Lung Cancer in First Nations People in Ontario: Incidence, Mortality, Survival and Prevalence
Lung Cancer in First Nations People in Ontario

Outline
This chapter will discuss the following:

- What is lung cancer, what are its risk factors and what are its symptoms?
- A snapshot of lung cancer in First Nations people
- John’s lung cancer story
- Incidence (new cases) of lung cancer
- Mortality (deaths) from lung cancer
- Survival (chances of living after diagnosis) of lung cancer
- Prevalence (new and existing cases) of lung cancer
- What these results may mean for policies and programs

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. Lung cancer can be a deadly disease because symptoms usually don’t appear until the cancer has spread to other parts of the body, when it is harder to treat.

Risk factors

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

- **Smoking commercial tobacco** is the main risk factor for lung cancer. In Ontario, cigarette smoking causes 71 percent of all lung cancer cases diagnosed each year. ¹ 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. ² 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).

- **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). ³ People can breathe in second-hand smoke in public places or in more private spaces, such as a home or a car.

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

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

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### 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. 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 (when buildings containing asbestos deteriorate, or are disturbed or damaged), and eating foods or drinking water containing arsenic.

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*

### Symptoms

There are many symptoms of lung cancer, which can also be caused by other health conditions ([click here for a full list](#)). 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.

### 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.

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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.

### John’s lung cancer story

John started smoking when he was 11 years old. He never really liked the taste of cigarettes, but with three older brothers at home he wanted to fit in with the bigger boys. John’s wife Mary has noticed lately that his breathing seems more laboured. After he drank his morning coffee, he’d have coughing fits. John brushed off the breathing and coughing blaming them on the smell from their new living room couch (that he didn’t think they needed in the first place). But the new furniture couldn’t explain his recent fever. Mary booked John in for an appointment with Dr. Ziotas who’s in the community today. Now, sitting outside the doctor’s office, John picks up a pamphlet about the symptoms of lung cancer and identifies with a few. Fortunately, John’s son Jordan just moved to Thunder Bay, which is where the pamphlet says the nearest Regional Cancer Program is. While feeling a little scared, John takes comfort in knowing whatever his next steps may be, he’ll have the support of his family.
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)

- 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).
- 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 (Figure 15).

**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.

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 among First Nations males. Lung cancer incidence also decreased in other Ontario males in this time period.
- Lung cancer incidence increased by 39 percent from 1991 to 2010 in First Nations females, while in other females in Ontario it stayed approximately the same over time.

FIGURE 16: LUNG CANCER INCIDENCE (NEW CASES) IN FIRST NATIONS MALES AND OTHER MALES IN ONTARIO, ALL AGES, BY YEAR OF DIAGNOSIS, 1991–2010
![Graph showing lung cancer incidence over time for First Nations males and other males in Ontario.]

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

FIGURE 17: LUNG CANCER INCIDENCE (NEW CASES) IN FIRST NATIONS FEMALES AND OTHER FEMALES IN ONTARIO, ALL AGES, BY YEAR OF DIAGNOSIS, 1991–2010
![Graph showing lung cancer incidence over time for First Nations females and other females in Ontario.]

Notes: Age-standardized to the 1960 World Standard. 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 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
Lung 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.

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)

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

Data sources: Indian Registration System; Ontario Cancer Registry
What these results may mean for policies and programs

Lung cancer incidence and mortality are higher among First Nations people than among other people in Ontario, and chances of surviving five years or longer after diagnosis are poor. Actions to reduce exposure to risk factors for lung cancer should be considered a high priority.

In a previous report, *Cancer in First Nations in Ontario: Risk Factors and Screening*, the main risk factor for lung cancer—breathing in commercial tobacco products—was shown to be common in First Nations people (on- and off-reserve). Although the cancer incidence patterns in this report are from the past (1991 to 2010), the high prevalence of smoking seen in First Nations people suggests that a higher incidence of lung cancer will continue into the future unless actions are taken to prevent, reduce or stop the use of commercial tobacco in First Nations communities.

Prevention programs often target more immediate causes of chronic disease, particularly health behaviours. However, someone’s likelihood of getting or surviving a disease (e.g., cancer) are also strongly influenced by factors such as access to healthcare systems and community infrastructure, as well as colonialism and racism. These factors strongly influence the health of First Nations people and are rooted in the historical, political, social and economic contexts that generations of First Nations people have lived through.

CCO’s *Path to Prevention*, released in 2016, outlines recommendations for the Government of Ontario on commercial tobacco reduction or elimination. The recommendations were developed in consultation with First Nations communities. They recognize that cancer control initiatives should be managed by the communities themselves, and must respect the rights of First Nations to determine their own policies.

Key commercial tobacco-related strategies from the report include:

- developing a coordinated plan to prevent commercial tobacco use among First Nations children and youth;
- establishing culturally appropriate smoking cessation programs and services in First Nations communities;
- supporting the development of resources to address second- and third-hand smoke; and
- supporting community-initiated and managed tobacco control measures while respecting First Nations rights.

Although the recommendations are aimed at the Government of Ontario, their implementation will require whole-of-government, multi-sectoral solutions to successfully reduce health inequities and improve access to infrastructure, resources and services. Cancer Care Ontario has begun work on implementing the recommendations of *Path to Prevention* in collaboration with partner organizations.

Further research is an important component of cancer control. While this report presents patterns of cancer statistics, it can also be used as a starting point for asking more research questions. More work is needed to understand the cancer experience, to decrease the number of lung cancers diagnosed and to improve the experience for those with a lung cancer diagnosis.

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, and access to care.

Evidence-based recommendations for policies to reduce commercial tobacco use in First Nations people have been developed and are available online at [cancercare.on.ca/pathtoprevention](http://cancercare.on.ca/pathtoprevention).
References

Glossary

**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.

**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.

**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.

**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.

**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.

**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.