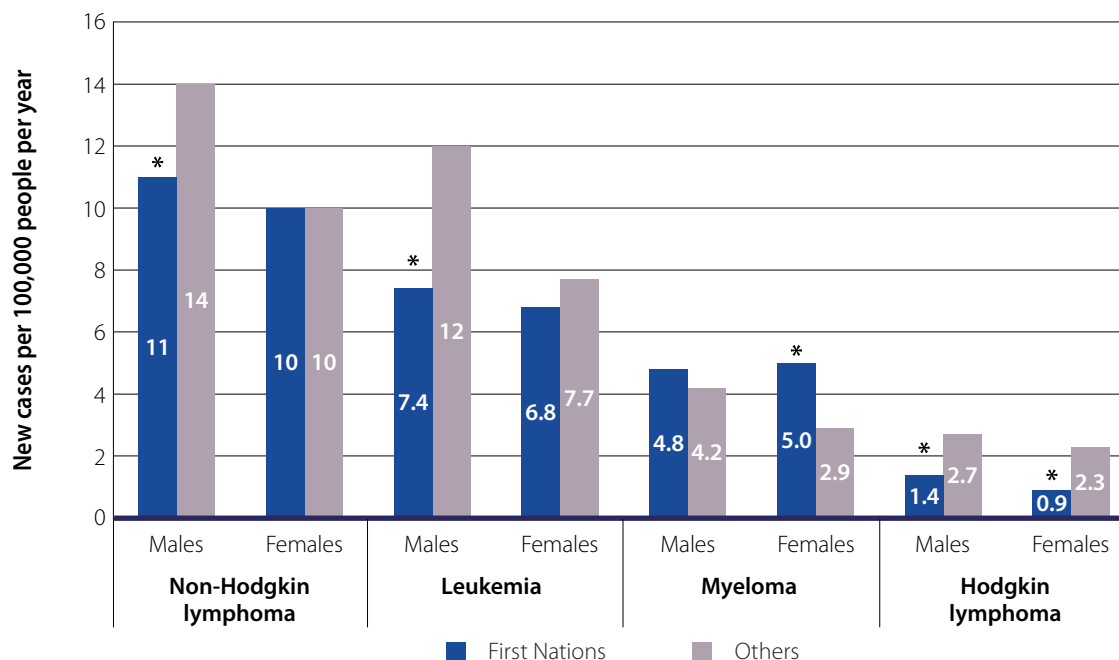


Cancer incidence is the number of people who are newly diagnosed with cancer in a specific population over a set period of time. The higher the incidence rate in a population, the more common the disease. For a more detailed explanation of incidence, visit cancercare.on.ca/measuringcancerFNIM.

Blood cancer incidence (new cases) by sex and type (Figure 59)

- Non-Hodgkin lymphoma is the most commonly diagnosed blood cancer in First Nations people and Hodgkin lymphoma is the least common. From 1991 to 2010, about 10 cases of non-Hodgkin lymphoma per 100,000 people and only one case of Hodgkin lymphoma per 100,000 people were diagnosed each year (among males and females).
- The incidence of each blood cancer type was similar for First Nations males and females, but for other people in Ontario, the incidence of non-Hodgkin lymphoma and leukemia was higher in males.
- First Nations females had a higher incidence of myeloma and a lower incidence of Hodgkin lymphoma than other females in Ontario.
- First Nations males had a lower incidence of non-Hodgkin lymphoma, leukemia and Hodgkin lymphoma than other males in Ontario.

FIGURE 59: Blood cancer incidence (new cases) in First Nations people and other people in Ontario, all ages, by sex and type, 1991–2010



Notes: * Indicates that incidence for First Nations people is significantly different than for other people in Ontario. Age-standardized to the 1960 World Standard population.

Data sources: Indian Registration System, Ontario Cancer Registry

Blood cancer mortality (deaths)

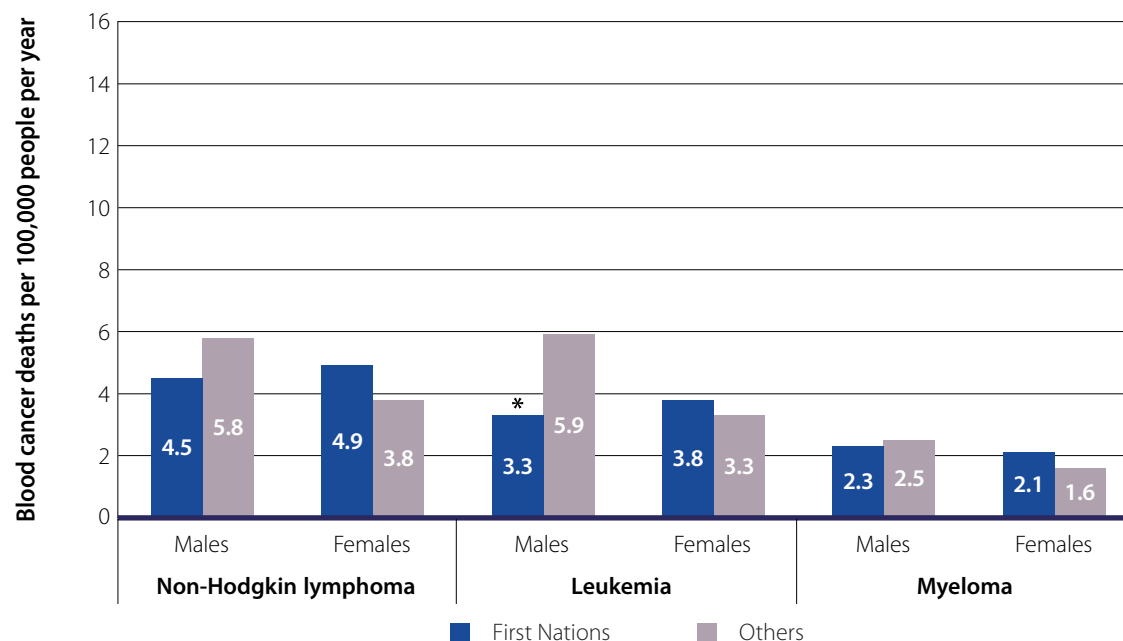


Mortality is the number of deaths in a population over a set period of time. Cancer mortality is lower when fewer people are being diagnosed with cancer or when more people are living longer after a cancer diagnosis. For a more detailed explanation of mortality, visit cancercare.on.ca/measuringcancerFNIM.

Blood cancer mortality (deaths) by sex and type (Figure 60)

- First Nations males and females had similar mortality for each blood cancer type, but mortality from non-Hodgkin lymphoma and leukemia among other people in Ontario was higher in males.
- First Nations males had lower mortality from leukemia than other males in Ontario.

FIGURE 60: Blood cancer mortality (deaths) in First Nations people and other people in Ontario, all ages, by sex and type, 1991–2010



Notes: * Indicates that mortality for First Nations people is significantly different than for other people in Ontario. Age-standardized to the 1960 World Standard population.

Data sources: Indian Registration System, Ontario Cancer Registry

Blood cancer survival (chances of living after diagnosis)

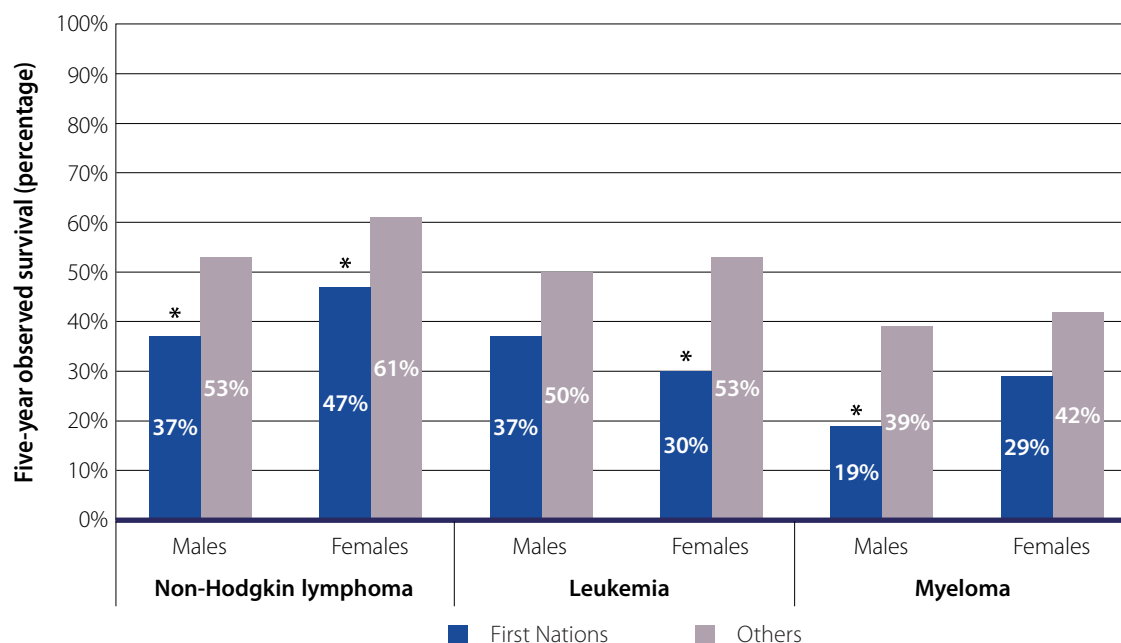


Cancer survival is the percentage of people still alive for a set time period after being diagnosed with cancer (usually five years). Survival improves when more cancers are caught early—before they spread to other parts of the body—and when there are improvements in cancer treatment that help people with cancer live longer. For a more detailed explanation on survival, visit cancercare.on.ca/measuringcancerFNIM.

Blood cancer survival by sex and type (Figure 61)

- Non-Hodgkin lymphoma had the best survival of any blood cancer type. Nearly one-third of First Nations females diagnosed with non-Hodgkin lymphoma (47 percent) and over one-third of males (37 percent) survived five years or longer after being diagnosed.
- Myeloma had the poorest survival of any blood cancer type. Of the First Nations people diagnosed with myeloma, less than one-third (29 percent) of females and less than one-quarter (19 percent) of males survived five years or longer after being diagnosed.
- First Nations people had poorer survival than other people in Ontario for non-Hodgkin lymphoma, leukemia (females only) and myeloma (males only).

FIGURE 61: Five-year blood cancer survival in First Nations people and other people in Ontario, ages 15–74 at diagnosis, by sex and type, 1991–2010



Notes: * Indicates that survival for First Nations people is significantly different than for other people in Ontario. Age-standardized to the International Cancer Survival Standard (ages 15–74).
Data sources: Indian Registration System, Ontario Cancer Registry

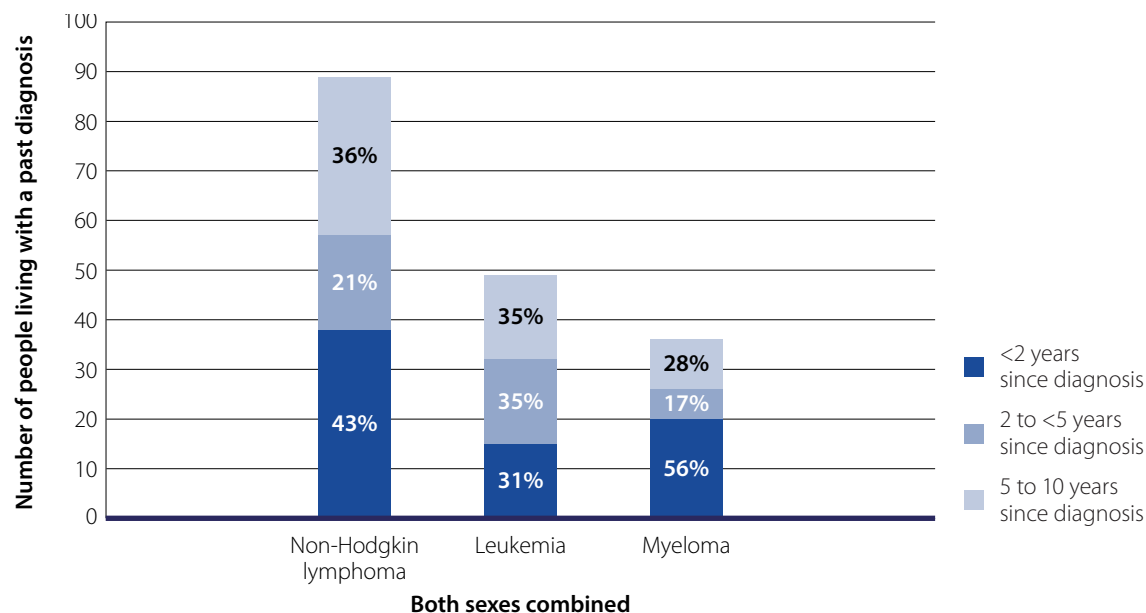
Blood cancer prevalence (new and existing cases)

i Cancer prevalence is defined as the number of people living with a past diagnosis of cancer in a set time period. A high prevalence of any given cancer might be explained by a high incidence (i.e., the cancer is very common) and/or high survival (i.e., someone is more likely to live long after being diagnosed). For a more detailed explanation of prevalence, visit cancercare.on.ca/measuringcancerFNIM.

Blood cancer prevalence by sex and type (Figure 62)

- As of January 1, 2011, there were 89 First Nations people living with a diagnosis of non-Hodgkin lymphoma, 49 living with a diagnosis of leukemia and 36 living with a diagnosis of myeloma sometime within the previous 10 years (that is, from 2000 to 2010).
- About two-thirds of First Nations people living with non-Hodgkin lymphoma (64 percent) or leukemia (66 percent), and nearly three-quarters (73 percent) of First Nations people living with myeloma were diagnosed in the previous five years and may still be undergoing cancer treatment.
- A smaller proportion of people living with blood cancer survived five years or longer after their diagnosis and might be considered cancer free, including 36 percent of those living with non-Hodgkin lymphoma, 35 percent living with leukemia and 28 percent living with myeloma.

FIGURE 62: Blood cancer prevalence in First Nations people in Ontario as of January 1, 2011, all ages, by time since diagnosis



Data sources: Indian Registration System, Ontario Cancer Registry

Other Digestive Cancers

in First Nations People in Ontario

What are digestive cancers and what are their symptoms?

The digestive system includes parts of the body involved in moving and breaking down food into energy for the body. It is made up of the mouth, esophagus, stomach, colon, rectum, anus, liver, gallbladder and pancreas. Colorectal cancer (which includes cancers of the colon and rectum) is the most common type of digestive cancer and is covered in a separate chapter of this report. Mouth cancers are covered as part of the oral cavity in the head and neck cancers chapter of this report.

This section describes five digestive system cancers (esophagus, stomach, liver, gallbladder and pancreas) in First Nations people, including some of the common symptoms. Symptoms of cancer may occur in some people and may not occur in others. People can experience symptoms differently; however, most symptoms get worse as the cancer develops. Symptoms for many digestive system cancers can also be caused by other health conditions. People experiencing any unusual symptoms should visit a doctor or other healthcare provider to discuss.

Esophageal cancer

The esophagus is a hollow muscular tube responsible for carrying food and drink from the back of the mouth to the stomach. Cancer of the esophagus is called esophageal cancer. Esophageal cancer starts when cells in the esophagus change, grow out of control and group together to form a lump (tumour). Esophageal cancer is more common among men and people over the age of 60.

In general, symptoms of esophageal cancer include difficulty in swallowing, heartburn, pain in the throat, chest or back, and indigestion (see the full list at cancer.ca).

Stomach cancer

The stomach is located in the upper abdomen and is where food starts to break down after it has been chewed in the mouth. Stomach cancer starts when cells in the stomach change, grow out of control and group together to form a lump (tumour). Stomach cancer is more common among men and most frequently occurs in adults age 50 and older.

In general, symptoms of stomach cancer include abdominal pain, weight loss, changes in digestion, difficulty swallowing, blood in the stool, jaundice, building up of fluid in the abdomen (see the full list at cancer.ca).

Liver cancer

The liver is one of the largest organs in the body and is located in the upper-right part of the abdomen. It is responsible for cleaning the blood coming from the digestive system. Liver cancer starts when cells in the liver change, grow out of control and group together to form a lump (tumour). The risk for liver cancer increases with age and is more common among men than women.

There are many symptoms of liver cancer, some of which can also be symptoms of other health conditions like liver scarring/cirrhosis. In general, symptoms of liver cancer include pain in the abdomen which may move up through the right shoulder, a lump or mass under the ribs, nausea, loss of appetite and constipation (see the full list at cancer.ca).

Gallbladder cancer

The gallbladder is a small, pear-shaped organ under the liver, on the right side of the body, responsible for making bile (a yellow-green fluid that helps the body digest fats). It is possible to live without a gallbladder; some people have it removed if they experience pain from gallstones. Gallbladder cancer starts when cells in the gallbladder change, grow out of control and group together to form a lump (tumour). Gallbladder cancer is more common among women and is often diagnosed in people over 65 years.

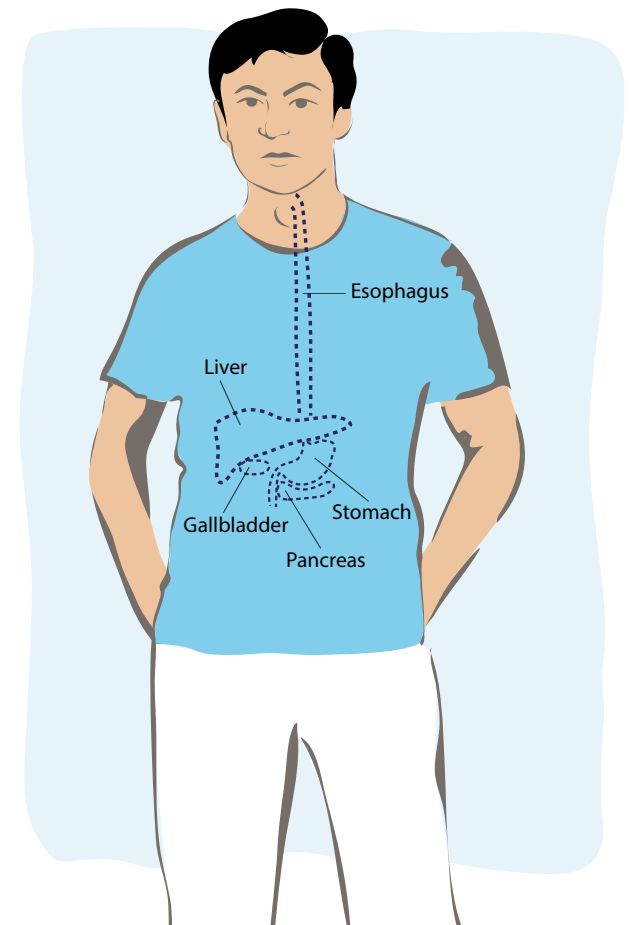
Most symptoms of gallbladder cancer appear in the later stages of the disease. The most common symptom of gallbladder cancer is abdominal pain that does not go away and is usually on the right side in the upper part of the abdomen (see the full list at cancer.ca). Advanced symptoms of gallbladder cancer may include jaundice, itching, tenderness in the right side of the upper abdomen.

Pancreatic cancer

The pancreas is a flat gland shaped like a hockey stick that is responsible for controlling blood sugar levels. It can be found behind the stomach. Cancer of the pancreas is called pancreatic cancer. Pancreatic cancer starts when cells in the pancreas change, grow out of control and group together to form a lump (tumour). Pancreatic cancer is usually found at later stages. People often do not experience symptoms until the cancer has spread to other organs.

In general, symptoms of pancreatic cancer include yellowing of the skin (jaundice), pain in the upper abdomen or upper back, bloating, fatty stools that are light colours, bulky and float in the toilet, dark urine and swelling of the legs (see the full list at cancer.ca).

Once a diagnosis of cancer is made, First Nations people are connected with Cancer Care Ontario's Aboriginal Navigator program. Navigators help facilitate and coordinate access to cancer services and resources, and work to address the cultural and spiritual needs of people with cancer and their families. The treatment for each type of cancer is different, so everyone's cancer experience is unique. First Nations people diagnosed with cancer should work with their Navigator and health care providers to come up with a cancer plan that is right for them.



Risk factors

The risk factors for digestive cancers described in this section are exposures, behaviours or individual characteristics that affect someone's risk of developing these diseases. Although they are not described in detail here, factors that individuals have little control over such as access to care, community infrastructure and the lasting effects of colonialism are as important as or more important than individual risk factors to determining someone's likelihood of getting cancer.

Risk factors for most digestive cancers include:

- **Smoking cigarettes:** Cigarette smoking is associated with esophageal, stomach, liver and pancreatic cancers. Half of on-reserve First Nations adults and 43 percent of off-reserve First Nations adults smoke cigarettes, compared to only 22 percent of non-Aboriginal adults.²⁹ Smoking is also more common among First Nations teens living on-reserve (30 percent) and off-reserve (14 percent) than among non-Aboriginal teens in Ontario (five percent).
- **Drinking alcohol:** Drinking alcohol is associated with esophageal cancers, stomach and liver cancers. While avoiding alcohol is the best way to reduce your risk of cancer, if you are going to drink, men should limit themselves to two drinks per day and women to one drink per day.²² First Nations adults (30 percent for on-reserve and 19 percent for off-reserve) are more likely to binge drink (have five or more drinks on one occasion two to three times per month) than non-Aboriginal adults in Ontario (13 percent). Regular heavy drinking of alcohol can damage the liver and cause scarring of the tissue (liver cirrhosis) which can also increase the risk of liver cancer.

- **Excess body weight:** Being overweight or obese is associated with esophageal, stomach, liver, gallbladder, and pancreatic cancers. Obesity is more common among First Nations adults (50 percent on-reserve and 30 percent off-reserve) and teens (16 percent on-reserve and eight percent off-reserve) than non-Aboriginal adults (17 percent) and teens (five percent).^{29, 32, 48}

Some additional risk factors for esophageal cancer include:

- **Smokeless tobacco:** Other forms of commercial tobacco use, such as chewing tobacco or snuff can also increase the risk of esophageal cancer, and are being used more and more by young people.^{49, 50}
- **Radiation:** Exposure to radiation from medical treatment or diagnostic purposes (for example, getting an x-ray) increases the risk of esophageal cancer.

Some additional risk factors for stomach cancer include:

- ***Helicobacter pylori* (H.pylori):** *H.pylori* is a small bacterium that lives in the stomach and can lead to stomach inflammation. *H.pylori* is transmitted from person to person through saliva, feces or vomit (either by direct exposure, through contaminated food and water, or during medical procedures). Research has shown that the prevalence of *H.pylori* infection is higher among First Nations people than the general population.²

Some additional risk factors for liver cancer include:

- **Hepatitis B virus (HBV):** A chronic HBV infection can cause liver cancer. HBV can be transmitted through contact with infected body fluids through sexual contact or infected blood via blood transfusions, unsafe injection drug use and poorly sterilized medical procedures. Smoking cigarettes increases the risk of developing liver cancer in people infected with Hepatitis B.⁵¹
- **Hepatitis C virus (HCV):** A chronic HCV infection can cause liver cancer. HCV is mainly transmitted through contact with infected blood via blood transfusions, unsafe injection drug use and poorly sterilized medical procedures. Research has shown that the HCV infection rates are higher among First Nations people than the general population.⁵² Smoking cigarettes increases the risk of developing liver cancer in people infected with Hepatitis C.⁵¹
- **Diabetes:** Diabetes can increase the risk of developing liver cancer.⁵³ The prevalence of diabetes is significantly higher among First Nations people than non-First Nations people.³⁵ Diabetes and cancer have similar risk factors (e.g., obesity, diet, physical inactivity) and often diabetes can complicate treatment for cancer, which, in turn, impacts the length of survival.³⁶

Some additional risk factors for gallbladder cancer include:

- **Gallstones:** Having gallstones, which are hard deposits of cholesterol and other substances, can increase the risk of getting gallbladder cancer. Gallstones occur more commonly in women but a very small number of people with gallstones will develop gallbladder cancer.

Some additional risk factors for pancreatic cancer include:

- **Smokeless tobacco:** Other forms of commercial tobacco use, such as chewing tobacco or snuff can also increase the risk of pancreatic cancer, and are being used more and more by young people.^{49, 50}
- **Family history:** Having a close blood relative like a mother, father or sibling who has had pancreatic cancer can increase the risk of developing pancreatic cancer. About 10 to 20 percent of pancreatic cancers are related to family history.
- **Diabetes:** Diabetes is strongly associated with pancreatic cancer.⁵³ The prevalence of diabetes is significantly higher among First Nations people than non-First Nations people.³⁵ Diabetes and cancer have similar risk factors (e.g., obesity, diet, physical inactivity) and often diabetes can complicate treatment for cancer, which, in turn, impacts survival.³⁶

Snapshot of digestive cancers in First Nations people

Stomach cancer is the tenth most commonly diagnosed cancer in First Nations people, with 149 cancer cases diagnosed from 1991 to 2010. Additionally, there were 139 pancreatic cancer cases, 96 liver cancer cases, 83 esophageal cancer cases and 45 gallbladder cancer cases diagnosed in First Nations people during this time period.

Compared to other people in Ontario, First Nations people had a higher incidence of liver and gallbladder, cancers. The incidence of stomach cancer was higher in First Nations females than in other females in Ontario. Pancreatic and esophageal cancer incidence was similar among First Nations people and other people in Ontario.

Mortality from most digestive cancers were similar in First Nations people and other people in Ontario, with the exception of higher mortality for liver cancer in First Nations. Mortality from esophageal cancer was also higher among First Nations females than among other females in Ontario. Less than half of First Nations people diagnosed with stomach or pancreatic cancers survived five years or longer.

Because of the small number of cases diagnosed in First Nations people, mortality, survival and prevalence of some digestive cancers could not be calculated.

Factors described in this section that can increase the risk of digestive cancers	Associated cancer type
• Smoking cigarettes	Esophagus, stomach, liver, pancreas
• Drinking alcohol	Esophagus, stomach, liver
• Excess body weight	Esophagus, stomach, liver, pancreas and gallbladder
• Radiation	Esophagus
• <i>Helicobacter Pylori</i> (<i>H.pylori</i>) infection	Stomach
• Hepatitis B virus	Liver
• Hepatitis C virus	
• Diabetes	Liver and pancreas
• Gallstones	Gallbladder
• Family history of pancreatic cancer	Pancreas

“My husband had me write on the brown paper posted in the cancer unit while it was under construction in the basement, he thanked all the doctors involved for their kindness and compassion involved in his treatment.”

Velva
Wife & Caregiver

Digestive cancer incidence (new cases)

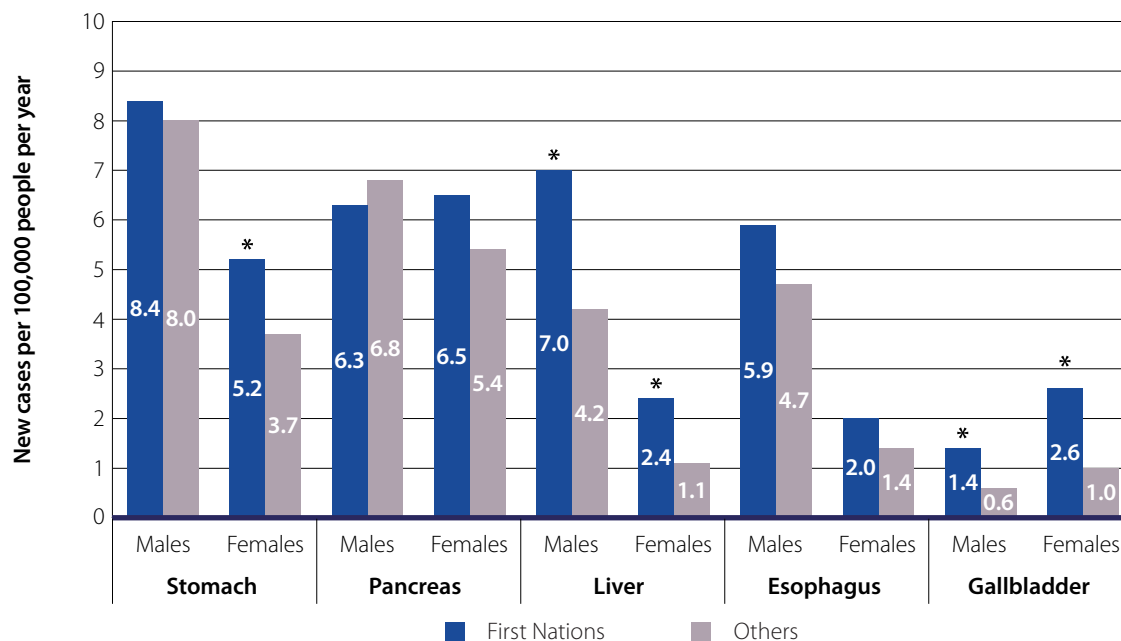


Cancer incidence is the number of people who are newly diagnosed with cancer in a specific population over a set period of time. The higher the incidence rate in a population, the more common the disease. For a more detailed explanation of incidence, visit cancercare.on.ca/measuringcancerFNIM.

Digestive cancer incidence (new cases) by sex and type (Figure 63)

- First Nations people had a higher incidence of liver and gallbladder cancer compared to other people in Ontario. Liver cancer was higher in males than in females.
- First Nations females had a higher incidence of stomach cancer than other females in Ontario; whereas, stomach cancer incidence was similar among First Nations males and other males in Ontario.
- First Nations people had a similar incidence of pancreas and esophagus cancer as other people in Ontario.

FIGURE 63: Digestive cancer incidence (new cases) in First Nations people and other people in Ontario, all ages, by sex and type, 1991–2010



Notes: * Indicates that incidence for First Nations people is significantly different than for other people in Ontario. Age-standardized to the 1960 World Standard population.
Data sources: Indian Registration System, Ontario Cancer Registry

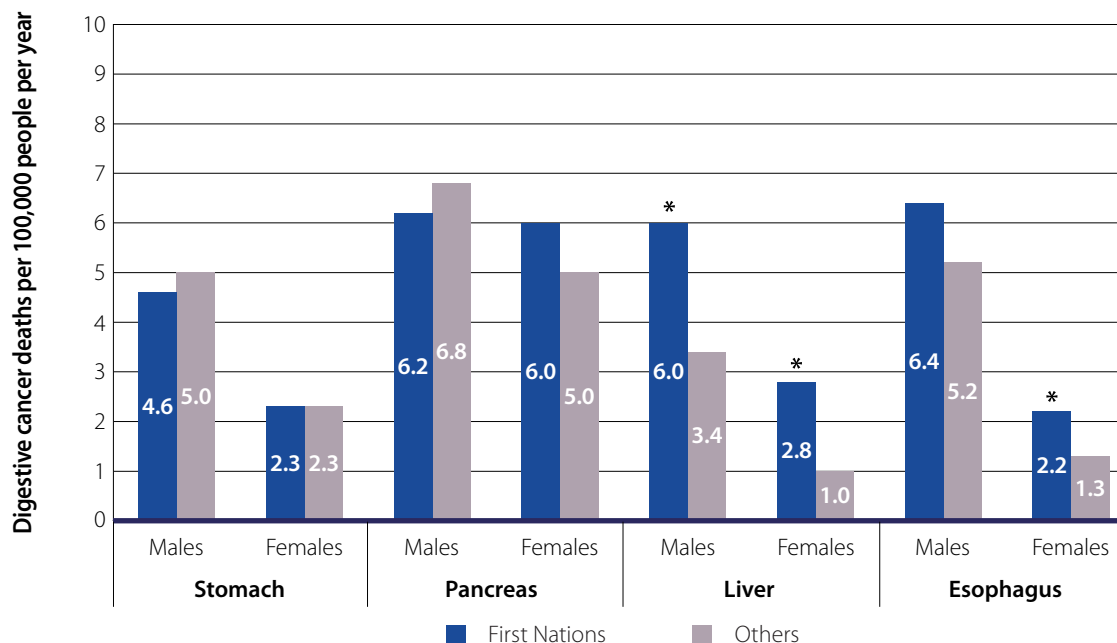
Digestive cancer mortality (deaths)

i Mortality is the number of deaths in a population over a set period of time. Cancer mortality is lower when fewer people are being diagnosed with cancer or when more people are living longer after a cancer diagnosis. For a more detailed explanation of mortality, visit cancercare.on.ca/measuringcancerFNIM.

Digestive cancer mortality (deaths) by sex and type (Figure 64)

- First Nations people had higher mortality from liver cancer than other people in Ontario.
- First Nations females had higher mortality from esophageal cancer than other females in Ontario.
- First Nations people had similar mortality from stomach and pancreatic cancer than other people in Ontario.
- Mortality for gallbladder cancer could not be reported due to small number of cases.

FIGURE 64: Digestive cancer mortality (deaths) in First Nations people and other people in Ontario, all ages, by sex and type 1991–2010



Notes: * Indicates that mortality for First Nations people is significantly different than for other people in Ontario. Age-standardized to the 1960 World Standard population.
Data sources: Indian Registration System, Ontario Cancer Registry

Digestive cancer survival (chances of living after diagnosis)

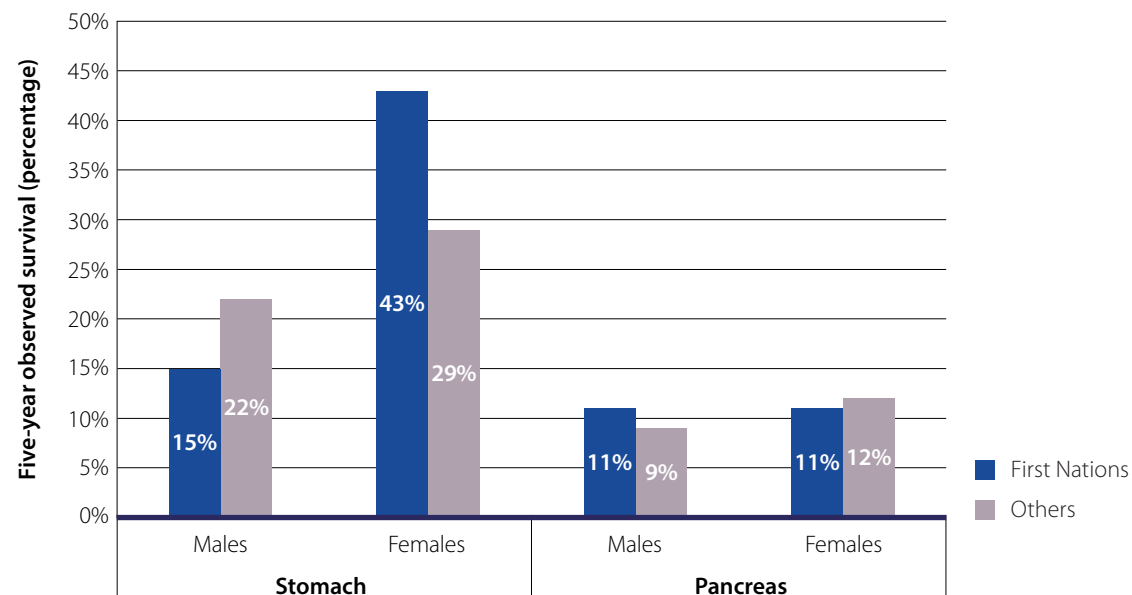


Cancer survival is the percentage of people still alive for a set time period after being diagnosed with cancer (usually five years). Survival improves when more cancers are caught early—before they spread to other parts of the body—and when there are improvements in cancer treatment that help people with cancer live longer. For a more detailed explanation of survival, visit cancercare.on.ca/measuringcancerFNIM.

Digestive cancer survival by sex and type (Figure 65)

- First Nations people had similar survival as other people in Ontario for stomach. While it appears that First Nations females had better survival for stomach cancer than other females in Ontario, this difference is not statistically significant due to small number of cancer cases.
- First Nations people had similar survival as other people in Ontario for pancreatic cancer.
- Survival for liver, esophageal and gallbladder cancer could not be reported due to small number of cases.

FIGURE 65: Five-year digestive cancer survival in First Nations people and other people in Ontario, ages 15–74, by sex and type, 1991–2010



Notes: Age-standardized to the International Cancer Survival Standard (ages 15 to 74).

Data sources: Indian Registration System; Ontario Cancer Registry

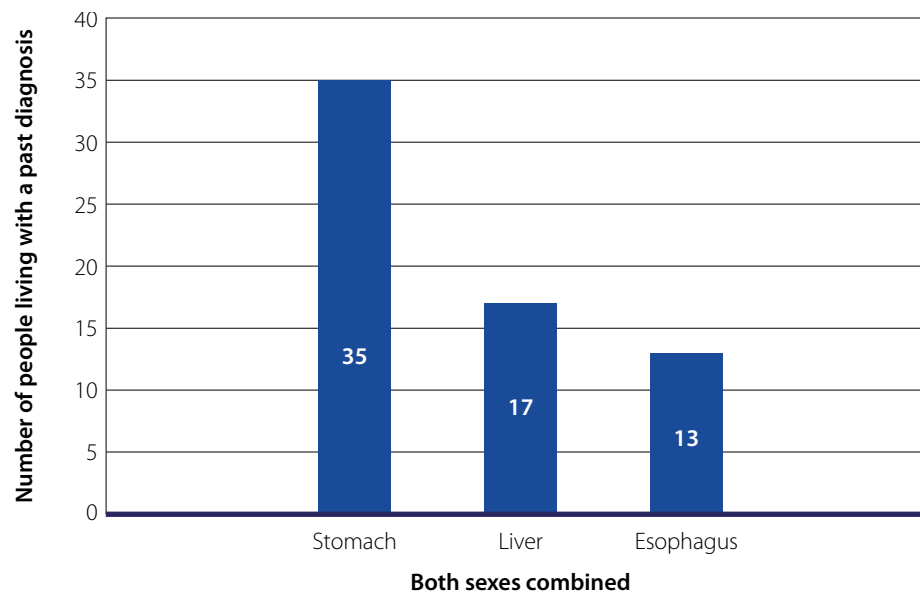
Digestive cancer prevalence (new and existing cases)

i Cancer prevalence is defined as the number of people living with a past diagnosis of cancer in a set time period. A high prevalence of any given cancer might be explained by a high incidence (i.e., the cancer is very common) and/or high survival (i.e., someone is more likely to live long after being diagnosed). For a more detailed explanation of prevalence, visit cancercare.on.ca/measuringcancerFNIM.

Digestive cancer prevalence by type (Figure 66)

- As of January 1, 2011 there were 35 First Nations people living with a diagnosis of stomach cancer, 17 living with a diagnosis of liver cancer and 13 living with a diagnosis of esophageal cancer sometime within the previous 10 years (that is, from 2000 to 2010).

FIGURE 66: Digestive cancer prevalence in First Nations people in Ontario as of January 1, 2011, all ages, by time since diagnosis



Data sources: Indian Registration System, Ontario Cancer Registry

Head and Neck Cancer

in First Nations People in Ontario

What are head and neck cancers and what are their symptoms?

Head and neck cancers include cancers of the oral cavity (mouth), the pharynx (throat) and larynx (voice box). These parts of the body are involved in eating (tasting, chewing and swallowing), breathing and speaking.

This section describes cancers of the oral cavity, pharynx and larynx, including some of their common symptoms. People with any unusual symptoms should visit a doctor or other healthcare provider to discuss.

Oral cavity

The oral cavity (mouth) is made up of the lips, gums, inside of cheeks, floor and palate (roof) of the mouth, salivary glands and tongue. Parts of the mouth play important roles in chewing and swallowing food. The surface of the tongue is responsible for tasting food. Speaking involves using the lips and tongue to form words. Oral cavity cancer starts when cells in the mouth change, grow out of control and group together to form a lump (tumour). These cancers usually grow in the type of cells that make up the surface of the tongue and lining of the mouth and lips. There are many symptoms of oral cavity cancer, which can also be caused by other health conditions (see the full list at cancer.ca). For example, some of the symptoms of oral cavity cancer include: white or red patches on the lips or in the mouth, a lump or growth on the lip or in the mouth, pain in the mouth that doesn't go away or difficulty swallowing or chewing.

Pharynx

The pharynx (throat) is a hollow tube that connects the nose and mouth to the esophagus and larynx. The upper part of the pharynx also includes the tonsils and back part of the tongue. The pharynx is involved in swallowing and breathing. Cancer of the pharynx is called pharyngeal cancer. Pharyngeal cancer starts when cells in the pharynx change, grow out of control and group together to form a lump (tumour). There are many symptoms of pharyngeal cancer, which can also be caused by other health conditions (see the full list at cancer.ca). For example, some of the symptoms of pharyngeal cancer include: sore throat, a feeling that something is stuck in the throat, difficulty swallowing or bleeding from the throat or mouth.

Larynx

The larynx (voice box) is part of the respiratory system. It produces sound for speaking. The larynx connects the pharynx to the trachea (windpipe), bringing air to the lungs. Cancer of the larynx is called laryngeal cancer. Changes to cells in the lining of the larynx can lead to non-cancerous conditions, such as nodules on the vocal cords, or sometimes laryngeal cancer. Laryngeal cancer starts when cells in the larynx change, grow out of control and group together to form a lump (tumour). There are many symptoms of laryngeal cancer, which can also be caused by other health conditions (see the full list at cancer.ca). For example, some of the symptoms of pharyngeal cancer include: hoarseness lasting longer than a few weeks, weakness of the voice, difficult or painful swallowing, and a lump in the throat or neck.

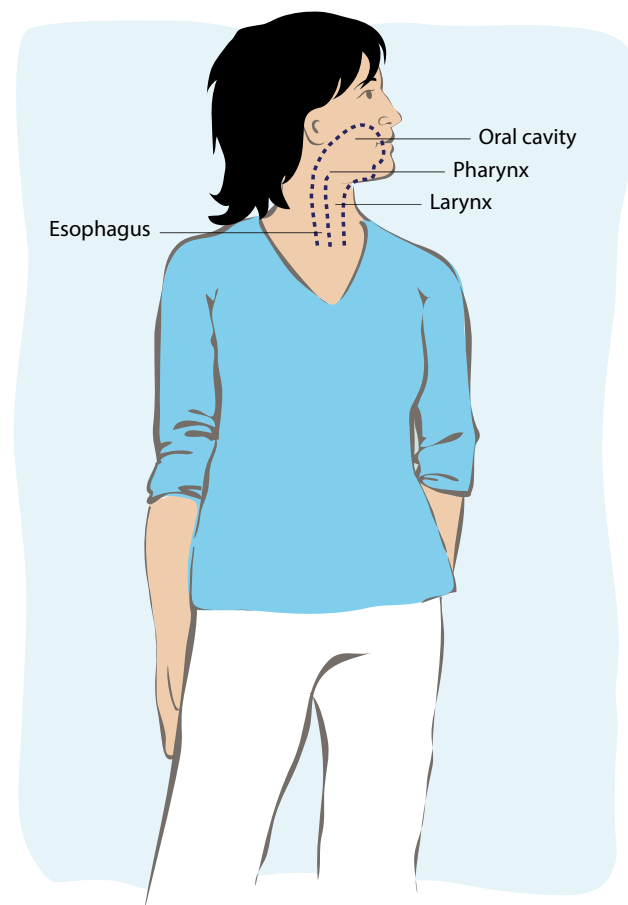
Risk factors

The risk factors for head and neck cancers described in this section are exposures, behaviours or other individual characteristics that affect someone's risk of developing this disease. Although they are not described in detail here, factors that individuals have little control over, such as access to care, community infrastructure and the lasting effects of colonialism are as important as or more important than individual risk factors to determining someone's likelihood of getting cancer. Some of the risk factors that can increase the risk of developing head and neck cancer include:

- **Smoking cigarettes:** Smoking is the main risk factor for head and neck cancers.³⁴ Non-traditional use of tobacco (i.e., smoking cigarettes) is significantly higher among First Nations. Half of on-reserve First Nations adults and 43 percent of off-reserve First Nations adults smoke cigarettes, compared to only 22 percent of non-Aboriginal adults. Smoking is also more common among First Nations teens living on-reserve (30 percent) and off-reserve (14 percent) compared to non-Aboriginal teens in Ontario (five percent).²⁹ People who both smoke cigarettes and drink alcohol are at a much higher risk for head and neck cancers than those who either only smoke or only drink alcohol. First Nations adults living on- and off-reserve were more likely to binge drink and smoke in combination than non-Aboriginal adults in Ontario.²⁹

- **Alcohol:** Drinking alcohol is also associated with an increased risk of head and neck cancer. While avoiding alcohol is the best way to reduce your risk of cancer, if you are going to drink, men should limit themselves to two drinks per day and women to one drink per day. About 75 percent of all head and neck cancers are linked to commercial tobacco and alcohol use.⁽⁵⁶⁾ First Nations adults (30 percent for on-reserve and 19 percent for off-reserve) are more likely to binge drink (have five or more drinks on one occasion two to three times per month) than non-Aboriginal adults in Ontario (13 percent).^{29, 34}

Factors described in this section that can increase the risk of head and neck cancers	Associated cancer type
• Smoking cigarettes • Drinking alcohol	All
• Smokeless tobacco • Human papillomavirus	Oral cavity
• Wood dust • Formaldehyde • Epstein-Barr virus • Human papillomavirus	Pharyngeal
• Asbestos	Laryngeal



Some of the risk factors that can increase the risk of developing oral cavity cancers include:

- **Smokeless tobacco:** Smokeless tobacco includes products such as chewing tobacco and snuff that are consumed without burning. Using smokeless tobacco increases a person's risk of developing cancer somewhere in their mouth.⁵⁰
- **Human papillomavirus (HPV):** Human papillomavirus is an infection spread from person-to-person, often through sexual contact. Certain types of HPV can cause cancer in the oral cavity. Most HPV infections have no symptoms often go away on their own. Many types of the HPV virus do not cause oral cancer, while others are linked to genital warts or other types of cancer.³⁴

Some of the additional risk factors that can increase the risk of developing pharyngeal cancers include:

- **Wood dust:** Wood dust is produced during the sanding or sawing of wood. Inhaling wood dust (e.g., while processing wood without wearing a protective mask) increases a person's risk of pharyngeal cancer.³⁴
- **Formaldehyde:** Formaldehyde is a chemical associated with an increased risk for pharyngeal cancer. Formaldehyde is released into the air from combustion sources, cigarette smoke and off-gassing of building products and furniture. People are exposed to formaldehyde mainly through breathing indoor air.³⁴
- **Epstein-Barr virus:** Epstein-Barr virus (EBV) is a risk factor for pharyngeal cancer. EBV infection is very common in the Ontario population and is most

commonly transmitted from person to person through saliva, especially during childhood. Once infected, a person is a carrier of EBV for life, and normally the virus doesn't cause any serious illness or symptoms.⁵⁴

- **Human papillomavirus (HPV):** Human papillomavirus is an infection spread from person-to-person, often through sexual contact. Certain types of HPV can cause pharyngeal cancer. Most HPV infections have no symptoms often go away on their own. Many types of the HPV virus do not cause pharyngeal cancer, while others are linked to genital warts or other types of cancer.³⁴

Some of the risk factors that can increase the risk of developing laryngeal cancers include:

- **Asbestos:** People who have been exposed to asbestos (insulation material formerly used in construction) at work have a higher risk of laryngeal cancer.³⁴

“I was very angry as I only had two months to prepare for his leaving me forever. We were in love since we were nine years old, and had been married forty six years.”

Velva
Wife & Caregiver

Snapshot of head and neck cancers in First Nations people

Cancers of the oral cavity and pharynx are the seventh most commonly diagnosed cancer in First Nations people, with 184 cancer cases diagnosed from 1991 to 2010. Laryngeal cancer is less common, with 59 laryngeal cancers diagnosed in First Nations people from 1991 to 2010.

Compared to other females in Ontario, First Nations females had a higher incidence of laryngeal cancer. First Nations people had a higher mortality from laryngeal cancer than other people in Ontario.

Less than half of First Nations people diagnosed with oral cavity and pharyngeal cancer or laryngeal cancer survived five years or longer. Compared to other people in Ontario, First Nations people had poorer oral cavity, pharyngeal and laryngeal cancer survival.

Because of the small number of cases diagnosed in First Nations people, prevalence could not be calculated for laryngeal cancer. These small numbers also mean that mortality, survival and prevalence for head and neck cancers could not be calculated separately for males and females.

Head and neck cancer incidence (new cases)

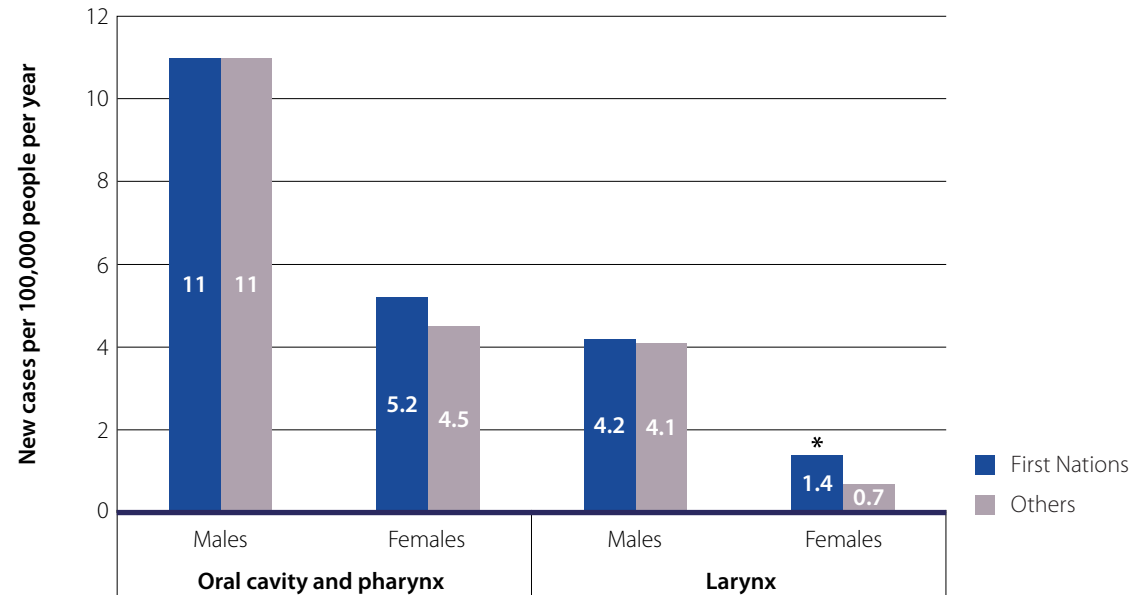


Cancer incidence is the number of people who are newly diagnosed with cancer in a specific population over a set period of time. The higher the incidence rate in a population, the more common the disease. For a more detailed explanation of incidence, visit cancercare.on.ca/measuringcancerFNIM.

Head and neck cancer incidence (new cases), by sex (Figure 67)

- From 1991 to 2010, about 11 oral cavity and pharyngeal cancers per 100,000 First Nations males and five oral cavity and pharyngeal cancers per 100,000 First Nations females were diagnosed each year.
- Oral cavity and pharyngeal cancer incidence in First Nations people was similar to oral cavity and pharyngeal cancer incidence in other males and females in Ontario.
- Laryngeal cancer incidence in First Nations males was similar to laryngeal cancer incidence in other males in Ontario.
- First Nations females had a higher incidence of laryngeal cancer than other females in Ontario.

FIGURE 67: Head and neck cancer incidence (new cases) in First Nations people and other people in Ontario, all ages, by sex, 1991–2010



Notes: * Indicates that incidence for First Nations people is significantly different than for other people in Ontario. Age-standardized to the 1960 World Standard population.
Data sources: Indian Registration System, Ontario Cancer Registry

Head and neck cancer mortality (deaths)

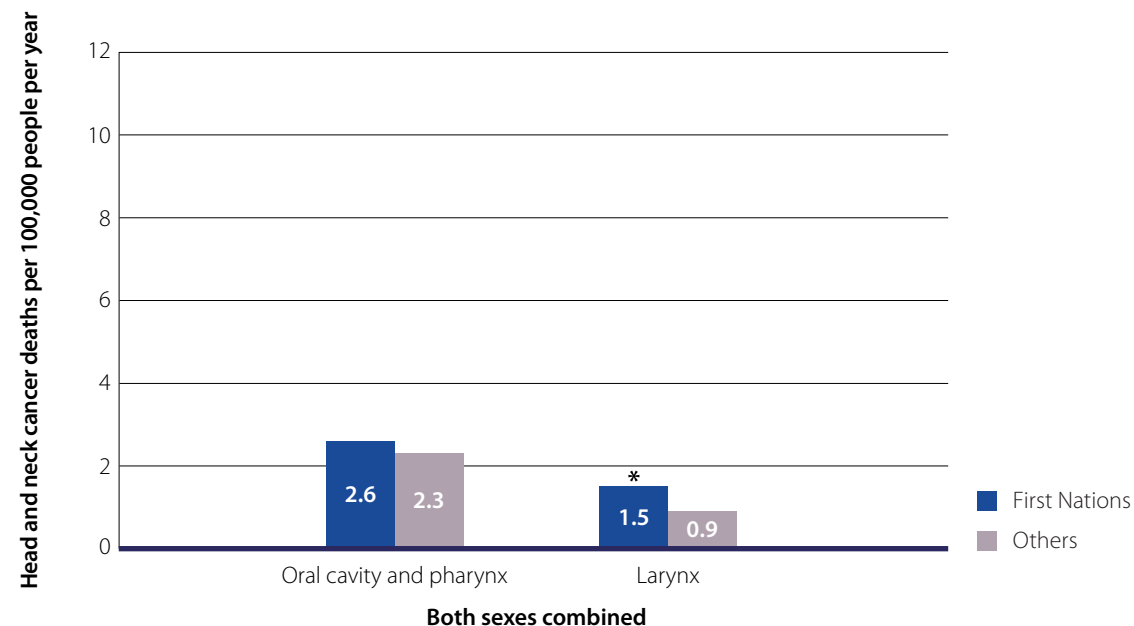


Mortality is the number of deaths in a population over a set period of time. Cancer mortality is lower when fewer people are being diagnosed with cancer or when more people are living longer after a cancer diagnosis. For a more detailed explanation of mortality, visit cancercare.on.ca/measuringcancerFNIM.

Head and neck cancer mortality (deaths) (Figure 68)

- From 1991 to 2010, there were about three oral cavity and pharyngeal cancer deaths and two laryngeal cancer deaths per 100,000 First Nations people each year.
- First Nations people had similar mortality from oral cavity and pharyngeal cancer to other people in Ontario.
- First Nations people had higher laryngeal cancer mortality than other people in Ontario.

FIGURE 68: Head and neck cancer mortality (deaths) in First Nations people and other people in Ontario, all ages, 1991–2010



Notes: * Indicates that mortality for First Nations people is significantly different than for other people in Ontario.

Age-standardized to the 1960 World Standard population.

Data sources: Indian Registration System, Ontario Cancer Registry

Head and neck cancer survival (chances of living after diagnosis)

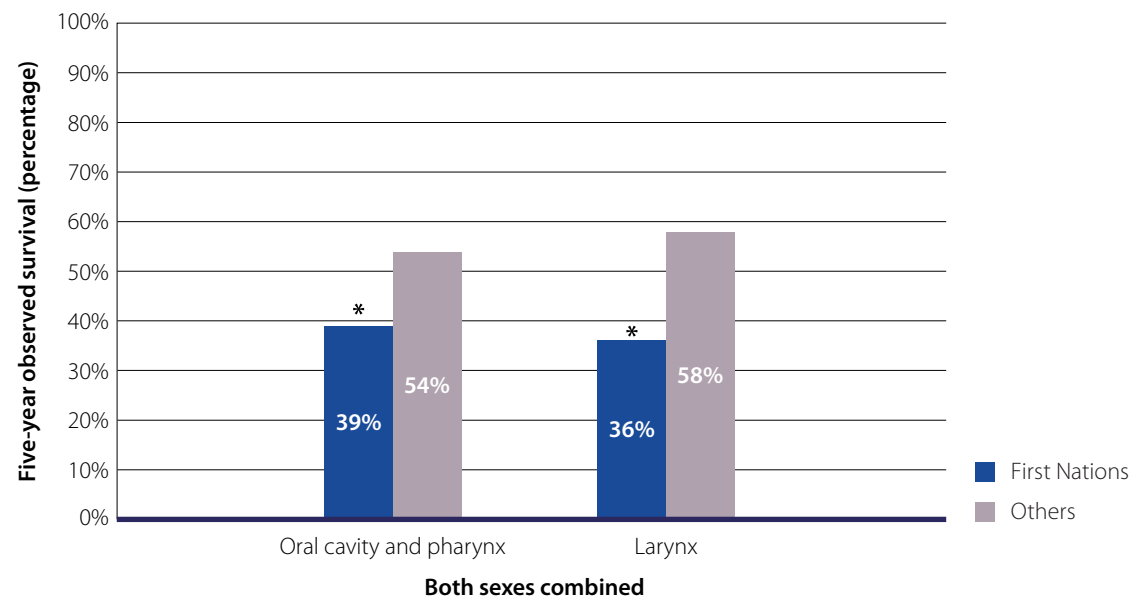


Cancer survival is the percentage of people still alive for a set time period after being diagnosed with cancer (usually five years). Survival improves when more cancers are caught early—before they spread to other parts of the body—and when there are improvements in cancer treatment that help people with cancer live longer. For a more detailed explanation on survival, visit cancercare.on.ca/measuringcancerFNIM.

Head and neck cancer survival (Figure 69)

- About 39 percent of First Nations people survived five years or longer after an oral cavity or pharyngeal cancer diagnosis. First Nations people had worse oral cavity and pharyngeal cancer survival than other people in Ontario.
- About 36 percent of First Nations people survived five years or longer after a laryngeal cancer diagnosis. First Nations people had worse laryngeal cancer survival than other people in Ontario.

FIGURE 69: Five-year head and neck cancer survival in First Nations people and other people in Ontario, ages 15–74, 1991–2010



Notes: * Indicates that survival for First Nations people is significantly different than for other people in Ontario. Age-standardized to the International Cancer Survival Standard (ages 15 to 74).
Data sources: Indian Registration System; Ontario Cancer Registry

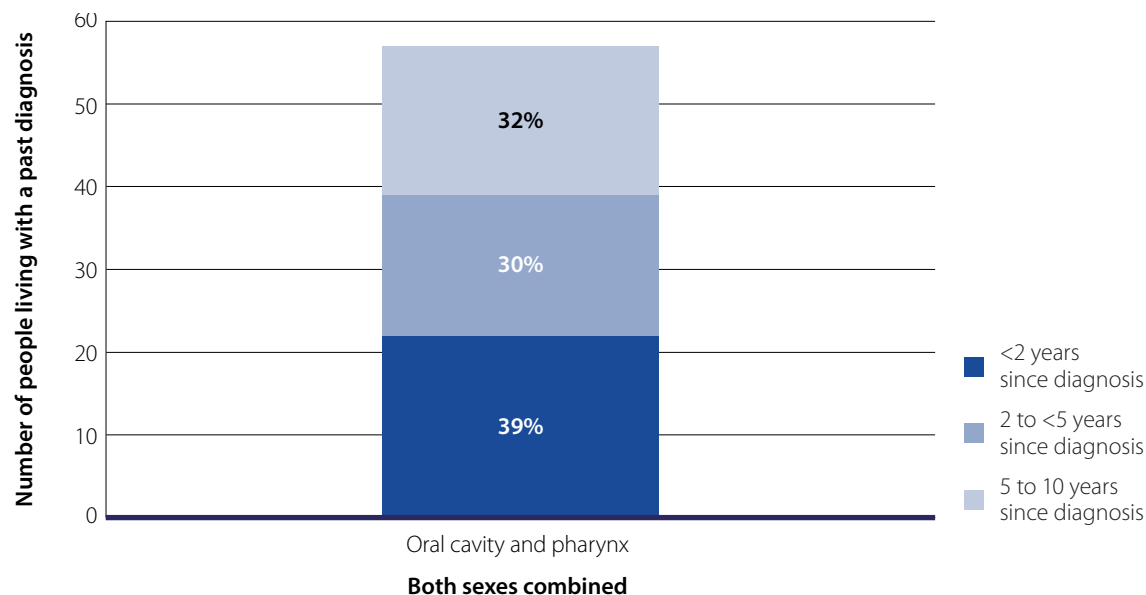
Head and neck cancer prevalence (new and existing cases)

i Cancer prevalence is defined as the number of people living with a past diagnosis of cancer in a set time period. A high prevalence of any given cancer might be explained by a high incidence (i.e., the cancer is very common) and/or high survival (i.e., someone is more likely to live long after being diagnosed). For a more detailed explanation of prevalence, visit cancercare.on.ca/measuringcancerFNIM.

Head and neck cancer prevalence (Figure 70)

- As of January 1, 2011, there were 57 First Nations people in Ontario who had been living with a diagnosis of oral cavity or pharyngeal cancer in the previous 10 years (i.e., sometime from 2001 to 2010).
- Most people living with a past diagnosis of oral cavity or pharyngeal cancer had been diagnosed in the previous five years.
- Because of the small number of cases diagnosed in First Nations people, prevalence could not be calculated for laryngeal cancer.

FIGURE 70: Head and neck cancer prevalence in First Nations people in Ontario as of January 1, 2011, all ages, by time since diagnosis



Data sources: Indian Registration System, Ontario Cancer Registry

Other Less Common Cancers

in First Nations People in Ontario

What are some of the other cancers and what are their symptoms?

There are over 200 types of cancer. Earlier chapters in this report cover the most common types of cancer in First Nations people, such as lung, colorectal, breast, prostate and kidney. Melanoma and cancers of the thyroid, brain, soft tissue, and bone and joints are some other types that are relatively less common in First Nations people; together representing about five percent of all cancers diagnosed from 1991–2010.

This section describes these other cancer types in more detail, including some of the common symptoms. Each person may experience symptoms differently, and some of these symptoms can also be caused by other health conditions. People experiencing any unusual symptoms should visit a doctor or healthcare provider to discuss.

Thyroid cancer

The thyroid is a small organ in the front of the neck below the larynx (voice box) and near the trachea (windpipe). The thyroid makes hormones that have various functions including: helping to break down food into energy; controlling body temperature, heart rate and breathing; and controlling the level of calcium in the blood. Thyroid cancer can occur when cells in the thyroid change and no longer grow or behave normally. Symptoms of thyroid cancer can include a lump or swelling in the neck, hoarseness or other voice changes, difficulty swallowing, or a sore throat or cough that doesn't go away (see the full list at cancer.ca).

Brain and other central nervous system cancers

Together, the brain and spinal cord form the central nervous system. Cancers can occur when cells of the central nervous system no longer grow or behave normally. There are many different types of central nervous system cancers, most of which occur in the brain. Some types are more common in children, and others more common in adults. In First Nations children (ages 0 to 14) and young adults (ages 15 to 29), brain cancer is the second most commonly diagnosed cancer type. Symptoms generally appear when the tumour is large enough to affect brain or spinal cord function (see the full list at cancer.ca). Some of the symptoms include a headache that may be worse in the morning or that gets worse with activity; seizures; changes in personality, thinking, memory and behaviour; and abnormal movements.

Melanoma of the skin

The skin is the body's largest organ. It is responsible for protecting the body against the harmful effects of the environment, such as the sun or germs. Melanoma is a type of skin cancer that starts in a special type of skin cell that produces the pigment that gives skin its colour. When these pigment-forming cells group together, they form moles on the skin that are usually non-cancerous. People with lighter skin, hair and/or eye colour are more likely to get skin cancer. How melanoma skin cancer looks can vary from person to person; it can sometimes start as an abnormal mole or spot on the skin. Symptoms can include a change in the colour, size or shape of an existing mole that is already on your skin, or the appearance of a new irregular mole or spot (see the full list at cancer.ca).

Soft tissue cancer

Soft tissues are structures in the body that mainly function to support, protect or connect organs. Examples of soft tissues include fat, muscles, blood vessels (arteries, capillaries and veins) and tendons. There are over 50 different types of soft tissue cancer; some types are more common in children, and others more common in adults. Symptoms of soft tissue cancer usually don't occur until the tumour has grown into surrounding tissues and organs, and depend on the location and type of cancer (see the full list at cancer.ca).

Bone and joint cancers

Bones form the skeleton of the human body and protect the organs within. Joints are the points where two or more bones meet, such as the elbow, knee and wrist. When cells of the bone and joint change and no longer grow or behave normally, they can develop into non-cancerous conditions such as bone cysts. In some cases, these changes cause bone or joint cancer. Some of the symptoms include pain in a bone or joint that worsens over time and becomes constant, swelling or a lump that can be felt over a bone, a bone that breaks for no known reason (see the full list at cancer.ca).

Once a diagnosis of cancer is made, First Nations people are connected with Cancer Care Ontario's Aboriginal Navigator program. Navigators help facilitate and coordinate access to cancer services and resources, and work to address the cultural and spiritual needs of people with cancer and their families. The treatment for each type of cancer is different, so everyone's cancer experience is unique. First Nations people diagnosed with cancer should work with their Navigator and health care providers to come up with a cancer plan that is right for them.

Risk factors

The risk factors for cancer described in this section are exposures, behaviours or individual characteristics that affect someone's risk of developing the disease. Although they are not described in detail here, factors that individuals have little control over such as access to care, community infrastructure, and the lasting effects of colonialism are as important as or more important than individual risk factors to determining someone's likelihood of getting cancer.

The main known risk factor for thyroid, brain and bone and joint cancer is:

- **Medical radiation:** Exposure to radiation from medical treatment increases the risk for thyroid cancer.³⁴

Some of the factors that can increase the risk of melanoma include:

- **Ultraviolet radiation (UVR) from the sun:** sunlight is the major source of exposure to UVR, and the main cause for all skin cancer types. Melanoma is most strongly related to a history of sunburns and sun-intensive activities such as sunbathing and outdoor recreational activities.¹⁹ Childhood exposure may be particularly harmful.³⁴
- **UVR from indoor tanning devices:** Indoor tanning devices, including sunbeds and sunlamps, cause melanoma. These devices may have UVR intensity as much as 10–15 times stronger than midday sun. Risk for melanoma may be increased even among those who have used a device only rarely and is particularly high among those who have used a device during adolescence and young adulthood.³⁴

- **Moles on the skin:** most moles on the skin are harmless, but the more moles a person has, the higher their risk for developing melanoma.
- **Light-coloured skin, eyes and hair:** People with fair or light-coloured skin, blonde or red hair, and blue, green or grey eyes have a higher risk of melanoma. People with dark (brown or black) skin have a lower risk of melanoma, though it is still possible to develop this type of skin cancer.
- **Family history:** The risk of developing melanoma increases if one or more first-degree relatives (parent, sibling, or child) has been diagnosed with melanoma. This may be due to family members having similar skin colour and sun exposure habits.

Evidence for risk factors associated with soft tissue cancer is limited because this cancer is relatively rare and there are over 50 different subtypes.

Factors described in this section that can increase the risk of other less common cancers	Associated cancer type
• Medical radiation	Thyroid, brain and bone and joint
• Ultraviolet radiation from the sun	Melanoma
• Ultraviolet radiation from indoor tanning devices	
• Moles on the skin	
• Light-coloured skin, eyes and hair	
• Family history	

Snapshot of other less common cancers in First Nations people

In total, there were 116 cases of thyroid cancer, 93 brain, 79 melanoma, 49 soft tissue and 34 bone and joint cancers diagnosed among First Nations people from 1991 to 2010.

Each of these cancer types affect people that are relatively young in age (both in the First Nations population and in the general population). Thyroid cancer was the fourth most common cancer among First Nations young adults (ages 15 to 29). Brain and other central nervous system cancers were the second most common cancer type among First Nations children (ages 0 to 14) and young adults (ages 15 to 29). Melanoma is less common in First Nations people than in the general population, but usually tends to affect young adults ages 15 to 49.

First Nations people were significantly less likely to be diagnosed with thyroid, brain, melanoma and soft tissue cancers than other people in Ontario. The number of First Nations people diagnosed with these other less common cancer types was too small to present estimates of mortality and survival, as well as prevalence for soft tissue and bone and joint cancers.

“

I had a port inserted under my skin which enabled me to carry around a chemo pump in something like a fanny pack during my five-weeks of radiation. During this time, I was supported by the Erie St. Clair Regional Cancer Program team, including their Aboriginal Navigator who spent a lot of one on one time with me, which was very comforting.”

Robert
Cancer survivor



Incidence (new cases) of other less common cancers

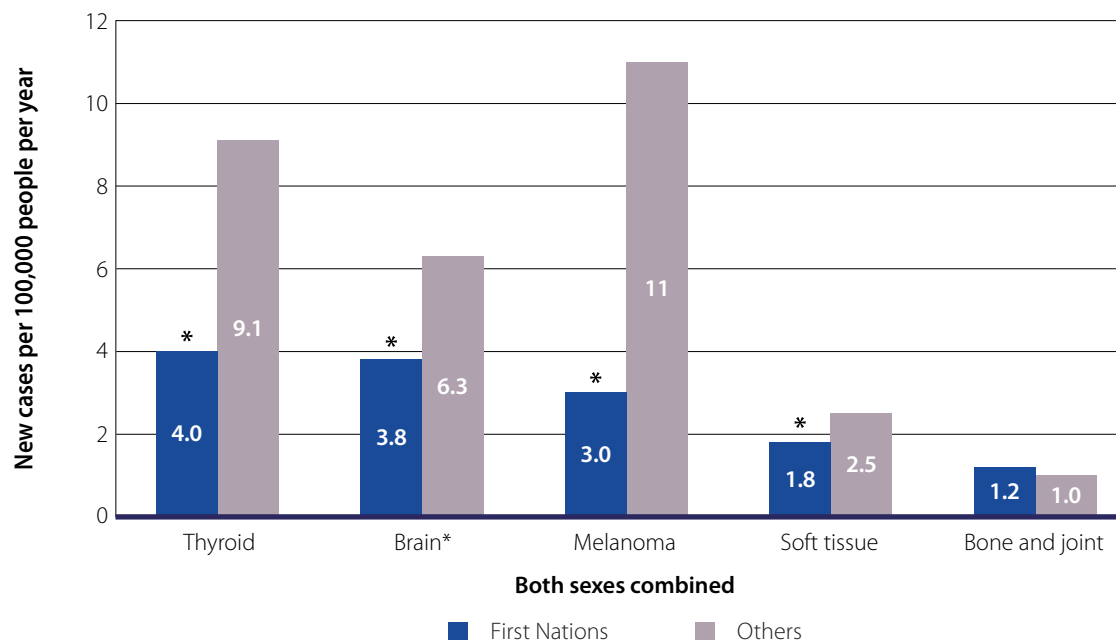


Cancer incidence is the number of people who are newly diagnosed with cancer in a specific population over a set period of time. The higher the incidence rate in a population, the more common the disease. For a more detailed explanation of incidence, visit cancercare.on.ca/measuringcancerFNIM.

Thyroid, brain, melanoma, soft tissue, and bone and joint cancer incidence (new cases) by type (Figure 71)

- From 1991 to 2010, about four thyroid and four brain cancers per 100,000 First Nations people were diagnosed each year (both sexes combined). Less than four cases of melanoma skin cancer, soft tissue cancer and bone and joint cancers were diagnosed per 100,000 First Nations people per year in the same time period.
- First Nations people had lower incidence of thyroid and brain (including other central nervous system) cancers, melanoma skin cancer and soft tissue cancer than other people in Ontario. This incidence of bone and joint cancer was similar for First Nations people and other people during the same time period.

FIGURE 71: Incidence of thyroid, brain, melanoma, soft tissue, and bone and joint cancers in First Nations people and other people in Ontario, all ages, both sexes combined, 1991–2010



Notes: * Indicates that incidence for First Nation people is significantly different than for other people in Ontario. Age-standardized to the 1960 World Standard population.

Data sources: Indian Registration System, Ontario Cancer Registry

Prevalence (new and existing cases) of other less common cancers

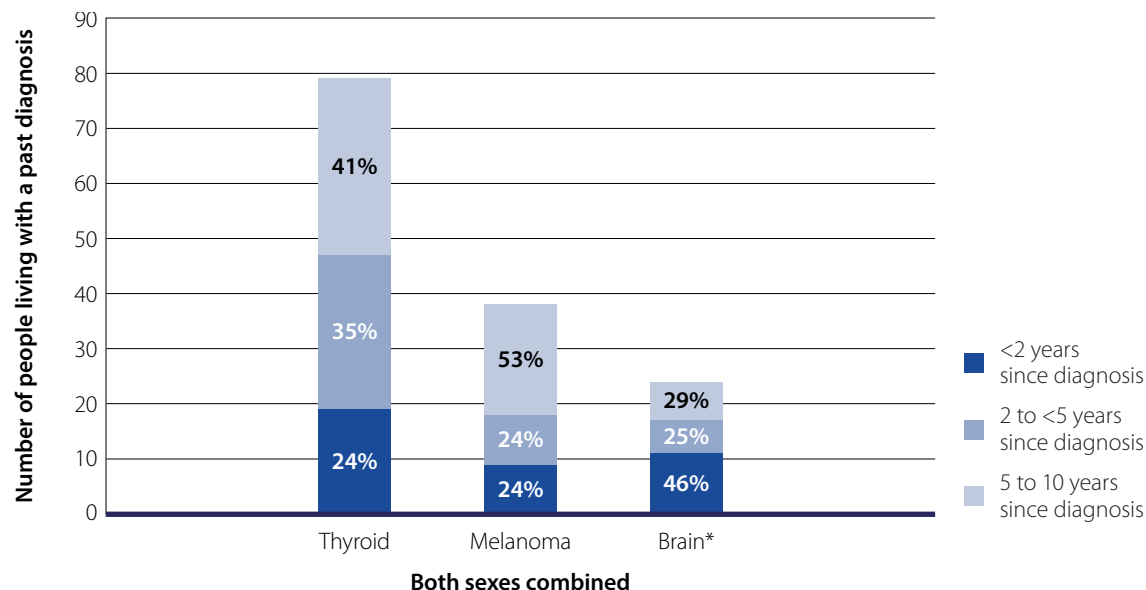


Cancer prevalence is defined as the number of people living with a past diagnosis of cancer in a set time period. A high prevalence of any given cancer might be explained by a high incidence (i.e., the cancer is very common) and/or high survival (i.e., someone is more likely to live long after being diagnosed). For a more detailed explanation of prevalence, visit cancercares.on.ca/measuringcancerFNIM.

Thyroid, melanoma and brain cancer prevalence by time since diagnosis (Figure 72)

- As of January 1st, 2011, there were 79 First Nations people living with a past diagnosis of thyroid cancer, 39 with a past diagnosis of melanoma and 26 with a past diagnosis of brain cancer. Despite having similar incidence, there are different patterns of cancer prevalence for thyroid, melanoma and brain cancer, which is related to the likelihood of surviving from one of these cancer types.
- Thyroid cancer had a relatively high prevalence, and in the general population, the chances of living after a diagnosis (i.e., survival) are good. Most First Nations individuals living with thyroid cancer were diagnosed more than two years ago (76 percent) and might be finishing their treatment or be considered cancer-free.

FIGURE 72: Prevalence of thyroid, melanoma and brain cancer in First Nations people in Ontario as of January 1, 2011, all ages, both sexes combined, by time since diagnosis



Data sources: Indian Registration System, Ontario Cancer Registry

- Brain cancer had a relatively low prevalence, and in the general population, the chances of living after a diagnosis (i.e., survival) are poor. Nearly half (46 percent) of First Nations people living with brain cancer were diagnosed in the previous two years and were likely still receiving cancer treatment.
- Over half of people living with melanoma were diagnosed more than five years ago and might be considered cancer free. In the general population, the chances of living after a diagnosis of melanoma (i.e., survival) are good.

Reducing the cancer burden

Travelling the road to hope



Alex's story

At seven months old, Dokis First Nation citizen Alexander Hebert completed his inaugural Terry Fox Run in a stroller. He raised \$300 that year. Now at 12 years old, Alex has raised nearly \$11,000 for the Terry Fox Foundation.

"I sold lemonade at yard sales, donated some of my allowance," says Hebert. "Most of the contributions come from friends, family and extended Anishinabek Nation family. Donations come from all over the world. Cancer affects everyone. More research needs to be done to find cures. So many family members have passed away in my lifetime and I'm only 12."

Alex attends White Woods Public School in Sturgeon Falls, Ontario. He is a role model for other students and often raises more than the entire school does.

"Terry didn't have a cell phone or Facebook to get attention to his run. Now we have the technology to get the message out there. He ran for us and we need to continue to run for him."

Equity and the social determinants of Indigenous health

The social determinants of Indigenous health—the conditions in which Indigenous people grow, work, live and age—affect the physical, emotional, mental and spiritual health of First Nations peoples. These determinants can be thought of as a tree, with each part of the tree depending on the other parts for sustenance and support, and the environment nourishing and sometimes damaging it.

Social determinants of Indigenous health, such as colonialism, racism and social exclusion, have a profound effect on community, family and individual health. These determinants are responsible for the social inequities and resulting health inequities that exist between First Nations peoples and the general Ontario population. Intergenerational trauma and a lack of trust in the Western healthcare system also contribute to poorer health in First Nations peoples compared to the general population.¹⁴

First Nations have nonetheless shown an ability to survive—even to thrive—in the face of overwhelming challenges, such as government policies that have altered their ways of life and have had profound impacts for generations. Personal, familial and community resilience, restoring and promoting Indigenous identity, keeping cultures and languages alive, and self-governance have had positive impacts on the health and well-being of First Nations peoples.⁵⁷

While there is an undeniable need to address the broader social determinants of Indigenous health to effectively reduce the risk of chronic disease, this report focuses mainly on specific factors (behaviours, exposures, genes, etc.)—for which there is sufficient evidence of a role in modifying one's risk of developing cancer.

Overview of cancer risk factors

There are a number of factors that can play a role in the risk of developing cancer (Table 1). Cancer risk factors that can be controlled include certain infections, chemicals or other substances, and behaviours. There are also risk factors that people cannot control, such as age and having a family history of cancer.

Although it is important to be aware of risk factors that cannot be altered, the main focus of this report is the impact of risk factors that can be altered or managed (exposure to infections, the environment and behavioural risk factors).



TABLE 1: Select risk factors associated with cancer

Risk factor domain	Description	Associated cancers
Lifestyle		
Commercial tobacco use	Cigarette smoking, second-hand smoke exposure, smokeless tobacco	Mouth and throat ¹ , stomach, colorectal, liver, pancreas, lung, cervix, ovary, kidney, bladder, leukemia
Alcoholic drinks	Alcoholic beverage consumption	Mouth and throat ¹ , colorectal, liver, female breast (post-menopausal)
Unhealthy diet	High red meat, high processed meat, high salt and salty/salted foods, low dietary fibre, low vegetables and fruit intake	Colorectal
Bodyweight	Overweight or obese	Esophagus, colorectal, liver, gallbladder, pancreas, uterus (endometrium), female breast (post-menopausal), kidney
Physical inactivity	Low levels of physical activity and sedentary behaviour (prolonged periods of sitting or lying down e.g. while watching television, using a computer)	Colon
Environment		
Ultraviolet (UV) radiation	Exposure to the sun without adequate sun safety practices, using tanning beds or lamps	Skin cancer (including melanoma)
Radon	Exposure to radon gas that can seep up through the ground and into homes or other buildings through cracks in floors, walls or foundations. The basement and first floor have highest levels of radon	Lung
Air pollution	From motor vehicles, industrial facilities (smelters), power plants, residential fireplaces and wood stoves, agriculture burning and forest fires	Lung

Risk factor domain	Description	Associated cancers
Other		
Reproductive and hormonal	Getting menstrual period at younger age and/or reaching natural menopause at an older age	Breast, uterus
	Giving birth	Breast (protective), cervix, uterus (protective)
	Giving birth to first child at an older age	Breast, cervix (protective), uterus
	Breastfeeding	Breast (protective)
	Using birth control pills	Cervix, uterus (protective)
	Hormone replacement therapy	Uterus
Infections	Human papillomavirus (HPV)	Oral cavity and pharynx, cervix, other genital
	Hepatitis B virus	Liver
	Hepatitis C virus	Liver, non-Hodgkin lymphoma
	Epstein-Barr virus	Pharynx, non-Hodgkin lymphoma, Hodgkin lymphoma
	<i>Helicobacter.pylori</i> bacteria (<i>H.pylori</i>)	Stomach, non-Hodgkin lymphoma
Family history/genetics	Typically a close blood relative (e.g. mother, father, sibling) with the cancer or specific genes/genetic syndromes (e.g., BRCA1 and BRCA2 for breast and ovarian cancer; HNPCC/Lynch syndrome for colorectal cancer; retinoblastoma gene for childhood eye cancer.)	Various
Medical conditions and treatments	Examples include:	
	Getting radiation for diagnosis or treatment (e.g. x-rays)	Brain, esophagus, lung, thyroid, kidney, bladder, breast, bone and joint, leukemia
	Diabetes	Colorectal, liver, pancreas, bladder, uterus (endometrium), breast

Notes: ¹Includes cancers of the oral cavity and pharynx, esophagus and larynx

²Protective factors reduce the risk of the particular cancer

Source: Cancer Care Ontario. Cancer Risk Factors in Ontario: Evidence Summary. Toronto, Canada, 2013.

Overview of infections

Some infections can increase the risk of certain cancers. Some of these cancers can be prevented by vaccinating people against the infections that cause them. Having the human papillomavirus (HPV) vaccine protects against the main types of HPV that can cause a number of different kinds of cancer (e.g., cervix, penis, anus, vulva, vagina, oral cavity and pharynx) and genital warts.⁵⁴ In Ontario, the HPV vaccine is offered through school-based programs free of charge to all boys and girls in Grade 7.⁴⁷ On reserves, the First Nations and Inuit Health Branch is responsible for providing the HPV vaccine. Ensuring equal access to HPV vaccination for adolescents across the province should be considered a priority.

The hepatitis B virus vaccine can reduce the risk of some digestive cancers. Since 1994, Ontario has recommended a two-dose hepatitis B virus vaccine for children in Grade 7.⁵⁸ Other infections that may increase the risk of certain cancers include *H.pylori* and hepatitis C virus (blood and digestive cancers). Infections with *H.pylori* and hepatitis C have been found to be more common among First Nations people in Ontario than in the rest of the population.^{52,59} Human immunodeficiency virus (HIV) can also increase the risk of cancer because it reduces the ability of the immune system to fight off other cancer-causing infections.⁵⁴ Finding and treating infections early can prevent cancers caused by them and can limit or decrease the spread of infection from person to person.

Overview of environment

Environmental factors can also have an impact on the risk of developing cancer, including the food, indoor and outdoor air, soil and type of workplace. Certain elements found in the environment are known to be associated with cancer, such as coming into contact with ultraviolet (UV) rays from the sun and radon. To prevent environmental cancers, it is important to understand how these elements in the environment can cause cancer. For example, when being physically active outdoors, UV rays from the sun can play a role in the risk of developing cancer. When outside in the sun, it is important to practice sun protection behaviours: staying in the shade, and wearing long-sleeved shirts, long pants, hats, sun screen and sunglasses. For additional information on sun protection behaviours, please read Health Canada's list of sun safety tips. Avoiding sunburns, sunbathing, and tanning beds and lamps can also reduce the risk of melanoma (a type of skin cancer).

Overview of behavioural risk factors

According to the *World Health Report 2010*⁶¹, the major risk factors for chronic disease include:

- Commercial tobacco use;
- Alcohol use;
- Raised blood pressure (or hypertension);
- Physical inactivity;
- Raised cholesterol;
- Overweight/obesity;
- Unhealthy diet; and
- Raised blood glucose.

For cancer and other chronic diseases, key common behavioural risk factors are:

- Commercial tobacco use;
- Alcohol use;
- Unhealthy diet;
- Physical inactivity and sedentary behaviour; and
- Obesity, which can be impacted by unhealthy diet and inactivity.

However, for some cancers, behavioural risk factors or actions that someone can take to reduce their cancer risk are not well-known. Having regular check-ups with a healthcare provider, following appropriate cancer screening guidelines and letting them know about any symptoms can be an important way of finding cancer earlier when it is easier to treat.

Behavioural risk factors are lifestyle behaviours that someone is usually able to change or control. Some common behavioural risk factors for cancer and chronic diseases are commercial tobacco use, alcohol, unhealthy diet, physical inactivity and obesity. Most early deaths are linked to these common behavioural risk factors. Focusing on changing behavioural risk factors will have the biggest impact on lowering cancer incidence (new cases).

Cancer Care Ontario's report, *Path to Prevention—Recommendations for Reducing Chronic Disease in First Nations, Inuit and Métis*, provides recommendations for strategies, policies and initiatives needed to address the many health challenges and high burden of chronic diseases faced by First Nations, Inuit and Métis communities. The goal of the report is to help create supportive and healthier environments that empower First Nations, Inuit and Métis peoples of Ontario by building on the strengths of individuals, families, communities and organizations. The 22 recommendations put forward to the government in Path to Prevention were developed through extensive engagement with First Nations, Inuit and Métis peoples, and then validated and reviewed to ensure that the recommendations accurately reflected the communities' priorities.¹⁹ These recommendations were supported by the All Chiefs in Assembly in June 2016 through resolution 31/16. There are several recommendations under each of the four behavioural risk factors, along with examples of First Nations-specific initiatives that could help to address the risk factors.

Examples of these initiatives include:

- The **Aboriginal Tobacco Program (ATP)** is a key prevention initiative offered by Cancer Care Ontario that works closely with communities to respectfully address commercial tobacco use through smoking cessation and prevention programs for adults, and youth-based Ultimate Frisbee workshops. Programming is designed to increase knowledge, build capacity and empower communities with the skills and tools needed to address commercial tobacco cessation, prevention and protection. The initiative works in alignment with Smoke-Free Ontario objectives, while respecting the role of traditional tobacco, and collaborates with other organizations working in commercial tobacco prevention and cessation (such as Smoker's Helpline, Centre for Addiction and Mental Health and Right to Play). More information about the Aboriginal Tobacco Program can be found at www.tobaccowise.com.
- In collaboration with **ReachUp Ultimate**, the Aboriginal Tobacco Program provides culturally appropriate workshops to address smoking cessation and provides an opportunity for youth to learn the sport of Ultimate Frisbee. More information can be found at www.reachup.ca.
- In collaboration with the **Ontario National Native Alcohol and Drug Abuse Program (NNADAP)**, workers provide holistic workshops that incorporate alcohol, and other health and wellness programming to communities upon request. Early engagement has begun with partners and traditional Knowledge Keepers, Healers and Elders to address the misuse and the root causes of alcohol and alcohol addiction in communities.⁶¹
- Nishnawbe Aski Nation (NAN) has worked to address the food security in its communities through the **NAN Food Strategy**. The strategy focuses on food sovereignty across communities to enhance quality of life through access to food that is safe, nutritious, culturally appropriate and affordable at all times. There is also work being done with the Ontario Public Health Association and First Nations partners involved in the Ontario Food and Nutrition Strategy to look at opportunities for improving food security.⁶²
- The Ontario government announced new funding for the Aboriginal Sport and Wellness Council of Ontario's Sport Pathway for **Ontario Native Wellness program**. The funding supports the participation of Indigenous youth in competitive sports, which included the 2017 North American Indigenous Games held in the Greater Toronto Hamilton Area. The government also confirmed continued funding for the Community Aboriginal Recreation Activator program, which facilitates delivery of recreational programming in 27 First Nations communities.⁶³

Iakohentiio's story

"Participating at the North American Indigenous Games (NAIG) has single handedly been some of the most memorable experiences in my 16 years of life. I have been lucky enough to partake in two of games. My first time was 2014 in Regina, Saskatchewan for U14 basketball and most recently in 2017 in Hamilton, Ontario for U16 soccer. Both times I have attended NAIG my team placed with a medal: in 2014 my basketball team received a silver medal and in 2017 my soccer team received a bronze medal.

Ever since my first time attending the games in 2014 I look forward to participating in the next NAIG and other events that are affiliated with NAIG. As a young Indigenous athlete, the North American Indigenous Games is a tremendous opportunity. The environment of the game is extremely positive and inclusive. The games does a perfect job of promoting the importance of sports to Indigenous

athletes, as well as supporting Indigenous youth who participate in sports. It also acknowledges the significance of tradition and culture within the Indigenous community and works to bring together different people across North America. The positive atmosphere of the games makes it extremely easy to make friends, whether they be from a different province/states or a different area of your own province.

The games is a great competition for Native American youth because it displays the importance of representation in athletics. For some people it might be their first time with other Indigenous athletes or it may be someone's first time playing competitive sports.

I am fortunate enough to have been able to participate in two of the games and I intend to continue to participate in as many as I can."

Cancer screening

Our report shows that First Nations people have poorer cancer survival—in particular for lung (male), breast, prostate, cervical cancer—than other people in Ontario. Previous research has shown that First Nations women are often diagnosed with breast cancer at a later stage and have pre-existing chronic conditions (e.g., diabetes). These challenges may partially explain the poorer survival in First Nations people.

Having regular check-ups with a healthcare provider can help find a disease early, when it is easier to treat. Cancer screening is an example of how finding cancer at an earlier stage can reduce deaths due to cancer and improve chances of survival. Cancer screening is testing done to find cells that could become cancer if left untreated or cancer at an early stage when there is a better chance of successful treatment.

Cancer Care Ontario coordinates organized, province-wide screening for colorectal, breast and cervical cancers. Organized screening involves activities such as sending letters to eligible Ontarians inviting or reminding them to get screened. Screening is only effective if people participate regularly and get the right follow-up care.

Cancer Care Ontario's Organized Screening Programs



Colorectal Cancer

People ages 50 to 74 without a family history of colon cancer are considered to be at average risk. ColonCancerCheck recommends that individuals at average risk of colon cancer get checked every two years with the safe and painless take-home test, the guaiac fecal occult blood test (gFOBT). The ColonCancerCheck program is planning to replace the gFOBT with the fecal immunochemical test (FIT) for people at average risk of getting colon cancer.

People with a family history of colon cancer (a parent, brother, sister or child who has been diagnosed with the disease) are considered to be at increased risk and should get checked with colonoscopy. Screening should begin at 50 years of age, or 10 years earlier than the age their relative was diagnosed, whichever occurs first.



Cervical Cancer

The Ontario Cervical Screening Program recommends that women ages 21 to 69 get screened for cervical cancer every three years if they are or have ever been sexually active. A woman can stop screening at age 70 if she has been regularly screened and has had three or more normal tests in the previous 10 years.



Breast Cancer

The OBSP provides high-quality breast cancer screening throughout Ontario to two groups of women, and recommends that:

- most women ages 50 to 74 be screened every two years with mammography; and
- women ages 30 to 69 who are confirmed to be at high risk of getting breast cancer be screened once a year with a mammogram and breast magnetic resonance imaging (MRI) (or, if MRI is not medically appropriate, screening breast ultrasound).

The cancer incidence (new cases) patterns in this report are from the past (1991 to 2010), but they show that cervical cancer incidence was decreasing more quickly in First Nations females than in other females in Ontario. Regular Pap testing in First Nations communities is an important way to ensure that cervical cancer incidence continues to go down and cervical cancer survival improves. A previous report, *Cancer in First Nations in Ontario: Risk Factors and Screening*, found that a similar proportion of screen-eligible First Nations women (living on- and off-reserve) and other women in Ontario had had a Pap test in the past three years from 2007 to 2013²⁹. First Nations women living on-reserve were significantly less likely to have had a mammogram for breast cancer in the last five years than non-Aboriginal women. Almost half of age-eligible First Nations adults living off-reserve in Ontario (42 percent) were overdue for colorectal cancer screening (i.e., had not been screened on time)²⁹. Improving breast and colorectal cancer screening rates among First Nations people should be a priority in Ontario because compared to other people in Ontario, First Nations females have an increasing incidence of breast cancer and First Nations people of both sexes have a higher incidence of colorectal cancer.

Access to cancer screening and health services in First Nations communities—especially for people in northern isolated regions—remains an ongoing challenge. Several research studies, such as the Wequedong Lodge Cancer Screening Research Project, are looking into the barriers to cancer screening in the First Nations population.

Mobile screening coach

Building on longstanding mobile breast screening services in northwestern Ontario, Cancer Care Ontario launched two mobile screening coach buses in partnership with the Ministry of Health and Long-Term Care, and the North West and Hamilton Niagara Haldimand Brant Regional Cancer Programs in 2013 to make cancer screening services more accessible and convenient. Each coach offers breast, cervical and colorectal cancer screening. To check if the mobile coach is coming to your community, please visit the website <https://www.cancercareontario.ca/en/find-cancer-services>.

Lung Cancer Screening Pilot for People at High Risk

To help plan for a province-wide organized lung cancer screening program, Cancer Care Ontario will screen people for lung cancer in just a few places instead of everywhere in Ontario. This is called a pilot. Lung cancer is often diagnosed at an advanced stage, when treatment options are limited. Screening with a test called low-dose computed tomography (low-dose CT) can detect lung cancer when it may be smaller and easier to treat. The pilot provides navigation support to participants throughout their screening experience and provides services to help quit smoking. Lung cancer screening may be helpful for First Nations people who are at high risk of getting lung cancer because the incidence of this disease is higher in the First Nations population than in other people in Ontario. First Nations males also have poorer survival for lung cancer than other males in Ontario, with only 10 percent of those diagnosed still living after five years.

The lung cancer screening pilot sites are based out of the following hospitals in Ontario: The Ottawa Hospital, Renfrew Victoria Hospital, Health Sciences North in Sudbury and Lakeridge Health in Oshawa. The pilot

sites are working closely with neighbouring First Nations communities to increase awareness of and appropriate participation in the Lung Cancer Screening Pilot for People at High Risk.

Wequedong Lodge Cancer Screening Research Project

Cancer Care Ontario has partnered with Wequedong Lodge of Thunder Bay and Sunnybrook Research Institute on a community-based research project that explores barriers to and facilitators of cancer screening participation among First Nations community members in northwestern Ontario. The research team conducted in-depth interviews with 29 First Nations community members from 19 different communities, nine community health workers from six different communities, and 10 doctors and nurses who service northwestern Ontario First Nations communities.

Analysis of this interview data revealed several barriers to cancer screening participation among First Nations community members. For example, limited awareness of cancer screening and a lack of culturally relevant screening education resources were important barriers to getting screened. Multiple negative experiences with healthcare providers and the healthcare system, including discrimination and poor communication, meant that community members often did not trust providers and did not want to participate in screening. The intimate nature of the cancer screening tests intensified these challenges. High healthcare provider turnover in communities and a lack of integration among

different health service provider organizations in the region made it hard for healthcare providers to track screening participation and effectively support community members with cancer screening. Because several of the First Nations communities in northwestern Ontario are in rural or remote settings, many First Nations community members had trouble accessing cancer screening services and travelling to larger health centres (particularly for mammography and colonoscopy).

The full report from this Canadian Institutes of Health Research-funded study will be released in late 2018 and will more fully explore barriers that interfere with cancer screening participation among First Nations community members, as well as a number of targeted solutions that could improve access to culturally safe cancer screening services. Findings from the Wequedong Lodge Cancer Screening Research Project will contribute to a provincial knowledge translation strategy and action plan that is in development. The provincial strategy will make recommendations that aim to improve cancer screening participation among First Nations, Métis and Inuit communities in Ontario.

Supports for people living with cancer

If there are more new cases of cancer being diagnosed (incidence) and people are living longer after their cancer diagnosis (survival), there may be more people living with cancer at any given time (prevalence). A 10-year cancer prevalence period can include people whose cancers are at different stages, from newly diagnosed and seeking treatment to long-term survivors. It is important to understand the needs of people living with cancer to provide them with the best care and support.

Aboriginal Relationship and Cultural Competency courses, which are online e-learning courses, provide information on First Nations, Inuit and Métis history and culture, and the health landscape to improve health and person-centred care.

The healthcare system needs to provide culturally sensitive support that encompasses health and wellness, and is balanced across the four dimensions of health (physical, mental, emotional and spiritual) throughout someone's cancer experience. There are many barriers to accessing culturally appropriate care in Ontario, such as a lack of understanding from Western medical practitioners regarding the need for support across these four health dimensions. To improve the cancer experience and quality of life, it is important for people with cancer and healthcare professionals to build strong partnerships—this approach is called “person-centred care.”

Once a diagnosis of cancer is made, First Nations people in Ontario have access to an Aboriginal Navigator. There are 10 Aboriginal Navigators across the province. They are professionals who provide culturally appropriate support to First Nations, Inuit and Métis people and their families along every step of their cancer experience. Navigators help facilitate and coordinate access to cancer services and resources, and work to advocate for and address the cultural and spiritual needs of people with cancer and their families. They can help provide a better understanding of the health and treatment programs offered, and can help people with cancer cope emotionally, psychologically and physically. Aboriginal Navigators can also help to facilitate shared decision-making, which is a collaborative process that allows healthcare professionals and people with cancer to effectively make health decisions together, and is essential for informed consent and person-centred care. Creating culturally safe spaces where First Nations people are empowered to make decisions along with their healthcare providers will ensure that they get better care. Shared-decision making could be in the form of a dialogue between a healthcare provider and their patient to discuss treatment options, concerns or traditional medicine.

When considering treatment and support options, it is important for healthcare providers to make First Nations patients aware that traditional cultural options are available. The Aboriginal Navigator can facilitate these options by providing resources for and connections to First Nations traditional supports in the area. These options should also be easily available for family members who are part of someone's support network.

For some people with advanced cancer, the main treatment is to reduce pain and improve quality of life—this is referred to as palliative care. Palliative care is not a common term in First Nations communities, but it emphasizes the importance of keeping someone with cancer and their family comfortable. To provide culturally appropriate care, it is essential to include the feelings and wishes of the person being treated for cancer in the design and delivery of their care.

Aboriginal Relationship and Cultural Competency courses, which are online e-learning courses, provide information on First Nations, Inuit and Métis history and culture, and the health landscape to improve health and person-centred care.

Cancer survivor story: Robert Lambert

"This is my story and I hope it helps people to understand what it is like to have had pancreatic cancer.

I can easily say that I visited the hospital 81 times—each time was scarier than the last one. I had no idea that I was even sick. I first experienced excruciating upper abdomen pain that forced me to go to the emergency room in August of 2015. The pain was so horrible it was intolerable and my body was wracked with pain. Symptoms included high blood pressure, high temperature, somewhat yellow in my eyes and the hospital staff suspected it might be my liver. The emergency room staff did a series of blood work. I came to the hospital it seemed like every week for about seven weeks in this unbearable pain and the hospital admitted me for about six days each time. The unknown is very scary and for one of the first times in my life, I felt all alone. They scheduled me for several tests, which included MRI, CAT scan, ultrasounds, full blood testing—it was a lot of testing and a lot of waiting. I am thankful the staff worked really hard to try to figure out what was wrong with me. I was anxious because I did not know what was wrong with me or when I would have another attack. One of these tests—I cannot remember which one because there were so many—revealed that I had a tumour about 5 to 7 cm at the tail end of my pancreas.

Once they discovered the tumour, the surgeons wasted no time in scheduling me for an operation. The doctors felt I was strong enough to go through the surgery because I had enjoyed good health up until this point, with a strong heart and healthy lungs. I was told the surgery to remove the 5 to 7 cm tumour would take about four hours. When I woke up on July 12, 2016, I was told they had to remove my spleen, lymph nodes and gall bladder, which took 10 hours. All said and done, I was very lucky my body healed quickly and I was home after five days. Before I got sick I was employed. Now I was not able to provide for myself so my son came and got me, and I moved to Harrow. I brought my medical files with me to Windsor Regional Cancer Centre.

I was fortunate because my son was a nurse and he monitored my blood pressure and body temperature. Since moving to Windsor, I still experienced pancreatic episodes that included reoccurring pain—not the same as before but equally unbearable. I had issues with swelling of my liver. The team at the Windsor Regional Cancer Centre was quick to provide support with antibiotics, pain medication and a controlled diet. I was already on a limited diet at this point.

I started my chemotherapy at the Windsor Regional Cancer Program on October 3, 2016. I had a port inserted under my skin that enabled me to carry around a chemo pump in something like a fanny pack during my five weeks of radiation. During this time, I was supported by the Erie St. Clair Regional Cancer Program team, including their Aboriginal Navigator who spent a lot of one-on-one time with me, which was very comforting. So I did both radiation and chemo together and completed everything in March 2017.

My message to everyone would be to follow all the directions given to you by your healthcare providers to make sure you increase your chances of getting better quicker. If you think something is wrong, be persistent in making sure that all the correct tests are being done. Only you can look after you for a better, more positive outcome.

Now, I am considered cancer free and look forward to rebuilding my life! I am building my strength back, I have a part time job and actively umpiring little league games!"

People with cancer and their families can access online resources, including brochures, articles, guiding documents and videos, to empower them during palliative care. The following are a few examples of these resources:

- Cancer Care Ontario has developed a culturally relevant end-of-life and palliative care resource, called **Tools for the Journey**, to help support people with cancer and their families or community members through this difficult time. This toolkit provides information on understanding a diagnosis, what to expect during treatment, how caregivers can get support for grief and loss, and tips on effectively communicating with healthcare providers. For more information visit cancercareontario.ca/en/resources-first-nations-inuit-metis
- The Sioux Lookout Meno Ya Win Health Centre in northwestern Ontario focuses on **integrating traditional and Western medicines** and practices along with recognizing and respecting the cultural diversity of the people it serves. The health centre has a dedicated palliative care area within the William “Bill” George extended care facility.
- In addition to the health centre, **Keewaytinook Okimakanak Telemedicine (KOTM)** serves communities in the Sioux Lookout Zone. KOTM is a First Nations Telemedicine Program that is holistic, community driven and culturally appropriate. It delivers clinical, educational and administrative services via videoconferencing and advanced information communication technologies.
- The **Canadian Virtual Hospice (CVH)** is a central hub that provides various resources for people who are in palliative care and their families. There are videos with messages from Elders to help families

deal with end-of-life care for loved ones. They share their experiences and beliefs about death and dying. It contains comforting words for families to help with the healing process in their time of need. There is also a video specifically designed with youth in mind that tells stories of bereaved youth and provides traditional responses from Elders. CVH also provides information about palliative care coverage through Non-Insured Health Benefits (NIHB).

Education

Education plays a large role in influencing the social determinants of health and throughout the cancer experience, as well as in reducing chronic disease. Factors such as education, income, housing and work status were significantly associated with the differences in early death among registered First Nations.⁶⁴

Although education can improve health, there are many barriers to accessing education and educational resources on health for First Nations people. Access, availability and acceptability of chronic disease prevention services also play a role in equity. Geographic factors limit access to and availability of health services, including health education, for First Nations populations living in rural and remote areas. In the cancer system, diagnosis and treatment options are often only located in a central geographic area, which means that many First Nations people have to travel far distances to access cancer services. If a First Nations person is travelling from a remote, fly-in only community, they may not be familiar with the city or speak the local language, in addition to not knowing how to navigate the complex healthcare system.⁶⁵

Given the importance of education in addressing health equity and access to educational resources for

improved health, it is important that First Nations people receive culturally appropriate educational resources for all stages of the cancer experience. Cancer Care Ontario has developed a suite of educational resources to help address the fear of cancer and provide information on prevention, screening, treatment and palliative care visit cancercareontario.ca/FNIMresources:

- **“Silent Enemy”, a cancer comic book**, provides education and awareness around cancer prevention for First Nations, Inuit and Métis youth.
- **Cancer 101** fact sheets and flash cards provide basic information on prevention topics, including behavioural risk factors, the environment and cancer screening.
- First Nations **cancer screening fact sheets** provide information on the three provincial cancer screening programs: the Ontario Breast Screening Program, the Ontario Cervical Screening Program and ColonCancerCheck.
- The **cancer screening toolkit** is designed to provide easily accessible information to community members using visual aids and a limited amount of text. It also gives healthcare providers more detailed information about the subject matter of the visual aids.
- The **First Nations cancer 101 whiteboard video** provides culturally appropriate cancer information and answers to many common questions about cancer. Visit <https://youtu.be/AY5WXWpnFj0>.
- The **Tools for the Journey** toolkit provides information for First Nations, Inuit and Métis families and community members involved in palliative and end-of-life care.

- **Aboriginal Relationship and Cultural Competency courses**, which are online e-learning courses, provide information on First Nations, Inuit and Métis history and culture, and the health landscape to improve health and person-centred care.
- **“How we measure cancer”** is a series of videos that helps First Nations planners, policy-makers and healthcare staff reading cancer reports understand what cancer statistics mean, and how to use them in health planning and priority-setting. Visit cancercare.on.ca/measuringcancerFNIM
- **Aboriginal Navigators** can provide access to educational resources, as well as advocate for First Nations people in the cancer system and support them throughout their cancer experience.

Through effective education, First Nations communities can gain the ability to take actions to improve their health, as well as gain a better understanding of chronic disease prevention, potential cancer symptoms, access to culturally appropriate palliative care, and the implications of surveillance and research data used for policy and program development.

Regional engagement

The Aboriginal Cancer Control Unit at Cancer Care Ontario has developed Relationship Protocols in partnership with First Nations leadership. These documents formalize sustainable relationships with First Nations partners through mutual respect, recognition and understanding. They highlight Cancer Care Ontario’s commitment to establishing a strong foundation necessary to achieve common goals and objectives towards the delivery of cancer services with First Nations peoples across the province.

In this spirit, the Aboriginal Cancer Control Unit has also been working closely with Regional Cancer Programs to build regional capacity supporting engagement with local First Nations, communities and organizations. Together, the Aboriginal Cancer Control Unit and the Regional Cancer Programs—in collaboration with local First Nations communities and organizations—are seeking to develop and implement initiatives that will address the unique cancer control issues and needs of First Nations people living within each region. These initiatives are detailed within Regional Aboriginal Cancer Plans, which are currently being developed collaboratively with the 13 Regional Cancer Programs. Regional Aboriginal Cancer Plans are regional blueprints for the implementation of Cancer Care Ontario’s Aboriginal Cancer Strategy III. They have been developed through close partnerships with First Nations Core Health Tables and Regional Cancer Program leadership with the goal of ensuring that First Nations people have a voice in the delivery of cancer services.

Summary

Addressing the social determinants of Indigenous health is necessary for significant and lasting health improvements. Initiatives that consider cultural differences, including public health policy and community programming, can help reduce the prevalence of behavioural cancer risk factors. Our findings call for the development of culturally tailored or community-led cancer prevention programs that emphasize the key behavioural risk factors for cancer: commercial tobacco, alcohol, unhealthy diet and physical inactivity. Efforts to reduce these risk factors among First Nations people will improve not only the incidence of cancer, but also the incidence of other

chronic diseases, including heart and respiratory diseases, and diabetes.

Given the increasing incidence of breast and colorectal cancer and poorer survival from breast, colorectal and cervical cancer in First Nations people compared to other people in Ontario, our findings call for actions to improve access to, education of and awareness of Ontario’s cancer screening programs and services. The ultimate goal is to increase participation in cancer screening and follow-up of abnormal test results.

More data and research are needed to understand the effectiveness of Ontario’s organized cancer screening programs for breast, colorectal and cervical cancer for the First Nations population in Ontario. More data is also needed to understand the reasons for the apparent differences in cancer rates between First Nations people and other people in Ontario.

While this report presents patterns of cancer statistics and important information for cancer control planning and priority-setting, it can also be used as a starting point for asking research questions. Communities should continue to build their research capacity and create research questions that are meaningful to them—questions that will help develop the best approaches for cancer prevention, surveillance, screening, access to care, diagnosis, treatment and palliative care services.

Cancer caregiver story: Velva Woodstock

My late husband was diagnosed with stage 4 lung cancer in October 2011. I was very angry as I only had two months to prepare for his leaving me forever. We were in love since we were nine years old, and had been married forty six years. He was 63 when he passed.

Our family doctor of 25 years had told him the last x-ray she had done of his chest before she retired looked like a spot on his one lung and for his new doctor to keep an eye on it.

He never found a new doctor as there was a shortage in our city. He went to the clinic the few times he was ill. The clinic doctor referred him to a urologist as he was having problems and was incontinent. The urologist operated on his penis (circumcision).

He finally found a family doctor that started treating him for vitamin B deficiency. The doctor had the family history stating his mother and all her siblings had all died from some form of cancer. My husband suffered with a bad back for years and had surgery to remove spurs. So when he started getting a lot of pain in his back he attributed the pain being caused by his bad back.

In 2010 I had noticed my husband falling asleep as soon as he sat in his recliner several times throughout the day. My husband made an appointment to see his doctor and tell him of his symptoms. I had also noticed about 8 black spots on my husbands back. I asked the doctor what they were he looked at the

spots and said they're nothing. My husband passed not knowing all the symptoms he had the past 4 years were related to cancer.

I wasn't ready to deal with talking about cancer and I was ready to walk out of the first meeting we had with Mat talking about the different types of cancer. We also had a very kind doctor attend a few of our meetings to answer any questions we had. I really started to look forward to the meetings and when the tour for the cancer centre came up, I thought this is great...

Our group was off to Kingston General Hospital. We met with the kind doctor Mat and an aboriginal woman whom had been at a few of our meetings also. Sorry I have trouble remembering names. The tour was great; we talked to the doctor who ran the radiation unit. We asked several questions and we were shown the different equipment and what it was for.

I am so grateful to have had the opportunity to learn all this information about cancer, I walked away with a lighter heart and understanding of the treatment. My husband had me write on the brown paper posted in the cancer unit while it was under construction in the basement, he thanked all the doctors involved for their kindness and compassion involved in his treatment. And for that I am very thankful to all involved in his treatment and this program.



References

1. Government of Canada. The Constitution Act, 1982, c. 11 (U.K.), Part II: Rights of the Aboriginal Peoples of Canada (Section 35). Ottawa 1982.
2. Aboriginal A, Northern Development C. Registered Indian Population by Sex and Residence 2011. Her Majesty the Queen in Right of Canada, represented by the Minister of Aboriginal Affairs and Northern Development; 2012. Contract No.: Report.
3. Royal Commission on Aboriginal P. Report of the Royal Commission on Aboriginal Peoples: Volume 3 Gathering Strength. Ottawa, ON, Canada: Canada Communication Group - Publishing; 1991. Contract No.: Report.
4. Berger TR. A Long and Terrible Shadow. White Values, Native Rights in the Americas Since 1492. Vancouver, ON, Canada: Douglas & McIntyre; 1991. 183 p.
5. Reading CL and Wien F. Health Inequalities and Social Determinants of Aboriginal Peoples' Health Prince George, BC: National Collaborating Centre for Aboriginal Health. ; 2009.
6. Syme SL. Social determinants of health: the community as an empowered partner. *Prev Chronic Dis*. 2004;1(1):A02.
7. Cancer Care O. Aboriginal Cancer Strategy III 2015-19: Together we will. Toronto, Canada; 2015. Contract No.: Report.
8. Tjepkema M, Wilkins R, Senécal S, Guimond É, Penney C. Mortality of Métis and registered Indian adults in Canada: an 11-year follow-up study. *Health Reports*. 2009;20(4):31-51.
9. Health C. First Nations and Inuit Health: Diseases and Health Conditions. Ottawa: Health Canada; 2014.
10. Chiefs of Ontario. First Nations Regional Health Survey (RHS) Phase 2 (2008/10) Ontario Region Final Report: Ontario Region Report on the Adult Youth and Children living in First Nations Communities. Toronto; 2012.
11. Allan B, Smylie J. First Peoples, second class treatment: The role of racism in the health and well-being of Indigenous peoples in Canada. Toronto, ON: the Wellesley Institute; 2015. Contract No.: Report.
12. Greenwood M, de Leeuw S, Lindsay NM, Reading C. Determinants of Indigenous Peoples' Health in Canada: Beyond the Social. Toronto: Canadian Scholars' Press; 2015.
13. Wilson K, Rosenberg MW. Exploring the determinants of health for First Nations peoples in Canada: can existing frameworks accommodate traditional activities? *Social science & medicine* (1982). 2002;55(11):2017-31.
14. Riecken T, Tanaka MT, Scott T. First Nations youth reframing the focus: Cultural knowledge as a site for health education. *Canadian Journal of Native Education*. 2006;29(1):29.
15. Chandler MJ, Lalonde CE, Sokol BW, Hallett D. Personal persistence, identity development, and suicide: a study of Native and Non-native North American adolescents. *Monographs of the Society for Research in Child Development*. 2003;68(2):vii-viii, 1-130; discussion 1-8.
16. Baydala L, Rasmussen C, Birch J, Sherman J, Wikman E, Charchun J, et al. Self-beliefs and behavioural development as related to academic achievement in Canadian Aboriginal Children. *Canadian Journal of School Psychology*. 2009;24(1):19-33.
17. McIvor O, Napoleon A. Language and culture as protective factors for at-risk communities. *International Journal of Indigenous Health*. 2009;5(1):6.
18. Cancer Care Ontario. Path to Prevention—Recommendations for Reducing Chronic Disease in First Nation, Inuit and Métis. Toronto: CCO; 2016.
19. Alfred T. Was se: Indigenous Pathways of Action and Freedom: University of Toronto Press; 2005.
20. Parkin DM, Boyd L, Walker LC. 16. The fraction of cancer attributable to lifestyle and environmental factors in the UK in 2010. *British journal of cancer*. 2011;105 Suppl 2:S77-81.
21. World Cancer Research Fund/American Institute for Cancer Research (AICR). Food, nutrition, physical activity and the prevention of cancer: A global perspective. Washington, DC: AICR; 2007.

22. Aboriginal Cancer Care Unit. Analysis of the Findings Aboriginal Cancer Care Needs Assessment "It's Our Responsibility"... Toronto, Canada: Cancer Care Ontario; 2002.
23. Canadian Partnership Against Cancer. First Nations Cancer Control in Canada Baseline Report. Toronto, Canada: Canadian Partnership Against Cancer; 2012.
24. Marrett LD, Chaudhry M. Cancer incidence and mortality in Ontario First Nations, 1968-1991 (Canada). *Cancer causes & control : CCC*. 2003;14(3):259-68.
25. Nishri ED, Sheppard AJ, Withrow DR, Marrett LD. Cancer survival among First Nations people of Ontario, Canada (1968-2007). *International journal of cancer Journal international du cancer*. 2015;136(3):639-45.
26. Sheppard AJ, Chiarelli AM, Marrett LD, Nishri ED, Trudeau ME. Stage at diagnosis and comorbidity influence breast cancer survival in First Nations women in Ontario, Canada. *Cancer epidemiology, biomarkers & prevention : a publication of the American Association for Cancer Research, cosponsored by the American Society of Preventive Oncology*. 2011;20(10):2160-7.
27. Cancer Care Ontario. Cancer Risk Factors in Ontario: Tobacco. Toronto, Canada; 2014.
28. Chiefs of Ontario, Cancer Care Ontario. Cancer in First Nations in Ontario: Risk Factors and Screening. Toronto, ON; 2016.
29. Canadian Cancer Society. Second-hand smoke Toronto, Canada: Canadian Cancer Society; 2017 [Available from: <http://www.cancer.ca/en/prevention-and-screening/live-well/smoking-and-tobacco/second-hand-smoke-is-dangerous/?region=on>].
30. Cancer Care Ontario and Ontario Agency for Health Protection and Promotion (Public Health Ontario). Environmental Burden of Cancer in Ontario. Toronto, Canada: Queen's Printer for Ontario; 2016.
31. International Agency for Research on C. IARC monographs on the evaluation of carcinogenic risks to humans. Volume 100E. A review of human carcinogens. Part E: Personal habits and indoor combustions. Lyon, France: International Agency for Research on Cancer; 2012. Contract No.: Report.
32. Lynch BM. Sedentary behaviour and cancer; a systematic review of the literature and proposed biological mechanisms. *Cancer epidemiology, biomarkers & prevention : a publication of the American Association for Cancer Research, cosponsored by the American Society of Preventive Oncology*. 2010;19(11):2691-709.
33. Cancer Care Ontario. Cancer Risk Factors in Ontario: Evidence Summary. Toronto, Canada; 2013. Contract No.: Report.
34. Dyck R, Osgood, N., Lin, TH., Gao, A., Stang, MR. Epidemiology of diabetes mellitus among First Nations and non-First Nations adults. *Canadian Medical Association Journal*. 2010;182(3):249-56.
35. Giovannucci E, Harlan, DM., Archer, MC., Bergenstal, RM., Gapstur, SM., Habel, LA., et al. Diabetes and cancer: a consensus report. *A Cancer Journal for Clinicians*. 2010;60(4):207-21.
36. World Cancer Research Fund / American Institute for Cancer R. Continuous update project. Colorectal cancer report 2010 summary. Food, nutrition, physical activity and the prevention of cancer. AICR; 2011.
37. Canadian Cancer Society's Advisory Committee on Cancer Statistics. Canadian Cancer Statistics 2015. Report. Toronto, ON: Canadian Cancer Society; 2015.
38. Reeves G, Pirie, K., Green, J., Bull, D., Beral, V. Reproductive factors and specific histological types of breast cancer: prospective study and meta-analysis. *British journal of cancer*. 2009;100(3):538-44.
39. Collaborative Group on Hormonal Factors in Breast Cancer. Breast cancer and hormonal contraceptives: collaborative reanalysis of individual data on 53,297 women with breast cancer and 100,239 women without breast cancer from 54 epidemiological studies. *Lancet* 1996;347(9018):1713-27.
40. Collaborative Group on Hormonal Factors in Breast Cancer. Breast cancer and hormone replacement therapy: collaborative reanalysis of data from 51 epidemiological studies of 52,705 women with breast cancer and 108,411 women without breast cancer. *Lancet* 1997;350(9084):1047-59.
41. Antoniou A, Pharoah PD, Narod S, Risch HA, Eyfjord JE, Hopper JL, et al. Average risks of breast and ovarian cancer associated with BRCA1 or BRCA2 mutations detected in case Series unselected for family history: a combined analysis of 22 studies. *American journal of human genetics*. 2003;72(5):1117-30.

42. Lindor N, McMaster ML, Lindor CJ, Greene MH. Concise handbook of familial cancer susceptibility syndromes-second edition. Journal of National Cancer Institute. 2008;38:1-39.
43. Nelson HD, Tyne K, Naik A, Bougatsos C, Chan B, Nygren P, et al. Screening for Breast Cancer: Systematic Evidence Review Update for the US Preventive Services Task Force. U.S. Preventive Services Task Force Evidence Syntheses, formerly Systematic Evidence Reviews. Rockville (MD)2009.
44. Chow W, Dong LM, Devesa SS. Epidemiology and risk factors for kidney cancer. Nature Reviews Urology. 2010;7(5):245-57.
45. Canadian Task Force on Preventive Health Recommendations on screening for cervical cancer. Canadian Medical Association journal. 2013;185(1):35-45.
46. Ontario Ministry of Health and Longterm Care. Ontario's HPV Immunization Program Toronto: Queen's Printer for Ontario; 2008 [updated 2017-03-02. Available from: <http://www.health.gov.on.ca/en/ms/hpv/>.
47. Lauby-Secretan B, Scoccianti C, Loomis D, Grosse Y, Bianchini F, Straif K. Body fatness and cancer - viewpoint of the IARC working group. The New England Journal of Medicine. 2016;375:794-8.
48. Coglian VJ, Baan R, Straif K, Grosse Y, Lauby-Secretan B, El Ghissassi F, et al. Preventable exposures associated with human cancers. J Natl Cancer Inst. 2011;103(24):1827-39.
49. Boffetta P, HS, Gray N., Gupta P., Straif K. Smokeless tobacco and cancer. Lancet Oncol. 2008;9(7):667-75.
50. Chuang SC, LY, Hashibe M., Dai M., Zheng T., Boffetta P. Interaction between cigarette smoking and hepatitis B and C virus infection on the risk of liver cancer: a meta-analysis. Cancer epidemiology, biomarkers & prevention : a publication of the American Association for Cancer Research, cosponsored by the American Society of Preventive Oncology. 2010;19(5):1261-8.
51. Ontario Agency for Health Protection and Promotion, Provincial Infectious Diseases Advisory Committee. Recommendations for the Public Health Response to Hepatitis C in Ontario. . Toronto, ON: Public Health Ontario; 2014.
52. Vigneri P, FF, Sciacca L., Pandini G., Vigneri R. Diabetes and cancer. Society of Endocrinology. 2009;16:1102-23.
53. Cancer Care Ontario. Burden of Cancer Caused by Infectious Diseases in Ontario. Toronto, ON: Cancer Care Ontario; 2018.
54. Naja F, Kreiger N, Sullivan T. Helicobacter pylori infection in Ontario: prevalence and risk factors. Can J Gastroenterol. 2007;21(8):501-6.
55. Blot WJ, McLaughlin JK, Winn DM, Austin DF, Greenberg RS, Preston-Martin S, et al. Smoking and drinking in relation to oral and pharyngeal cancer. Cancer research. 1988;48(11):3282-7.
56. Institute for Aboriginal Peoples' Health. Pathways to Health Equity for Aboriginal Peoples: Overview. Canadian Institutes of Health Research website. [cited 2015 Jul 7] Available from: <http://www.cihr-irsc.gc.ca/e/47003.html>.
57. MacDonald N. Moving towards a universal hepatitis B vaccine program for Canadian children. Can J Infect Dis. 1995;6(3):129-30.
58. Sethi A, Chaudhuri M, Kelly L, Hopman W. Prevalence of Helicobacter pylori in a First Nations population in northwestern Ontario. Canadian family physician Medecin de famille canadien. 2013;59(4):e182-7.
59. World Health Organization. Global status report on noncommunicable diseases 2010.[cited 2018 Mar 5] Available from: http://www.who.int/nmh/publications/ncd_report_full_en.pdf
60. First Nations and Inuit Health Branch. National Native Alcohol and Drug Abuse Program General Review 1998. Final Report. Ottawa: Health Canada; 1998.
61. Nishnawbe Aski Nation. Annual Report 2010-2011. Thunder Bay: Nishnawbe Aski Nation; 2011.
62. Ministry of Tourism, Culture and Sport. Supporting the next generation of Indigenous leaders: Ontario investing in sport and recreation opportunities for Indigenous youth [Internet]. Toronto: Queen's Printer for Ontario; 2017 [cited 2017 Nov 17]. Available from: <https://news.ontario.ca/mtc/en/2017/05/supporting-the-next-generation-ofindigenous-leaders.html>.
63. Oliver LN, Penney C, Peters PA. The influence of community well-being on mortality among Registered First Nations people. Statistics Canada Health Reports. 2016.
64. Kewayosh A, Marrett L, Aslam U, Steiner R, Moy Lum-Kwong M, Imre J, et al. Improving health equity for First Nations, Inuit and Métis people: Ontario's ACS II. Healthcare Quarterly. 2015;17:33-40

Glossary

Arsenic: A naturally occurring semi-metal that has been used commercially in pharmaceuticals, wood preservatives, agricultural chemicals and the mining industry. Environmental exposure occurs mainly through eating certain foods (e.g., rice and poultry) or drinking water containing arsenic.

Asbestos: A naturally occurring mineral used in a wide range of manufactured goods, including building materials (e.g., roofing and insulation), because of its strength and flexibility. People are exposed to asbestos fibres through breathing the air wherever building materials containing asbestos have deteriorated, or are disturbed or damaged.

Cancer incidence: The number of people who are newly diagnosed with cancer in a specific population over a set period of time. The higher the incidence rate in a population, the more common the disease.

Cancer mortality: The number of deaths in a population over a set period of time. Mortality is lower when fewer people are being diagnosed or when more people are living longer after a cancer diagnosis.

Cancer prevalence: The number of people living with a past diagnosis of cancer in a set time period. A high prevalence of any given cancer might be explained by a high incidence (i.e., the cancer is very common) and/or high survival (i.e., someone is more likely to live long after being diagnosed).

Cancer survival: The percentage of people still alive for a set time period after being diagnosed with cancer (usually five years). Survival improves when more cancers are caught early—before they spread to other parts of the body—and when there are improvements in cancer treatment that help people with cancer live longer.

Health inequality: a difference in health status or in the distribution of health determinants between different population groups.

Health inequity: a specific type of health inequality that leads to systematic, unfair and avoidable disadvantages in groups of people, produced by the social context in which we live, including our political and economic systems, culture and social values.

Hormone Replacement Therapy: A type of treatment for some symptoms of menopause (e.g., hot flashes) related to decreasing levels of estrogen in the body. For some women, taking hormones (estrogen) can relieve these uncomfortable symptoms.

Jaundice: medical condition where the skin and the whites of the eyes become a yellowish colour.

Lymphocyte: A white blood cell found in the lymph (fluid of the body). Lymphocytes are an important part of the immune system and help protect the body from illness due to infection. Cancers that grow from these white blood cells (lymphocytes) are called lymphoma.

Particulate air pollution: Small particles called that are less than 2.5 micrometers in diameter and are capable of being inhaled deeply into the lungs due to their small size. Sources of particulate air pollution include motor vehicles, industrial facilities (e.g., smelters), power plants, residential fireplaces and wood stoves, agricultural burning and forest fires.

Plasma cell: A type of white blood cell found in blood plasma (the liquid part of blood). Plasma cells are made in bone marrow and produce antibodies that protect the body from bacteria and viruses.

Radon: An invisible, odorless, tasteless gas that seeps up through the ground and diffuses into the air. Radon can enter homes through cracks in floors, wall or foundations, and collect indoors. Basement and first floors typically have the highest radon levels because of their closeness to the ground.

Record linkage: A process of connecting two or more data files together to combine different kinds of information about a population not available in any one file.

Second-hand smoke: Second-hand smoke (also called environmental tobacco smoke) is what smokers breathe out or unfiltered smoke that comes from the end of a burning cigarette, pipe or cigar. No amount of second-hand smoke is safe. People can breathe in second-hand smoke in public places or in what are considered more private spaces, such as in a home or in a car.

Appendix: Governance, Methods and Limitations

This section describes the strategy that was used to learn about and track cancer patterns in First Nations people, supported by a partnership between the Chiefs of Ontario (COO), the Institute for Clinical Evaluative Sciences (ICES) and Cancer Care Ontario.

It provides information on the data governance (including three Agreements that say how the data were accessed, stored, managed and used), methods for preparing the data and a timeline of key events dating back to the early 1990s.

Governance

Following the Chiefs in Assembly resolution 09/33, a Cancer Surveillance Working Group (“Working Group”) was established in 2010. The Working Group recognized the need for the Indian Registration System to identify First Nations people in the Ontario Cancer Registry. In 2011, COO, ICES and Cancer Care Ontario submitted a joint application for IRS data to Aboriginal Affairs and Northern Development Canada (AANDC) (now referred to as Indigenous and Northern Affairs Canada [INAC]).

Data Governance Agreement between COO and ICES

In 2012, a Data Governance Agreement was signed to govern the collection, creation, use and disclosure of First Nations Data—including the IRS—by ICES in a manner that respects the OCAP® principles.

Data Sharing Agreement between ICES and AANDC

In 2013, a Data Sharing Agreement was signed to transfer the IRS file to ICES. It authorized ICES to act as data steward for the IRS Data and to provide security of the personal information it contains.

As a “prescribed entity,” ICES implements the privacy policies and practices required by the Information and Privacy Commissioner (IPC) of Ontario under section 45 of the Personal Health Information Protection Act (PHIPA). Physical security measures, technological safeguards such as encryption, and a robust framework of policies and procedures work together to protect the information entrusted to ICES. Most notably, ICES prohibits identification of individuals and uses techniques such as coding and de-identification to prevent it. Direct personal identifiers, including names, health card numbers and other identifying numbers are removed and replaced by confidential codes promptly after they are collected. Moreover, the IRS data is a restricted data set and therefore not available for general use at ICES.

Data Sharing Agreement between COO, ICES and Cancer Care Ontario

In 2014, a Data Sharing Agreement was signed that authorized ICES to share an anonymous file (no personal identifiers) of linked data with Cancer Care Ontario to enable analysis of cancer rates and trends. The agreement set out the terms and conditions for the creation, use, access and disclosure of the First Nations Data.

Methods

Datasets used in this report

This report used data from the following three sources:

1. **Indian Registration System (IRS):** maintained by INAC (formerly AANDC), the IRS consists of a list of all First Nations people registered under the Indian Act (also known as registered or status First Nations), living on- and off-reserve. The eligibility criteria that someone must meet to be registered is set out in the Indian Act.
2. **Registered Persons Database (RPDB):** maintained by the Ministry of Health and Long-Term Care, the RPDB provides basic demographic information about anyone who has ever received an Ontario health card number.
3. **Ontario Cancer Registry (OCR):** maintained by Cancer Care Ontario, the OCR contains records of all cancers diagnosed, and all deaths due to cancer, in residents of Ontario. The OCR collects data from administrative databases, including pathology reports, Regional Cancer Centres (RCCs) and non-RCC hospital records, surgery and discharge records and death certificates. All activities—from initial registration of a new cancer case in the OCR, through to research and reporting—are governed by the Personal Health Information Protection Act (PHIPA).

How the data was assembled

There were three main steps used to create a group of people representing registered First Nations people in Ontario for whom cancer statistics are presented in this report.

1. **Linkage of IRS and RPDB:** The IRS file was first linked to the RPDB file at ICES. Combined, these two datasets reveal a group of people representing First Nations people in Ontario.
2. **Linkage of the IRS-RPDB file and OCR:** The file of First Nations people living in Ontario was then linked to an OCR file at ICES. Combined, these datasets reveal a group of people representing First Nations people in Ontario with a diagnosis of cancer in 1991–2010.
3. **Analysis of cancer rates:** Two anonymous files (i.e., with no personal identifiers) were sent from ICES to Cancer Care Ontario for analysis of cancer rates in First Nations people. Together, these two files enabled Cancer Care Ontario to develop the statistics about cancer in First Nations people that are presented in this report:
 - **File 1:** Anonymous file of First Nations people in Ontario to form the population
 - **File 2:** Anonymous file of First Nations people in Ontario with a diagnosis of cancer in 1991–2010 for information on the number of cancers and cancer deaths.

Analytic definitions and methods

First Nations people and other people in Ontario

Individuals were classified as ‘First Nations’ if they were registered under the Indian Act and lived in the province of Ontario between 1991 and 2010. All other persons living in the province of Ontario between 1991 and 2010 were classified as ‘others’.

Population health measures

Incidence was defined as the number of new cancer cases per 100,000 people per year.

Mortality was defined as the number of cancer deaths per 100,000 people per year.

Survival was defined as the percentage of people who survived five years or longer following a cancer diagnosis.

Prevalence was defined as number of people living with a previous cancer diagnosis as of January 1, 2011.

Age standardization

Age standardization is a statistical calculation that adjusts health measures to take population age differences into account. All estimates of incidence and mortality were age-standardized to the 1960 World Standard Population. All estimates of survival were age-standardized to the International Cancer Survival Standard. Differences in incidence, mortality or survival between the two populations are therefore not due to age differences.

Statistical significance of differences

In this report, the term significant is used to describe differences in incidence, mortality or survival between First Nations people and other people that achieved statistical significance at an alpha level of 0.05.

Time trends

The trend in incidence over time was analyzed using Joinpoint regression software. Statistical significance was determined if the trend (slope of the line) was significantly different from zero.

Limitations

The aim of the two record linkages was to capture information on all registered First Nations people in Ontario with a diagnosis of cancer; however, there are several limitations to the ability of these linkages to do so. The RPDB and OCR do not capture First Nations people that have had no contact with the Ontario health system. In addition, cancer services accessed outside Ontario are not included in the RPDB and OCR. However, if a cancer was diagnosed in the province of Manitoba for an individual with an Ontario Health Insurance Plan number, this cancer would be included.

A further limitation of this work is that the statistics do not go beyond the year 2010. Although these data are a little out of date, cancer patterns generally do not change dramatically year over year. These estimates provide a good basis for identifying priorities for prevention policies and programs.





Timeline

1991 – 1995	AOOC Resolution to accept the <i>New Beginnings: Planning Cancer Care for Aboriginal People</i> report	1999	AOCC resolution 15/01 — implement needs assessment in First Nations communities	2004	AOCC resolution 09/33 — direction for COO to work with Cancer Care Ontario to explore creating a First Nations cancer surveillance system	2010
First data of cancer in First Nations people in Ontario is created and shared with the First Nations groups	1997	Cancer Care Ontario invites all provincial First Nations, Inuit and Métis organizations to the table — JOACC created	2001	Five-year plan developed, outlining priorities for an Aboriginal Cancer Strategy, which includes priorities to create a First Nations cancer surveillance system — AOCC resolution	2009	Cancer Surveillance Working Group created, which recognizes the need for the Indian Registration System to identify First Nations in the Ontario Cancer Registry — resolution is passed directing COO to negotiate a data governance agreement with ICES

A joint application from COO, Cancer Care Ontario and ICES is submitted to AANDC (now INAC) requesting access to the Indian Registration System

2012

Data Sharing Agreement is signed between ICES and AANDC

AANDC sends a copy of the Indian Registration System to ICES

2014

Results presented to OCCOH and AOCC

2017

Results released to First Nations communities in Ontario

2011

Data Governance Agreement is signed between COO and ICES, appointing ICES as the steward of the Indian Registration System data file for the Chiefs of Ontario

2013

Data Sharing Agreement signed between COO, Cancer Care Ontario and ICES

2016

Acronyms:

AOCC=All Ontario Chiefs Conference;
AANDC=Aboriginal Affairs and Northern Development Canada;
INAC=Indigenous and Northern Affairs Canada;
JOACC=Joint Ontario Aboriginal Cancer Committee;
ICES=Institute for Clinical Evaluative Sciences;
COO=Chiefs of Ontario;
OCCOH=Ontario Chiefs Committee on Health

Working together to
create the best health
systems in the world

