

Impact of the COVID-19 pandemic on follow-up colonoscopy rates after a positive stool-based screening test for colorectal cancer among U.S. health care organizations

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BACKGROUND AND OBJECTIVE

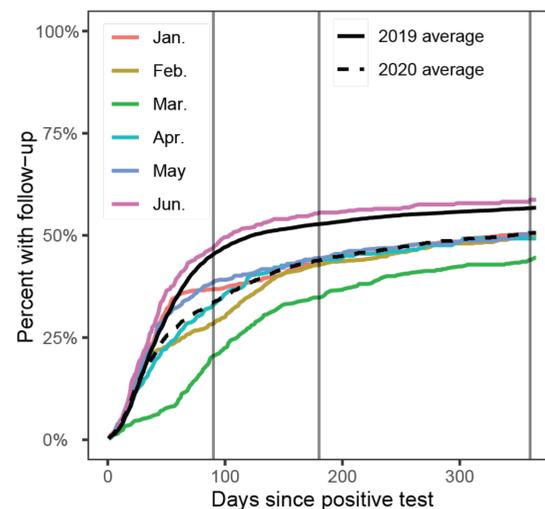
- The COVID-19 pandemic has disrupted cancer detection, diagnosis, and treatment including colorectal cancer (CRC) screening.¹
- There was a sharp decline in screening colonoscopies during the COVID-19 pandemic, while utilization of stool-based screening tests (SBTs) such as fecal immunochemical test (FIT) or multitarget stool DNA test (mt-sDNA) increased.²⁻⁴
- A positive SBT result requires a follow-up colonoscopy (FU-CY) to complete the screening paradigm.
- Simultaneous increased use of SBTs for screening and decrease in colonoscopy accessibility creates a potential care gap if patients fail to follow up after a positive SBT.
- This study evaluated the impact of the COVID-19 pandemic on FU-CY rates within 90, 180, and 360 days of a positive SBT (FIT or mt-sDNA).

STUDY DESIGN

- A retrospective analysis of de-identified administrative claims and electronic health record data between June 1, 2015, and June 30, 2021, obtained from the Optum Labs Data Warehouse.
- The study population included 14,623 average-risk patients aged 50-75 years old with positive SBT (FIT or mt-sDNA) results in the years 2019 or 2020.
- The index date was the date of the first positive SBT result in 2019 or 2020.
- Patients were included if they had a primary care visit within 15 months prior to the index date and had documented activity at least 90 days after the index date.
- Patients were excluded if they were at higher-than-average CRC risk, had a prior CRC diagnosis, or had recent CRC screening tests prior to the index date.
- Patients were clustered by month of the index date, allowing a comparison of the evolving pandemic impact over time.
- The Kaplan-Meier method was used to compare FU-CY rates at 90, 180, and 360 days of the index date. Patients were censored on death or on the date of last known activity (e.g., visit, prescription, or procedure).
- A difference of differences analysis was used to compare the impact across patient characteristics, including race, Charlson Comorbidity Index (CCI), and insurance type.

PRINCIPAL FINDINGS

The COVID-19 pandemic and related lockdowns significantly reduced rates of FU-CY



Survival plots of follow-up rates, aligned on positive test result. 2020 patients are subdivided according to month of index.

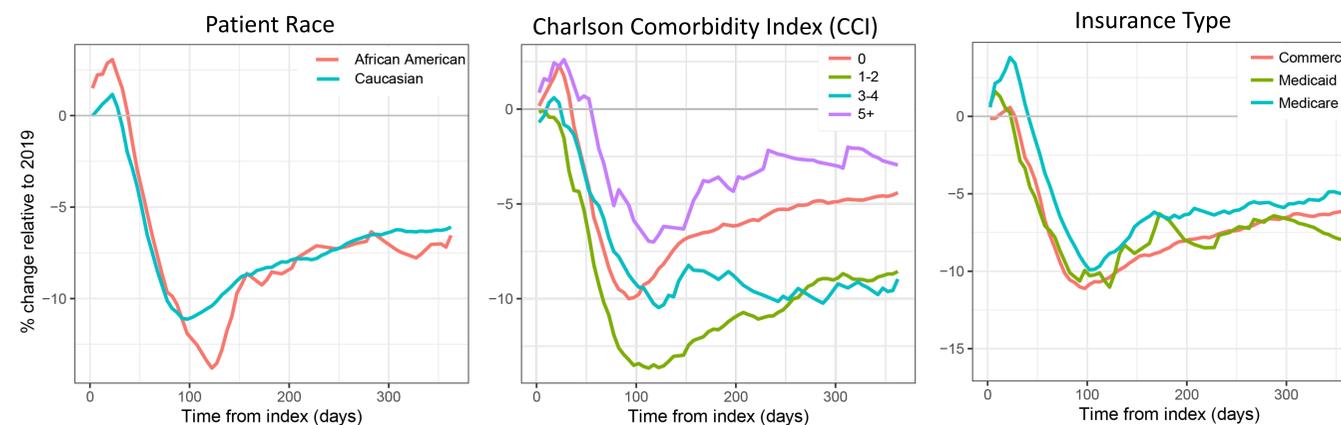
- Follow-up rates are significantly reduced in 2020.
- Largest impact on patients indexed March 2020.
- Patients indexed in June had FU-CY rates above 2019 levels, but differences persisted for all other index months.

90-day						
Index month	2019		2020		p-value	
	n	% FU-CY (95% CI)	n	% FU-CY (95% CI)		
Jan	456	47.4%(44.0%-50.6%)	445	36.7%(33.1%-40.2%)	0.001	
Feb	443	50.1%(46.7%-53.3%)	478	28.3%(24.8%-31.7%)	<0.001	
Mar	558	47.8%(44.7%-50.7%)	395	20.5%(16.9%-24.0%)	<0.001	
Apr	587	47.5%(44.5%-50.3%)	154	32.8%(26.4%-38.6%)	0.001	
May	687	45.4%(42.6%-48.1%)	195	38.5%(32.9%-43.6%)	0.087	
Jun	568	44.6%(41.5%-47.6%)	252	47.0%(42.3%-51.3%)	0.534	

180-day						
Index month	2019		2020		p-value	
	n	% FU-CY (95% CI)	n	% FU-CY (95% CI)		
Jan	392	53.4%(49.9%-56.6%)	394	43.2%(39.4%-46.7%)	0.004	
Feb	360	57.5%(54.2%-60.7%)	373	42.6%(38.7%-46.3%)	<0.001	
Mar	440	55.9%(52.8%-58.8%)	318	34.8%(30.5%-38.9%)	<0.001	
Apr	449	55.8%(52.8%-58.7%)	118	44.0%(37.2%-50.2%)	0.022	
May	537	53.6%(50.8%-56.3%)	163	44.4%(38.7%-49.6%)	0.039	
Jun	422	53.8%(50.6%-56.7%)	194	55.6%(50.9%-59.9%)	0.671	

360-day						
Index month	2019		2020		p-value	
	n	% FU-CY (95% CI)	n	% FU-CY (95% CI)		
Jan	293	58.2%(54.7%-61.3%)	313	50.3%(46.4%-53.9%)	0.053	
Feb	283	61.1%(57.8%-64.2%)	282	49.8%(45.8%-53.5%)	0.007	
Mar	321	59.4%(56.3%-62.3%)	235	44.0%(39.4%-48.3%)	<0.001	
Apr	354	60.0%(57.0%-62.8%)	70	49.2%(42.1%-55.4%)	0.094	
May	428	57.5%(54.6%-60.2%)	100	50.7%(44.7%-56.0%)	0.215	
Jun	345	57.1%(53.9%-60.1%)	88	58.7%(53.9%-63.0%)	0.783	

FU-CY rates disproportionately impacted certain patient subpopulations



- Rates of follow-up over time are compared for patients indexed in 2020 vs 2019 (absolute change).
- No significant difference across African American and Caucasian patients (other patient races had insufficient data in 2020).
- Patients with 1-4 CCI (likely those with 1-2 chronic conditions) had the largest drop-off and the least recovery in FU-CY rates as compared to patients in other CCI categories.
- Medicare patients were overall less impacted than commercially insured patients, but this difference was small.
- No subpopulation recovered to 2019 rates within one year.

IMPLICATIONS FOR POLICY AND PRACTICE

- Our study demonstrates the long-lasting impact of the COVID-19 pandemic on follow-up colonoscopy rates after a positive SBT result.
- Patients with positive SBT had much lower rates of follow-up in 2020 relative to 2019, which created a potential backlog of patients at high risk of CRC that must be addressed.
- Patients and health systems utilize SBTs for initial CRC screening as a convenient way to increase population-level screening rates; however, a lack of follow-up after a positive SBT during and after the COVID-19 pandemic needs to be addressed.

CONCLUSION

50% of patients with a positive SBT CRC screening test result in 2020 failed to complete a follow-up colonoscopy within 1 year

- This failure rate was approximately 10% higher than the prior years.
- Patients with a positive screening test in March were disproportionately affected and never recovered to the same (lower) level as other months, potentially due to the disruption at the initial scheduling stage.
- By June 2020, FU-CY rates recovered to 2019 levels.

Patients at higher risk of mortality had lower FU-CY rates during the pandemic

- A higher risk of mortality (as measured by CCI) was associated with lower FU-CY rates, perhaps due to difficulty in providing care to more complex patients.
- Overall, the differential impact of the pandemic across patient groups was modest, though this issue is separate from overall disparities in screening rates.

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