Analysis of Colorectal Cancer Screening Post-Updated Guidelines

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Background

- Colorectal cancer is the third most common cancer and third leading cause of cancer-related death in the United States.
- There has been a rise in the incidence of CRC in people youngers than 50 years old.
- In 2018, the American Cancer Society (ACS) updated the guidelines for CRC screening, lowering the age to begin screening to 45 years old. The goal of this guideline change was to allow for earlier detection of precancerous polyps or CRC.
- Native Americans and Black Americans have the highest incidence of CRC in the United States.

Objectives

- To assess changes in CRC screening rates after implementation of the updated ACS CRC screening guidelines in 2018
- To assess whether demographic and socioeconomic factors impact CRC screening adherence

Methods

Study Design

- Retrospective study that examined electronic health record (EHR) data from patients in our tertiary medical center's system.
- Data from 2017-2023 was included, with a baseline for screening rates from January 2017-April 2018 and for post-updated guidelines from May 2018-2023.

Data Analysis

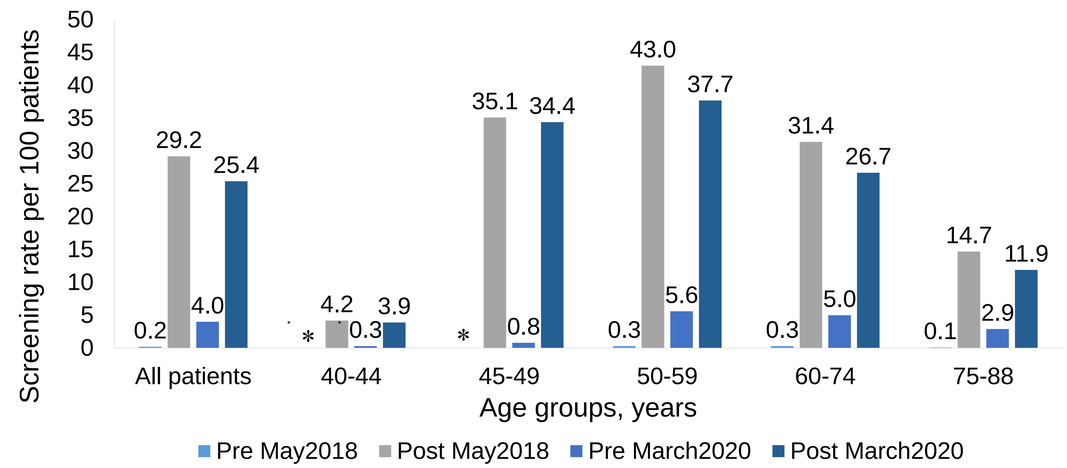
- Univariate and bivariate comparisons of CRC screening rates overall and patient characteristics.
- The independent variables examined were patient age, sex, race, ethnicity, insurance type, residence location area type, and residence area median household income.
- Screening rates within the selected time period cut points and patient age groups were analyzed.
- Multivariate logistic regression models were used to estimate the adjusted odds ratios (OR) and 95% confidence intervals (CI) of CRC screening by patient characteristics.

Table 1. Colorectal cancer (CRC) screening rates and adjusted CRC screening odds ratios (OR) with 95% confidence intervals (CI).

Characteristic	CRC Screening Rate*	Adjusted OR (95% CI)
Sex		
Female	24.4	ref
Male	38.1	2.05 (2.01, 2.09)
Age group, years		
40-44	4.3	0.08 (0.08, 0.09)
45-49	35.1	1.03 (0.99, 1.06)
50-59	43.3	1.40 (1.37, 1.44)
60-74	31.7	ref
75-88	14.8	0.43 (0.42, 0.44)
Race/ethnicity		
White NH	29.9	ref
Black NH	26.4	0.97 (0.90, 1.04)
Hispanic	23.9	1.42 (1.23, 1.63)
Asian/Native Hawaiian	37.0	0.77 (0.66, 0.90)
Native American	34.2	1.22 (0.71, 2.10)
Other/Multiple race	35.0	0.89 (0.75, 1.06)
Insurance type		
Public	21.2	ref
Private	38.0	1.69 (1.64, 1.73)
Other	21.3	0.83 (0.80, 0.87)
Residence location		
Metro	29.4	ref
Small/medium metro	28.4	1.61 (1.55, 1.68)
Non-metro	34.3	1.97 (1.82, 2.13)
Residence area MHI, $^		
Low (0 - 72,149)	23.3	ref
Middle (72,150 - 103,326)	23.8	1.04 (1.01, 1.08)
High (103,327+)	38.1	2.11 (2.03, 2.19)

* Rate per 100 patients; MHI: median household income; NH: non-Hispanic

^Source: 2020 5-year US Census American Community Survey zip code tabulation area (ZCTA) estimated tertile cut points of median household income and percentage of population under 1.37 of the poverty threshold for the state of Maryland



*Screening rates were suppressed based on <10 screened patients.

Figure 1. Colorectal cancer screening rates by study period and patient age groups.

Results

- Screening rates among the 45-49 year old age group increased from <0.1 per 100 patients to 35.1 per 100 patients post-May 2018.
- Patients with private insurance were more likely to be screened for CRC than patients with public insurance (OR=1.69).
- Asian/Pacific Islander NH patients were ~23% less likely to than White NH patients to have a CRC screen (OR=0.77).
- Patients from non-metro rural areas were nearly twice as likely to be screened for CRC as patients from metro areas (OR=1.97).
- Patients from areas with the highest median household income (MHI) were more than twice the odds to have CRC screening than patients from the lowest MHI areas (OR=2.11).

Conclusion

- The findings of this study indicate that the updated screening guidelines are being implemented into clinical practice. However, the need to increase the CRC screening rate overall remains.
- The results highlight the disparities in CRC screening, with rate differences based on race, insurance type, geographic region, and median household income.
- Interventions are needed to address these disparities and optimize the benefit of early CRC detection for all populations.

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