Measuring concordance with guidelines for the diagnosis and treatment of colon cancer

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INTRODUCTION

Colorectal cancer is the second leading cause of cancer death and the third most commonly diagnosed cancer in Canada, with an estimated 9200 deaths and 23,300 new cases in 2012. Evidence-based diagnosis and treatment of colon cancer can help to improve outcomes. As part of the System Performance Initiative at the Canadian Partnership Against Cancer, we report on indicators measuring concordance with two evidence-based guidelines (per the National Comprehensive Cancer Network) for the diagnosis and treatment of colon cancer in a number of Canadian provinces for patients diagnosed between 2007 and 2009.

The first indicator assesses the resection and examination of a minimum of 12 lymph nodes in colon cancer resections, which is recommended by most clinical guidelines to more definitively establish N stage (indicating the extent of cancer spread to lymph nodes), because the chance of a false-negative diagnosis is reduced to acceptable levels beyond the threshold of 12 nodes examined.

The second indicator assesses the rate of adjuvant chemotherapy in patients with surgically resected stage III colon cancer. Several large randomized controlled trials have demonstrated that treatment with chemotherapy after surgery improves outcomes.

Measuring concordance with these two guidelines at a national level allows for identification of best practices, which in turn can inform quality improvements.

METHODOLOGY

The two indicators were developed in collaboration with participating provincial cancer registries. All patients diagnosed with stage III colon cancer between 2007 and 2009 were identified in each of the provincial cancer registries using the International Classification of Diseases for Oncology (3rd edition) codes and collaborative staging data. Patients receiving a colon resection were then identified either through the coding of surgical procedures in the registries or by linkage with hospital records data (depending on the province). Only patients receiving a resection (identified through appropriate Canadian Classification of Health Interventions procedure codes) within 1 year of diagnosis were included. The number of lymph nodes removed and examined was obtained from the collaborative staging data elements. Adjuvant or postoperative chemotherapy delivery was obtained from various administrative data sources in the provinces or from information abstracted into the registries. Intravenous and oral chemotherapy were both included. Only chemotherapy treatment started (or prescribed) within 120 days of surgery was included as guideline-concordant.

Removal of 12 or More Lymph Nodes in Colon Resections

For the 8 participating provinces, the percentage of colon resections with 12 or more lymph nodes removed and examined ranged from 58.7% in New Brunswick to 89.4% in Ontario for patients diagnosed in 2009 (Figure 1). Guideline concordance rates increased between 2007 and 2009 for most provinces with data for all 3 years.

The rates were slightly higher for women than for men and for patients less than 70 years of age than for patients 70 years of age and over (data not shown). The rates presented here are slightly higher than those reported in other jurisdictions and studies, where they ranged from 65% to 77%.

Adjuvant Chemotherapy for Stage III Colon Cancer

The percentage of resected stage III colon cancer cases diagnosed in 2009 receiving adjuvant chemotherapy ranged from 55.7% in Manitoba to 81.8%

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*a The Canadian Classification of Health Interventions codes refer to the standards for the classification of health-related interventions in Canada.
in Saskatchewan (Figure 2), a substantial interprovincial variation. Moreover, guideline concordance rates appeared to decline over time in the provinces with multiple years of data. That trend may reflect incomplete data capture for the increasing use of capecitabine, an oral alternative to the intravenous 5-fluorouracil–based regimen used in the adjuvant setting for colon cancer. Also shown in Figure 2 is the percentage of stage III colon cancer patients receiving surgical resection in each of the 5 participating provinces, which, in most provinces, ranged from mid-80% to mid-90%.

**Figure 1** Percentage of colon resections with 12 or more lymph nodes removed and examined, by province, patients diagnosed 2007–2009.

**Figure 2** Percentage of stage III colon cancer patients receiving chemotherapy after surgical resection, by province, patients diagnosed 2007–2009.
A strong decrease in guideline concordance related to patient age was evident, with the adjuvant chemotherapy rate dropping from 90% for patients less than 60 years of age to 20% for patients 80 years of age and older (data not shown). A French study conducted in 2002–2003 found that, after controls for other possible factors had been applied, the use of chemotherapy dropped significantly for patients 75 years of age and older.

DISCUSSION

The indicators presented in this snapshot are intended to identify opportunities for improvements in evidence-based practice. Previous articles published in this series featured chart reviews that were conducted to shed further light on the referral and treatment decisions that contributed to the measured guideline concordance rates. Those reviews are examples of drill-down analysis that can help to provide more details about the factors needed to understand the indicator results. That level of analysis can be carried out at the level of provincial cancer programs to help identify the real potential for improvement. Follow-up might, as appropriate, involve consultations with clinician leaders in colon surgery and medical oncology to identify strategies for influencing practice decisions and bringing them more in line with established evidence.

THE CANCER SYSTEM PERFORMANCE COLLABORATION

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The 2012 Cancer System Performance Report can be viewed at http://www.cancerview.ca/systemperformancereport.

Slides of figures in this communication and the System Performance Report can be downloaded at http://www.cancerview.ca/downloadableslides.

CONFLICT OF INTEREST DISCLOSURES

The authors have no financial conflicts of interest to declare.

REFERENCES


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