

EVALUATING THE PERFORMANCE OF AN EHR-BASED CLINICAL DASHBOARD TO TRACK FOLLOW-UP COLONOSCOPY FOR ABNORMAL FIT

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Disclosures: None to report

Funding: Institutional, Melvin and Bren Simon Digestive Diseases Center

Submission Category:

- **Performance Metrics, Process Improvement, Quality Improvement and Implementation**

Character Count: 2898/2900

Introduction

The fecal immunochemical test (FIT) is a widely used tool for colorectal cancer (CRC) screening. Abnormal results require a follow-up colonoscopy in a two-part screening process. However, data show completion rates as low as 40-60%, likely owing to various barriers such as patient willingness to undergo a procedure, access, and linkage from primary care to gastroenterology. EHR-based clinical dashboards can be powerful tools for aggregating and tracking health system data in real-time to identify gaps in care. This study aimed to validate a feature of a CRC screening dashboard we created at our health system, which tracks colonoscopies for abnormal FIT patients.

Methods

This study took place at UCLA Health, a large academic health system. We worked with clinical informatics and population health teams to develop a CRC screening dashboard that uses EHR data to track patient demographics, screening modalities, results, and colonoscopies. Five abstractors performed manual chart review to abstract FIT result date, colonoscopy completion date, internal (performed at UCLA) and external colonoscopies, and repeat FIT orders. An *a priori* power calculation determined we needed at least 1,204 patients to detect an 8% difference in colonoscopy completion between manual abstraction and dashboard data (0.8 power, 10% attrition). We used paired t-tests to compare abstracted and dashboard data.

Results

1,322 patients had an abnormal FIT from 1/1/2023 to 6/30/2024 (Table 1). In abstracted data, 70.3% of patients had a follow-up colonoscopy, compared to 63.1% from dashboard data. Sensitivity of the dashboard to accurately capture follow-up colonoscopies was 88.9%; specificity was 97.7%; PPV was 98.9%; NPV was 78.7% (Table 2). Chart review identified an additional 183 (19.7%) external colonoscopies. Overall median time to colonoscopy was similar for abstracted and dashboard data (2.56 v. 2.26 months; $p=0.13$). In the abstracted data, median time to colonoscopy was similar between internal (2.53 months) and external (2.76 months) colonoscopies ($p=0.16$).

Discussion

These data demonstrate that our clinical dashboard to track abnormal FIT follow-up performs well compared to chart abstraction and increases our confidence in using the dashboard for health system quality improvement. The dashboard's sensitivity and specificity were high, and there were no statistically significant differences in major outcomes. A notable difference in data sources was that the dashboard primarily captures internal colonoscopies while manual abstraction revealed additional external colonoscopies. Moving forward, we plan to use the dashboard to monitor FIT follow-up in real time and to assess efficacy of interventions to improve follow-up. Increasing use of noninvasive CRC screening tests further implicate the need for accurate, comprehensive CRC screening dashboards such as this one.

Figures

Table 1. Characteristics of Abnormal FIT Patients in CRC Screening Dashboard, 1/1/2023 to 6/30/2024 (N=1,322)	
Age at Abnormal FIT	62.3 (SD 25.7)
Sex	
Male	692 (52.3%)
Female	630 (47.7%)
Race/Ethnicity	
Non-Hispanic White	680 (52.0%)
Non-Hispanic Black	65 (5.0%)
Hispanic (Any Race)	162 (12.4%)
Non-Hispanic Asian/Pacific Islander	173 (13.2%)
Non-Hispanic American Indian/Alaska Native	5 (0.4%)
Other Race/Ethnicity	21 (1.6%)
Unknown/Declined to State	202 (15.4%)
PCP is at UCLA Health	
Yes	1,116 (84.4%)
No	206 (15.6%)

Table 2. Comparison Data for Chart Abstraction and CRC Dashboard			
	Chart Abstraction (N=1,322)	CRC Dashboard (N=1,322)	Statistical Comparison
Colonoscopy Completed after Abnormal FIT Result?			
Yes	930 (70.3%)	836 (63.1%)	Sensitivity: 88.9% Specificity: 97.7% PPV: 98.9% NPV: 78.7%
No	390 (29.5%)	486 (36.7%)	
Internal colonoscopies	742 (79.8% of colonoscopies)		
External colonoscopies	183 (19.7% of colonoscopies)		
Time to Colonoscopy (mo)			
Overall	2.56 median (IQR 1.25-4.86)	2.26 (IQR 1.13-3.97)	p=0.13
Internal	2.53 median (IQR 1.21-4.63)		p=0.16 (internal v. external)
External	2.76 median (IQR 1.38-5.13)		
Repeat FIT Ordered?			
No	1,214 (91.8%)	1,202 (90.7%)	p=0.08
Yes	104 (7.9%)	116 (8.8%)	