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## Follow-up Care in Medicare Beneficiaries with Colorectal Cancer

BY GREGORY S. COOPER, MD<sup>1,2</sup>; TZUYUNG DOUG KOU, MPH, MA<sup>2</sup>; HARRY L. REYNOLDS, JR., MD<sup>3</sup>

<sup>1</sup>Division of Gastroenterology, University Hospitals Case Medical Center; <sup>2</sup>Comprehensive Cancer Center, Case Western Reserve University; <sup>3</sup>Division of Colorectal Surgery, University Hospitals Case Medical Center, Cleveland, Ohio

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### LEARNING OBJECTIVES

After completing this activity, the reader should be better able to:

- Describe current guidelines for follow-up care of colorectal cancer survivors.
- Discuss how these guidelines are applied in clinical management of elderly patients.
- Explain reasons for disparities between recommended care and that received by elderly patients.

### TARGET AUDIENCE

Advanced practice nurses, registered nurses, and other interested healthcare professionals, especially those caring for cancer patients.

### COST

This program is complimentary for all learners.

Routine postoperative surveillance is recommended for patients with colorectal cancer who undergo potentially curative resection.<sup>1-8</sup> The goals of surveillance are to detect recurrent cancer in the colon or metastatic sites before the onset of other symptoms or signs, as well as to screen for cancers and polyps. Most guidelines recommend a combination of regularly scheduled office visits, colonoscopy, and carcinoembryonic antigen (CEA) testing, and two meta-analyses have reported improved long-term survival compared with minimal follow-up.<sup>9,10</sup> However, there are no national, population-based studies on the actual adherence to published comprehensive guidelines, as well as on the potential use of excessive testing. We therefore conducted the present study to determine compliance with guideline-based surveillance recommendations as well as to describe the potential overuse of follow-up testing in colorectal cancer survivors.

### Methods

The cohort was identified from a database that included tumor registry data from the Surveillance, Epidemiology, and End Results (SEER) Program and Medicare claims data.<sup>11,12</sup> SEER consists of a series

of population-based registries that capture approximately 25% of the US population, and for patients who are age-eligible (65 years and older) Medicare beneficiaries, inpatient, outpatient, and physician-supplier Medicare claims are linked. Patients were included if they were diagnosed with adenocarcinoma of colon or rectum during years in which oncology society guidelines were continuously available, 2000 through June 2001.

The follow-up period of interest was from 6 months after diagnosis through 42 months after diagnosis. Procedures within 6 months were excluded to avoid including tests to evaluate possible postoperative complications and routine postoperative visits. Procedures were identified through billing codes and included office visits, CEA testing, colonoscopy, computed tomography (CT) scan, and positron emission tomography (PET) scan.

The primary outcome of interest was adherence to professional society guidelines for routine surveillance, such as those of the American Society of Clinical Oncology (ASCO)<sup>2,3</sup> and the National Comprehensive Care Network (NCCN)<sup>6</sup> (Table). Because we could not ascertain which individual set of guidelines was most likely referenced in

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## Certain cancer-specific characteristics were associated with greater use of CEA testing (ie, regional- vs local-stage, poorly differentiated vs others), but no more than 63.5% of a specific subgroup fulfilled the testing criteria.

practice, we selected a composite minimum frequency of service and procedure receipt to measure guideline adherence:

- Guidelines met: two or more office visits per year, two or more CEA tests per year in years 1 and 2, one or more colonoscopies within 3 years
- Excess of guidelines: patient met guidelines and received one or more CT scans for cancers not poorly differentiated and/or one or more PET scans.

All others were considered to have failed to have met

guidelines. Differences in the proportion of eligible patients who met guidelines for individual procedures (office visits, CEA testing, colonoscopy) as well as overall guidelines were compared according to patient and clinical characteristics, and a multivariable logistic regression model was used to determine the independent association of factors with receipt of care meeting or exceeding guidelines (vs not meeting guidelines).

The study was approved by the Institutional Review Board at University Hospitals Case Medical Center.

### Results

A total of 9426 patients (mean age, 76.9 years; 54.5% women) who met the study eligibility criteria were identified. We found that 92.3% of patients fulfilled surveillance guidelines for office visits, with at least two visits in each year of follow-up. Although statistically significant differences were found across certain patient subgroups, with the exception of age  $\geq 80$  years, the differences in general were not of large magnitude.

We found that only 46.7% of patients in the study cohort met the guideline-based recommendations for CEA testing, lower rates being associated with age  $\geq 80$  years, African-American race, and increased comorbidity scores. Certain cancer-specific characteristics were associated with greater use of CEA testing (ie, regional- vs local-stage, poorly differentiated vs others), but no more than 63.5% of a specific subgroup fulfilled the

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## COMMENTARY

### Follow-up Care in Medicare Beneficiaries with Colorectal Cancer: A Nurse's Perspective

BY PAMELA HALLQUIST VIALE, RN, MS, CS, ANP, AOCNP

*Oncology Nurse Practitioner, Saratoga, California; Department of Physiological Nursing, University of California San Francisco*

Although reductions have occurred in the death rate from colorectal cancer, this tumor type remains the third most commonly occurring cancer for both men and women, and the third leading cause of cancer death for both sexes.<sup>1</sup> The majority of these cancers occur in the elderly, with a median age at diagnosis of 71 years. Despite this fact, the elderly do not participate in many clinical trials and may also receive less than standard therapy or guideline-based care compared with their younger counterparts.<sup>2,3</sup>

Recently, a national, retrospective chart review of 520 elderly patients treated in community practices noted that these patients were less likely to receive first-line doublet chemotherapy than younger patients and that the use of targeted therapy agents, such as bevacizumab, was much lower in the elderly population as well.<sup>2</sup> The reasons for the treatment disparity included the presence of comorbidities, which could have prevented elderly patients from being able to receive doublet chemotherapy, and the fact that many of these older patients required hospitalization for their increased adverse side effects, such as gastrointestinal complaints.<sup>2</sup> The literature indicates that the elderly should not be considered for treatment by their chronological age alone, and comprehensive evaluation, including assessment of the preferences of the elderly patients themselves, is essential in determining the appropriate treatment.<sup>4</sup>

The treatment disparities described above are primarily related to concerns regarding the increased adverse events and higher hospitalization rates associated with chemotherapy and targeted therapy agents in the elderly. Cooper and colleagues, however, also noted disparities in the surveillance care of elderly patients after their initial treatment.

Surveillance guidelines included recommendations for biomarker testing, visits to clinicians, and radiographic tests or procedures. In their study, elderly patients received carcinoembryonic antigen (CEA) testing below the recommended guidelines and did not undergo the recommended colonoscopy examinations as frequently as recommended either.

Cooper and colleagues note that these results reflect a large population of colorectal cancer survivors who should be receiving adequate surveillance to determine recurrence of disease. In addition, differences in frequency of surveillance testing were noted in certain racial groups, such as African Americans, which could affect overall survival. The authors point out limitations to their data, such as accuracy of procedure coding for Medicare patients and lack of information for the reason procedures were performed. Nonetheless, the observed disparities between the recommended frequency of testing and the actual frequency of testing are disturbing, and the authors recommend further study of the reasons for poor adherence to guidelines in this population as well as its potential effect on patient outcome.

Because colorectal cancer remains a common cancer in the elderly, clinicians, including oncology nurses, should have increased awareness of the specific needs of this population of patients. The National Comprehensive Cancer Network (NCCN) provides specific clinical practice guidelines for the care of the senior adult oncology patient, which call for careful assessment and an individual approach.<sup>5</sup> Assessment tools for geriatric functional assessment are included, and clinicians are cautioned to remain aware of the specific physical needs of the older patient. After active treatment has concluded, surveillance should be conducted to determine whether there are post-

treatment complications and to detect recurrence of disease as early as possible, rendering metastatic disease potentially curable.<sup>6</sup>

The 2009 NCCN clinical practice guidelines for colon cancer survivors call for history and physical examination every 3 to 6 months for 2 years, then every 6 months for 3 years, with CEA testing every 3 to 6 months for 2 years, then every 6 months for 3 years.<sup>6</sup> A computed tomography scan of the abdomen and pelvis should be conducted annually for 3 years, with a colonoscopy at 1 year, repeated as clinically indicated.<sup>6</sup> These recommendations apply to all patients, with no differences noted in frequency of surveillance testing for elderly patients. Oncology nurses and clinicians should advocate for compliance with guideline-based treatment and surveillance for elderly patients. Future studies should gather additional information regarding compliance and recommended surveillance for this population.

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**Table. Recommended Colorectal Cancer Surveillance Guidelines**

Guideline (year)	Office visits	CEA testing	Colonoscopy
American Gastroenterological Association (1989) <sup>a</sup>	Every 3-6 months for 2 years, then 6-12 months for 2 years	Every 2 months for 2 years, then every 4 months for 2 years	1 year, then every 3 years
American Society of Clinical Oncology (1999, 2000)	Every 6 months for 3 years	Every 2-3 months for at least 2 years in stages II and III	Every 3-5 years
American Society of Clinical Oncology (2005) <sup>b</sup>	Every 3-6 months for 3 years	Every 3 months for at least 3 years in stages II and III	3 years; if normal, every 5 years
American Society of Colon and Rectal Surgeons (2004) <sup>c</sup>	At least three times yearly for 2 years	At least three times yearly for 2 years	Every 3 years
National Comprehensive Cancer Network (updated yearly)	Every 3-6 months for 2 years, then every 6 months	Every 3-6 months for 2 years, then every 6 months	1 year, 3 years later, 5 years later

CEA indicates carcinoembryonic antigen; CT, computed tomography; FOBT, fecal occult blood test.

<sup>a</sup>Also recommend FOBT and liver enzymes every 3-6 months for 2 years then every 6-12 months for 2 years, chest x-ray every 6-12 months for 2 years then yearly.

<sup>b</sup>Also recommend annual CT scans for patients at higher risk of recurrence.

<sup>c</sup>Also recommend considering annual CT scans for patients at high risk for recurrence (ie, lymphatic or venous invasion or poorly differentiated tumors).

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## COMMENTARY

### Follow-up Care in Medicare Beneficiaries with Colorectal Cancer: A Pharmacist's Perspective

BY BETTY M. CHAN, PHARM.D, BCOP

University of Southern California/Norris Comprehensive Cancer Center, Los Angeles

In the article by Cooper and colleagues on follow-up care in Medicare beneficiaries with colorectal cancer, the authors report that the majority of patients (92.3%) fulfilled the surveillance guidelines for physician follow-up office visits, but overall guideline-based recommendations were met in only 17.1% of patients, with 60.2% of patients receiving testing below the minimum frequency. Being aged 70 to 74 years, African-American race, having local-stage, non-poorly differentiated colorectal cancers, and increased comorbidity scores were factors identified by the authors as most strongly associated with lack of guideline adherence.

Since 1998, incidence rates of colorectal cancer have been rapidly declining among both men and women.<sup>1</sup> Between 1996 and 2004, only 40% of patients with colorectal cancer were diagnosed with local-stage disease, for which the 5-year relative survival rate is 90%; for patients diagnosed with regional-stage disease, the 5-year relative survival rate decreases to 68%, and for patients diagnosed with distant-stage disease, the 5-year relative survival rate decreases further to 11%.<sup>2</sup> With the introduction of 5-fluorouracil-based adjuvant chemotherapy for stage III resectable colon cancer in the late 1980s, mortality from colon cancer was further reduced by 30%.<sup>3</sup> These statistics, along with the case study included by Cooper and colleagues, further illustrate the importance of follow-up and

surveillance for cancer survivors with early stages of disease.

Posttreatment surveillance of colorectal cancer patients is performed to evaluate for possible therapeutic complications and to discover early recurrence of disease at its early resectable stages, which allows for curative treatment, as well as at its preinvasive stage, which affords for better treatment outcomes. Several meta-analyses of randomized controlled trials have demonstrated the advantages of intensive follow-up surveillance for colorectal cancer patients.<sup>4,7</sup> The National Comprehensive Cancer Network clinical practice guidelines regarding colon cancer patients recommend outlining a prescription plan for survivorship upon transfer of care to a primary care physician, which should include<sup>8</sup>:

- Overall summary of treatment received, including all surgeries, radiation, and chemotherapy
- Description of clinical course, including expected time to resolution of acute toxicities, long-term effects of treatment, and possible late sequelae from treatment
- Recommendations for follow-up surveillance.

Although surveillance guidelines are available for clinicians, adherence to the guidelines can be a challenge and often requires a multidisciplinary approach that involves the patients and their family members or caregivers to ensure patient compliance with follow-up appointments. Oncology nurses and pharma-

cists can also assist by developing follow-up care plans and a patient-care database to help track and document methods of follow-up and surveillance.

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## Case Study

An otherwise healthy 70-year-old African-American man presented for first-time screening colonoscopy and was found to have a nonobstructing mass lesion in the cecum with pathology showing well differentiated adenocarcinoma. In addition, two polyps were removed from the sigmoid colon, each of which was a tubular adenoma. He underwent right hemicolectomy, with the surgical margins free of residual cancer and 14 lymph nodes negative for malignancy. Postresection, his carcinoembryonic antigen level was 1 ng/mL. He was considered to be TNM Stage II, and a medical oncology consultant did not recommend adjuvant chemotherapy. He was seen by the surgeon 2 weeks, 1 month, and 3 months postoperatively and, because he had made a complete recovery, no further surgical follow up was recommended. Approximately 1 year after surgery, he presented to his primary care physician for routine evaluation. The primary care physician assumed that any recommended cancer-related follow up would be coordinated by other specialists and recommended that he return for an annual physical examination in 1 year. When the patient returned at that time, he reported a 3-month history of intermittent rectal bleeding and was referred for an urgent colonoscopy. He was found to have an ulcerated mass in the sigmoid colon, with pathology showing moderately well-differentiated adenocarcinoma, requiring a subtotal colectomy.

testing criteria. Only 73.6% of patients met guideline-specified criteria for colonoscopy (at least one examination within 3 years of diagnosis). Advancing age, especially age 70 to 74 years, African-American race, and increased comorbidity scores were associated with decreased use of colonoscopy. Across the SEER registries, the vast majority of patients in all sites received the requisite number of office visits (range, 86.0%-95.6%), but there was wider variation in adherence with colonoscopy (67.6%-78.8%) and CEA testing (37.2%-49.8%).

When we examined the use of two procedures that are not routinely recommended for cancer surveillance, abdominal/pelvic CT scans and PET scans, we found that 47.7% of patients received at least one CT scan. Although guidelines recommend that CT scanning be considered for poorly differentiated tumors, we found that 51.4% of patients with poorly differentiated cancer compared with 47.1% of others underwent CT scans.

Overall, the findings showed that guideline-based recommendations were met in 17.1% of patients and exceeded in 22.7%, 60.2% receiving testing below the minimum frequency. Among the factors that were most strongly associated with lack of adherence to guidelines were local stage and nonpoorly differentiated cancers. Age 70 to 74 years, African-American race, and increased comorbidity scores were also associated with less than recommended surveillance included.

In a multivariate logistic regression model, the variables that were most strongly associated with meeting

or exceeding guidelines for surveillance care were younger age group and regional-stage cancers. Patients who were non-African-American and who had lower inpatient comorbidity scores and poorly differentiated cancers were more likely to undergo testing. Differences were also observed across geographic location, with odds ratios ranging from 0.60 (New Mexico) to 1.57 (Michigan).

## Discussion

Approximately three of four patients diagnosed with colorectal cancer have local- or regional-stage tumors, and, assuming that these patients receive treatment with curative intent, the population of survivors in whom routine surveillance testing would be recommended is extremely large. The goals of surveillance testing are to discover a recurrence that is potentially resectable, identify metachronous neoplasms at an early stage, and provide reassurance to the patient.

Professional society practice guidelines include recommendations for routine colorectal cancer surveillance testing (Table).<sup>1-8</sup> The present study of a large cohort of patients treated in routine clinical practice showed that the majority of patients did not receive testing according to practice guidelines for cancer surveillance. Despite including the lowest extreme of the recommended range for testing from these guidelines (two office visits per year, two CEA tests per year in years 1 and 2, one colonoscopy in 3 years), we found that fewer than half the patients achieved compliance. Conversely, a subset of patients received procedures not routinely recommended by guidelines, such as CT and PET scans. Although some of these nonrecommended tests were likely performed because of signs or symptoms and/or abnormal results of routine testing, we suspect that many were obtained for routine follow-up.

Some of the differences in surveillance testing may be explained by clinical factors, such as stage of disease or perceived longevity as measured by age or comorbidity, but we also found important differences across racial groups and geographic sites. The generally lower use of testing in African Americans is likely a contributing factor to their poorer stage-specific survival compared with whites.<sup>13</sup> The results, especially the geographic differences across SEER sites, also suggest that patient and physician preferences may influence choice of testing.

The data used for this study had several inherent limitations. First, the accuracy of procedure coding in the Medicare population has not been formally studied, although we have evaluated its accuracy in a similar population from a large health plan.<sup>14</sup> Second, the study did not measure the indication for procedures, which could have been performed for diagnostic purposes as well as routine surveillance, particularly for procedures such as CEA testing and CT and PET scans, which are used to detect metastatic disease. Third, the database was limited to older patients ( $\geq 66$  years) with colorectal cancer, and thus adherence in younger individuals could not be assessed. Fourth, because physician identifiers or specialty were not available in this database, we could not measure potential differences in practice according to provider type. Finally, we did not measure other factors that could have an impact on procedure use, such as access to care and socioeconomic status, which could not be

ascertained from this database.

## Summary

Our study of this population-based cohort of older colorectal cancer survivors showed that most patients underwent colorectal surveillance testing below a minimum frequency specified by clinical practice guidelines. We also found that a significant number of patients underwent procedures not recommended by clinical practice guidelines, suggesting potential overuse of surveillance tests. Further studies should ascertain the reasons for poor compliance with clinical practice guidelines and the effect this may have on patient outcome.

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This study used the linked Surveillance, Epidemiology, and End Results (SEER)-Medicare database. The interpretation and reporting of these data are the sole responsibility of the authors. The authors acknowledge the efforts of the Applied Research Program, the National Center Institute; the Office of Research, Development and Information, Centers for Medicare & Medicaid Services; Information Management Services, Inc; and the SEER Program tumor registries in the creation of the SEER-Medicare database.

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