

Colonoscopy Surveillance After Colorectal Cancer Resection: Recommendations of the US Multi-Society Task Force on Colorectal Cancer

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The US Multi-Society Task Force has developed updated recommendations to guide health care providers with the surveillance of patients after colorectal cancer (CRC) resection with curative intent. This document is based on a critical review of the literature regarding the role of colonoscopy, flexible sigmoidoscopy, endoscopic ultrasound, fecal testing and CT colonography in this setting. The document addresses the effect of surveillance, with focus on colonoscopy, on patient survival after CRC resection, the appropriate use and timing of colonoscopy for perioperative clearing and for postoperative prevention of metachronous CRC, specific considerations for the detection of local recurrence in the case of rectal cancer, as well as the place of CT colonography and fecal tests in post-CRC surveillance.

Keywords: Colonoscopy; Colorectal Neoplasms; Surveillance.

In the United States, colorectal cancer (CRC) is the second leading cause of cancer deaths for men and women combined.¹ Of the estimated 132,700 new cases expected to be diagnosed in 2015,¹ 70%–80% will undergo surgical resection with curative intent^{2,3} and up to 40% of patients with locoregional disease will develop recurrent cancer, of which 90% will occur within 5 years.⁴ The postoperative surveillance of patients treated for CRC is intended to prolong survival by diagnosing recurrent and metachronous cancers at a curable stage, and to prevent metachronous cancer by detection and removal of precancerous polyps.

Surveillance strategies employ a combination of modalities, including history and physical examination, carcinoembryonic antigen (CEA), computed tomography (CT) scans, and endoluminal imaging, including colonoscopy, sigmoidoscopy, endoscopic ultrasound (EUS), and CT colonography (CTC). Although the optimal surveillance strategy is still not clearly defined, the role of colonoscopy is primarily to clear the colon of synchronous cancers and polyps and prevent metachronous neoplasms.

In 2006, the US Multi-Society Task Force (USMSTF) published a consensus guideline to address the use of endoscopy for patients after CRC resection.⁵ This updated document focuses on the role of colonoscopy in patients after CRC resection. Additionally, based on a comprehensive literature review updated from the 2006 recommendations, we review the possible adjunctive roles of fecal testing (eg, fecal immunochemical testing for hemoglobin) and CTC. The use of CEA, CT scans of the liver, as well as chest radiographs are beyond the scope of this document and are not reviewed. The goal of this consensus document is to provide a critical review of the literature and recommendations regarding the role of colonoscopy, flexible sigmoidoscopy, EUS, fecal testing, and CTC in surveillance after surgical resection of CRC.

Methodology

Literature Review

The English-language medical literature was searched using MEDLINE (2005 to September 30, 2015), EMBASE (2005 to September 30, 2015), the Database of Abstracts of Reviews and Effects (2005 to October 7, 2015), and the Cochrane Database of Systematic Reviews (2005 to October 7, 2015). In MEDLINE, subject headings for colorectal neoplasms were combined with

Abbreviations used in this paper: CEA, carcinoembryonic antigen; CI, confidence interval; CRC, colorectal cancer; CT, computed tomography; CTC, computed tomographic colonography; EUS, endoscopic ultrasound; FIT, fecal immunochemical test; GRADE, Grading of Recommendations Assessment, Development and Evaluation; OR, odds ratio; RCT, randomized controlled trial; RR, relative risk; SPS, serrated polyposis syndrome; USMSTF, US Multi-Society Task Force.

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the subheading for surgery, resection, postoperative, colectomy, curative, survivor, survival, neoplasm recurrence, second primary neoplasms, and treatment outcome. The resulting set was combined with subject and keywords for colonoscopy or follow-up studies. Similar searches were performed in EMBASE, the Database of Abstracts of Reviews and Effects, and the Cochrane Database of Systematic Reviews. Case reports and studies performed in patients with inflammatory bowel disease, prior CRC, or hereditary CRC syndromes were excluded. Review papers, meta-analyses, gastroenterology textbooks, and editorials were searched manually for additional references. Data from studies with no explicit documentation that perioperative colonoscopic clearing had been performed were not included in the overall summary tables, but some of these studies are referred to in the discussion of the evidence. The review includes studies published since 2005, but also incorporates older evidence used to draft the 2006 guidelines.⁵ Evidence-based recommendations are provided with supporting discussion to help guide clinicians in the management of these patients.

Definitions

The review focused on the use of colonoscopy after surgical resection in patients with TNM stages I–III (or Dukes A–C) CRC, and selected patients with resected stage IV cancer.⁶ When available, we included studies with specific reporting of overall and cancer-specific survival, and rates of second primary (metachronous) cancers and anastomotic recurrences. Although significant variability exists in the terminology of the reviewed studies, the following general definitions were employed: metachronous cancer refers to CRC diagnosed as a second primary after surgical resection and perioperative clearing, and anastomotic recurrence includes CRC which recurs intraluminally at or within close proximity of the surgical anastomosis.

Rectal cancer is generally associated with a higher risk of local recurrence than cancer in other segments of the colon, and requires additional considerations for surveillance, which are discussed in more detail in a separate section.

Throughout the document, reference is made to “high-quality” colonoscopy for perioperative clearing and surveillance for metachronous neoplasms. A high-quality colonoscopy assumes completeness (cecum or anastomosis is reached), adequate bowel preparation, and meticulous examination by appropriately trained operators who meet adenoma detection benchmarks (ie, frequency of conventional adenoma detection of $\geq 25\%$ in average-risk screening colonoscopies).^{7,8}

Process and Levels of Evidence

The USMSTF includes gastroenterology experts with specific interest in CRC. These members represent the American College

of Gastroenterology, the American Gastroenterological Association, and the American Society for Gastrointestinal Endoscopy. Summary tables and a draft document were circulated to members of the Task Force, and final guidelines were developed by consensus during a joint teleconference. The document underwent committee review and governing board approval by all 3 societies. The USMSTF grades the quality of evidence and strength of recommendations using an adaptation of the Grading of Recommendations Assessment, Development and Evaluation (GRADE) approach.⁹ The GRADE process categorizes the quality of the evidence as high, moderate, low, or very low (Table 1). This categorization is based on an assessment of the study design (eg, randomized controlled trial or observational study), study limitations, inconsistency of results, indirectness of evidence, imprecision, and publication bias. The USMSTF members conduct literature searches to identify published papers that address the key issues discussed within these recommendations. These publications are supplemented both by review of citations from the identified papers as well as other key references elicited from the subject matter experts on the Task Force. The GRADE process involves the collection of literature, analysis, summary (often as meta-analysis), and a separate review of the quality of evidence and strength of recommendations. The USMSTF members employ a modified, qualitative approach for this assessment based on exhaustive and critical review of evidence, without a traditional meta-analysis. The GRADE process separates evaluation of the quality of the evidence to support a recommendation from the strength of that recommendation. This is done in recognition of the fact that, although the quality of the evidence impacts the strength of the recommendation, other factors can influence a recommendation, such as side effects, patient preferences, values, and cost. Strong recommendations mean that most informed patients would choose the recommended management and that clinicians can structure their interactions with patients accordingly. Weak recommendations mean that patients' choices will vary according to their values and preferences, and clinicians must ensure that patients' care is in keeping with their values and preferences.⁹ Weaker recommendations are indicated by phrases such as “we suggest,” whereas stronger recommendations are stated as “we recommend.”

Results of Literature Review

Effect of Surveillance Colonoscopy on Survival

Observational studies utilizing large administrative databases^{10–12} and meta-analysis of randomized controlled trials (RCTs)^{13,14} show that patients who receive surveillance colonoscopy after CRC resection have lower overall,^{10–14} but not disease-specific^{11,14} mortality. Cancer-specific mortality

Table 1. Grading of Recommendations Assessment, Development, and Evaluation Ratings of Evidence

Rating of evidence	Definition
A: High quality	Further research is very unlikely to change our confidence in the estimate of effect
B: Moderate quality	Further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate
C: Low quality	Further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate
D: Very low quality	Any estimate of effect is very uncertain

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