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Increasing Colorectal Cancer Screening Rates in Adults Aged 45-49 at an Urban FQHC: A Quality Improvement Project

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Abstract

Background: The United States Preventive Services Task Force (USPSTF) now recommends that colorectal screening begins at age 45 rather than 50. The purpose of this QI project was to improve colorectal cancer screening rates in adults to prevent diagnosis, promote earlier detection, and reduce mortality from colorectal cancer.

Local Problem: This QI project was completed at a large urban federally qualified health center (FQHC) that served a diverse and underserved population. Its colorectal cancer screening rate for adults aged 45 to 49 was low compared to older adults (50-75) and national standards.

Methods: A literature review identified technology-based outreach as the best evidenced-based intervention for the project site. The Plan-Develop-Study-Act (PDSA) cycle was used to guide the development and implementation of this project.

Intervention: Patients aged 45 to 49 seen in the last 12 months who were due for colorectal cancer screening and had email or cell phone contact information received a message from a patient-engagement platform inviting them to select a colorectal cancer screening option. These selections were then reviewed and ordered by their primary care providers.

Results: 396 patients were outreached. 44 patients responded to the message and 50% of patients who requested a screening successfully completed the stool-based test or connected with a gastroenterologist within three months. Greater than 50% of providers were satisfied with project implementation and supported similar outreach in the future.

Conclusion: Technology-based outreach improved colorectal cancer screening in adults aged 45-49. Future projects should be focused on multipronged approaches to increase screening rates.

Introduction

Colorectal cancer is a significant cause of morbidity and mortality in the United States. It is the second highest cause of death from cancer and the third most seen cancer in men and women (Lin et al., 2021). The United States Preventive Services Task Force (USPSTF) recently expanded its colorectal cancer screening guidelines from ages 50 to 75 to now also include adults aged 45 to 49 (Lin et al., 2021). The USPSTF currently recommends screening with several stool-based tests (high-sensitivity guaiac fecal occult blood test (gFOBT), fecal immunochemical test (FIT), and FIT-DNA test) and visualization tests (colonoscopy, CT colonography, and flexible sigmoidoscopy) (Davidson et al., 2021). The use of these screening tools is supported by multiple trials that have demonstrated a reduction in mortality from colorectal cancer (Lin et al., 2021).

Problem Description

The incidence of colorectal cancer has been decreasing in recent years; however, this trend is only seen in adults aged older than 55 (Lin et al., 2021). Colorectal cancer rates are increasing in younger adults, with the median age of diagnosis dropping from 72 years old in 2001-2002 to 66 years old in 2015-2016 (Siegel et al., 2020). Mortality rates from colorectal cancer are also increasing in adults under 55 years old (Cancer Facts & Figures, 2022). Timely screening for colorectal cancer not only improves chances for survival, but also prevents colorectal cancer diagnosis through the detection and removal of polyps (Cancer Facts & Figures, 2022). Early-stage cancer can be treated with surgery, while more advanced stages often need chemotherapy or other therapies in addition to surgery (Davidson et al., 2021). Despite the clear benefits of screening and the availability of multiple high-quality screening modalities, 31.2% of eligible adults in the United States have never been screened and an additional 25.6% were not up to date with screening (Davidson et al., 2021).

Colorectal cancer incidence, mortality, and screening rates have considerable disparities across racial and socioeconomic groups. Black adults in the United States not only have the highest incidence of colorectal cancer, but they are also more likely to be diagnosed with advanced disease and have a disproportionately higher mortality rate (Siegel et al., 2020). Lower socioeconomic status is also associated with a higher incidence of colorectal cancer (Siegel et al., 2020). These demographic disparities are thought to be related to both screening rates and access to high-quality health care (Davidson et al., 2021; Siegel et al., 2020). Lower screening rates are also seen in adults who have immigrated to the United States in the last 10 years and in adults who are uninsured or are insured under Medicaid (Siegel et al., 2020).

Local Problem

This quality improvement project was implemented at a large federally qualified health center (FQHC) with nine primary care sites in New York City. The FQHC served a diverse and underserved population, with 48% of patients reporting Hispanic ethnicity; 32% reporting African American race; 79% living under the federal poverty level; and 18% overall identifying as best served in a language other than English, with some individual sites as high as 25%. The FQHC historically struggled to reach the Healthy People 2030 colorectal cancer screening target rate of 74.4% (Healthy People 2030, 2020). In 2022, the screening completion rate for colorectal cancer at the FQHC was approximately 39% in patients aged 50 to 75. Patients aged 45 to 49 had a completion rate of approximately 16%. This FQHC network was well positioned to promote the updated guidelines and increase screening rates in this younger, underserved population with a quality improvement project.

Available Knowledge

A PRISMA-guided search was conducted to investigate interventions to improve colorectal cancer screening rates among adult primary care patients in a clinic setting. The search terms “colorectal cancer” and “screening rate” were used in Medline, CINAHL, and JSTOR. Inclusion criteria were studies that were conducted in the United States, published in the English language, and published within the last five years. Studies were excluded if they were not quantitative or intervention based. The studies were evaluated for quality using the Johns Hopkins Research Evidence Level and Quality Guide. Ten studies with five different strategies were included in the review and are summarized in the Evidence Summary (Appendix A).

Two interventions identified in the literature involved patient outreach. The first strategy focused on mail-based outreach. Patients were mailed information about screening and provided a method to complete a test. Four studies reported those efforts as effective in increasing colorectal cancer screening rates (Castañeda et al., 2020; Coronado et al., 2018; Mankaney et al., 2019; Yu et al., 2018). The second intervention seen in the literature was technology-based outreach. This included studies that promoted colorectal cancer screening to their patients through automated phone-calls, live-phone calls, text messaging, and web-based messaging. The three studies included in the review found that one form or a combination of technology-based outreach improved colorectal cancer screening rates among their study population (Champion et al., 2018, Coronado et al., 2019, Goshgarian et al., 2022).

Patient navigation or in-person patient education was also reported in the literature. The studies used patient navigators or other care team members to provide patients with one-on-one education on the importance of screening. Two studies included in the review found that rates increased with this strategy (Castañeda et al., 2020, Slater et al., 2018).

Another intervention seen was primary care provider education. Desai and colleagues (2021) found significantly higher rates of colorectal screening after provider education focused on the topic. The study focused on short-term effects of the education program and while it did not provide patient demographic data, it did have a large sample size and was conducted in a federally qualified health center (Desai et al., 2021).

Finally, one study reported on the use of a blood-based screening test. Ioannou and colleagues (2021) offered patients who declined stool-based and visualization-based testing a blood test to screen for colorectal cancer screening and saw a large increase in screening rates when compared to previous years. Despite being approved for use by the Food and Drug Administration (FDA), this screening tool was not recommended by the USPSTF due to limitations in available data especially related to its impact on mortality rates (Davidson et al., 2021). This test was not offered at the QI project site.

After a comprehensive review, the use of technology-based patient outreach as the intervention for this quality improvement project was selected based on review of both the available supporting literature and the health center's resources.

Rationale

No underlying theories emerged from the literature review; however, the Health Belief Model helped to inform the development of an effective intervention. Originally developed to better understand low adoption rates for screening tests in the United States, the Health Belief Model has been repeatedly applied to interventions that attempt to improve patient participation in health care prevention (Ritchie, et al., 2020). The Health Belief Model considers an individual's perception of the following aspects related to the condition or screening: susceptibility to a condition; severity of the condition; benefits and barriers to completing the screening; motivation to act; and self-efficacy (Rosenstock et al., 1988). This quality improvement project focused on addressing barriers to screening and motivating patients to act to complete colorectal cancer screening.

This quality improvement project was supported by the change management model developed by Kurt Lewin, called Unfreeze-Change-Refreeze. This model consists of three phases to drive change within an organization: during the unfreeze stage, the FQHC prepared for the change and created awareness of why the problem must be addressed; the next phase was when the change was implemented and information was continuously collected on its impact; finally, the refreeze stage is when the change became a routine, consistent practice within the organization (MindTools, 2022). Throughout the three steps, the project team aimed to assess and address any barriers to the project's implementation.

Specific Aims:

The purpose of this QI project was to improve colorectal cancer screening rates at an urban FQHC to prevent diagnosis, promote earlier detection, and reduce mortality from colorectal cancer. The overarching aim was to design, implement, and evaluate an intervention using technology-based outreach to improve colorectal cancer screening rates in adults aged 45 to 49 who were due for colorectal cancer screening and received primary care at a federally qualified health center. There were eight sub aims in this project:

- Engage stakeholders to develop and finalize project workflow.
- Generate a report of patients eligible for outreach.
- Send outreach to all eligible patients and successfully connect with 70%.
- 40% of contacted patients will respond to outreach with a screening choice.
- 100% of patient screening requests will be sent to the primary care provider.

- 50% of patients requesting screening will have completed screening or have GI consultation scheduled within three months of outreach.
- Greater than 50% of primary care providers will express satisfaction with project implementation.
- Greater than 50% of primary care providers will support similar projects in the future.

Methods

This quality improvement project was developed using the Institute for Healthcare Improvement Model for Change as a framework for improving health care (Institute for Healthcare Improvement, 2023). The Plan-Develop-Study-Act (PDSA) cycle was used to guide the development and implementation of this project, allowing for rapid assessment and change (Institute for Healthcare Improvement, 2023).

Context:

The project was conducted within an FQHC with nine primary care sites throughout Manhattan, serving about 45,000 patients annually. Based on stakeholder feedback and available resources, the project population was limited to the largest site within the FQHC, where over 20% of the patients receive primary care. Primary care providers (PCP) included family and internal medicine physicians, nurse practitioners, and physician assistants; there was also an internal medicine residency program at five sites, including the project site, with residents working as primary care providers under the supervision of a large pool of preceptors employed by a local hospital system. Three of the centers had part-time gastroenterologists who provide specialty services to patients within the network; the project site offered gastroenterology appointments three days per week. Colonoscopies were completed at a partner hospital or at nearby endoscopy suites; they were offered at low cost to patients without insurance. Stool-based testing was offered to patients at no cost regardless of insurance status.

Once completed, patient colorectal cancer screening results were sent electronically to the FQHC’s electronic medical record and were available for immediate review by the patient via the online portal. Patients who screened negative were typically informed via patient portal or in a follow-up appointment with their primary care provider or gastroenterologist (GI). When a stool-based test result was positive for blood, the laboratory provider contacted the clinic directly and the provider would inform the patient and urgently refer to GI. Patients who had suspicious findings during a screening colonoscopy were informed after their procedure and quickly connected to oncology if pathology confirmed malignancy. The GI doctor also shared this result with the primary care provider. For either situation, patients who were uninsured or underinsured were connected to navigation services within the hospitals to enroll in financial support systems like charity care, payment plans, or emergency Medicaid.

In the project FQHC, primary care providers worked in care teams with an assigned medical assistant (MA), nurse, and front desk staff member. Each clinic day, the provider and MA/nurse worked with a list that detailed the scheduled patients and the screenings they were missing, including colorectal cancer screening. The FQHC asked primary care providers to address outstanding cancer screenings at every visit including well-visits and episodic visits whenever possible. The MA/nurse collected information about recent screening history while rooming the patient and then provided them with information about any tests ordered by the PCP.

A microsystem map (Appendix B) illustrated the people and departments within the FQHC that were involved in patients’ colorectal cancer screening. The primary care provider and

MA/nurse were identified as the main influences on this process. They served as the principal source of information for the patients. Patients who screened with a stool-based test interacted with laboratory services; patients who screened with a colonoscopy worked with the gastroenterologist and the pharmacy, for the colon preparation medication. The front desk and call center staff assisted with sending messages to the providers, updating contact information, and helping to schedule follow-up appointments. Some patients navigated the process with the assistance of a caregiver or case manager. Patients may have worked with the billing department and their insurance carrier for parts of the screening process.

There were several barriers to colorectal cancer screening that contributed to low screening rates in patients aged 45 to 49 at the FQHC. A fishbone diagram (Appendix C) depicted barriers related to the patient, environment, care team, and technology. There were multiple logistic challenges related to colorectal cancer screening listed in the fishbone diagram. The usual workflow at the project FQHC required a considerable amount of the patients' time; typically, patients first attended an appointment with their primary care provider to obtain a referral. Stool-based testing was completed at home after the appointment and then returned to the lab. If a colonoscopy was chosen, patients usually attended a consultation with the gastroenterologist and then had the procedure on a separate date. After the COVID-19 pandemic, routine colonoscopy appointments were often scheduled several months out. Additionally, preparation for the colonoscopy could be unpleasant for the patient.

This project also addressed some aspects related to patient fears and primary care provider access. Muthukrishnan and colleagues found that fear of screening was the biggest barrier, with nearly one-third of patients self-reporting fear of anesthesia used in a colonoscopy and dealing with a potential cancer diagnosis (Muthukrishnan et al., 2019). This project focused on relieving some of these challenges.

A force field analysis (Appendix D) illustrated aspects within the organization that were expected to drive and restrain this quality improvement project. The FQHC was motivated to provide patients with evidenced-based care and to support the updated USPSTF guidelines by including the younger population. There were well established population health and information technology (IT) departments that would use their experience from previous quality improvement initiatives to drive this project forward. Financial incentives for the organization from managed care organizations and the ability to offer patients multiple screening options were also driving forces.

The force field analysis also revealed restraining forces within the organization: access to primary care providers and gastroenterologists, inaccurate medical record data, outdated contact information, and staff training needs were thought to work against the project. There was also the potential for resistance from providers who could have been hesitant to adjust their usual workflows. Patient health literacy and competing quality improvement efforts could have also restrained the implementation of this project.

Intervention

Intervention Description

This quality improvement project implemented a technology-based outreach campaign focusing on patients of the FQHC aged 45 to 49 years old who were due for colorectal cancer screening. The intervention was outlined in an intervention workflow (Appendix I). Outreach was conducted through Luma Health, a patient engagement platform used by the FQHC and accessed through a subscription. The FQHC regularly utilized this platform to send patients messages via text, emails, and automated phone calls. Communication was able to be bidirectional and patients could schedule appointments through the platform (Luma Health, 2022).

A list of eligible patients was created using data from the electronic medical record. This area of the workflow was completed by the population health and IT departments and was detailed in the blue section in the intervention workflow (Appendix I). This list included patients aged 45 to 49 years old who have had a primary care visit in the last 12 months and were due for colorectal cancer screening. This list was loaded into the patient engagement platform and those patients received text and email messages with the colorectal cancer screening form. Patients who did not respond to the initial messages were identified through a report generated by the engagement platform and received another message three weeks later.

The patient-based section of the intervention is highlighted in purple in the intervention workflow (Appendix I). Patients who opened the form were told that their medical record indicated that they were due for colorectal cancer screening. They were then asked if they had already been screened and then prompted to provide the FQHC with the type of screening and date completed. Patients who did not indicate they had a recent screening were offered the option of a stool DNA test, colonoscopy, or appointment with their primary care provider to discuss screening options. If they agreed to a stool-test, they were asked to confirm their mailing address. If they opted to speak with their PCP, they were able to schedule an appointment with their PCP's next available appointment. The prompts sent to the patients were illustrated in a script (Appendix H).

The final section of the intervention involved the care team, highlighted in green in the intervention workflow (Appendix I). The care team was responsible for reviewing the self-reported colorectal screening and updating the patients' charts. They also sent requests for stool-based testing and colonoscopy referrals to the patients' primary care providers (Appendix G). The PCP confirmed that stool-based testing was appropriate for the individual and ordered the test. The test was mailed to the patients' homes by the laboratory company that produced the stool DNA tests. If the provider deemed the patient was not eligible for stool-based testing, usually due to personal or family medical history that increased their risk of colorectal cancer, they sent a message to their MA/nurse to communicate this with the patient. Patients who declined screening were counselled on their options at future visits and referred for screening when indicated, which was routine care for any patient due for screening.

Pre-Intervention Planning

Before implementing this QI project, the project lead ensured the needed resources were in place and guided the planning activities shown in the Logic Model (Appendix E). First, the project lead, clinical leadership, operational leadership, and the IT/QI teams collaborated to create the intervention workflow. During these meetings, they also developed staff education and communication materials around the project (Appendix F and Appendix G) and cocreated the script for the outreach (Appendix H). These materials were distributed and discussed with the appropriate staff members before the start of the project via email and during team meetings.

The outreach list was generated using the FQHC's population health database. This database contained a validated registry of patients due for colorectal cancer screening which could be filtered for age, contact information, primary service location, and the date of the last primary care provider appointment. Reports from the patient engagement tool were already validated before the project started.

Evaluation of Intervention:

This quality improvement project was evaluated using the Plan-Do-Study-Act (PDSA) cycle framework. The PDSA cycle created an environment in which a change could be tested, and modifications were rapidly made based on observations (Institute for Healthcare Improvement, 2023). During the planning stage, the objectives of the project were finalized. The project team also determined what data was to be used to measure the effects of the change. The quality improvement team reviewed the intervention workflow, staff communication materials, and staff education. During the "Do" stage, the project was implemented. After the initial implementation, the data collected was analyzed in the "Study" stage and the stakeholders worked to understand successes and struggles in the project. Finally, during the "Act" stage, adjustments were made and next steps for the projects were considered (Institute for Healthcare Improvement, 2023). The project lead conducted rapid check-ins with the stakeholders including the Director of Quality Improvement, care coordinator, and primary care providers after each outreach campaign was conducted, throughout data entry, and ad-hoc to reinforce or adjust the intervention workflow as needed.

Measures & Analysis:

The measures were summarized in Table 1: Measures Table below and described in detail in Appendix J.

Table 1:

Measures Table

Aim/Objective	How to Measure/Operationalize
Engage stakeholders to develop and finalize workflow.	Meet with project lead, clinical leadership, operations leadership to collaboratively create workflows and staff education materials by start of project.
Generate a report of patients eligible for outreach.	Pull report of patients aged 45-49 seen in primary care in the last 12 months who are due for CRC screening with cell phone/email contact listed by start of project.

Send outreach message and connect with 70% of eligible patients.	Use Patient Engagement Platform (Luma) to send messages. Review success and failure rates of outreach messages.
Among successfully contacted patients, 40% will respond to outreach.	Measure number of responses and their screening choices (stool-based, colonoscopy, or self-report recent screening).
100% of screening requests from patients will be sent to PCP for review.	Measure the process of communicating a patient request from Luma into the EMR to the provider.
50% of the patients who responded to outreach by requesting stool-based or colonoscopy will have completed test or have GI consult scheduled within 3 months.	Measure number of outreach patients who complete stool-based testing or have consultation scheduled with GI.
Greater than 50% of primary care providers will express satisfaction with project implementation.	Providers will complete a Likert scale survey with area for comments 3 months after project implementation rating satisfaction.
Greater than 50% of primary care providers will support similar outreach projects in the future.	Providers will complete a Likert scale survey with area for comments 3 months after project implementation rating support.

Aim 1: Engage stakeholders to develop and finalize project workflow.

The first aim was that the project lead would engage QI and IT team members, leadership, and operations supervisors to cocreate the workflow and staff education materials. This was to be completed by the start of the implementation. Qualitative analysis was to be completed using email communication and meeting minutes to evaluate for any emerging themes (Appendix K).

Aim 2: Generate a report of patients eligible for outreach.

The second aim was to have a list of eligible patients generated using the FQHC’s population health registry. This was to be completed just before the project outreach started. This report was to be filtered to include adult patients aged 45 to 49 seen in primary care in the last 12 months who were due for colorectal cancer screening and had either an email or cell phone number listed. Patients without email or cell phones listed were to be excluded from this outreach. This was to be detailed in a log of patient records (Appendix L).

Aim 3: Send outreach to all eligible patients and successfully connect with 70%.

The QI project aimed to successfully connect with 70% of eligible patients. This was to be measured using reports from the patient engagement platform, which included the frequency and percentage of successfully delivered messages compared to all outreach attempts. A data tracking tool was developed for this measure (Appendix M).

Aim 4: 40% of contacted patients will respond to outreach with a screening choice.

The next aim was to have 40% of the successfully contacted patients respond to outreach and select an option. The project aimed to measure the frequency and percentage of patients who responded with a screening choice (stool-based, colonoscopy, or self-report recent test). This was to be measured using data from the patient engagement tool (Appendix N).

Aim 5: 100% of patient screening requests will be sent to the primary care provider.

The next aim was to have 100% of screening requests obtained from patients during outreach sent to the primary care provider. A care coordinator was to review the patient responses in the engagement tool and individually send them to the patient's PCP in the electronic medical record (EMR). This request was to be sent using the EMR's telephone encounter feature, which was the process used in the FQHC to communicate requests from patients to providers. This objective was to be measured post-implementation by reviewing data from the patient engagement tool and the EMR. This measure was to be tracked in a log (Appendix O).

Aim 6: 50% of patients requesting screening will have completed screening or have GI consultation scheduled within three months of outreach.

The sixth aim was to measure the number of outreached patients who either completed the stool-based test or had a consultation with a gastroenterologist scheduled depending on their requested screening methodology during outreach. This objective was to be successful if 50% of those patients achieve this within three months of outreach. This was to be measured three months post-intervention using data from the EMR and population health database and logged in a data tracking tool (Appendix P).

Aim 7: Greater than 50% of primary care providers will express satisfaction with project implementation.

Providers were to be surveyed three months after implementation using a Likert-Scale to rate their satisfaction with the project implementation (Appendix Q). The analysis planned to include the frequency of PCPs who rated their satisfaction to Question 1 as a satisfied (4) or a very satisfied (5) out of five. Following the Likert-Scale, there was an open text area to allow for comments. Responses were to be tracked in a log (Appendix R).

Aim 8: Greater than 50% of primary care providers will support similar projects in the future.

Question 2 of the survey asked providers to rate their support for continuing this type of outreach in the future using a Likert-Scale and provide comments (Appendix Q). Providers who responded that they support (4) or strongly support (5) were considered supportive of future outreach and logged in a tracking tool (Appendix S).

Ethical Considerations

Patients were excluded from this QI project if they did not have access to either text messaging or email, presenting a potential ethical concern. The FQHC used a multipronged approach in its patient engagement and outreach efforts and continued to work to reduce this as a barrier to accessing quality healthcare. Patients were also proactively asked to update their contact information by the center when making and checking in for appointments.

The project site did not have an institutional review board (IRB). The project was discussed with the QI team, which regularly designed and conducted QI outreach campaigns at the project site and was also presented to the Quality Assurance/Performance Improvement (QA/PI) Committee. The QA/PI committee was a multidisciplinary group with both clinical and operational leadership responsible for overseeing all quality improvement work within the FQHC.

The project or innovation completed was quality improvement and did not meet the definition of human subjects research because it was not designed to generate generalizable findings but rather to provide immediate and continuous improvement feedback in the local setting in which the project was being carried out. The University of Massachusetts Boston IRB determined that quality improvement projects did not need to be reviewed by the IRB. The Clinical Quality Improvement Checklist from the University of Massachusetts Boston was included in Appendix T.

Results

This quality improvement project was presented to the project FQHC's Quality Assurance & Performance Improvement Committee and approved on September 20, 2023. Patients were outreached on November 27, 2023 and December 18, 2023. The post-implementation survey was sent out on March 3, 2024. The specific aims and results were summarized in Table 2 below.

Table 2:

Specific Aims and Results

Aim/Objective	Result
Engage stakeholders to develop and finalize workflow.	Aim completed. Stakeholders were engaged.

Generate a report of patients eligible for outreach.	Aim completed. 396 patients eligible for outreach.
Send outreach message and connect with 70% of eligible patients.	Unable to determine if aim completed.
Among successfully contacted patients, 40% will respond to outreach.	Unable to determine if aim completed. 44 patients responded with choice.
100% of screening requests from patients will be sent to PCP for review.	Aim completed. 100% of requests were sent to PCP.
50% of the patients who responded to outreach by requesting stool-based or colonoscopy will have completed test or have GI consult scheduled within 3 months.	Aim completed. 50% of patients completed screening or connected with GI within 3 months.
Greater than 50% of primary care providers will express satisfaction with project implementation.	Aim completed. 60% of PCPs expressed satisfaction with project implementation.
Greater than 50% of primary care providers will support similar outreach projects in the future.	Aim completed. 60% of PCPs expressed support for similar projects in the future.

Specific Aims - Outcomes

Aim 1: Engage stakeholders to develop and finalize project workflow.

The first aim of this QI project was achieved, and relevant stakeholders were engaged in developing the project intervention before implementation. The project lead met with the director of quality improvement and clinical quality manager to cocreate the staff communication email, staff education on data entry, patient outreach script, and intervention workflow (Appendices F,G,H, and I). The project was presented to the Quality Assurance and Performance Improvement committee on September 20, 2023, and was approved to move forward.

Aim 2: Generate a report of patients eligible for outreach.

The second aim was met just prior to project implementation. A list of 396 eligible patients was generated using the practice's population health database. This list included patients who were eligible as of October 15, 2023. Their demographics were summarized in Table 3 below.

Table 3:

Demographics of patients eligible for outreach

Patient demographics	**Number of patients (Percentage)**
Average Age	47.8
Sex	
Female	258 (65.2)
Male	138 (34.8)
Language	
English	280 (70.7)
Spanish	102 (25.8)
Other	14 (3.5)
Insurance	
Medicaid	217 (54.8)
Medicare	20 (5.1)
Uninsured	40 (10.1)
Other	119 (30.0)
Race	
Black/African American	138 (34.8)
White	70 (17.7)
Asian	23 (5.9)
American Indian/Alaska Native	16 (4.0)
More than 1 race	4 (1.0)
Unreported	145 (36.6)
Ethnicity	
Hispanic/Latinx	208 (52.5)
Non-Hispanic/Latinx	153 (38.6)
Unreported	35 (5.0)

The average age of all eligible patients was 47.8. Most of the patients were female and spoke English as a primary language. Over half of all patients were insured by state Medicaid, which included six patients covered by AIDS Drug Assistance Program (ADAP). Patients covered by commercial plans or plans obtained through the New York State Exchange are included in "other insurance" types. Patients in this cohort most consistently declined to specify a racial identity. Black/African American was the most seen racial identity. Over half of the eligible patients identified as Hispanic or Latinx.

Aim 3: Send outreach to all eligible patients and successfully connect with 70%.

The first round of outreach to the 396 eligible patients via text message was conducted on November 27, 2023. Three weeks later, on December 18, 2023, a second outreach text message was sent to 354 patients who did not respond to the first attempt. Lastly, 282 patients who did not respond and had emails on file received a final outreach attempt on December 26, 2023.

This measure was considered successfully met if 70% of the 396 eligible patients received the outreach message; however, the project lead and team were unable to extrapolate the information needed to determine this from the patient engagement software. The team was not able to report on the number of successfully delivered text messages so the percentage of successfully contacted patients is not known.

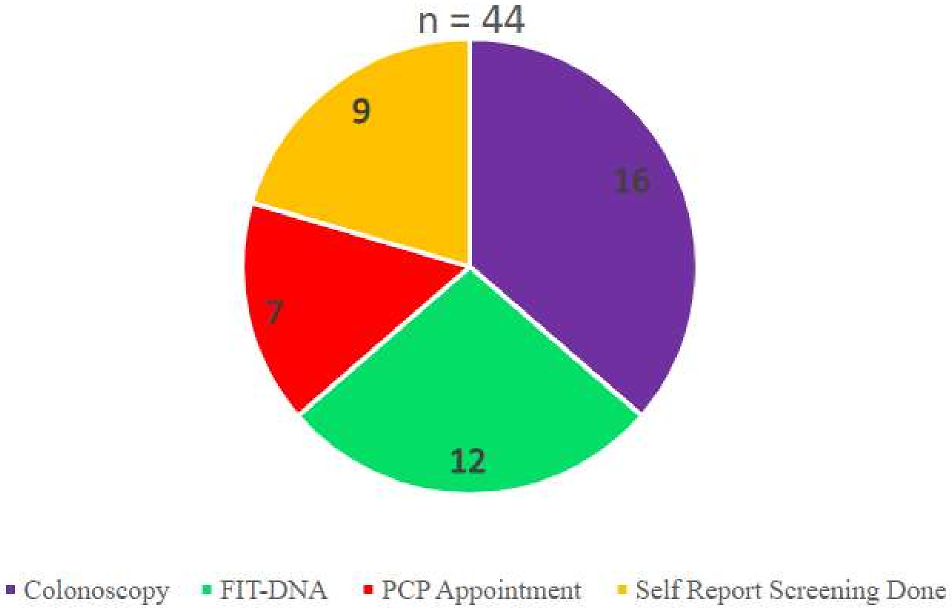
Aim 4: 40% of contacted patients will respond to outreach with a screening choice.

It is not known if this aim was met. In total, 44 patients responded to outreach with a screening choice. 15 patients responded to the first round of outreach, with the remaining 29 patients responding to the second round of outreach. Without knowing the total number of successfully contacted patients, context is limited because the proportion cannot be calculated. 44 patients represented approximately 11% of the total eligible patients.

The patients who did respond to outreach selected from the following options: GI/colonoscopy referral, FIT-DNA testing, schedule appointment with PCP, or a self-report. Their responses are summarized in Graph 1 below. Of the 44 patients, most of the patients (63.6%) responded to the outreach with a screening request. Nine patients (20%) reported that they had already completed screening and their medical records were updated by the care coordinator.

Graph 1:

Patient Responses to Outreach



Aim 5: 100% of patient screening requests will be sent to the primary care provider.

There were 28 patients who requested a referral for colorectal cancer screening. A review of the electronic medical record was conducted, and all 28 requests (100%) were sent to the patients' primary care provider. This aim was successfully met.

Aim 6: 50% of patients requesting screening will have completed screening or have GI consultation scheduled within three months of outreach.

This aim was achieved: 50% of patients who requested a colorectal cancer screening either completed a FIT-DNA test, attended a consultation with a GI doctor who ordered a colonoscopy, or had a colonoscopy directly ordered by their primary care provider within three months of outreach. 41.7% (n=5) of patients who requested a FIT-DNA test completed the test; 56% (n=9) of patients who requested a colonoscopy were referred and had a consultation within three months. Among patients who completed screenings, zero were positive.

Post-Implementation Surveys

Five primary care providers were sent an anonymous post-implementation survey three months after outreach. Providers included one physician, one physician assistant, one nurse practitioner, and two physician preceptors from the residency program. The preceptors were included if they received more than one screening request during the project outreach. The quantitative responses are summarized in Table 4 below. One provider responded with qualitative feedback: "*I support outreach efforts like these for colon cancer prevention.*"

Table 4:

PCP Survey Responses

PCP ID	Response to Question #1 (satisfaction with project)	Response to Question #2 (support for future projects)
1	Very satisfied (5)	Strongly agree (5)
2	Satisfied (4)	Agree (4)
3	Neutral (3)	Neutral (3)
4	Very satisfied (5)	Strongly agree (5)
5	Neutral (3)	Neutral (3)

Aim 7: Greater than 50% of primary care providers will express satisfaction with project implementation.

Three providers (60%) expressed satisfaction with project implementation and the aim was met. One provider agreed and two providers strongly agreed that they were satisfied. Two providers expressed neutral feelings toward project implementation. Zero providers reported being dissatisfied or strongly dissatisfied with the project implementation.

Aim 8: Greater than 50% of primary care providers will support similar projects in the future.

Three providers (60%) expressed support for conducting similar projects programs in the future and the aim was met. One provider agreed and two providers strongly agreed that they supported conducting similar projects. Two providers expressed neutral feelings toward future outreach. Zero providers disagreed or strongly disagreed with supporting similar projects in the future.

Discussion

Summary

The implementation of a technology-based outreach project inviting patients to select colorectal cancer screening at a federally qualified health center (FQHC) had several strengths and weaknesses. Leadership at the FQHC were supportive of the project and stakeholders provided the project lead with important feedback before and during implementation. Lewin's Theory "Unfreeze-Change-Refreeze" helped to guide the FQHC through the change as they prepared for implementation, began outreach, and studied the outcomes to make the change part of its usual workflow (MindTools, 2022). Additionally, there was limited expense to the FQHC: existing resources were successfully utilized to complete the outreach.

Forty-four patients (11.1% of eligible patients) responded to the outreach and 14 patients (3.5% of eligible patients) were either screened for colorectal cancer or connected to a gastroenterologist within three months. An outreach project in May 2024 that invited patients of the FQHC to schedule their annual physical had a response rate of 13%, suggesting this QI project had a similar success rate of other outreach projects. The QI project response rate was also consistent with studies noted in the literature review, which demonstrated improvements in colorectal screening rates with the use of technology-based outreach (Champion et al. 2018, Coronado et al. 2019, Goshgarian et al. 2022). While it is unknown exactly how many patients successfully received the outreach messages, evidence suggests that even patients who did not immediately respond to the project could have been influenced by outreach. Peterson and colleagues completed a systematic review and found that in all twenty-four studies there was “overwhelming evidence” that provider recommendation greatly improves cancer screening rates (Peterson et al., 2023, p.98). While most aims of the project were met, the QI project did face several challenges.

Limitations & Challenges

Data Extraction Challenges

The project aimed to determine the percentage of successfully delivered text messages. The data collection plan relied on a report from the patient engagement software that would detail the number of successfully and unsuccessfully delivered messages. Despite consultation with the chief information officer and other superusers of the system, the team was unable to obtain this information to determine if Aims 3 and 4 were achieved. Also, review of patient responses by the care coordinator was more time consuming than expected; future iterations of this project would need to consider both an IT solution in order to quantify successfully delivered messages and the time required to review patient responses, especially if expanding the number of patients outreached.

Provider Buy-In

In the force field analysis, provider buy-in was identified as a potential resisting force acting against project implementation and success. This was mitigated by engaging stakeholders, including providers, and adjusting based on their feedback. There were two providers, both preceptors for the internal medicine residency program, who did not consistently follow the intervention workflow. Both preceptors completed the post-implementation survey and did not express a lack of support for the project nor provide suggestions to improve it.

Out of the 28 requests for screenings, there were five instances of the primary care provider requiring the patient to come in for an appointment to discuss screening. While it was expected that some patients who requested stool-based tests would be asked to come in to discuss screening options due to family or personal medical histories that require colonoscopies, this was not expected for patients who requested colonoscopies given that all patients had been seen by the practice in the last twelve months; however, three patients were required by the preceptors to be seen by their provider before they could be referred for a colonoscopy. Additional analysis revealed that while all three patients came in for an appointment, only one was referred for a colonoscopy during their appointment. The remaining two patients did not appear to discuss screening with their provider and were ultimately not referred for screening. This issue is also a potential target for potential future QI work.

Access to Gastroenterology (GI) Appointments

The project intervention initially aimed to allow patients to self-schedule appointments with the clinic's GI doctors. One week after initial outreach, one of the FQHC's GI doctors resigned, resulting in significant delays with scheduling appointments. This was identified during a post-implementation check-in and a rapid adjustment was made based on stakeholder feedback. Moving forward, patients who requested a colonoscopy were referred directly for the procedure rather than having a consultation with the GI doctor first. This allowed for more timely screening and allowed the FQHC to preserve appointments for patients with urgent GI concerns.

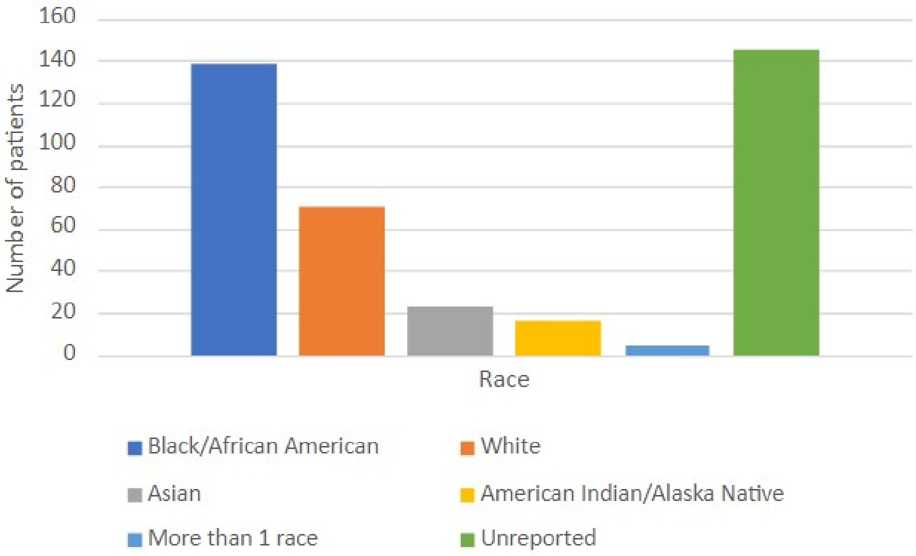
Despite this adjustment, post-implementation data analysis revealed that four responding patients were scheduled for GI doctor appointments outside of the 3-month aim: three patients were scheduled within four months and one was scheduled six months out. While timely scheduling was a project aim, these patients were ultimately successfully referred for colorectal cancer screening despite scheduling outside of the expected time window.

Evaluation for Healthcare Disparities

A large portion (36.6%) of eligible patients in the QI project did not report a racial identity. Self-reported races of patients were illustrated in Graph 2 below. Without this information, it was difficult to draw conclusions about potential racial bias in the project outcomes. The FQHC was aware of this knowledge gap before the implementation of this project and had already implemented several quality improvement projects focused on improving this data collection. Work continued after the project concluded and remains a priority for the organization.

Graph 2:

Self-Reported Racial Identity



Conclusions

Technology based outreach improved colorectal cancer screening rates in adults aged 45 to 49 receiving primary care at an urban federally qualified health center. Six of the specific aims were met; it is not known if two of the specific aims were met due to data collection challenges. This QI project represented just one part of the FQHC's multi-pronged approach to improving screening rates. In May 2024, the FQHC's trailing-year screening rate for adults aged 45 to 49 improved to 21.9% from approximately 16% in 2022. As outreach continues in the future, the FQHC should consider expanding this QI project's workflow to include additional evidenced-based interventions, such as patient education within the outreach message and phone-based outreach for those who do not respond to the text or email outreach.

Additionally, future iterations of this outreach project should address some of the challenges identified during this initial outreach project. The data collection plan should be adjusted to work around the limitations found in the patient engagement program or use an alternative mode of outreach to better capture the number of patients successfully outreached. The project team should also engage the residency practice in the planning stages to improve buy-in and the preceptors' understanding of the workflows. The FQHC should also continue its work to improve the collection of race and ethnicity data. QI projects must address health care disparities related to race and require accurate data to better understand their impact.

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Appendix A: Evidence Summary Table

Intervention	Studies	Significant Outcomes	Sample Size & Description	Level of Evidence (Quality)
Mail-Based outreach	a. Castañeda et al. 2020 b. Coronado et al. 2018 c. Mankaney et al. 2019 d. Yu et al. 2018	a. Screening rates significantly higher with mail outreach (77.2%) than usual care (27.5%) and in-person education (52.7%). b. CRC rates were statistically significantly higher (P = 0.01) in intervention group (21%) compared to usual care (16.3%). Rates were higher in clinics that consistently delivered reminder letters (25%) than the clinic sites that were less consistent (14%) or did not mail at all (10%). c. 3.8% of patients completed colonoscopy within six months of outreach letter. Race non-white more likely to respond to outreach letter (22.8% vs 15.1%, p < 0.001). d. Screening rate increased from 65.1% to 76.6% after QI intervention which included patient mailers, provider education, system changes (improved coordination for positive screenings)	a. 673 participants: 100% Latinx, 86% Spanish speaking, 66.9% Medicaid; Average age: 59.9 b. 41193 participants: 11.5% Latinx, 12% Spanish speaking, 35% Medicaid; Average age: 58.5 c. 145,717 participants: 84% white, 12% black; English speaking 99%, private insurance 68%; Average age: 59.2. d. 5186 participants: 55% women, 50% white; Average age: 61.2	a. 1 (A) b. 1 (B) c. 3 (B) d. 5 (B)
Technology-Based outreach	a. Champion et al. 2018 (web and phone based) b. Coronado et al. 2019 (live vs. Automated)	a. Phone and Web Phone group rates significantly higher (P<0.0001) than usual care (24.6%). Web only not significantly higher than usual care. Web intervention: 22.7%; Phone intervention: 52.5%; Web + Phone: 44.4%. b. Text messaging did not impact screening rates. Automated calls (28%), live calls	a. 1196 participants: 100% women, 86.3% white; Average age: 58.9 b. 1767 participants: 83% Hispanic, 59.4% Spanish speaking, 57% Medicaid or Medicare; Average age: 59	a. 1 (B) b. 1 (C) c. 1 (A)

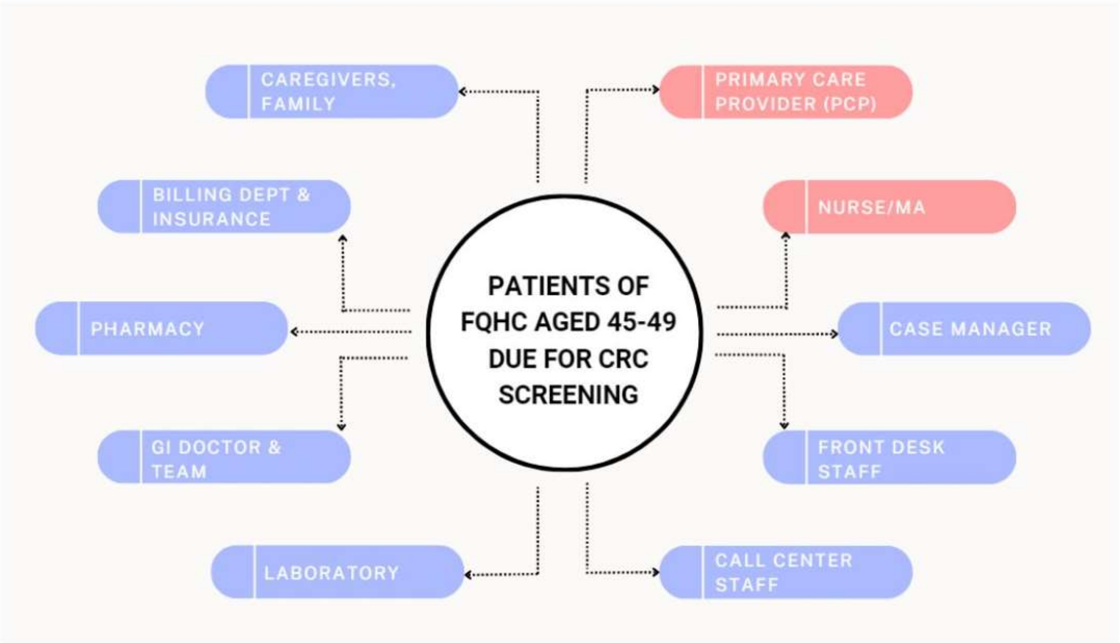
	c. Goshgarian et al. 2022 (web based)	(22%), and combo all significantly increased screening rates. c. Web messaging prior to sending FIT increased CRC screening rates significantly over control group (37.6% vs 32.1%, P = 0.005).	c. 2339 participants: 57% white; Average age: 58.7 (control), 59.2 (intervention)	
Patient Education or Navigation	a. Castañeda et al. 2020 (in-person education) b. Slater et al. 2018 (navigation and financial incentives to complete)	a. Screening rates with in-person education (52.7%) higher than usual care (27.5%) but not higher than mailed outreach (77.2%). b. Group with patient navigation (with financial incentives) had higher colonoscopy rates than usual care (P<0.01). Intervention group had 12% higher odds of going for colonoscopy.	a. 673 participants: 100% Latinx, 86% Spanish speaking, 66.9% Medicaid; Average age: 59.9 b. 94,294 participants: 69% white, 87% English speaking; Average age: 58.4	a. 1 (A) b. 1 (B)
Provider Education	a. Desai et al. 2021	a. Provider education resulted in statistically significantly higher rates of CRC screening than previous years: Pre/Post Screening Rates % Site 1: 41/48.4 (P < .0001) Site 2: 31.6/37.8 (P < .0001) Site 3: 30.5/38.2 (P < .0001) Site 4: 43.9/46.8 (P = .012)	a. 10,933 participants, no demographics provided beyond FQHC population.	a. 2 (C)
Blood-Based Testing	a. Ioannou et al. 2021	a. Patients were offered blood-based testing for CRC screening if they declined stool & scope-based testing, increasing the testing rate from 12.6% to 93.5%	a. 460 participants; 33% non-Hispanic, 22% Black-Caribbean; 51% primary language is English; 50% uninsured; Average age: 62	a. 3 (B)

Appendix B: Microsystem Analysis

Clinical Microsystem: FQHC in New York City
Subpopulation: Adults aged 45-49 who are due for colorectal cancer (CRC) screening

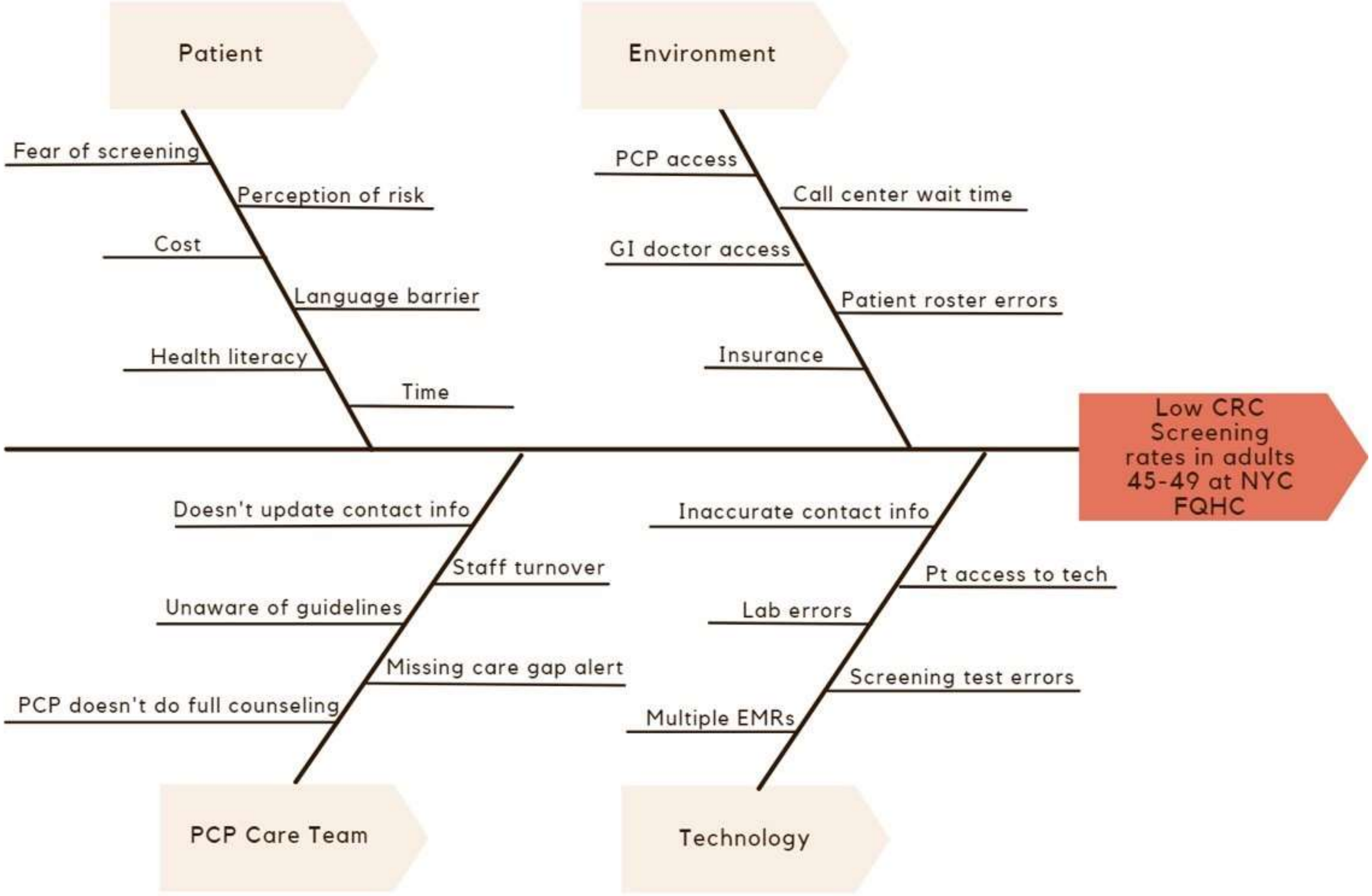
Specific health care needs:

1. Access to PCP and care team nurses
2. CRC risk assessment and screening history.
3. Education on screening options
4. Access to GI doctor for follow up of positive tests
5. Counseling on modifiable risk factors for CRC

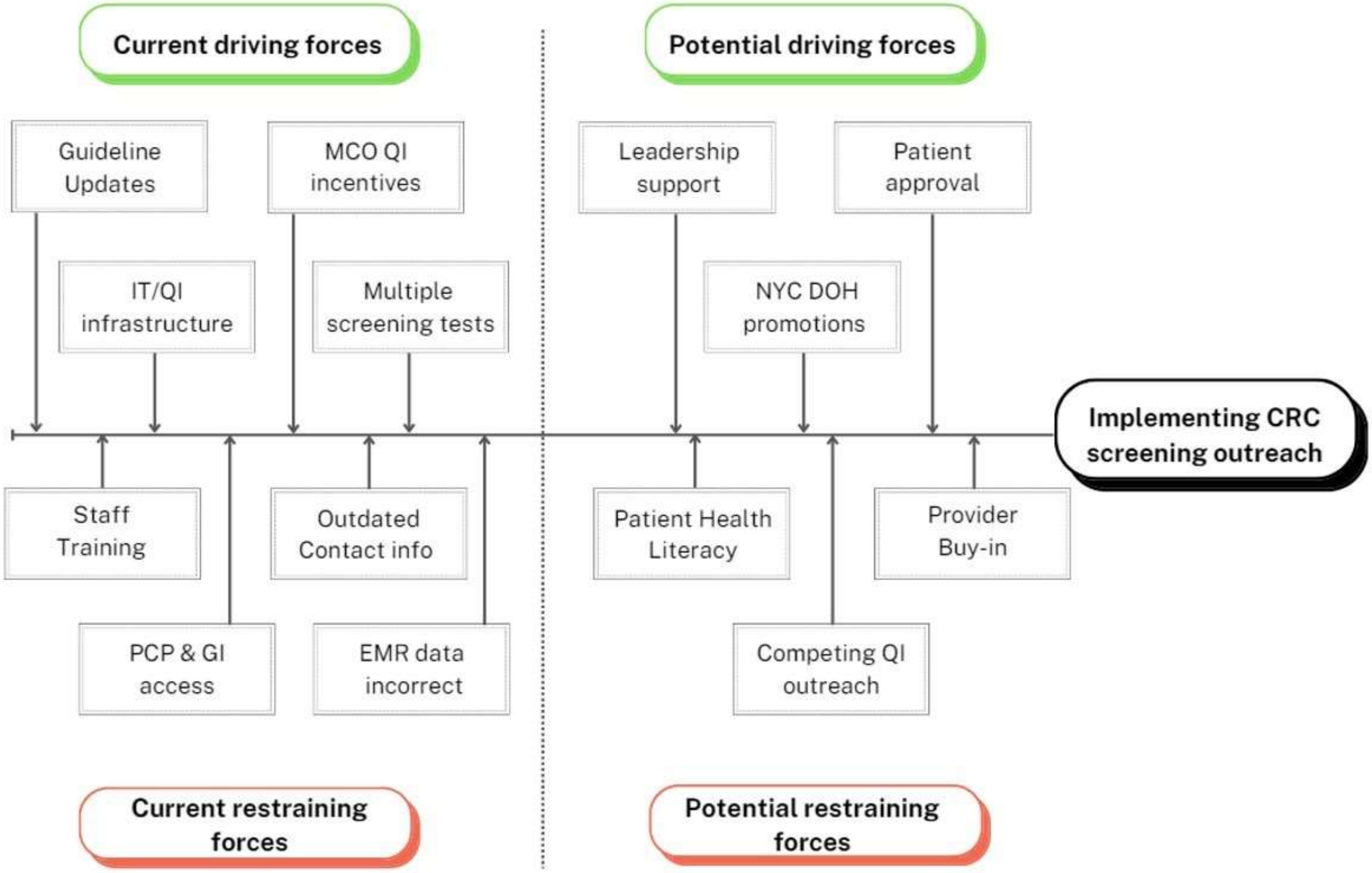


Improvement Ideas: Offer screening outside of appointments, staff and patient education to increase CRC screening awareness, decrease wait time for call center and offer alternative communication methods, update EHR data (PMH, screening history, contact information, demographics)

Appendix C: Fishbone Diagram

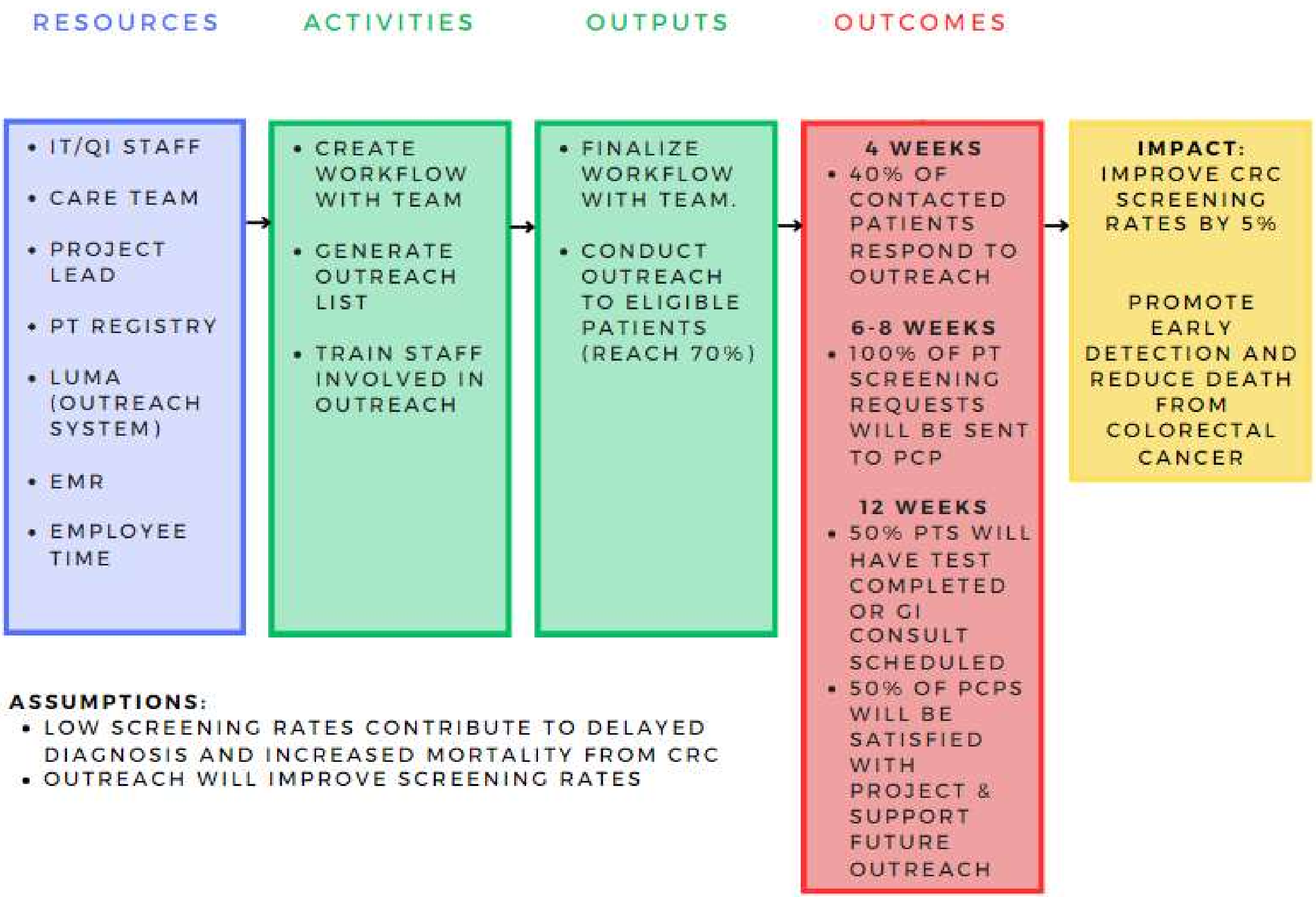


Appendix D: Force Field Analysis



Appendix E: Logic Model

PROBLEM: AT NYC FQHC, COLORECTAL CANCER SCREENING RATES ARE UNACCEPTABLY LOW IN ADULTS AGED 45-49
GOAL: TO IMPROVE CRC SCREEENING RATES BY IMPLEMENTING TECH-BASED OUTREACH CAMPAIGN



RESOURCES

- IT/QI STAFF
- CARE TEAM
- PROJECT LEAD
- PT REGISTRY
- LUMA (OUTREACH SYSTEM)
- EMR
- EMPLOYEE TIME

ACTIVITIES

- CREATE WORKFLOW WITH TEAM
- GENERATE OUTREACH LIST
- TRAIN STAFF INVOLVED IN OUTREACH

OUTPUTS

- FINALIZE WORKFLOW WITH TEAM.
- CONDUCT OUTREACH TO ELIGIBLE PATIENTS (REACH 70%)

OUTCOMES

4 WEEKS
- 40% OF CONTACTED PATIENTS RESPOND TO OUTREACH

6-8 WEEKS
- 100% OF PT SCREENING REQUESTS WILL BE SENT TO PCP

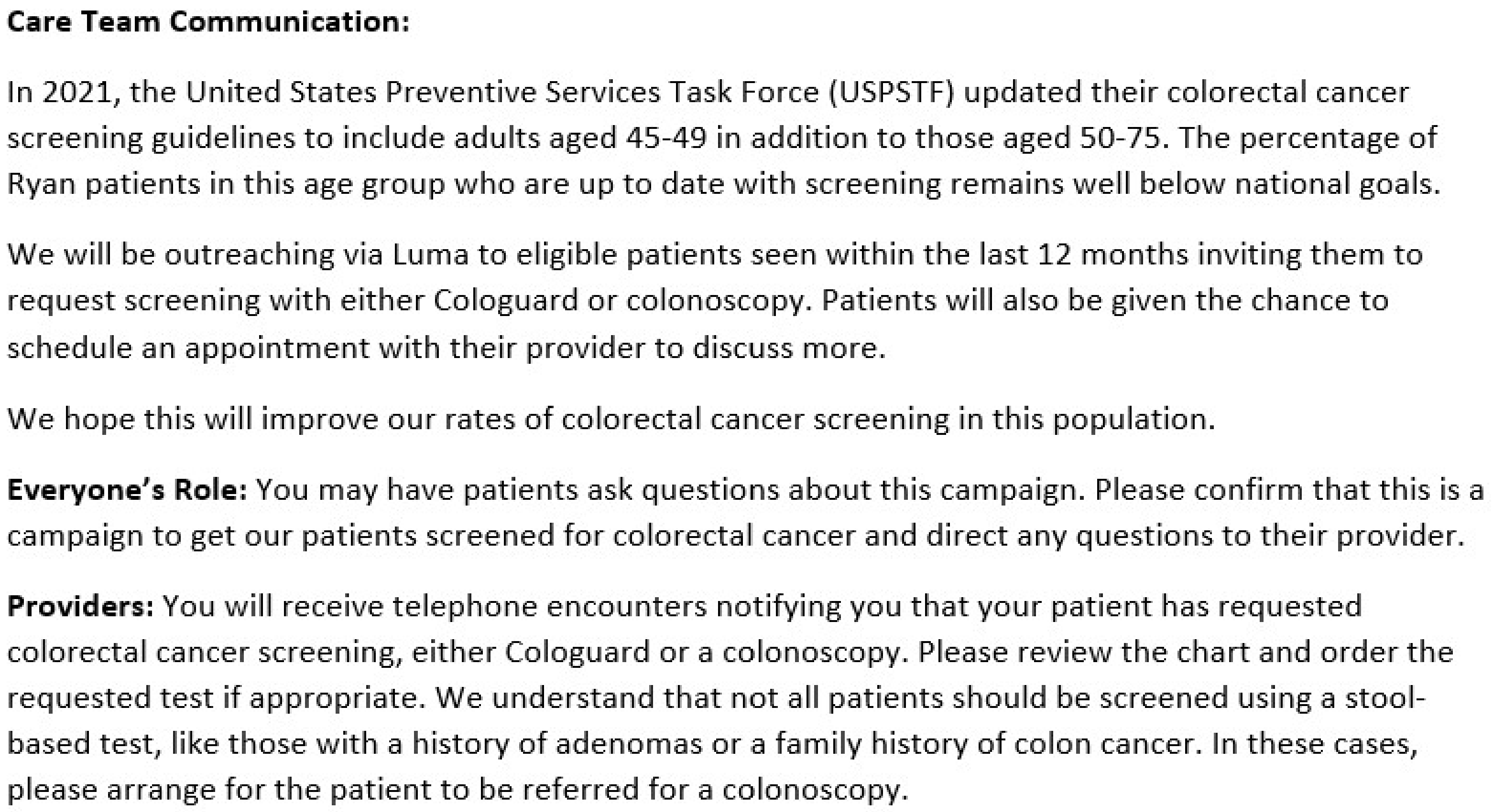
12 WEEKS
- 50% PTS WILL HAVE TEST COMPLETED OR GI CONSULT SCHEDULED
- 50% OF PCPS WILL BE SATISFIED WITH PROJECT & SUPPORT FUTURE OUTREACH

IMPACT: IMPROVE CRC SCREENING RATES BY 5%

PROMOTE EARLY DETECTION AND REDUCE DEATH FROM COLORECTAL CANCER

ASSUMPTIONS:
- LOW SCREENING RATES CONTRIBUTE TO DELAYED DIAGNOSIS AND INCREASED MORTALITY FROM CRC
- OUTREACH WILL IMPROVE SCREENING RATES

Appendix F: Staff Communication (Email)



Care Team Communication:

In 2021, the United States Preventive Services Task Force (USPSTF) updated their colorectal cancer screening guidelines to include adults aged 45-49 in addition to those aged 50-75. The percentage of Ryan patients in this age group who are up to date with screening remains well below national goals.

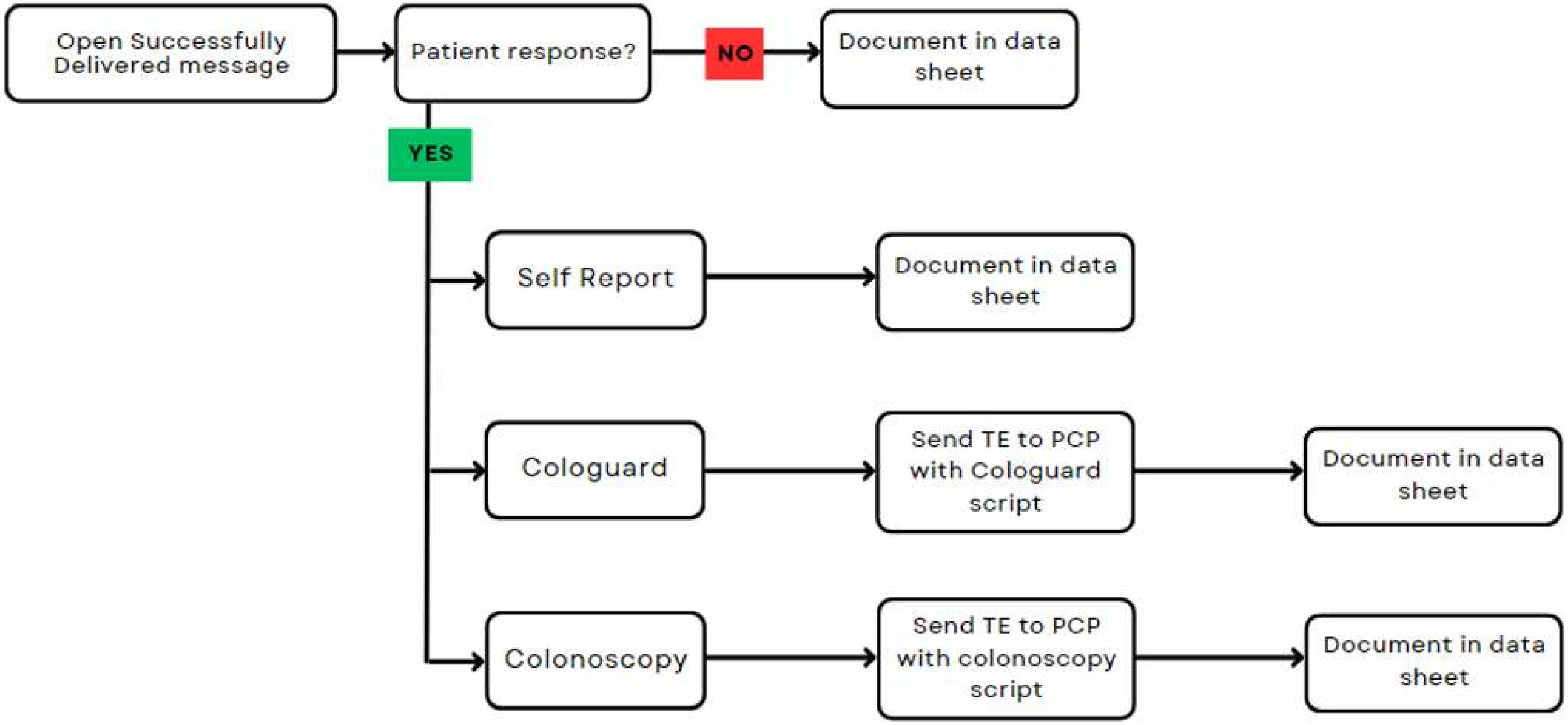
We will be outreaching via Luma to eligible patients seen within the last 12 months inviting them to request screening with either Cologuard or colonoscopy. Patients will also be given the chance to schedule an appointment with their provider to discuss more.

We hope this will improve our rates of colorectal cancer screening in this population.

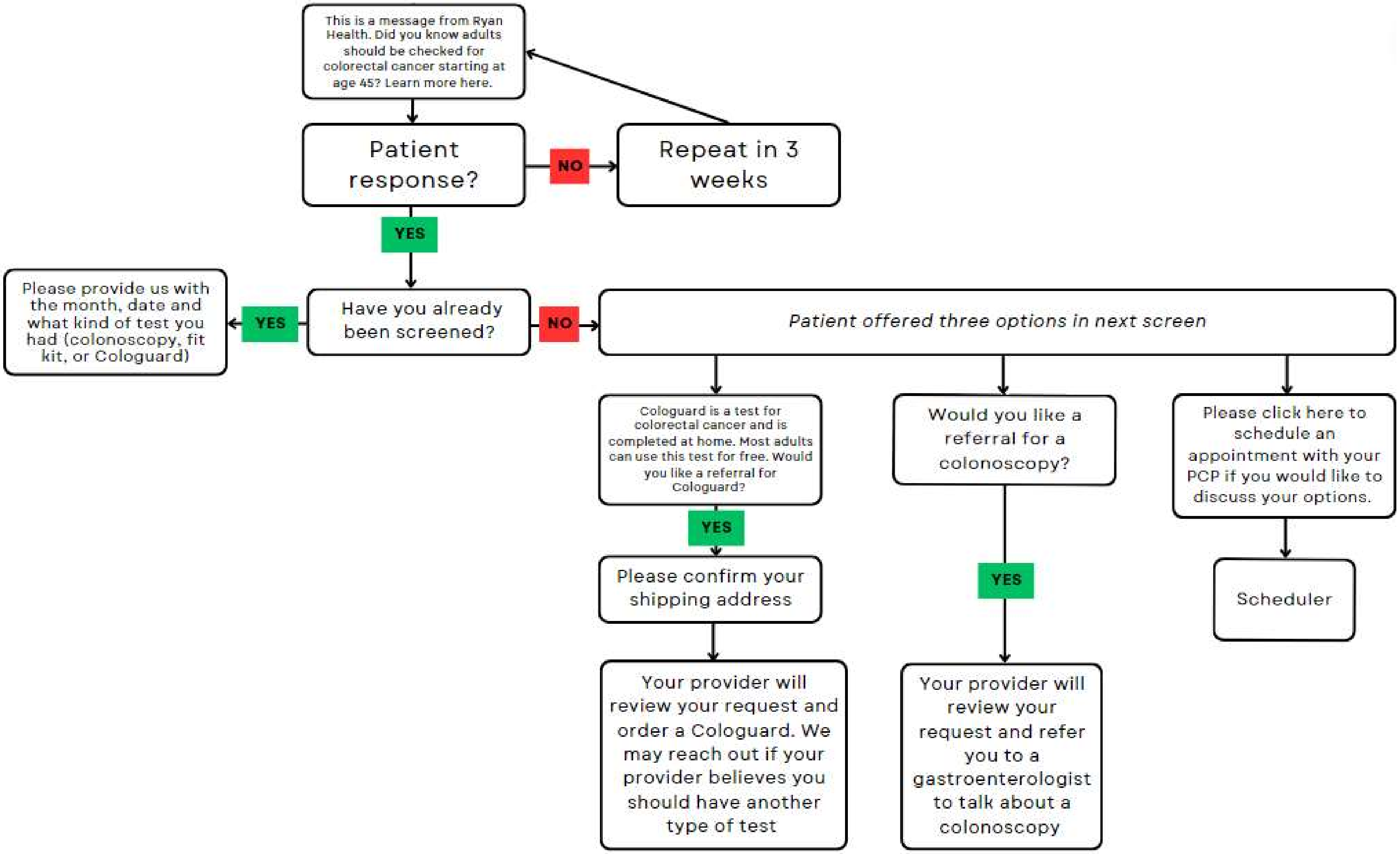
Everyone's Role: You may have patients ask questions about this campaign. Please confirm that this is a campaign to get our patients screened for colorectal cancer and direct any questions to their provider.

Providers: You will receive telephone encounters notifying you that your patient has requested colorectal cancer screening, either Cologuard or a colonoscopy. Please review the chart and order the requested test if appropriate. We understand that not all patients should be screened using a stool-based test, like those with a history of adenomas or a family history of colon cancer. In these cases, please arrange for the patient to be referred for a colonoscopy.

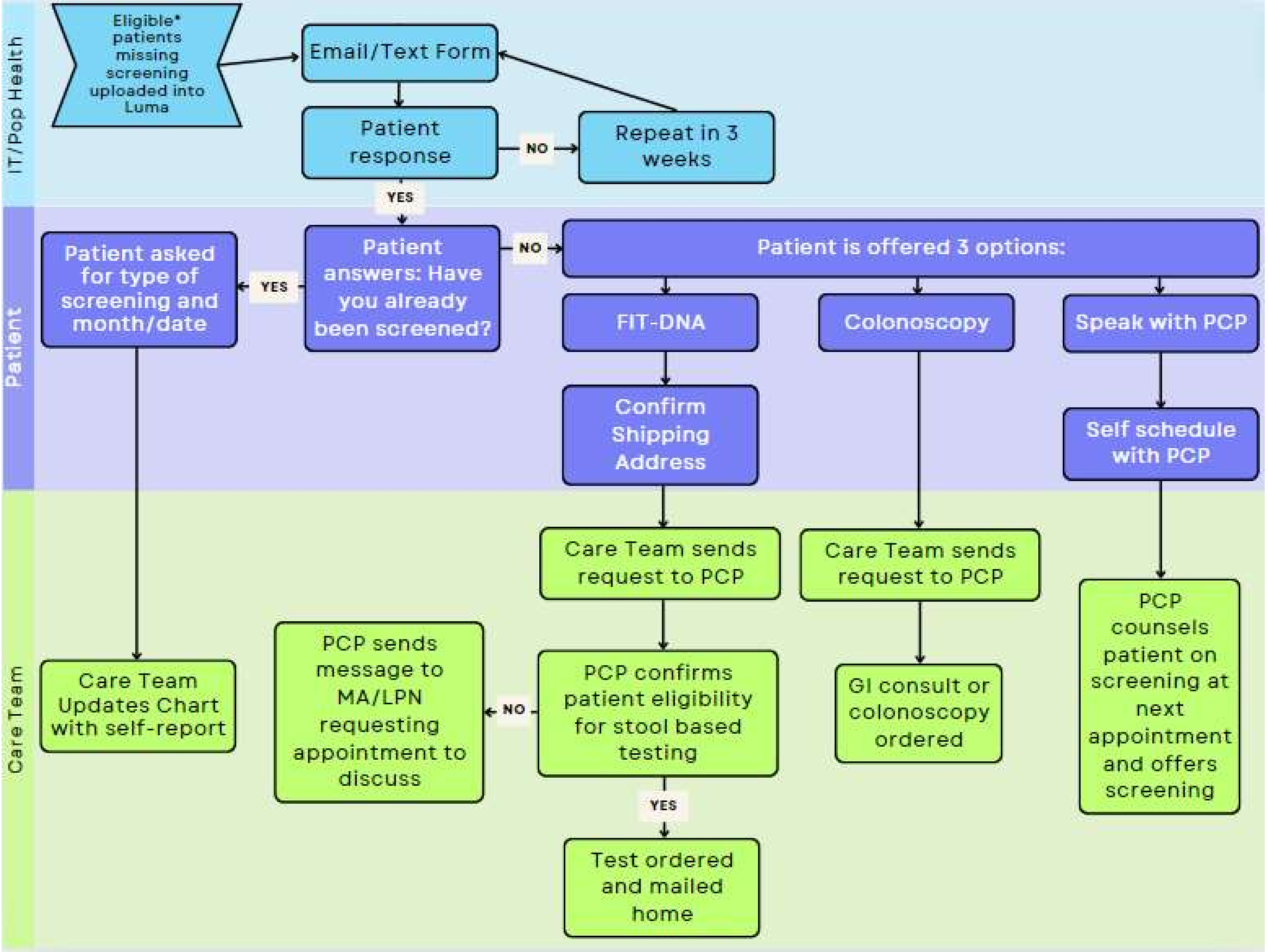
Appendix G: Staff Education on Data Entry



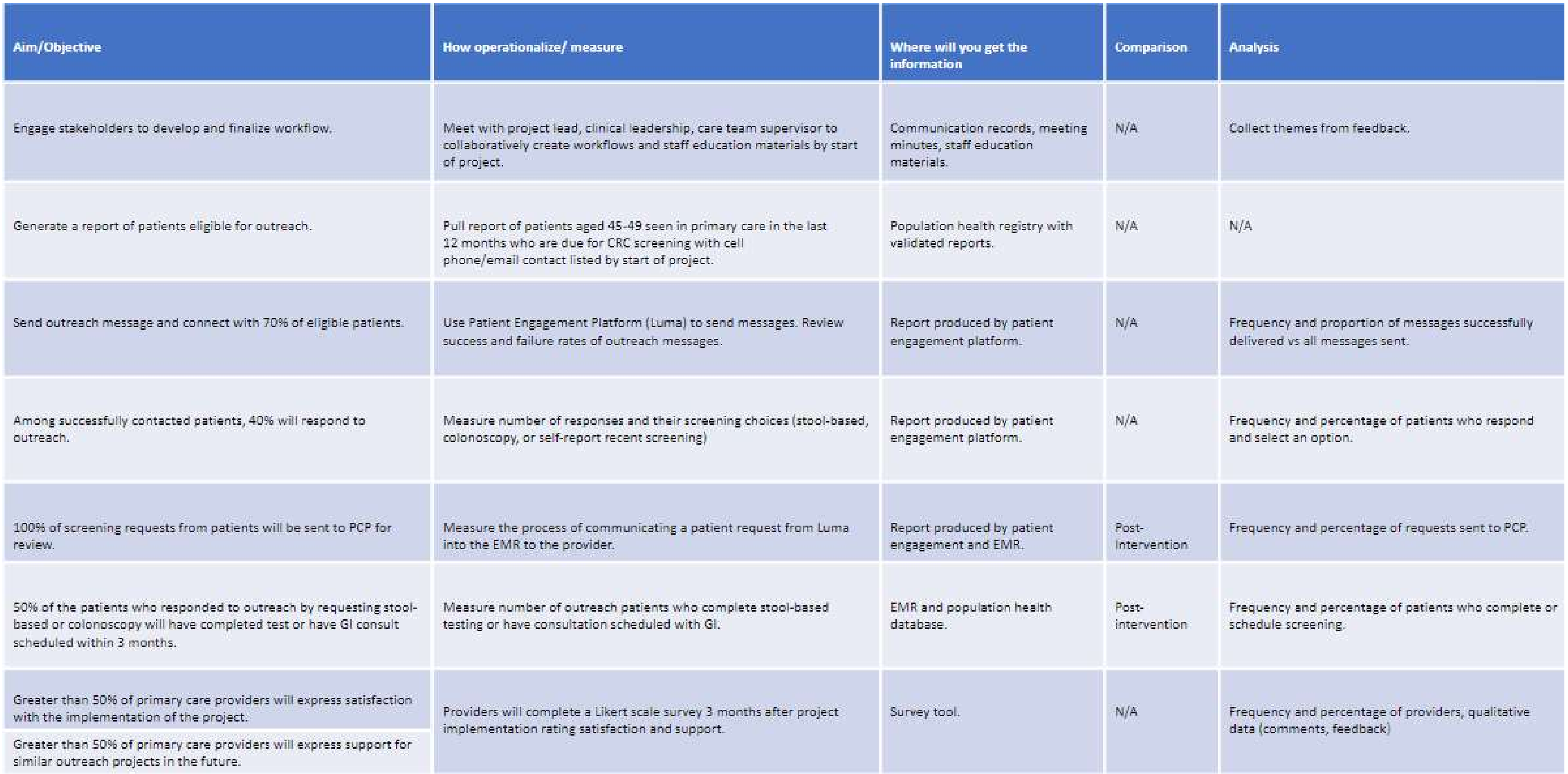
Appendix H: Patient outreach script



Appendix I: Intervention Workflow

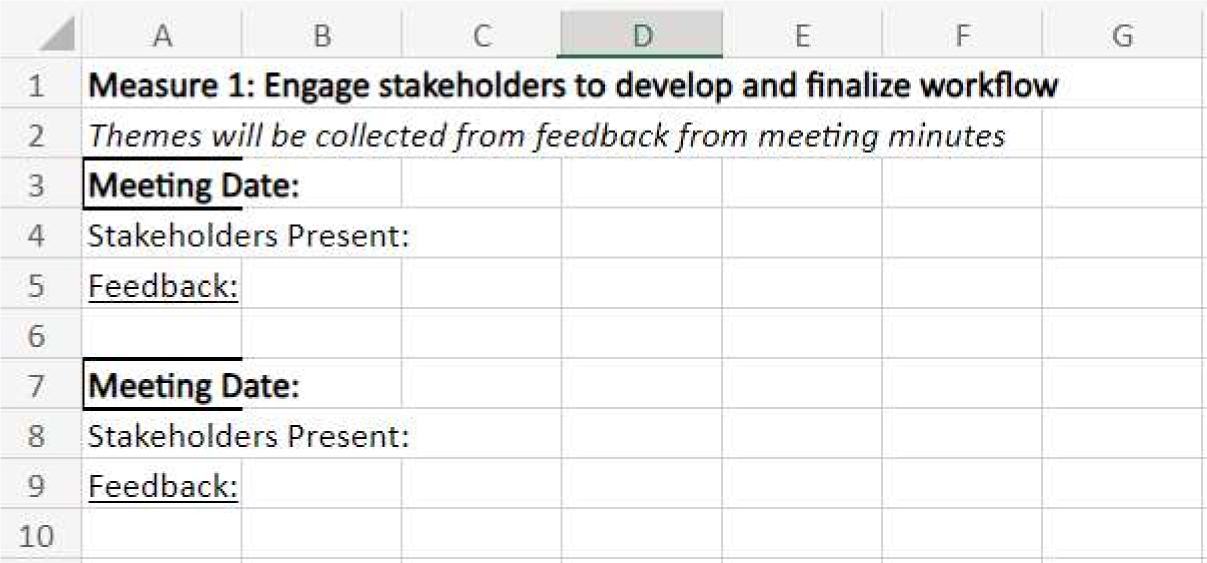


Appendix J: Measures Table



Aim/Objective	How operationalize/ measure	Where will you get the information	Comparison	Analysis
Engage stakeholders to develop and finalize workflow.	Meet with project lead, clinical leadership, care team supervisor to collaboratively create workflows and staff education materials by start of project.	Communication records, meeting minutes, staff education materials.	N/A	Collect themes from feedback.
Generate a report of patients eligible for outreach.	Pull report of patients aged 45-49 seen in primary care in the last 12 months who are due for CRC screening with cell phone/email contact listed by start of project.	Population health registry with validated reports.	N/A	N/A
Send outreach message and connect with 70% of eligible patients.	Use Patient Engagement Platform (Luma) to send messages. Review success and failure rates of outreach messages.	Report produced by patient engagement platform.	N/A	Frequency and proportion of messages successfully delivered vs all messages sent.
Among successfully contacted patients, 40% will respond to outreach.	Measure number of responses and their screening choices (stool-based, colonoscopy, or self-report recent screening)	Report produced by patient engagement platform.	N/A	Frequency and percentage of patients who respond and select an option.
100% of screening requests from patients will be sent to PCP for review.	Measure the process of communicating a patient request from Luma into the EMR to the provider.	Report produced by patient engagement and EMR.	Post-Intervention	Frequency and percentage of requests sent to PCP.
50% of the patients who responded to outreach by requesting stool-based or colonoscopy will have completed test or have GI consult scheduled within 3 months.	Measure number of outreach patients who complete stool-based testing or have consultation scheduled with GI.	EMR and population health database.	Post-intervention	Frequency and percentage of patients who complete or schedule screening.
Greater than 50% of primary care providers will express satisfaction with the implementation of the project. Greater than 50% of primary care providers will express support for similar outreach projects in the future.	Providers will complete a Likert scale survey 3 months after project implementation rating satisfaction and support.	Survey tool.	N/A	Frequency and percentage of providers, qualitative data (comments, feedback)

Appendix K: Aim 1 Data Log



Measure 1: Engage stakeholders to develop and finalize workflow

Themes will be collected from feedback from meeting minutes

Meeting Date:

Stakeholders Present:

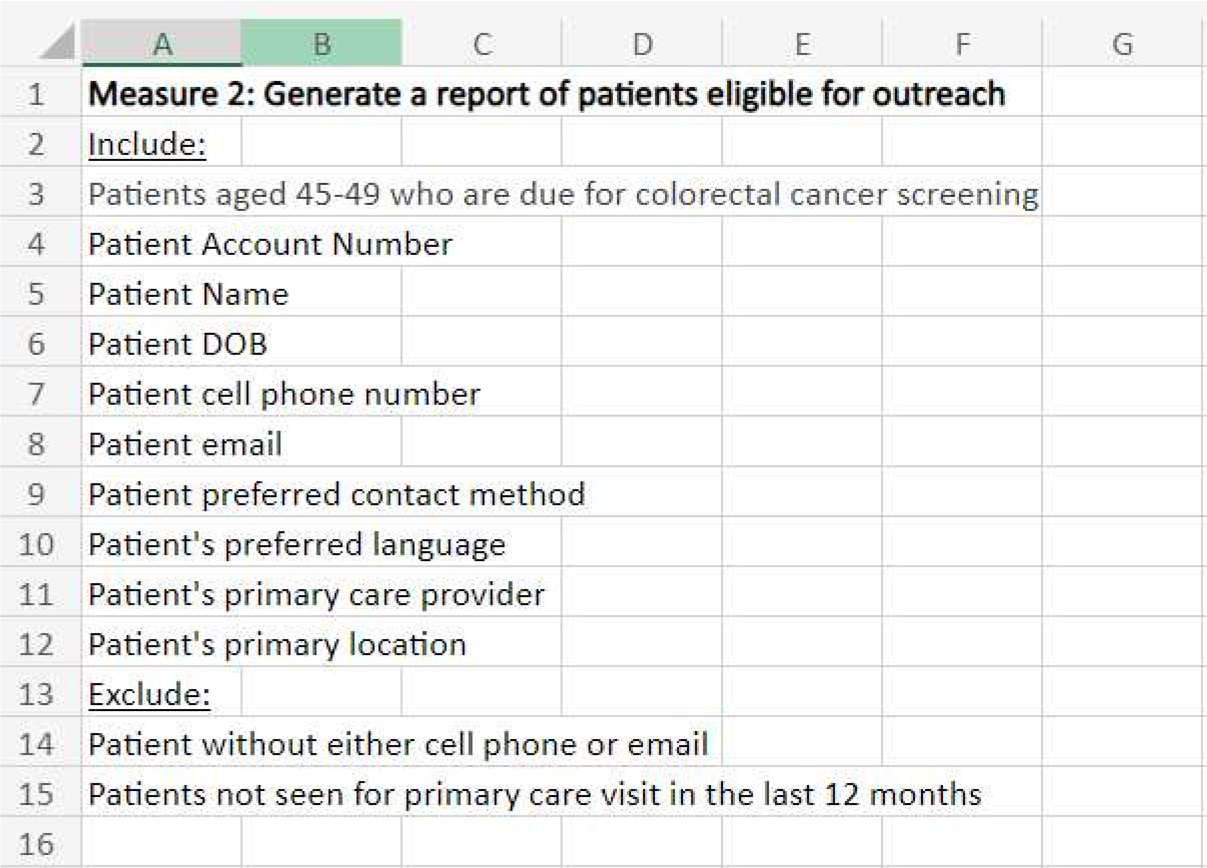
Feedback:

Meeting Date:

Stakeholders Present:

Feedback:

Appendix L: Aim 2 Data Log



Measure 2: Generate a report of patients eligible for outreach

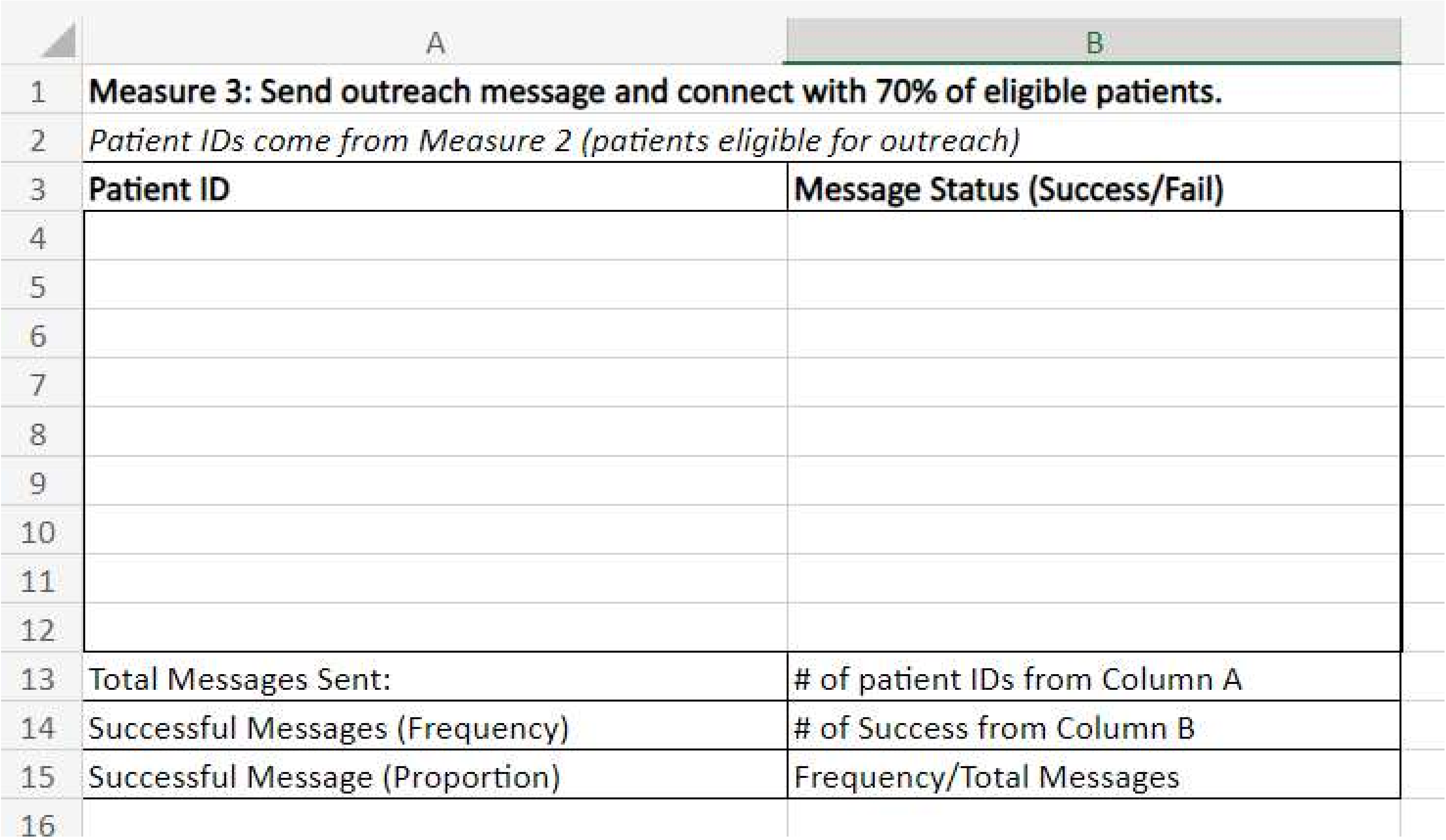
Include:

Patients aged 45-49 who are due for colorectal cancer screening
Patient Account Number
Patient Name
Patient DOB
Patient cell phone number
Patient email
Patient preferred contact method
Patient's preferred language
Patient's primary care provider
Patient's primary location

Exclude:

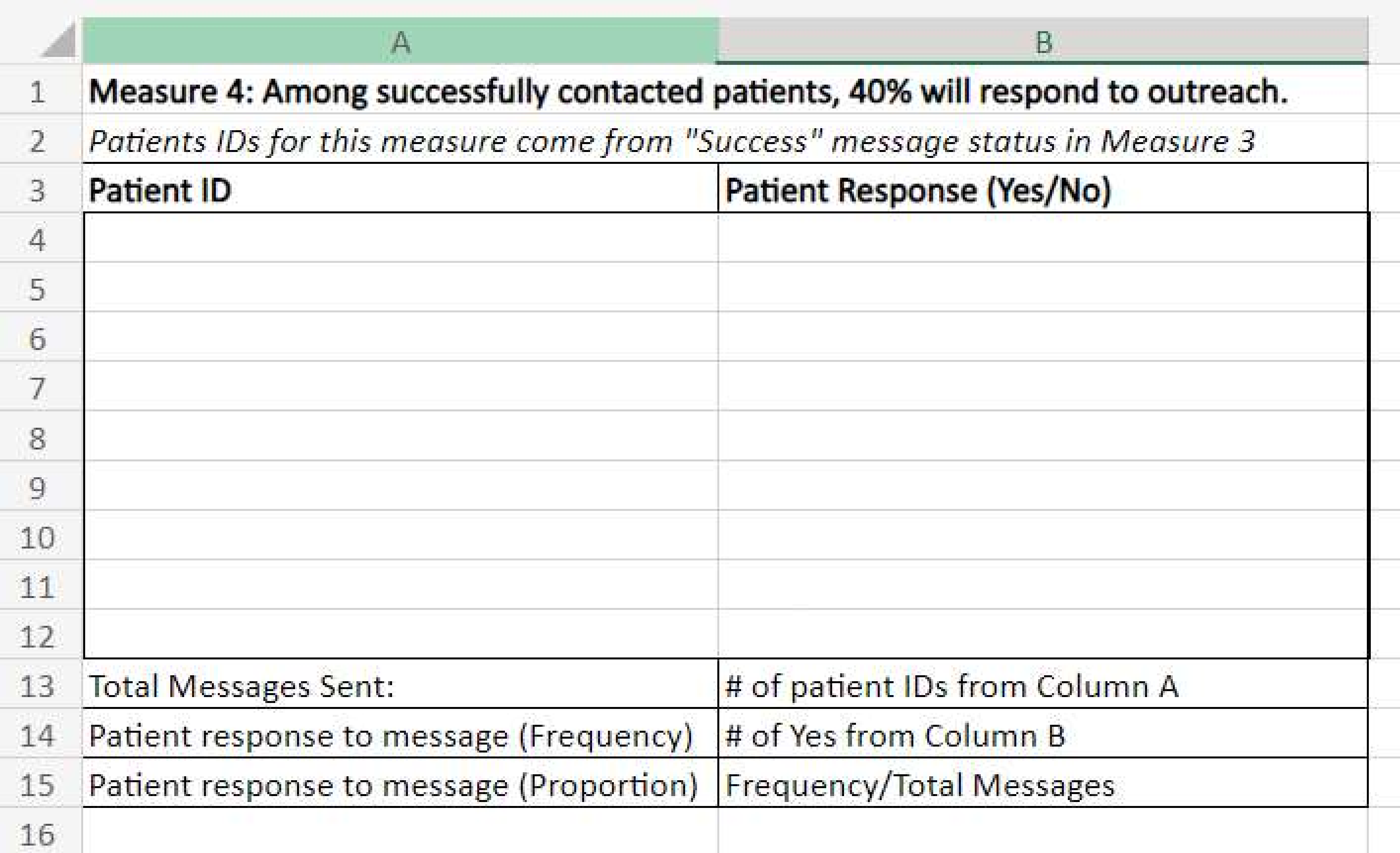
Patient without either cell phone or email
Patients not seen for primary care visit in the last 12 months

Appendix M: Aim 3 Data Log



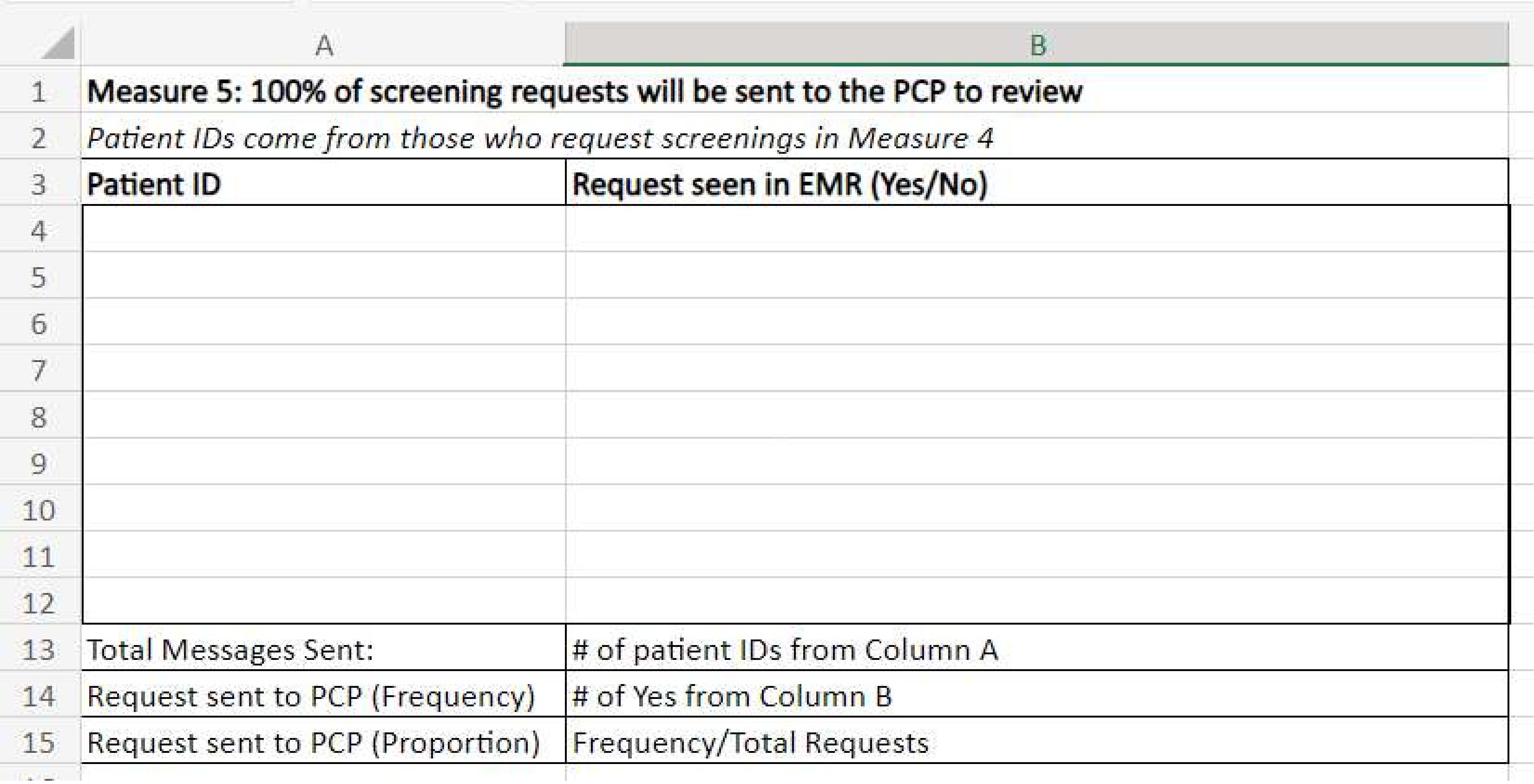
	A	B
1	**Measure 3: Send outreach message and connect with 70% of eligible patients.**	
2	*Patient IDs come from Measure 2 (patients eligible for outreach)*	
3	**Patient ID**	**Message Status (Success/Fail)**
4		
5		
6		
7		
8		
9		
10		
11		
12		
13	Total Messages Sent:	# of patient IDs from Column A
14	Successful Messages (Frequency)	# of Success from Column B
15	Successful Message (Proportion)	Frequency/Total Messages
16		

Appendix N: Aim 4 Data Log



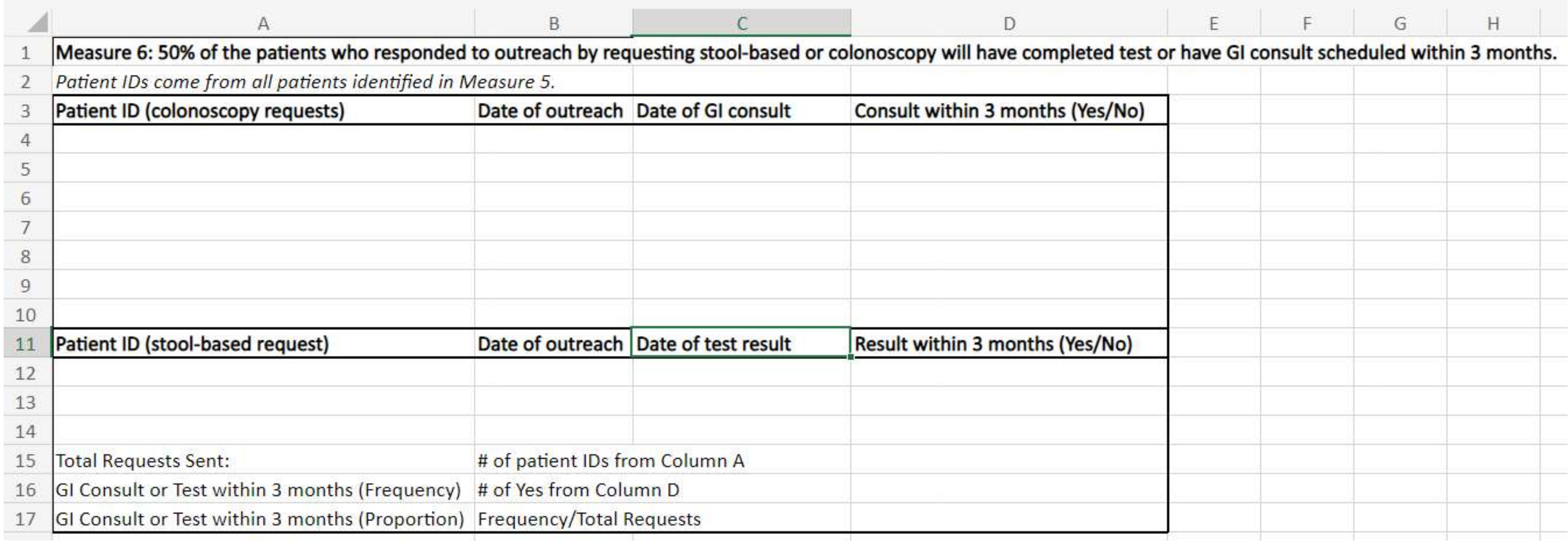
	A	B
1	**Measure 4: Among successfully contacted patients, 40% will respond to outreach.**	
2	*Patients IDs for this measure come from "Success" message status in Measure 3*	
3	**Patient ID**	**Patient Response (Yes/No)**
4		
5		
6		
7		
8		
9		
10		
11		
12		
13	Total Messages Sent:	# of patient IDs from Column A
14	Patient response to message (Frequency)	# of Yes from Column B
15	Patient response to message (Proportion)	Frequency/Total Messages
16		

Appendix O: Aim 5 Data Log



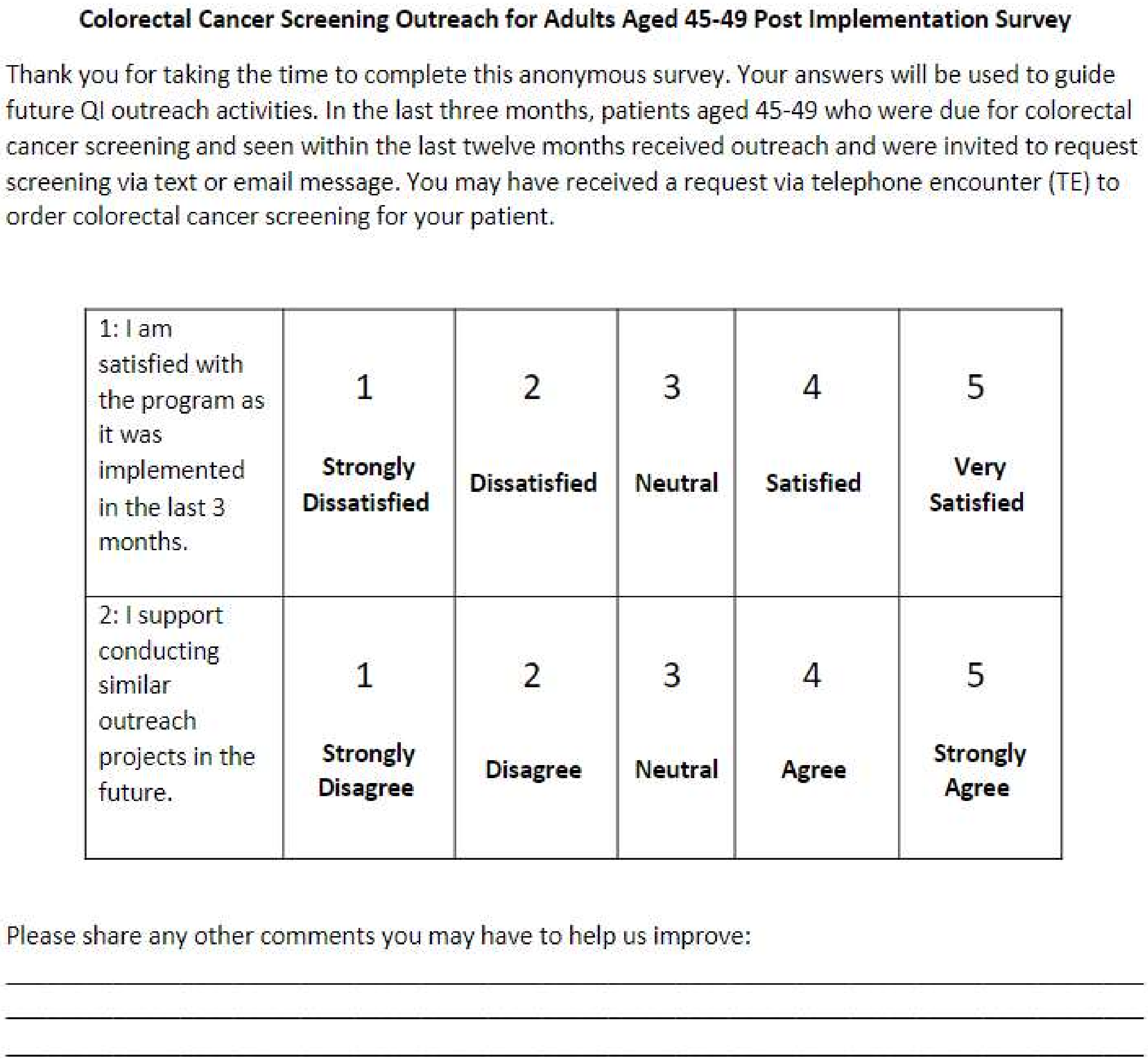
	A	B
1	**Measure 5: 100% of screening requests will be sent to the PCP to review**	
2	*Patient IDs come from those who request screenings in Measure 4*	
3	**Patient ID**	**Request seen in EMR (Yes/No)**
4		
5		
6		
7		
8		
9		
10		
11		
12		
13	Total Messages Sent:	# of patient IDs from Column A
14	Request sent to PCP (Frequency)	# of Yes from Column B
15	Request sent to PCP (Proportion)	Frequency/Total Requests

Appendix P: Aim 6 Data Log



	A	B	C	D	E	F	G	H
1	**Measure 6: 50% of the patients who responded to outreach by requesting stool-based or colonoscopy will have completed test or have GI consult scheduled within 3 months.**							
2	*Patient IDs come from all patients identified in Measure 5.*							
3	**Patient ID (colonoscopy requests)**	**Date of outreach**	**Date of GI consult**	**Consult within 3 months (Yes/No)**				
4								
5								
6								
7								
8								
9								
10								
11	**Patient ID (stool-based request)**	**Date of outreach**	**Date of test result**	**Result within 3 months (Yes/No)**				
12								
13								
14								
15	Total Requests Sent:	# of patient IDs from Column A						
16	GI Consult or Test within 3 months (Frequency)	# of Yes from Column D						
17	GI Consult or Test within 3 months (Proportion)	Frequency/Total Requests						

Appendix Q: Survey Tool



Colorectal Cancer Screening Outreach for Adults Aged 45-49 Post Implementation Survey

Thank you for taking the time to complete this anonymous survey. Your answers will be used to guide future QI outreach activities. In the last three months, patients aged 45-49 who were due for colorectal cancer screening and seen within the last twelve months received outreach and were invited to request screening via text or email message. You may have received a request via telephone encounter (TE) to order colorectal cancer screening for your patient.

1: I am satisfied with the program as it was implemented in the last 3 months.	1 **Strongly Dissatisfied**	2 **Dissatisfied**	3 **Neutral**	4 **Satisfied**	5 **Very Satisfied**
2: I support conducting similar outreach projects in the future.	1 **Strongly Disagree**	2 **Disagree**	3 **Neutral**	4 **Agree**	5 **Strongly Agree**

Please share any other comments you may have to help us improve:

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____

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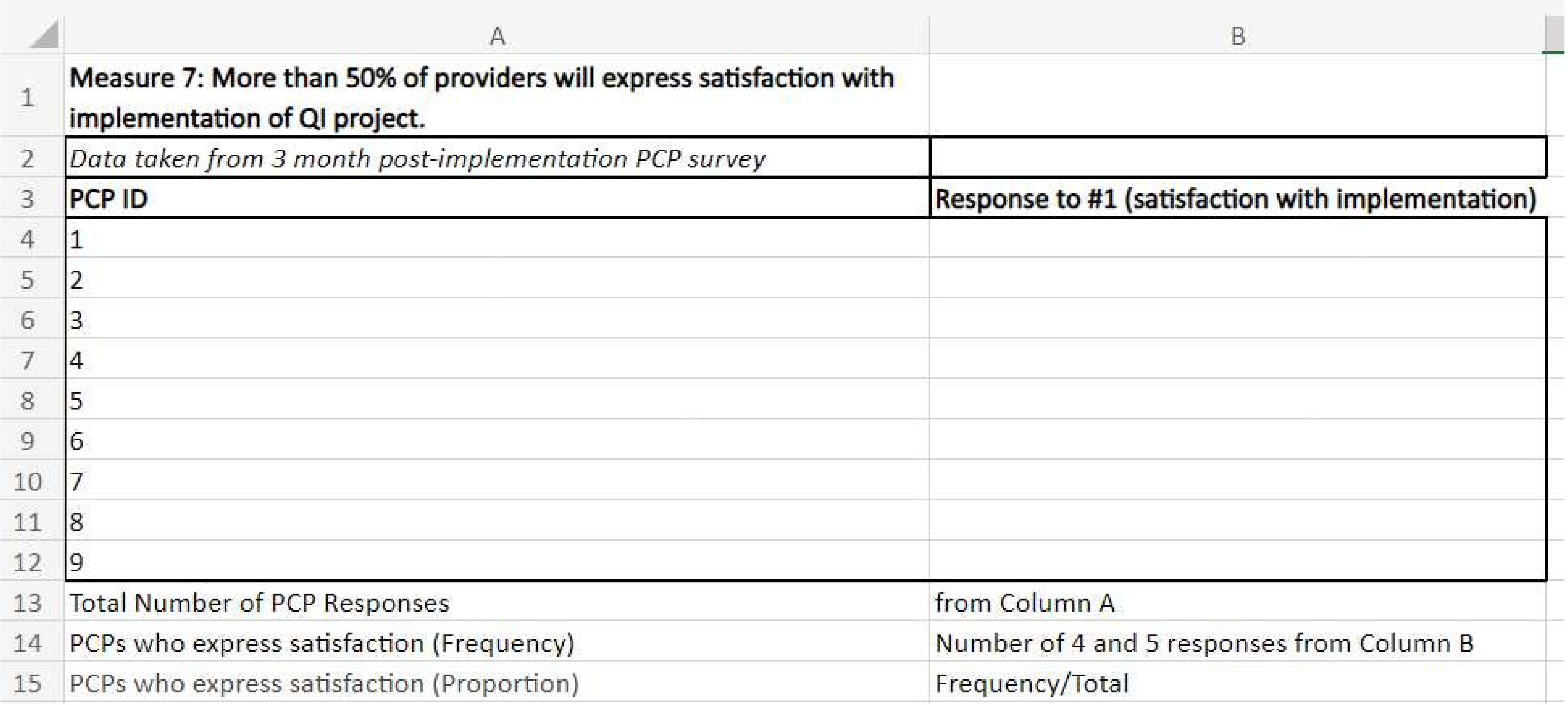
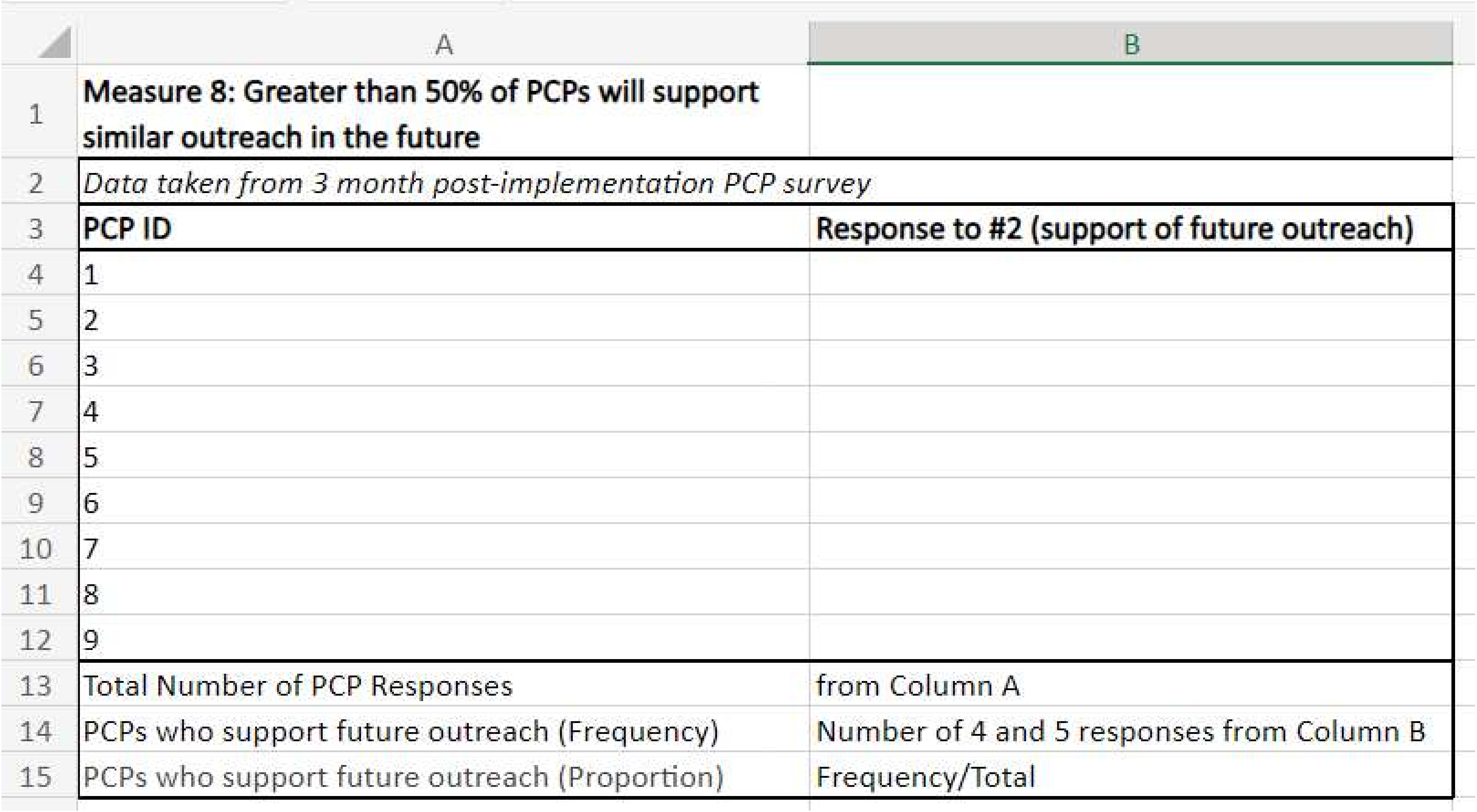
Appendix R: Aim 7 Data Log



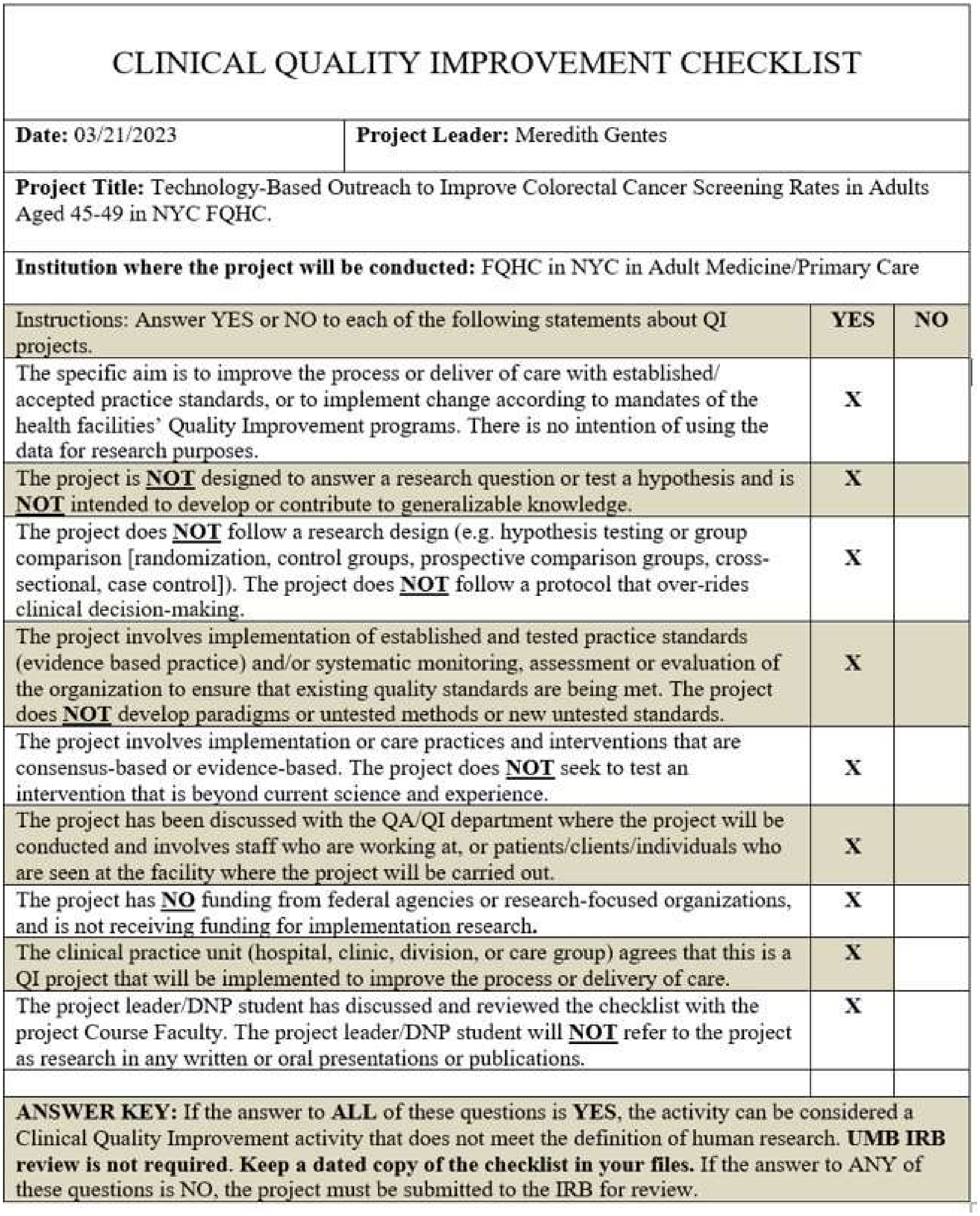
	A	B
1	**Measure 7: More than 50% of providers will express satisfaction with implementation of QI project.**	
2	*Data taken from 3 month post-implementation PCP survey*	
3	**PCP ID**	**Response to #1 (satisfaction with implementation)**
4	1	
5	2	
6	3	
7	4	
8	5	
9	6	
10	7	
11	8	
12	9	
13	Total Number of PCP Responses	from Column A
14	PCPs who express satisfaction (Frequency)	Number of 4 and 5 responses from Column B
15	PCPs who express satisfaction (Proportion)	Frequency/Total

Appendix S: Aim 8 Data Log



	A	B
1	**Measure 8: Greater than 50% of PCPs will support similar outreach in the future**	
2	*Data taken from 3 month post-implementation PCP survey*	
3	**PCP ID**	**Response to #2 (support of future outreach)**
4	1	
5	2	
6	3	
7	4	
8	5	
9	6	
10	7	
11	8	
12	9	
13	Total Number of PCP Responses	from Column A
14	PCPs who support future outreach (Frequency)	Number of 4 and 5 responses from Column B
15	PCPs who support future outreach (Proportion)	Frequency/Total

Appendix T: Clinical Quality Improvement Checklist



CLINICAL QUALITY IMPROVEMENT CHECKLIST

Date: 03/21/2023

Project Leader: Meredith Gentes

Project Title: Technology-Based Outreach to Improve Colorectal Cancer Screening Rates in Adults Aged 45-49 in NYC FQHC.

Institution where the project will be conducted: FQHC in NYC in Adult Medicine/Primary Care

Instructions: Answer YES or NO to each of the following statements about QI projects.	**YES**	**NO**
The specific aim is to improve the process or deliver of care with established/ accepted practice standards, or to implement change according to mandates of the health facilities' Quality Improvement programs. There is no intention of using the data for research purposes.	**X**	
The project is **NOT** designed to answer a research question or test a hypothesis and is **NOT** intended to develop or contribute to generalizable knowledge.	**X**	
The project does **NOT** follow a research design (e.g. hypothesis testing or group comparison [randomization, control groups, prospective comparison groups, cross-sectional, case control]). The project does **NOT** follow a protocol that over-rides clinical decision-making.	**X**	
The project involves implementation of established and tested practice standards (evidence based practice) and/or systematic monitoring, assessment or evaluation of the organization to ensure that existing quality standards are being met. The project does **NOT** develop paradigms or untested methods or new untested standards.	**X**	
The project involves implementation or care practices and interventions that are consensus-based or evidence-based. The project does **NOT** seek to test an intervention that is beyond current science and experience.	**X**	
The project has been discussed with the QA/QI department where the project will be conducted and involves staff who are working at, or patients/clients/individuals who are seen at the facility where the project will be carried out.	**X**	
The project has **NO** funding from federal agencies or research-focused organizations, and is not receiving funding for implementation research.	**X**	
The clinical practice unit (hospital, clinic, division, or care group) agrees that this is a QI project that will be implemented to improve the process or delivery of care.	**X**	
The project leader/DNP student has discussed and reviewed the checklist with the project Course Faculty. The project leader/DNP student will **NOT** refer to the project as research in any written or oral presentations or publications.	**X**	

ANSWER KEY: If the answer to **ALL** of these questions is **YES**, the activity can be considered a Clinical Quality Improvement activity that does not meet the definition of human research. **UMB IRB review is not required. Keep a dated copy of the checklist in your files.** If the answer to ANY of these questions is NO, the project must be submitted to the IRB for review.