

Thoracic Cancer Surgeries

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Abstract

In 2005, Cancer Care Ontario (CCO) released Thoracic Surgical Oncology Standards. These standards were aimed at providing the best level of care for those undergoing thoracic surgery and encompass surgeon training, hospital ancillary services and minimum volume thresholds for surgeries of the lung and esophagus.

The objective of the current study was to explore variations in thoracic cancer surgical volumes at the hospital level across Canada. Using data from the Discharge Abstract Database for 2007–2008, the cohort included patients admitted to hospital with a most responsible diagnosis of cancer and who had a lung or esophageal surgery. To determine the volume of surgeries performed per facility, we grouped patients according to the hospital facility performing the surgery.

In Canada (excluding Quebec and Prince Edward Island), there were a total 4,509 lung and 587 esophageal cancer procedures performed in 94 hospitals in 2007–2008. For both types of surgeries, Ontario hospitals performed approximately half of the procedures. Overall, 12 hospitals performed at or over the volume of surgeries for lung cancer as identified by the CCO standards, while 10 did so for esophageal cancer. Nine hospitals performed both lung and esophageal cancer surgeries at or over the suggested volumes.

Higher volumes of lung and esophageal cancer-related surgeries have been associated with improved patient outcomes. Here we present a snapshot of the distribution of cancer-related lung and esophageal surgeries across Canada (excluding Quebec and Prince Edward Island).

A positive association between surgical volume and improved patient outcomes – often measured by in-hospital or 30-day mortality rates – has been identified for several types of conditions and procedures (Birkmeyer et al. 2002; Committee for Scientific Affairs et al. 2007; Halm et al. 2002; Hillner et al. 2000; Urbach et al. 2004) including cancer-related lung and esophageal surgeries (Bach et al. 2001; Halm et al. 2002). However, the strength of the association varies by both condition and procedure (Halm

Level One and Two Thoracic Cancer Surgery Centres

In 2005, Cancer Care Ontario (CCO) released guidelines developed by the Expert Panel on Thoracic Surgical Oncology to provide the highest-quality of care in Ontario. The recommendations were set for level one and two thoracic cancer surgery centres, which included standards for surgeon criteria and training, availability of medical specialists, hospital and organizational resources and services and minimum surgical volumes.

Level One Centres

- Provide the most comprehensive care and manage the most complex cases
- Have at least three thoracic surgeons on staff to provide care whenever it is needed
- Perform 150 anatomical pulmonary resections and 20 esophagectomies per year

Level Two Centres

- Have a formal relationship with a level one centre to which it can refer its most complex cases
- Have a minimum of one thoracic surgeon who performs routine thoracic procedures
- Perform 50 anatomical pulmonary resections and seven esophagectomies per year

For complete information on these guidelines see www.cancercare.on.ca/pdf/pebc_thoracic_surg_standards.pdf.

et al. 2002; Finlayson et al. 2003).

In 2005, Cancer Care Ontario (CCO) released the Thoracic Surgical Oncology Standards, aimed at providing the highest-quality care for this type of complex surgery (CCO 2009). These standards were developed by a panel of experts who reviewed evidence-based literature and recommendations from other jurisdictions and evaluated the distribution of thoracic surgeries in Ontario at the time. Included in the guidelines were recommendations related to surgeon training, hospital ancillary

Table 1. Number of hospitals and thoracic cancer surgeries performed, by province 2007–2008

Province*	No. of Hospitals Performing Lung Cancer Surgeries	No. of Lung Cancer Surgery Cases	No. of Hospitals Performing Esophageal Cancer Surgeries	No. of Esophageal Cancer Surgery Cases
Newfoundland	2	61	2	15
Nova Scotia	3	254	5	36
New Brunswick	6	178	5	16
Ontario	41	2,501	29	285
Manitoba	4	282	4	33
Saskatchewan	3	183	8	38
Alberta	6	436	6	50
British Columbia	7	614	12	114
Totals	72	4,509	71	587

*Data were unavailable for Quebec for 2007–2008. Data for Prince Edward Island were suppressed, given small cell size. No surgeries for lung or esophageal cancer-related surgeries were performed in facilities located in Canada's three territories.

Source: Discharge Abstract Database, 2007–2008, Canadian Institute for Health Information.

services and minimum volume thresholds in order for institutions to be regarded by the Regional Cancer Program as level one or two regional thoracic centres.

Here we determine the distribution of both lung and esophageal cancer-related surgeries in Canada and consider the volume of each type of surgery by facility.

Methodology

Using CIHI's Discharge Abstract Database for 2007–2008, patients admitted to hospital with a primary diagnosis of cancer were selected according to whether they had lung or esophageal surgery, using the following Canadian Classification of Health Interventions codes:

- Lung surgery: 1GR87, 1GR89, 1GR91, 1GT87, 1GT89, 1GT91
- Esophageal surgery: 1NA87–1NA92

To determine the volume of surgeries performed, we grouped patients according to the facility performing the surgery.

Results

In 2007–2008, 4,509 lung cancer and 587 esophageal cancer procedures were performed in Canada outside of Quebec and Prince Edward Island. For both types of procedures, Ontario

hospitals accounted for approximately half of the cases (Table 1).

In 2007–2008, 72 hospitals performed lung cancer-related surgeries. Of these hospitals, 12 performed 150 or more – the suggested minimum number of surgeries to meet the volume criteria for CCO level one centres. A further 17 hospitals met the minimum surgical volumes for a level two designation (50 or more lung cancer-related surgeries). Forty-three facilities performed fewer than 50 lung cancer-related surgeries in 2007–2008 (Figure 1).

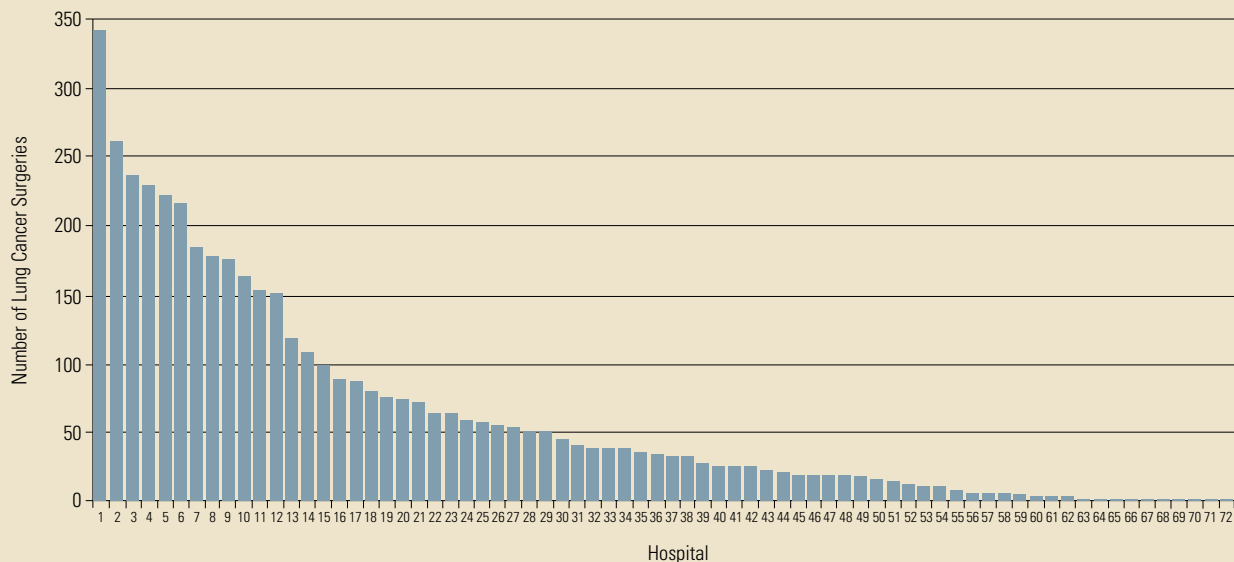
Similarly, of the 71 hospitals performing esophageal cancer-related surgeries, 10 were at or above CCO's recommended volume standard of 20 esophageal surgeries set for level one centres; a further 17 hospitals had volumes that met the level two designation of seven surgeries. The remaining 44 facilities each performed six or fewer esophageal cancer surgery cases in 2007–2008 (Figure 2).

Overall, there were nine hospitals in Canada (excluding Quebec and Prince Edward Island) that performed 150 or more lung surgeries and 20 or more esophageal surgeries. These hospitals were located in and outside of Ontario.

Conclusion

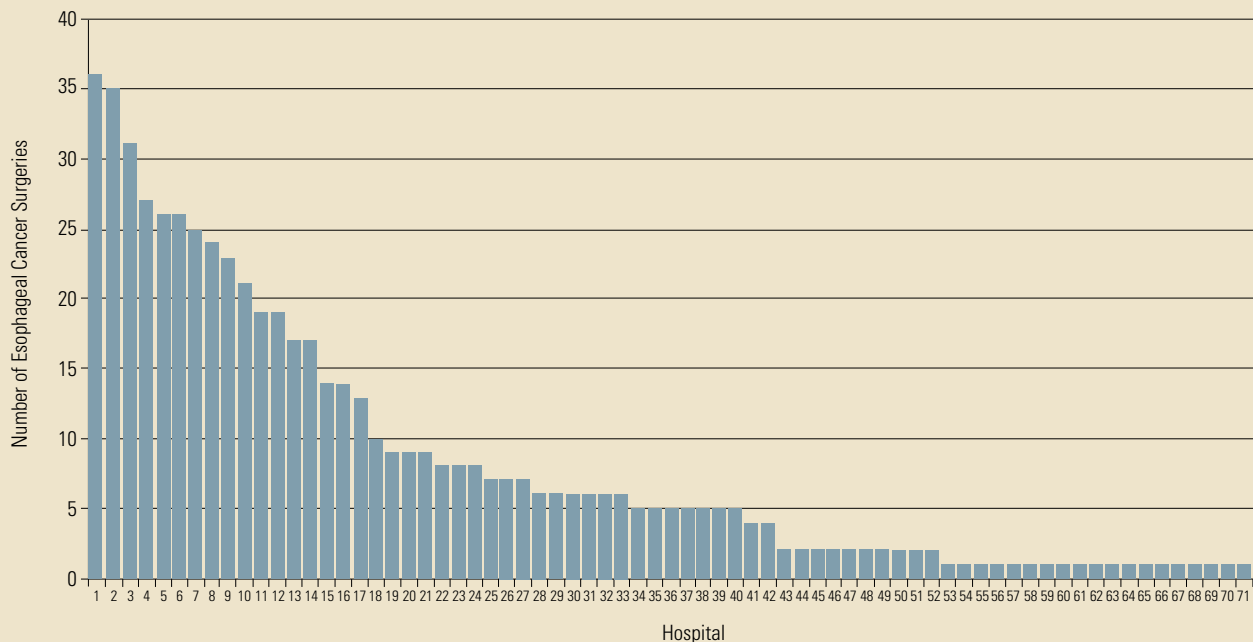
In 2005, CCO moved toward establishing criteria for designated centres of care in order to “accommodate long-range needs

Figure 1. Number of lung cancer surgeries performed in Canada (excluding Quebec and P.E.I.) by hospital*



*Two reporting hospitals represent hospital corporations that are composed of three hospital sites each; it is not possible to determine the number of surgeries performed at each site.
Source: Discharge Abstract Database, 2007–2008, Canadian Institute for Health Information.

Figure 2. Number of esophageal cancer surgeries performed in Canada (excluding Quebec and P.E.I.) by hospital*



*Two reporting hospitals represent hospital corporations that are composed of three hospital sites each; it is not possible to determine the number of surgeries performed at each site.
Source: Discharge Abstract Database, 2007–2008, Canadian Institute for Health Information.

and take into account the projected increase in thoracic cancer surgery needs over the next decade due to a growing and aging population” (Sundaresan et al. 2005: 4). How care is organized in Ontario may not directly translate to other jurisdictions in Canada where population demands for these surgeries are less. However, given an established association of improved outcomes with increased surgical volumes for some cancer procedures, regionalizing care has been suggested as a means of improving the quality of care (Simunovic et al. 2006; Urbach and Baxter 2004) and lowering costs (BC Thoracic Surgery 2006).

This analysis shows the variation in the volume of lung and esophageal cancer-related surgeries at the facility level, against the backdrop of CCO’s volume guidelines. These findings can inform ongoing discussions regarding what is reasonable and practical in organizing care for those undergoing thoracic surgery in Canada. **HQ**

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