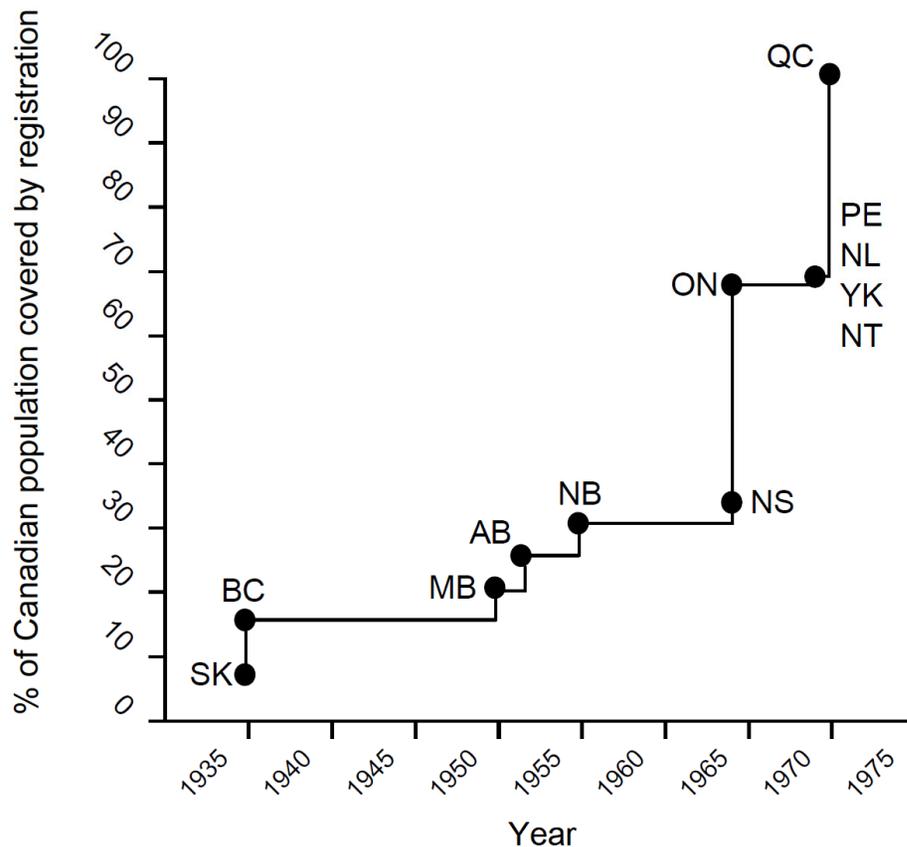


ESOPHAGEAL CANCER IN CANADA, 1986-2006: TRENDS BY MORPHOLOGY AND ANATOMICAL LOCATION

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(for the Canadian Cancer Statistics Steering Committee²)

1 Public Health Agency of Canada 2 Canadian Cancer Society 3 Statistics Canada
4 Cancer Care Nova Scotia 5 Cancer Care Ontario 6 Centers for Disease Control and Prevention

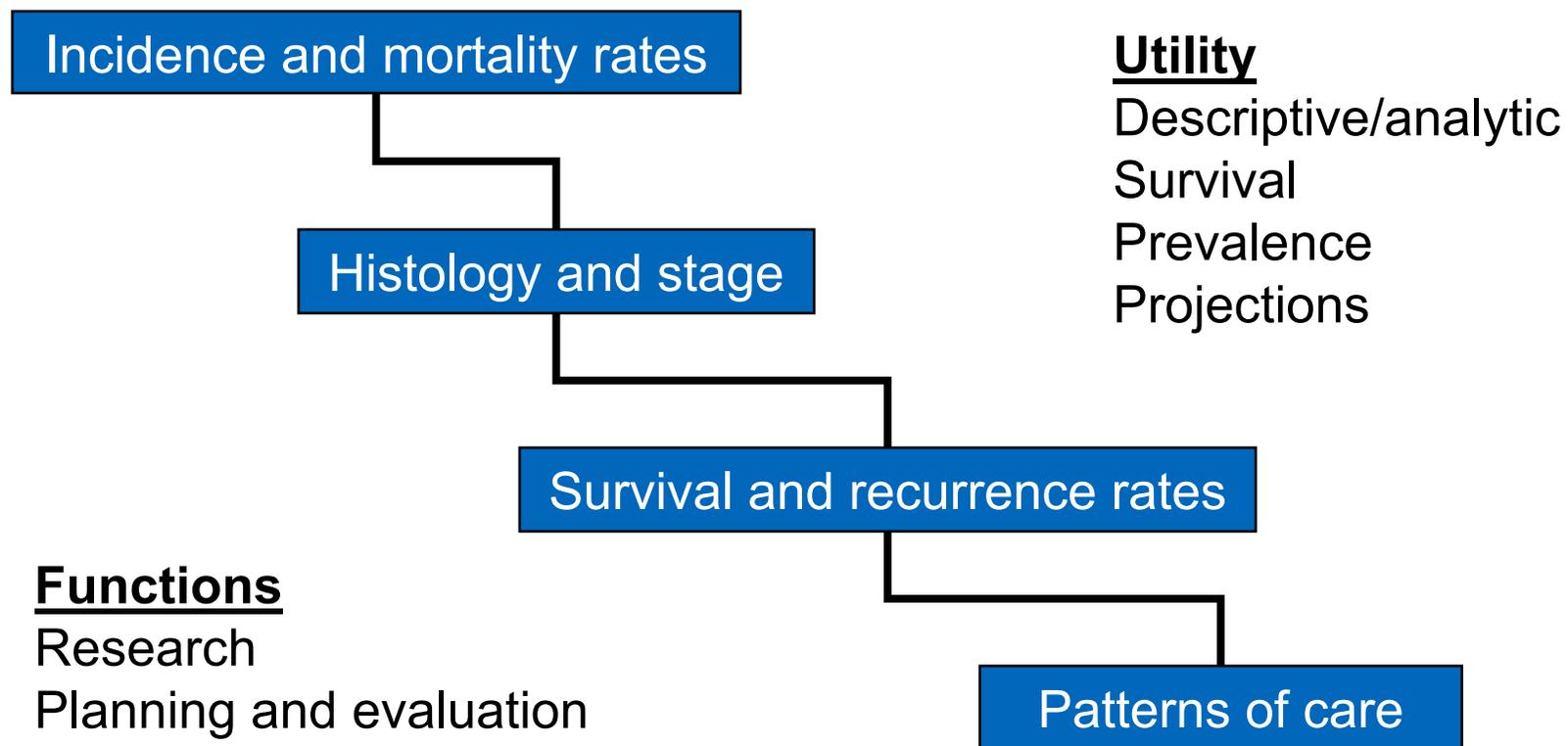
Progression of cancer registration in Canada



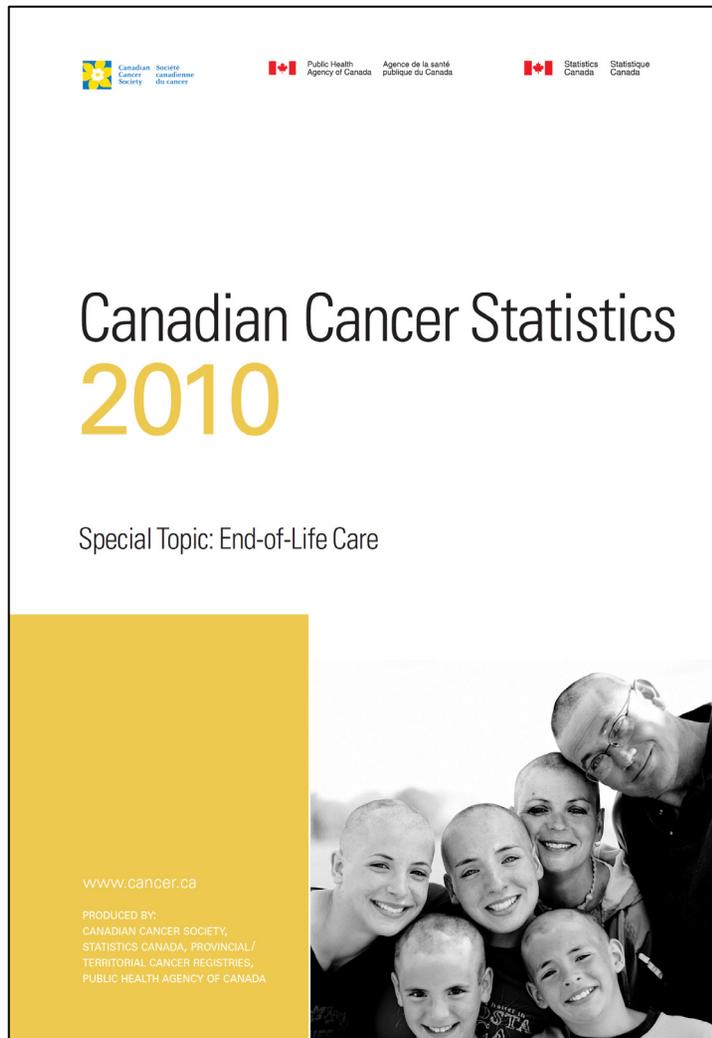
The first Canadian cancer registries established in 1930s (Saskatchewan and British Columbia) – these are among the oldest in the world.

By late 1960s, most provinces had cancer registries. The addition of Quebec in 1970 brought the percentage of the population covered to 100%.

Cancer surveillance data: forms and functions



Canadian Cancer Statistics report



- annual series that began in 1987
- each edition developed by representatives from various organizations, including
 - Canadian Cancer Society
 - Public Health Agency of Canada
 - Statistics Canada
 - Provincial/territorial cancer registries
- report aims to provide health professionals, researchers, and policy makers with detailed information on cancer
 - incidence & mortality
 - survival & prevalence
 - special topics (e.g., end-of-life care)
 - analyses in-depth (e.g., esophageal cancer)

Pick up a copy at the PHAC booth, or see
www.cancer.ca/statistics

Canadian Cancer Statistics report

ABOUT THIS PUBLICATION

Canadian Cancer Statistics is part of an annual series that began in 1987 and has been developed by members of the Steering Committee on Cancer Statistics, which is supported by the Canadian Cancer Society. The Steering Committee is responsible for developing content, reviewing statistical information, interpreting data and writing text. The Steering Committee includes individuals from the Canadian Cancer Society, the Public Health Agency of Canada (PHAC), Statistics Canada, the Canadian Council of Cancer Registries, as well as researchers based in universities and provincial or territorial cancer agencies.

Purpose and intended audiences

The aim of this annual publication is to provide health professionals, researchers and policy makers with detailed information regarding incidence, mortality and other measures of cancer burden of the most common types of cancer presented by age, sex, time and province or territory. These data can help stimulate new research as well as assist decision-making and priority-setting at the individual, community, provincial, territorial and national levels. Educators, the media and members of the public who have an interest in cancer may also find value in this report.

New biennial format of the publication

Every year, this publication provides updates on cancer incidence, mortality, survival, prevalence and risk of developing or dying from cancer. Given that some of this information does not change significantly from year to year, we are introducing a new biennial format for this publication.

Starting with the 2010 edition (and every even year thereafter), a new condensed format will alternate with the usual full-length publication. This change will allow the Steering Committee on Cancer Statistics to explore and develop new content for the condensed report on specialized cancer issues beyond the usual statistics. For example, this year's edition includes two new sections:

- ◆ Cancer in depth: Cancer of the esophagus
- ◆ Cancer in depth: Cancer of the kidney

To make this change, we have temporarily deferred the sections on Five-Year Relative Survival, Prevalence, Probability of Developing or Dying from Cancer, and Incidence, Mortality and Survival in Children. These sections will reappear next year (and every odd year) as part of the full-length report.

Data sources (see Appendix II for detailed information)

The Canadian Cancer Registry (CCR), National Cancer Incidence Reporting System (NCIRS) and Canadian Vital Statistics — Death Database (CVS: D) are the main sources of data for this publication. Briefly:

- ◆ Provincial and territorial cancer registries collect clinical and demographic data on newly diagnosed cancer cases for people residing in the province or territory. These data are reported annually to Statistics Canada and added to the CCR.
- ◆ Provincial and territorial registrars of vital statistics collect demographic and cause of death information for people residing in the province or territory at the time of death. These data are reported annually to Statistics Canada and added to the CVS: D.

DATA SOURCES

Provincial/territorial registries collect clinical and demographic data on new cancer cases/deaths. These are reported annually to Statistics Canada:

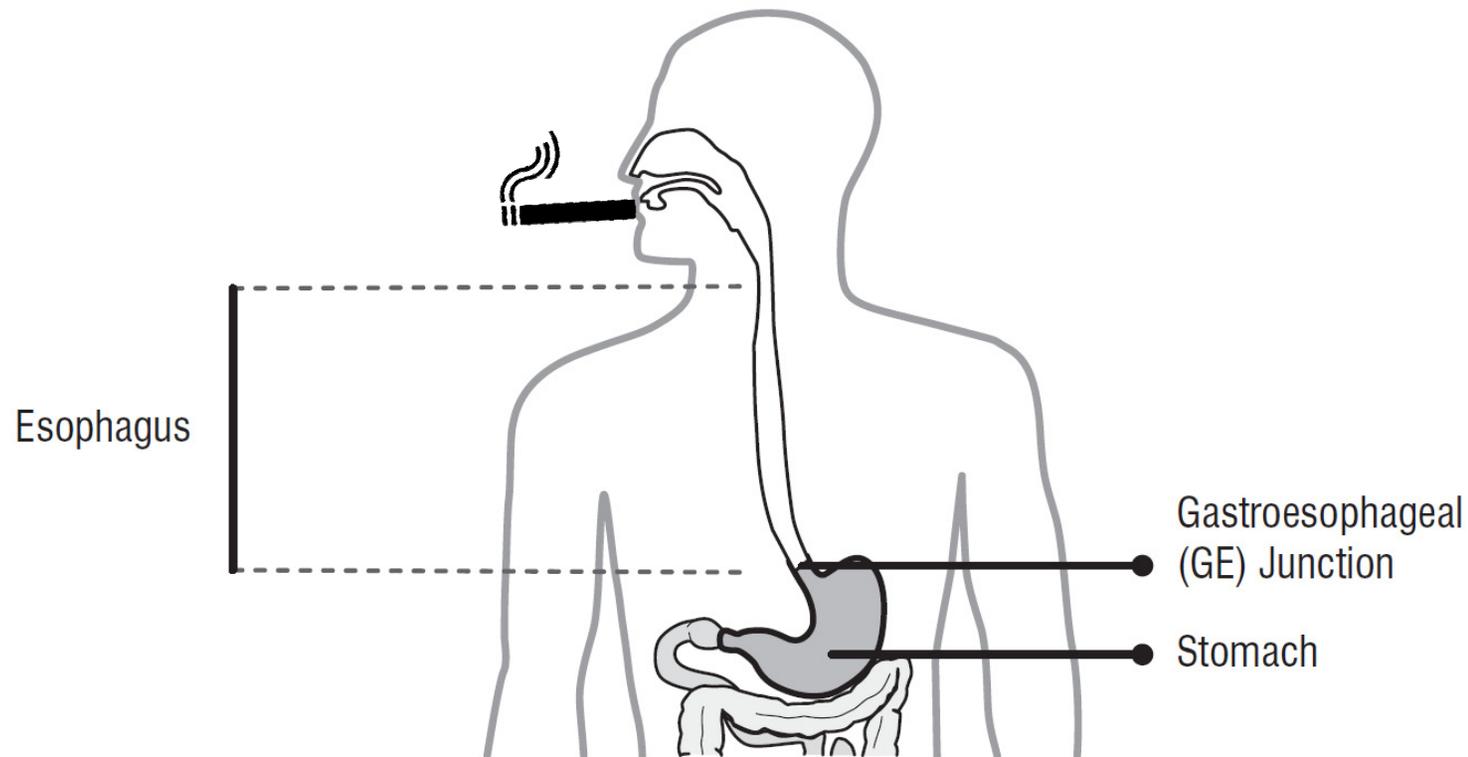
- Canadian Cancer Registry (CCR), 1992-onward: “person-based” registry
- National Cancer Incidence Reporting System (NCIRS), 1969-1991: “tumor-based” registry
- Canadian Vital Statistics Death database (1951-onward)

REVIEW AND ANALYSIS

Chronic Disease Surveillance Division (Public Health Agency of Canada), and Health Statistics Division (Statistics Canada) conduct analyses

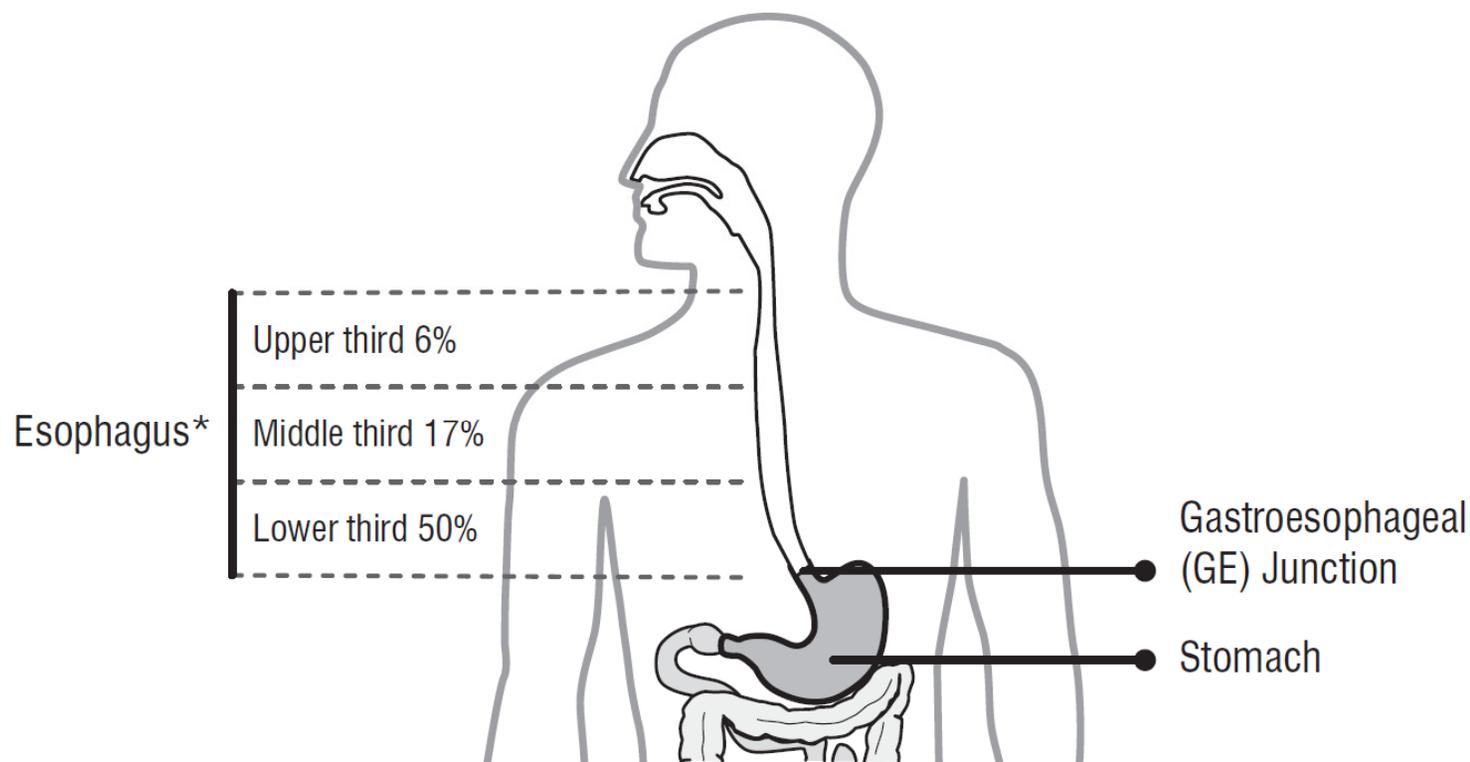
Pick up a copy at the PHAC booth, or see www.cancer.ca/statistics

Cancer of the esophagus



- Most esophageal cancers develop in epithelial tissue as either
- **adenocarcinomas** (more common in lower esophagus)
 - **squamous cell carcinomas** (more common in upper esophagus)

Percentage of new cases of esophageal cancer by subsite, Canada, 2002-2006



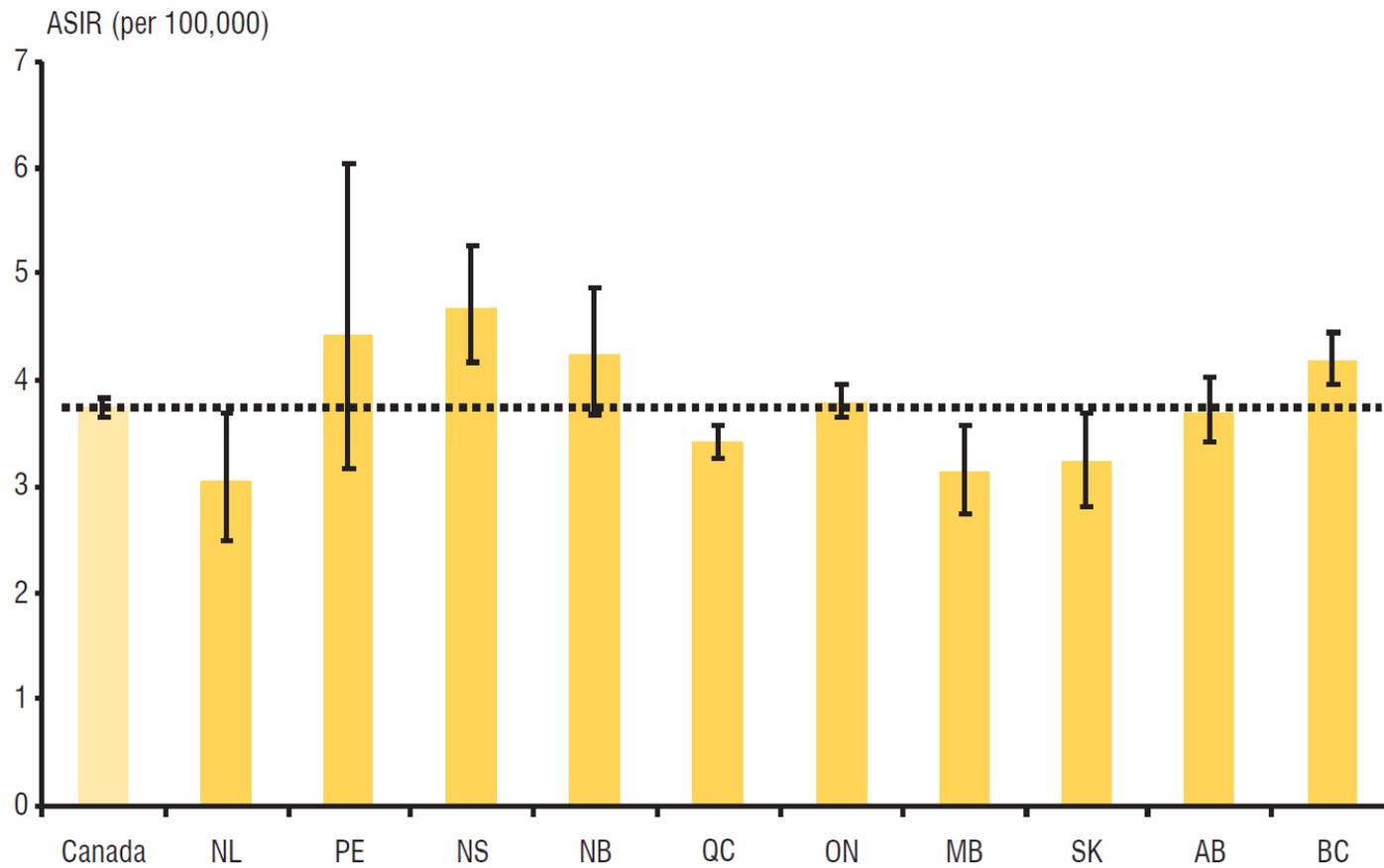
*27% of esophageal cancers were not specified with respect to location or overlapped across subsites

Esophageal cancer in Canada: summary statistics

Incidence (2002–2006)	Males	Females
Number of cases:	5,231	1,903
Rate (per 100,000):	6.1	1.7
% of all cancers:	1.4	0.5
Mortality (2001–2005)		
Number of deaths:	5,419	1,834
Rate (per 100,000):	6.6	1.7
% of all cancer deaths:	3.1	1.2

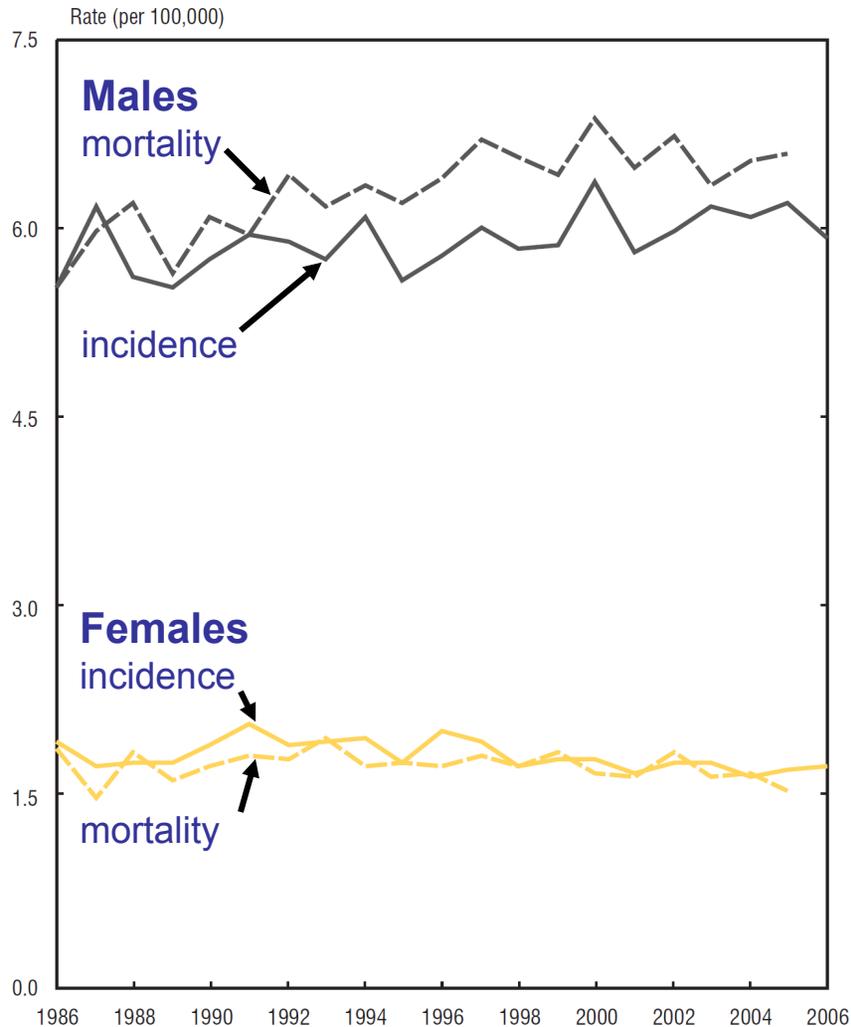
- still relatively rare: 15th (males) and 19th (females) most common cancer type
- occurs three times more often in males than females
- >90% of cases occur among those 50 years of age and older
- accounts for over 7000 deaths annually

Age-standardized* incidence rates for esophageal cancer by province, Canada, 2002-2006



*Rates standardized to the 1991 Canadian population

Age-standardized rates of esophageal cancer incidence and mortality, Canada, 1986-2005



Overall incidence rates have changed little since mid-1980s

- males: increase 0.3% per year*
- females: decrease 0.5% per year

Mortality rates have increased slightly among males (0.7% per yr) but remained stable in females

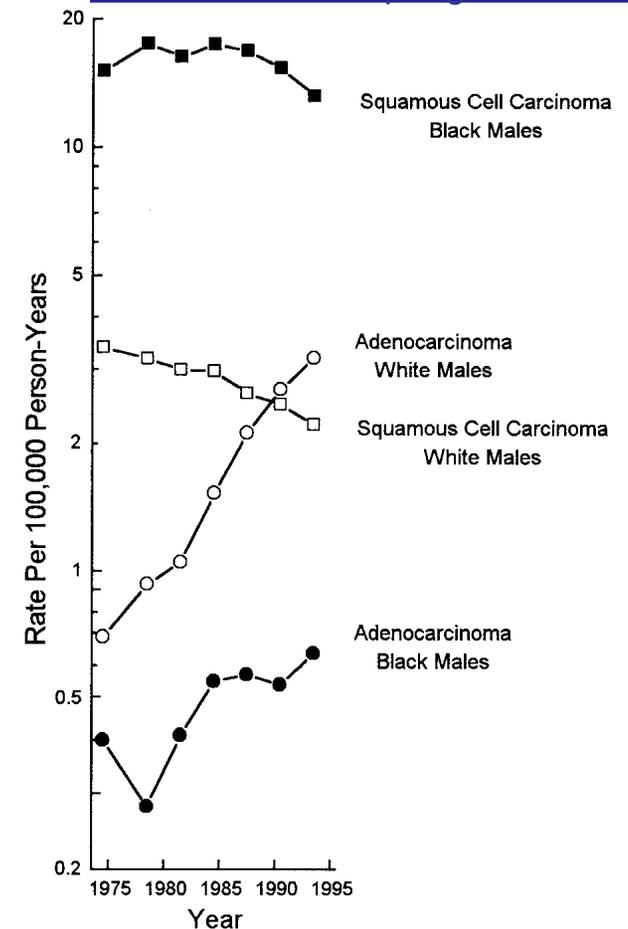
Prevention and control of esophageal cancer in Canada have not improved in the last 20 years

*Statistically significant time trends reported as annual percent change, calculated using a log-linear model

Esophageal cancers by morphology and anatomical location

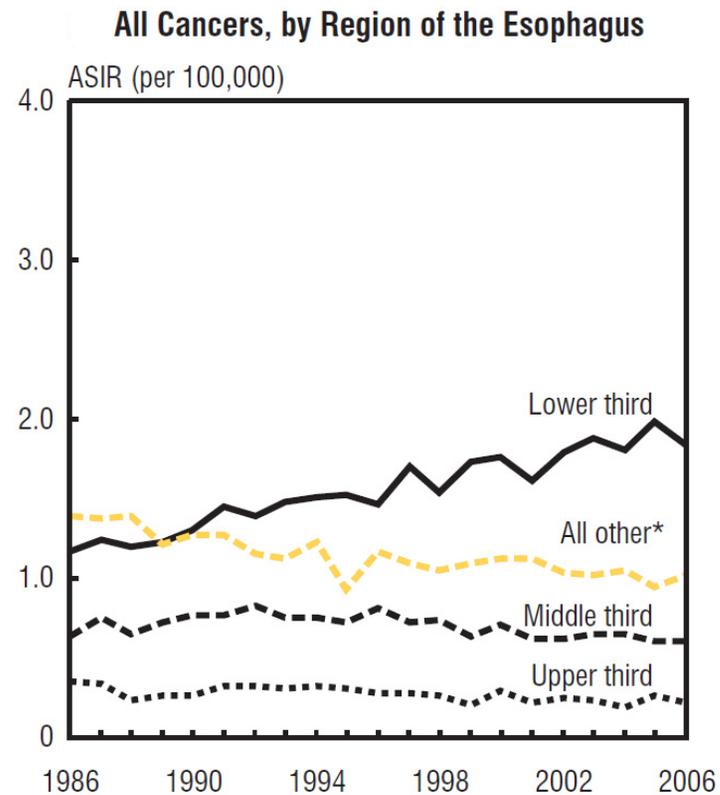
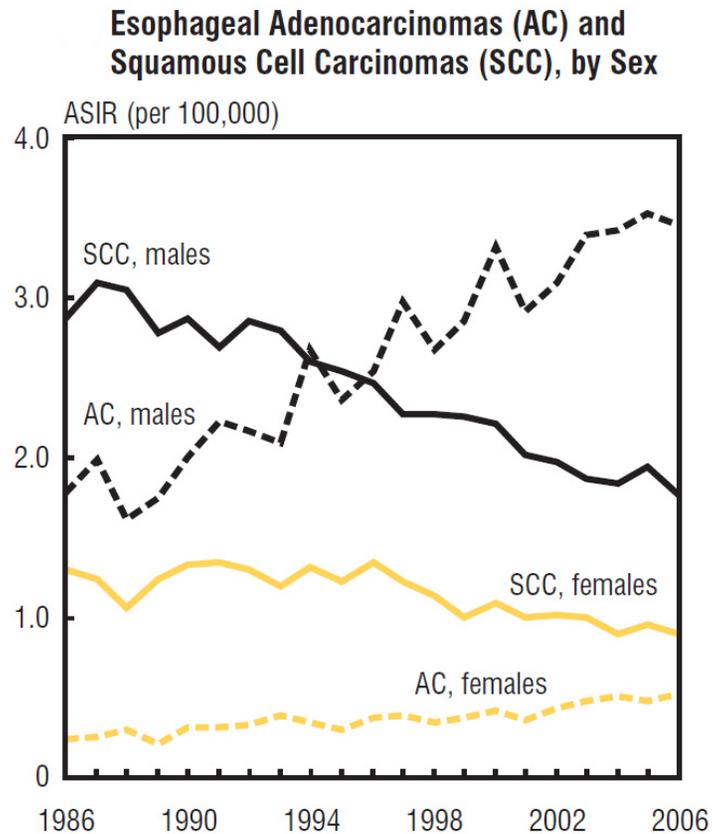
Cancer	ICDO-3 Site	ICDO-3 Morphology
Esophagus, All Types*	C15.0–C15.9	Type 8000–9049, 9060–9139, 9141–9589, 9990–9999
Upper Esophagus	C15.3	Type 8000–9049, 9060–9139, 9141–9589, 9990–9999
Middle Esophagus	C15.4	Type 8000–9049, 9060–9139, 9141–9589, 9990–9999
Lower Esophagus	C15.5	Type 8000–9049, 9060–9139, 9141–9589, 9990–9999
Not Specified as Upper, Middle or Lower	C15.0, C15.1–C15.2, C15.8–C15.9	Type 8000–9049, 9060–9139, 9141–9589, 9990–9999
Adenocarcinoma, All	C15.0–C15.9	Type 8140–8141, 8143–8145, 8190–8231, 8260–8263, 8310, 8401, 8480–8490, 8550–8551, 8570–8574, 8576
Adenocarcinoma, Lower Esophagus	C15.2, C15.5	Type 8140–8141, 8143–8145, 8190–8231, 8260–8263, 8310, 8401, 8480–8490, 8550–8551, 8570–8574, 8576
Adenocarcinoma, All Other	C15.0–C15.1, C15.3–C15.4, C15.6–C15.9	Type 8140–8141, 8143–8145, 8190–8231, 8260–8263, 8310, 8401, 8480–8490, 8550–8551, 8570–8574, 8576
Squamous Cell Carcinoma	C15.0–C15.9	Type 8050–8078, 8083–8084

U.S. trends in esophageal cancer



U.S. data from Devesa et al. 1998

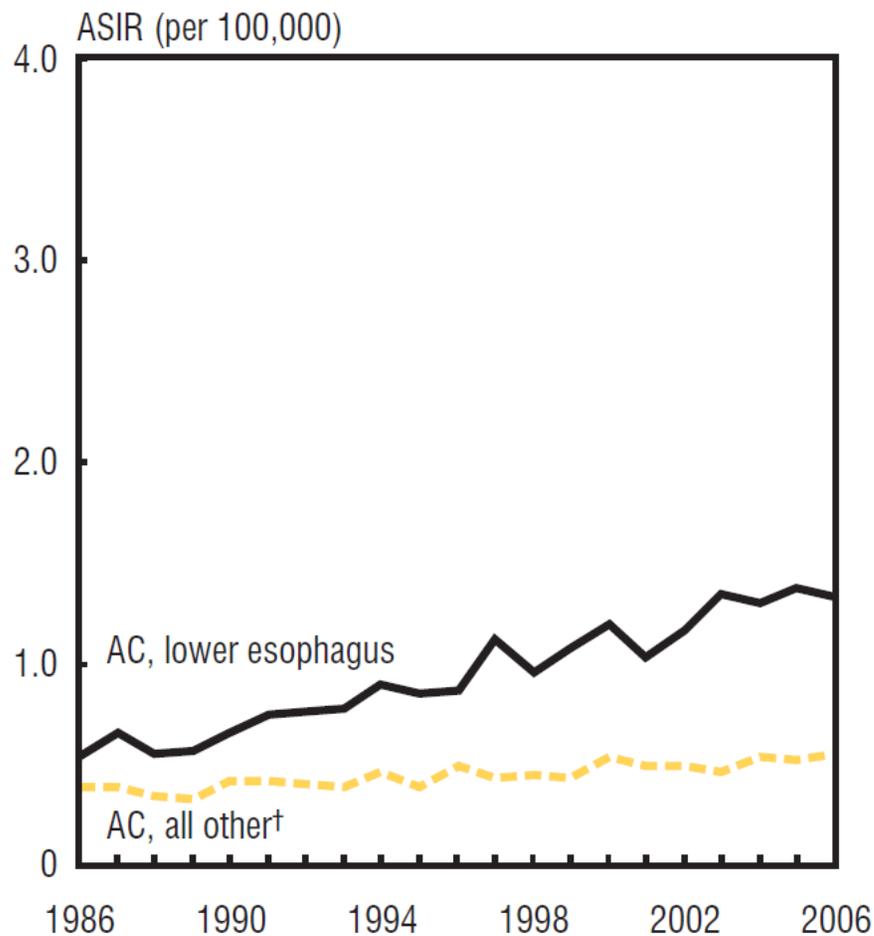
Age-standardized incidence of esophageal cancer, by morphology and anatomical location, Canada, 1986-2006



- Adenocarcinomas increasing rapidly and now dominate in males
- Squamous cell carcinomas declining, but still dominate in females
- Lower esophageal cancers are rising, all others are falling

Esophageal cancers by morphology and anatomical location

Adenocarcinomas (AC), by Region of the Esophagus



Location and morphology together show only adenocarcinomas of the lower esophagus are increasing rapidly (4.9% per yr, but up to 6.1% per yr for under 50 yrs of age)

Over the last 20 years, incidence of esophageal adenocarcinoma has doubled in Canada

Estimated 5-year relative survival ratio for esophageal cancer, Canada*, 2003-2005

	RSR (%)	95% CI	
		Low (%)	High (%)
All Esophageal Cancers	14	13	15
Sex			
Males	14	12	15
Females	14	12	17
Topography			
Upper Esophagus	16	11	22
Middle Esophagus	15	12	19
Lower Esophagus	13	11	15
Not Specified as Upper, Middle or Lower†	14	12	17
Morphology			
Adenocarcinoma	13	12	15
Lower Esophageal Adenocarcinoma	13	11	15
All Other Adenocarcinoma	14	11	18
Squamous Cell Carcinoma	16	13	18
Age			
15-44	23	16	31
45-54	16	12	20
55-64	17	15	20
65-74	14	12	17
75-99	10	8	12

Predicted 5-year survival for individuals diagnosed with esophageal cancer is poor: 14% compared to similar individuals in the general population

Since 1992-94, 5-year survival has increased by 3.3%

*Excluding Quebec

Period method analysis, conducted by L. Ellison at Statistics Canada

New cases of esophageal cancers by stage* and morphology, Manitoba, 2005-2007

Stage	New Cases	% of Total
All Esophageal Cancers (known stage)	128	100.0
I	19	14.8
II	20	15.6
III	25	19.5
IV	64	50.0
Unknown stage	31	—
Adenocarcinomas (known stage)	74	100.0
I	11	14.9
II	12	16.2
III	16	21.6
IV	35	47.3
Unknown stage	7	—
Squamous Cell Carcinomas (known stage)	39	100.0
I	7	17.9
II	7	17.9
III	6	15.4
IV	19	48.7
Unknown stage	14	—

At diagnosis, half of all new cases of a known stage were in the most advanced category (IV-metastatic disease)

Data on stage helps to explain the low survival rates observed for esophageal cancer

* Stage derived using Collaborative Stage (CS)

Data source: Manitoba Cancer Registry

Summary

- Cancer of the esophagus occurs more often in males than in females, and the majority are adenocarcinomas (more common in males) and squamous cell carcinomas (more common in females)
- Although the overall incidence of esophageal cancer has remained stable, rates of adenocarcinomas (particularly in the lower esophagus) have doubled since the mid-1980s; rates of squamous cell carcinoma have declined
- The prognosis is generally poor for individuals with esophageal cancer; however, five-year relative survival has improved slightly since the early 1990s

Discussion

- Changing rates of esophageal adenocarcinoma and squamous cell carcinoma may relate to changes in risk factor prevalence, notably obesity, gastroesophageal reflux disease, and smoking
- Differences in cancer rates across time and provinces inevitably reflect a mix of true differences and variation in registry practices
- Analysis of cancer trends must reflect the complexity of the disease; overall rates may hide important trends in histology/topography
- The Canadian Cancer Registry is a valuable tool, allowing examination of cancer patterns across the entire Canadian population; such analyses can inform public health research, planning, and decision making

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