CBE ID

4705e

Title

Rate of Timely Follow-up on Positive Stool-based Tests for Colorectal Cancer Detection

Project

Initial Recognition and Management

Endorsement Status

Endorsed with Conditions

E&M Committee Rationale/Justification

When the measure returns for maintenance (3 years), the measure developer should have:

- Conducted additional validity testing (data element in additional EHR); and
- Continued to monitor (e.g., qualitative assessments, empirical analyses) for unintended consequences (e.g., reduced access to colonoscopies) during implementation.

Is Under Review

No

Next Maintenance Cycle

Fall 2027

Previous Endorsement Cycle

Fall 2024

Initial Endorsement

Fri, 03/14/2025 - 10:31

Steward

Brigham and Women's Hospital

1.0 New or Maintenance

New

1.1 Measure Structure

Single Measure

1.3 Electronic Clinical Quality Measure (eCQM)

Yes

1.6 Measure Description

This electronic Clinical Quality Measure (eCQM) reports the percentage of patients aged 45 to 75

years with at least one positive stool-based colorectal cancer screening test (i.e., high-sensitivity guaiac fecal occult blood test, fecal immunochemical test, or Cologuard) during the measurement period (i.e., calendar year) who completed a colonoscopy within 180 days after their index (i.e., first) positive stool-based test result date.

1.7 Composite Measure

No

1.7 Measure Type

Process

1.8 Level of Analysis

Facility, Other

1.8b Other Level of Analysis

Integrated Delivery System

1.9 Care Setting

Hospital: Outpatient, Other

1.9b Other Care Setting

Integrated Delivery System

1.10 Measure Rationale

Colorectal cancer is the second leading cause of cancer mortality in the United States for men and women combined [1]. In 2024, around 152,810 patients will be diagnosed with colorectal cancer and 53,010 are expected to die from it. Early detection and removal of colorectal polyps and early-stage cancers prevents disease progression and improves the odds of survival [2]. Noninvasive screening tests (e.g., stool-based tests) are available to detect markers of abnormal growths. However, delays in follow-up colonoscopy reduce the benefits of screening by leading to missed opportunities for timely intervention.

Multiple guidelines recommend using stool-based tests (i.e., high-sensitivity gFOBT, FIT, FIT-DNA) as noninvasive screening options, and colonoscopy as the gold standard for follow-up in patients with a positive stool-based test result [3, 4, 5]. The American Gastroenterological Association (AGA) recommends that at least 95% of patients receive a colonoscopy within 6 months of a positive noninvasive test result to complete the full screening process [6]. Existing literature supports this timeframe as patients who received their colonoscopies after the 6-month mark had a significantly higher risk of being diagnosed with more advanced stages of cancer [7].

Rates of timely follow-up in the U.S. are far below the benchmark established by the AGA. A 2023 study examining 39 U.S. health care organizations reported follow-up colonoscopy rates around 50% within 180 days of a positive stool-based test [8]. A follow-up study in 2024 reported rates of around 56.1% within the same timeframe [9].

Existing endorsed clinical quality measures report on the percentage of patients who received

initial screening for colorectal cancer [10, 11]. This eCQM can be used to measure rates of timely completion of the full screening process after positive non-invasive colorectal cancer screening stool-based test results to help improve health care delivery and quality in medical facilities and health systems across the U.S.

1. Key Statistics for Colorectal Cancer. American Cancer Society. Accessed October 31, 2024. https://www.cancer.org/cancer/types/colon-rectal-cancer/about/key-stati....
2. Corley DA, Jensen CD, Quinn VP, et al. Association Between Time to Colonoscopy After a Positive Fecal Test Result and Risk of Colorectal Cancer and Cancer Stage at Diagnosis. JAMA. 2017;317(16):1631-1641. doi:10.1001/jama.2017.3634. PMID: 28444278.
3. Rex DK, Boland CR, Dominitz JA, et al. Colorectal Cancer Screening: Recommendations for Physicians and Patients from the U.S. Multi-Society Task Force on Colorectal Cancer. Am J Gastroenterol. 2017;112(7):1016-1030. doi:10.1038/ajg.2017.174. PMID: 28555630.
4. Lopes G, Stern MC, Temin S, et al. Early Detection for Colorectal Cancer: ASCO Resource-Stratified Guideline [published correction appears in JCO Oncol Pract. 2022 Nov;18(11):775-778. doi: 10.1200/OP.22.00580]. J Glob Oncol. 2019;5:1-22. doi:10.1200/JGO.18.00213. PMID: 30802159.
5. US Preventive Services Task Force, Davidson KW, Barry MJ, et al. Screening for Colorectal Cancer: US Preventive Services Task Force Recommendation Statement [published correction appears in JAMA. 2021 Aug 24;326(8):773. doi: 10.1001/jama.2021.12404]. JAMA. 2021;325(19):1965-1977. doi:10.1001/jama.2021.6238. PMID: 34003218.
6. Burke CA, Lieberman D, Feuerstein JD. AGA Clinical Practice Update on Approach to the Use of Noninvasive Colorectal Cancer Screening Options: Commentary. Gastroenterology. 2022;162(3):952-956. doi:10.1053/j.gastro.2021.09.075. PMID: 35094786.
7. Mutneja HR, Bhurwal A, Arora S, Vohra I, Attar BM. A delay in colonoscopy after positive fecal tests leads to higher incidence of colorectal cancer: A systematic review and meta-analysis. J Gastroenterol Hepatol. 2021;36(6):1479-1486. doi:10.1111/jgh.15381. PMID: 33351959.
8. Mohl JT, Ciemins EL, Miller-Wilson LA, Gillen A, Luo R, Colangelo F. Rates of Follow-up Colonoscopy After a Positive Stool-Based Screening Test Result for Colorectal Cancer Among Health Care Organizations in the US, 2017-2020. JAMA Netw Open. 2023;6(1):e2251384. Published 2023 Jan 3. doi:10.1001/jamanetworkopen.2022.51384. PMID: 36652246.
9. Ciemins EL, Mohl JT, Moreno CA, Colangelo F, Smith RA, Barton M. Development of a Follow-Up Measure to Ensure Complete Screening for Colorectal Cancer. JAMA Netw Open. 2024;7(3):e242693. Published 2024 Mar 4. doi:10.1001/jamanetworkopen.2024.2693. PMID: 38526494.
10. #0034 Colorectal Cancer Screening (COL). NQF: Quality Positioning System. Updated March 26. 2023. Accessed May 24, 2024. https://www.qualityforum.org/Qps/QpsTool.aspx#qpsPageState=%7B%22TabTyp....
11. Quality ID #113 (NQF 0034). Centers for Medicare & Medicaid Services. Accessed October 31, 2024. https://qpp.cms.gov/docs/QPP_quality_measure_specifications/CQM-Measure...;

1.13 Data Dictionary

Not attached. I attest that all information will be provided where codes and/or value sets are needed (1.14a - 1.15c).

1.13a Attach Data Dictionary

4705e_DataDictionary_ValueSets.zip

1.14 Numerator

Patients in the denominator population who completed a colonoscopy within 180 days after their index (i.e., first) positive stool-based colorectal cancer screening test result date.

1.14a Numerator Details

1. If documented, extract the first colonoscopy occurring within 180 days after the index positive stool test result date for each patient [value set: “Colonoscopy” OID 2.16.840.1.113883.3.464.1003.108.12.1020].
2. Patients that completed a colonoscopy within 180 days are included in the numerator population.

1.15 Denominator

Patients aged 45 to 75 years with at least one positive stool-based colorectal cancer screening test result date during the measurement period (i.e., calendar year). Only the first positive stool test result (i.e., index screening test) is included in the measure calculation.

1.15a Denominator Details

1. Identify all stool-based colorectal cancer screening tests (i.e., high-sensitivity guaiac fecal occult blood test, fecal immunochemical test, or Cologuard) with result dates in the measurement period (i.e., calendar year) [value set “Colorectal Screening” OID 2.16.840.1.113762.1.4.1206.57].
2. Retain stool tests with positive results.
3. Retain stool tests where patients were aged between 45 and 75 years on the positive stool test result date [value set "BirthDate" OID 2.16.840.1.113883.3.560.100.4].
4. Patients with at least one positive stool test result are included in the target population.

1.15b Denominator Exclusions

Exclude positive stool-based colorectal cancer screening tests that were not an index test or were conducted in the inpatient or emergency department setting. Exclude index positive stool tests from the denominator population where patients had a history of colorectal cancer or total colectomy, or recently received hospice or palliative care. Exclude index positive stool tests from the denominator population only if the patients are not in the numerator population in cases where the patients completed a prior recent colonoscopy or died during the 180-day follow-up period.

1.15c Denominator Exclusions Details

1. Identify the first positive stool-based colorectal cancer screening test result in the measurement period (i.e., calendar year) for each patient to define the index positive stool tests and index test result dates [value set “Colorectal Screening” OID

2.16.840.1.113762.1.4.1206.57].
2. Exclude index positive stool tests conducted in inpatient or emergency department settings [value sets: “Inpatient Stay” OID 2.16.840.1.113762.1.4.1182.285; “Encounter Inpatient” OID 2.16.840.1.113883.3.666.5.307; “Emergency Department Evaluation and Management Visit” OID 2.16.840.1.113883.3.464.1003.101.12.1010].
3. Exclude index positive stool tests where the patient had a prior positive stool test result less than 1 year before the index positive stool test result date.
4. Exclude index positive stool tests where patients had a documented history of colorectal cancer before the index positive stool test result date [value set: “Malignant Neoplasm of Colon” OID 2.16.840.1.113883.3.464.1003.108.12.1001].
5. Exclude index positive stool tests where patients had a documented history of total colectomy before the index positive stool test result date [value set: “Total Colectomy” OID 2.16.840.1.113883.3.464.1003.198.12.1019].
6. Exclude index positive stool tests where patients received hospice or palliative care within 1 year before or 180 days after the index positive stool test result date [value sets: “Hospice Care Ambulatory” OID 2.16.840.1.113883.3.526.3.1584; “Palliative Care Encounter” OID 2.16.840.1.113883.3.600.1.1575].
7. Exclude index positive stool tests (only if patient not in the numerator population) where patients completed a colonoscopy within 3 years before the index positive stool test result date [value set: “Colonoscopy” OID 2.16.840.1.113883.3.464.1003.108.12.1020].
8. Exclude index positive stool tests (only if patient not in the numerator population) where patients were deceased within 180 days after the index positive stool test result date [value set "Expired" OID 2.16.840.1.113762.1.4.1047.438].

1.15d Age Group

Other

1.15e Age Range in Years

Universal Colorectal Cancer Screening Age (45-75 years)

1.16 Type of Score

Rate/proportion

1.17 Measure Score Interpretation

Better performance = Higher score

1.18 Calculation of Measure Score

1. Identify all stool-based colorectal cancer screening tests (i.e., high-sensitivity guaiac fecal occult blood test, fecal immunochemical test, or Cologuard) with result dates in the measurement period (i.e., calendar year) [value set “Colorectal Screening” OID 2.16.840.1.113762.1.4.1206.57].
2. Retain stool tests with positive results.
3. Retain stool tests where patients were aged between 45 and 75 years on the positive stool test result date [value set "BirthDate" OID 2.16.840.1.113883.3.560.100.4].
4. Patients with at least one positive stool test result are included in the target population.
5. Identify the first positive stool-based colorectal cancer screening test result in the

measurement period (i.e., calendar year) for each patient to define the index positive stool tests and index test result dates.
6. Exclude index positive stool tests conducted in inpatient or emergency department settings [value sets: “Inpatient Stay” OID 2.16.840.1.113762.1.4.1182.285; “Encounter Inpatient” OID 2.16.840.1.113883.3.666.5.307; “Emergency Department Evaluation and Management Visit” OID 2.16.840.1.113883.3.464.1003.101.12.1010].
7. Exclude index positive stool tests where the patient had a prior positive stool test result less than 1 year before the index positive stool test result date.
8. Exclude index positive stool tests where patients had a documented history of colorectal cancer before the index positive stool test result date [value set: “Malignant Neoplasm of Colon” OID 2.16.840.1.113883.3.464.1003.108.12.1001].
9. Exclude index positive stool tests where patients had a documented history of total colectomy before the index positive stool test result date [value set: “Total Colectomy” OID 2.16.840.1.113883.3.464.1003.198.12.1019].
10. Exclude index positive stool tests where patients received hospice or palliative care within 1 year before or 180 days after the index positive stool test result date [value sets: “Hospice Care Ambulatory” OID 2.16.840.1.113883.3.526.3.1584; “Palliative Care Encounter” OID 2.16.840.1.113883.3.600.1.1575].
11. If documented, extract the first colonoscopy occurring within 180 days after the index positive stool test result date for each patient [value set: “Colonoscopy” OID 2.16.840.1.113883.3.464.1003.108.12.1020].
12. Patients that completed a colonoscopy within 180 days are included in the numerator population.
13. Exclude index positive stool tests from the denominator population (only if patient not in the numerator population) where patients completed a colonoscopy within 3 years before the index positive stool test result date [value set: “Colonoscopy” OID 2.16.840.1.113883.3.464.1003.108.12.1020].
14. Exclude index positive stool tests from the denominator population (only if patient not in the numerator population) where patients were deceased within 180 days after the index positive stool test result date [value set "Expired" OID 2.16.840.1.113762.1.4.1047.438].
Once numerator and denominator populations are defined:
15. Calculate rate: Numerator population divided by denominator population and multiplied by 100 to calculate the percentage.

1.18a Attach measure score calculation diagram

4705e_CalculationDiagram.pdf

1.19 Measure Stratification Details

The measure is not stratified.

1.20 Types of Data Sources

Electronic Health Records

1.25 Data Source Details

Health System 1 data were used to calculate the eCQM rates, assess feasibility, and conduct reliability and validity testing. All analyses were conducted using data routinely collected and documented in the Epic EHR and reported for six years (2018 to 2023). Six facility groups were included in the analyses.

Health System 2 data were used to calculate eCQM rates and assess feasibility. All analyses were conducted using data routinely collected and documented in the Cerner (now Oracle Health) EHR and reported for eight years (2016 to 2023). One facility group was included in the analyses.

Health System 3 data were used to assess feasibility using the Allscripts EHR. eCQM rates are forthcoming.

1.26 Minimum Sample Size

No minimum sample size specified.

2.1 Attach Logic Model

4705e_LogicModel.pdf

2.2 Evidence of Measure Importance

Colorectal cancer is the second most expensive cancer to treat after breast cancer, costing about $24.3 billion for both medical services and prescription drugs combined [1]. Colorectal cancer is easier to treat when caught in its earlier stages [2]. Around 89% of patients with early-stage colorectal cancer live for five years or more compared to only 16% with later-stage cancer [2]. Increasing screening rates to 80% can reduce colorectal cancer mortality by 33% by 2030 [3]. Increasing rates to 70% for adults aged 50-64 can reduce Medicare spending by over $10 billion by 2050 [4]. Therefore, screening via inexpensive noninvasive stool tests, like the high-sensitivity gFOBT, FIT, and FIT-DNA, are more cost-effective and cost-saving compared to no screening [5]. Screening strategies that use a combination of stool-based testing and follow-up colonoscopy lead to greater reductions in costs and gains in quality-adjusted life years (QALYs) than single-test strategies [5, 6, 7].

Patients with a positive stool test who do not receive follow-up colonoscopy within 180 days are at a significantly increased risk of being diagnosed with late-staged cancer [9]. In a 2017 study, facilities had follow-up rates as low as 28% within 365 days [10]. A 2023 retrospective analysis showed follow-up rates of 56% within a year of a positive stool-based test across 39 health care organizations [11]. Timely follow-up within 180 days was 51%, highlighting an urgent need for implementing interventions to reach the American Gastroenterological Association (AGA) 95% benchmark [11, 12].

Rates of timely follow-up were lower among historically disadvantaged and medically underserved communities, further emphasizing the necessity of tailored interventions to increase colonoscopy uptake for all patient populations. Black, Asian, and Hispanic/Latino patients, older individuals, non-English speakers, male patients, Medicare and Medicaid beneficiaries, those with no recent history of stool test use, and patients with one or more comorbidities were more likely to have a

delayed follow-up [10, 11, 13, 14, 15, 16, 17].

Medical facilities and health systems face common challenges in increasing their rates of timely follow-up colonoscopy [10, 13, 14, 15, 16, 18, 19]. A 2022 study observed that site-level factors had a greater impact on follow-up colonoscopy rates than patient demographic factors [16]. Patients who did not have a referral for colonoscopy were more likely to miss opportunities for screening completion [10, 13, 14, 18]. Failure to provide adequate bowel preparation instruction to patients may further delay colonoscopy completion in patients with suboptimal bowel preparation [16, 20, 21]. Although some safety-net systems shared an electronic health record, inadequate documentation of patient data prevented tracking of follow-up [10, 18, 19]. Additionally, a lack of standard protocols for appropriate clinical workflows to coordinate care from the positive stool-based test to the colonoscopy have contributed to loss of follow-up [10, 13, 14, 15, 19].

Interventions for improving rates of timely colonoscopy uptake after positive stool-based tests have been outlined in the literature. Strategies like the timely transmission of referrals to GI specialists, patient navigation and case management, patient education on colorectal cancer screening and adequate bowel preparation, active patient outreach by the care coordination team, and electronic health record (EHR) reminders [19, 21, 22, 23, 24, 25]. EHR-based trigger algorithms have also been shown to be effective in reducing time to follow-up for colorectal cancer detection [18, 26]. These evidence-based approaches can be integrated into protocols to ensure the timeliness of care.

Timely follow-up rates were higher for patients with a positive FIT-DNA (i.e., multitarget stool DNA panel [mt-sDNA], Cologuard) than for positive FITs, suggesting that the FIT-DNA may increase adherence to the completion of screening [11].

In 2023, the United States Preventive Services Task Force (USPSTF) issued a call to action to increase the rates of follow-up colonoscopy after positive stool-based screening tests, stipulating that considerable out-of-pocket costs for follow-up colonoscopies may reduce rates of screening completion [27 ,28]. As of January 2023, commercial insurance and Medicare providers are federally obligated to cover the costs of follow-up colonoscopies to lower the impact of this financial disparity [17, 27, 28, 29].

Therefore, increases in the rates of timely follow-up colonoscopy will require the engagement of various stakeholders, including patients, health care providers, medical facilities, health systems, and regulatory bodies to dictate policies that can help prevent delayed follow-ups and improve colorectal cancer care outcomes for all patients. Furthermore, a 2023 study found that out of the clinicians representing over 30 health care sites in qualitative interviews, 100% were not aware of the low rates of follow-up colonoscopy within their organizations [11]. There are currently no standard tools and systems in place requiring medical facilities to track the rates of timely colonoscopy after a positive stool-based screening test.

This eCQM can be used to measure rates of timely follow-up colonoscopy within 180 days after positive stool-based testing for colorectal cancer detection. The development of this measure was informed by current clinical practice guidelines for colorectal cancer screening, recent published literature, and existing endorsed quality measures. The results of this measure can help facilities identify areas of improvement that may be specific to their particular setting and the communities

being served. Facilities, health systems, and other stakeholders may also use this measure to develop targeted interventions to increase colonoscopy uptake in populations with lower rates of timely follow-up.

1. National Cancer Institute. Financial burden of cancer care. Cancer Trends Progress Report. Reviewed March 2024. Accessed October 2024. https://progressreport.cancer.gov/after/economic_burden.
2. Cancer Statistics Working Group. U.S. Cancer Statistics Data Visualizations Tool, based on 2021 submission data (1999–2021). U.S. Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute. Updated June 2024. Accessed October 2024. www.cdc.gov/cancer/dataviz.
3. U.S. Preventive Services Task Force; Davidson KW, Barry MJ, Mangione CM, et al. Screening for colorectal cancer: US Preventive Services Task Force recommendation statement. JAMA. 2021;325(19):1965–1977. doi:10.1001/jama.2021.6238. PMID: 34003218.
4. Goede SL, Kuntz KM, van Ballegooijen M, et al. Cost-savings to Medicare from pre-Medicare colorectal cancer screening. Medical Care. 2015;53(7):630–638. PMID: 26067885.
5. Ramos MC, Passone JAL, Lopes ACF, Safatle-Ribeiro AV, Ribeiro Júnior U, de Soárez PC. Economic evaluations of colorectal cancer screening: A systematic review and quality assessment. Clinics (Sao Paulo). 2023;78:100203. Published 2023 Apr 24. doi:10.1016/j.clinsp.2023.100203. PMID: 37099816.
6. Dan YY, Chuah BY, Koh DC, Yeoh KG. Screening based on risk for colorectal cancer is the most cost-effective approach. Clin Gastroenterol Hepatol. 2012;10(3):266-71.e716. doi:10.1016/j.cgh.2011.11.011. PMID: 22100624.
7. Dinh T, Ladabaum U, Alperin P, Caldwell C, Smith R, Levin TR. Health benefits and cost-effectiveness of a hybrid screening strategy for colorectal cancer. Clin Gastroenterol Hepatol. 2013;11(9):1158-1166. doi:10.1016/j.cgh.2013.03.013. PMID: 23542330.
8. Burke CA, Lieberman D, Feuerstein JD. AGA Clinical Practice Update on Approach to the Use of Noninvasive Colorectal Cancer Screening Options: Commentary. Gastroenterology. 2022;162(3):952-956. doi:10.1053/j.gastro.2021.09.075. PMID: 35094786.
9. Mutneja HR, Bhurwal A, Arora S, Vohra I, Attar BM. A delay in colonoscopy after positive fecal tests leads to higher incidence of colorectal cancer: A systematic review and meta-analysis. J Gastroenterol Hepatol. 2021;36(6):1479-1486. doi:10.1111/jgh.15381. PMID: 33351959.
10. Issaka RB, Singh MH, Oshima SM, et al. Inadequate Utilization of Diagnostic Colonoscopy Following Abnormal FIT Results in an Integrated Safety-Net System. Am J Gastroenterol. 2017;112(2):375-382. doi:10.1038/ajg.2016.555. PMID: 28154400.
11. Mohl JT, Ciemins EL, Miller-Wilson LA, Gillen A, Luo R, Colangelo F. Rates of Follow-up Colonoscopy After a Positive Stool-Based Screening Test Result for Colorectal Cancer Among Health Care Organizations in the US, 2017-2020. JAMA Netw Open. 2023;6(1):e2251384. Published 2023 Jan 3. doi:10.1001/jamanetworkopen.2022.51384. PMID: 36652246.
12. Burke CA, Lieberman D, Feuerstein JD. AGA Clinical Practice Update on Approach to the Use of Noninvasive Colorectal Cancer Screening Options: Commentary. Gastroenterology. 2022;162(3):952-956. doi:10.1053/j.gastro.2021.09.075. PMID: 35094786.
13. Chubak J, Garcia MP, Burnett-Hartman AN, et al. Time to Colonoscopy after Positive Fecal Blood Test in Four U.S. Health Care Systems. Cancer Epidemiol Biomarkers Prev. 2016;25(2):344-350. doi:10.1158/1055-9965.EPI-15-0470. PMID: 26843520.

14. Llovet D, Serenity M, Conn LG, et al. Reasons For Lack of Follow-up Colonoscopy Among Persons With A Positive Fecal Occult Blood Test Result: A Qualitative Study. Am J Gastroenterol. 2018;113(12):1872-1880. doi:10.1038/s41395-018-0381-4. PMID: 30361625.
15. May FP, Yano EM, Provenzale D, et al. Barriers to Follow-up Colonoscopies for Patients With Positive Results From Fecal Immunochemical Tests During Colorectal Cancer Screening. Clin Gastroenterol Hepatol. 2019;17(3):469-476. doi:10.1016/j.cgh.2018.05.022. PMID: 29857147.
16. Khoong EC, Rivadeneira NA, Pacca L, et al. Extent of Follow-Up on Abnormal Cancer Screening in Multiple California Public Hospital Systems: A Retrospective Review. J Gen Intern Med. 2023;38(1):21-29. doi:10.1007/s11606-022-07657-4. PMID: 35641722.
17. Breen N, Skinner CS, Zheng Y, et al. Time to Follow-up After Colorectal Cancer Screening by Health Insurance Type. Am J Prev Med. 2019;56(5):e143-e152. doi:10.1016/j.amepre.2019.01.005. PMID: 31003603.
18. Murphy DR, Wu L, Thomas EJ, Forjuoh SN, Meyer AN, Singh H. Electronic Trigger-Based Intervention to Reduce Delays in Diagnostic Evaluation for Cancer: A Cluster Randomized Controlled Trial. J Clin Oncol. 2015;33(31):3560-3567. doi:10.1200/JCO.2015.61.1301. PMID: 26304875.
19. Haas JS, Atlas SJ, Wright A, et al. Multilevel Follow-up of Cancer Screening (mFOCUS): Protocol for a multilevel intervention to improve the follow-up of abnormal cancer screening test results. Contemp Clin Trials. 2021;109:106533. doi:10.1016/j.cct.2021.106533. PMID: 34375748.
20. Mahmood S, Farooqui SM, Madhoun MF. Predictors of inadequate bowel preparation for colonoscopy: a systematic review and meta-analysis. Eur J Gastroenterol Hepatol. 2018;30(8):819-826. doi:10.1097/MEG.0000000000001175. PMID: 29847488.
21. Chen G, Zhao Y, Xie F, et al. Educating Outpatients for Bowel Preparation Before Colonoscopy Using Conventional Methods vs Virtual Reality Videos Plus Conventional Methods: A Randomized Clinical Trial. JAMA Netw Open. 2021;4(11):e2135576. Published 2021 Nov 1. doi:10.1001/jamanetworkopen.2021.35576. PMID: 34807255.
22. Atlas SJ, Tosteson ANA, Wright A, et al. A Multilevel Primary Care Intervention to Improve Follow-Up of Overdue Abnormal Cancer Screening Test Results: A Cluster Randomized Clinical Trial. JAMA. 2023;330(14):1348-1358. doi:10.1001/jama.2023.18755. PMID: 37815566.
23. Coronado GD, Ferrari RM, Barnes A, et al. Characteristics of patient navigation programs in the Cancer Moonshot ACCSIS colorectal cancer screening initiative. J Natl Cancer Inst. 2023;115(6):680-694. doi:10.1093/jnci/djad032. PMID: 36810931.
24. Escoffery C, Fernandez ME, Vernon SW, et al. Patient Navigation in a Colorectal Cancer Screening Program. J Public Health Manag Pract. 2015;21(5):433-440. doi:10.1097/PHH.0000000000000132. PMID: 25140407.
25. Janahiraman S, Tay CY, Lee JM, et al. Effect of an intensive patient educational programme on the quality of bowel preparation for colonoscopy: a single-blind randomised controlled trial. BMJ Open Gastroenterol. 2020;7(1):e000376. doi:10.1136/bmjgast-2020-000376. PMID: 32371502.
26. Murphy DR, Meyer AND, Vaghani V, et al. Development and Validation of Trigger Algorithms to Identify Delays in Diagnostic Evaluation of Gastroenterological Cancer [published correction appears in Clin Gastroenterol Hepatol. 2019 May;17(6):1218. doi: 10.1016/j.cgh.2019.03.039]. Clin Gastroenterol Hepatol. 2018;16(1):90-98. doi:10.1016/j.cgh.2017.08.007. PMID: 28804030.

27. Fendrick AM, Kisiel JB, Brooks D, et al. A Call to Action to Increase Uptake of Follow-Up Colonoscopy After Initial Positive Stool-Based Colorectal Cancer Screening. Popul Health Manag. 2023;26(6):448-450. doi:10.1089/pop.2023.0199. PMID: 37930304.
28. Fendrick AM, Princic N, Miller-Wilson LA, et al. . Out-of-pocket costs for colonoscopy after noninvasive colorectal cancer screening among US adults with commercial and Medicare insurance. JAMA Netw Open 2021;4:e2136798. PMID: 34854909.
29. Insurance Coverage for Colorectal Cancer Screening. American Cancer Society. Updated January 29, 2024. Accessed October 31, 2024. https://www.cancer.org/cancer/types/colon-rectal-cancer/detection-diagn...;

2.3 Anticipated Impact

The anticipated impact has been described in the Evidence of Measure Importance, above. The benefits of adhering to universal colorectal cancer screening recommendations outweighs any potential unintended consequences related to screening.

2.4 Performance Gap

Table 1 (in attachment "4705e_PerformanceGap") presents eCQM performance rates for Health System 1 at the integrated delivery system level by year. Table 2 (in attachment "4705e_PerformanceGap") shows the eCQM rates at Health System 1 by hospital-affiliated facility group and by year. Table 3 (in attachment "4705e_PerformanceGap") presents eCQM performance rates for Health System 2 at the integrated delivery system level by year.

All eCQM performance rates were statistically significantly lower than the 95% benchmark set by the American Gastroenterological Association (AGA) above. This eCQM provides an assessment of integrated delivery system and hospital affiliated facility group capacity to complete timely diagnostic evaluation with colonoscopy. Literature estimates that 10-15% of colonoscopies are completed outside of the health system where the positive stool-based test was performed and resulted. Therefore, it may be appropriate to apply a benchmark accommodating out-of-system follow-ups, such as 80% benchmark for in-system follow-up.

Even with a reduced 80% benchmark, neither Health System 1 nor 2 met this level of performance over the period of reporting. There were substantial (non-significant) increases in the eCQM rates for two hospital-affiliated facility groups in 2023, with the Facility Group 6 eCQM performance rate of 71.7 (59.5, 83.9) not being statistically different from the 80% benchmark, indicating that performance at this level is achievable.

Please note that it was not possible to provide the performance scores by decile. This is a new eCQM that was tested at two health systems to-date with a total of 2 integrated delivery system eCQM performance rates reported (Health systems 1 and 2) and 6 facility-group eCQM performance rates reported (Health System 1).

2.4a Attach Performance Gap Results

4705e_PerformanceGap.docx

2.5 Health Care Quality Landscape

There is currently one endorsed quality measure related to colorectal cancer screening:

1. **Colorectal Cancer Screening** (Higher rate = better): “Percentage of patients aged 45-75 years who had appropriate screening for colorectal cancer” (NQF #0034, Quality ID #113)

This clinical quality measure quantifies the initial step of the colorectal cancer screening process; the eCQM submitted for endorsement complements this measure by reporting the percentage of patients that completed the multi-step diagnostic process after an initial positive stool-based test result.

2.6 Meaningfulness to Target Population

Three provider interviews have been conducted to date. More interviews are underway with a target of 5-10 provider and 5-10 patient interviews. Feedback was also obtained at Technical Expert Panel (TEP) meetings and through a Public Comment period.

Provider Interviews:

Providers agreed with using stool-based tests for the measure as they are widely used and applicable to lower resource environments. Similarly, there was agreement with the measure exclusion and exception criteria. Following an index positive stool-based test, the provider will recommend the patient undergo a diagnostic colonoscopy. After communication of results with the patient, one provider stated, “you will coordinate with GI, or you'll put in the order for that patient.” Delays in follow-up colonoscopies can be attributed to barriers on the patient side such as hesitancy, work obligations, or transportation but one provider identified health system capacity as a significant barrier, “GI is so backlogged, it is hard to get them done.” One provider stated, “there is some value to [measuring] at a system level because you need processes in place for diagnostic colonoscopy to be finished.” The provider suggested “having navigators to help patients find an appointment. There are other structural things but I don't think for me as a PCP would change anything.” The providers’ perspectives suggested utility of the eCQM to drive quality improvement at the hospital and health system levels.

Patient Perspective on the TEP:

One patient stated that "you can get lost in the system" when trying to schedule a colonoscopy, and expressed that it is unclear who can help navigate patients through this process. They reported barriers around scheduling, "one of the things that I’m concerned about is the ability to schedule things because it seems to be somewhat of a barrier at times," and encouraged identifying additional barriers to colonoscopy to inform interventions aimed at increasing timely follow-up.

Public Comment Feedback:

The eCQM specifications and preliminary rates were posted for Public Comment on the Centers for Medicare & Medicaid Services (CMS) Measures Management System (MMS) for 15 days. The

posting was shared via email with CMS listserv members for wider distribution of the commenting opportunity.

Comments were received from the following organizations expressing support for the eCQM and providing feedback on the specifications: American College of Gastroenterology (ACG), American Medical Association (AMA), American Society for Gastrointestinal Endoscopy (ASGE), Guardant Health, HealthHIV & the National Coalition for LGBTQ Health, and Merck. Comments and feedback were used to revise measure specifications and select benchmarks as described in the supplemental attachment "4705e_Supplemental_Information.docx." Comments around meaningfulness included:

“We agree with the importance of this measure and find it well specified… This measure is appropriate for measurement at the facility level within an integrated health system, as supported by the level of analysis.” – *American College of Gastroenterology (ACG) and American Society for Gastrointestinal Endoscopy (ASGE)*

“The American Medical Association appreciates the opportunity to comment on the two measures addressing timely follow-up after an abnormal screening result and supports their intent… We agree that measurement should be at the facility level, assuming that testing demonstrates that the results are reliable and valid, and subsequently selected for those programs for which that level is appropriate.” – *American Medical Association (AMA)*

“We write to you in support of the development process for the proposed electronic Clinical Quality Measure (eCQM) on *Timely Follow-up on Positive Stool-based Screening Tests for Colorectal Cancer Detection*. We agree that timely completion of a follow-up colonoscopy after an abnormal noninvasive colorectal cancer (CRC) screening test is an integral part of the screening process.” – *Guardant Health*

“Merck strongly supports the proposed quality measure for timely follow-up on positive screening tests for colorectal cancer. This measure, aligned with established clinical guidelines, emphasizes the importance of prompt diagnostic evaluation and enables the initiation of effective therapies at a stage when they can have the greatest impact. Early detection and linkage to treatment are critical in improving survival rates and quality of life for patients and this measure provides a structured approach to achieving these goals. Moreover, it opens opportunities for personalized treatment plans, enhancing patient outcomes and supporting long-term health.” – *Merck*

3.1 Contributions Towards Closing Care Gaps

The eCQM performance rates were calculated stratified by age at index positive stool-based test, sex, race, ethnic group, primary insurance at index positive stool-based test, primary language, and type of stool-based test (Table 15 in supplemental attachment "4705e_SupplementalInformation.docx"). A model was used to calculate the rates and 95% CIs while clustering by facility group. P-values were used to assess for significant differences in rates.

There were significant differences by primary insurance ($p<.01$) and type of stool-based test ($p<.0001$). Notably, there was substantial missing data for primary insurance at index positive stool-based test (31.9%) and the majority (~90%) with missing insurance data were Cologuard

tests. Additional work is underway to accurately extract the insurance data for Cologuard tests.

Patients who completed Cologuard tests were significantly more likely to receive a timely Colonoscopy (59.9%), as compared with patients that completed Guaiac (51.8%) or Fecal Immunochemical Tests (49.5%). These findings align with the published literature.

Similar analyses were conducted for each of the 6 facility groups (Table 16 in supplemental attachment "4700e_SupplementalInformation.docx"). Facility Group 3 showed significant differences in rates by ethnic group and primary language; patients with unreported ethnic group and patients with a primary language other than English or Spanish had significantly lower rates of timely colonoscopy.

4.1 Feasibility Assessment

Table 8 (in supplemental attachment "4705e_SupplementalInformation.docx") presents the frequency of data elements by Health System. Table 9 (in supplemental attachment "4705e_SupplementalInformation.docx") presents the frequency of data elements for the 6 facility groups at Health System 1. All required data elements are routinely collected during patient care.

All facilities within health systems had the same feasibility scores (Scorecards 1, 2 and 3 in attachment "4705e_FeasibilityScorecard.xlsx").

4.2 Attach Feasibility Scorecard

4705e_FeasibilityScorecard.xlsx

4.3 Feasibility Informed Final Measure

Feasibility assessments did not impact final measure specifications. All data required to calculate the measure were available in routinely collected structured fields.

4.4 Proprietary Information

Not a proprietary measure and no proprietary components

5.1.1 Data Used for Testing

Health System 1 data were used for reliability and validity testing. The analyses were conducted using data routinely collected and documented in the Epic EHR and reported for six years (2018 to 2023).

5.1.2 Differences in Data

None.

5.1.3 Characteristics of Measured Entities

Table 10 (in supplemental attachment "4705e_SupplementalInformation.docx") presents health system characteristics and overall eCQM rates. In Health System 1, one hospital-affiliated facility group had 4 facilities, two groups had 3 facilities, two groups had 2 facilities, and one group had 1 facility.

5.1.4 Characteristics of Units of the Eligible Population

Tables 11 and 13 (in supplemental attachment "4705e_SupplementalInformation.docx") show the patient and test characteristics for the included and excluded samples by health system, respectively. Tables 12 and 14 (in supplemental attachment "4705e_SupplementalInformation.docx") show the patient and test characteristics for the included and excluded samples for the 6 facility groups at health system 1, respectively.

5.2.1 Level(s) of Reliability Testing Conducted

Person or encounter level (i.e., data element) (e.g., inter–abstractor reliability), Accountable entity level (i.e., measure score) (e.g., signal-to-noise analysis)

5.2.2 Method(s) of Reliability Testing

Patient-level Data Element Percentage Agreement and Kappa: Chart reviews were conducted on a random sample of 100 patients to calculate inter-abstractor reliability for data elements of the numerator, denominator, and excluded populations. Manual chart review was considered the gold standard. Chart reviewers were blinded to the eCQM data extractions. Percentage agreement and Kappa were calculated for the gold-standard manual chart review abstractions and the eCQM automated data extractions. For the denominator data elements, inter-abstractor agreement required agreement on three elements: whether an eligible stool-based test was resulted, result date, and whether result was positive. For the numerator data elements, inter-abstractor agreement required agreement on two elements: whether a colonoscopy was performed and colonoscopy date. For denominator exclusion and exception data elements, inter-abstractor agreement required agreement on at least one element indicating that the patient met an exclusion criterion.

Accountable Entity-level Signal-to-Noise Analysis: Signal-to-Noise Ratios (SNR) were calculated for the six hospital-affiliated facility groups at Health System 1. The signal-to-noise analysis estimated the proportion of overall variability explained by the differences between measured entities (i.e., hospital-affiliated facility groups). A minimum sample size of 10 patients was required for the signal-to-noise analysis. The results are reported overall and by year from 2018 to 2023, since the measure is intended to be reported annually. This analysis was only conducted at the facility group level given that this is a new eCQM and only two performance rates were available at the integrated delivery system level.

5.2.3 Reliability Testing Results

Patient-level Data Element Percentage Agreement and Kappa: From the random sample of

100 patients, 8 were excluded from the denominator, 92 were included in the denominator, and 56 were included in the numerator. The percentage agreements between the gold-standard manual chart review abstractions and the eCQM automated data extractions were 100% with Kappas of 1.0 for each level of analysis (i.e., denominator data elements, numerator data elements, and denominator exclusion and exception data elements).

Accountable Entity-level Signal-to-Noise Analysis: The SNRs are provided in Table 4 (in attachment "4705e_ReliabilityTestingResults.docx"). Overall, the median SNR was 0.715 (95% CI: 0.662, 0.763) for the six hospital-affiliated facility groups at Health System 1. The minimum SNR was 0.076 and the maximum SNR was 0.976. The SNRs increased over time from 2018 to 2023. The median SNR for 2023, which is most reflective of current performance, was 0.911 (95% CI: 0.860, 0.971) for the six hospital-affiliated facility groups. The minimum SNR was 0.859 and the maximum SNR was 0.971 in 2023.

Please note that it was not possible to provide the performance scores by decile. This is a new eCQM that was tested at two health systems to-date with a total of 2 integrated delivery system eCQM performance rates reported (Health systems 1 and 2) and 6 facility-group eCQM performance rates reported (Health System 1).

5.2.3a Attach Additional Reliability Testing Results

4705e_ReliabilityTestingResults.docx

5.2.4 Interpretation of Reliability Results

Patient-level Data Element Percentage Agreement and Kappa: The 100% agreements and Kappas of 1.0 demonstrated excellent reliability between the gold-standard manual chart review abstractions and the eCQM automated data extractions. These results indicate that the eCQM reliably abstracted data to define the numerator, denominator, and excluded populations.

Accountable Entity-level Signal-to-Noise Analysis: The median SNR of 0.911 (95% CI: 0.860, 0.971) in 2023 indicated that a high proportion of overall variability was explained by the differences between measured entities (i.e., hospital-affiliated facility groups) that year. The increased median SNR and narrower confidence intervals can be attributed to larger sample sizes and increased variability between hospital-affiliated facility groups in 2023.

5.3.1 Level(s) of Validity Testing Conducted

Person or encounter level (i.e., data element) (e.g., sensitivity and specificity), Accountable entity level (i.e., measure score) (e.g., criterion validity)

5.3.3 Method(s) of Validity Testing

Patient-level Data Element Validity Percentage Agreement, Kappa, and Positive Predictive Value: Chart reviews were conducted on a random sample of 100 patients to assess whether the eCQM appropriately allocated patients into the numerator, denominator only, or excluded to calculate the eCQM rates. Manual chart review was considered the gold standard. Chart reviewers were blinded to the eCQM automated allocations and reviewed the full chart to

assess whether each patient should be included in the numerator or denominator only, or excluded from the measure. Percentage agreement and Kappa were calculated between the gold-standard manual chart review allocations and the eCQM automated allocations. The Positive Predictive Value (PPV) of the denominator was also calculated to quantify the proportion of patients included in the denominator that required short-term follow-up with a colonoscopy. Health Systems 2 and 3 are in the process of conducting chart reviews.

Accountable Entity-level Face Validity: The objective of face validity testing was to demonstrate that this measure would be meaningful and beneficial to providers, patients, and informatics professionals, from the perspective of experts in the field. As a part of the validity testing process, we provided the Technical Expert Panel (TEP) with several opportunities throughout the measure development process to suggest improvements and refinements to the measure. The TEP consisted of six members, representing the patient experience and expertise in medicine, measure development, quality and safety of care, cancer screening, health services research, and EHRs. During a July 2024 meeting, the TEP was presented with final measure specifications and revised rate calculations at the integrated health system level and the hospital (i.e., hospital-affiliated facility group level). The TEP also had an opportunity to discuss questions and provide feedback to the measure development team at this time. A formal face validity vote was conducted using the polling function in Zoom. The TEP was asked to agree (vote YES) or disagree (vote NO) on the following two statements:

1. The ***Timely Follow-up on Positive Stool-based Screening Tests for Colorectal Cancer Detection – eCQM***, as specified at the integrated health system level, can be used to distinguish good from poor quality care.
2. The ***Timely Follow-up on Positive Stool-based Screening Tests for Colorectal Cancer Detection – eCQM***, as specified at the hospital level, can be used to distinguish good from poor quality care.

TEP members were blinded to individual member responses but were told the final face validity vote results after eligible members had voted.

Accountable Entity-level Spearman's Rank Correlation Coefficients and Interclass Correlation Coefficients: A random half split correlation was conducted at the hospital-affiliated facility group level at Health System 1, with six facility groups included in the analysis. To perform a random half split correlation analysis, we required a minimum of 20 patients for each facility group per year (10 patients in each split sample). Patients in each clinician group were randomly split by facility group and year into a test group or a validation group, with ~50% of patients in each group. The descriptive statistics and p-values for each group were calculated. Spearman's rank correlation coefficients and Interclass Correlation Coefficients (ICC) were calculated with 95% confidence intervals. The ICCs were calculated to describe how much variation in the facility group level scores was due to facility group level signal variation. The Spearman's rank correlation coefficients were calculated to compare the relative rankings of facility groups in the test and validation samples. The Spearman's rank correlation coefficients were reported overall and by year, since the measure is intended to be reported annually. These analyses were only conducted at the facility group level given that this is a new eCQM and only two performance rates were available at the integrated delivery system level.

5.3.4 Validity Testing Results

Patient-level Data Element Validity Percentage Agreement, Kappa, and Positive Predictive Value: From the random sample of 100 patients, 8 were excluded from the denominator, 36 were included in the denominator only, and 56 were included in the numerator. The percentage agreement between the gold-standard manual chart review allocations and the eCQM automated allocations was 100% with a Kappa of 1.0. The PPV of the denominator was 100%.

Accountable Entity-level Face Validity: At the July 2024 TEP meeting, members were asked to agree (vote YES) or disagree (vote NO) on the following two statements:

1. The ***Timely Follow-up on Positive Stool-based Screening Tests for Colorectal Cancer Detection – eCQM***, as specified at the integrated health system level, can be used to distinguish good from poor quality care.
2. The ***Timely Follow-up on Positive Stool-based Screening Tests for Colorectal Cancer Detection – eCQM***, as specified at the hospital level, can be used to distinguish good from poor quality care.

The final vote for #1 was 6/6 members (100%) in agreement with the statement at the integrated health system level.

The final vote for #2 was 5/6 members (83.3%) in agreement with the statement at the hospital level. Additional data to address feedback and concerns was provided to two TEP members that did not initially agree with the statement for review. The data showed that 88% to 100% of patients received both screening and follow-up within the same hospital-affiliated facility group for 4 facility groups in 2023. Based on this evaluation the two facility groups with lower coverage (47% and 78%) could consider reporting together given their high level of collaboration, which would result in 93% of patients receiving both screening and follow-up within the same hospital-affiliated facility group. One TEP member changed their vote to agree with the statement and no response has been received from the other TEP member yet.

Accountable Entity-level Spearman's Rank Correlation Coefficients and Interclass Correlation Coefficients: The six facility groups from Health System 1 were included for years 2018 to 2023. 2,398 patients were included in the test sample, and 2,414 patients were included in the validation sample (Tables 5a-g in attachment "4705e_ValidityTestingResults.docx"). The eCQM rate of timely colonoscopy was 56.3% and 56.2% in the test and validation samples, respectively. P-values were calculated for patient-level demographic characteristics and type of stool-based test received; there were no significant differences between test and validation samples. The overall Spearman's rank correlation coefficient was 0.36 (95% CI: 0.04, 0.62) (Table 6 in attachment "4705e_ValidityTestingResults.docx"). The correlations were very low in 2020-2021 and improved for 2022-2023. The Spearman's rank correlation coefficient for 2023, which is most reflective of current performance, was 0.83 (95% CI: -0.03, 0.98). The overall ICC was 0.025 (95% CI: 0.008, 0.243) in the test sample and 0.037 (95% CI: 0.013-0.302) in the validation sample (Table 7 in attachment "4705e_ValidityTestingResults.docx"). There were no apparent trends over time.

5.3.4a Attach Additional Validity Testing Results

4705e_ValidityTestingResults.docx

5.3.5 Interpretation of Validity Results

Patient-level Data Element Validity Percentage Agreement, Kappa, and Positive Predictive Value: The 100% agreement, Kappa of 1.0, and PPV of 100% demonstrated strong validity of the eCQM automated allocations and ability to calculate accurate eCQM rates.

Accountable Entity-level Face Validity: Face validity was established by a panel of experts who agreed that the measure can be used to distinguish good from poor quality care at the integrated health system level. The majority of TEP members agreed that the measure can be used to distinguish good from poor quality care at the hospital (i.e., facility group) level. Additional data has been shared with TEP members to address feedback and concerns. No responses have been received yet.

Accountable Entity-level Spearman's Rank Correlation Coefficients and Interclass Correlation Coefficients: The Spearman's rank correlation coefficient of 0.83 (95% CI: -0.03, 0.98) indicated a strong positive correlation between the test and validation samples. The increased correlation can be attributed to increased variability between hospital-affiliated facility groups in 2023. However, the 95% CI is very wide given that only six facility groups were included in the analysis. Additional facility group data is required to generate narrower confidence intervals. The overall ICCs were low at 0.025 (95% CI: 0.008, 0.243) in the test sample and 0.037 (95% CI: 0.013-0.302) in the validation sample, indicating that a low proportion of variation in the facility group level scores was due to facility group level signal variation. Notably, the 95% CIs were very wide given that only six facility groups were included in the analysis. Additional facility group data is required to generate narrower confidence intervals.

5.3.2 Type of Accountable Entity Level Validity Testing Conducted (derived)

Systematic assessment of face validity of the measure's performance score as an indicator of quality or resource use

5.4.1 Methods Used to Address Risk Factors

No risk adjustment or stratification

6.1.1 Current Status

Not in use

6.1.2 Current or Planned Use(s)

Public Reporting, Quality Improvement with Benchmarking (external benchmarking to multiple organizations), Quality Improvement (Internal to the specific organization)

6.2.1 Actions of Measured Entities to Improve Performance

Rates of timely follow-up colonoscopy within 180 days of a positive stool-based test can improve with reductions in site-related barriers to timely follow-up [1, 2]. Facilities and organizations that are collecting measurement data can take steps to implement standard protocols directing clinical

workflow for effective coordination of care in patients needing follow-up [3]. Evidence-based interventions that have had an observable impact on decreasing time to follow-up include patient navigation and case management, patient education on adequate bowel preparation to prevent further delays in colonoscopy, timely communication of screening and follow-up results to avoid prolonged initiation of any necessary treatment, and electronic health record (EHR) reminders to primary care providers and care coordinators [3, 4, 5, 6, 7, 8]. EHR-based trigger algorithms have also accurately identified screening eligible patients needing timely follow-up and reduced delays in colonoscopy uptake [9, 10].

Furthermore, there are no standard requirements in place to track the rates of timely follow-up colonoscopy after positive stool-based testing [3, 9, 11, 12, 13, 14, 15]. Therefore, data quality and reporting may vary among facilities seeking to report their measurements. Some facilities lack interoperable EHRs that allow for the exchange of patient data to track follow-up between facilities and health care systems [16]. Measurement entities must promote improvements in interoperability between EHRs to increase the accuracy of data used to report the rates of timely follow-up colonoscopy since data quality may ultimately influence the implementation of tailored interventions for demographics that are more likely to miss opportunities for timely follow-up [16].

1. Burke CA, Lieberman D, Feuerstein JD. AGA Clinical Practice Update on Approach to the Use of Noninvasive Colorectal Cancer Screening Options: Commentary. Gastroenterology. 2022;162(3):952-956. doi:10.1053/j.gastro.2021.09.075. PMID: 35094786.
2. Khoong EC, Rivadeneira NA, Pacca L, et al. Extent of Follow-Up on Abnormal Cancer Screening in Multiple California Public Hospital Systems: A Retrospective Review. J Gen Intern Med. 2023;38(1):21-29. doi:10.1007/s11606-022-07657-4. PMID: 35641722.
3. Haas JS, Atlas SJ, Wright A, et al. Multilevel Follow-up of Cancer Screening (mFOCUS): Protocol for a multilevel intervention to improve the follow-up of abnormal cancer screening test results. Contemp Clin Trials. 2021;109:106533. doi:10.1016/j.cct.2021.106533. PMID: 34375748.
4. Chen G, Zhao Y, Xie F, et al. Educating Outpatients for Bowel Preparation Before Colonoscopy Using Conventional Methods vs Virtual Reality Videos Plus Conventional Methods: A Randomized Clinical Trial. JAMA Netw Open. 2021;4(11):e2135576. Published 2021 Nov 1. doi:10.1001/jamanetworkopen.2021.35576. PMID: 34807255.
5. Atlas SJ, Tosteson ANA, Wright A, et al. A Multilevel Primary Care Intervention to Improve Follow-Up of Overdue Abnormal Cancer Screening Test Results: A Cluster Randomized Clinical Trial. JAMA. 2023;330(14):1348-1358. doi:10.1001/jama.2023.18755. PMID: 37815566.
6. Coronado GD, Ferrari RM, Barnes A, et al. Characteristics of patient navigation programs in the Cancer Moonshot ACCSIS colorectal cancer screening initiative. J Natl Cancer Inst. 2023;115(6):680-694. doi:10.1093/jnci/djad032. PMID: 36810931.
7. Escoffery C, Fernandez ME, Vernon SW, et al. Patient Navigation in a Colorectal Cancer Screening Program. J Public Health Manag Pract. 2015;21(5):433-440. doi:10.1097/PHH.0000000000000132. PMID: 25140407.
8. Janahiraman S, Tay CY, Lee JM, et al. Effect of an intensive patient educational programme on the quality of bowel preparation for colonoscopy: a single-blind randomised controlled trial. BMJ Open Gastroenterol. 2020;7(1):e000376. doi:10.1136/bmjgast-2020-000376. PMID: 32371502.

9. Murphy DR, Wu L, Thomas EJ, Forjuoh SN, Meyer AN, Singh H. Electronic Trigger-Based Intervention to Reduce Delays in Diagnostic Evaluation for Cancer: A Cluster Randomized Controlled Trial. J Clin Oncol. 2015;33(31):3560-3567. doi:10.1200/JCO.2015.61.1301. PMID: 26304875.
10. Murphy DR, Meyer AND, Vaghani V, et al. Development and Validation of Trigger Algorithms to Identify Delays in Diagnostic Evaluation of Gastroenterological Cancer [published correction appears in Clin Gastroenterol Hepatol. 2019 May;17(6):1218. doi: 10.1016/j.cgh.2019.03.039]. Clin Gastroenterol Hepatol. 2018;16(1):90-98. doi:10.1016/j.cgh.2017.08.007. PMID: 28804030.
11. Issaka RB, Singh MH, Oshima SM, et al. Inadequate Utilization of Diagnostic Colonoscopy Following Abnormal FIT Results in an Integrated Safety-Net System. Am J Gastroenterol. 2017;112(2):375-382. doi:10.1038/ajg.2016.555. PMID: 28154400.
12. Chubak J, Garcia MP, Burnett-Hartman AN, et al. Time to Colonoscopy after Positive Fecal Blood Test in Four U.S. Health Care Systems. Cancer Epidemiol Biomarkers Prev. 2016;25(2):344-350. doi:10.1158/1055-9965.EPI-15-0470. PMID: 26843520.
13. Llovet D, Serenity M, Conn LG, et al. Reasons For Lack of Follow-up Colonoscopy Among Persons With A Positive Fecal Occult Blood Test Result: A Qualitative Study. Am J Gastroenterol. 2018;113(12):1872-1880. doi:10.1038/s41395-018-0381-4. PMID: 30361625.
14. May FP, Yano EM, Provenzale D, et al. Barriers to Follow-up Colonoscopies for Patients With Positive Results From Fecal Immunochemical Tests During Colorectal Cancer Screening. Clin Gastroenterol Hepatol. 2019;17(3):469-476. doi:10.1016/j.cgh.2018.05.022. PMID: 29857147.
15. Khoong EC, Rivadeneira NA, Pacca L, et al. Extent of Follow-Up on Abnormal Cancer Screening in Multiple California Public Hospital Systems: A Retrospective Review. J Gen Intern Med. 2023;38(1):21-29. doi:10.1007/s11606-022-07657-4. PMID: 35641722.
16. Kaushal R. The Role of Health Information Technology in Improving Quality and Safety in Pediatric Health Care. Agency for Healthcare Research and Quality; 2012. Available from: https://digital.ahrq.gov/sites/default/files/docs/page/final-kaushal-st.... Accessed October 31, 2024.

7.1 Supplemental Attachment

4705e_SupplementalInformation.docx

Measure Developer POC

United States

The measure developer is different from the measure steward

No

Steward Address

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