

Cancer in Manitoba

DEPARTMENT OF EPIDEMIOLOGY
& CANCER REGISTRY



Annual Statistical Report

Department of Epidemiology and Cancer Registry

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Vision

Through engaged partnerships, effective research, and knowledge exchange, generate relevant information on all essential facets of cancer control including prevention, screening, early detection, treatment, and palliation.

Mission

To enhance the development and evaluation of a cancer control strategy by collecting data, and conducting surveillance and research across the spectrum of cancer control in Manitoba.

Department of Epidemiology and Cancer Registry 2011 Report from the Managers

The Department of Epidemiology and Cancer Registry continues its dedication to the advancement of cancer control initiatives and works diligently to provide high quality cancer data, and consultation on statistical analysis and cancer epidemiology. Day to day operations of the Department mean handling an increase in the number and complexity of variables captured in the Manitoba Cancer Registry, as well as providing epidemiological support to CancerCare Manitoba (CCMB) administrators, clinicians, researchers and program planners, and the CancerCare Manitoba Foundation (CCMF), Manitoba Health, Manitoba Regional Health Authorities, provincial, national and international agencies, and the private sector and public.

Every year there is an increase in the number of projects and initiatives matched with an expectation of Departmental support. Therefore, guided by the five goals of our revised strategic plan, the Department is engaging with CCMB and our stakeholders to best meet the growing demand and need for data.

Data Requests

YEAR	PROGRAM PLANNING/ PATIENT CARE/ CLINICAL GUIDELINES	SURVEILLANCE/ EDUCATIONAL	RESEARCH	TOTAL
2007	35	13	31	79
2008	17	21	21	59
2009	30	15	31	76
2010	29	25	38	92
2011	17	28	64	109

2011 initiatives and ongoing work include:

- **Data Quality**

The Manitoba Cancer Registry has submitted its 2011 data to the North America Association of Central Cancer Registries for certification. The Registry has held gold certification since 2006.

- **Staging**

Recognized as a leader in capturing stage amongst North American cancer registries, the Registry has stage at diagnosis information on all cancer cases diagnosed from 2004 forward.

Electronic pathology (ePath) is now flowing into the Registry's database from all private and public labs across Manitoba.

- **Prevention**

The Department has engaged in several projects to help determine how to reduce the risk of Manitobans getting cancer.

- The Youth Health Survey (YHS) is a collaborative project with RHAs, government and other organizations. To determine youth behavioural risk factors, a census of youths in grades 7–12 (65,000 students) was undertaken. With support from CCMF, the Epidemiology Unit led this massive initiative and provided data analyses and interpretation, knowledge exchange and report writing.
- Responding to the ongoing need for publication education on sun/UV safety, the Unit has engaged in outreach activities supported by a grant from CCMF.
- Due to the lack of a specific prevention unit, the Virtual Prevention Unit was created to answer the recognized need for organized and collaborative cancer prevention initiatives between CCMB departments.

- **Clinical Epidemiology**

The Department engages with CCMB clinicians and others to support research and determine clinical outcomes by:

- Dedicating cancer registrars to work with specific Disease Site Groups (DSGs).
- Providing ongoing epidemiological collaboration with physicians from DSGs, including Manitoba Oncology Drug Utilization and Clinical Outcome.
- Developing and maintaining databases for clinician research.
- Retaining epidemiologists and health outcome analysts to work hand in hand with the clinicians on clinical research endeavors.
- Providing support to clinicians, students and staff throughout the research process (ethics, RRIC, HIPC, data sharing agreements, etc.)

- **System Performance**

The Department continues its work with the Canadian Partnership Against Cancer by building on the first two System Performance Reports (2009, 2010) and updating a number of indicators with more recent data and introducing several new ones for prevention, screening, treatment and long-term outcomes.

- **IN SIXTY**

Heavily involved in this major provincial initiative which aims to reduce the wait from suspicion of cancer to treatment, the Department is supporting multiple initiatives to improve the cancer patient journey.

- **Benchmarking**

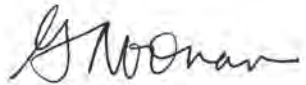
Led by the UK, The International Cancer Benchmark Partnership is a unique and innovative global group of clinicians, academics and policymakers seeking to understand how and why cancer survival varies between countries/jurisdictions. Given its recognized strength in data collection and analytic expertise, CancerCare Manitoba was invited to participate. This collaboration aims to generate insight and understanding that will help all partners improve cancer survival outcomes by optimizing cancer policies and services.

The Department is proud of its ability to provide key knowledge, data collection support, and analytical expertise. This is due in part to our partners - Manitoba hospitals, clinics, physicians, Diagnostic Services of Manitoba and all private labs, Manitoba Health, Manitoba Vital Statistics Agency and other health care professionals - and we thank them for their efforts.



Dr. Jane Griffith

MANAGER, EPIDEMIOLOGY UNIT
CancerCare Manitoba



Gail Noonan

MANAGER, MANITOBA CANCER REGISTRY
CancerCare Manitoba

Introduction to the Data

The Manitoba Cancer Registry is an essential tool for evidence-based, data-driven decision making that has an immense impact on treatment and research. This year's report is based on the following information.

NOTE: *All statistics in the body of this report only include Manitoba residents.*

Manitoba Cancer Registry data is used for:

- health care planning and monitoring
- surveillance and studies on the causes and prevention of cancer, cancer clusters, treatment patterns, outcomes and survival
- patient care
- quality assurance
- reporting to the Canadian Cancer Registry, the North American Association of Central Cancer Registries and the International Association of Cancer Registries

Information sources include:

- provincial cytology and pathology departments
- admission/separation data from the provincial hospital abstracting system
- Vital Statistics
- letters and "Report of Malignant Neoplasm Forms" from physicians and other health care providers
- hospital health records
- correspondence from other provincial and territorial cancer registries on Manitoba residents diagnosed and/or treated in those jurisdictions

Incidence data

Incidence refers to the number of new cases of cancer diagnosed in Manitoba every year. Cancer cases referenced were diagnosed in the 2011 calendar year. Incidence is also provided by stage of disease at diagnosis.

The Manitoba Cancer Registry uses disease site groupings according to the International Classification of Diseases for Oncology Third Edition (ICD-O₃), based on Surveillance Epidemiology and End Results (SEER) Groups. The primary site groupings used for incidence can be found in Appendix 3.

Mortality data

Mortality information refers to Manitobans who died of cancer in the 2011 calendar year, however those patients may not have been diagnosed in 2011. This information is provided by Manitoba's Vital Statistics Agency. The totals in the summary on page 9 (Mortality by site, 2011) include all cancer deaths occurring in Manitoba.

The Manitoba Cancer Registry uses disease site groupings according to the International Statistical Classification of Diseases and Related Health Problems, Tenth Revision (ICD-10).

Rates

Incidence and mortality counts and rates are all presented in this report. Annual age-standardized rates are per 100,000 population and allow for comparison of cancer rates in different regions with different age structures. Rates are age-standardized (using the direct method) to the 2001 Manitoba population.

Staging data

The Manitoba Cancer Registry implemented the Collaborative Stage Data Collection System for all cases of cancer (excluding non-melanoma skin) diagnosed January 1, 2004 and forward. This data derives the "best stage" grouping consistent with the AJCC Cancer Staging Manual, 7th edition.

In this report, stage data is shown for all disease site groups with a cancer incidence of 45 cases per year or more and is represented using pie charts. Additionally, stage information, along with frequency of incidence for each of these sites, can be found in table format on page 14 and 15.

Population data

Data are based on Manitoba estimates provided by Manitoba Health.

Additional statistical information is available upon request. Please contact the Manitoba Cancer Registry at (204) 787-2174 or email epi.cancerregistry@cancercare.mb.ca.

Manitoba's Cancer Profile

Facts & Figures

Cancer is a significant health issue. In 2011, 10,462 Manitobans were diagnosed with cancer:

- 6,302 invasive cancers
- 3,761 in situ (confined to the area of origin)
- 292 unspecified cancers

In this same year, 2,756 people died from the disease.

The number of cancer cases in Manitoba is influenced by three factors:

- the age of the population
- the size of the population
- risk factors such as unhealthy living (including smoking, poor diet, inactivity, sun exposure), some environmental carcinogens, genetic predisposition and not being screened.

Adjusting for age, cancer incidence and mortality rates for Manitoba men and women were stable over 2006 – 2011 for the top cancer diagnoses – breast, prostate, colorectal, and lung. Only breast cancer mortality in Manitoba women showed a significant decreasing annual percent change during this time period – 3.01% per year*.

Most Common Cancer Diagnoses, 2011

Incidence

Male		Female		Total	
SITE	CASES	SITE	CASES	SITE	CASES
Prostate	670	Breast	923	Breast	927
Colorectal	493	Lung & bronchus	436	Colorectal	912
Lung & bronchus	433	Colorectal	419	Lung & bronchus	869
Kidney	162	Corpus uteri	220	Prostate	670
Non-Hodgkin lymphoma	144	Non-Hodgkin lymphoma	123	Non-Hodgkin lymphoma	267
Bladder	105	Melanoma of the skin	99	Kidney	238
Melanoma of the skin	95	Thyroid	93	Corpus uteri	220
Pancreas	94	Ovary	87	Melanoma of the skin	194
Stomach	92	Pancreas	81	Pancreas	175
Brain	50	Kidney	76	Bladder	140
Chronic lymphocytic leukemia	50				

Mortality

Male		Female		Total	
SITE	CASES	SITE	CASES	SITE	CASES
Lung and bronchus	347	Lung and bronchus	318	Lung and bronchus	665
Colorectal	171	Breast	192	Colorectal	336
Prostate	149	Colorectal	165	Breast	194
Pancreas	75	Pancreas	79	Pancreas	154
Esophagus	60	Ovary	54	Prostate	149
Non-Hodgkin lymphoma	57	Non-Hodgkin lymphoma	49	Non-Hodgkin lymphoma	106
Kidney	52	Stomach	29	Stomach	76
Stomach	47	Other digestive system	27	Esophagus	75
Bladder	44	Bladder	26	Kidney	73
Other digestive system	33	Multiple myeloma	23	Bladder	70

* Software Citation: Joinpoint Regression Program, Version 4.0.4 - May 2013; Statistical Methodology and Applications Branch, Surveillance Research Program, National Cancer Institute.

Department of Epidemiology and Cancer Registry Feature:

Non-Melanoma Skin Cancer in Manitoba

Radiation from sunlight is the single most important risk factor for developing non-melanoma skin cancer (NMSC). The two main forms of NMSC are basal cell carcinomas (BCC) and squamous cell carcinomas (SCC), which comprise 95% of non-melanoma skin cancers. All types of ultraviolet radiation have been recognized as carcinogenic and have been implicated in the development of both BCC and SCC, collectively known as NMSC. However, other factors such as skin type and skin characteristics, and immunosuppressive status are known to contribute to the development of NMSC.

Men tend to have consistently higher incidence of NMSC than women in all regions of the province. Figure 1 shows the trends in Manitoba from 1960 to 2011 for NMSC. The rates for both men and women increase until 2000, but starting in 2001, the rate started declining and began showing some stability after 2008. Classifying the death of individuals due to NMSC has always been difficult, but overall results show that incidence has increased and mortality rates stayed the same, which suggest that diagnosis and treatment are increasingly efficient and effective.

To grasp the total economic burden NMSC has placed on the country, the Canadian Partnership Against Cancer

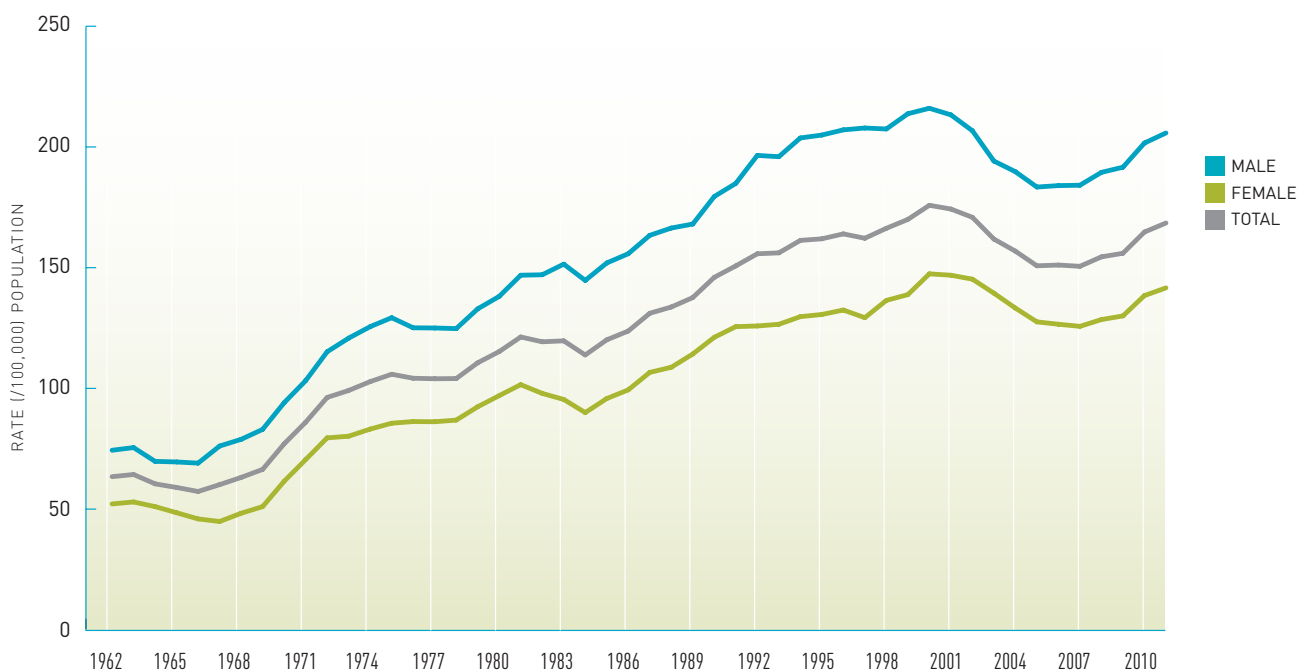
calculated the overall cost and reported an estimated \$88 million in 2004 dollars. By 2031, the number is projected to rise to approximately \$220 million.

Understanding skin cancer incidence and treatment is key to planning prevention strategies and allocating resources for treatment. Australia has the highest incidence and mortality rates for skin cancer in the world and based on their experience, the sun-drenched country reported an increase in sun protection behaviors due to various awareness campaigns and multi-component interventions at the community, state, and national level. It is estimated that a comprehensive skin cancer prevention program in Canada sustained until 2031 would result in 20500 fewer NMSC cases, and 85 fewer NMSC-related deaths.

CancerCare Manitoba, in partnership with the CancerCare Manitoba Foundation and the departments of Epidemiology, Communications, Medical Oncology, and the Cutaneous Oncology Disease Site Group, is establishing a sun/UV safety awareness program, with prevention and early detection of skin cancer messaging that informs Manitobans.

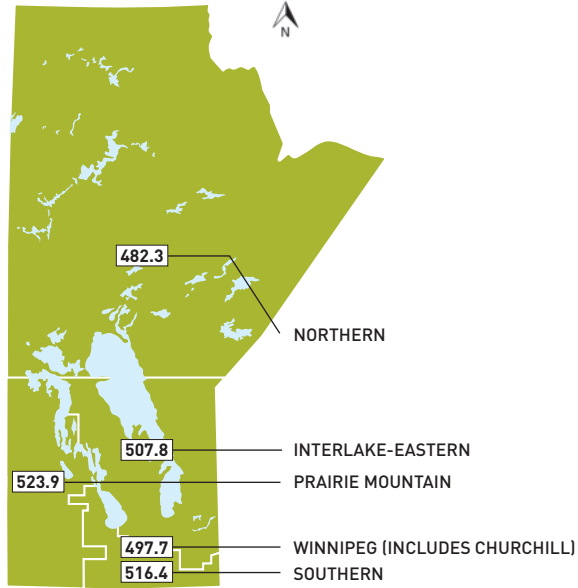
Non-Melanoma Skin Cancer in Manitoba, 1960-2011

AGE-STANDARDIZED INCIDENCE RATES (3-YEAR MOVING AVERAGE)



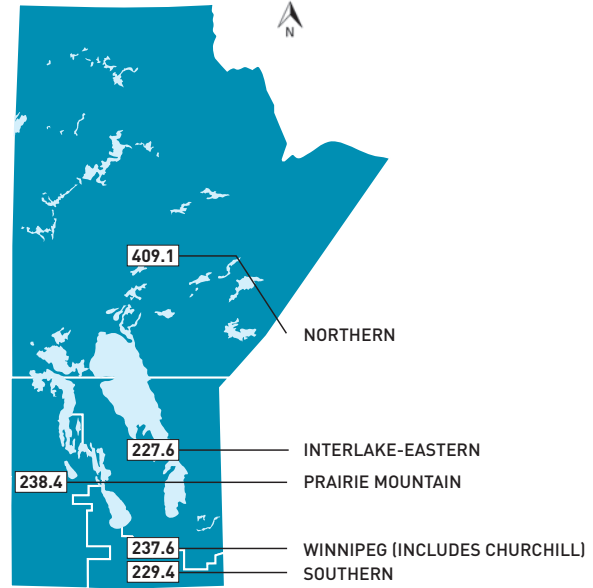
2011 All Invasive Cancers – Male *Incidence*

Age-standardized rate per 100,000
Standard population: Manitoba 2001
Out of province residents excluded.



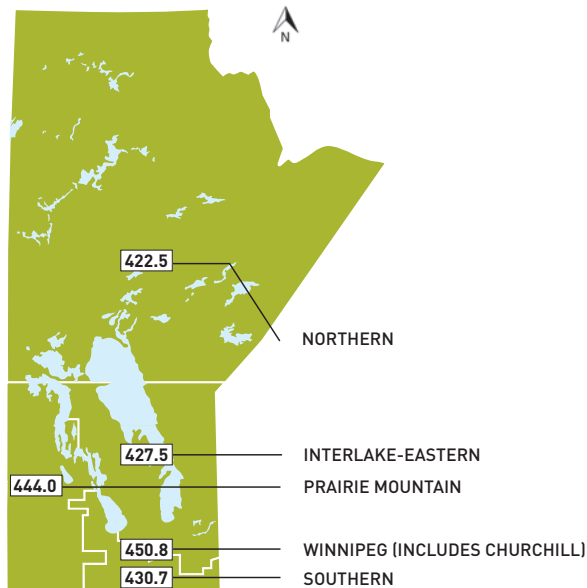
2011 All Invasive Cancers – Male *Mortality*

Age-standardized rate per 100,000
Standard population: Manitoba 2001
Out of province residents excluded.



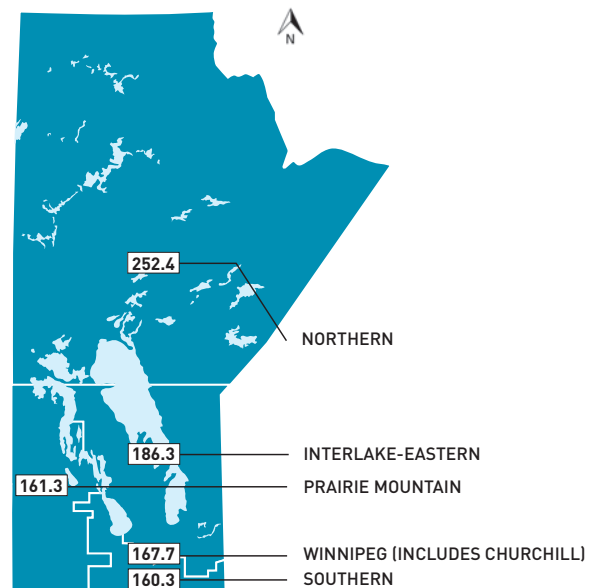
2011 All Invasive Cancers – Female *Incidence*

Age-standardized rate per 100,000
Standard population: Manitoba 2001
Out of province residents excluded.



2011 All Invasive Cancers – Female *Mortality*

Age-standardized rate per 100,000
Standard population: Manitoba 2001
Out of province residents excluded.

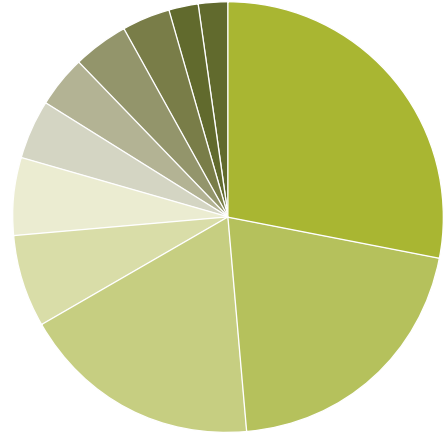


Cancer Incidence by Site

Invasive cancers only

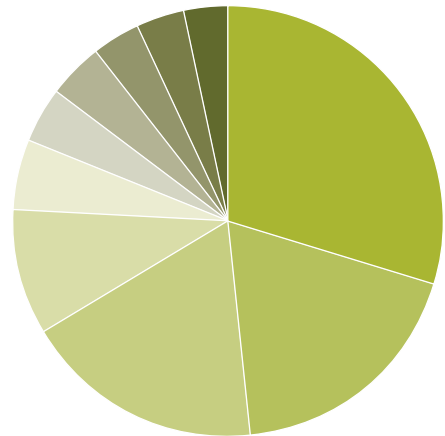
Cancer Incidence by Site, Male

21.6% Prostate	3.1% Melanoma of the skin
15.9% Colorectal	3.0% Pancreas
14.0% Lung & bronchus	3.0% Stomach
5.2% Kidney	1.6% Brain
4.7% Non-Hodgkin lymphoma	1.6% Chronic lymphocytic leukemia
3.4% Bladder	



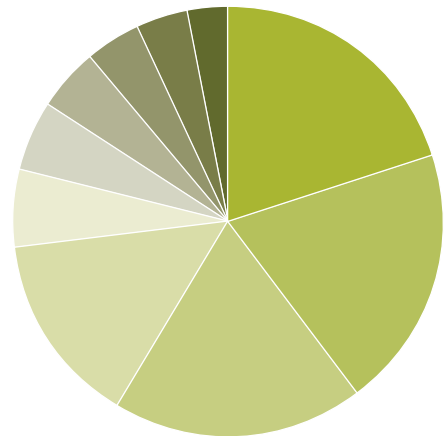
Cancer Incidence by Site, Female

28.8% Breast	3.1% Melanoma of the skin
13.6% Lung & bronchus	2.9% Thyroid
13.1% Colorectal	2.7% Ovary
6.9% Corpus uteri	2.5% Pancreas
3.8% Non-Hodgkin lymphoma	2.4% Kidney



Cancer Incidence by Site, Total

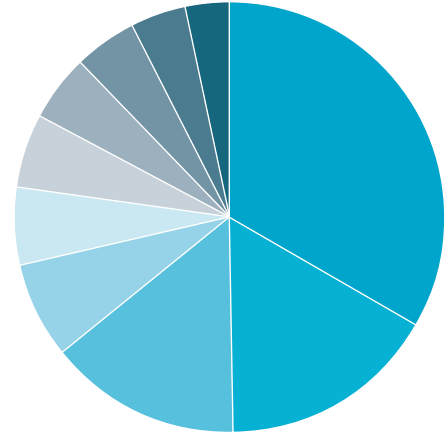
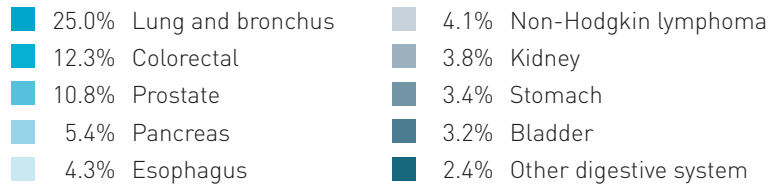
14.7% Breast	3.8% Kidney
14.5% Colorectal	3.5% Corpus uteri
13.8% Lung & bronchus	3.1% Melanoma of the skin
10.6% Prostate	2.8% Pancreas
4.2% Non-Hodgkin lymphoma	2.2% Bladder



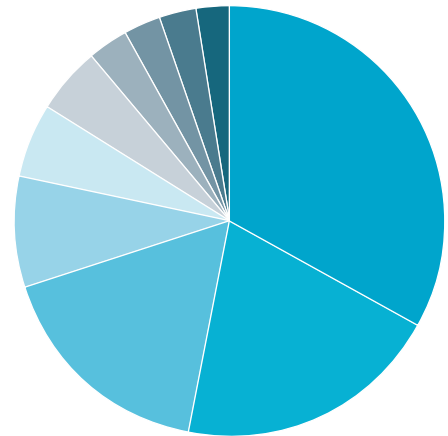
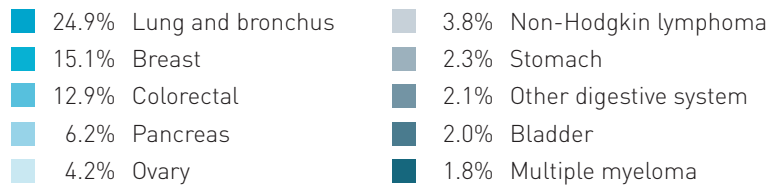
Cancer Mortality by Site

Invasive cancers only

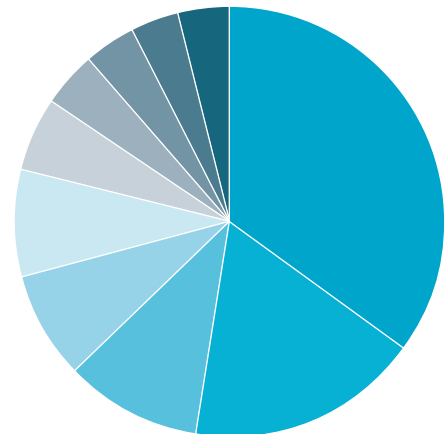
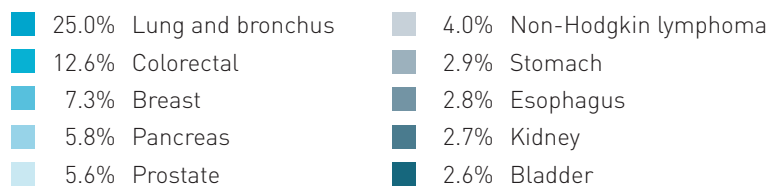
Cancer Mortality by Site, Male



Cancer Mortality by Site, Female



Cancer Mortality by Site, Total



Cancer Incidence - Cases and Rates in Manitoba by Site, 2011

CANCER SITE	0-29			30-39			40-49			50-59			60-69			70-79			80+			TOTAL COUNT			*ASIR			
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	
BUCCAL CAVITY & PHARYNX	Lip	1	0	1	1	0	1	3	1	4	11	0	11	6	4	10	12	2	14	12	3	15	46	10	56	7.79	1.34	4.20
	Tongue	1	1	2	4	0	4	3	2	5	8	1	9	8	1	9	5	0	5	2	1	3	31	6	37	4.83	0.89	2.78
	Major salivary gland	0	2	2	0	0	0	1	0	1	0	0	0	2	1	3	2	2	4	1	2	3	6	7	13	1.01	1.01	1.01
	Floor of mouth	0	0	0	0	0	0	1	0	1	5	1	6	4	0	4	0	0	0	1	0	1	11	1	12	1.54	0.13	0.80
	Gum & other mouth	0	0	0	0	0	0	0	2	2	0	4	4	3	0	3	1	1	2	2	3	5	6	10	16	0.97	1.39	1.17
	Nasopharynx	0	0	0	0	0	0	4	1	5	2	1	3	1	1	2	1	0	1	1	0	1	9	3	12	1.48	0.43	0.92
	Oropharynx	0	0	0	0	0	0	1	0	1	2	0	2	2	0	2	0	1	1	0	0	0	5	1	6	0.69	0.17	0.43
	Hypopharynx	0	0	0	0	0	0	0	0	0	2	0	2	3	0	3	5	1	6	1	1	2	11	2	13	1.81	0.28	1.00
	Other buccal cavity & pharynx	0	0	0	0	0	0	5	0	5	12	1	13	6	3	9	0	1	1	0	0	0	23	5	28	3.21	0.66	1.94
DIGESTIVE	Esophagus	0	0	0	1	0	1	3	0	3	6	1	7	13	3	16	13	3	16	11	2	13	47	9	56	7.85	1.22	4.17
	Stomach	0	0	0	0	1	1	3	2	5	17	2	19	27	7	34	28	16	44	17	13	30	92	41	133	14.98	5.77	9.98
	Small intestine	0	0	0	0	0	0	1	0	1	2	2	4	4	4	8	3	4	7	4	6	10	14	16	30	2.33	2.10	2.20
	Colon excluding rectum	1	0	1	6	5	11	10	10	20	34	30	64	76	65	141	92	77	169	66	114	180	285	301	586	48.04	40.22	43.88
	Rectum & rectosigmoid	0	1	1	7	3	10	11	10	21	40	28	68	66	26	92	55	23	78	29	27	56	208	118	326	33.21	16.21	24.02
	Anus	0	0	0	0	0	0	0	2	2	1	5	6	2	1	3	2	3	5	1	2	3	6	13	19	0.97	1.86	1.42
	Liver	0	0	0	0	0	0	1	1	2	10	2	12	9	3	12	18	6	24	1	2	3	39	14	53	6.29	2.03	4.06
	Gallbladder	0	0	0	0	0	0	1	0	1	0	1	1	0	2	2	1	2	3	1	3	4	3	8	11	0.57	1.05	0.83
	Pancreas	0	0	0	1	0	1	4	3	7	13	12	25	23	14	37	34	18	52	19	34	53	94	81	175	15.86	10.66	13.12
	Other digestive system	0	0	0	1	0	1	0	0	0	7	2	9	9	8	17	7	8	15	12	11	23	36	29	65	6.00	3.81	4.74
RESPIRATORY	Larynx	0	0	0	0	1	1	1	0	1	5	1	6	12	1	13	7	2	9	4	1	5	29	6	35	4.50	0.88	2.54
	Lung & bronchus	0	0	0	2	3	5	8	6	14	60	72	132	136	120	256	128	122	250	99	113	212	433	436	869	71.38	58.77	63.89
	Other respiratory system	0	0	0	0	0	0	2	0	2	2	2	4	0	1	1	2	3	5	0	0	0	6	6	12	1.00	0.88	0.95
OTHER	Bones & joints	3	4	7	3	0	3	1	1	2	1	1	2	0	0	0	1	0	1	0	1	1	9	7	16	1.52	1.09	1.31
	Soft tissue (Including heart)	3	6	9	1	2	3	5	2	7	1	6	7	2	2	4	3	1	4	4	4	8	19	23	42	3.30	3.37	3.27
	Kaposi sarcoma	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0.00	0.18	0.09
	Mesothelioma	0	0	0	0	0	0	0	1	1	1	0	1	5	1	6	8	0	8	3	1	4	17	3	20	2.91	0.41	1.53
	Melanoma of the skin	3	5	8	3	8	11	13	13	26	15	15	30	25	18	43	20	19	39	16	21	37	95	99	194	15.50	14.27	14.73
	Breast	0	3	3	0	31	31	0	123	123	0	220	220	2	221	223	1	186	187	1	139	140	4	923	927	0.65	130.34	68.98
	Other																											
FEMALE GENITAL	Cervix uteri		2			7			9			10			8			2			4			42			6.26	
	Corpus uteri		0			5			13			64			84			32			22			220			29.71	
	Uterus, NOS		0			0			1			7			1			0			1			10			1.34	
	Ovary		3			4			16			15			19			20			10			87			12.78	
	Other female genital system		0			0			5			9			7			7			8			36			4.99	

MALE GENITAL	Prostate	0	0	10	125	246	172	117	670	105.91																		
	Testis	12	13	6	1	1	1	0	34	5.77																		
	Penis	0	0	0	0	2	1	2	5	0.85																		
	Other male genital system	0	0	0	0	0	1	0	1	0.19																		
URINARY	Bladder	0	0	0	1	0	1	6	6	12	37	6	43	26	9	35	35	14	49	105	35	140	17.68	4.60	10.22			
	Kidney	4	1	5	4	3	7	21	5	26	32	9	41	42	26	68	39	20	59	20	12	32	162	76	238	26.09	10.62	17.82
	Ureter	0	0	0	0	0	0	0	0	0	1	0	1	2	0	2	1	0	1	1	1	2	5	1	6	0.78	0.11	0.42
	Other urinary system	0	0	0	0	0	0	0	0	0	1	0	1	1	0	1	2	0	2	3	0	3	7	0	7	1.25	0.00	0.52
Eye	0	1	1	0	0	0	0	0	1	1	2	1	2	3	1	0	1	0	1	1	3	6	9	0.45	0.83	0.65		
BRAIN & OTHER NERVOUS	Brain	12	7	19	1	3	4	2	4	6	8	7	15	15	6	21	8	5	13	4	5	9	50	37	87	7.75	5.47	6.55
	Other nervous system	2	3	5	1	0	1	0	0	0	0	1	1	0	0	0	0	0	0	1	0	1	4	4	8	0.70	0.63	0.64
ENDOCRINE	Thyroid	0	12	12	2	19	21	5	18	23	12	17	29	9	15	24	4	6	10	1	6	7	33	93	126	4.92	14.34	9.69
	Other endocrine	1	2	3	0	0	0	0	0	0	3	1	4	0	0	0	0	0	0	0	1	1	4	4	8	0.56	0.58	0.58
LYMPHOMA	Hodgkin lymphoma	4	7	11	1	4	5	1	0	1	4	0	4	3	1	4	1	3	4	1	1	2	15	16	31	2.30	2.62	2.45
	Non-Hodgkin lymphoma	5	6	11	4	5	9	7	6	13	23	11	34	32	33	65	45	32	77	28	30	58	144	123	267	24.11	17.14	20.19
	Multiple myeloma	0	0	0	0	1	1	2	0	2	8	6	14	15	8	23	10	8	18	8	11	19	43	34	77	6.83	4.52	5.60
LEUKEMIAS	Acute lymphocytic	2	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	3	0.32	0.17	0.25
	Chronic lymphocytic	0	0	0	0	0	0	0	0	0	1	4	5	23	8	31	13	7	20	13	10	23	50	29	79	8.15	3.80	5.70
	Acute myeloid	0	2	2	2	3	5	4	3	7	2	1	3	6	3	9	10	2	12	9	2	11	33	16	49	5.81	2.46	3.85
	Chronic myeloid	2	0	2	1	0	1	1	0	1	1	1	2	2	0	2	3	3	6	2	5	7	12	9	21	2.04	1.20	1.64
	Other leukemias	0	1	1	0	0	0	0	0	0	2	2	4	4	1	5	5	1	6	2	4	6	13	9	22	2.13	1.17	1.63
	Other, ill defined & unknown	0	3	3	1	0	1	4	5	9	10	17	27	31	14	45	34	32	66	40	65	105	120	136	256	20.70	18.00	19.18
TOTAL - ALL INVASIVE		56	73	129	60	109	169	146	266	412	498	599	1097	918	749	1667	826	690	1516	595	717	1312	3099	3203	6302	444.74	505.48	467.80
IN SITU	Other skin & in situ	5	6	11	20	37	57	65	100	165	223	203	426	350	243	593	445	265	710	372	396	768	1480	1250	2730	249.75	170.50	204.26
	Breast in situ	0	0	0	0	1	1	0	19	19	0	45	45	0	31	31	0	28	28	0	9	9	0	133	133	0.00	18.92	9.79
	Cervix in situ	171		143		51		12		17		1		2		397										67.29		33.43
	Prostate in situ	0		0		1		5		15		3		1		25										3.51		1.69
	Bladder in situ	1	0	1	1	0	1	3	0	3	10	9	19	36	8	44	50	6	56	14	13	27	115	36	151	19.17	4.63	11.36
	Other in situ (Excl. Breast, Skin, Cervix, Prostate, Bladder)	1	1	2	4	3	7	8	15	23	27	36	63	74	34	108	48	34	82	26	14	40	188	137	325	29.65	19.47	23.87
	TOTAL - INVASIVE & IN SITU	63	251	314	85	293	378	223	451	674	763	904	1667	1393	1082	2475	1372	1024	2396	1008	1151	2159	4907	5156	10063	725.56	807.57	752.21
Brain uncertain & unspecified	4	1	5	0	1	1	0	0	0	2	0	2	2	2	4	1	2	3	0	3	3	9	9	18	1.35	1.26	1.36	
Neoplasms (Uncertain & unspecified, excluding brain)	5	13	18	3	10	13	3	13	16	20	26	46	28	33	61	27	24	51	28	41	69	114	160	274	18.86	22.35	20.41	
Brain & nervous system benign	2	1	3	3	3	6	5	8	13	3	12	15	4	15	19	12	17	29	6	16	22	35	72	107	6.15	10.16	8.27	
ALL CANCERS		74	266	340	91	307	398	231	472	703	788	942	1730	1427	1132	2559	1412	1067	2479	1042	1211	2253	5065	5397	10462	759.32	833.93	782.25

* Age-standardized incidence rate per 100,000
Standard population: Manitoba 2001

Cancer Mortality - Cases and Rates in Manitoba by Site, 2011

CANCER SITE	0-29			30-39			40-49			50-59			60-69			70-79			80+			TOTAL COUNT			*ASMR					
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T
BUCCAL CAVITY & PHARYNX	Lip	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	0.00	0.00
	Tongue	0	0	0	0	0	0	0	0	0	1	1	2	1	0	1	3	0	3	0	0	0	5	1	6	0.84	0.13	0.46		
	Major salivary gland	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	1	0.20	0.00	0.07		
	Floor of mouth	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	1	0	1	0.19	0.00	0.09		
	Gum & other mouth	0	0	0	0	0	0	0	0	0	0	2	2	2	1	3	0	0	0	1	3	4	3	6	9	0.45	0.73	0.61		
	Nasopharynx	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	3	0	0	0	1	2	3	0.19	0.33	0.27		
	Oropharynx	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0	1	1	0	0	0	2	1	3	0.25	0.17	0.21		
	Hypopharynx	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	1	0	1	2	0	2	0.33	0.00	0.13		
	Other buccal cavity & pharynx	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	1	0	1	1	2	3	5	2	7	0.77	0.23	0.49		
DIGESTIVE	Esophagus	0	0	0	0	0	0	2	0	2	8	0	8	21	5	26	18	6	24	11	4	15	60	15	75	9.73	2.06	5.54		
	Stomach	0	0	0	0	0	0	2	0	2	9	2	11	9	1	10	10	8	18	17	18	35	47	29	76	8.01	3.75	5.66		
	Small intestine	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	1	2	0	2	0.39	0.00	0.16		
	Colon excluding rectum	0	0	0	1	0	1	1	0	4	8	20	28	24	18	42	45	25	70	41	65	106	120	131	251	21.34	16.88	18.80		
	Rectum & rectosigmoid	0	0	0	0	0	0	1	0	1	5	2	7	22	9	31	12	13	25	11	10	21	51	34	85	8.13	4.65	6.22		
	Anus	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	1	1	2	2	1	3	0.33	0.11	0.21		
	Liver	0	0	0	0	0	0	1	0	1	5	2	7	3	3	6	11	2	13	7	4	11	27	11	38	4.74	1.42	2.88		
	Gallbladder	0	0	0	0	0	0	0	0	0	0	1	1	1	1	2	1	1	2	1	3	4	3	6	9	0.52	0.76	0.66		
	Pancreas	0	0	0	0	0	0	2	0	2	9	6	15	18	9	27	20	28	48	26	36	62	75	79	154	12.88	10.60	11.60		
	Other digestive system	0	0	0	0	0	0	1	0	2	3	2	5	8	4	12	10	5	15	11	15	26	33	27	60	5.72	3.46	4.47		
RESPIRATORY	Larynx	0	0	0	0	0	0	0	0	1	0	1	4	0	4	1	3	4	2	0	2	8	3	11	1.23	0.50	0.82			
	Lung & bronchus	0	0	0	2	1	3	7	0	16	33	38	71	101	72	173	108	89	197	96	109	205	347	318	665	58.77	42.66	49.49		
	Other respiratory system	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	1	0	1	3	0	3	0.46	0.00	0.20		
OTHER	Bones & joints	2	0	2	1	1	2	0	0	0	0	0	0	0	0	0	0	0	3	1	4	6	2	8	1.10	0.29	0.63			
	Soft tissue (Including heart)	0	0	0	0	1	1	1	0	4	1	3	4	1	2	3	3	1	4	1	0	1	7	10	17	1.21	1.51	1.32		
	Kaposi sarcoma	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	0.00	0.00		
	Mesothelioma	0	0	0	0	0	0	0	0	0	1	0	1	4	1	5	5	0	5	2	0	2	12	1	13	2.00	0.12	0.97		
	Melanoma of the skin	0	0	0	2	0	2	3	0	3	5	1	6	6	0	6	4	2	6	4	5	9	24	8	32	3.88	1.03	2.40		
	Breast	0	0	0	0	4	4	0	0	15	0	31	31	2	36	38	0	41	41	0	65	65	2	192	194	0.25	26.01	14.44		
	Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	0.00	0.00	
FEMALE GENITAL	Cervix uteri	0	0	0	1	0	0	0	0	1	0	0	2	0	0	1	0	0	6	0	0	13	0	0	1.75					
	Corpus uteri	0	0	0	0	0	0	0	0	4	0	0	4	0	0	1	0	0	4	0	0	13	0	0	1.64					
	Uterus, NOS	0	0	0	0	0	0	0	0	2	0	0	4	0	0	1	0	0	4	0	0	11	0	0	1.37					
	Ovary	0	0	0	1	0	0	0	0	10	0	0	8	0	0	15	0	0	17	0	0	54	0	0	7.42					
	Other female genital system	0	0	0	0	0	0	0	0	1	0	0	2	0	0	1	0	0	6	0	0	11	0	0	1.40					

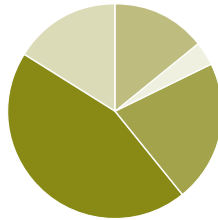
MALE GENITAL	Prostate	0	0	0	3	17	39	90	149	28.13																			
	Testis	0	0	0	0	0	0	0	0	0.00																			
	Penis	0	0	0	0	0	0	0	0	0.00																			
	Other male genital system	0	0	0	0	0	0	0	0	0.00																			
URINARY	Bladder	1	0	1	0	0	0	1	0	1	1	1	2	7	4	11	10	6	16	24	15	39	44	26	70	8.10	3.31	5.23	
	Kidney	1	0	1	0	1	1	4	1	5	9	0	9	8	7	15	13	5	18	17	7	24	52	21	73	8.97	2.83	5.48	
	Ureter	0	0	0	0	0	0	0	0	0	0	1	1	1	0	1	1	0	1	1	0	1	3	1	4	0.52	0.13	0.29	
	Other urinary system	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	2	2	1	2	3	0.13	0.23	0.21	
BRAIN & OTHER NERVOUS	Eye	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	1	0.20	0.00	0.07	
	Brain	2	1	3	1	1	2	3	0	3	6	5	11	5	4	9	5	3	8	3	3	6	25	17	42	4.01	2.33	3.12	
	Other nervous system	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	0.00	0.00	
ENDOCRINE	Thyroid	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	1	2	3	1	3	4	0.20	0.35	0.28	
	Other endocrine	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1	1	0	2	2	0.00	0.24	0.13	
LYMPHOMA	Hodgkin lymphoma	0	0	0	0	0	0	0	0	0	1	1	2	0	1	1	1	0	1	0	1	1	2	3	5	0.32	0.37	0.36	
	Non-Hodgkin lymphoma	0	0	0	2	0	2	1	0	1	7	3	10	16	11	27	19	10	29	12	25	37	57	49	106	9.55	6.23	7.87	
	Multiple myeloma	0	0	0	0	0	0	1	0	1	1	1	2	9	3	12	10	7	17	9	12	21	30	23	53	5.18	3.02	4.00	
LEUKEMIAS	Acute lymphocytic	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	1	0	1	0.19	0.00	0.09	
	Chronic lymphocytic	0	0	0	0	1	1	0	0	0	1	1	2	4	0	4	2	1	3	9	7	16	16	10	26	2.83	1.27	1.90	
	Acute myeloid	0	2	2	0	1	1	0	1	1	2	0	2	6	1	7	12	1	13	8	5	13	28	11	39	4.94	1.54	3.01	
	Chronic myeloid	0	0	0	0	0	0	0	0	0	0	1	1	1	0	1	0	0	0	1	3	4	2	4	6	0.33	0.47	0.42	
	Other leukemias	0	1	1	0	0	0	0	0	0	0	1	1	2	0	2	5	2	7	6	6	12	13	10	23	2.42	1.31	1.76	
	Other, ill defined & unknown	0	0	0	1	2	3	2	3	5	10	7	17	28	21	49	36	28	64	35	52	87	112	113	225	19.35	14.90	16.87	
	TOTAL - ALL INVASIVE	6	4	10	10	15	25	33	42	75	133	151	284	338	236	574	409	309	718	457	519	976	1386	1276	2662	239.30	169.49	198.64	
IN SITU	Other skin & in situ	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	2	0	2	3	4	7	5	5	10	0.99	0.63	0.77	
	Breast in situ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	0.00	0.00	
	Cervix in situ	0			0																						0.00		
	Prostate in situ	0			0																						0.00		
	Bladder in situ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	0.00	0.00
	Other in situ (Excl. Breast, Skin, Cervix, Prostate, Bladder)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	0.00	0.00
	TOTAL - INVASIVE & IN SITU	6	4	10	10	15	25	33	43	76	133	151	284	338	236	574	411	309	720	460	523	983	1391	1281	2672	240.29	170.12	199.41	
	Brain uncertain & unspecified	0	0	0	0	0	0	1	0	1	2	1	3	2	2	4	2	5	7	1	7	8	8	15	23	1.28	2.00	1.74	
	Neoplasms (Uncertain & unspecified, excluding brain)	1	0	1	0	0	0	0	0	0	0	1	1	2	4	6	6	3	9	17	21	38	26	29	55	4.98	3.50	4.07	
	Brain and nervous system benign	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	2	2	1	3	3	3	6	0.59	0.40	0.46	
	ALL CANCERS	7	4	11	10	15	25	34	43	77	135	153	288	342	243	585	420	318	738	480	552	1032	1428	1328	2756	247.15	176.02	205.68	

* Age-standardized mortality rate per 100,000
Standard population: Manitoba 2001

Staging on sites with more than 45 cases

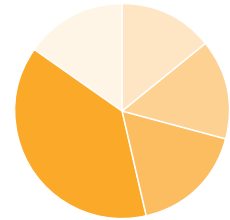
ESOPHAGUS

	FREQUENCY	PERCENT	
Stage I	8	14.29	■
Stage II	2	3.57	■
Stage III	12	21.43	■
Stage IV	25	44.64	■
Unknown	9	16.07	■
Total	56	100	



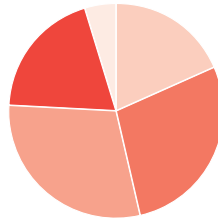
STOMACH

	FREQUENCY	PERCENT	
Stage I	19	14.29	■
Stage II	20	15.04	■
Stage III	23	17.29	■
Stage IV	51	38.35	■
Unknown	20	15.04	■
Total	133	100	



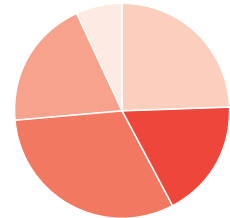
COLON EXCLUDING RECTUM

	FREQUENCY	PERCENT	
Stage I	108	18.43	■
Stage II	164	27.99	■
Stage III	174	29.69	■
Stage IV	113	19.28	■
Unknown	27	4.61	■
Total	586	100	



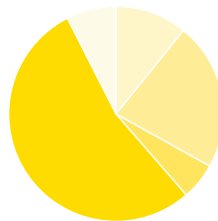
RECTUM & RECTOSIGMOID

	FREQUENCY	PERCENT	
Stage I	80	24.54	■
Stage II	58	17.79	■
Stage III	102	31.29	■
Stage IV	64	19.63	■
Unknown	22	6.75	■
Total	326	100	



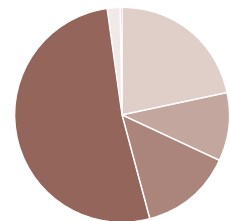
PANCREAS

	FREQUENCY	PERCENT	
Stage I	19	10.86	■
Stage II	39	22.29	■
Stage III	10	5.71	■
Stage IV	94	53.71	■
Unknown	13	7.43	■
Total	175	100	



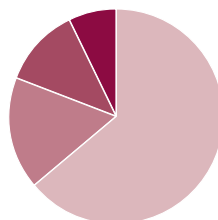
LUNG & BRONCHUS

	FREQUENCY	PERCENT	
Stage I	190	21.86	■
Stage II	88	10.13	■
Stage III	122	14.04	■
Stage IV	450	51.78	■
Unknown	17	1.96	■
Occult	2	0.23	■
Total	869	100	



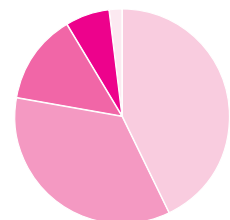
MELANOMA OF THE SKIN

	FREQUENCY	PERCENT	
Stage I	124	63.92	■
Stage II	33	17.01	■
Stage III	23	11.86	■
Stage IV	14	7.22	■
Total	194	100	



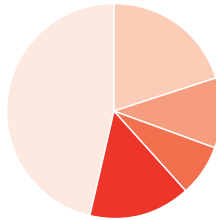
BREAST

	FREQUENCY	PERCENT	
Stage I	398	42.93	■
Stage II	325	35.06	■
Stage III	125	13.48	■
Stage IV	63	6.80	■
Unknown	16	1.73	■
Total	927	100	



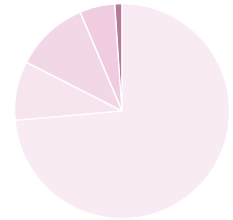
OTHER DIGESTIVE SYSTEM

	FREQUENCY	PERCENT	
Stage I	13	20.00	■
Stage II	7	10.77	■
Stage III	5	7.69	■
Stage IV	10	15.38	■
Unknown	30	46.15	■
Total	65	100	



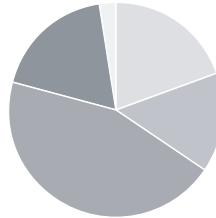
CORPUS UTERI

	FREQUENCY	PERCENT	
Stage I	162	73.64	■
Stage II	20	9.09	■
Stage III	24	10.91	■
Stage IV	12	5.45	■
Unknown	2	0.91	■
Total	220	100	



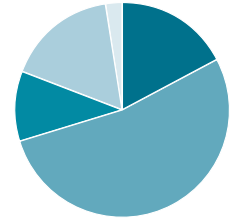
OVARY

	FREQUENCY	PERCENT	
Stage I	17	19.54	■
Stage II	13	14.94	■
Stage III	39	44.83	■
Stage IV	16	18.39	■
Unknown	2	2.30	■
Total	87	100	



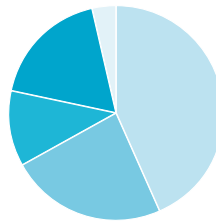
PROSTATE

	FREQUENCY	PERCENT	
Stage I	116	17.31	■
Stage II	355	52.99	■
Stage III	71	10.60	■
Stage IV	112	16.72	■
Unknown	16	2.39	■
Total	670	100	



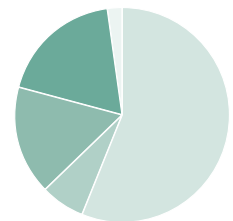
BLADDER

	FREQUENCY	PERCENT	
Stage I	61	43.57	■
Stage II	33	23.57	■
Stage III	16	11.43	■
Stage IV	25	17.86	■
Unknown	5	3.57	■
Total	140	100	



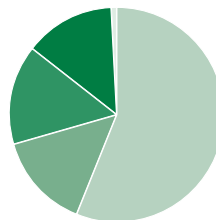
KIDNEY

	FREQUENCY	PERCENT	
Stage I	134	56.30	■
Stage II	16	6.72	■
Stage III	39	16.39	■
Stage IV	44	18.49	■
Unknown	5	2.10	■
Total	238	100	



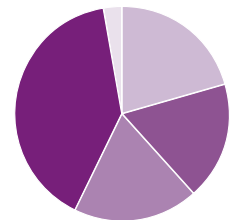
THYROID

	FREQUENCY	PERCENT	
Stage I	71	56.35	■
Stage II	18	14.29	■
Stage III	19	15.08	■
Stage IV	17	13.49	■
Unknown	1	0.79	■
Total	126	100	



NON-HODGKIN LYMPHOMA

	FREQUENCY	PERCENT	
Stage I	55	20.60	■
Stage II	48	17.98	■
Stage III	50	18.73	■
Stage IV	107	40.07	■
Unknown	7	2.62	■
Total	267	100	



In keeping with international coding conventions, all invasive brain tumours, multiple myeloma and leukemia are considered unstageable using the collaborative staging system utilized by all population-based North American Cancer Registries.

Research

2011 Publications

This is only a sample of publications that have used Manitoba Cancer Registry data. For a complete listing, please visit www.cancercare.mb.ca and click on Epidemiology and Cancer Registry under the Research tab.

Articles with names in bold are authored by department staff.

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Elias, B., **Kliewer, E.V.**, Hall, M., **Demers, A.A., Turner, D.**, Martens, P., Hong, S. P., Hart, L., Chartrand, C., and Munro, G. The burden of cancer risk in Canada's indigenous population: a comparative study of known risks in a Canadian region. *Int J Gen.Med* 4, 699-709. 2011.

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Mahmud, S. M., Franco, E. L., **Turner, D.**, Platt, R. W., Beck, P., Skarsgard, D., Tonita, J., Sharpe, C., and Aprikian, A. G. Use of non-steroidal anti-inflammatory drugs and prostate cancer risk: a population-based nested case-control study. *PLoS One*. 2011 Jan 28;6(1):e16412. doi: 10.1371/journal.pone.0016412.

Maule, M., Scelo, G., Pastore, G., Brennan, P., Hemminki, K., Olsen, J. H., Tracey, E., Pukkala, E., Weiderpass, E., Brewster, D. H., Tamaro, S., Chia, K. S., Pompe-Kirn, V., **Kliewer, E. V.**, Tonita, J. M., Martos, C., Jonasson, J. G., Merletti, F., and Boffetta, P. Second malignancies after childhood noncentral nervous system solid cancer: Results from 13 cancer registries. *Int J Cancer* 129(8), 1940-1952. 10-15-2011.

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Ott B., Ratna, N., Prayag, R., Badiani, K., and Navaratnam, S. Survival and treatment patterns in elderly patients with advanced non-small-cell lung cancer in Manitoba. *Curr Oncol* 18(5), 238-242. 2011.

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Singh, H., **Nugent, Z., Demers, A. A.**, and Bernstein, C. N. Screening for cervical and breast cancer among women with inflammatory bowel disease: a population-based study. *Inflamm Bowel Dis*. 2011 Aug;17(8):1741-50.

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Cancer in Manitoba 2010 Annual Statistical Report

Canadian Partnership Against Cancer. 2010 System Performance Report. Cancer View Canada, 6-17-2011.

Canadian Partnership Against Cancer. Lung Cancer in Canada: A Supplemental System Performance Report. Cancer View Canada, 6-17-2011.

Appendix 1

Place of Diagnosis 2011

	MALE	FEMALE	TOTAL
Health Sciences Centre	1310	1049	2359
St.Boniface General Hospital	472	521	993
Other Hospitals in Winnipeg	768	662	1430
Other Hospitals in Manitoba	979	1717	2696
Hospitals Outside Manitoba	82	83	165
Doctors and Clinics in Winnipeg	1374	1269	2643
Doctors and Clinics in Manitoba	246	260	506
Total	5231	5561	10792

Place of Death 2011

	MALE	FEMALE	TOTAL
Hospitals - Winnipeg	529	476	1005
Hospitals - Outside Winnipeg	390	318	708
Nursing Homes	30	40	70
Other - Winnipeg	180	148	328
Other - Outside Winnipeg	48	43	91
At Home	30	33	63
Unknown	221	270	491
Total	1428	1328	2756

Residence at Diagnosis 2011

	MALE	FEMALE	TOTAL
Winnipeg	2847	3218	6065
Manitoba - Outside Winnipeg	2218	2179	4397
Non-Manitoba Residence	166	164	330
Total	5231	5561	10792

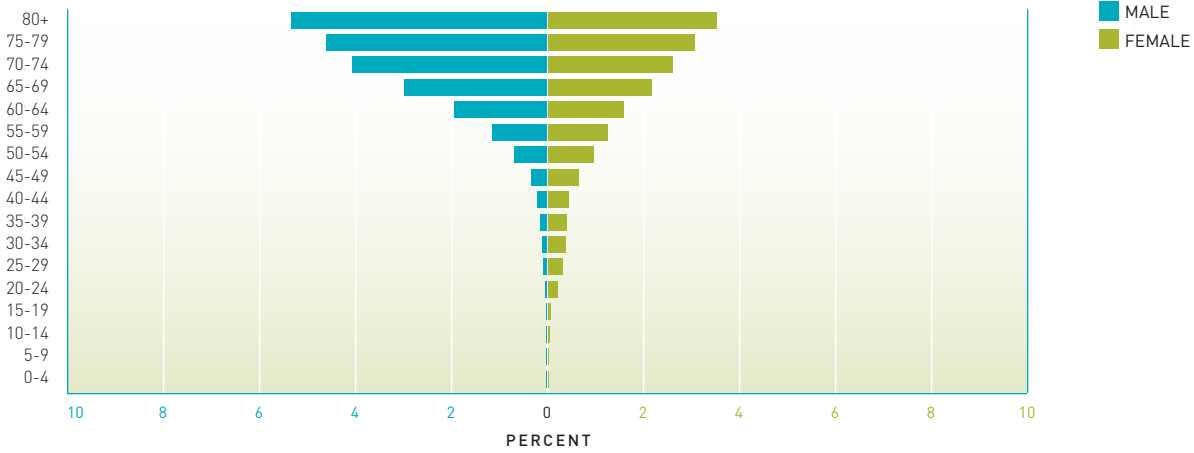
Residence at Death 2011

	MALE	FEMALE	TOTAL
Greater Winnipeg	783	772	1555
Manitoba - Outside Winnipeg	645	556	1201
Total	1428	1328	2756

Appendix 2

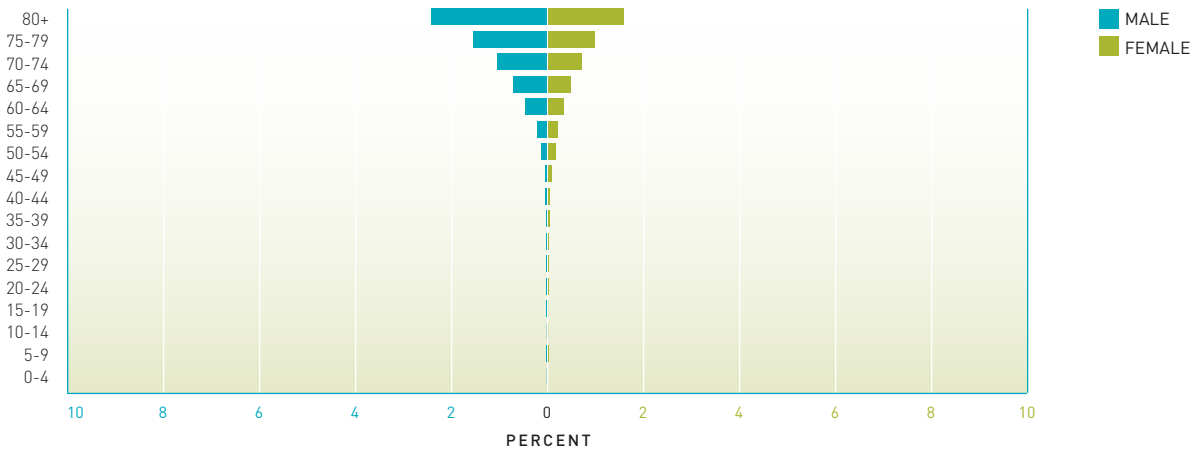
Age Distribution at Diagnosis, 2011

CANCER INCIDENCE: 10,462



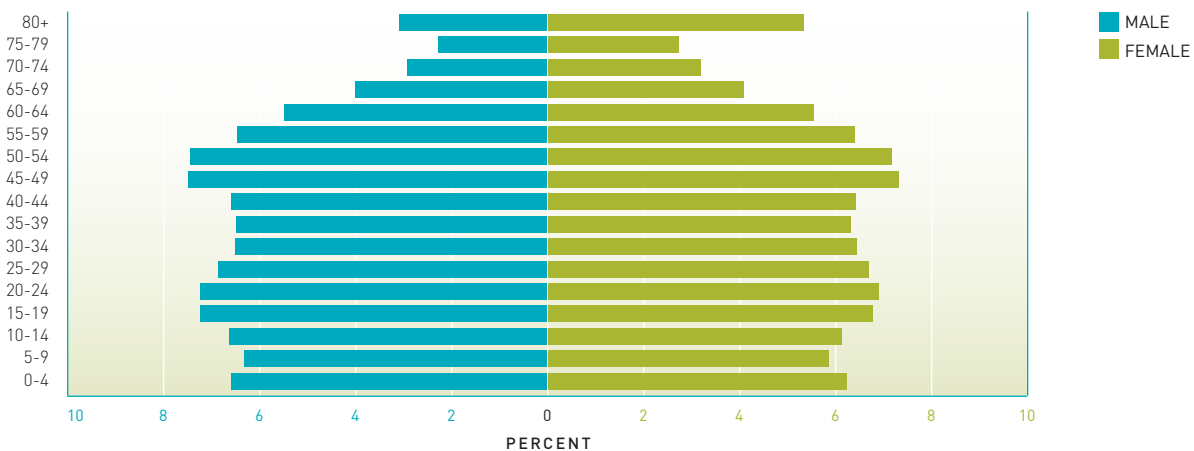
Age Distribution at Death, 2011

CANCER DEATHS: 2,756



Age Distribution for Manitoba, 2011

MANITOBA POPULATION: 1,254,771



Appendix 3

International Classification of Diseases for Oncology –
3rd Edition

PRIMARY SITE	SITE/ CELL TYPE	PRIMARY SITE	SITE/ CELL TYPE
Buccal cavity & pharynx	C00:C14	Male genital system	C60:C63
Lip	C000:C009	Prostate	C619
Tongue	C019:C029	Testis	C620:C629
Major salivary gland	C079:C089	Penis	C600:C609
Floor of mouth	C040:C049	Other male genital system	C630:C639
Gum & other mouth	C030:C039, C050:C059, C060:C069		
Nasopharynx	C110:C119	Urinary system	C64:C68
Oropharynx	C100:C109	Bladder (incl. in situ)	C670:C679
Hypopharynx	C129, C130:C139	Kidney	C649, C659
Other buccal cavity & pharynx	C090:C099, C140, C142:C148	Ureter	C669
		Other urinary system	C680:C689
Digestive system	C15:C26	Eye	C690:C699
Esophagus	C150:C159		
Stomach	C160:C169	Brain & other nervous system	C70:C72
Small intestine	C170:C179	Brain	C710:C719
Colon excluding rectum	C180:C189, C260	Other nervous system	C710:C719 (type 953), C700:C709
Rectum & Rectosigmoid	C199, C209		C720:C729
Anus	C210:C212, C218		
Liver	C220	Endocrine	C73:C75
Gallbladder	C239	Thyroid	C739
Pancreas	C250:C259	Other endocrine	C379, C740:C749, C750:C759
Other digestive system	C240:C249, C221, C480, C481:C482, C268:C269, C488		
Respiratory system	C30:C39	Lymphomas	C77
Larynx	C320:C329	Hodgkin lymphoma	types 9650:9667
Lung & bronchus	C340:C349	Non-Hodgkin lymphoma	types 9590:9596, 9670:9719, 9727:9729
Other respiratory system	C300:C301, C310:C319, C384, C339, C381:C383, C388, C390:C399		type 9823, all sites except C420, C421, C424
			type 9827, all sites except C420, C421, C424
			C421, types 9731:9732, 9734
Bones & joints	C400:C419	Multiple myeloma	
Soft tissue (including heart)	C380, C470:C479, C490:C499	Leukemias	C42
		Acute lymphocytic	types 9826, 9835:9837
Mesothelioma	types 9050:9055	Chronic lymphocytic	C420(type 9823), C421 (type 9823), C421 (type 9823), C424 (type 9823)
Kaposi sarcoma	types 9140	Acute myeloid	types 9840, 9861, 9866, 9867, 9871:9874, 9891, 9895:9897, 9910, 9920
		Chronic myeloid	types 9863, 9875, 9876, 9945, 9946
Skin	C44	Other	types 9733, 9742, 9800, 9801, 9805, 9820, 9831, 9832:9834, 9860, 9870, 9930, 9931, 9940, 9948, 9963, 9964
Melanoma of the skin	C440:C449 (types 8720:8790)		C420 (type 9827), C421 (type 9827), C424 (type 9827)
Other skin	C440:C449		
Breast	C500:C509	Other, ill-defined & unknown	types 9740,9741, 9750:9758, 9760:9769, 9950:9962, 9970:9989
			C760:C768, (types 8000:9589)
Female genital system	C51:C58		C809 (types 8000:9589)
Cervix uteri	C530:C539		C420:C424 (types 8000:9589)
Corpus uteri	C540:C549		C770:C779 (types 8000:9589)
Uterus, NOS	C559		
Ovary	C569		
Other female genital system	C529, C510:C519, C570:C589		

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