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Electronic Coding for Abnormal Fecal Immunochemical Test Is Associated With Increased Colonoscopy Completion

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Abstract

INTRODUCTION: We examined the utility of the *International Classification of Disease, Tenth Revision (ICD-10)* code, R19.5, for a positive or abnormal fecal immunochemical test (FIT) and its association with colonoscopy completion.

METHODS: We identified all patients in a safety-net health system who underwent FITs from January 1, 2020, to August 31, 2021, and extracted the FIT date, FIT result, and *ICD-10* code (R19.5) and colonoscopy procedures for each patient.

RESULTS: FIT-positive patients who had an R19.5 designation within 90 days ($n = 383$) were significantly more likely than all other FIT-positive patients ($n = 273$) to complete a colonoscopy within 6 months (40.9% vs 16.8%, $P < 0.001$).

DISCUSSION: We found that less than two-thirds of patients had an *ICD-10* code designated in their chart within 30 days of an abnormal FIT. When coding occurred in a timely manner, patients were more likely to complete their colonoscopy within 6 months.

International Classification of Disease, Tenth Revision (ICD-10) codes are used for clinical documentation and services within a healthcare system (1). We conducted a retrospective study in a large safety-net health system that predominantly uses fecal immunochemical tests (FITs) for colorectal cancer (CRC) screening. We examined the utility of the *ICD-10* code, R19.5, for an abnormal or positive FIT and its association with colonoscopy completion. As FIT-positive patients have an elevated risk of CRC (2) and those with

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delayed colonoscopy beyond 9 months have a higher risk of late-stage CRC and mortality (3), *ICD-10* codes may be used to identify and track patients awaiting colonoscopy referral, scheduling, and completion (Figure 1).

We identified patients in a safety-net health system who underwent FIT from January 1, 2020, to August 31, 2021. The FIT date, FIT result, *ICD-10* code R19.5 for an abnormal FIT, and colonoscopy procedures were extracted. For patients with an abnormal FIT, the timing of the *ICD-10* code R19.5 was categorized as absent, occurring within 30 days, within 90 days, and beyond 90 days. The primary outcome was the 6-month colonoscopy completion rate stratified by the presence and absence of the *ICD-10* code R19.5. Secondary outcomes compared colonoscopy completion rates when the R19.5 code was charted at differing time intervals. The use of R19.5 code in FIT-negative patients was also evaluated. Chart reviews were randomly chosen to describe variations of the coding process. Statistical analysis was performed using Stata, with 2-tailed χ^2 testing (Table 1).

Of 12,005 patients who completed a FIT, 961 patients (8.0%) had an abnormal FIT result and 501 patients (52.1%) had an R19.5 code abstracted from their chart after their abnormal FIT result before their colonoscopy. There were an additional 186 patients who received their R19.5 code on the day of their colonoscopy. Of the 501 patients with an R19.5 designation, 317 (63.3%) received their R19.5 code within 30 days of their abnormal FIT, 66 (13.1%) between 30 and 90 days, 58 (11.6%) between 90 and 180 days, 39 (7.8%) between 6 and 12 months, and 21 (4.2%) after 12 months. FIT-positive patients who had an R19.5 designation within 90 days ($n = 383$) were significantly more likely than all other FIT-positive patients ($n = 273$) to complete a colonoscopy within 6 months (40.9% vs 16.8%, $P < 0.001$). While an R19.5 designation within 30 days was strongly correlated with an increased colonoscopy completion rate within 6 months compared with an R19.5 designation between 90 and 180 days (41.9% vs 15.5%, $P < 0.001$), the colonoscopy completion rate at 1 year was not significantly different (51.4% vs 49.1%, $P = 0.67$). Among 11,044 patients with negative FIT results, 88 (0.8%) had R19.5 codes designated after their negative FIT result.

We performed a chart review of 60 FIT-positive patients with and without an R19.5 designation. In the charts with R19.5 coded, all patients had a record of the abnormal FIT result documented in the provider note or telephone encounter, and 66% had the R19.5 code added to the problem list. In 97% of patients, the date of the R19.5 designation coincided with the first mention of the abnormal FIT result in their chart. In the 30 charts without the R19.5 code, 83% had documented FIT results in their chart and 33% had an abnormal FIT listed in the problem list.

In this study, we report that *ICD-10* codes are not consistently used to document patients with an abnormal FIT. Despite an elevated CRC risk, we found that less than two-thirds of patients had an *ICD-10* code designated in their chart within 30 days of an abnormal FIT. Indeed, when coding occurred in a timely manner, patients were more likely to complete their colonoscopy within 6 months. Given the association between *ICD-10* documentation of an abnormal FIT and colonoscopy completion, a standard practice that consistently uses

R19.5 to codify patients with abnormal FIT will likely improve tracking and colonoscopy completion.

To date, no studies have described the use of *ICD-10* codes to track patients with abnormal cancer screening tests. Since the screening test occurs in asymptomatic patients, providers may not routinely designate abnormal test results as a clinical problem. Notably, almost all charts acknowledge the abnormal test result; however, in charts with verified R19.5 coding, our review supported the notion that providers and staff recognized the abnormal test result as a condition that should be added to the problem list that can be tracked over time. Specifically, when added to the problem list, documentation by clinical care teams often included commentary regarding patient notification, date of gastroenterology referral, date of scheduled colonoscopy, and, at times, description of barriers and facilitators. Moreover, the use of the abnormal FIT in the problem list could be a surrogate for standardized practices within a care team. When the coding appears later, such as after 90 days, the colonoscopy completion rate catches up to instances when the coding occurs earlier. By contrast, when the code was not apparent, it appeared that the provider acknowledged and processed the abnormal test result, but the abnormal result was not tracked over time.

Our study has several limitations. As a single health system, this should be examined elsewhere. While the R19.5 code was mapped to less than 1% of FIT-negative patients, the R19.5 can be coded for other indications such as abnormal stool color, which decreases the specificity of the code for colonoscopy monitoring purposes. Despite these limitations, given the association between R19.5 codes and completion of colonoscopy, we expect that routine coding should be used to codify abnormal results, co-ordinate care, and support health system approaches to tracking and facilitating colonoscopy completion.

Our results suggest that the *ICD-10* code is one possible component of a multicomponent strategy to document, track, and support patients with an abnormal FIT. Additional interventions and strategies can complement *ICD-10* coding, including direct routing of abnormal results to gastroenterology, open scheduling for colonoscopy, abnormal cancer screening registries, automated diagnoses generated from *ICD-10* codes, and providing patient self-management through communication and education (4).

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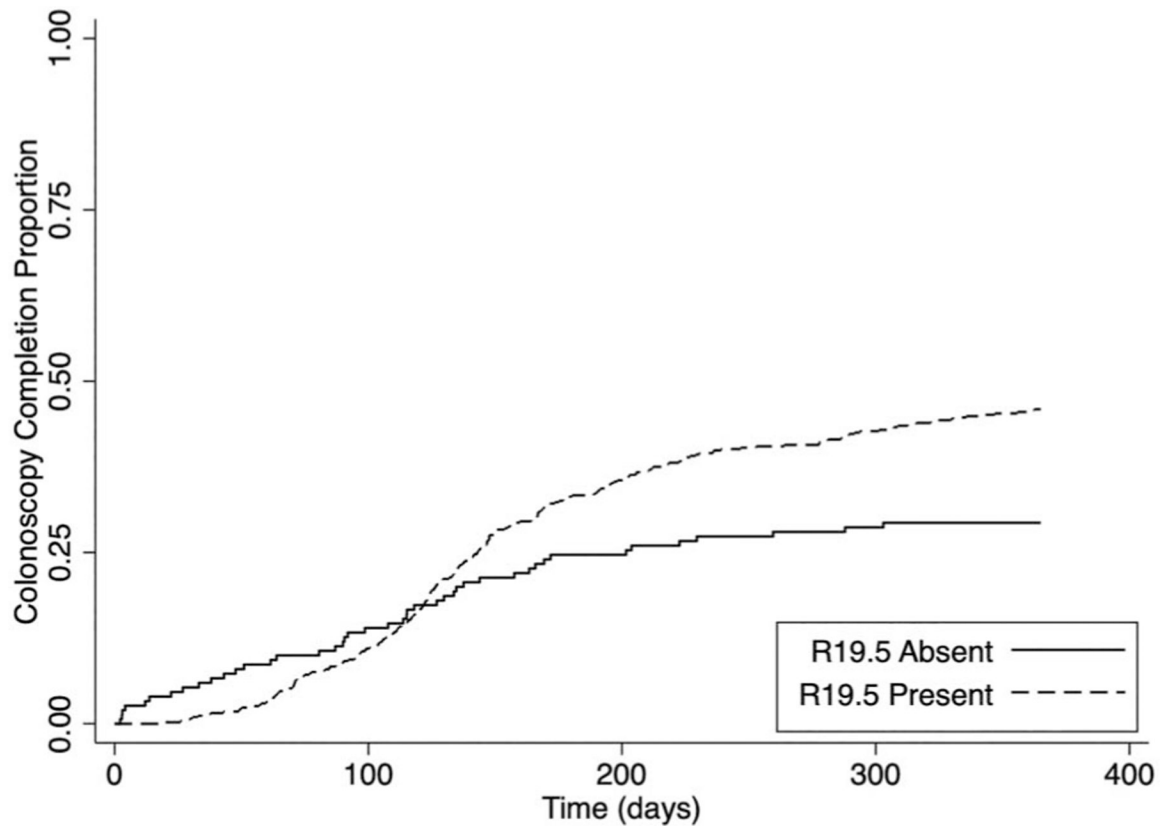


Figure 1. Colonoscopy completion rate by *ICD-10* status. *ICD*, *International Classification of Disease*.

Table 1.Colonoscopy completion rate by *ICD* coding status

Colonoscopy completion rate	FIT+,		<i>P</i> value
	R19.5+ (n = 501)	R19.5- (n = 166)	
At 6 mo	166 (33.1%)	43 (25.9%)	0.04
At 1 yr	230 (45.9%)	52 (31.3%)	<0.001
Colonoscopy rate (6 mo)			
R19.5 designation	FIT+,		<i>P</i> value
	R19.5+ (n = 501)	R19.5- (n = 166)	
30 d (n = 317)	133 (41.9%)	43 (25.9%)	<0.001
30–90 d (n = 66)	24 (36.3%)		
90–180 d (n = 58)	9 (15.5%)		
180–365 d (n = 39)	0 (0%)		

FIT, fecal immunochemical test; *ICD*, *International Classification of Disease*.

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