The Diagnosis of Colorectal Cancer — A Review of CT Colonography versus Colonoscopy or Sigmoidoscopy

**Context**
Colorectal cancer (CRC) is the second leading cause of cancer-related death in industrialized countries and the third most common cancer worldwide. In Canada, over 20,000 cases of CRC are diagnosed annually. Early detection, diagnosis, and treatment are important factors in survival. Screening for CRC includes fecal occult blood testing, double contrast barium enema, sigmoidoscopy, and colonoscopy.

**Technology**
Colonoscopy is used to detect and locate CRC or polyps that may lead to cancer. It is performed by inserting an endoscope through the anus, allowing exploration of the entire colorectum. Sigmoidoscopy is a similar procedure, but the exploration is limited to only the sigmoid colon. Computed tomographic colonography (CT colonography) offers an alternative to traditional colonoscopy and sigmoidoscopy. In this technique, a CT scan is taken to generate high-resolution images of the inner surface of the colon.

**Issue**
Colonoscopy is the gold standard for colon cancer screening. It detects lesions with high sensitivity and specificity, but it is invasive, and requires sedation and extensive bowel preparation. CT colonography is less invasive and requires less bowel preparation. No sedation or analgesia is needed and it takes less time than colonoscopy. It can also be performed in patients with incomplete colonoscopies or in patients who are unable to undergo colonoscopy. CT colonography is, however, costly and delivers a high dose of radiation. Its sensitivity and specificity in detecting cancer and precancerous polyps are also lower. A review to assess the clinical effectiveness and cost-effectiveness of CT colonography compared with colonoscopy or sigmoidoscopy will help to inform clinical decisions. A review of evidence-based guidelines will also contribute to the decision-making process.

**Methods**
A limited literature search of key resources was conducted, and titles and abstracts of the retrieved publications were reviewed. Full-text publications were evaluated for final article selection according to predetermined selection criteria (population, intervention, comparator, outcomes, and study designs).

**Key Messages**
For the diagnosis of colorectal cancer:
- CT colonography performed almost or equally as well as colonoscopy.
- CT colonography performed better than colonoscopy for preoperative evaluation of tumours when patients had obstructive masses.

Clinical practice guidelines recommend CT colonography in patients who:
- Failed or cannot undergo colonoscopy
- Require precise tumour location which cannot be clearly determined by colonoscopy.

No evidence on comparative cost-effectiveness or on CT colonography versus sigmoidoscopy was available.

**Results**
The literature search produced 500 citations of which 31 were deemed potentially relevant. An additional 6 articles were identified from the grey literature. Of these 37 reports, 12 met the criteria for inclusion in this review: 2 systematic reviews, 6 non-randomized studies, and 4 evidence-based guidelines. No economic evaluations were identified.