

# Receipt of Guideline-Concordant Surveillance Care in Elderly Patients With Colorectal Cancer

Ravi K. Goyal, Keith L. Davis

RTI Health Solutions, Research Triangle Park, NC, United States

## BACKGROUND

- Colorectal cancer (CRC) is the third most frequent cancer and the second leading cause of cancer mortality in the United States (US).<sup>1</sup>
- The American Society of Clinical Oncology (ASCO) guidelines recommend a surveillance care plan that includes periodic colonoscopy, computed tomography (CT) scan, carcinoembryonic antigen (CEA) test, and office visits for history/physical examination.
- A few studies have previously examined adherence to guideline recommendations among elderly patients enrolled in the US Medicare program.<sup>2,4</sup>
- However, more recent data have become available, and new research is warranted to examine current guideline-adherence patterns.

## OBJECTIVE

- We assessed the proportion of patients with CRC receiving guideline-concordant surveillance care and analyzed predictors of guideline concordance.

## METHODS

### Data Source

- Data for this retrospective observational cohort study were obtained from the Survey, Epidemiology, and End Results (SEER)–Medicare linked database, primarily comprising elderly cancer patients, aged 65 years and older, enrolled in the US Medicare program.
- Cancer incidence and related clinical data were obtained from the SEER registry, which comprises 17 population-based registries located across the US. SEER is considered an authoritative source of data for population-based assessments of cancer incidence and survival in the US.
- The linked Medicare component provides longitudinal information on health care service utilization, including diagnoses, treatments, and procedures that patients received before and after their cancer diagnosis.

### Patient Selection and Measures

- Patients aged 66 years and older with a diagnosis of early-stage CRC between 2004 and 2008 were selected for initial inclusion.
- Following the CRC diagnosis, patients were required to have survived at least 3 years, in addition to being continuously enrolled in Medicare Part A and Part B plans with no evidence of enrollment in a health maintenance organization plan.
- Patients who received surveillance care concordant with the 2013 ASCO guidelines were identified using applicable procedure codes.
- Guidelines were considered met if patients received all of the following:
  - At least two office visits for history/physical examination annually
  - At least two CEA tests annually
  - At least one CT scan annually
  - At least one colonoscopy in a 3-year period
- Multivariable logistic regression analysis was performed to examine predictors of guideline-concordant surveillance care.

## RESULTS

- A total of 23,598 patients met the inclusion criteria. Patient characteristics are presented in Table 1.
- Overall, only 9% received guideline-concordant surveillance care during the study period (Figure 1).
- For each guideline component separately, recommendations for office visits, CEA tests, CT scans, and colonoscopies were met with varying degrees of adherence, ranging from 15% to 82% (Figure 1).
- Based on the multivariable analysis, predictors of lower concordance included older age groups (75-84 vs. 66-74 years) and race (black vs. white) (Table 2).
- Guideline concordance was significantly higher among patients with regional-stage disease (vs. local-stage disease) and larger tumor sizes (Table 2).

## LIMITATIONS

- This study relied on diagnostic and procedure codes used for billing purposes to identify receipt of guideline-concordant care. Coding inaccuracy and the absence of specific billing codes for new procedures may introduce misclassification bias.
- This analysis could not measure the intent of the procedures (diagnostic vs. surveillance); additionally, the receipt of treatment with curative intent was not measured and accounted for.
- Data on recurrence and progression to metastasis were not available from the registry data and therefore could not be controlled for in the multivariable analysis.
- Patients younger than 66 years of age and those who died during the follow-up period (i.e., with less than 3 years of available follow-up data) were excluded.

Figure 1. Proportion of CRC Patients Concordant With Guideline-Recommended Surveillance Care

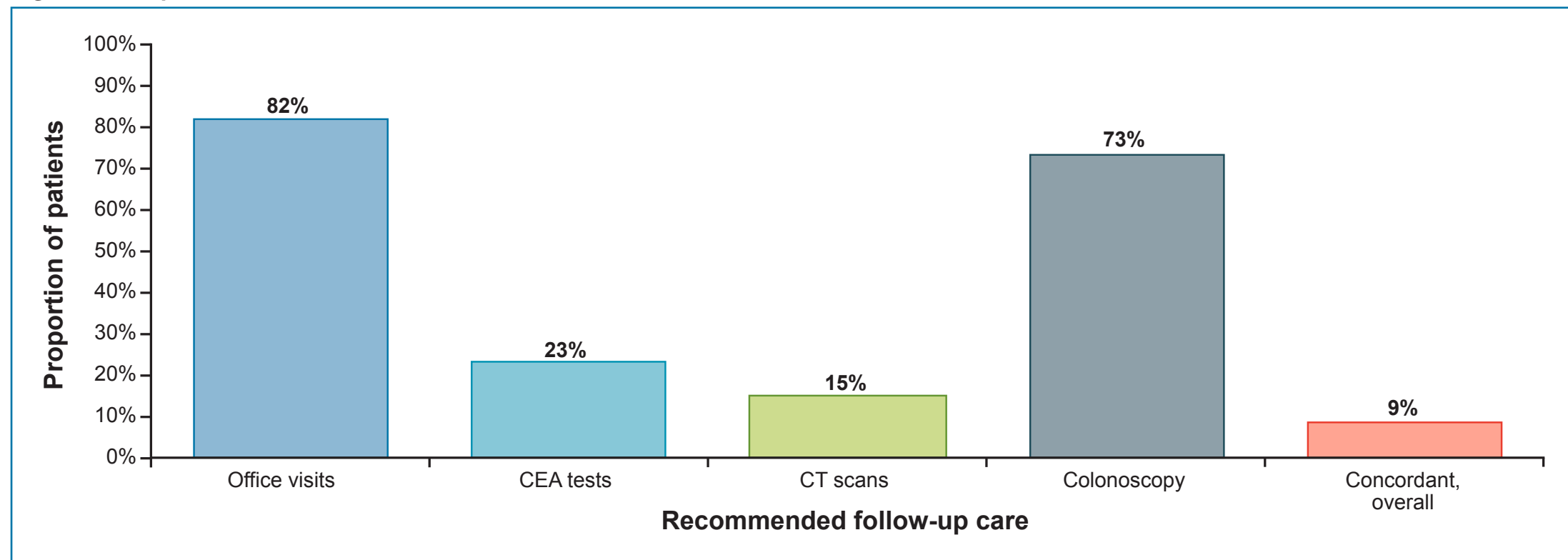


Table 1. Baseline Characteristics of Patients With Early-Stage CRC Diagnosis

Characteristics	n	%
Age at diagnosis in years, mean (SD)	76.8	(6.72)
Age group in years at diagnosis		
66-74	10,263	43.49
75-84	10,275	43.54
85+	3,060	12.97
Sex		
Male	10,742	45.52
Female	12,856	54.48
Race		
White	20,213	85.66
Black	1,757	7.45
Other	1,628	6.90
Rural/urban status		
Big metro	12,262	51.96
Metro	7,008	29.70
Urban	1,472	6.24
Less urban	2,291	9.71
Rural	560	2.37
Year of diagnosis		
2004	5,571	23.61
2005	5,343	22.64
2006	5,034	21.33
2007	4,904	20.78
2008	2,746	11.64
Charlson comorbidity index score, mean (SD)	2.09	(2.27)
Tumor size in centimeters		
> 0-1	5,753	24.38
> 1-2	4,484	19.00
> 2-3	11,769	49.87
> 3	1,589	6.73
Stage at diagnosis		
Localized	14,047	59.53
Regional	9,551	40.47

SD = standard deviation.

Note: Categories with cell size less than 11 are not presented to protect patient confidentiality and to meet the requirements of the SEER-Medicare data use agreement.

Table 2. Predictors of Concordance to Guideline-Recommended Surveillance Care Among CRC Survivors

Covariate	Odds Ratio	95% CI
Age group at diagnosis in years		
Age 66-74	ref	
Age 75-84	0.54	0.49-0.60
Age 85+	0.14	0.11-0.18
Sex		
Male	ref	
Female	0.99	0.90-1.09
Race		
White	ref	
Black	0.62	0.51-0.77
Other	0.98	0.80-1.20
Rural/urban status		
Big metro	ref	
Metro	1.18	0.83-1.68
Urban	1.13	0.80-1.59
Less urban	1.06	0.72-1.55
Rural	1.02	0.71-1.46
Charlson Comorbidity Index score	0.99	0.97-1.02
Tumor size in centimeters		
> 0-1	ref	
> 1-2	1.66	1.37-2.02
> 2-3	2.12	1.77-2.53
> 3	2.36	1.88-2.95
Stage at diagnosis		
Localized	ref	
Regional	3.12	2.77-3.51
Year of diagnosis		
2004	ref	
2005	1.28	1.12-1.47
2006	1.19	1.04-1.37
2007	1.14	0.99-1.31
2008	0.15	0.11-0.21

CI = confidence interval.

Note: A small fraction of patients with unknown rural/urban status and unknown tumor size were excluded from the multivariable analysis.

## CONCLUSIONS

- Concordance with the current follow-up care and surveillance protocol for patients with early-stage CRC is low, with older age, black race, and local-stage disease being the significant predictors of low concordance.
- Further research assessing barriers to access to a guideline-recommended survivorship care plan is crucial for improving long-term outcomes among elderly patients with CRC.

## REFERENCES

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## CONTACT INFORMATION

Ravi Goyal, MS  
Health Outcomes Scientist

RTI Health Solutions  
200 Park Offices Drive  
Research Triangle Park, NC 27709

Phone: +1.919.541.6019  
Fax: +1.919.541.7222  
E-mail: rgoyal@rti.org