Attrition in the Critical Clinical Steps between Abnormal FIT and Follow-up Colonoscopy in a Large Federally Qualified Health Center

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Introduction: The fecal immunochemical test (FIT) is an affordable and effective colorectal cancer screening method if completed annually and if individuals with an abnormal result undergo timely follow-up colonoscopy. This process is challenging in Federally Qualified Health Centers (FQHCs), where millions of low-income patients receive primary care services, and where follow-up colonoscopy requires referral to outside providers. We aimed to determine the critical clinical steps between abnormal FIT and colonoscopy and to calculate attrition rates at each of these steps in one of the largest FQHCs in the United States.

Methods: The study setting is the Northeast Valley Health Corporation (NEVHC), a large FQHC in California. We queried the NEVHC electronic health record (EHR) to identify a cohort of patients ages 50-75 with an abnormal FIT result between 1/1/2016 and 8/13/2019. Two hundred patients who completed a colonoscopy after abnormal FIT and 200 patients who did not complete a colonoscopy after abnormal FIT were then randomly selected for manual chart abstraction to confirm completion status for each clinical step. Sampling weights were applied to obtain percentages that are representative of the population of NEVHC patients with an abnormal FIT.

Results: There were 1,475 patients with an abnormal FIT result in the study period (abnormal FIT rate 12.4%). In our random sample of 400 individuals, the mean age at FIT completion was 58.4 years (s.d.=6.1); 61.5% were female, 74% were Hispanic/Latino, 66% preferred speaking Spanish, and 31% were uninsured (**Table**). In prior qualitative interviews with NEVHC physicians and staff, we identified 5 critical steps in the clinical pathway from abnormal FIT to colonoscopy: 1) patient notification, 2) clinical decision about follow-up, 3) GI
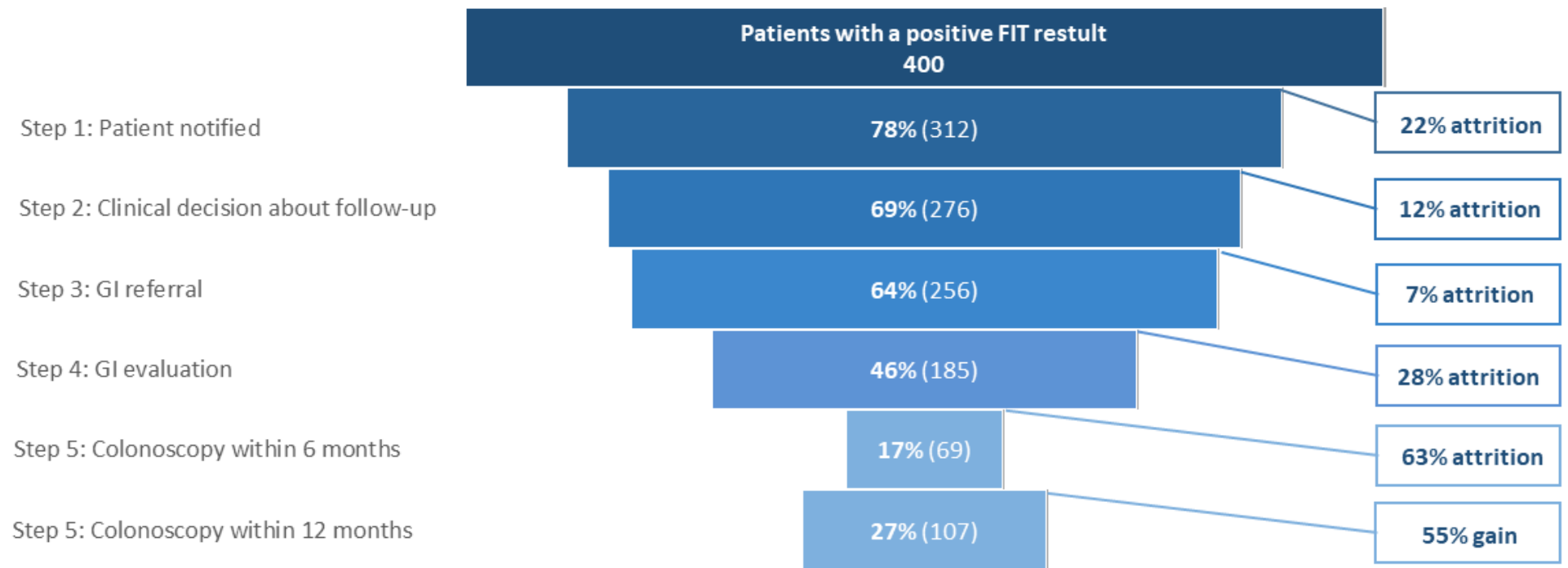
referral, 4) GI evaluation, and 5) colonoscopy completion. Only 17% of patients (69/400) completed a colonoscopy within 6 months of their abnormal FIT. Attrition rates at the 4 previous critical steps were 1) 22% (88/400) attrition for patient notification of their abnormal result; 2) 12% (36/312) attrition for clinical decision about follow-up; 3) 7% (20/276) attrition for placement of a GI referral; 4) 28% (71/256) attrition for completion of the GI referral; and 5) 63% (116/185) attrition for colonoscopy completion at 6 months (**Figure**). When we extended the follow-up period to 12 months, there was a 55% gain in colonoscopy completion for a total completion rate of 27% (**Figure**).

Discussion: There was attrition at each step of the clinical pathway, with the greatest drop-out occurring at GI evaluation (28%) and colonoscopy completion (63%). Multilevel interventions are needed in FQHCs and the GI clinics to which they refer patients to increase colonoscopy rates after abnormal FIT, reduce CRC screening disparities, and improve CRC outcomes.

Table: Study Population Demographics and Clinical Data (n=400).

Patient characteristic	Mean (sd) or N (%)
Age at FIT completion, years	58.4 (6.1)
Female sex	246 (61.5%)
Race/ethnicity	
Non-Hispanic White	71 (17.8%)
Hispanic/Latino	297 (74.2%)
Non-Hispanic Asian	15 (3.8%)
Non-Hispanic Black	8 (2.0%)
Unknown/Other (AI/AN, NH/OPI, multi-racial)	9 (2.2%)
Language Preference	
English	131 (32.8%)
Spanish	262 (65.5%)
Other	7 (1.8%)
Insurance type	
Public Program/Self Pay (uninsured)	125 (31.2%)
Covered CA/Private	30 (7.5%)
Medicaid	207 (51.7%)
Medicare	38 (9.5%)
Average monthly visits after positive FIT result	0.4 (0.3)
Results for patients age 50-75 with an abnormal FIT result between 1/1/2016 – 8/13/2019	

Figure. Attrition and retention rates among patients with an abnormal FIT (n=400) at each critical step leading to follow-up colonoscopy at the Northeast Valley Health Corporation Federally Qualified Health Center between 1/1/2016 and 8/13/2019.

	Patients with a positive FIT restult 400	
Step 1: Patient notified	78% (312)	22% attrition
Step 2: Clinical decision about follow-up	69% (276)	12% attrition
Step 3: GI referral	64% (256)	7% attrition
Step 4: GI evaluation	46% (185)	28% attrition
Step 5: Colonoscopy within 6 months	17% (69)	63% attrition
Step 5: Colonoscopy within 12 months	27% (107)	55% gain

Completion: Completion at each step is reported as % (n) and denotes overall completion after each step out of 400
Attrition: The proportion of patients from the previous step who were not included in the current step
Gain: Increase in colonoscopy completion by 12 months