



chapter 4

TOBACCO RELATED HEALTH CARE USE AND COSTS



Key Messages

What does this Chapter tell us?

- Current or former smokers in Canada utilize more hospitalization resources than non-smokers.²⁶ In Peel, by the age of 50, the proportion of the population with one or more hospitalisations begins to increase.⁶ As our smokers succeed in quitting, there will be additional resources available for health care.
- In Peel the hospital cost of treating smoking-attributable disease is almost \$50 million. This is a conservative estimate. Treatment of cardiovascular diseases attributable to smoking make up over half of this estimate. Extrapolating from Canadian data²⁷, this estimate would be closer to \$100 million.

In Canada, individuals with a history of smoking have higher odds of hospitalization and spend more time in hospital than never-daily smokers.²⁶ In addition, hospital expenditures in Canada represent a large share of health care costs and total costs associated with treating smoking-related illnesses. In Peel, the proportion of the population who have had one or more hospitalization begins to increase by the age of 50. Current smokers have a significantly higher rate of hospitalization compared to non-smokers (data not shown).⁶

In Canada, the total costs of treating smoking-attributable diseases is \$16,996.2 million. Within this estimate, \$4,360.2 million are direct health care costs (Table 4.1)²⁷, which include: acute care hospital costs, ambulatory care physician fees, family physician visits and prescription drug use. Indirect costs (not directly related to health care expenditures) include things such as: productivity losses due to long-term disability, short-term disability and premature mortality.

Table 4.1
Hospitalization Costs Attributable to Smoking,
Canada and Ontario, 2002

Type of Cost	Canada (\$ millions)	Ontario (\$ millions)
Direct Costs Total	\$4,525.3	NA
• Health Care Costs	• \$4,360.2	
- Hospital Costs	- \$2,551.2	
• Prevention and Research	• \$78.1	
• Other	• \$87.0	
Indirect Costs (productivity)	\$12,470.0	NA
TOTAL COSTS	\$16,996.2	\$6,057.2

Source: Rehm J, Baliunas D, Brochu S, Fischer B, Gnam W, Patra J, et al. The costs of substance abuse in Canada 2002. Canadian Centre on Substance Abuse; March 2006.

To estimate annual hospital costs associated with treating smoking-related diseases in Peel, we multiplied the average unit cost for treating each case of disease²⁸ by the average annual number of hospitalizations attributable to smoking for each disease.

The reader should note that there are many conditions listed in Table 4.2 that do not have cost estimates available, including: laryngeal cancer, aortic aneurysm and dissection, other arterial disease, esophageal cancer, stomach cancer, pancreatic cancer, cervical cancer, kidney and renal cancer, and acute myeloid leukemia.

Using currently available data, it is estimated that the hospitalization costs of treating smoking-attributable diseases is just over \$49 million per year in Peel. Extrapolating from Canadian tobacco-related hospitalization cost estimates²⁷, this cost estimate would be closer to \$100 million annually.



Table 4.2Average Number of Hospitalizations^f and Smoking-Attributable Hospitalizations and Costs, Peel, 2005-2009

	Smoking Attributable Fraction (SAF)%	Number of Hospitalizations	Number of Hospitalizations Attributable to Smoking	Cost per stay	Cost for all Hospitalizations	Cost for Hospitalizations Attributable to Smoking
RESPIRATORY DISEASES						
Bronchitis, Emphysema ^y	84.0%	33	28	\$8,060	\$265,980	\$225,680
Chronic airway obstruction	76.8%	1,032	793	\$8,060	\$8,317,920	\$6,391,580
Pneumonia and Influenza	18.5%	932	172	See below ^e	\$3,868,248	\$674,374
Lung cancer	79.6%	335	267	\$11,665	\$3,907,775	\$3,114,555
Laryngeal cancer	80.2%	24	20	Data not available		
RESPIRATORY TOTAL		2,356	1,280		\$16,359,923	\$10,406,189
CARDIOVASCULAR DISEASES						
Ischemic heart disease	24.3%	3,420	820	See below [†]	\$37,872,511	\$9,079,482
Cerebrovascular diseases	22.0%	1,141	251	\$14,261	\$16,271,801	\$3,579,511
Other heart disease	14.4%	3,032	435	See below [†]	\$38,185,956	\$23,629,448
Atherosclerosis	23.0%	50	11	\$14,129	\$706,450	\$155,419
Aortic aneurysm and dissection	62.0%	137	84	Data not available		
Other arterial disease	18.0%	173	31	Data not available		
CARDIOVASCULAR TOTAL		7,953	1,632		\$93,036,718	\$36,443,860
DIGESTIVE SYSTEM DISEASES						
Ulcer	34.9%	267	93	\$7,574	\$2,022,258	\$704,382
Colorectal cancer	9.6%	513	49	\$8,002	\$4,105,026	\$392,098
Esophageal cancer	65.7%	39	26	Data not available		
Stomach cancer	21.0%	111	24	Data not available		
Pancreatic cancer	23.9%	82	20	Data not available		
Cancer of the lip, oral cavity and pharynx	63.8%	76	48	\$16,628	\$1,263,728	\$798,144
DIGESTIVE TOTAL		1,088	260		\$7,391,012	\$1,894,624

Table 4.2 continues ...

Table 4.2 continued

	Smoking Attributable Fraction (SAF)%	Number of Hospitalizations	Number of Hospitalizations Attributable to Smoking	Cost per stay	Cost for all Hospitalizations	Cost for Hospitalizations Attributable to Smoking
OTHER DISEASES						
Cervical cancer	9.0%	31	<5	Data not available		
Kidney, Renal cancer	25.3%	129	32	Data not available		
Bladder cancer	41.4%	237	98	\$6,293	\$1,491,441	\$616,714
Acute myeloid leukemia	13.7%	43	6	Data not available		
OTHER TOTAL		440	139		\$1,491,441	\$616,714
OVERALL TOTAL		11,837	3,311		\$118,279,094	\$49,361,387

£ Reflects cardiovascular, respiratory and ulcer hospitalizations for those aged 35 years and older. Cancer hospitalizations reflect those aged 30 years and older.

¥ It is assumed that the costs for bronchitis and emphysema are same as cost for chronic lower respiratory disease, excluding asthma.

€ Pneumonia and influenza costs have been calculated separately for each condition and then summed. Costs include: pneumonia (\$7,812); acute upper respiratory infections and influenza (\$3,494). It is assumed that the cost of treating influenza is the same as for treating acute upper respiratory tract infections.

† Ischemic heart disease costs have been calculated separately for each condition and then summed. Costs include: angina pectoris (\$5,639), acute myocardial infarction (\$11,043), and other ischemic heart disease (\$13,015).

‡ Other heart disease costs have been calculated separately for each condition and then summed. Costs include: Rheumatic fever with heart involvement (\$39,748.00), chronic rheumatic heart diseases (\$33,678.00), Pulmonary heart disease (\$8,582.00), Cardiomyopathy (\$21,287.00), Atrial fibrillation (\$24,096.00), other conduction disorders and cardiac arrhythmias (\$5,966.00), Heart failure (\$9,795.00), and Other forms of heart diseases (\$10,848.00). Please note that for other heart disease, cost estimate includes ICD-10 code I52.

Note: Number of hospitalizations reflects an annual average for the years 2005-2009.

Sources:

Hospital In-Patient Discharge Data 2005-2009, IntelliHEALTH Ontario, Ministry of Health and Long Term Care.

Smoking Prevalence: Canadian Community Health Survey 2003, 2005, 2007/2008 combined, Statistics Canada, Share File, Ontario Ministry of Health and Long-Term Care.

Relative Risk for smoking and diseases attributable to smoking (excluding colorectal cancer and ulcer): Thun MJ, Day-Lally C, Myers DG, Calle EE, Flanders WD, Zhu BP, et al. Trends in tobacco smoking and mortality from cigarette use in cancer prevention studies I (1959 through 1965) and II (1982 through 1988). Bethesda, MD: US Department of Health and Human Services, Public Health Service, National Institutes of Health, National Cancer Institute; 1997.

Relative Risk for smoking and colorectal cancer from: Chao A, Thun MJ, Jacobs EJ, Henley SJ, Rodriguez C, Calle EE. Cigarette smoking and colorectal cancer mortality in the cancer prevention study II. J Natl Cancer Inst. 2000 Dec 6;92(23):1888-96.

Relative Risk for smoking and ulcer: English DR, Holman CDJ, Milne E, Winter MJ, Hulse GK, Codde G, et al. The quantification of drug caused morbidity and mortality in Australia 1995. Canberra, Australia: Commonwealth Department of Human Services and Health; 1995.

Canadian Institute for Health Information. The cost of acute care hospital stays by medical condition in Canada, 2004-2005. Ottawa: Canadian Institute for Health Information; 2008.

Summary

In Peel, current smokers have a higher rate of hospitalization compared to non-smokers.^G In Peel, we estimate that at the very least, smoking-attributable hospitalization costs about \$49 million annually.