

## **e-Appendix 3: Details of the local tabulation of direct health care costs of colonoscopy and CT colonography**

### **Cost of colonoscopy**

Detailed procedural costs for diagnostic and therapeutic colonoscopy, including physician and nursing charges and costs for medical and surgical supplies, medications, cleaning, and amortized costs for overhead, were tabulated locally: Alberta Health Care physician reimbursement for colonoscopy (\$141.87 ± \$52.77 for polypectomy) + consultation (\$165.59) + personnel, disposables, medication, and equipment cleaning and depreciation\* (\$239.18 ± \$68.25 for polypectomy).

### **Cost of colonoscopy-related complications**

From Calgary Health Region administrative data sets, 823 patients who were admitted to an acute care hospital within 30 days after an outpatient colonoscopy from January 2002 through December 2003 were identified. Of these, chart reviews were performed on 133 patients, including all those whose discharge record included an ICD-10 diagnostic code related to bleeding or perforation ( $n = 53$ ) and a random selection of patients without these codes ( $n = 80$ ). Only complications resulting from colonoscopy confirmed with chart review were included in the analysis. Inpatient direct health care costs were obtained according to accepted costing methodology.<sup>1,2</sup> A total of 14 bleeding and 9 perforation complications were identified, costing an average of \$3067 and \$29 982, respectively (see Table 2 of article at [www.cmaj.ca/cgi/content/full/173/8/877](http://www.cmaj.ca/cgi/content/full/173/8/877)).

### **The technology of CT colonography and its cost**

CT colonography is an evolving technology. Both 2-dimensional images and 3-dimensional computerized reconstructions can be used to identify polyps. Most studies have used the 2-dimensional images for the initial detection of polyps, reserving the 3-dimensional “fly-through” images for trouble-shooting. Only 1 study<sup>3</sup> has used a primary 3-dimensional approach.

CT colonography is not currently part of any provincial fee schedule in Canada. In Calgary, it is currently offered at 1 private clinic only, for \$795. We estimated the cost of CT colonography using the Provincial Common Procedure List Catalog used in the Calgary Health Region to calculate the cost of diagnostic imaging tests. The cost estimate was for primary 2-dimensional reading with 3-dimensional trouble-shooting. A cost of \$400 was estimated to cover a radiologist’s interpretation fee, support staff, supplies and equipment maintenance. It excludes capital expenditures and thus assumes that the extra CT scans could be done by means of existing capital infrastructure. Moreover, the CT cost is likely a conservative estimate because it does not include the anticipated higher radiologist’s interpretation fee, given the extra time required to interpret a CT colonography study. We added an additional \$45 to account for the cost of extracolonic findings according to a recent US study<sup>4</sup> (conversion: US\$34.33 × 1.30 = Can\$45).

### **Indirect costs of colonoscopy and CT colonography**

Using average hourly earnings for Canadians (\$17.76 per hour — Canadian Socioeconomic Information Management System [CANSIM] Table 281-0029), we estimated the indirect costs for colonoscopy as \$213.12 (8 h for patient + 4 h for an escort), and for CT colonography as \$71.04 (4 h for patient). This method is, however, controversial, since previous studies have found that short-term absence is often compensated for during normal working hours and therefore does not lead to productivity losses (i.e., indirect costs). Our approach therefore likely overestimates the indirect costs.<sup>5</sup>

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\*Data are findings from a local costing study.