Chronic Health Conditions

Chronic health conditions typically develop over a long period of time, have a long duration and, in most cases, have no cure.[1]

These conditions can have significant impacts on an individual's sense of well-being and also on their ability to continue their everyday activities.[1] Examples of chronic health conditions include: allergies, asthma, arthritis, high blood pressure, chronic respiratory diseases, diabetes, heart disease, cancer, mood disorders, among others.

Social determinants of health, such as education levels, income and employment status, are major contributors to the development of chronic health conditions. These social characteristics directly impact health behaviours (i.e. tobacco and alcohol use, poor diet, physical inactivity, etc) and outcomes (i.e. high blood pressure and obesity) which can lead to chronic disease development. These risk factors, however, are not always present during adulthood when diagnosis of these chronic conditions occurs. Increasingly, research has shown that chronic health conditions may result from complex interactions of multiple risk factors which begin as early as in utero through to adolescence.

For example, **Figure 1** demonstrates biological and social exposures that can act across a life span to influence the development of respiratory disease. Low birth weight infants have been shown to have an increased risk of respiratory disease in later life, which could be due to poor lung development in utero. In addition, poor socioeconomic status (SES) as a child can result in increased exposure to air pollution, poor nutrition and/or adoption of smoking which can in turn lead to respiratory illness as a child and increased risk of developing chronic respiratory illness as an adult. Poor social status can also result in lower educational attainment as a child, leading to a lower adult socioeconomic position and increased risk of chronic respiratory disease.

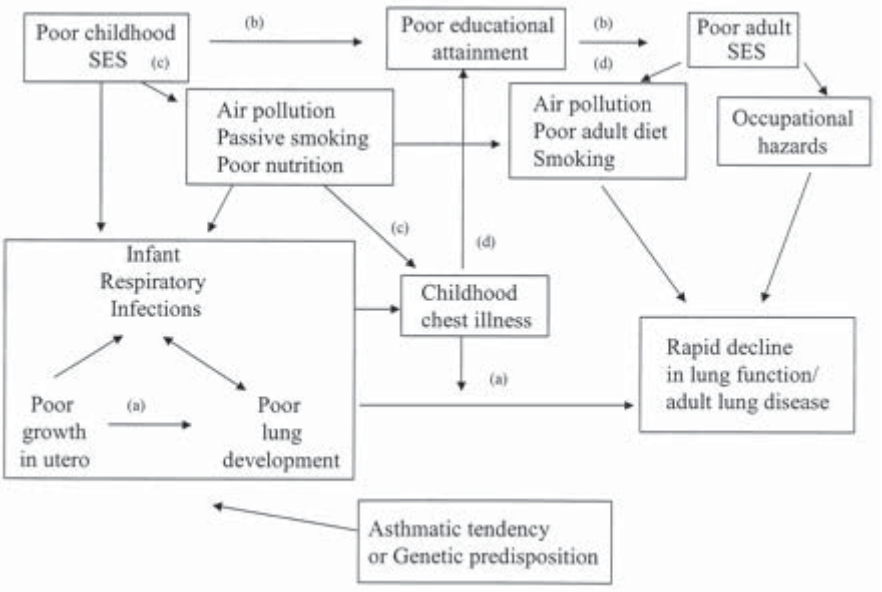


Figure 1. The biological and social exposures across a life course that influence the development of respiratory disease in adulthood. Source: Ben-Shlomo Y and Kuh D. 2002. A life course approach to chronic disease epidemiology: conceptual models, empirical challenges and interdisciplinary perspectives. International Journal of Epidemiology. 31: 285-293.

In addition to social and behavioural risk factors, community characteristics, such as population density and built environment, have a major impact on the development of chronic conditions.[1]

This section will detail the prevalence of self-reported chronic health conditions along with the morbidity and mortality for selected chronic health conditions of public health importance. In addition, incidence and mortality rates for selected cancers and prevalence of cancer screening will be reported.

Prevalence of Chronic Health Conditions

In 2005, 74.7% (95% CI 69.5-79.9) of Huron County residents aged 12 years or older reported having at least one long-term chronic condition diagnosed by a health professional.[2] Females were more likely to report having a chronic condition than men (79.1%, 95% CI 73.7-84.5 compared to 70.3%, 95% CI 62.2-78.4), although this difference was not statistically significant. The percentage of individuals reporting at least one chronic condition increased with age. Of individuals aged 65 years and older, 93.0% (95% CI 88.6-97.4) reported having at least one chronic condition.

The prevalence of chronic conditions also varies inversely by income level. In Huron County, 87.7% (95% CI 81.6-93.8) of individuals living in a household with an annual income of less than $30,000 reported having at least one long-term chronic condition diagnosed by a health professional (**Figure 2**). By contrast, 66.7% (95% CI 55.0-78.5) of individuals living in a household with an annual income of $80,000 or more reported the same.

The prevalence of selected chronic conditions - arthritis/rheumatism, high blood pressure, asthma, diabetes, heart disease and mood disorders - is presented in **Figure 3**. In 2005, arthritis/rheumatism was one of the most commonly reported chronic illnesses in Huron County, with 23.3% (95% CI 19.9-26.8) of individuals aged 12 years and older reporting a diagnosis from a health professional. This is significantly higher than the 17.2% (95% CI 16.7-17.7) of Ontarians who report having been diagnosed with arthritis/rheumatism. Huron County also has a higher prevalence of self-reported high blood pressure (Figure 3). Prevalence of asthma, diabetes, heart disease and mood disorders was similar to Ontario.

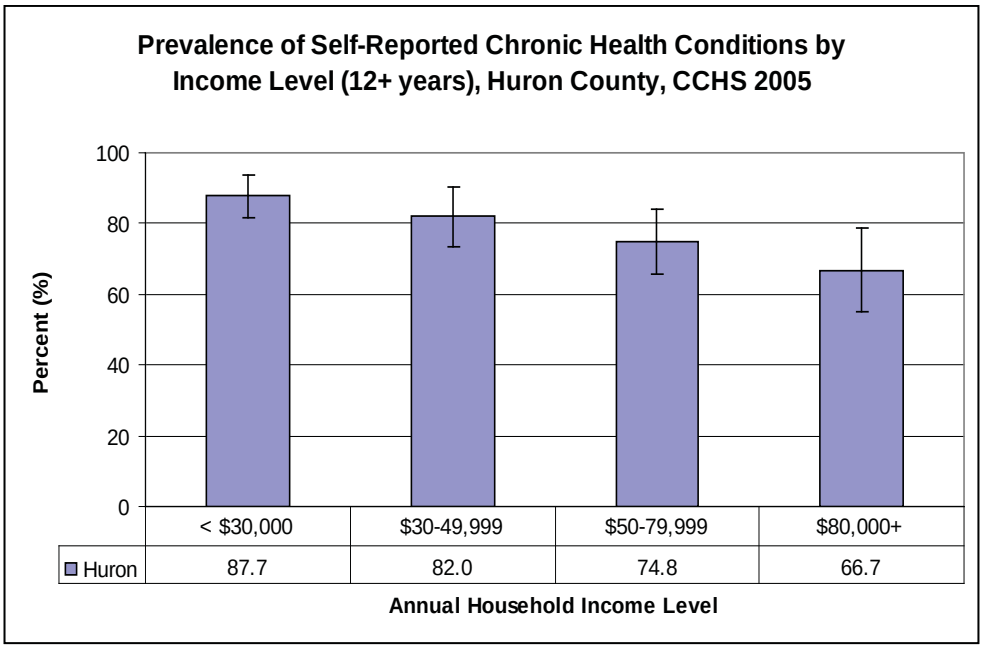


Figure 2. The prevalence of self-reported chronic health conditions by household income level for Huron County (12+ years), 2005 (n=576). Error bars represent 95% confidence intervals. Source: Canadian Community Health Survey 3.1 (2005), Statistics Canada, Share File, Knowledge Management and Reporting Branch, Ontario MOHLTC.

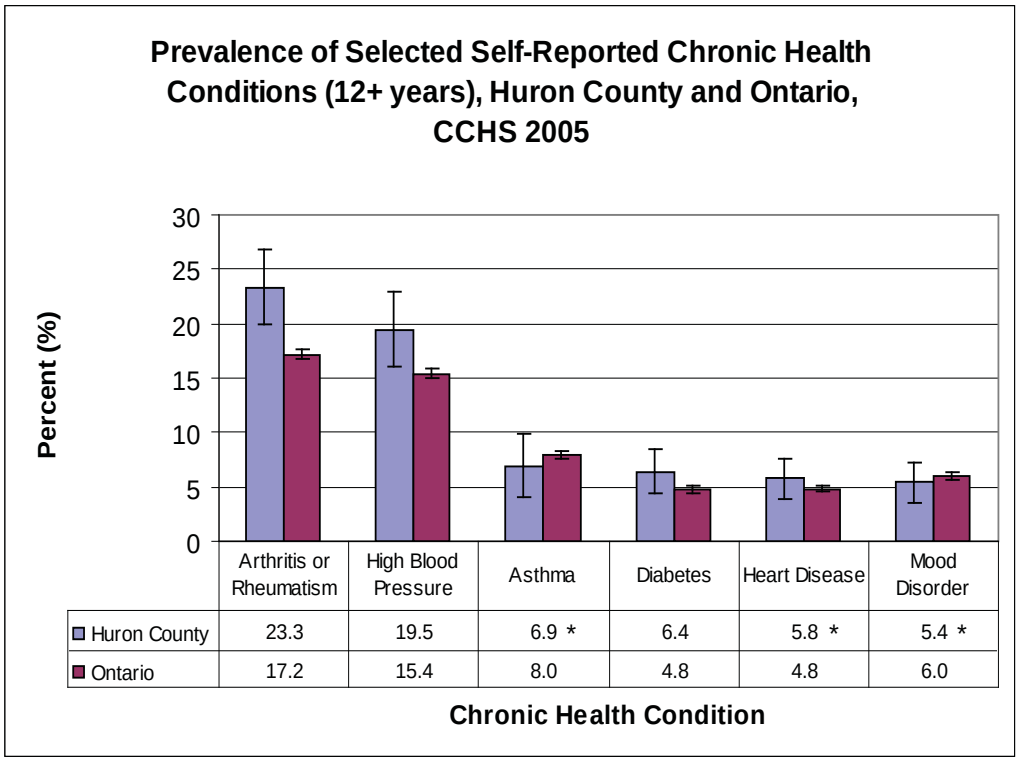


Figure 3. The prevalence of selected chronic health conditions among individuals aged 12 years and older, Huron County and Ontario, 2005 (n=576). * Indicates that the estimate should be interpreted with caution due to high sampling variability. Error bars represent 95% confidence intervals. Source: Canadian Community Health Survey 3.1 (2005), Statistics Canada, Share File, Knowledge Management and Reporting Branch, Ontario MOHLTC.

Ischemic Heart Disease

Ischemic heart disease (International Classification of Diseases ICD-10-CA I20-I25) is any condition in which the heart muscle is damaged or works inefficiently because of a deficiency in blood supply.[3] Ischemic heart disease includes angina pectoris, acute myocardial infarction, chronic ischemic heart disease and sudden death. A common cause of ischemic heart disease is atherosclerosis, which is a slow, progressive condition where arteries lose their elasticity and narrow as they become clogged with fatty deposits (or plaque). Risk factors for atherosclerosis include diabetes, obesity, high blood cholesterol, consuming a high fat diet, or a family history of heart disease.[4]

Hospitalization

From 2002 to 2006 in Huron County, there were a total of 2,046 hospital separations for ischemic heart disease (annual average: 409) (**Figure 4**). Huron County males accounted for 62.8% of all hospital separations in this time period, with an average crude hospitalization rate almost double that of females (833.3 hospital separations per 100,000 population compared to 492.2 hospital separations per 100,000 population).

Ischemic heart disease age-standardized hospitalization rates have steadily declined from 2002 to 2006 for both Huron County and Ontario (Figure 4). In Huron County, the age-standardized hospitalization rate in 2006 was 357.1 hospitalizations per 100,000 population, a 33.8% reduction from 2002. Age-standardized ischemic heart disease hospitalization rates were similar for Huron County and Ontario.

Mortality

Between 2000 and 2003, ischemic heart disease was the leading cause of death in Huron County, accounting for 21.7% of all deaths in that time period (see Mortality section, page 38).
The annual number of deaths due to ischemic heart disease ranged from 112 to 152 deaths between 2000 and 2004, for a total of 641 deaths (**Figure 5**). Average crude mortality rates for these five years were higher among males than females

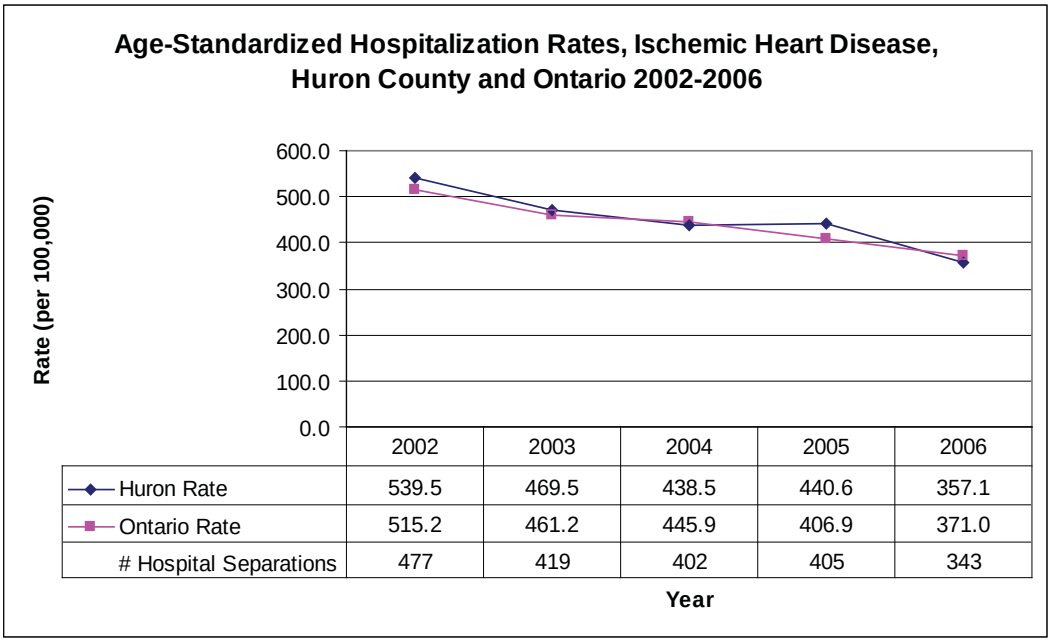


Figure 4. Age-standardized hospitalization rates for ischemic heart disease in Huron County and Ontario (2002-2006). The annual number of hospital separations in Huron County is also listed. Source: Hospital [In-Patient] Data and Population Estimates [2002-2006], Provincial Health Planning Database (PHPDB) Extracted: 07/01/2008, Health Planning Branch, Ontario MOHLTC.

(225.5 deaths per 100,000 population compared to 188.7 deaths per 100,000 population). The majority of deaths were among Huron County males (54.3%) and individuals aged 65 years and older (85.2%).

When looking at age-standardized mortality rates for ischemic heart disease, slightly different trends emerge for Huron County and Ontario (**Figure 5**). In Ontario, age-standardized mortality rates have decreased 19.4%, from 124.8 deaths per 100,000 population in 2000 to 100.6 deaths per 100,000 population in 2004. In Huron County, however, rates have increased 5.6%, from 115.3 deaths per 100,000 population in 2000 to 121.8 deaths per 100,000 population in 2004. Age-standardized mortality rates were similar for all years in Huron County compared to Ontario with the exception of 2003.

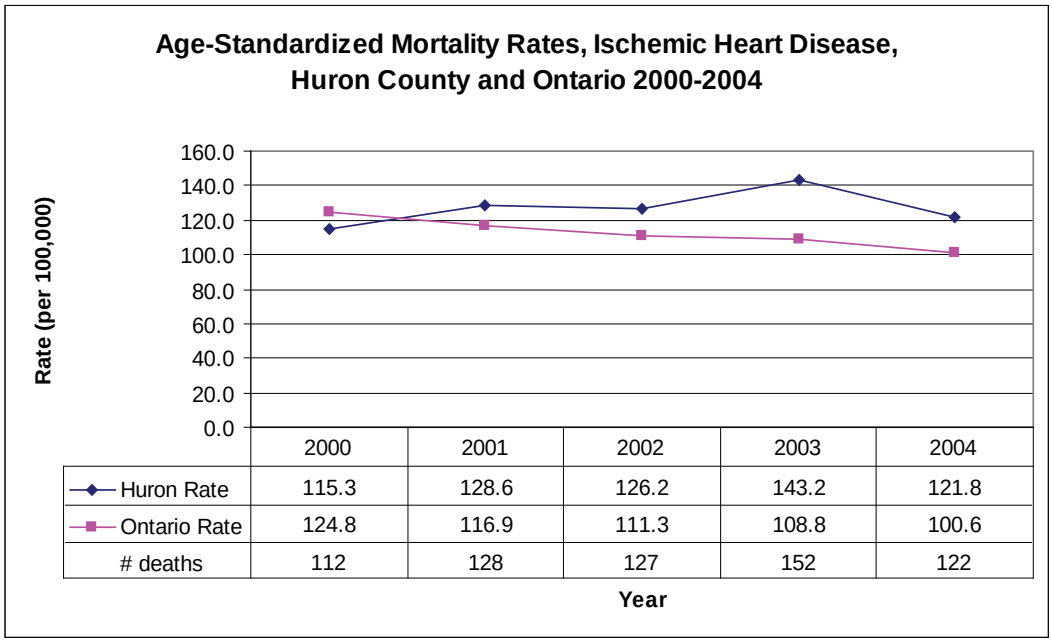


Figure 5. Age-standardized mortality rates for ischemic heart disease in Huron County and Ontario, 2000-2004. The annual number of deaths in Huron County is also listed. Source: Ontario Mortality Data and Population Estimates [2000-2004], Provincial Health Planning Database (PHPDB) Extracted: 28/11/2007, Health Planning Branch, Ontario MOHLTC.

Cerebrovascular Disease

Cerebrovascular disease (International Classification of Diseases ICD-10-CA I60-I69) is the label for diseases resulting from disturbances in blood supply to the brain, such as a stroke. In particular, strokes can be the result of a blockage (ischemic stroke) or a rupture of a blood vessel (hemorrhagic stroke).[5] Approximately 80 per cent of strokes in Canada are ischemic. High blood pressure and tobacco use are the two most important modifiable risk factors for stroke.[6]

Hospitalization

Hospital separations due to cerebrovascular disease are less common than ischemic heart disease, with an average of 117 hospital separations per year in Huron County from 2002 to 2006. Males accounted for over half (54.6%) of these hospitalizations.

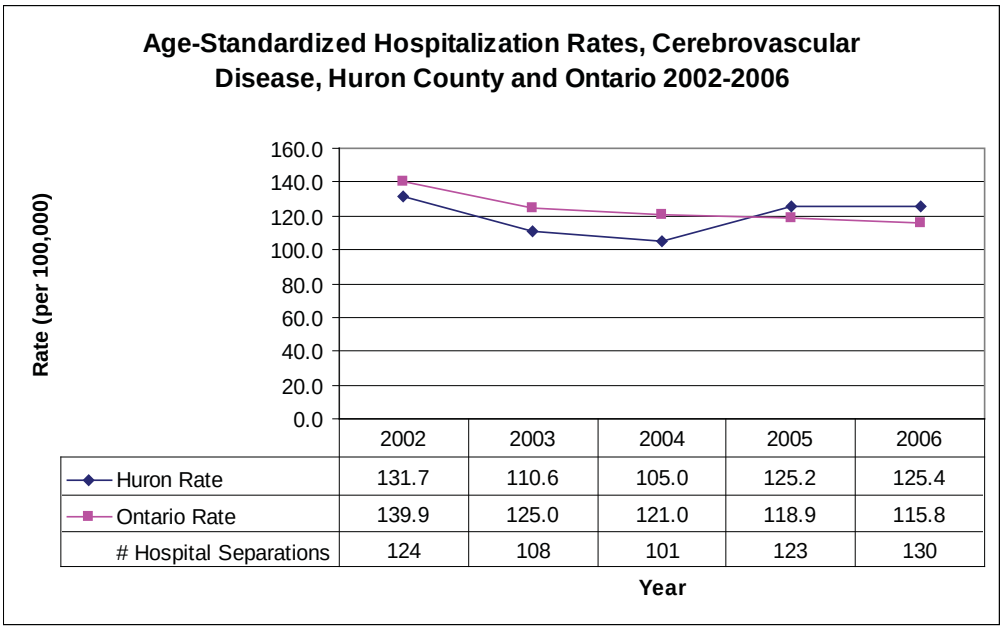
While age-standardized hospitalization rates for cerebrovascular disease have clearly declinedfrom 2002 to 2006 in Ontario, rates in Huron County have increased in 2005 and 2006 (**Figure 6)**. Age-standardized cerebrovascular disease hospitalization rates did not significantly differ between Huron County and Ontario for this time period.

Mortality

Cerebrovascular disease was the second leading cause of death in Huron County, accounting for 6.7% of all deaths between 2000 and 2003 (see Mortality section, page 30).

In total, 204 Huron County deaths have been attributable to cerebrovascular disease from 2000 to 2004, with an average of 41 deaths annually (**Figure 7**). Females in Huron County experienced higher crude mortality rates due to cerebrovascular disease than males, with an average crude mortality rate of 81.2 deaths per 100,000 population compared to 50.6 deaths per 100,000 population. From 2000 to 2004, 61.8% of all cerebrovascular disease deaths were in females and more than half (52.0%) were in those aged 85 years and older.

After adjustment for age, Huron County age-standardized mortality rates became more similar to the province (**Figure 7**). From 2000 to 2004, Ontario cerebrovascular mortality rates steadily decreased. In this same time period, Huron rates also decreased to 28.1 deaths per 100,000 population in 2002, after which rates increased to 41.2 deaths per 100,000 in 2004. Rates did not differ significantly between Huron County and Ontario.



	2002	2003	2004	2005	2006
Huron Rate	131.7	110.6	105.0	125.2	125.4
Ontario Rate	139.9	125.0	121.0	118.9	115.8
# Hospital Separations	124	108	101	123	130

Figure 6. Age-standardized hospitalization rates for cerebrovascular disease in both Huron County and Ontario (2002-2006). The annual number of hospital separations in Huron County is also listed. Source: Hospital [In-Patient] Data and Population Estimates [2002-2006], Provincial Health Planning Database (PHPDB) Extracted: 07/01/2008, Health Planning Branch, Ontario MOHLTC.

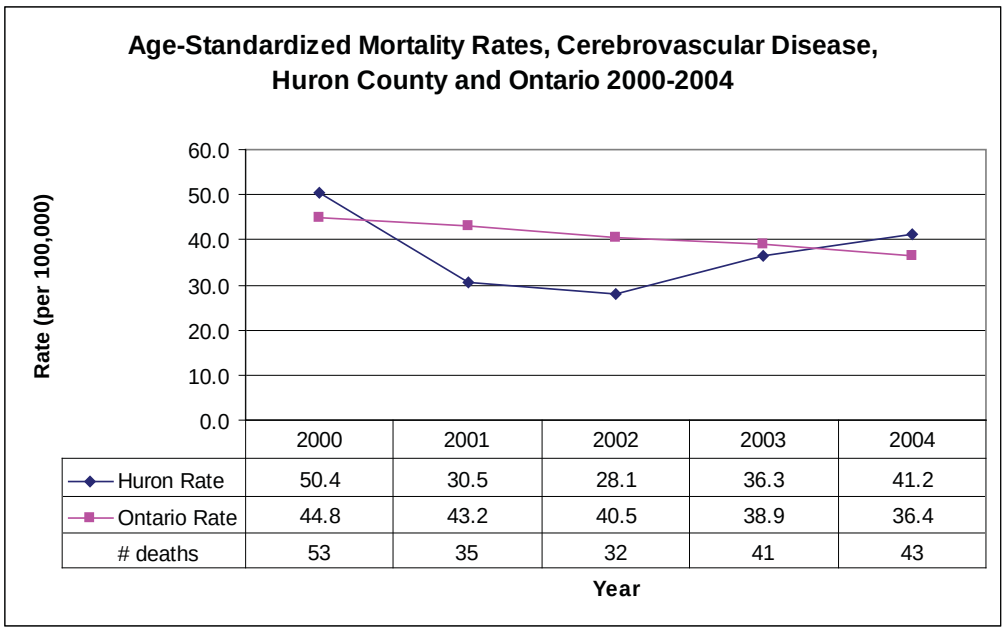


Figure 7. Age-standardized mortality rates for cerebrovascular disease in Huron County and Ontario, 2000-2004. The annual number of deaths in Huron County is also listed. Source: Ontario Mortality Data and Population Estimates [2000-2004], Provincial Health Planning Database (PHPDB) Extracted: 28/11/2007, Health Planning Branch, Ontario MOHLTC.

Diabetes

Diabetes (International Classification of Diseases ICD-10-CA E10-14) is a chronic condition that results from the body's inability to sufficiently produce and/or properly use insulin.[7] There are several forms of diabetes: type 1; type 2; and gestational. Approximately 90 per cent of all diabetes cases are type 2, which is usually adult-onset and is associated with excess body weight. In most cases, this form of diabetes can be prevented through a healthy diet and regular physical activity. If not properly managed, diabetes can lead to serious complications, such as cardiovascular disease, kidney disease and/or blindness, and also premature death.

Hospitalization

In Huron County, there were, on average, 72 hospital separations per year due to diabetes from 2002 to 2006 (range: 61-86).[4] Males and females were equally hospitalized. Age-standardized diabetes hospitalization rates were calculated for 2002 to 2006 and are shown in Figure 8 for Huron County and Ontario. For all years, age-standardized diabetes hospitalization rates were similar for Huron County and the province. Since 2003, Huron County age-standardized hospitalization rates have steadily increased 47.8% from 68.3 hospitalizations per 100,000 in 2003 to 101.0 hospitalizations per 100,000 population in 2006 (**Figure 8**). Ontario has also seen an increase in age-standardized hospitalization rates since 2003, albeit a smaller and more gradual increase.

Mortality

Diabetes is one of the top ten leading causes of death in Huron County and has accounted for 3.8% of all deaths from 2000 to 2003 (see Mortality section, page 38).

The annual number of deaths has ranged from 17 to 31 deaths between 2000 and 2004, with an average of 24 deaths annually.[8] Males and females had similar average crude mortality rates for this five year period (40.8 deaths per 100,000 population compared to 37.4 deaths per 100,000 population). Over 90 per cent (93.4%) of all diabetes deaths in Huron County were in individuals aged 65 years and older.

Crude diabetes mortality rates were higher in Huron County than Ontario between 2000 and 2004 (data not shown); however, this difference disappeared after age-standardization. For 2000-2004 combined, the age-standardized mortality rate for diabetes in Huron County was 22.8 deaths per 100,000 population, which was similar to the Ontario rate of 21.6 deaths per 100,000.

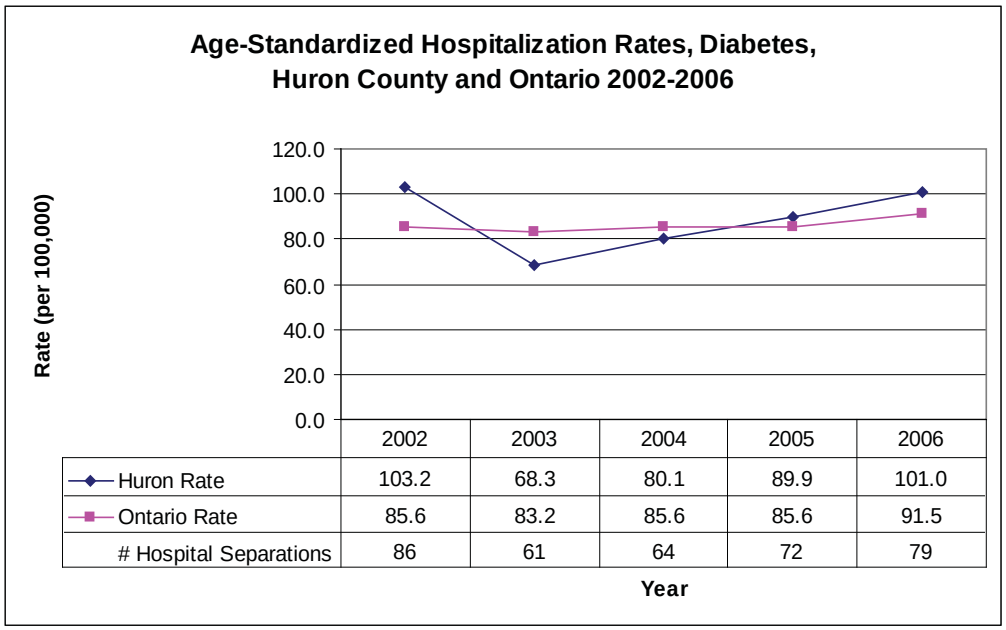


Figure 8. Age-standardized hospitalization rates for diabetes in both Huron County and Ontario (2002-2006). The annual number of hospital separations in Huron County is also listed. Source: Hospital [In-Patient] Data and Population Estimates [2002-2006], Provincial Health Planning Database (PHPDB) Extracted: 07/01/2008, Health Planning Branch, Ontario MOHLTC.

Chronic Lower Respiratory Diseases

Chronic lower respiratory diseases (International Classification of Diseases ICD-10-CA J40-J47) are diseases affecting the lower respiratory tract and include chronic bronchitis, emphysema, chronic obstructive pulmonary disease and asthma. Tobacco smoke and air quality are the two most important, preventable risk factors for chronic respiratory diseases.[9]

Hospitalization

Over 1,000 hospital separations due to chronic lower respiratory disease occurred in Huron County between 2002 and 2006, with an average of 201 hospitalizations per year (**Figure 9**). Males accounted for almost two thirds of all hospitalizations (60.2%). Of all chronic lower respiratory disease hospitalizations, 13.9% were due to asthma (annual average: 28 hospital separations), compared to 26.9% in Ontario.

Age-standardized hospitalization rates for both Huron County and Ontario have remained relatively stable from 2002 to 2006 (Figure 9). There were no significant differences in rates between the two regions for this time period.

Mortality

Chronic lower respiratory diseases were the fourth leading cause of death in Huron County for 2000 to 2003 (see Mortality section, page 38).

On average, chronic lower respiratory diseases have resulted in 30 deaths annually in Huron County from 2000 to 2004, for a total of 148 deaths.[11] The crude mortality rate for chronic lower respiratory diseases in Huron County was 58.3 deaths per 100,000 population in 2004. The majority of chronic lower respiratory diseases occurred in males (56.8%) and those aged 65 years and older (93.2%).

Age-standardized mortality rates for 2000-2004 combined revealed a significantly higher mortality rate due to chronic lower respiratory disease in Huron County compared to the province. In Huron County, the age-standardized mortality rate was 28.2 deaths per 100,000 population, while the age-standardized mortality rate for Ontario was 23.3 deaths per 100,000 population for 2000-2004.

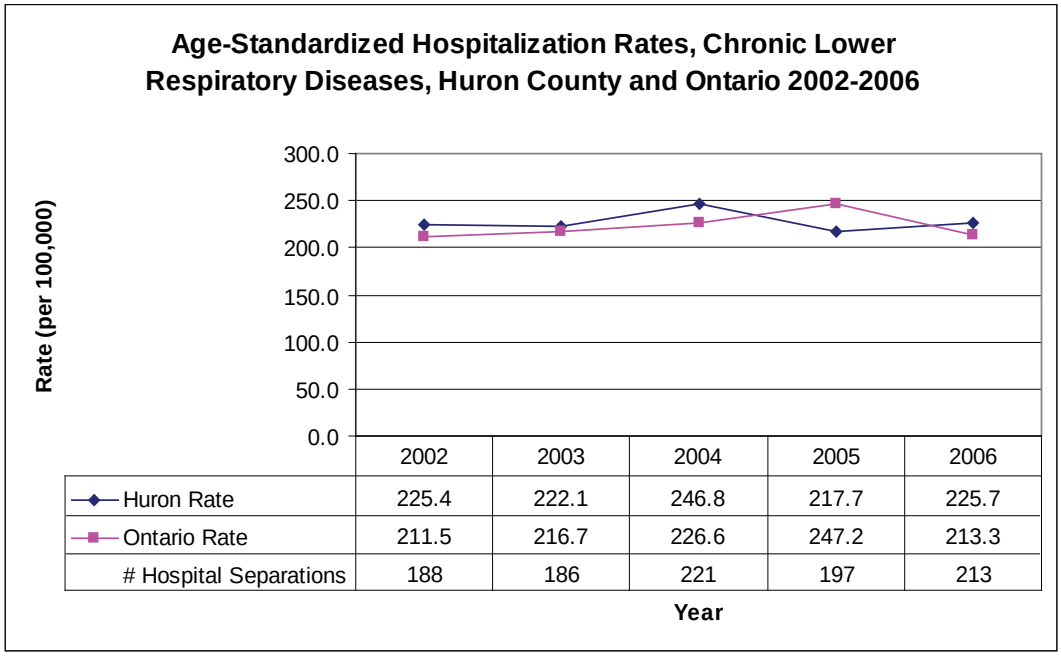


Figure 9. Age-standardized hospitalization rates for all chronic lower respiratory diseases in both Huron County and Ontario (2002-2006). The annual number of hospital separations in Huron County is also listed. Source: Hospital [In-Patient] Data and Population Estimates [2002-2006], Provincial Health Planning Database (PHPDB) Extracted: 07/01/2008, Health Planning Branch, Ontario MOHLTC.

Incidence and Mortality Rates for Cancers in Huron County

Cancers are characterized by the uncontrolled growth and spread of abnormal cells in some part of the body.[10] They are typically named after the part of the body where the cancer originates.

Cancer takes many years to develop and is caused by the complex interaction of genetic, social, lifestyle and environmental factors. Common factors include, but are not limited, to:

- age
- tobacco use
- diets high in fat
- sun exposure (U.V. radiation)
- family history of cancer
- alcohol use
- reproductive factors
- sexual activity
- lack of physical activity

In 2006, over 150,000 new cancer cases and 70,000 cancer deaths were estimated to occur in Canada.[11]

Overall Cancer Incidence and Mortality

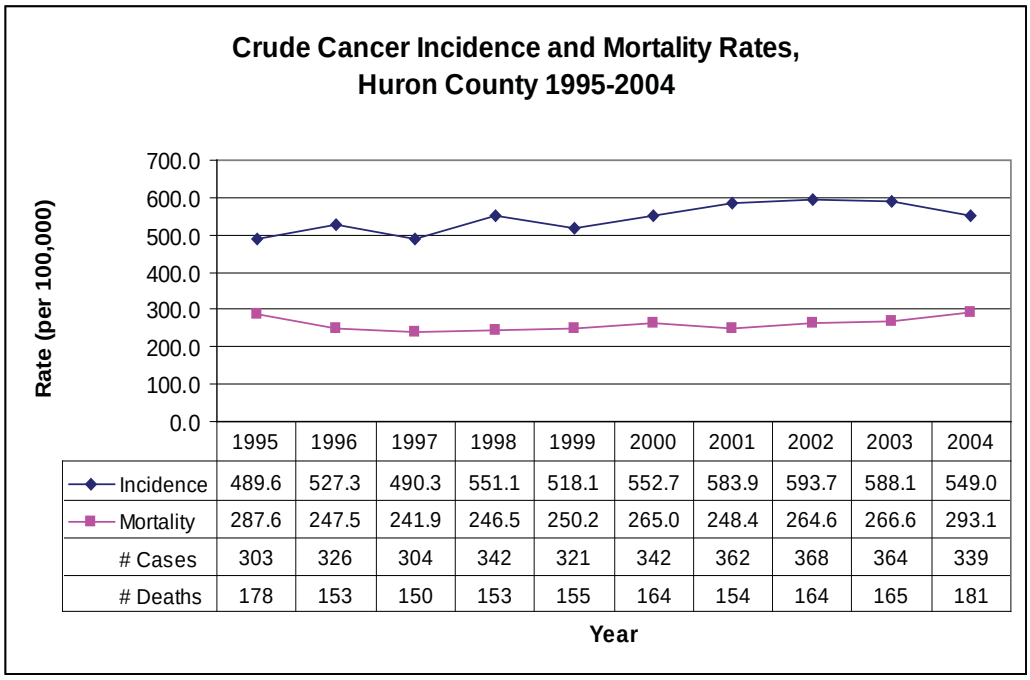
From 1995 to 2004, the crude incidence rate (rate of new cases) of cancer has increased 12.1% in Huron County, from 489.6 cases per 100,000 population in 1995 to 549.0 cases per 100,000 population in 2004 (**Figure 10**). The number of new cancer cases diagnosed each year has ranged from 303 cases to 368 cases in this time period (average: 337 cases per year).

The crude mortality rate of cancer has also gradually increased. From 1995 to 2004, the number of cancer deaths increased from 150 deaths in 1997 to 181 deaths in 2004 (average: 162 deaths per year from 1995 to 2004) (**Figure 10**). Increases in cases and deaths are likely due in part to an aging population.

The top ten diagnosed cancers between 2000 and 2004 in Huron County males and females are shown in **Table 1**. Among Huron County males, prostate cancer was the most frequently diagnosed cancer, accounting for almost one third (31.5%) of all male cancer cancers. Breast cancer was the most frequently diagnosed cancer among females, accounting for one quarter (25.1%) of all female cancer cases in Huron County. Breast and prostate cancers are also the most commonly diagnosed cancers in Canadian women and men.[11] Colorectal and lung cancer were the second and third most frequently diagnosed cancers for Huron County men and women.

The top ten leading causes of cancer death between 2000 and 2004 in Huron County males and females are shown in Table 2. Like Canada, lung cancer was the leading cause of cancer death for both sexes. Among both males and females, colorectal cancer was within the top three causes of cancer deaths, along with prostate cancer in men and breast cancer in women.

To make comparisons to the province, cancer incidence rates were standardized for age and are shown in Figure 11 for each gender. Age-standardized cancer incidence rates for 1995 to 2004 were similar for Huron County and Ontario (confidence intervals not shown). In females, age-standardized cancer incidence rates have experienced a slight increase over this time period. Ontario males also experienced a slight increase in rates, while Huron County rates have gradually declined over this time period. In both Huron County and Ontario, males experienced a higher age-standardized cancer incidence rate than females.



	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Incidence	489.6	527.3	490.3	551.1	518.1	552.7	583.9	593.7	588.1	549.0
Mortality	287.6	247.5	241.9	246.5	250.2	265.0	248.4	264.6	266.6	293.1
# Cases	303	326	304	342	321	342	362	368	364	339
# Deaths	178	153	150	153	155	164	154	164	165	181

Figure 10. The number of cancer cases and number of deaths, for 1995 to 2004, in Huron County. "Year" refers to the year of diagnosis for incidence rates and new cases, and the year of death for mortality rates and deaths. Note: The International Classification of Disease (ICD) was revised in January 1, 2000 for mortality data and April 1, 2002 for hospitalization data. Caution should be used when interpreting trends over time periods which span this revision. Source: Cancer Incidence and Mortality [1995-2004], Cancer Care Ontario, Release: 6, July 2007.

MALES			FEMALES	
	# Cases			# Cases
All Cancers	*939*		*All Cancers*	*836*
Prostate Cancer	296		Breast Cancer	211
Colorectal Cancer	141		Colorectal Cancer	127
Lung Cancer	128		Lung Cancer	83
Bladder Cancer	49		Uterine Cancer	55
Melanoma of the skin	36		Thyroid Cancer	39
Non-Hodgkin Lymphoma	32		Ovarian Cancer	34
Kidney Cancer	28		Melanoma of the skin	30
Leukemia	23		Non-Hodgkin Lymphoma	29
Stomach Cancer	22		Pancreatic Cancer	24
Oral Cancer	21		Bladder Cancer	19

Table 1. Top ten diagnosed cancers (# Cases) in Huron County, by sex, for 2000-2004 combined. Note: The Ontario Cancer Registry excludes skin cancers other than melanoma. Source: Cancer Incidence [2000-2004], Cancer Care Ontario, Release: 6, July 2007.

Age-standardized cancer mortality rates for Huron County and Ontario are shown in **Figure 12** for both genders. Age-standardized cancer mortality rates for 1995 to 2004 were similar for Huron County and Ontario (confidence intervals not shown). Both Ontario males and females experienced gradual declines in age-standardized cancer mortality rates. The trends are less clear for Huron County due to fluctuating rates caused by a smaller number of deaths. Like incidence rates, mortality rates were higher among males compared to females for both Huron County and Ontario.

Standardized incidence ratios (SIR) and standardized mortality ratios (SMR) were calculated to compare if Huron County cancer incidence and mortality was significantly different from Ontario for 1995-2004 (**Figure 13**). For both males and females, there were no significant differences in cancer incidence and mortality for Huron County compared to the province.

MALES		FEMALES	
	# Deaths		# Deaths
All Malignant Cancers	*458*	*All Malignant Cancers*	*370*
Lung Cancer	125	Lung Cancer	68
Colorectal Cancer	67	Breast Cancer	58
Prostate Cancer	64	Colorectal Cancer	49
Pancreatic Cancer	21	Pancreatic Cancer	27
Non-Hodgkin Lymphoma	19	Ovarian Cancer	19
Leukemia	15	Esophageal Cancer	10
Esophageal Cancer	14	Non-Hodgkin Lymphoma	10
Bladder Cancer	12	Leukemia	10
Stomach Cancer	12	Kidney Cancer	9
Brain Cancer	11	Myeloma	8

Table 2. Ten leading causes of cancer death (# Deaths) in Huron County, by sex, 2000-2004 combined. Note: The Ontario Cancer Registry excludes skin cancers other than melanoma. Source: Cancer Mortality [2000-2004], Cancer Care Ontario, Release: 6, July 2007.

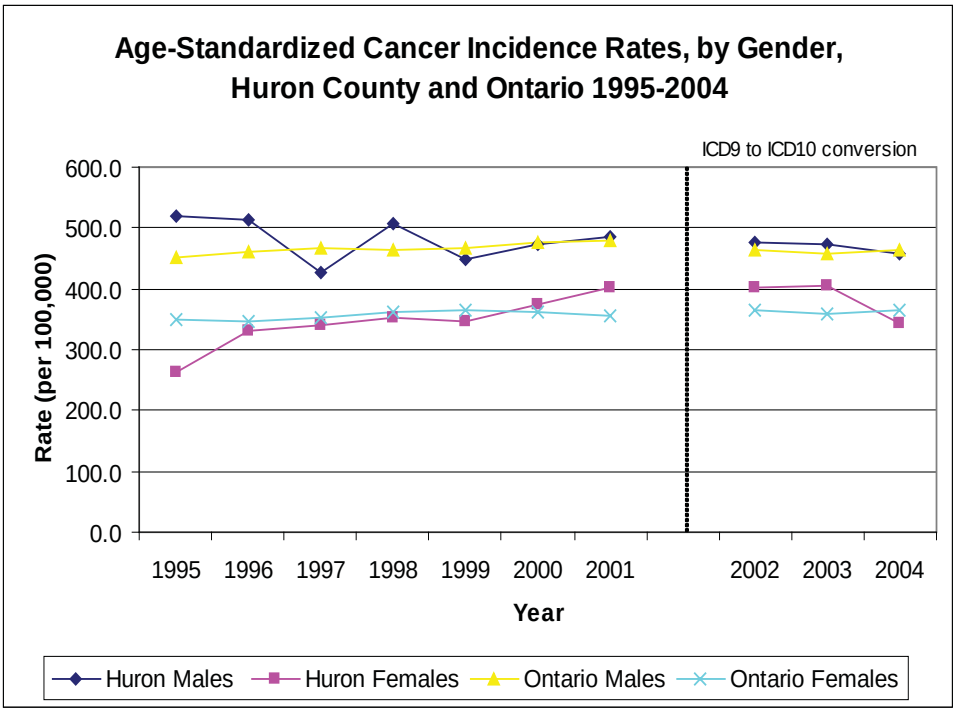


Figure 11. Age-standardized incidence rates for cancer (at all sites) both males and females in Huron County and Ontario (1995-2004). Source: Cancer Incidence [1995-2004], Cancer Care Ontario, Release: 6, July 2007.

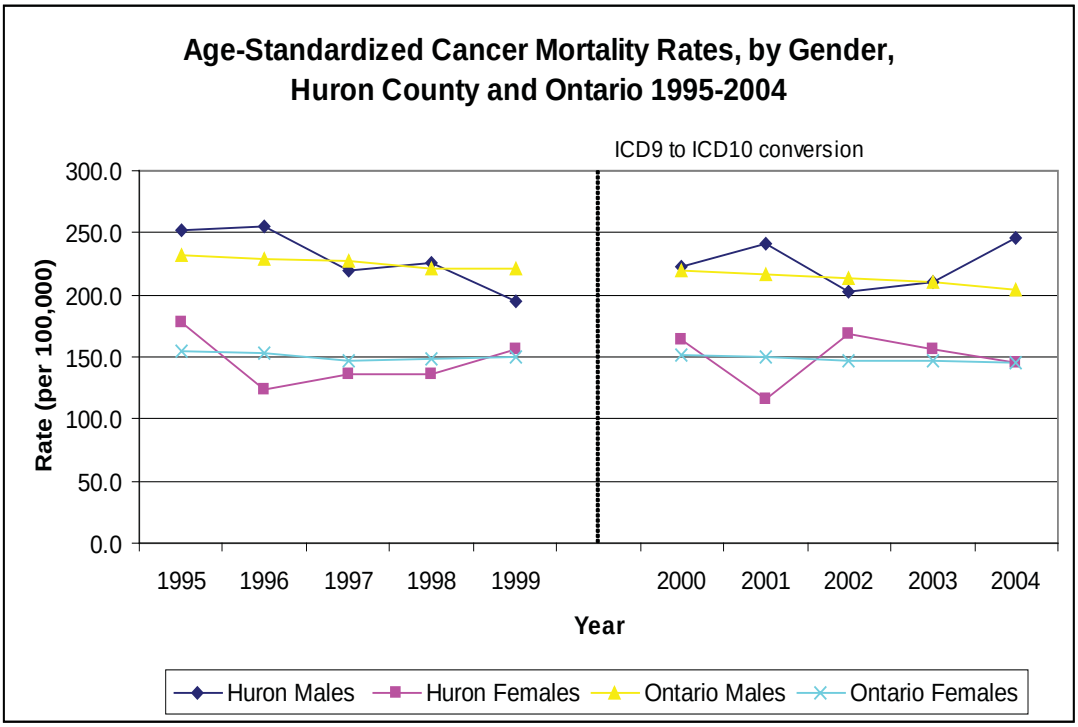


Figure 12. Age-standardized mortality rates for cancer (at all sites) for both males and females, in Huron County and Ontario (1995-2004). Source: Cancer Mortality [1995-2004], Cancer Care Ontario, Release: 6, July 2007.

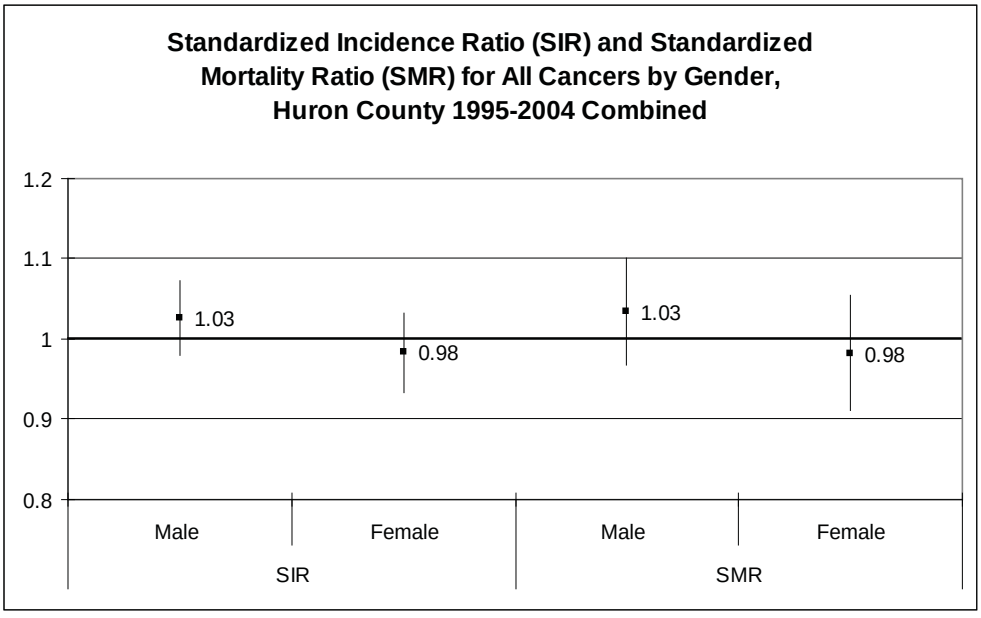


Figure 13. Standardized incidence and mortality ratios for all cancers, by sex, comparing Huron County to Ontario (1995-2004 data combined). Source: Cancer Incidence and Mortality [1995-2004], Cancer Care Ontario, Release: 6, July 2007.

Selected Cancers

The most frequently diagnosed cancers and leading causes of cancer death in Huron County – breast, prostate, colorectal and lung cancer – will be explored here in more detail.

Breast Cancer

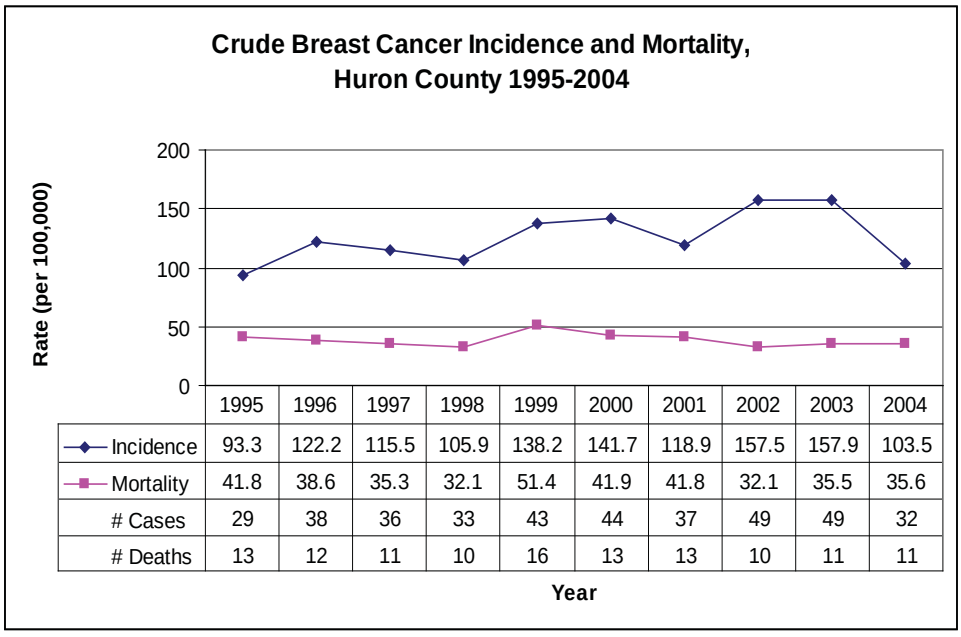
Breast cancer begins in cells of the breast. While breast cancer can affect both men and women, less than one per cent of Canadian cases are male.[11] Risk factors for breast cancer include, but are not limited to: age; having a family history of breast or ovarian cancer; an above average exposure to estrogen; dense breast tissue; being obese; alcohol use; and taking birth control pills.[12] Recent studies have also shown that both vitamin D and physical activity are associated with a reduced breast cancer risk.[13]

Like Canada, breast cancer is the most commonly diagnosed cancer among Huron County women. Crude breast cancer incidence and mortality rates are shown in **Figure 14**, along with the number of new cases and number of deaths annually.

Between 1995 and 2004, a range of 29 to 49 new cases were diagnosed per year (average: 39 cases per year). Almost 40 per cent (39.2%) of all cases were aged between 45-64 years. The crude breast cancer incidence rate increased by 10.9% from 93.3 cases per 100,000 population in 1995 to 103.5 cases per 100,000 population in 2004.

An average of 12 deaths occurred per year from 1995 to 2004 (range:10 to 16 deaths). Crude breast cancer mortality rates have remained relatively stable in Huron County, ranging from 32.1 deaths per 100,000 population to 51.4 deaths per 100,000 population.

Age-standardized breast cancer incidence rates for Huron County and Ontario females are shown in **Figure 15**. Rates from 1995 to 2004 were similar for Huron County and Ontario (confidence intervals not shown). In Ontario, age-standardized breast cancer incidence rates have remained around 100 new cases diagnosed per 100,000 population over this time period. By contrast, Huron County rates have fluctuated between 72.5 cases per 100,000 population in 1995 to 120.2 cases per 100,000 population in 2003.



	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Incidence	93.3	122.2	115.5	105.9	138.2	141.7	118.9	157.5	157.9	103.5
Mortality	41.8	38.6	35.3	32.1	51.4	41.9	41.8	32.1	35.5	35.6
# Cases	29	38	36	33	43	44	37	49	49	32
# Deaths	13	12	11	10	16	13	13	10	11	11

Figure 14. Crude breast cancer incidence and mortality rates for Huron County females, including the number of breast cancer cases and deaths for 1995 to 2004. "Year" refers to the year of diagnosis for incidence rates and new cases, and the year of death for mortality rates and deaths. Note: The International Classification of Disease (ICD) was revised in January 1, 2000 for mortality data and April 1, 2002 for hospitalization data. Caution should be used when interpreting trends over time periods which span this revision. Source: Cancer Incidence and Mortality [1995-2004], Cancer Care Ontario, Release: 6, July 2007.

Because Huron County has a relatively small number of deaths due to breast cancer each year, age-specific mortality rates were calculated for 1995 to 2004 combined and compared to Ontario (**Figure 16**). Huron County age-specific mortality rates were not significantly different from Ontario for this time period. In both regions, mortality rates were highest among females aged 75 years and older.

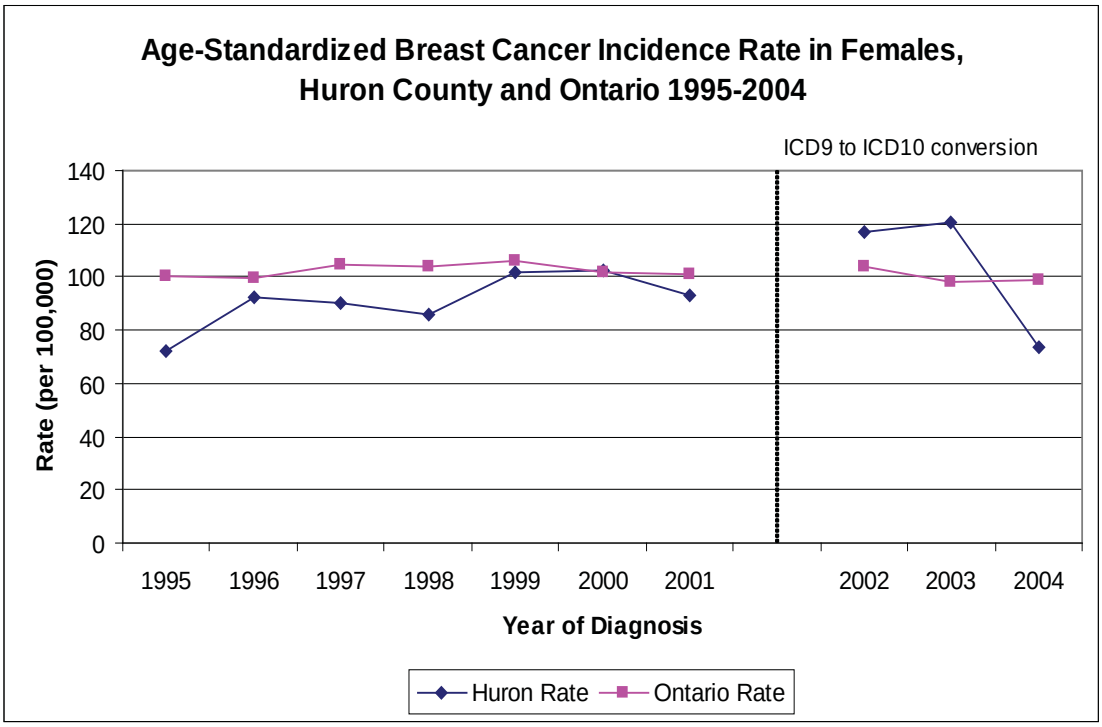


Figure 15. Age-standardized incidence rates for breast cancer in females, for Huron County and Ontario (1995-2004). Source: Cancer Incidence [1995-2004], Cancer Care Ontario, Release: 6, July 2007.

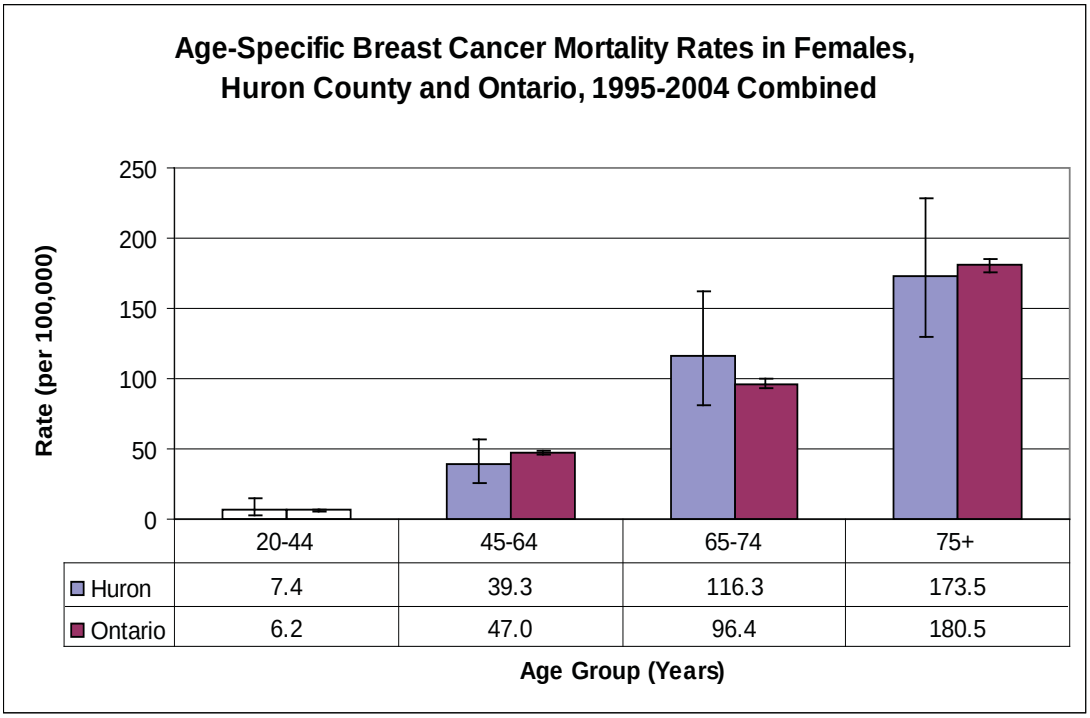


Figure 16. Age-specific breast cancer mortality rates for females in Huron County and Ontario, 1995-2004 data combined. Error bars represent 95% confidence intervals for the rates. Source: Cancer Mortality [1995-2004], Cancer Care Ontario, Release: 6, July 2007.

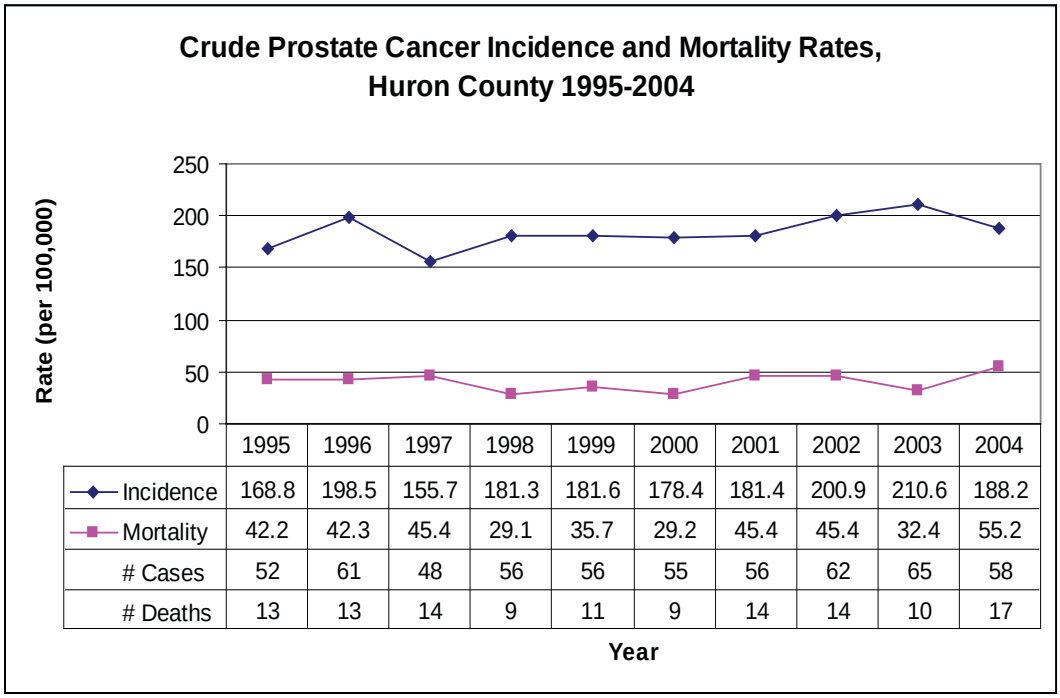
Prostate Cancer

Beginning in the cells of the prostate gland, prostate cancer is the most common cancer in Canadian men.[14] Because prostate cancer takes many years to develop, being over the age of 65 years increases the risk of developing prostate cancer. High fat diets and a family history of prostate cancer can also increase the risk of developing prostate cancer.[15]

Prostate cancer is the most commonly diagnosed cancer among Huron County men and is the third leading cause of cancer death. The crude prostate cancer incidence and mortality rates, along with the number of cases diagnosed and number of deaths annually, is shown in **Figure 17** for Huron County. Between 1995 and 2004, the crude prostate cancer incidence rate increased 11.5% from 168.8 new cases diagnosed per 100,000 population in 1995 to 188.2 cases per 100,000 population in 2004. Annually, an average of 57 new cases of prostate cancer were diagnosed in Huron County (range: 48 to 65 cases). Almost half (44.1%) of all cases were aged 65-74 years. The crude mortality rate for prostate cancer has remained relatively constant for this time period, hovering around 40 deaths per 100,000 population. On average, 12 deaths occurred each year in Huron County males due to prostate cancer.

Prostate cancer incidence rates, adjusted for age, are shown in **Figure 18** for Huron County and Ontario. For all years, the Huron County age-standardized prostate cancer incidence rates were similar to the province.

Age-specific prostate cancer mortality rates for 1995-2004 combined are shown below in **Figure 19**. There was no significant difference in age-specific prostate cancer mortality rates for Huron County and Ontario during this time period. In both regions, mortality rates were highest among males aged 75 years and older. This age group accounted for almost three-quarters of all prostate cancer deaths in Huron County (91 deaths or 73.4%).



	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Incidence	168.8	198.5	155.7	181.3	181.6	178.4	181.4	200.9	210.6	188.2
Mortality	42.2	42.3	45.4	29.1	35.7	29.2	45.4	45.4	32.4	55.2
# Cases	52	61	48	56	56	55	56	62	65	58
# Deaths	13	13	14	9	11	9	14	14	10	17

Figure 17. Crude prostate cancer incidence and mortality rates for Huron County males, including the number of prostate cancer cases and deaths for 1995 to 2004. "Year" refers to the year of diagnosis for incidence rates and new cases, and the year of death for mortality rates and deaths. Note: The International Classification of Disease (ICD) was revised in January 1, 2000 for mortality data and April 1, 2002 for hospitalization data. Caution should be used when interpreting trends over time periods which span this revision. Source: Cancer Incidence and Mortality [1995-2004], Cancer Care Ontario, Release: 6, July 2007.

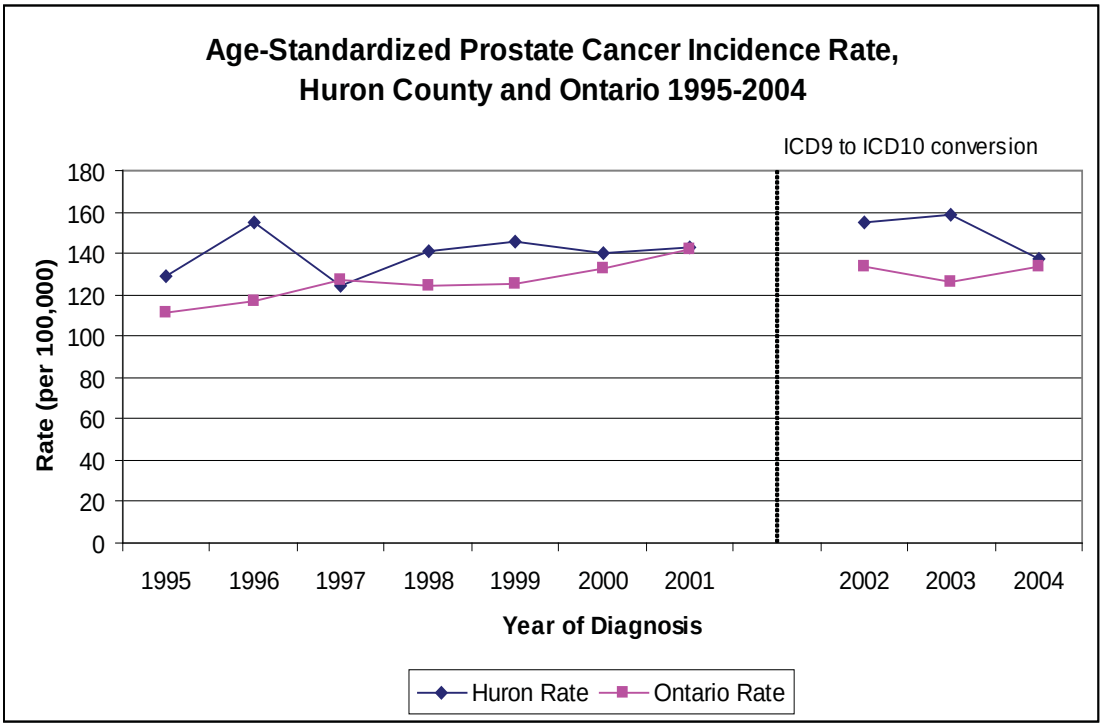


Figure 18. Age-standardized incidence rates for prostate cancer in Huron County and Ontario (1995-2004). Source: Cancer Incidence [1995-2004], Cancer Care Ontario, Release: 6, July 2007.

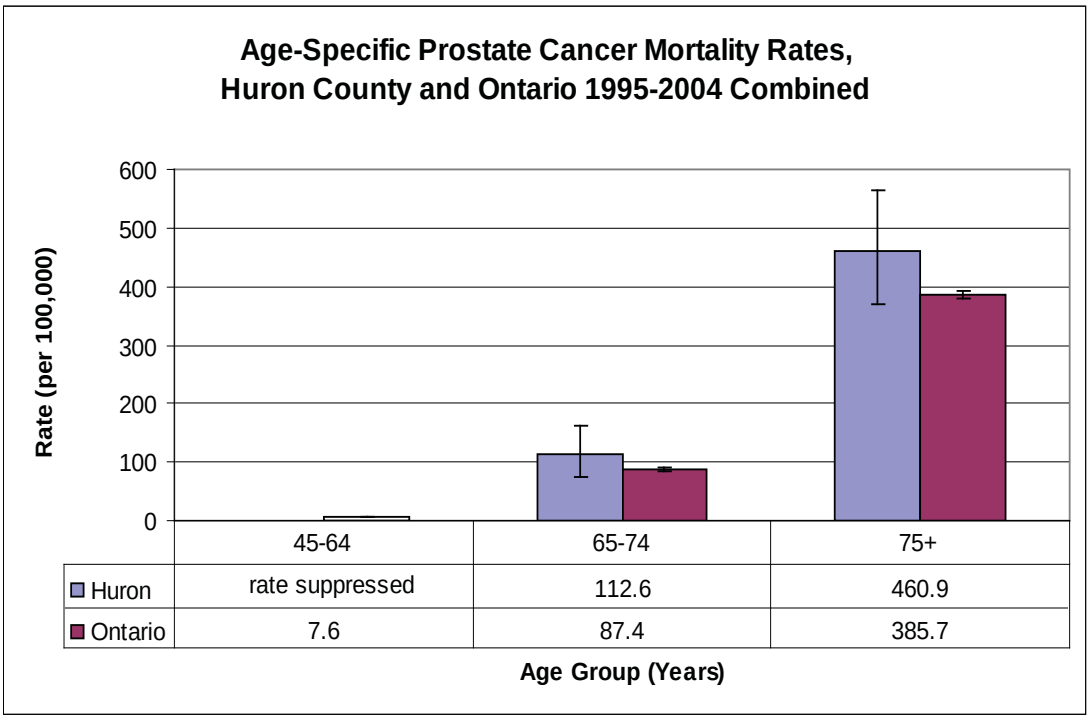


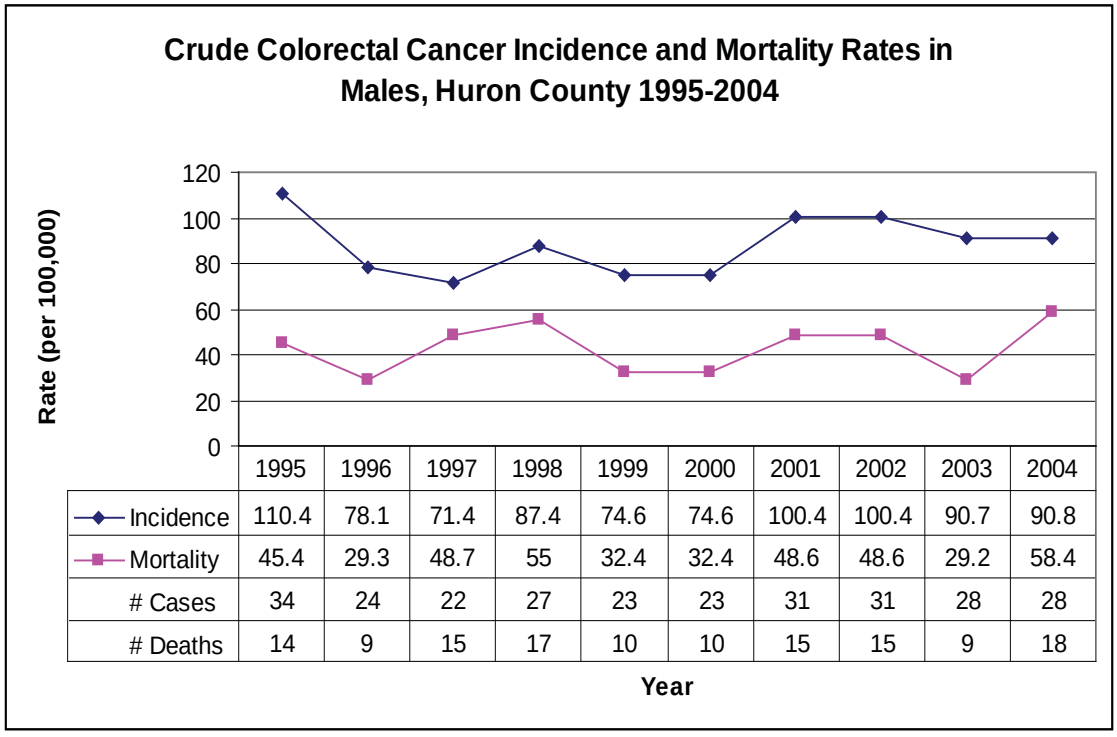
Figure 19. Age-specific prostate cancer mortality rates for males in Huron County and Ontario, 1995-2004 data combined. Error bars represent 95% confidence intervals for the rates. The rate was suppressed in the 45-64 years age group for Huron due to <5 deaths. Source: Cancer Mortality [1995-2004], Cancer Care Ontario, Release: 6, July 2007.

Colorectal Cancer

Most colorectal cancers begin in the cells of the colon or rectum, which make up the large intestine.[16] While 70 to 75 per cent of all colorectal cancers develop in individuals with no specific risk factors, there are factors which may increase the risk of developing colorectal cancer.[17] These factors include: age; presence of polyps in the colon or rectum; personal and/or family history of colorectal cancer; inflammatory bowel disease; a diet high in fat; high intake of red meat and meats that have been cooked at high temperatures; alcohol and tobacco use; and physical inactivity; among others.[18]

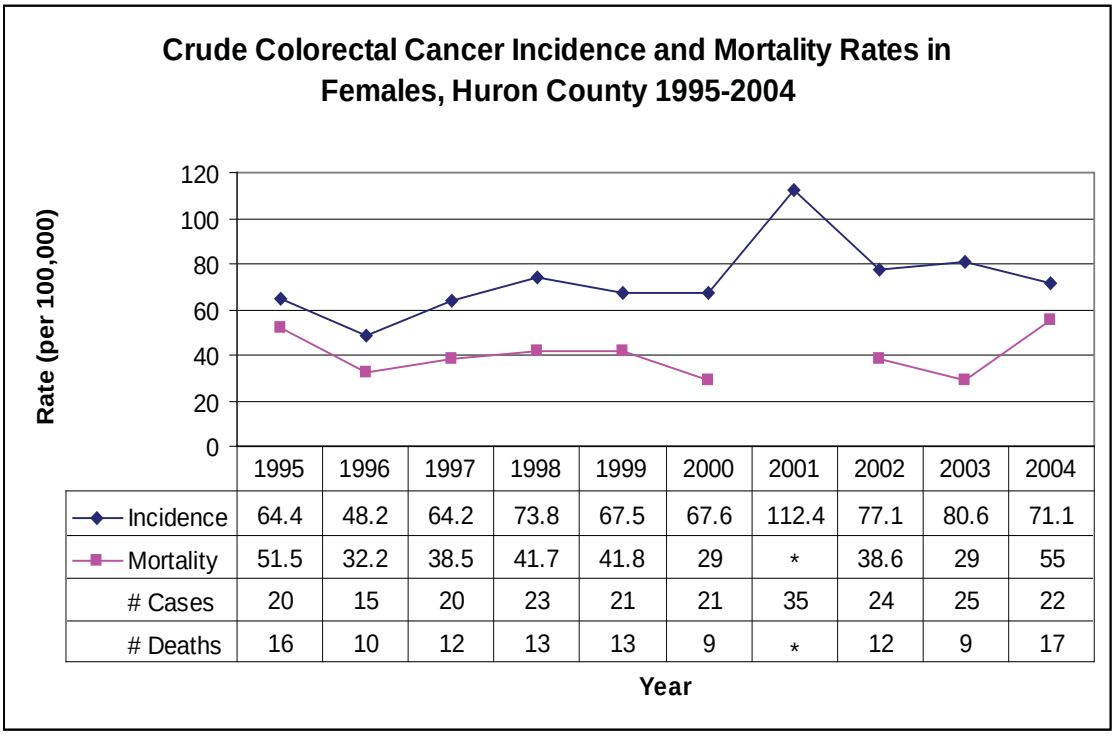
Crude colorectal cancer incidence and mortality rates are shown in **Figure 20** (males) and **Figure 21** (females) between 1995 and 2004. Unlike mortality rates, which were relatively similar for Huron County males and females, crude colorectal cancer incidence rates were higher among males when compared to females. This difference, however, was not statistically significant. Among Huron County women, both crude incidence and mortality rates have somewhat increased from 1995 to 2004, while in males, a trend is less clear.

Age-standardized colorectal cancer incidence rates are shown in **Figure 22** for Huron County and Ontario. For all years, with the exception of 2001, the age-standardized colorectal cancer incidence rate for Huron County was similar to the province.



	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Incidence	110.4	78.1	71.4	87.4	74.6	74.6	100.4	100.4	90.7	90.8
Mortality	45.4	29.3	48.7	55	32.4	32.4	48.6	48.6	29.2	58.4
# Cases	34	24	22	27	23	23	31	31	28	28
# Deaths	14	9	15	17	10	10	15	15	9	18

Figure 20. Crude colorectal cancer incidence and mortality rates for Huron County males, including the number of colorectal cancer cases and deaths for 1995 to 2004. "Year" refers to the year of diagnosis for incidence rates and new cases, and the year of death for mortality rates and deaths. Note: The International Classification of Disease (ICD) was revised in January 1, 2000 for mortality data and April 1, 2002 for hospitalization data. Caution should be used when interpreting trends over time periods which span this revision. Source: Cancer Incidence and Mortality [1995-2004], Cancer Care Ontario, Release: 6, July 2007.



	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Incidence	64.4	48.2	64.2	73.8	67.5	67.6	112.4	77.1	80.6	71.1
Mortality	51.5	32.2	38.5	41.7	41.8	29	*	38.6	29	55
# Cases	20	15	20	23	21	21	35	24	25	22
# Deaths	16	10	12	13	13	9	*	12	9	17

Figure 21. Crude colorectal cancer incidence and mortality rates for Huron County females, including the number of colorectal cancer cases and deaths for 1995 to 2004. "Year" refers to the year of diagnosis for incidence rates and new cases, and the year of death for mortality rates and deaths. * indicates that the rate was suppressed due to <5 deaths. Note: The International Classification of Disease (ICD) was revised in January 1, 2000 for mortality data and April 1, 2002 for hospitalization data. Caution should be used when interpreting trends over time periods which span this revision. Source: Cancer Incidence and Mortality [1995-2004], Cancer Care Ontario, Release: 6, July 2007.

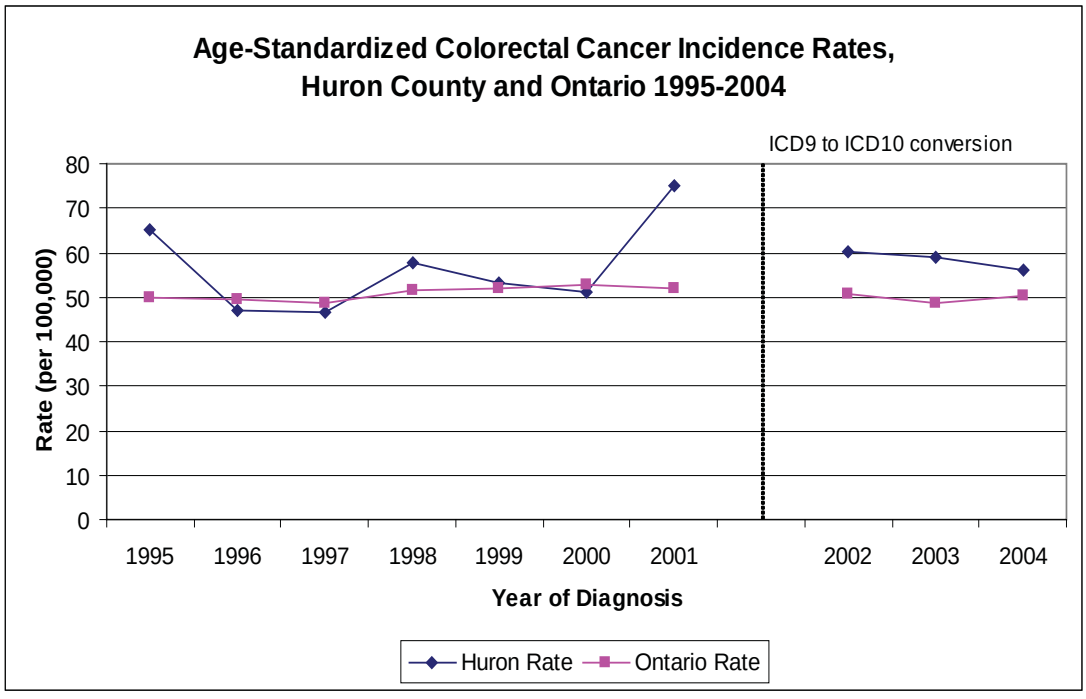
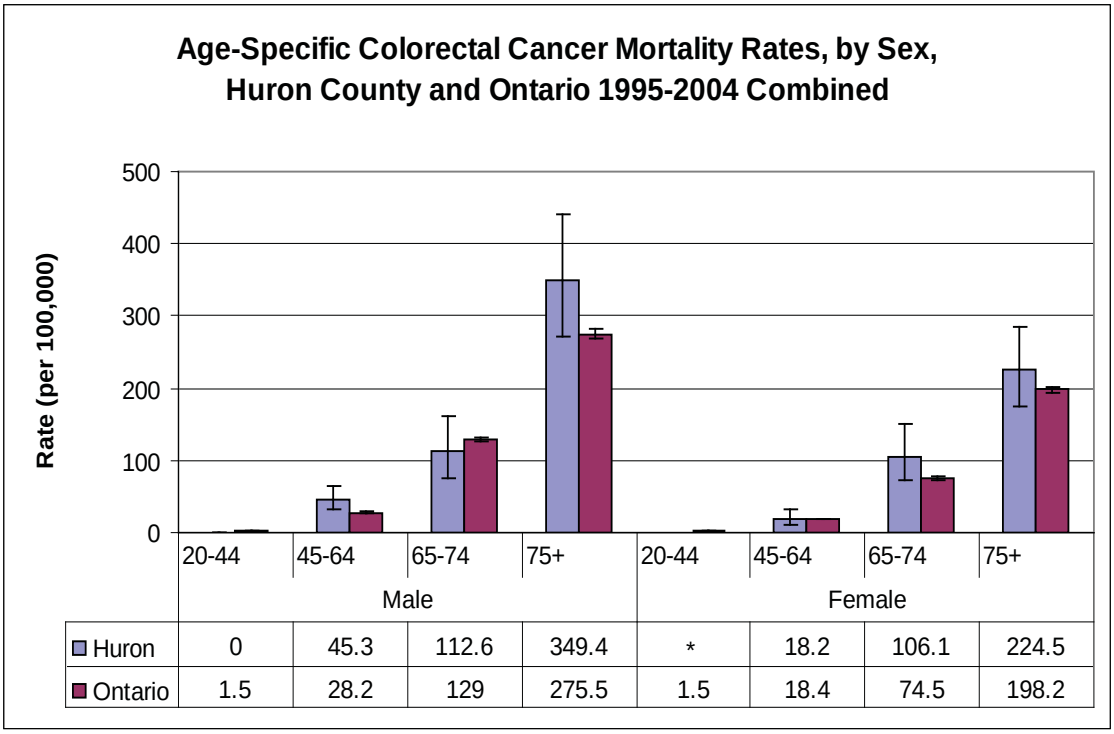


Figure 22. Age-standardized incidence rates for colorectal cancer in Huron County and Ontario (1995-2004). Source: Cancer Incidence [1995-2004], Cancer Care Ontario, Release: 6, July 2007.

Age-specific colorectal cancer mortality rates for 1995-2004 combined are shown for males and females in **Figure 23**. There was no significant difference in age-specific colorectal cancer mortality rates for Huron County and Ontario during this time period. In both regions, mortality rates were higher among males aged 45 years and older when compared to females, although this difference was not statistically significant for Huron County. In Huron County, over half of all deaths in this time period were among males and females aged 75 years and older (52.3% and 58.4%).



	Male 20-44	Male 45-64	Male 65-74	Male 75+	Female 20-44	Female 45-64	Female 65-74	Female 75+
Huron	0	45.3	112.6	349.4	*	18.2	106.1	224.5
Ontario	1.5	28.2	129	275.5	1.5	18.4	74.5	198.2

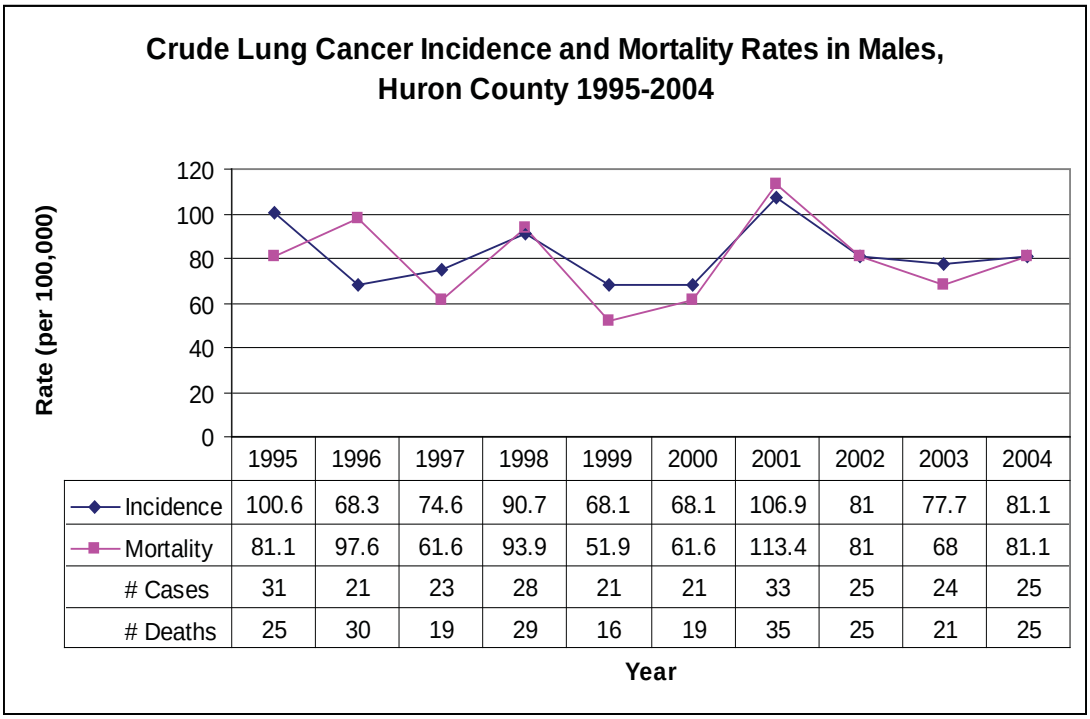
Figure 23. Age-specific colorectal cancer mortality rates for males and females in Huron County and Ontario, 1995-2004 data combined. Error bars represent 95% confidence intervals for the rates. * indicates that the rate was suppressed due to <5 deaths. Source: Cancer Mortality [1995-2004], Cancer Care Ontario, Release: 6, July 2007.

Lung Cancer

Lung cancer begins in cells of the lung. There are two main types of lung cancer: non-small cell lung cancer, which is the most common and can originate anywhere in the lungs and small cell lung cancer, which usually begins in the cells of the bronchi, bronchioles or alveoli.[18] The major risk factor for lung cancer is smoking. Other risk factors include: exposure to second-hand smoke; working with materials such as asbestos, arsenic, nickel and petroleum products; and exposure to radon gas.[19]

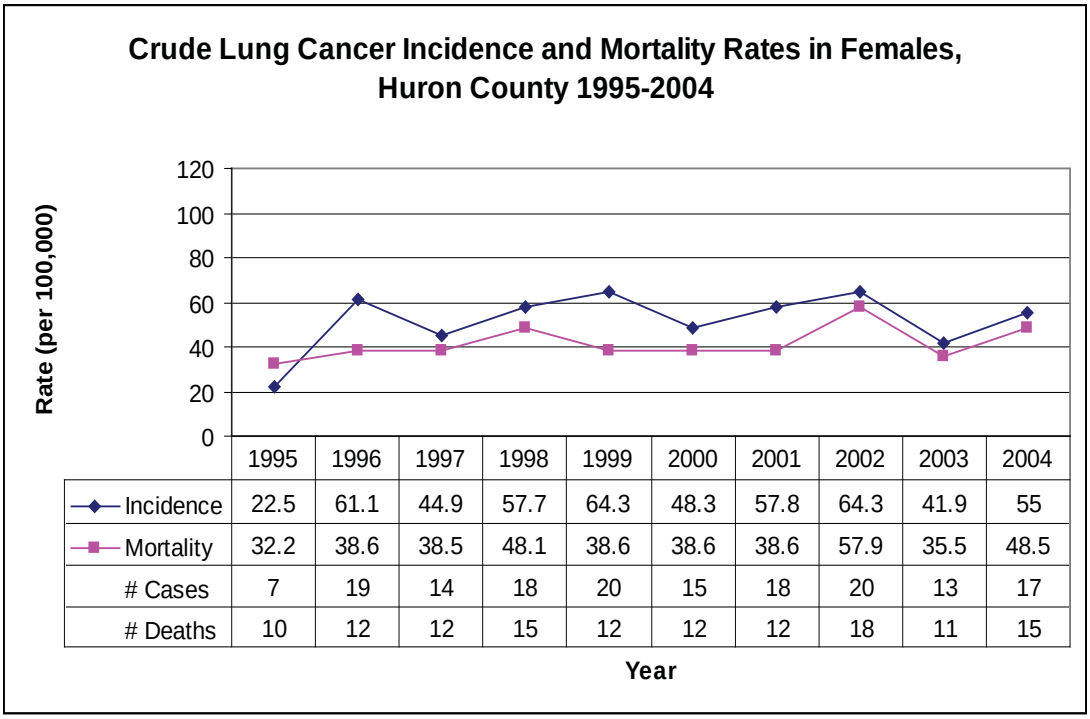
Lung cancer is the third most commonly diagnosed cancer and the leading cause of cancer death in Huron County. The crude incidence and mortality rates for lung cancer are shown in **Figure 24** (males) and **Figure 25** (females). Unlike other cancers presented here, crude incidence rates were similar to crude mortality rates for both sexes (i.e. the number of new cases diagnosed each year roughly matched the number of deaths each year). In Huron County males, there was an average of 25 new cases and 24 deaths each year between 1995 and 2004. By contrast, there was an average of 16 Huron County women diagnosed with lung cancer and 13 deaths each year.

Both crude lung cancer incidence and mortality rates were higher in Huron County males when compared to females between 1995 and 2004. This difference, however, was not statistically significant for most years.



	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Incidence	100.6	68.3	74.6	90.7	68.1	68.1	106.9	81	77.7	81.1
Mortality	81.1	97.6	61.6	93.9	51.9	61.6	113.4	81	68	81.1
# Cases	31	21	23	28	21	21	33	25	24	25
# Deaths	25	30	19	29	16	19	35	25	21	25

Figure 24. Crude lung cancer incidence and mortality rates for Huron County males, including the number of lung cancer cases and deaths for 1995 to 2004. "Year" refers to the year of diagnosis for incidence rates and new cases, and the year of death for mortality rates and deaths. Note: The International Classification of Disease (ICD) was revised in January 1, 2000 for mortality data and April 1, 2002 for hospitalization data. Caution should be used when interpreting trends over time periods which span this revision. Source: Cancer Incidence and Mortality [1995-2004], Cancer Care Ontario, Release: 6, July 2007.



	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Incidence	22.5	61.1	44.9	57.7	64.3	48.3	57.8	64.3	41.9	55
Mortality	32.2	38.6	38.5	48.1	38.6	38.6	38.6	57.9	35.5	48.5
# Cases	7	19	14	18	20	15	18	20	13	17
# Deaths	10	12	12	15	12	12	12	18	11	15

Figure 25. Crude lung cancer incidence and mortality rates for Huron County females, including the number of lung cancer cases and deaths for 1995 to 2004. "Year" refers to the year of diagnosis for incidence rates and new cases, and the year of death for mortality rates and deaths.

Note: The International Classification of Disease (ICD) was revised in January 1, 2000 for mortality data and April 1, 2002 for hospitalization data. Caution should be used when interpreting trends over time periods which span this revision. Source: Cancer Incidence and Mortality [1995-2004], Cancer Care Ontario, Release: 6, July 2007.

Lung cancer incidence rates, adjusted for age, are shown in **Figure 26** for Huron County and Ontario. Age-standardized lung cancer incidence rates have declined 7.7% in Ontario from 1995 to 2004. The trend is less clear in Huron County due to a smaller number of cases. For all years examined, age-standardized lung cancer incidence rates for Huron County were similar to the province.

Age-specific lung cancer rates for males and females for 1995 to 2004 combined and are shown in **Figure 27** for Huron County and Ontario. Rates were significantly higher for males compared to females for those aged 65-74 years and 75+ years in Huron County. While Huron County and Ontario mortality rates were similar for most age groups, Huron County women aged 75 years and older had a significantly lower mortality rate compared to the province.

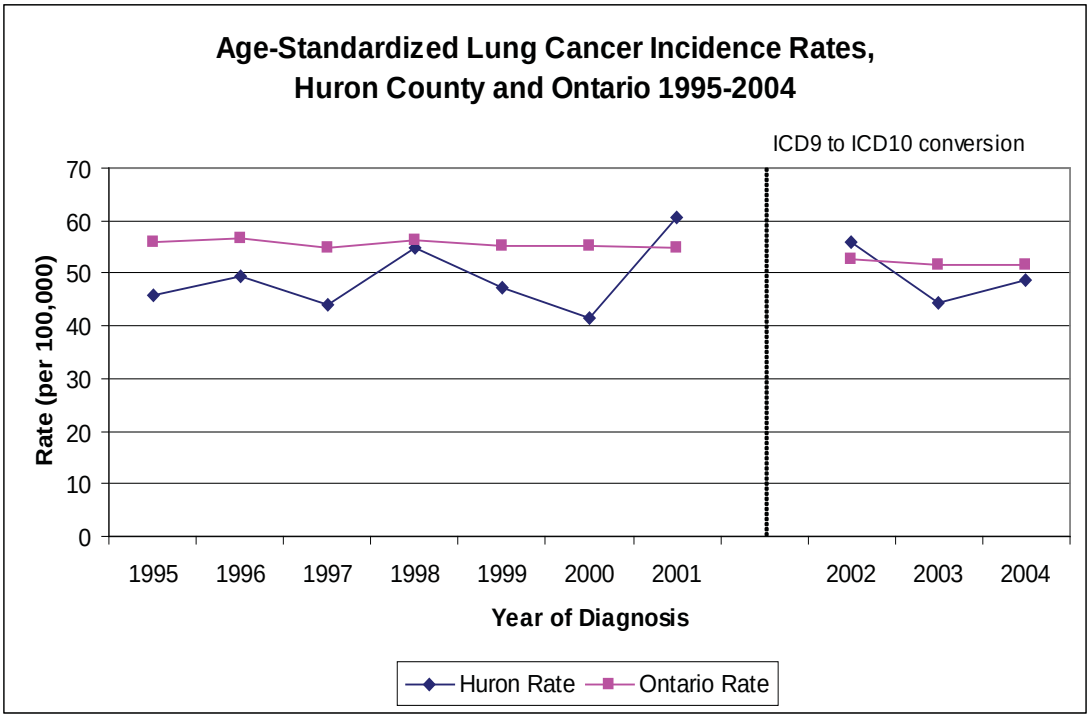
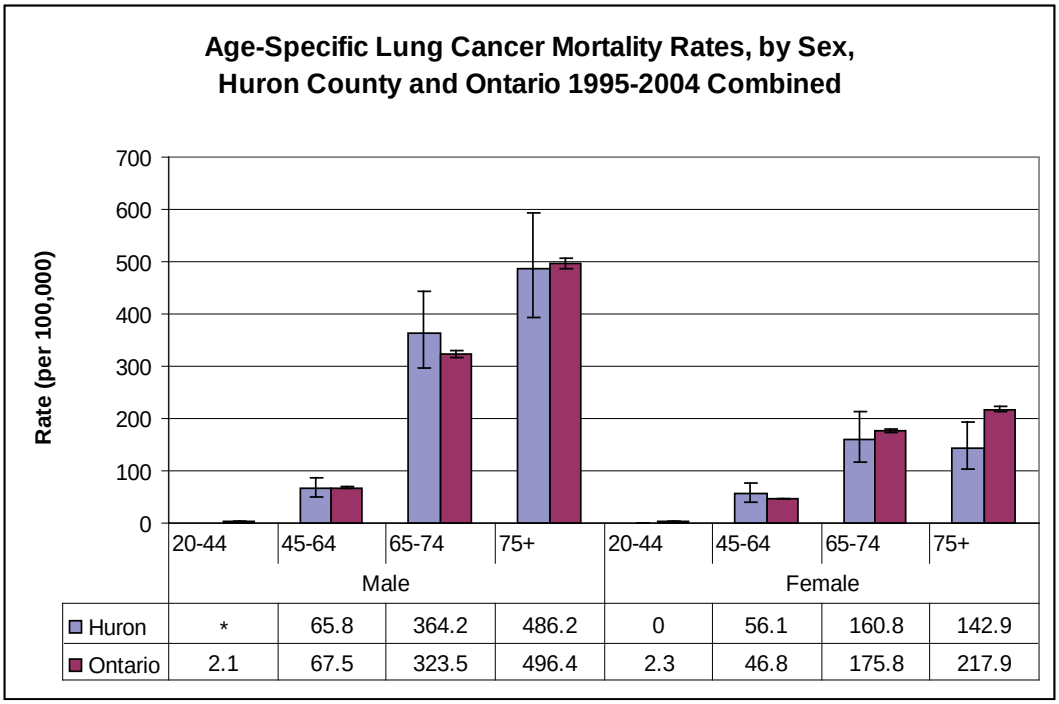


Figure 26. Age-standardized incidence rates for lung cancer in Huron County and Ontario (1995-2004). Source: Cancer Incidence [1995-2004], Cancer Care Ontario, Release: 6, July 2007.



	Male				Female			
	20-44	45-64	65-74	75+	20-44	45-64	65-74	75+
Huron	*	65.8	364.2	486.2	0	56.1	160.8	142.9
Ontario	2.1	67.5	323.5	496.4	2.3	46.8	175.8	217.9

Figure 27. Age-specific lung cancer mortality rates for males and females in Huron County and Ontario, 1995-2004 data combined. Error bars represent 95% confidence intervals for the rates. * indicates that the rate was suppressed due to <5 deaths. Source: Cancer Mortality [1995-2004], Cancer Care Ontario, Release: 6, July 2007.

Prevalence of Cancer Screening

Cancer screening is used to identify early disease or precursors of disease in individuals who are not exhibiting any symptoms so that the disease can be treated early and result in a better outcome.[19]

Breast Cancer

Breast screening includes mammography and a physical examination of the breasts by a health care professional. A mammogram is a low dose X-ray of the breast, which can detect changes in the breast even when they are too small to feel or see.[20] Regular mammograms have been shown to reduce the risk of dying from breast cancer and allow women more treatment options if detected early.[21] In Ontario, the Canadian Cancer Society recommends women aged 50 to 74 years have a screening mammogram roughly every two years.

In 2005, 87.2% (95% CI 80.8-93.6) of Huron County women aged 50-74 years reported ever having a mammogram, which was similar to Ontario.[2] This figure, however, drops to 68.6% (95% CI 58.3-79.0) for women who report having a mammogram within the last two years as recommended. This percentage is also similar to the province (72.2%, 95% CI 70.5-73.9).

Cervical Cancer

An effective way to control cervical cancer is through regular Pap test screening. Pap tests can identify precancerous lesions and cancers at an early stage, when treatments are most effective.[22] The Ontario Cervical Screening Program Practice Guidelines outlines that women of all ages who have been sexually active should be screened.[23] It is recommended that pap tests are conducted annually until 3 consecutive normal tests, after which screening is recommended to be continued every 2-3 years. Screening is discontinued after age 70 if there have been three or more normal pap tests within the previous ten years.

In Huron County, in 2005, 94.3% (95% CI 90.6-98.0) of women aged 18 to 69 years reported ever having a pap test.[2] In addition, 72.9% (95% CI 65.8-79.9) of women in this same age group reported having a pap test within the last 3 years as recommended. This percentage was similar to the province (74.6%, 95% CI 73.5-75.7).
The main cause of cervical cancer is infection with a high-risk form of human papillomavirus (HPV). In July 2006, an HPV vaccine, Gardasil®, was approved by Health Canada for females aged 9 to 26 years. If received before possible exposure to HPV through sexual contact, Gardasil® protects against two of the many high-risk types of HPV, which are responsible for seventy per cent of cervical cancers.[24] In the fall of 2007, the government of Ontario introduced the HPV vaccine as part of a voluntary school-based immunization program for females in Grade eight.[25] In Huron County, 42.5% (164/386) of Grade eight girls had started the series of vaccinations in 2007.[4]

Colorectal Cancer

The primary method of screening for colorectal cancer is to administer a Fecal Occult Blood Test (FOBT). Regular screening using this test has been shown to reduce the risk of dying of colorectal cancer by a minimum of 16% in several large, randomized clinical trials.[26 27] Screening for colorectal cancer can be particularly effective, as there is a 90 per cent chance of curing colorectal cancer if it is detected early and only a ten per cent chance if it is detected at an advanced stage.[28] Individuals typically display no symptoms at first, so screening is the best way to detect this cancer early.[29]

In January 2007, a province-wide colorectal cancer screening program was launched by the Ministry of Health and Care and Long-Term Care and Cancer Care Ontario. This program provides funding to screen all average risk men and women 50 years and older using the FOBT every two years.[29]

In 2005, before the launch of this program, 43.6% (95% CI 36.6-50.7) of Huron County residents aged 50 years and older reported ever having a FOBT.[2] However, just 20.5%‡ (95% CI 13.6-27.5) of all Huron County adults aged 50 years and older reported having a FOBT within the last two years as recommended by Cancer Care Ontario and the Canadian Cancer Society. This is similar to the

‡ Interpret with caution, high sampling variability.

province (20.8%, 95% CI 19.8-21.8).

Colonoscopies are generally recommended to screen those at increased risk because of one or more first degree family members with colorectal cancer. It is also recommended as a follow-up procedure for those with positive FOBT results.[29] Use of colonoscopy procedures in Ontario has been reported by the Institute for Clinical Evaluative Sciences.[29] In 2001, Huron County colonoscopy utilization rates were significantly higher than Ontario for adults aged 50-74 years and were also higher than all other counties within the South West region. Between 1992 and 2001, 20.0% of Huron County adults 50-74 years had at least one colonoscopy compared to 15.7% of Ontarians. Living in a rural area does not appear to be a barrier to accessing colonoscopy procedures.

Conclusions

Three quarters of Huron County residents report having at least one chronic health condition, with arthritis and rheumatism being the most commonly reported chronic health condition. Hospitalization and mortality rates for ischemic heart disease, cerebrovascular disease, diabetes and chronic lower respiratory diseases were generally similar between Huron County and Ontario. Cancer is another important chronic disease, with roughly just over 300 new cancer cases diagnosed among Huron County residents and over 150 deaths annually. The most commonly diagnosed cancers, and also the leading causes of cancer death in Huron County, are prostate, breast, colorectal and lung cancer. The percentage of Huron County residents reporting undergoing preventive cancer screening tests, including mammograms, pap tests and fecal occult blood testing, are similar to the province.

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