



Region of Waterloo  
PUBLIC HEALTH

## Building Healthy and Supportive Communities

# A Glance at Cancer in Waterloo Region



This is one of a series of Public Health Perspectives reports developed by Region of Waterloo Public Health. It focuses on cancer incidence, mortality, risk factors, and screening in Waterloo Region.

This report and others are available at the **Region of Waterloo Public Health website:**

[www.region.waterloo.on.ca/ph](http://www.region.waterloo.on.ca/ph)

(Go to **Resources** and select **Reports and Factsheets**.)

Cancer is one of the most economically and personally significant health concerns facing our community. Defined by uncontrolled cell division and abnormal tissue growth, cancer takes on a range of forms throughout the body, some of which are curable and others which are nearly always fatal.

One out of three people in Ontario will be diagnosed with cancer in their lifetime<sup>1</sup>. Current trends indicate that by 2010 cancer will be the number one cause of death in Canada and as our population grows and ages, diagnoses are expected to increase by 60% over the next twenty years<sup>2</sup>.

Cancer research, risk reduction, and treatment require attention from all levels of health service including researchers, public health professionals, community agencies, and clinicians. Public Health's efforts to reduce the burden of cancer focus on encouraging healthy lifestyle choices and participation in early detection and screening.

Addressing differences related to gender, age, geography, and time, this report considers the status of cancer incidence, mortality, risk factors, and screening in Waterloo Region.

### Total Incidence and Mortality<sup>3,i</sup>

From 1998 through 2002 the top ten most commonly diagnosed cancer sites and the leading causes of cancer death in Waterloo Region were similar to those experienced in Ontario with only slight differences in ranking (See Tables A and B).

Non-melanoma skin cancers<sup>ii</sup> are the most commonly diagnosed forms of cancer in Canada (approximately 72,000 cases across the country in 2002)<sup>4</sup>. After this type of skin cancer, prostate, breast, colorectal, and lung cancers are the most frequently diagnosed and account for 56% (57% provincially) of total reported cancer cases in Waterloo Region within the past five years. They are also the leading causes of cancer mortality, contributing to 48% (49% provincially) of total cancer deaths.

## FAST FACTS

- One out of three Ontarians will be diagnosed with cancer in their lifetime<sup>1</sup>.
- From 1998 to 2002, prostate, breast, colorectal, and lung cancers accounted for around half of reported cancer diagnoses and cancer deaths in Waterloo Region<sup>3</sup>.
- While youth experienced 1.1% of cancer diagnoses and 0.5% of cancer deaths between 1998 and 2002, more than half of cancer diagnoses and deaths were among older adults<sup>3</sup>.
- Since 1979, cancer incidence has risen slightly for the entire population, while mortality rates have decreased slightly for men and remained relatively constant for women<sup>3</sup>.
- As the smoking rate among women has become more similar to that of men<sup>6</sup>, women's rates of lung cancer are also approaching those of men<sup>3</sup>.
- Increasing trends of incidence are found for prostate, breast, and thyroid cancer, melanoma, and non-Hodgkin's lymphoma. Decreasing trends are found for bladder, oral, and stomach cancer<sup>3</sup>.
- Tobacco use, an unhealthy diet, and inactivity are related to about one half of all cancer deaths<sup>8</sup>. In 2003, 19% of adults were daily smokers, less than a third indicated food choices based on cancer risk concerns, and approximately half were physically inactive<sup>12</sup>.
- Nearly three-quarters of women aged 50-74 had a mammogram within the past 2 years and 87.5% of women aged 18 and over had a pap test at some point in their lives<sup>12</sup>.

i. *Cancer Incidence: the number of new cancer cases during a period of time. Cancer Mortality: number of deaths from cancer.*

ii. *Because non-melanoma skin cancers (squamous and basal cell carcinomas) are highly treatable and not reportable to the Ontario Cancer Registry, only estimates are available and the data is not reported in Tables A and B.*

**Table A:** Top 10 Most Commonly Diagnosed Cancer Sites by Gender, Waterloo Region, over 5 years (1998 - 2002) (Rank comparison with Ontario)

Men				Woman			
ONT	Waterloo		# Cases	ONT	Waterloo		# Cases
1	1	Prostate	1148	1	1	Breast	1208
3	2	Colorectal	586	2	2	Colorectal	583
2	3	Lung	565	3	3	Lung	447
5	4	Bladder	202	4	4	Uterine	254
4	5	Non-Hodgkin's	194	6	5	Non-Hodgkin's	187
8	6	Leukemia	139	5	6	Ovarian	165
7	7	Melanoma	136	8	7	Melanoma	164
6	8	Kidney	135	7	8	Thyroid	160
9	9	Oral	112	9	9	Leukemia	111
10	10	Stomach	102	>10	10	Cervical	95
<b>Total Cancer Cases</b>			<b>4047</b>	<b>Total Cancer Cases</b>			<b>4096</b>

Source: Cancer Care Ontario, Cancer Incidence, Mortality, Survival and Prevalence in Ontario (Release 4, April 2004).

**Table B:** Top 10 Leading Causes of Cancer Death by Gender, Waterloo Region, over 5 years (1998 - 2002) (Rank comparison with Ontario)

Men				Woman			
ONT	Waterloo		# Cases	ONT	Waterloo		# Cases
1	1	Lung	499	1	1	Lung	368
2	2	Prostate	218	2	2	Breast	363
3	3	Colorectal	211	3	3	Colorectal	208
5	4	Pancreatic	85	4	4	Ovarian	108
4	5	Non-Hodgkin's	82	6	5	Non-Hodgkin's	94
8	6	Leukemia	79	5	6	Pancreatic	79
7	7	Stomach	75	7	7	Leukemia	66
6	8	Bladder	73	9	8	Uterine	47
9	9	Brain	71	10	9	Brain	45
10	10	Kidney	50	8	10	Stomach	43
<b>Total Cancer Deaths</b>			<b>1982</b>	<b>Total Cancer Deaths</b>			<b>1939</b>

Source: Cancer Care Ontario, Cancer Incidence, Mortality, Survival and Prevalence in Ontario (Release 4, April 2004).

## Gender Variation<sup>3</sup>

Men are diagnosed with, and die from, cancer at a higher rate than women. From 1979 through 2002, there was an average of 335.8 diagnoses of cancer per 100,000 men in Waterloo Region compared with 326.5 cases per 100,000 among women. During these years, an average of 174.5 men per 100,000 died from cancer compared with 155.0 women per 100,000. Despite the higher rates among men, there are more Potential Years of Life Lost (PYLL)<sup>iii</sup> among women. This difference is attributed to the impact of breast cancer, which develops at a relatively young age in women<sup>5</sup>.

A comparison of incidence rates over the 24 years studied indicates gender differences for all cancers identified in the Tables except for melanoma. In all cases, except that of thyroid cancer which affects women three times more often, the higher diagnosis rates were found among men.

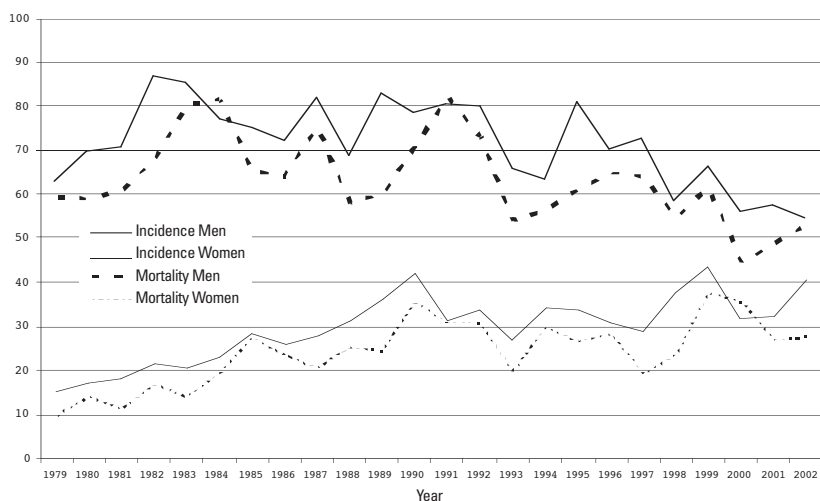
Notably, while the incidence of lung cancer during the study period was lower among women (30.5 cases per 100,000) than men (56.3 cases per 100,000), this difference has diminished somewhat over the last five years studied (40.0 cases per 100,000 versus 50.8 cases per 100,000, respectively). This finding is in line with a more pronounced drop in smoking rates among men than for women over the last half century<sup>6</sup>. As the smoking rate among women has become more similar to that of men, women's rates of lung cancer have also approached those among men. See Figure 1.

Gender differences in mortality are found for lung, colorectal, bladder, oral, kidney, and stomach cancers as well as for leukemia. In all cases male rates are higher. Standardized trends for incidence and mortality are consistent with those in Ontario<sup>v</sup>.

iii Statistics Canada defines Potential Years of Life Lost (PYLL) as "the number of years of life "lost" when a person dies "prematurely" from any cause - before age 75. A person dying at age 25, for example, has lost 50 years of life."

iv Comparisons between Waterloo Region and Ontario Data were standardized to the 1991 Canadian Population.

Lung Cancer Incidence and Mortality by Gender, Waterloo Region, 1979-2002  
Standardized Rates



Source: Cancer Care Ontario, Cancer Incidence, Mortality, Survival and Prevalence in Ontario (Release 4, April 2004).

## Children<sup>3</sup>

Although cancer is the most common disease-related cause of death among Canadian youth (aged 0-19), the disease is rare in those under age forty-five<sup>7</sup>. In Waterloo Region, youth experienced 1.1% of total diagnoses and 0.5% of total cancer deaths from 1998 through 2002. On average, there were 17.3 cancer diagnoses (11.5 cases per 100,000 among girls, 18.0 per 100,000 among boys) and 2.8 cancer deaths (2.3 per 100,000 for girls and 3.5 per 100,000 for boys) annually. Rates are consistent with those at a provincial level.

Leukemia, brain tumours, lymphomas, and sarcomas are the most commonly diagnosed cancers among Canadian youth<sup>8</sup>. This predominance holds up locally over 1998-2002, with leukemia as the most prevalent cancer affecting children in Waterloo Region (21 cases over the five years, 23% of total cancer cases), followed by brain and central nervous system cancers (13 cases) and Hodgkin's lymphoma (11 cases). Two-thirds of cancer deaths in youth were attributed to leukemia (6 cases) and brain tumours (6 cases).

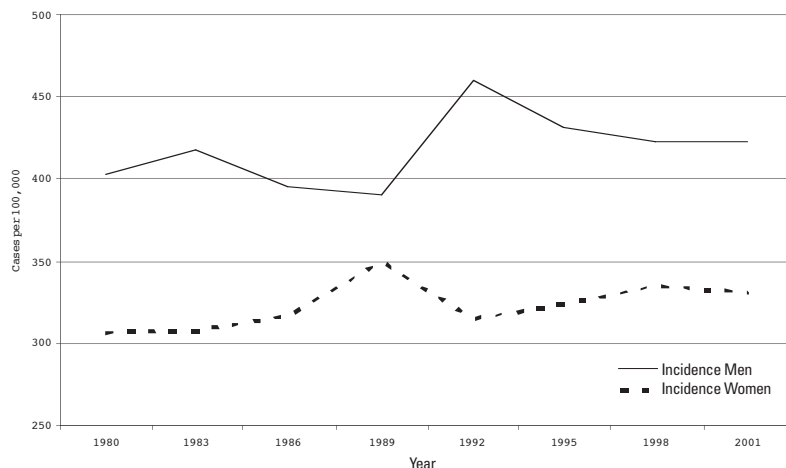
Despite small ranking differences, trends are consistent with Ontario data. As well, while diagnosis rates of leukemia have not changed dramatically over the 24 years, the standardized rate of children in Waterloo Region and in Ontario dying from this cancer has decreased.

## Older Adults<sup>3</sup>

From 1998 through 2002, 55% of all cancer diagnoses and 67% of all cancer deaths in Waterloo Region were among individuals aged 65 and over. Cancer incidence and mortality rates follow an upward trend beginning around middle age (ages 45-65) and increase steeply throughout the remainder of the life cycle. Women have higher rates of cancer during the first half of the life cycle, but from age 55 on, rates are higher for men. Trends are consistent at a provincial level.

Figure 2

Total Cancer Incidence by Gender, Waterloo Region, 1979-2002  
(Standardized Rates, 3 year averages)



Source: Cancer Care Ontario, Cancer Incidence, Mortality, Survival and Prevalence in Ontario (Release 4, April 2004).

## Overall Trends<sup>3</sup>

The incidence of cancer in Waterloo Region has increased slightly among men and women over the 24 years studied (see Figure 2). Looking at total cancer deaths, mortality rates among men have decreased slightly while rates for women have remained relatively constant. Ontario data show similar trends.

## Cancer Site Specific Trends<sup>3</sup>

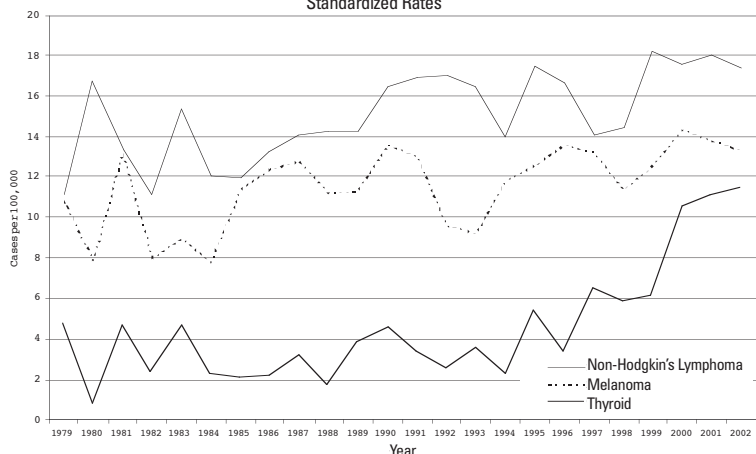
Across the years studied, rates of most forms of cancers included in this report are declining gradually or remaining stable in Waterloo Region. There are, however, some notable trends. In addition to the previously discussed narrowing of the gender gap in lung cancer due to increasing rates of lung cancer among women and decreasing rates among men, diagnoses of prostate, breast, and thyroid cancer, melanoma, and non-Hodgkin's lymphoma have all increased over time (See Figures 3 and 4). While the rise in thyroid cancer is most dramatic among women, rates among men have also increased. The rise in melanoma incidence is found primarily among women and non-Hodgkin's lymphoma is increasing mainly among men.

Notable decreasing trends in incidence are found for bladder, oral, and stomach cancers (See Figure 5). While bladder and stomach cancer rates are dropping across the population, the overall decrease in oral cancer incidence is due to a strong reduction in cases among men. Ontario data show similar trends.

A change in the number of cancer diagnoses does not necessarily mean that more (or fewer) people are dying from cancer. Considering sites where diagnosis and mortality rates do not follow similar trends, data show that despite the increased diagnoses of prostate and breast cancers, mortality rates have not changed significantly (See Figure 4). As well, despite the rise in thyroid cancer incidence, mortality rates have remained relatively stable.

**Figure 3**

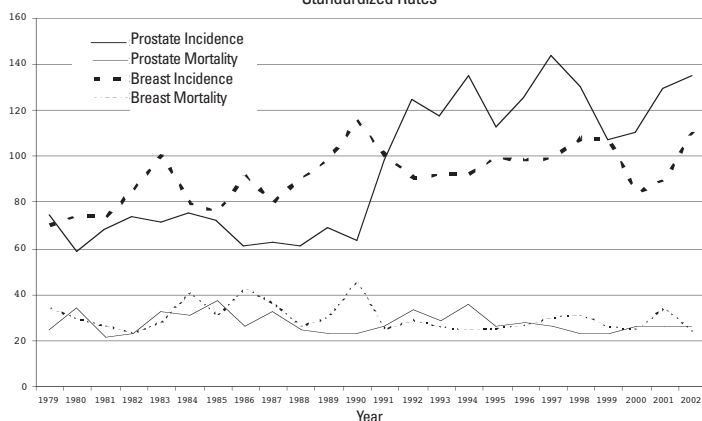
Increasing Cancer Trends, Waterloo Region, 1979-2002  
Standardized Rates



**Source:** Cancer Care Ontario, Cancer Incidence, Mortality, Survival and Prevalence in Ontario (Release 4, April 2004).

**Figure 4**

Trends in Incidence and Mortality of Prostate and Breast Cancers,  
Waterloo Region, 1979-2002  
Standardized Rates



**Source:** Cancer Care Ontario, Cancer Incidence, Mortality, Survival and Prevalence in Ontario (Release 4, April 2004).

**Figure 5**

Decreasing Cancer Trends, Waterloo Region, 1979-2002  
Standardized Rates



## Risk Reduction and Screening

It is often difficult to determine why some people develop cancer and others do not. There is, however, some clarity; tobacco use, an unhealthy diet, and physical inactivity together are related to approximately half of all cancer deaths<sup>9</sup>. Other risks include workplace and environmental exposures, genetics, and infectious agents<sup>9</sup>.

Resources are often focused on efforts with a significant and known effect on cancer development. It is not possible to completely prevent cancer, but individuals are encouraged to reduce vulnerability by making healthy choices to eliminate exposure to tobacco, eat for health, participate in daily activity, limit UV exposure, engage in safer sexual practices, and avoid or moderately use alcohol<sup>8</sup>.

Screening is another tool important to reducing the impact of cancer. These tests seek to identify cancer cells before symptoms appear and early enough in the development of the malignancy so that treatments have a greater chance of success. Screening tools exist for a range of cancers, but discussion here includes only those with the most significant levels of usage in Canada: breast, cervical, colorectal, and prostate<sup>5</sup>.

## Risk Factors

### Tobacco Use

Smoking is linked to cancers of the lung, mouth, throat, esophagus, bladder, stomach, pancreas, cervix, and kidney, and one form of leukemia<sup>10</sup>. Nearly all of these are found on the top ten lists for Waterloo Region. In particular, smoking increases lung cancer risk by 23 times for men and 13 times for women<sup>11</sup>.

In 2003, 16.3% of women and 21.8% of men in Waterloo Region identified themselves as daily smokers with 38.0% of women and 46.9% of men reporting to be former occasional or daily smokers<sup>12</sup>. Ontario figures are similar.

### Diet

Diet-related factors are estimated to be linked to 30% of cancers in western countries including oral, esophageal, larynx, breast, stomach, liver, kidney, uterine, and colorectal cancers<sup>13</sup>. Seven of these cancers make at least one of the Regional top ten lists.

Dietary concerns include excessive alcohol use, insufficient fruit and vegetable consumption, high intake of salt and processed or red meats, and unhealthy weights<sup>13</sup>. Consumption of two standard alcoholic drinks (25g of alcohol) per day can increase the risk for oral and esophageal cancers and this risk is amplified for those who smoke<sup>5</sup>. With increasing amounts of alcohol consumed, the risk for liver, breast, colorectal, and stomach cancer is also raised<sup>5</sup>. As of 2003, 73.3% of men and 60.0% of women in Waterloo Region aged 20 and over identified themselves as regular drinkers<sup>12</sup>.

*v. In the Canadian Community Health Survey, A Regular Drinker is defined as an individual who consumed at least one alcoholic drink per month within the previous 12 months.*

A diet low in fat and meat and high in fruits and vegetables has been shown to reduce the risk of gastrointestinal tract cancers (oral, stomach, and colorectal)<sup>5</sup>. When asked about their food selection, 33.0% of women and 19.3% of men indicated a choice based on concerns about cancer risk<sup>12</sup>. Respondents were more likely, however, to choose certain foods or avoid others based on concerns about body weight (55.7% for women and 37.5% for men) and heart health (43.1% and 32.3%)<sup>12</sup>. Ontario figures are similar.

The 5 to 10 a day message<sup>14</sup> encouraging fruit and vegetable consumption can serve as a guide for measuring dietary efforts to reduce cancer risk. Women appear to follow this standard more than men with over half (50.6%) reporting eating five or more fruits and vegetables a day, compared with just over a third of men (39.8%) reporting this level<sup>12</sup>.

*Healthy Weight.* Obesity is associated with increased risk of mortality<sup>15</sup>. Further, evidence indicates that this condition raises an individual's risk of breast and kidney cancer and may also be linked with non-Hodgkin's lymphoma, leukemia, and colorectal, esophageal, uterine, ovarian, and prostate cancers<sup>8,16</sup>. Nearly all of these cancers are in the Regional top ten.

The Body Mass Index (BMI) helps determine whether an individual is carrying a healthy weight. Based on this standard, 2003 data indicate that 16.7% of women and 18.7% of men in Waterloo Region are obese and an additional 24.5% of women and 40.7% of men had a BMI indicating overweight (or pre-obese) status<sup>12</sup>. Although 47.6% of individuals are of a healthy weight, research indicates that more Canadians are moving into healthy weight categories<sup>17,12</sup>. Ontario rates are similar.

## Physical Activity

In addition to lowering obesity risk, physical activity has been linked to a reduced risk of colon (by 40%) and breast cancer (by 30-40%)<sup>8</sup>. There are also possible associations between inactivity and higher rates of lung, uterine, and prostate cancer<sup>8,9</sup>. In 2003, approximately half of the population (53.7% of women and 44.1% of men) was physically inactive, or not achieving minimum levels necessary for cardiovascular benefits. These figures are consistent with provincial data.

## UV Exposure

Cumulative or excessive exposure to UV radiation, particularly during childhood, increases an individual's chance of developing skin cancer. Those facing additional risk are fair-skinned, light-haired persons with large numbers of atypical moles, and those with actinic keratosis (pre-cancerous skin growth) or a family history of skin cancer<sup>18,19</sup>.

In Waterloo Region, 40.1% (CI:  $\pm$  3.1%) of adults surveyed in 2004 reported experiencing a sunburn within the previous year<sup>20</sup>. When asked about four types of sun safety behaviour (reduced exposure during high UV and use of protective clothing, sunglasses, or sunscreen) 28.6% (CI:  $\pm$  4.0%) of the population said that they sometimes or often engaged in at least three of these practices<sup>20</sup>.

## Screening

### Breast Cancer

Mammograms are used to detect changes in breast tissue and help identify whether changes are benign or malignant. The Ontario Breast Screening

Program (OBSP) recommends that women aged 50 to 74 have a mammogram once every two years. For those at greater risk, this standard is increased to once per year. Women 40 and over are encouraged to have a yearly physical breast exam from their physician or nurse practitioner.

In Waterloo Region, 73.7% of women aged 50-74 reported having a mammogram within the previous 2 years; with almost two-thirds of these individuals noting that it was less than a year since their last test<sup>12</sup>. Ontario percentages are similar.

### Cervical Cancer

Pap Tests allow for the examination of cervical cells to identify noncancerous conditions or changes that may lead to cancer. A main risk for cervical cancer is exposure to the human papilloma virus (HPV); a sexually transmitted infection. The Ontario Cervical Screening Program (OCSP) encourages girls and women to have a yearly pap test after becoming sexually active. After three consecutive normal tests, the exam can be done every other year. Women are advised to have pap tests until age 70 when they are encouraged to consult with their doctor or nurse practitioner about the need to continue.

Locally, 87.5% of women aged 18 and over reported receiving a pap test at some point in their lives<sup>12</sup>. Of these women, 53.4% under age 40 had a pap test within in the last year and this percentage grew to 73.0% when including those who had received the exam within the previous three years<sup>12</sup>. Among women aged 40-69, 39.0% had been examined in the previous year and 73.0% with the last three years. Less than half of women (42.9%) aged 70 and older had a pap test within the previous three years. Of those who reported to never have had a pap test, 60.9% were aged 12-29 years<sup>12</sup>. Percentages presented here are similar for Ontario except for those among women aged 40-49 reporting a pap test within the previous year or previous three years (values are 10% and 7% lower, respectively, in Waterloo Region)<sup>12</sup>

### Colorectal Cancer

While there is no organized screening program for colorectal cancer in Ontario, there are efforts to standardize the fecal occult blood test (FOBT) for those over fifty years of age<sup>5</sup>. Currently conducted on an ad-hoc basis, the FOBT helps identify the presence of blood in the stool which may be associated with a tumour or pre-cancerous polyp. Positive tests can be followed by a sigmoidoscopy, colonoscopy, or double contrast barium enema.

### Prostate Cancer

Two primary tests aid in the early detection of prostate cancer. A digital rectal examination (DRE) is the use of a finger to feel for abnormalities in the prostate. A secondary tool is the Prostate Specific Antigen (PSA) test. A positive PSA test is often followed by other tests to determine if the variation is due to cancer or another concern.

As with colorectal cancer, there is no organized screening program for prostate cancer. Further, while there is insufficient evidence to determine if PSA tests effectively reduce prostate cancer mortality<sup>21</sup>, the Canadian Cancer Society recommends that men aged 50 and older discuss the merits of the tests with their physicians.

## WHAT DOES THIS MEAN?

- Although there has been an overall increase in cancer incidence since 1979, the rise has been small. As well, there has been a decrease in cancer mortality among men and women's mortality rates from cancer have remained relatively unchanged.
- Our local rates of cancer and associated risk factors are similar to those reported across Ontario. This shared experience means that collective efforts can inform, build upon, and support those implemented locally.
- While there is work to be done in other areas of cancer risk, improvements in the areas of tobacco use, diet/nutrition, and physical activity are central to reducing the occurrence of cancer and other chronic diseases.
- Public Health continues to encourage individuals in Waterloo Region to reduce their vulnerability to cancer by making healthy choices to:
  - Eliminate exposure to tobacco
  - Eat for health
  - Participate in daily activity
  - Limit UV exposure
  - Engage in safer sexual practices
  - Avoid or moderately use alcohol
- Cervical and breast cancer screening are currently promoted by Public Health. Your doctor or nurse practitioner can also talk with you about cervical and breast screening as well as early detection of colorectal, skin, prostate, and testicular cancer.

For more information on this report, please call Environmental Health and Lifestyle Resources (EHLR) at (519) 883-2008.

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\*Resources that can be borrowed from the Region of Waterloo Public Health Resource Centre (email [phrc@region.waterloo.on.ca](mailto:phrc@region.waterloo.on.ca) or call 883-2256)



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