MPICCS
MISSOURI PARTNERSHIPS TO INCREASE COLORECTAL CANCER SCREENING

Final Evaluation Report Years 1-5

June 2025

Amy Lake (Assessment Resource Center, MU College of Education and Human Development)
With significant contributions from the MPICCS Team

Program: Missouri Partnerships to Increase Colorectal Cancer Screening (MPICCS)
Principal Investigators: Dr. Jane McElroy and Dr. Kevin Everett
Program dates: July 1, 2020 – June 30, 2025
Funding agency: Centers for Disease Control

Reporting period: July 2020 – June 2025

Assessment Resource Center
University of Missouri

Table of Contents

Executive summary

Missouri Partnership to Increase Colorectal Cancer Screening (MPICCS) is a 5-year CDC-funded project, housed in the Department of Family and Community Medicine at the University of Missouri School of Medicine. It is one of 35 Colorectal Cancer Control Program (CRCCP) grantees for the 2020-2025 CDC grant cycle and one of eight university-based projects.

The purpose of the MPICCS program is to improve colorectal cancer (CRC) screening rates in Missouri, for those clinics with CRC screening rates that are below the state average (64%). The priority populations are low income, medically underserved, rural residents, immigrants and non-English language speaking patients. The MPICCS program enrolled medical locations which primarily serve these priority populations, such as Federally Qualified Health Centers (FQHCs). Key findings are provided here.

Key MPICCS project findings

Broad reach to traditional and non-traditional partners. Over the course of the five years, MPICCS partnered with 46 total health facilities (10 FQHCs, one pharmacy and one free community clinic) in underserved regions of Missouri and maintained relationships with 35 of those health facilities (7 FQHCs, one pharmacy and one free community clinic) until the end of the project. For simplicity, all health partners will be referred to as health systems for the rest of the report. The included pharmacy is currently the only one in the state providing essential medications to low resourced patients. This charitable pharmacy is actively engaged in CRC screening through the CDC-funded project. Another partner is a medical clinic staffed by volunteer clinicians providing health care for those without access to health care.

CRC screening rates improved by 10 percentage points on average for MPICCS partners and by 18 percentage points for the top 15 clinics. The average CRC screening rate increased from 34% (baseline year) to 44% (2024 Quarter 4) for all clinics and from 32% (baseline) to 51% (2024 Q4) for the highest performing clinics. This 2024 CRC rates are higher than the 2023 national average for FQHCs (41%) and the 2023 average for Missouri Federally Qualified Health Centers (35%).

Change in age recommendations for CRC screening lowered the average CRC rate for most MPICCS partners. In 2021, the US Preventive Services Task Force (USPSTF) lowered the recommended age for CRC screening from age 50 to age 45. In 2023 all the FQHCs were required to include screening rates for this younger age group (45-49 year olds) as part of their Uniform Data System colorectal cancer screening metric (45-75 year olds) under Section 330 of the Public Health Service Act. In general, screening rates for ages 45-49 were considerably lower than for ages 50-75.

Practice-facilitator model is at the heart of MPICCS success. Three highly effective practice facilitators (all with experience practicing health care in clinical settings) are the heart of the project along with a highly skilled project coordinator. This team uses a practical one-on-one approach: identifying each clinic's needs, meeting them where they are, providing appropriate education and technical support, and creating a feedback loop for constant and ongoing improvements based on mutual respect and support.

Practice facilitator model led to 449 official interactions between MPICCS team and clinic partners. MPICCS has a high-touch approach to working with health systems and clinics, leading to 449

interactions including clinic tracking (for orientation, onboarding, Evidence Based Intervention (EBI) selection and approval by CDC), ad hoc meetings (on an as needed bases to address any additional barriers or concerns clinics may have related to EBIs implementation or data collection); clinic TA tracking (primarily related to EHR issues); and monthly or quarterly EBI meetings (when MPICCS staff goes over EBI successes, challenges, and barriers in detail and problem solves with the clinics).

Each MPICCS partner implemented at least 3 EBIs. Each MPICCS clinic has implemented at least three of the four primary EBIs (patient reminders, provider reminders, provider assessment and feedback, and reducing structural barriers), and two supporting activities (patient navigation and small media). For simplicity, the rest of the report will refer to the EBIs and supportive activities collectively as six EBIs. These EBIs have been the conduit for not only improving CRC screenings and follow-up colonoscopy but also educating the MPICCS partners' staff and patients about the importance of CRC screening and prevention.

Dozens of tailored activities can be nested in a single EBI. For example, the MPICCS team produced quarterly CRC screening reports for 89 health care clinicians, which amounted to 356 individual quarterly reports in just one year, as part of the Provider Assessment and Feedback's EBI. Additionally, MPICCS produced reports for 34 clinics (8 health systems) each year. This amounted to 32 system level reports per year with 132 clinic-level analyses each quarter.

MPICCS implemented at least several value-added activities that were not required by CDC. MPICCS brought a wide range of opportunities and resources not required by the grant to their partners including transportation resources; coordination with Exact Science; customized CRC flyers; Rural Health Research Network opportunities; MPICCS partner awards dinners; translations for FIT kit instruction and patient information in seven languages[1]; 10'x10'x20' inflatable colon for clinic use; patient navigation program for partner clinics through MU nursing student program; opportunity to participate in Missouri CRC Roundtable; safety net resources; coordination with colonoscopy clinicians; implementation of a nurse competency test about CRC screening; newsletter publication, CRC screening 2025 calendar featuring partner clinics and ACS funding opportunities for direct CRC patient care. While these activities were not required by CDC, they were wrapped around EBIs to bolster CRC screenings rates.

Chart reviews and EHR technical assistance have improved the quality of CRC screening data and screening rates. Annual chart reviews, though also not required by CDC, were conducted annually with MPICCS partner clinics for a total of 30 chart reviews. There was 91% average concordance (agreement between chart review CRC screening rates and data provided to MPICCS by clinics). Chart reviews and improved EHR data have led to MPICCS identifying patients in need of follow-up screening, uncovering workflow and documentation issues, and providing targeted guidance for improvement.

The quality of clinics' data collection and reporting has improved over the 5 years of the project. One of the project's signature supports is technical assistance with data mapping with partner clinics using five different EMR systems. MPICCS team members have invested in their knowledge of each system and even attended an Azara Healthcare conference with hands-on workshops for utilizing DRVS in 2022 to level up their skills.

[1] Not all the patient materials were translated into all seven languages. For example, some materials were translated into only two out of the seven such as themed infographics.

A higher proportion of administrative staff (90-100%) found selected EBIs helpful as compared to patient-facing staff (56-78%). While there was overall agreement that EBIs were helpful, the two groups differed on which EBIs were most helpful and which were easiest to implement.

Several individual MPICCS EBIS appear to be sustainable. The top four EBIs most likely sustained (according to the administrative staff of MPICCS partners) were: pre-visit planning, auto text messaging, return dates on FIT kits, and auto EHR alerts for clinicians.

Pivoting from all virtual communication to more in-person visits. MPICCS began with full virtual engagement because the project started during the COVID-19 pandemic. Despite the challenges of the period, the team successfully established and cultivated strong partnerships with healthcare organizations virtually. MPICCS implemented frequent in-person visits as soon as possible when COVID-19 restrictions were eased. This helped the relationships evolve and deepen, as evidenced by the diverse range of value-added activities adopted by partner clinics.

About the MPICCS team

The MPICCS team is made up of two project directors, a project coordinator, three practice facilitators, and two consultants.

MPICCS Project Team

Project Directors:
Jane McElroy, PhD
Kevin Everett, PhD

Project Coordinator:
Chloe Zink (Maltagliati), BS

Practice facilitators:
Nuha Wareg, Ph.D.(c), MPH, MBBS
(Fatima) Alicia Vaca, MPH, BSN, RN
Ying Liu, MD, MA (replaced Brandon Spratt, DNP, FNP-BC)

Consultants:
Dr. Jean Wang, Washington University Professor of Medicine and Professor of Surgery & gastroenterologist
Dr. Robert Pierce, University of Missouri Health Care family physician with expertise in electronic health records

---

"The MPICCS team has been great to work with and helps keep us focused on the importance of colon screenings for our patients and our coworkers."

-MPICCS survey participant quote

About Evaluation

The Assessment Resource Center (ARC) is the external evaluator for the MPICCS program. The primary purpose of the overall evaluation is program improvement. This purpose was determined by the MPICCS Core Team jointly with ARC and is described in detail in the 2020 MPICCS Evaluation Plan. The following process and outcome questions were also jointly developed:

Evaluation process questions:

1. What were the key learning points for the MPICCS Core Team and how will future program implementation be affected by them?
2. What factors influenced the MPICCS Core Team's ability to complete clinic onboarding, build strong relationships with clinics, support clinics' adoption of EBIs and follow-up colonoscopies?
3. What factors encountered at the clinics influenced their ability to complete clinic level requirements, including readiness assessment and baseline/annual clinic data collection?
4. To what extent did MPICCS identify barriers to and facilitators for clinic-level program training, EBI adoption, and follow-up colonoscopy implementation?

Evaluation outcome questions:

1. How much and what kind of change was caused by the implementation of EBIs and follow-up colonoscopy?
2. Which EBIs were the most effective for each clinic and why?
3. Which external factors influenced the adoption and success of EBIs and follow-up colonoscopy?
4. What aspects of MPICCS will be sustained after the program and how will they be sustained at each clinic? (examples include screening recommendations, EBIs, financial resources for the uninsured and underinsured, behavior change in clinicians and patients)

Evaluation data collection methods:

1. **KI Core:** Key informant interviews with Core Team members and consultants
2. **Checklist:** A clinic checklist used to track each clinic's progress over time
3. **Artifacts:** Project documents (PowerPoint presentations, key emails, and reports)
4. **Field notes:** Evaluator notes supplemented by other Core Team member notes
5. **CDC data:** Baseline and annual clinic data required by CDC
6. **RA data:** Readiness assessment data
7. **KI Clinic:** Key informant interviews with targeted staff at partner clinics (2022)
8. **Focus Group:** Focus group with health care administrators (2023)
9. **Clinic Survey:** Web-based clinic survey of administrative, patient-facing, ancillary and support staff (2024)

Focus of this report. This report is focused solely on overall project outcomes for the 5-year project and the four outcome evaluation questions. For a more granular understanding of specific project elements, processes, successes, barriers, and challenges along the five-year journey, please refer to reports 1-5.

Five previous evaluation reports. ARC produced five previous evaluation reports for the MPICCS program. Most of these were part of the process evaluation, intended to give the MPICCS team information for quality improvement as the project was being implemented.

MPICCS Evaluation Document	Link (URL):
1. *2020 MPICCS Evaluation Plan*	*MPICCS_evalplan_FINAL_12_2020 pdf.pdf*
2. *MPICCS Interim Evaluation Report #1 June 2022*	*ARC_Interim1_MPICCS_Final_June_2022.pdf*
3. *MPICCS Interim Evaluation Report #2: Clinic Partner Interview Report, December 2022*	*MPICCS_Clinic_interview_report_12_22 final2.pdf*
4. *MPICCS Clinic Leaders' Focus Group Report, December 2023*	*ARC Fall 2023 Focus Group Report_final.pdf*
5. *CDC CRCCP Evaluation Report for University of Missouri: MPICCS, November 2024*	*CDC CRCCP Evaluation Report for University of Missouri: MPICCS, November 2024*

PART I: MPICCS partners are traditional and groundbreaking

From July 2020 to June 2025, MPICCS developed partnerships with and onboarded a total of 46 individual health partners (44 clinics in 10 health systems, one pharmacy and one free community clinic). All MPICCS partners had colorectal cancer (CRC) screening rates that were below the state average of 64%, as required by CDC. While there was some attrition over the 5 years of the program due to changing administrative priorities by partner clinics, 35 health facilities in 9 health systems are currently MPICCS partners with engagement from 1-5 years. These 35 health facilities, referred to as "MPICCS active clinics or partners" are the basis for most of this report and are listed on the next page.

46
health facilities

supported by MPICCS
2020-2025

MPICCS strategically coordinated with the Missouri Department of Health and Senior Services so that MPICCS clinics would not overlap with state-supported CRC screening and prevention programs. MPICCS clinics are in 25 counties in central, west and southwest Missouri.

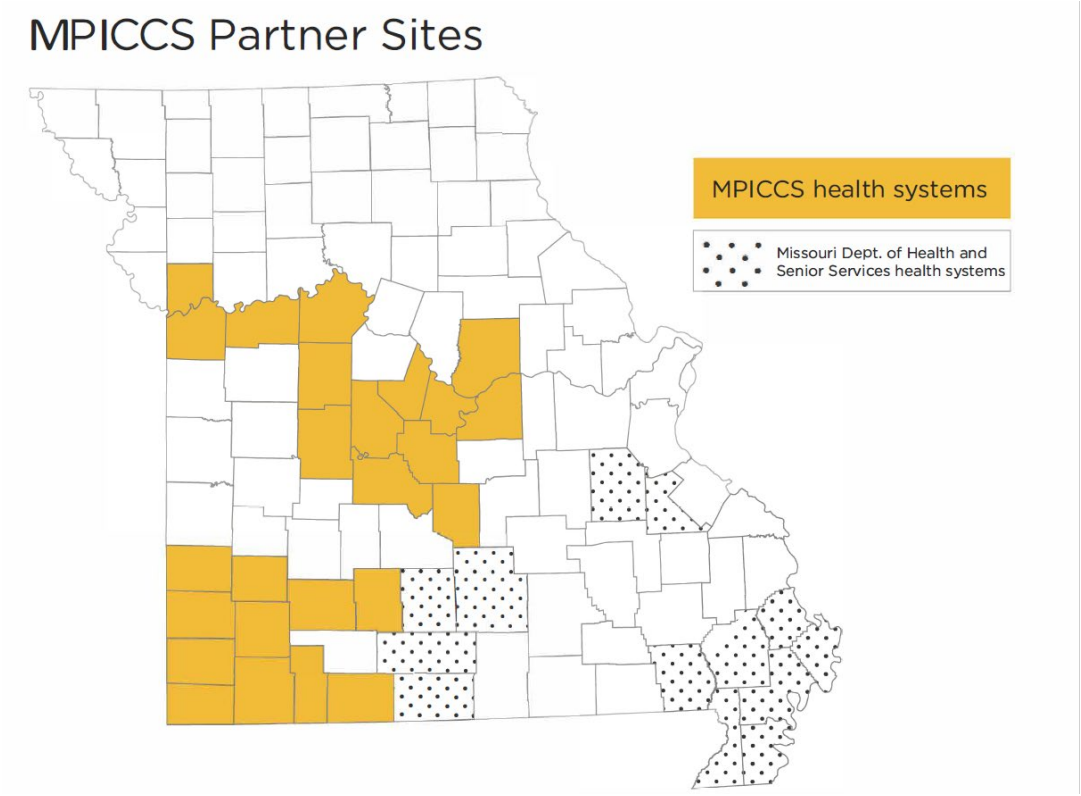


Table 1: 36 MPICCS active partners

MPICCS Active Clinics (2025) [2] [3]	
Katy Trail Community Health:	**Health Care Collaborative Network:**
1. Sedalia Clinic	22. Buckner Clinic
2. Versailles/Prairie Hills Clinic	23. Concordia Clinic
3. Warsaw Clinic	24. Lexington Clinic
4. Marshall Clinic	25. Waverly Clinic
5. Sedalia Main Street Clinic	26. Carrollton Clinic
Community Health Center of Central Missouri:	**Fordland Clinic:**
6. Jefferson City Clinic	27. Burrell (Springfield) Clinic
7. Linn Clinic	28. Fordland Clinic
8. Fulton Clinic	29. Kimberling City
9. California Clinic	30. Webster County Health Department
Access Family Care:	**Community Clinic of Southwest Missouri:**
10. Aurora Clinic	31. Joplin Clinic
11. Joplin Clinic	
12. Lamar Clinic	**My Neighbor's Charitable Pharmacy**
13. Neosho Clinic	32. Neighbor's Pharmacy
14. Cassville Clinic	
15. Anderson Clinic	**Samuel U. Rodgers Health Center:**
16. Monett Clinic	33. Downtown
	34. Clay
Central Ozarks Medical Center:	35. Cabot
17. Mobile Medical Clinic	36. North Oak
18. Richland Clinic	
19. Camdenton Clinic	
20. Osage Beach Clinic	
21. Laurie Clinic	

[2] See Appendix 1-2 for detailed descriptions of MPICCS active partners and demographics.

[3] Four health systems (11 clinics) withdrew from MPICCS. These were Jordan Valley Community Health Center (Hollister, Lebanon, Marshfield, and Republic clinics); Compass Health Network (Union, Wentzville and Warrenton clinics), Comtrea Health Center (Hillsboro, High Ridge and Festus clinics) and Faith Community Health. Reasons for withdrawal varied. One system did not seem ready to be able to implement EBIs, and therefore, it was mutually decided to not re-engage in year 2. Two health system withdrew because of mergers that changed organizational structure and focus. One of those two was refocusing post-COVID, on reducing staff's meeting commitments and the other system that was absorbed in the merger was directed to follow the new priorities. Both systems planned to continue implementing some MPICCS EBIs. One clinic's mission changed from medical care for low resourced patients to a focus on mental health care for this same low resourced population. The Webster County Health Department is a collaboration with Fordland to screen Fordland patients seen at the health department.

First charitable pharmacy to partner in Missouri. One of MPICCS most unique partners is My Neighbor's Charitable Pharmacy (known as Neighbor's Pharmacy after this). This is a charitable pharmacy established in 2022 and located in south central Missouri. Neighbor's Pharmacy provides affordable prescriptions and patient education. Through MPICCS, Neighbor's Pharmacy has expanded their services to support CRC screenings. The pharmacy coordinates with local primary care clinicians (PCCs) to provide another CRC screening opportunity for their uninsured patients. The PCC are also given a prescription-like pad to refer patients to the pharmacy for a free home-based stool test. The pharmacist coordinates with the prescribing physician if available and the Pharmacy's medical director to prescribe and share the results with the patient and arrange for follow-up care, as needed. This was the first pharmacy in Missouri to engage directly with CRC screenings in collaboration with PCCs. At the same time, the statewide Missouri Colorectal Cancer Roundtable began exploring ways to engage more pharmacies in CRC screening and prevention. MPICCS is a successful model for the broader statewide effort. Currently the Neighbor's Pharmacy has submitted a grant application to Exact Science to support continued CRC efforts. Drs. McElroy (MPICCS co-director), Lyons-Burneys, (clinical pharmacist and founder of Neighbor's Pharmacy) and Eisenbeis (pharmacist and director of practice development at Missouri Pharmacy Association) submitted a letter of intent to submit a grant application to the Department of Defense for engaging pharmacies in CRC screening work.

Other unique partners. Other unique partners include a mobile medical unit (Central Ozarks Medical Center health system); a free clinic (Community Clinic of Southwest Missouri: Joplin Clinic), and a county health department (an auxiliary partner with the Fordland health system). MPICCS prioritizes reaching as many clinicians and eligible Missourians as possible by making creative partnerships and shaping them to meet the needs of the health facilities, traditional and non-traditional.

A note on health care in rural Missouri. Health care in rural Missouri tends to be centered on Federally Qualified Health Centers (FQHCs). FQHCs operate as health care systems with several brick-and-mortar clinics under one umbrella. MPICCS works both with the individual clinics (as per CDC guidance that all activities be implemented at the clinic level) and the health systems simultaneously. Each clinic-level activity aligns both with CDC guidance and the clinic's larger FQHC system norms. MPICCS refers to activities both by system and individual clinic because clinics within a system are generally aligned. This evaluation report sometimes uses the MPICCS convention referring to health systems rather than clinics, even though all MPICCS activities are at the clinic, pharmacy, or health department level. Also, in an extensive survey in which 132 staff (i.e., patient-facing, ancillary support staff, and administrative staff) from MPICCS clinics provided their thought, analyses of queries rarely found any significant difference by health systems. In contrast, quarterly reports on screening rates by clinic did find noticeable differences.

PART II: Thousands of Missourians reached

The 35 MPICCS partners, active in program year 5, reached 24,054 Missourians between the ages of 45-75 who were eligible for CRC screenings during the project. The number of eligible Missourians who were seen by health care professionals in MPICCS partner health systems are listed in the table below.

Table 2: Number of Missourians reached by MPICCS

MPICCS Partner Health System	# reached by MPICCS
Katy Trail Community Health	4,391
Central Ozarks Medical Center	5,204
Community Health Center of Central Missouri	2,905
Health Care Collaborative	1,012
ACCESS	4,008
Fordland Clinic	1,967
Samuel U. Rodgers	3,905
Community Clinic of Southwest Missouri	245
Neighbor's Pharmacy	417
Total	**24,054**

24,054 Missourians

reached by 35 active MPICCS partners

This program has been very instrumental in helping us to implement a CRC screening program. We have screened people who would never have had an option for care otherwise—and this program has saved lives. We are so thankful to be part of MPICCS.

--MPICCS survey participant quote

Part III: Evidence-based interventions (EBIs)

CDC recommends four primary EBIs (patient reminders, provider assessment and feedback, provider reminders, and reducing structural barriers) and two supporting activities (patient navigation and small media). Each of the MPICCS active clinics implements at least five of these six EBIs and sometimes more as shown in Table 3. There is great variation in how to implement EBIs.

- Patient reminders include automated text messages; reminder calls; exam room reminders; due dates added to FIT kits; bulk mailing of FIT kits; reminder calls for unreturned FIT kits; and waiting room reminders.
- Provider reminders include pre-visit planning; EHR alerts; Letters to collaborating physicians; laminated pocket cards; standing orders
- Reducing barriers includes free Fit Kits (funding provided by American Cancer Society small grant awarded to Dr. McElroy on behalf of partner clinics); Exact Science Health Equity Program; providing colonoscopy prep kits; gas cards; workflow optimization.
- Provider Assessment and feedback focuses on quarterly infographics.

We have worked to implement almost all the EBIs into our facilities. We have even borrowed some of the EBIs from this project to use for other quality measures to improve our patients' overall preventative care.

-MPICCS survey participant quote

Table 3: Brief Description of Current EBIs by Enrolled Health Systems[4]

Health system / start date	**# of clinics**	**Provider Reminder**	**Provider Feedback**	**Patient Reminders**	**Reducing Barriers**	**Patient Navigation**	**Small Media**
Katy Trail Community Health 10/2020-	5	PVP[4]; EHR alerts; Existing standing orders optimized	QI[9]	Automated text messages; Reminder calls[6]; Exam room reminders	Workflow optimization	Care coordinators to assist with colonoscopy completion	Birthday card reminders; Facebook posts
COMC[1] 3/2021-	5	PVP[4]; Existing standing orders optimized	QI[9]	Automated text messages; Exam room reminders	Workflow optimization	CHW[5] follow-up on abnormal home based kits	CRC t-shirts worn by staff; Facebook posts
Access Family Care 10/2021-	7	PVP[4]; EHR alerts; Existing standing orders optimized	QI[9]	Due dates on FIT; Bulk mailing of FIT; reminder calls[6] for unreturned FIT; Exam room reminders	Gas cards; workflow optimization		
HCC[3] 4/2021-	5	PVP[4]; Existing standing orders optimized	QI[9]	Reminder calls[6] for unreturned FIT kits, text reminders; Exam room reminders	Provided prep kit for colonoscopies	CHW[5] follow-up on abnormal home based kits	
CHCCM[2] 4/2021-	4	Standing orders; PVP[4]	QI[9]	Reminder calls[6] for unreturned FIT kits; due dates on FIT; Exam room reminders	Workflow optimization; Cologuard Health Equity Program[8]	CHW[5] follow-up on abnormal home based kits	CRC t-shirts worn by staff; Facebook posts

[4] Table from MPICCS project narrative February 2025

Health system / start date	**# of clinics**	**Provider Reminder**	**Provider Feedback**	**Patient Reminders**	**Reducing Barriers**	**Patient Navigation**	**Small Media**
Community Clinic 9/2022-	1	Laminated pocket cards	QI[9]	Reminder calls[6], return date on kits; Exam room reminder	Free FIT kits (funded from outside resources); Gas cards; Workflow optimization		
Fordland 9/2022-	3	PVP[4], EHR alerts; Existing standing orders optimized	QI[9]	waiting room and exam room reminders	Gas cards, Cologuard Health Equity Program[8]	CHW[5] follow-up on abnormal home based kits	CRC t-shirts worn by staff
Samuel U Rodgers 5/2024-	4	PVP[4]; HIM team placing EHR alerts for CRC results	QI[9]	Text messaging[7]; return date on kits; Exam room reminders	Cologuard Health Equity Program[8]; Gas cards		
Neighbor's Pharmacy 6/2024-	1	Letters to physicians to collaborate		Text messaging[7]; Waiting area reminders	Workflow optimization; Cologuard Health Equity Program[8]	Follow-up on abnormal home based kits	

[1]Central Ozarks Medical Center (COMC); [2]Community Health Center of Central Missouri (CHCCM); [3]Health Care Collaborative (HCC); [4]Pre-Visit Planning; [5]CHW: Community Health Workers; [6]Reminder Calls: for unreturned FIT kits; [7]Text Reminders: patient due for CRC screening; [8]Exact Science Health Equity Program: provides free Cologuard to qualifying un/underinsured patients; [9] Quarterly Infographics

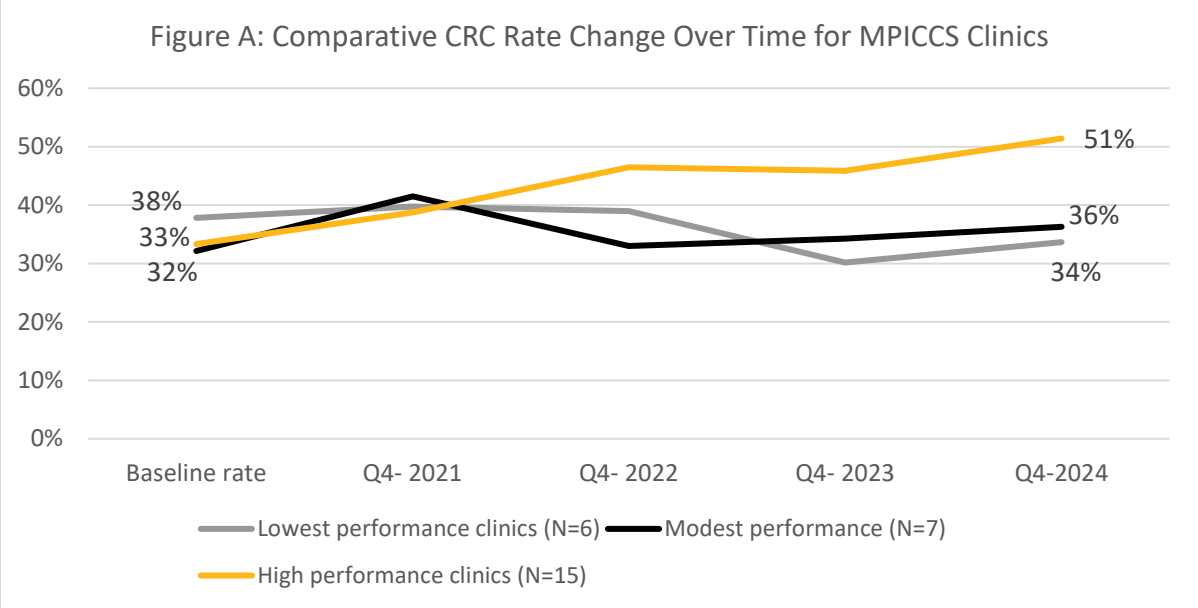
Part IV: CRC screening rates improved overall

CRC screening rates improved by 10 percentage points on average for MPICCS partners and by 18 percentage points for the top 15 clinics.[5] The average CRC screening rate increased from 34% (baseline year) to 44% (2024 Q4) for all clinics and from 32% (baseline) to 51% (2024 Q4) for the highest performing clinics. While the 2024 rates are still below the Missouri state average (64%) and the federal Healthy People 2030 goal (72%), it is a marked increase for these partners. It is also higher than the 2023 national average for FQHCs (41%) and the 2023 average for Missouri FQHCs (35%).[6]

Average rate changes can obscure individual clinic performance. MPICCS clinics can be broken into three categories based on their CRC screening rate changes from baseline to 2024 (Q4). Over half of the clinics (15) are considered high performance clinics, with an average increase of 18 percentage points compared to modest performance clinics (4 percentage points), and lowest performance clinics (-4 percentage points). Clinics' baseline rate does not seem to be an indicator of their overall capacity for change. The lowest performing MPICCS clinics had a higher average CRC rate at baseline than high and modest performance clinics as shown in the chart below.

Table 4: CRC screening rates for high, modest, and lowest performance clinics

MPICCS clinic category	N	CRC rate absolute change range (baseline to 2024)	Average absolute rate change
All clinics	28	-11 to 37	10
High performance clinics	15	10 to 37	18
Modest performance clinics	7	0 to 9	4
Lowest performance clinics	6	-11 to -1	-4



[5] This analysis is based on data from 28 MPICCS clinics who joined the project in 2023 or earlier and for which screening data are available. Six partners joined in 2024 so only one year of data are available.

[6] 2023 National and Missouri FQHC CRC screening rates from *Missouri CRCCP Updates* presentation for the June 2025 Southeast Consortium.

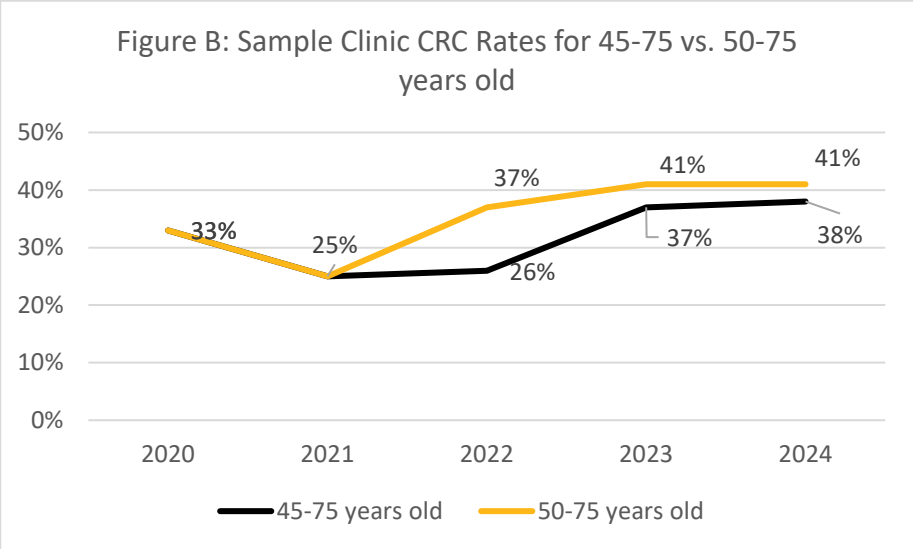
Table 5: MPICCS CRC Screening Rates by Clinic (baseline and annual quarter 4 data)

	Baseline year	Baseline rate	Q4 2021	Q4 2022	Q4 2023	Q4 2024	Absolute Change[7]	Relative Change[8]
Katy Trail Community Health								
Sedalia	2020	28%	33%	36%	36%	40%	12%	43%
Versailles	2020	29%	40%	41%	39%	40%	11%	38%
Warsaw	2020	24%	47%	52%	48%	47%	23%	96%
Marshall	2020	43%	58%	54%	36%	41%	-2%	-5%
Sedalia Main St.	2022	37%		36%	32%	36%	-1%	-3%
Central Ozarks Medical Center								
Mobile Medical	2021	15%	16%	17%	35%	32%	17%	113%
Richland	2020	36%	31%	32%	35%	35%	-1%	-3%
Camdenton	2020	33%	24%	31%	40%	41%	8%	24%
Osage Beach	2020	27%	21%	31%	34%	37%	10%	37%
Laurie	2021	18%		18%	14%	19%	1%	6%
Community Health Center of Central Missouri								
Jeff City	2020	45%	44%	45%	47%	48%	3%	7%
Linn	2020	47%	46%	59%	54%	55%	8%	17%
Fulton	2020	43%	58%	57%	64%	63%	20%	47%
California	2020	37%	52%	30%	50%	38%	1%	3%
Health Care Collaborative								
Buckner	2020	35%	41%	46%	47%	62%	27%	77%
Concordia	2020	29%	54%	71%	69%	66%	37%	128%
Lexington	2020	28%	25%	32%	20%	25%	-3%	-11%
Waverly	2020	36%	45%	45%	30%	25%	-11%	-31%
Carrolton	2024	35%				38%	3%	9%
ACCESS								
Aurora	2021	47%		51%	39%	58%	11%	23%
Joplin	2021	26%		23%	17%	26%	0%	0%
Lamar	2021	19%		25%	18%	27%	8%	42%
Neosho	2022	51%		57%	58%	66%	15%	29%
Cassville	2022	51%		55%	53%	63%	12%	24%
Anderson	2022	47%		35%	28%	40%	-7%	-15%
Monett	2024	42%				40%	-2%	-5%
Fordland Clinic								
Burrell	2022	38%		42%	51%	66%	28%	74%
Fordland	2022	45%		54%	60%	61%	16%	36%
Kimberling	2022	38%		41%	52%	53%	15%	39%
Community Clinic of Southwest Missouri								
Joplin	2022	0%			3%	17%	**17%**	**N/A**
Neighbor's Pharmacy						**Q1 2025**		
	2024	0%				6%	**6%**	**N/A**
Samuel U Rodgers Health Center								
Clay	2024	39%				47%	8%	21%
North Oak	2024	38%				36%	-2%	-5%
Downtown	2024	44%				52%	8%	18%
Cabot	2024	31%				38%	7%	23%

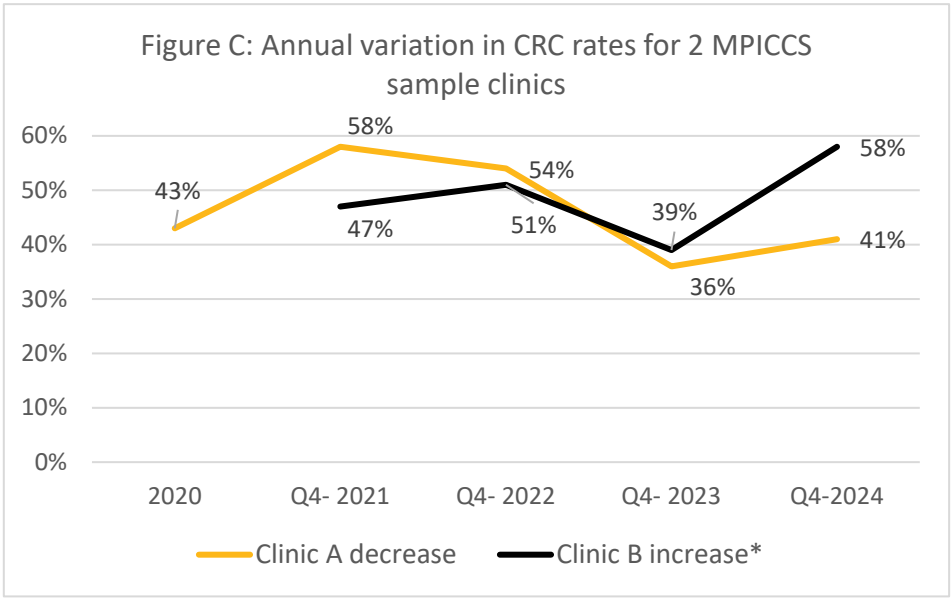
[7] "Absolute change" = 2024 (Q4) rate – baseline rate

[8] "Relative change" = absolute change / baseline rate

Change in age recommendations for CRC screening lowered the average CRC rate for most MPICCS partners. In 2021, the US Preventive Services Task Force (USPSTF) lowered the recommended age for CRC screening from ages 50 -75 to ages 45 -75, shortly after the MPICCS program began. While it did not take long for Missouri clinics to adopt the change, it did take a while to educate the public, who had previously received consistent messaging that CRC screening starts at age 50. As a result, screening rates for those aged 45-49 were lower than for ages 50–75, which brought the overall rates (for ages 45-75) down. For MPICCS, the difference in rates is evident for some clinics seen starting in 2022 and for others in 2023. See Figure B for sample clinic. differences between the age groups (analysis based on annual data rather than Q4 data.)



Overall rate changes can obscure annual improvements and challenges. Looking only at the start and end point of CRC rates also obscures some of the annual (and sometimes semi-annual) fluctuation that is inherent in health care. As shown in Figure C for Sample Clinic A –a clinic with an overall decrease—still had two years where its rate was higher than when it joined MPICCS. Clinic B—a clinic with an overall increase in rates—had one year when its rate dipped below baseline. Both these clinics (in different health systems) experienced changes in the EHR system/data migration, which affected their data collection and reporting, but in opposite directions.



*Clinic B's 2021 CRC rate is annual baseline, not 2021 quarter 4

Each clinic's story is different. Each one experienced a set of internal and external factors that affected their rates including changes in administration and/or clinicians or changes in EHR systems which disrupt the ability to monitor data effectively. Adding a new clinic to a health system can shift patient populations among clinics, relocate staff, and include new staff which can affect data monitoring as can challenges with transportation and colonoscopy procedure centers (see McElroy and Everett JNCI commentary, Appendix 5); surges of cases of COVID, flu or pneumonia, etc.

Individual clinicians show significant improvements in CRC screening rates

MPICCS tracked CRC screening rates for 89 MPICCS health care clinicians (physicians and nurse practitioners). MPICCS noted marked improvement by some individual clinicians as shown in Table 6 below. In absolute terms, clinicians improved their CRC screening rates by as much as 36 percentage points from baseline to 2024 (Q4). In terms of relative change, one provider improved their rate by 533%. While this is not the story for every provider in every MPICCS clinic, it shows the impact of MPICCS interventions when working one-on-one with clinics and clinicians.

Table 6: Individual provider with largest improvement in CRC screening rates by health system (baseline to 2024 Q4)

Individual provider with largest improvement in CRC screening rates by health system	Absolute Change*	Relative Change**
Katy Trail Community Health	36%	0%
Central Ozarks Medical Center	32%	533%
Community Health Center of Central Missouri	20%	100%
Health Care Collaborative	30%	110%
Access	12%	131%
Fordland Clinic	18%	39%
Community Clinic of Southwest Missouri: Joplin	20%	290%
* "**Absolute change**" = 2024 (Q4) rate – baseline rate **"**Relative change**" = absolute change / baseline rate		

With coaching, clinical residents improved their CRC screening rate from 14% to 48%. Residents in one health system had a baseline CRC screening rate of 14% in 2021. To support improvement, MPICCS met with them to discuss potential barriers and provide CRC education materials, such as pocket cards. MPICCS also offered expert support by coordinating a meeting with Dr. Pierce, MD, during which residents discussed general CRC screening practices and the importance of proper documentation. Additionally, MPICCS practice facilitator attended an EHR training and shared feedback on enhancing training materials based on chart review findings. These combined efforts—along with the support of the health system's attending physicians and the residents' own motivation—led to an increase in the CRC screening rate to 48% in the last quarter of 2024.

The MU project provides great support and assists with guidance, providing data analyzation and infographics that take time burden off of health center, provides educational resources, etc. -MPICCS survey participant quote

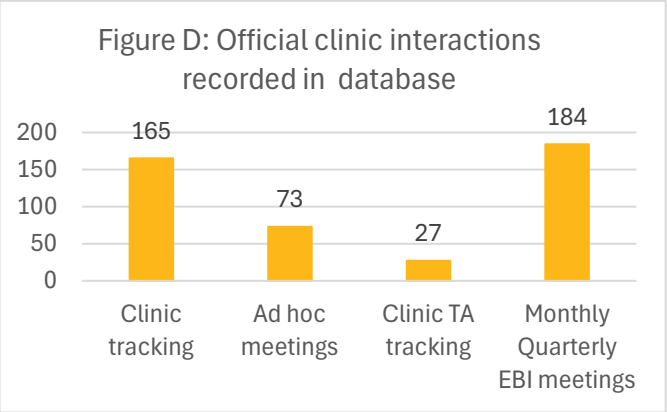
Part V: Practice-facilitator based approach

MPICCS has a practice facilitator-based approach to improve CRC screening rates. Three highly effective practice facilitators (all with experience practicing health care in clinical settings) are the heart of the project along with a highly skilled project coordinator who provides side-by-side administration and project implementation. MPICCS has developed a process to (1) recruit and onboard clinics (2) facilitate clinics through EBI selection and implementation; (3) support clinics to collect, report and understand relevant patient and screening data; (4) provide supplemental data, education, and learning opportunities; (5) develop statewide infrastructure for sustainable CRC screening support. Practice facilitators use a practical one-on-one approach: identifying each clinic's needs, meeting them where they are, providing appropriate education and technical support, and creating a feedback loop for constant and ongoing improvements based on mutual respect and support. They support each individual EBI at each clinic as well as supplemental and non-required elements as shown below. They serve as network connectors, facilitating the exchange of successful strategies and solutions identified by individual health systems. Finally, practice facilitators enhance care quality by systematically addressing questions and performance gaps identified during site visits.

High-touch approach integral to practice facilitator model

Practice facilitators are in contact with several clinics every day by email, phone, text, in-person visits, and virtual interactions. While many of these go unrecorded, practice facilitators record specific interactions considered "official" in a REDCap database. Over the five-year project, practice facilitators recorded 449 official interactions[9], broken down into four categories: clinic tracking (165 interactions); ad hoc meetings (73); clinic TA tracking (27); and Monthly/Quarterly EBI meetings (184).

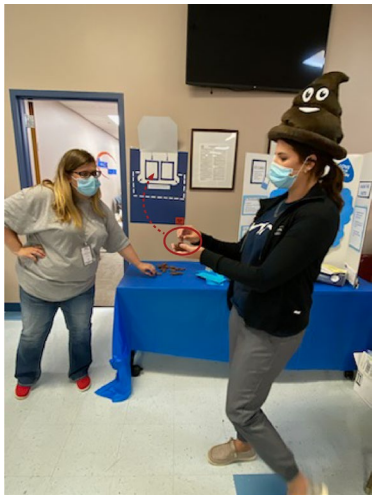
Clinic tracking: MPICCS has a very specific onboarding process that includes 17 potential points of interaction and information exchange including orientation meeting, clinic champion selection, readiness assessment follow-up meeting, EBI introduction and selection, clinic implementation planning summary approval by CDC, etc.



Clinic TA tracking: TA tracking meetings focus on the technical aspects of project management and implementation, such as workflow, optimizing the colonoscopy referral process, EHR issues, etc. Importantly, it also includes targeted meetings with Dr. Jean Wang (Washington University Professor of Medicine and Professor of Surgery & gastroenterologist) and Dr. Robert Pierce (University of Missouri Health Care family physician with expertise in electronic health records).

Monthly/Quarterly EBI meetings: These are the core of MPICCS project communication allowing for frequent, planned in-person or virtual meetings to discuss the status of all EBIs, identify barriers and challenges, and find solutions. MPICCS has monthly meetings with most health systems, only going to quarterly meetings based on the request of a health system. In fact, during a collaborative meeting involving all MPICCS sites, participants indicated a preference for monthly meetings to maintain focus and accountability around colorectal cancer (CRC) screening efforts. The two health systems with the longest MPICCS history have each had 27 Monthly/Quarterly EBI meetings with practice facilitators.

Ad hoc meetings: this is a category that includes meetings to discuss things like chart review follow-up, determining best times to implement EBIs, discussing March events, etc.



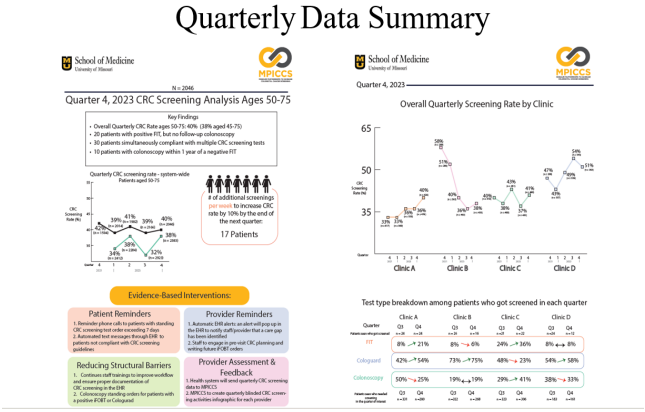
The image on the left is from one of the partner clinics in which they have an educational day with games to have fun with CRC screening elements. These fun elements were embraced in many different artistic ways. For example, one staff member created a skeleton installation for getting screened and posted on their Facebook site (image on the right).

[9] This includes 76 interactions with health systems that withdrew from the program.

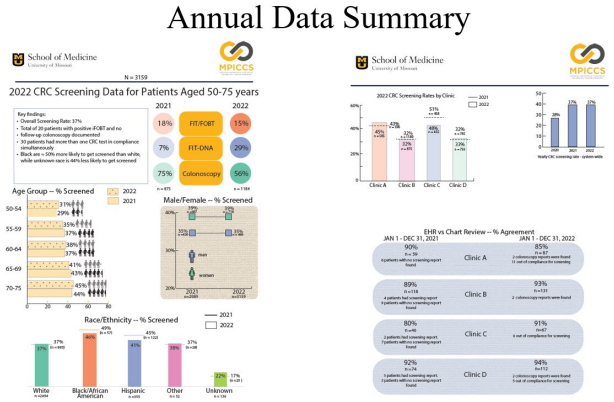
Wide range of EBIs and value-added activities requires dexterity from MPICCS team.

Implementing the wide range of EBIs requires a wide range of technical expertise by the MPICCS team. The specific EBIs that are highlighted in this section are meant to give an idea of the breadth of knowledge and intense activity required for each intervention. These particular EBIs synthesize complex data into simplified and specific reports. MPICCS practice facilitators and the coordinator provide all the data analysis in-house. While they seek outside expertise as needed, this team has developed strong data analysis skills in addition to other technical skills like data mapping, EHR management, and workflow analysis. **See Appendix 3 for full-sized images of each of the documents in this section.**

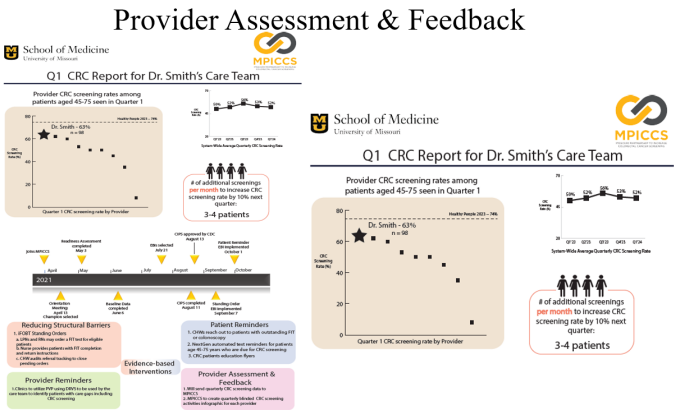
Clinic Quarterly Data Reports. The MPICCS team produces quarterly reports for 34 clinics (8 health systems) each year. This amounts to 32 system level reports per year with 132 different clinic-level analyses. The clinic reports include quarterly changes in CRC screening rates for 2 age groups (45-75 and 50-75); quarterly trends in screening rates for each clinic over 4 quarters; changes from last quarter in percent screened by test type (FIT, FIT-DNA, Colonoscopy); number of screenings needed to increase rate by 10% for the health system; and a summary of the health systems' EBIs. Key findings were also listed to bring attention to action items such as the number of positive screening tests with no follow-up colonoscopies.



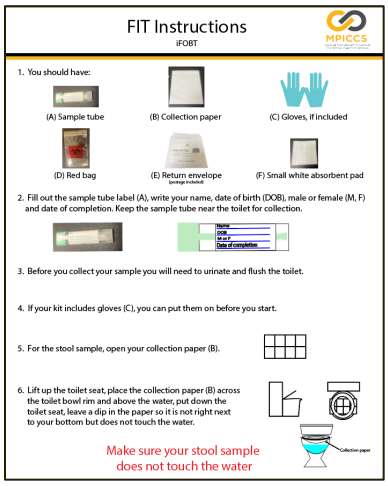
Annual Clinic Data Reports. These reports provide an overview of the past year. Besides providing a comparison to the previous year's screening rates by screening test type, screening rates are shown by age groups, male/female, race/ethnic groups. A logistic regression model was conducted to examine whether CRC screening rates differed by age group, sex, or race/ethnicity. The model adjusted for additional variables such as clinic site, to account for potential confounding factors. Results were shared with clinic leadership to support data-informed strategies for improving screening uptake. The other important feedback given in the annual report was results from the chart reviews by clinic and comparison with the previous year. Finally key findings were also listed to bring attention to action items such as the number of positive screening tests with no follow-up colonoscopies.



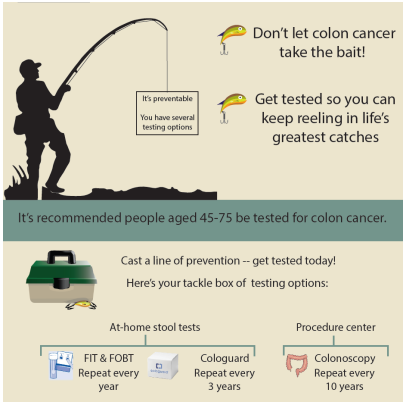
Provider Feedback Quarterly Reports



MPICCS produced quarterly reports for 89 clinicians, which amounted to 356 individual quarterly reports in just one year. The Provider report included average quarterly CRC screening rates of the health system; a ranking of providers based on their quarterly screening rate; number of patients needed to be screened per week or month to improve their screening rates by 10% in the next quarter; and a summary of the health systems' EBIs. Interestingly, the practice facilitators asked whether to include names of clinicians on the infographics and were instructed to include their names. Some partner clinics also suggested that the provider feedback infographic should be labeled for the clinician and their team—that is, *Dr. Smith's Care Team Feedback*—as opposed to labeling it for the clinician alone.



FIT Kit instructions. The MPICCS team identified unclear FIT Kit instructions as a barrier for patients to complete at-home CRC screening tests. To address this, the MPICCS team systemically reviewed several FIT kits used by health systems as a team and rewrote the instructions in clear, easy to read formats. This process was very time-consuming and often involved the full staff pouring over instructions during weekly staff meetings to ensure clarity, consistency, and conciseness.



Themed infographics. The MPICCS team developed a series of infographics targeting specific audiences including women, men, and pet lovers. Each infographic was carefully developed with the Family Community Medicine marketing department to provide both accurate and understandable information and to be visually appealing. While each infographic does have a targeted theme, each one is also relevant to all audiences. The MPICCS team tailored each themed infographic by including the health system logo and adding the clinic names and contact information.

Part VI: Chart review concordance

Annual chart reviews are recommended—but not required—by the CDC. MPICCS chose to continue conducting them annually with all active partners. These reviews enable real-time collaboration between the MPICCS team and clinical staff, help identify discrepancies in colorectal cancer (CRC) screening data between the electronic health record (EHR) and the data reported by health systems, uncover workflow and documentation issues, and provide targeted guidance for improvement. For example, during one review, MPICCS identified significant discrepancies in colonoscopy data within a health system. The root cause was the lack of a standardized process for labeling and documenting colonoscopy reports across clinics, leading to underreporting of completed colonoscopies. To address this, the MPICCS team collaborated with the referral department and clinic managers to develop a colonoscopy referral guide. The guide clearly defined each team member's role, outlined standardized documentation and labeling practices, and detailed the steps needed to close the referral loop. This resource helped the health system streamline its referral process and improve the accuracy of its colonoscopy documentation.

Chart review concordance average

91%

for 8 MPICCS health systems 2020-2025

The MPICCS team conducted 30 chart reviews from 2020-2024. The team randomly selects about 10% of the eligible patient panel from annual data by clinic. These patients are then 'looked up' in the EHR to determine if the CRC screening status data sent to MPICCS matches what is found in the EHR. On average across health systems and years, there was 91% concordance between the CRC screening data provided to MPICCS by clinics and the data found in the EHR 'look up', with a range of 82%-99%. Among the individual clinics, three patterns of concordance were observed. About 1/3 of the clinics got better each year (higher concordance over time), 1/3 (relatively no change over time), and 1/3 had inconsistent concordance over time.

Table 7: Chart review concordance 2020-2024

	2020	2021	2022	2023	2024	N (range)*
Katy Trail Community Health						
	90%	82%	92%	89%	95%	229-469
Central Ozarks Medical Center						
	87%	89%	89%	91%	89%	380-563
Community Health Center of Central Missouri						
	92%	95%	94%	93%	97%	226-311
Health Care Collaborative						
	83%	97%	94%	90%	89%	104-201
Access						
		99%	96%	90%	89%	252-440
Fordland Clinic						
			85%	86%	87%	180-270
Community Clinic of Southwest Missouri: Joplin						
				92%	91%	35-39
Samuel U Rodgers Health Center						
					89%	404

* Number of charts reviewed at each chart review session

Sample MPICCS email to health centers re: chart reviews

Dear Health System Administrator,

The MPICCS team is planning to conduct a chart review of CRC screening data for the XX Health System. This is an annual activity of our team for every health system in MPICCS project. The purpose of the chart review is to discover any gaps in workflow as well as problems in utilizing EMR that lead to the inconsistency of CRC screening data.

Our team randomly selects about 10% of the eligible patient panel from your annual data (2024) by clinic. These patients are then 'looked up' in the EHR to determine if the CRC screening status matches between the spreadsheet you sent us and what we find in the EHR.

If the administration of XX Health System does not feel comfortable with our staff having access to your EHR on site, we totally understand. The way we then need to do the chart review is by involving XX Health System staff on the day of the chart review.

One of our other systems, also prefers that their staff work with us to do the chart review. How this happens is that about 4-5 clinic people from SURHC and our team (of 4-5) meet in a room at XX Health System. The XX Health System clinical staff bring their computers and we have our laptops. Each pair (one XX Health System person and one MPICCS person) work together. The MPICCS person tells the XX Health System person the MRN, DOB and/or name of the patient, from our list of randomly selected patients. The SURHC person, then searches the EHR for that patient to determine the CRC status. MPICCS staff records the results (matched or did not match and if not matched (date of CRC screening, missing date or report, misinterpretation of results, etc)). This process with staff actively involved in the chart review has been incredibly informative for the system in quickly identifying mapping issues, etc.

After we complete the chart review, we send XX Health System a report and spreadsheet with all the patients who did not match so your team can 'fix' the problems.

Just as a FYI: if we are given access to the EHR or are paired up with a staff person, we would prefer to sign a confidentiality agreement. If we have read only access and we do the chart reviews, someone from the clinic is in the room at all times. This is helpful, when doing the chart reviews as that person can help us navigate the system to find results.

Part VII: Value-added MPICCS activities

The practice facilitator model and the MPICCS team's intense one-on-one approach allowed them to identify a range of issues that were challenges or barriers to CRC screening implementation, beyond traditional support of EBIs. As with EBIs, each individual value-added activity that the MPICCS team adopts is highly detailed and time intensive. Each activity, however, shores up at least one barrier to CRC screening for eligible Missourians. See Table 8 and next page for highlighted activities.

Table 8: Selected value-added activities

<table>
<tr><td>Tailored local safety net resources
MPICCS provides each partner with a regionally customized list of safety net clinicians, colonoscopy clinicians, and charity care resources.</td><td>Access to statewide networks, grants, and conferences
MPICCS partners invited to become members of Rural Health Research Network, MO CRC Roundtable, ACS funding opportunity, Department of Health and Human Services statewide screening initiative (see Appendix 6) & the PANDEMIC (MU grant)</td></tr>
<tr><td>Inflatable walk-through colon
MPICCS loans out an inflatable walk-through colon that shows healthy and unhealthy tissue as an interactive educational tool for partners.</td><td>Awards dinner and project conference
MPICCS presented awards at a St. Louis dinner on Oct. 24, 2024, and hosted a wrap up event at Lake of the Ozarks June 5-7, 2025 for all partners</td></tr>
<tr><td>Patient Navigator program with MU Sinclair School of Nursing
Nursing students help MPICCS patients get access to follow-up CRC screening through a unique college elective course, designed by MPICCS team</td><td>Translations of CRC home-based screening test instructions, educational material, and patient reminders into 7 languages
Spanish, Russian, Pashto, Dari, Arabic, Hmong, Chuukese</td></tr>
<tr><td>Newsletter
MPICCS provides a quarterly newsletter with up-to-date information on clinical best practices for CRC screening</td><td>Coordination with colonoscopy clinicians and Exact Science
MPICCS reached out to colonoscopy clinicians to improve the referral process and allow MPICCS clinics to prescribe the colonoscopy prep. They coordinated with clinics to implement Exact Science Health Equity program to improve patients' access to the home-based test</td></tr>
<tr><td rowspan="2">Representation on key national and regional committees
Chloe Zink was member of the Planning Committee for 2025 Southeastern CRC Consortium; the Practice Facilitator were invited speakers on the Georgia ECHO; and Dr. McElroy is cancer screening workgroup co-chair at National Association of Chronic Disease Directors</td><td>Nurse CRC competency CME test
MPICCS created a CME approved test partner clinic nurse</td></tr>
<tr><td>Site for 3 CDC supported RTI International evaluation reports
MPICCS acted as liaison between RTI and selected MPICCS clinics supporting sites to transfer relevant local data to RTI</td></tr>
<tr><td>Transportation
MPICCS brought partners access to Angel Flight, Uber Health and Health Tran</td><td>Media
MPICCS developed 18 stories that ran in local media and was featured in a ReachMD podcast</td></tr>
</table>

Highlighted value-added activities

Nursing students link Missourians to CRC screenings and prevention service at no cost through novel partnership with MPICCS. In the words of the MPICCS team themselves, "MPICCS launched a patient navigator program in partnership with the University of Missouri (MU) Sinclair School of Nursing (SSON). Since Spring 2023, this program has successfully bridged communications between clinics, colonoscopy procedure centers, and patients. The program ensured seamless colonoscopy completion for patients at no additional financial cost to health systems. The MPICCS team works closely with colonoscopy procedural centers in the patient navigator program with the nursing students to mitigate patient- and system-level challenges for successful colonoscopy completion." MPICCS has provided 20 nursing students with real-world clinical experience. The students receive approximately 20-30 hours of training including an 8-hour onboarding session and their remaining hours (60-70 hours) are working directly with systems and patients. They must complete a total of 90 hours in the semester. MPICCS also provides the nursing students office space, phone lines, and direct supervision.

Pilots volunteer to transport patients in small private planes through Angel Flight. Angel Flight https://www.angelflightcentral.org/ As described in their website, Angel Flight "volunteer pilots and supporters provide hundreds of free flights throughout the Midwest for families who need access to specialized health care, camps for special needs, disaster response efforts, and other compassionate reasons." Angel Flight is powered by volunteer pilots. MPICCS has partnered with them both transporting the inflatable colon to community events hosted by partner clinics and for the MPICCS partners' patients in need of transportation for CRC screenings such as colonoscopy.

Inflatable walk-through colon "We call him Collin" – MPICCS team member. MPICCS purchased a giant inflatable walk-through colon (\10'x10'x20'; more than 10 people can fit inside it) that shows healthy and diseased colon tissue. It is a fun and interactive educational tool, and MPICCS has loaned it out 17 times to MPICCS partners for health fairs and other educational opportunities. MPICCS staff have developed a checklist for setting it up; supplementary educational handouts; and an agreement form for use of the colon. Clinics are responsible for transporting the inflatable colon to and from events, and MPICCS assists when necessary (once on Angel Flight) and occasionally participate in the educational event.

MPICCS supported three CDC funded RTI International evaluation projects

Missouri partnered on CDC-funded evaluation projects led by RTI International three times. For each project, the MPICCS team served as a liaison between RTI International and the participating MPICCS clinics—providing insight into local clinic contexts, helping shape feasible data requests, coordinating data collection, and facilitating communication. The three projects included: (1) a qualitative study examining clinics' responses to COVID-19; (2) an assessment of the cost-effectiveness of implementing specific interventions or enhancements; and (3) an evaluation of strategies used by clinics to improve follow-up colonoscopy completion after abnormal stool test results. Data from Missouri clinics were combined with data from other CRCCP sites and contributed to several RTI-led publications and presentations, including one co-authored by Dr. Jane McElroy, as noted in Appendix 7.

Media

18 news stories in local media. MPICCS was very successful at getting the word out about its own work, the importance of CRC screening, and related health issues through local media outlets in Missouri. In total, 18 news stories ran in small and large outlets—from the Pulaski County Weekly and the Branson Globe to the St. Louis Post-Dispatch. MPICCS staff and the MU Department of Family Community Medicine Communications wrote or ghost wrote these stories or pitched them to local reporters and monitored them. See Appendix 9 and 10 for these stores.

Featured ReachMD podcast. MPICCS was invited to be interviewed for ReachMD's ***Spotlight On: Colorectal Cancer Screening*** series. ReachMD https://reachmd.com is a prominent learning platform for physicians and other healthcare professionals, which features peer-to-peer learning. Drs. Jane McElroy, Jean Wang, and Nuha Wareg were interviewed for the 30-minute episode recorded on May 20, 2025. The episode, called Improving *Colorectal Cancer Screening Rates: Strategies for Equitable* Care, can be found here https://reachmd.com/programs/clinicians-roundtable/improving-colorectal-cancer-screening-rates-strategies-for-equitable-care/33057/

Part VIII: 2024 MPICCS survey results

The external evaluation team conducted an online survey of 30 clinics[10] from October 17 to November 8, 2024. The survey was designed in collaboration with the MPICCS Project Team to better understand the aspects of MPICCS that are sustainable, beneficial, or challenging. The survey was segmented so that administrative staff, patient-facing staff (including but not limited to health care clinicians) and ancillary/support staff answered questions targeted to their specific roles in the clinic and with respect to MPICCS. The clinics were offered an incentive of a catered lunch if 77% of their staff members completed the survey.[11] Each group was defined, and titles were provided so survey respondents could select their respective role.

- **Administrative staff** includes CEO, COO, CFO, QI Director, IT Director, and Data Analyst.
- **Patient facing staff** includes MD, DO, Resident, PA, LPN, APRN (NP), RN, MA, CHW, social worker, care coordinator, patient navigator, referral coordinator, clinic manager.
- **Ancillary / support staff** includes lab supervisor, lab tech, front desk receptionist, medical office assistant, and pharmacist.

Information about the survey respondents

The survey was sent to 596 clinic staff members through an anonymous online link by health care administrators at each respective health system that had been with MPICCS for 2 or more years. All survey respondents were asked to identify their primary clinic(s), their role within the health system, and the size of their clinic. Then they were asked a qualifying question: **"Have you been involved with the MU Colorectal Cancer Project[12] in any way? Yes or No."** Only those respondents who answered "Yes" (n=244) proceeded through the entire survey. Those who answered "No" were redirected to exit the survey and thanked for their participation. The response rate for the survey (those who "qualified" and who completed the survey) was 82% (n=199).

Table 9: Survey respondent roles

	Number	Percentage
Total completed surveys	199	100%
Administrative staff	35	18%
Patient facing staff	127	64%
Ancillary/support	37	19%

Patient-facing staff represents 64% of the survey respondents. The remainder of respondents is evenly distributed between administrative staff (18%) and ancillary/support staff (19%).

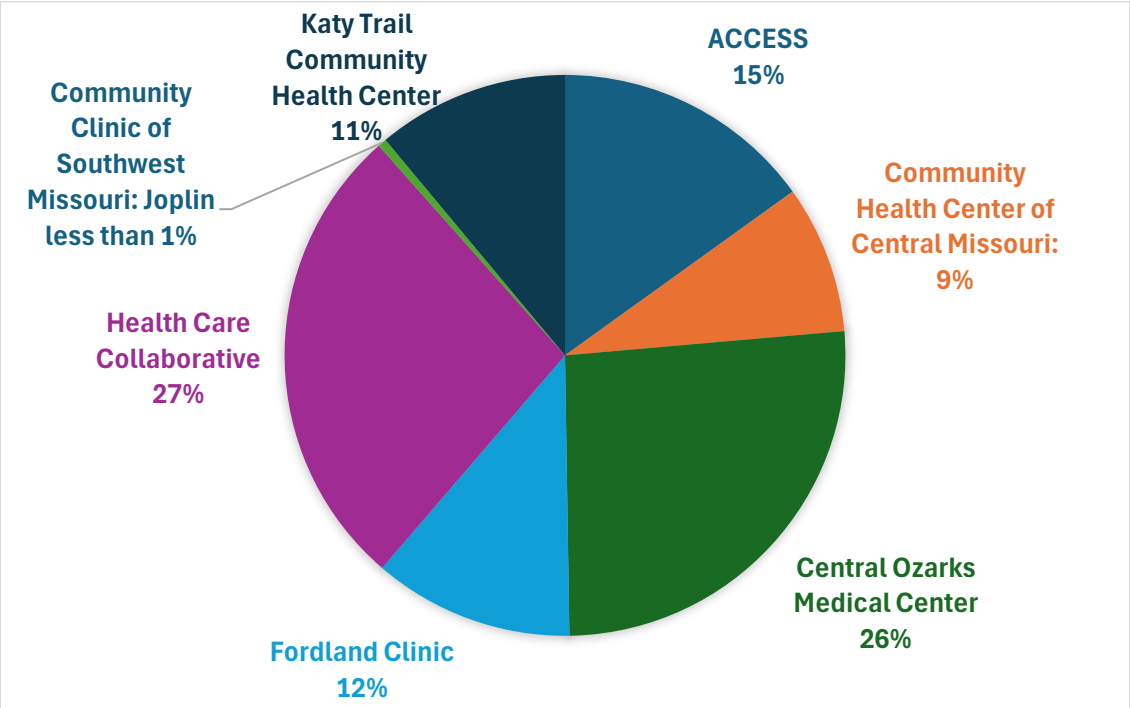
[10] Samuel U Rodgers (4 clinics) and Neighbors Pharmacy joined the project in 2024, so they were not included in the survey. Webster County Health Department was also excluded.

[11] MPICCS chose 77% because the original Healthy People 2030 colorectal cancer screening target was 77%.

[12] In the field, MPICCS partners refer to the project as the "MU Colorectal Cancer Project." This terminology was adopted in the survey and is used throughout this section of the report.

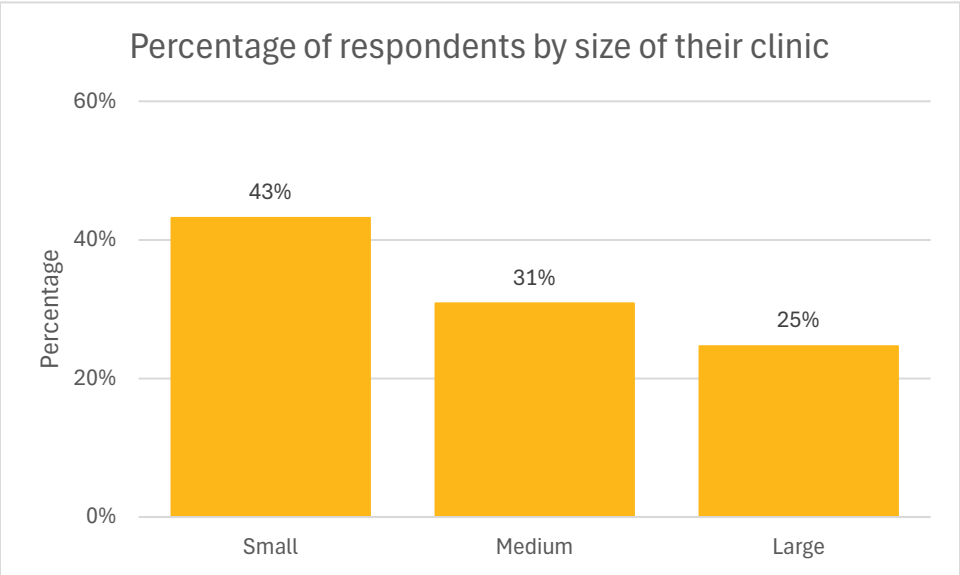
Health systems All health systems surveyed were represented, but not equally. Together, Health Care Collaborative (27%) and Central Ozarks Medical Center (26%) make up just over half of all respondents combined. Community Clinic of Southwest Missouri made up less than 1% of the respondents.

Figure E: Percentage of survey respondents by their health system (N=199)



Clinic size The largest proportion of survey respondents who answered this question work for small clinics (43%). One third of respondents (31%) work for medium clinics, and one-fourth (25%) work for large clinics. Many administrators serve all the clinics in a health system, but their office was typically located in the 'largest' clinic.

Figure F: Percentage of respondents by clinic size (N=144)



Small = 1-3 full-time equivalent Primary Care Clinicians (PCCs) including residents

Medium = 4-6 full-time equivalent PCPs including residents

Large = 7 or more full-time equivalent PCCs including residents

Survey result highlights[13]

Overall awareness of resources Survey results show that most administrative staff were aware of the impact of the MPICCS project, which speaks to its broad reach across health facilities. Half of the nursing staff and most clinicians, however, were unaware of MPICCS's impact on improving clinical care.

Question 1: Which of these MU Colorectal Cancer Project quality improvement (QI) resources for improving CRC screening do you believe has been helpful?

- Funding provided to health system/clinic for implementing the evidence-based interventions (EBIs)
- Funding for follow up colonoscopies for uninsured and underinsured patients
- Information to apply for / obtain supplemental funding
- EHR optimization including advice for mapping, alerts, proper documentation
- Annual chart review validating colorectal cancer (CRC) screening rates
- Technical assistance extracting, analyzing and understanding data regarding CRC screening
- Guidance for integrating EBIs into existing clinic workflows
- List and contact information for colonoscopy safety net resources
- Educational material about the importance of CRC Screenings
- Infographics about clinics' CRC screening performance by clinic and by health system
- Clinician-specific feedback infographics their individual CRC screening rates
- Sharing strategies for best practices in implementation of your selected EBIs
- Using inflatable colon for community outreach and education
- Opportunities to meet other clinics, professionals, health care organizations
- On-site professional development provided by MU Colorectal Cancer Project staff

Survey respondents were asked to rate each resource based on the following choices:

- Not helpful
- Helpful, but not used by clinic/s
- Helpful, and used by clinic/s
- Not aware of this resource
- Not familiar with this individual element or NA to my role

Helpfulness and usefulness. The fifteen resources were universally found to be helpful and used for improving CRC screening rates.

Awareness of resources. Approximately 9%-15% of administrative and patient-facing staff were unaware of resources, with no real difference in overall awareness between the two groups. When looking at specific QI activities, however, there was some difference between the two groups. A higher proportion of patient-facing staff were not aware of QI activities that addressed infrastructure (chart reviews for mapping concordance; technical assistance for extracting, analyzing and understanding data; integration of EBIs into workflow; and local safety net resource documents) compared to administrative staff.

Resources that are helpful but not used. There was also a disconnect between patient-facing and administrative staff regarding the resources they found helpful but not used. Between 20% to 35% of patient-facing staff reported that resources were helpful but not used compared to less than 6% of administrative staff. These responses did not vary by health system, by patient-facing role or by the size of the clinic.

[13] Data analysis and interpretation for this section was provided by Dr. Jane McElroy (MPICCS Project Director) and Jamie Smith (University of Missouri Family Community Medicine, Lead Research Analyst).

Question 2: How difficult was it for your clinic care teams to implement the selected EBIs (evidence-based interventions) into their workflows?

Scale of 1-5 where 1 is "very difficult" and 5 is "very easy" to implement.

- **Patient reminders** (e.g., return dates on FIT kits, flyers, table stands exam room reminders, birthday cards, text reminder messages, phone calls)
- **Provider reminders** (e.g., pre-visit planning, huddles, EHR alerts, pocket cards)
- **Provider assessment and feedback** (e.g., incentive pay for screening improvements, quarterly provider infographics)
- **Reducing structural barriers** (e.g., gas cards for transportation, gift card for chaperone, financial assistance from charity or MU grant)
- **Small media** (e.g., social media posts about CRC screening and community outreach events, inflatable colon, patient educational videos)

Both the administrators and patient facing staff agreed that patient reminders, provider reminders, and provider assessment/feedback was easy to implement (mean range 3.80-4.1). However, significant differences were seen between the two groups for addressing structural barriers and use of small media. Patient-facing staff felt that addressing structural barriers and small media was less easy to implement (mean 3.6 for both) compared to administrative staff (mean 4.2 for both). Albeit, both groups felt neither one was difficult. No differences were noted between the different health systems nor the size of the clinic.

Question 3: How burdensome was the MU Colorectal Cancer Project on your clinic care teams workload?

Scale of 1-5 where 1 is "very burdensome" and 5 is "not at all burdensome."

- New colorectal cancer screening tasks
- Lack of clarity in how to implement the task
- Use of new strategies for navigating/ educating patients
- Meetings with MU Colorectal Cancer Project team
- In-person visits from MU Colorectal Cancer Project team
- Providing chart review accommodations for MU Colorectal Cancer Project team
- Emails from MU Colorectal Cancer Project team
- Effort to schedule meetings with MU Colorectal Cancer Project team
- Use of additional patient resources for colorectal cancer

The burdensomeness of integrating MPICCS tasks into clinical care workload was deemed minimal by all types of staff (administrative, ancillary/support, and patient-facing staff). For example, almost three quarters of survey respondents report little burden in implementing new CRC screening tasks. There was no difference by size of clinic or health system. The most burdensome activities appeared to be fielding emails from MPICCS and scheduling in person meetings, with 40% of the staff indicating that these were "somewhat burdensome" or "neutral."

The overall positive response parallels the response to the question of helpfulness of the EBIs. Most suggested that EBIs were helpful, and it seems that these were also not overly burdensome in a busy clinic enterprise. In other words, performing these tasks fit the clinical staff's jobs.

Administrative staff logistics questions

a. Thinking about the MU Colorectal Cancer Project's engagement efforts to support positive change, how would you rate the following (less, about the same, more):

- Number of emails
- Number of in-person meetings
- Data request (quarterly)
- Direct feedback on clinic performance related to colorectal cancer screening (i.e., key findings on infographics, data mapping issues, individual site visits)
- Number of site visits to individual clinics

Survey respondents from five health systems indicated that engagement efforts should remain about the same. Respondents from two health systems indicated that they would like less communication by all modes, except for site visits to individual clinics.

b. Who do you think should routinely be at the table for effective implementation of CRC screening efforts?

People who should be at the table, in order of ranking, were QI director, at least one clinician, at least one nurse, a data manager, and CHW. This ranking was similar between top administrators (CEO, CFO), and middle management administrators.

c. How difficult is it to get 'everyone at the table' for MU Colorectal Cancer Project check-in meetings?

All sites except one felt it was somewhat difficult but possible to get everyone at the table for the check-in meetings.

d. MU Colorectal Cancer Project sends the providers assessment and feedback infographics. What would be the most helpful way to receive these?

- One PDF for each clinic with all their providers (36%)
- One PDF for each provider (50%)
- One PDF for all providers in the health system (14%)

The best way to share provider assessment and feedback seems to be site specific. Even within a health system, different people had different opinions about what worked best. A one size fits all answer was not found.

e. How are the MU Colorectal Cancer Project provider assessment and feedback infographics shared? (same choices as above)

- Distribute at staff meeting with discussion (top choice)
- Distribute at staff meeting without discussion (2nd choice)
- Distribute by email to clinician without any discussion
- Distribute by email to clinic manager(s) without any discussion
- Discuss at performance evaluation
- Do not distribute---review them from an administrative perspective

Distributing provider assessment and feedback infographics at staff meetings with discussion was the most popular response. Only one health system felt it would be helpful to discuss these at performance reviews.

f. In your opinion, what proportion of your patient-facing staff are aware that improving patient CRC screenings has a positive impact on health system quality metrics?

Although there was no statistically significant difference, CHWs and smaller health systems seem least aware that improving patient CRC screenings have a positive impact on health system quality metrics. Most health systems thought their staff were aware of this.

Clinical / patient-facing staff questions

Question 4: When you talk to your asymptomatic, average-risk patients about colorectal cancer screening, how often do you encounter the following among those who declined to get tested? Scale of 1 to 5 where 1 is "never" and 5 is "always."

- They no longer want to discuss colorectal cancer screening
- They have difficulty understanding the information I present about colorectal cancer screening
- They are unaware of the need for colorectal cancer screening
- They do not perceive colorectal cancer as a serious health threat for themselves
- Lack of adequate insurance coverage for colorectal cancer screening
- They are only aware of one option: colonoscopy
- They would rather not know (fear of knowing)
- They do not know that the Cologuard completed test can be picked up at their home

In general, community health workers (CHWs) ranked barriers as more common than did nurses, nurse practitioners (NP), or MD/DOs. MD/DOs ranked barriers less common than all the other patient-facing staff. While the differences among patient-facing roles were not statistically significant, it does point to a pattern where CHWs perceive more barriers to CRC screening than others in the system.

Role in health facility	Mean rating (where 1=never and 5 = always)
CHW	3.36
Nurses	3.06
NPs	2.94
MDs/DOs	2.78

Question 5: The following list is for reported barriers to successfully completing CRC screening (home-based tests or colonoscopy). Among your patients who are receptive to CRC screening, how many of your patients face the listed barrier?

- No reliable transportation for colonoscopy
- No chaperone for colonoscopy
- Lack of insurance to cover the cost of colonoscopy
- Language barriers making it hard to understand testing instructions
- Difficulties following the instructions necessary to complete the steps to get screened
- Be on a long waiting list for colonoscopy
- The procedure center for colonoscopy is too far away
- Unable to get off work for the 1-2 days necessary for colonoscopy prep
- Unable to get child or adult care help

According to the survey respondents, all the barriers are faced to some degree by patients at MPICCS clinics. "Lack of insurance to cover the cost of colonoscopy" was the most common barrier, whereas "long wait list" was the least common barrier.

Nurse practitioners reported (1) "lack of insurance" and (2) "difficulties following instructions necessary to complete the steps to get screened," as important issue for patients at a higher level of frequency than the other patient-facing clinical staff.

Different health systems ranked specific barriers differently. For example, "language barriers making it hard to understand testing instructions" was a higher concern for one health system compared to three other health systems. "Difficulties following the instructions necessary to complete the steps to get screened" was of higher concern for another health system, while "long waiting list" was a higher concern for a third health system.

Question 6. As a clinician, how much impact do the following situations have on your efforts to get patients screened for colorectal cancer?

Scale of 1-5 where 1 is "no impact" and 5 is "major impact."

- Having enough time to discuss screening with my patients
- Trust in the reliability and validity of FIT/FOBT
- Trust in the reliability and validity of Cologuard
- Do not offer home-based test and only offer colonoscopy
- Do not offer colonoscopy due to long wait list
- Few eligible average risk asymptomatic patients
- Comfort with using standing orders for FIT/FOBT tests
- The majority of patients I see are not my patient panel
- Someone else on the care team takes care of screening
- Difficult to find CRC screening status of my patient during the visit

Patient-facing survey respondents were asked to rank the impact of these clinical situations on CRC screening efforts with patients. This question gets at issues faced by clinicians that may inhibit effective CRC screening. Survey responses show that nurses were more likely to feel the encounter time was insufficient to discuss screening with patients, whereas MD/DOs and NPs were less likely to indicate visit length as an issue. Some key points that emerged from this question were:

- Among the 3 groups (nurses, NPs and MD/DOs), MD/DOs had the least confidence in Cologuard compared to NPs and nurses.
- Nurses felt the longer wait for a colonoscopy impacted CRC screening opportunities more often, compared to MD/DOs and NPs.
- Nurses also reported their comfort level using standing orders was lower than the other groups.
- The ease of finding patient data in the EHR was the most impactful for clinicians.
- Overall, nurses felt that issues faced by the clinical staff were more impactful on screening than the other groups.
- Overall, MD/DOs felt these issues had little impact on CRC screening.
- Clinics reported similar responses regardless of size of the clinic.

Question 7: In your health system, which of the following resources are available for patients who need to be screened?

Choices: available; unavailable; and not sure/Don't know

- Sliding scale to cover the cost of CRC screening
- Free FIT/FOBT test kits
- Free FIT/FOBT analysis*
- Assistance with transportation (e.g., gas cards, CHW assistance with coordinating rides)
- External grants/gifts/funds to support colorectal cancer screening
- Local charity care to cover colorectal cancer screening costs
- Multiple procedure centers available that would take your patients for colonoscopy

Among the different resources, sliding scale is a requirement of a FQHC; however not all patient-facing staff are aware of this resource. Assistance with transportation and external grants were the most well-known resources among respondents. Local charity care was least well known among both patient-facing and ancillary/support staff—even though local safety net guides were developed for each health care system. No difference in awareness of patient resources was observed between patient-facing and ancillary/support staff.

This question was analyzed for differences among MD/DOs, NPs, nurses, and CHWs. However, very few MD/DOs, NPs and CHWs answered the question. That said, it is clear that the few MD/DOs who responded to the survey had no knowledge of local charity available for their patients. One can surmise that this is outside of their role, and therefore it is not something they learn about. Rather, they may refer the patient to others, such as CHWs, to take care of the patient's financial needs. For the most part the MD/DOs had the least awareness of resources but, again, with such a small number of respondents this interpretation should be taken with caution. Overall, among the four groups, the nurses had the most awareness of resources as a group.

Among the clinics, the largest clinics have the least awareness of local charity opportunities for their patients. All other resources were known at about the same level for each size of clinic.

Among the six health systems, one health system stood out because it had the lowest awareness of local charity care. At the same time, only a few survey respondents from this health system were aware of procedural centers available to their patients. While it was not a statistically significant difference from other systems, it is a notable.

Perceptions of patient barriers to CRC screening compared to clinic resources for patient-facing and ancillary/support staff (correlation between questions 5 and 7)

An analysis of different parts of two different questions was conducted to better understand correlations between patient barriers to CRC screening (Question 5) and clinic resources (Question 7) for patient-facing and ancillary/support staff. The following issues were analyzed:

Barriers (Question 5)	Correlation	Clinic resources (Question 7)
No reliable transportation	<->	Assistance with transportation
Lack of insurance	<->	Charity care to cover cost
Lack of insurance	<->	Free Fit/FOBT
Lack of insurance	<->	Free FIT/FOBT analysis

Transportation. Data indicate that when survey respondents are more aware of transportation barriers for patients, they feel there are fewer resources to address them. This makes sense if the barriers are noted precisely because there are not enough resources to address them.

Lack of insurance. On the flip side, for insurance coverage and charity care or free CRC home-based kits, there was no correlation between staff recognizing lack of insurance as a barrier and their knowledge of free home-based kits.

Question 8. After receiving an abnormal FIT/FOBT or Cologuard results, how often do your patients share the following reasons for not completing a follow-up colonoscopy?

Scale of 1-5 where 1 is "never" and 5 is "always."

- Have difficulty following all the steps needed for completing the colonoscopy procedure
- No longer want to discuss CRC screening
- Have difficulty understanding the information I present about colorectal cancer screening
- Do not perceive colorectal cancer as a serious health threat for themselves
- Cannot afford or lack adequate insurance coverage for a colonoscopy
- Would rather not know (fear of knowing)
- Do not have reliable transportation for colonoscopy
- Do not have a chaperone for colonoscopy
- Think that the waiting list for colonoscopy is too long
- Think that the procedure center for colonoscopy is too far away
- Are unable to get off work for the 1-2 days necessary for colonoscopy prep
- Are unable to get child or adult care help for the 1-2 days necessary for the procedure

CHWs were much more attuned to "Have difficulty following all the steps needed for completing the colonoscopy procedure" when compared to MD/DOs, nurses, and NPs. This suggests the value of a patient navigator/care coordinator/CHW to help facilitate this process.

Medium-sized clinics seem to recognize barriers as more impactful than either small or large clinics.

One health system felt procedural centers available to them were too far away for patients. This seems to be a legitimate concern, since one major center is about an hour's drive one way from this system.

Perception of patient barriers compared to clinic resources for patients with abnormal FIT/FOBT or Cologuard results (patient-facing staff only) Correlation between questions 5 and 8.

Analysis of Question 5 (barriers for patients) and Question 8 (resources for patients with abnormal FIT/FOBT or Cologuard results) was conducted to better understand their correlation.

For patients with abnormal home-based tests that needed to get a colonoscopy, clinical staff recognizing barriers is strongly correlated with the clinical staff feeling more of their patients are experiencing these barriers.

This was not as clear, however, for average risk patients who were getting screened. Except for transportation, recognizing a lack of insurance and the solution of charity care to cover costs and free FIT test and/or analysis was not correlated. A lack of correlation suggests that clinical staff may not be aware of these barriers since they have a mix of economic status patients—not every patient needs safety net care or lacks insurance to cover medical costs. Clinicians may not focus on that aspect of their patient's demographics.

Standing orders

Question 9. Are standing orders for colorectal cancer screening in place at your clinic for asymptomatic, average-risk patients? Please provide a response for each group.

"Standing or protocol orders allow nurses, CMAs or other staff to execute orders according to a protocol without consulting a physician every time. For example, a standing or a protocol order that will allow anyone who requests an influenza vaccine to receive the flu shot without consulting a clinician."

	45-49 year olds	50-75 year olds
1. Standing order is in place for this for FIT/FOBT and /or Cologuard	Yes/No/Don't know	Yes/No/Don't know
2. Standing order is in place for colonoscopy if there is a positive FIT/FOBT and/or Cologuard	Yes/No/Don't know	Yes/No/Don't know

9a. Who can use your clinic's standing orders for colorectal cancer screening?

Choices: MD, DO, PA, NP, MA, Nurse (RN and/or LPN), Pharmacist, Other

9b. How are standing orders used at your clinic/health system?

Choices: I use them; Used by approved health care team; Restricted on a provider-by-provider basis and only used by selected health care staff

9c. How likely are you to allow your care team staff to use the standing orders?

Scale of 1 to 5 with 1 being "very unlikely" and 5 being "very likely"

9d. How comfortable are you using a standing order at your clinic?

Scale of 1 to 5 with 1 being "very uncomfortable" and 5 being "very comfortable"

Overall, 33% of MD/DOs use standing orders. The range, however, varies by health systems. One half of MD/DO use standing orders in one health system compared to just one-fifth for another.

Comfort level using standing orders for CRC screening was similar among the health systems. The correlation between comfort level and likelihood of using standing orders was very high for MD/DOs, PAs, and NPs.

The likelihood of using standing orders for home-based stool testing is similar for patients age 50-75 and age 45-49 across health systems. Two health systems were likely to use standing orders for colonoscopy; whereas, the other four systems are much less likely to use standing orders for colonoscopy.

EHR documentation

Question 10. How sufficient is your training on EHR documentation for quality measures?
Scale of 1-5 where 1 is "not sufficient at all" and 5 is "very sufficient."

Question 11. What works best for you to receive training on EHR documentation?
Choices: In person or zoom one-on-one training; Webinar; Video tutorial; Written manual / instructions; Other

Question 12. In your experience what has NOT worked well in terms of EHR documentation training?
Choices: In person or zoom one-on-one training; Webinar; Video tutorial; Written manual / instructions; Annual competency training; Other

Except for one health system, the training was considered sufficient for QI measures. The three most popular ways to receive training, in order, were in person or zoom one-on-one training (42%), followed by written instructions (33%) and then video tutorial (32%). Webinars did not get a favorable response. Interestingly, although written instruction was marked as a good method for training, it was also significantly correlated as a method that did not work well.

Colonoscopy referral process

Question 13. Do you have a role in the colonoscopy referral process?
Choices: Yes/ no

Question 14. How well do you understand your workflow process for colorectal cancer screening?
Scale of 1-5 where 1 is "not at all well" and 5 is "extremely well"

Question 15. When changes are made in the workflow for colorectal cancer screening and follow-up, is there an established process at your clinic to inform you in a timely manner about the changes?
Choices: Yes/ No / Don't know

Question 16. What are the typical method(s) used to keep you up to date on the new workflow process for colorectal cancer screening and follow-up?
Choices: By email; In a staff meeting; Word of mouth; Annual competency training; Other

Overall clinical staff feel they are up-to-date on the workflow, except for CHWs who feel less sure. CHWs feel less confident about both their understanding of the workflow and about knowing when changes are being made. Email seems to be the preferred method of communication among all but CHWs.

Overall, about half or fewer MD/DOs, NPs, and nurses said that updates on workflow occur in staff meetings, and few hear about it by word of mouth. This varies by health systems. Although the difference was not statistically significant, all respondents from one health system reported receiving timely information on workflow changes. In contrast, only 75%–80% of respondents from each of the other five health systems felt similarly informed. This trend supports the importance of timely communication regarding operational changes.

Part IX: Answering evaluation outcomes and sustainability questions

The Assessment Resource Center (ARC), the external evaluator for the MPICCS program, developed the following outcome questions jointly with the MPICCS team in 2020. These questions were developed to encapsulate the overall outcomes of the five-year project, including the elements that are most likely to be sustained. This section is based on the full project and therefore also leans heavily on information that is more fully described in other sections of this report.

The four questions addressed in this section are:

1. How much and what kind of change was caused by the implementation of EBIs and follow-up colonoscopy?
2. Which EBIs were the most effective for each clinic and why?
3. Which external factors influenced the adoption and success of EBIs and follow-up colonoscopy?
4. What aspects of MPICCS will be sustained after the program and how will they be sustained at each clinic? (examples include screening recommendations, EBIs, financial resources for the uninsured and underinsured, behavior change in clinicians and patients)

Evaluation Question 1: How much and what kind of change was caused by the implementation of EBIs and follow-up colonoscopy?

CRC screening rate improved by 10 percentage points on average for all MPICCS clinics and by 18 percentage points for highest performing clinics. The average CRC screening rate increased from 34% (baseline year) to 44% (2024 Q4) for all clinics and from 32% (baseline) to 51% (2024 Q4) for the highest performing clinics. While the 2024 rates are still below the Missouri state average (62%) and the federal Healthy People 2030 goal (72%), it is a marked increase for these health facilities. It is also higher than the 2023 national average for FQHCs (41%) and the 2023 average for Missouri FQHCs (35%).[14]

At least 5 EBIs implemented by each MPICCS partner. Each of the MPICCS health systems have implemented at least 5 EBIs out of the 6 EBIs (patient reminders, provider reminders, provider assessment and feedback, and reducing structural barriers, patient navigation, and small media). These EBIs have been the conduit for not only improving CRC screenings and follow-up colonoscopy but also for educating the MPICCS partners' staff and patients about the importance of CRC screening and prevention.

Tailored activities nested within EBIs. Several activities are nested within each EBI. These nested activities are often tailored to each health system and/or each individual facility. As described earlier, for example, the MPICCS team produces quarterly reports for 35 clinics (9 health systems) each year. This amounts to 36 system level reports per year with 140 different clinic-level analyses.

Practice facilitator model led to 449 official interactions between MPICCS team and clinic partners. MPICCS has a high-touch approach to working with health systems and clinics, leading to 449 interactions including clinic tracking (for orientation, onboarding, EBI selection and approval by CDC), ad

[14] 2023 National and Missouri FQHC CRC screening rates from *Missouri CRCCP Updates* presentation for the June 2025 Southeast Consortium.

hoc meetings (for miscellaneous reasons such as clarifying EBI implementation issues); clinic TA tracking (primarily related to EHR issues); and monthly or quarterly EBI meetings (when MPICCS staff goes over successes, challenges, and barriers in detail and problem solves with the clinics).

Chart reviews and EHR technical assistance have improved the quality of CRC screening data and screening rates. Annual chart reviews, though not required, were conducted with MPICCS partner clinics for a total of 30 chart reviews. There was 91% average concordance (agreement between chart review and data provided to MPICCS by clinics). Chart reviews and improved EHR data have led to MPICCS identify patients in need of follow-up screening, uncover workflow and documentation issues, and provide targeted guidance for improvement.

Value-added opportunities and resources MPICCS brought a wide range of opportunities and resources not required by the grant to their partners including transportation resources; collaborating with Exact Science Health Equity Program with; customized CRC flyers; Rural Health Research Network opportunities; PANDEMIC (MU Grant) opportunity; awards dinners; CRC instruction translations; Inflatable colon; patient navigation support through MU nursing student program; Missouri CRC Roundtable; colonoscopy provider lists; safety net resources; coordination with colonoscopy clinicians; nurse competency test; newsletter and ACS funding opportunity.

Systemic and sustainable changes for health systems include the following:[15]

- Development of appropriate tools and methods for data collection to better monitor CRC screening and follow-up colonoscopies at each site.
- Improved EHR usage and data mapping that can be generalized and replicated by MPICCS partners for data collection and monitoring for other QI measures.
- Collaboration with other state entities including the Missouri CRC Roundtable, Rural Health Research Network, and other MPICCS health facilities.

"We have been working with MU on the MPICCs project. I found these ladies to be very helpful and informative. Such a helpful partnership."

-MPICCS survey participant quote

---

[15] Systemic changes were identified in the report titled *MPICCS Interim Evaluation Report #1 June 2022* where they are described in detail.

Evaluation Question 2: Which EBIs were the most effective for each clinic & why?

Administrative and patient-facing staff were asked about the helpfulness of fifteen MPICCS QI activities and whether they were being used in the *2024 MPICCS Evaluation Survey.* These data were described in detail in Part VIII. Overall, staff found the EBIs helpful, but greater proportions of administrative staff found MPICCS QI activities helpful (and used them) than patient-facing staff did.

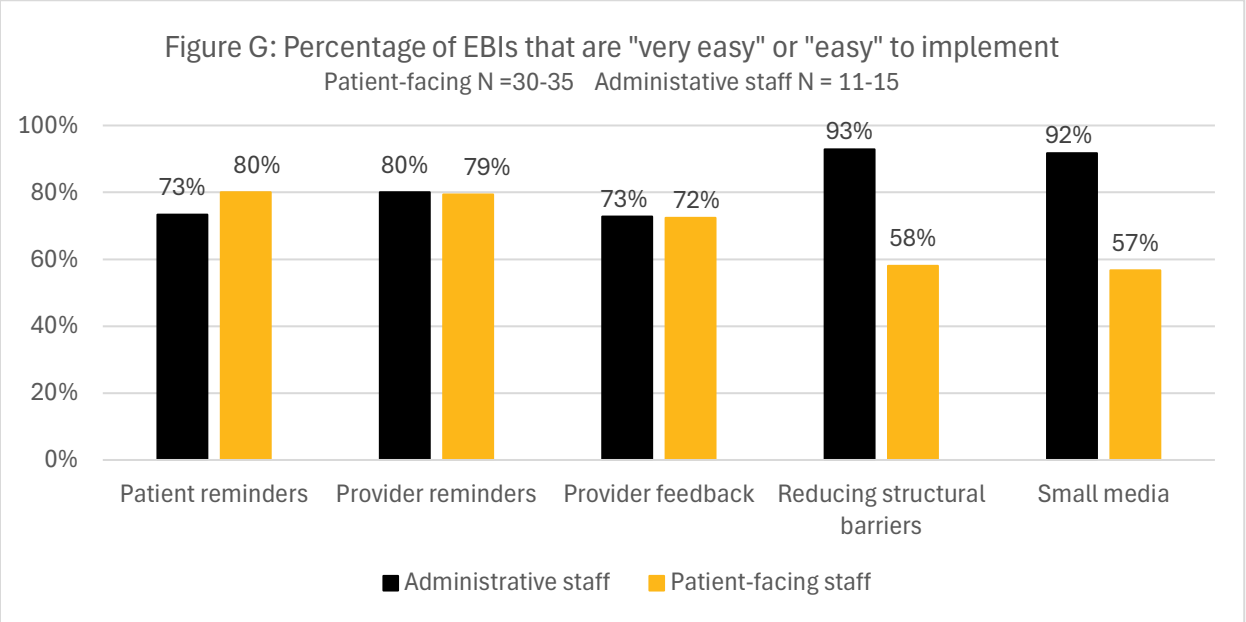
- Ninety percent (90%) to 100% of administrative staff found each of the EBIs listed helpful and used them, except for the inflatable colon (80%).
- Over half (56%) to 78% of patient-facing staff found the EBIs helpful and used them.

The most helpful QI activities used by patient-facing staff were:
- Educational materials (78%)
- General funding (75%)
- Best practices information (73%)
- ·Chart reviews (72%)
- EHR optimization (71%)

80%-100% of administrative staff used all QI activities listed and found them helpful.

The most helpful QI activities used by patient-facing staff were educational materials used by 78% of patient-facing staff who answered this survey question; general funding (75%); best practice information (73%); chart reviews (72%) and EHR optimization (71%).

Administrative and patient-facing staff were also asked how easy or difficult it was to implement five EBIs in the survey. Again, administrative staff considered each of the EBIs easier to implement than patient-facing staff. Only two respondents marked an EBI "difficult" or very difficult" to implement.



Interestingly, administrative staff and patient-facing staff ranked reducing structural barriers and small media as opposites in terms of how easy they are to implement. Administrative staff find them the easiest, and patient-facing staff find them most difficult. Similarly, patient-facing staff rank patient reminders easiest and administrative staff rank them the most difficult.

Table 10: Easiest and most difficult EBIs to implement

Staff group	Easiest EBI to implement	Most difficult EBI to implement
Administrative	• Reducing structural barriers • Small media	• Patient reminders • Provider reminders
Patient-facing	• Patient reminders • Provider feedback	• Reducing structural barriers • Small media

Overall, we would not be as focused on colorectal cancer to the depth that we are without the 'burdensome' of the project team. We are grateful to be part of it, even though we are all stretched for time and sometimes feel we have not implemented or focused on the project enough when our next meeting rolls around. BUT, having the reminders and monthly meetings is a great way to keep us focused. The MU team does a lot of the heavy lifting and we appreciate them.

-MPICCS survey participant quote

Discussion

When the MPICCS team and the evaluator created this summative question, it was assumed it would be possible to tease out which of the EBIs was most effective for each clinic. However, five years into the project and the team realized this is not possible. Each clinic implements at least five different EBIs (from the 6 EBIs) and multiple QI and supplemental activities supported by MPICCS. Implementation of these EBIs were also not done sequentially. Many times more than one EBI was implemented at the same time. We do not have a way to determine which EBI is most effective for a specific clinic. To address this short-coming in the data, the MPICCS team and evaluator chose to do an analysis of the EBIs and QI activities that were most frequently used, the most helpful, and the easiest to implement at the project level to better understand which specific EBIs were the most effective program-wide. Survey data shows that while most MPICCS EBIs and QI activities are helpful, used and relatively easy to implement, there is a difference between administrative staff perception and patient-facing staff perception. In general, administrative staff have a more positive perception of the EBIs in terms of helpfulness, usefulness and ease of implementation. In fact, administrative and patient-facing staff have

opposite views of how easy it is to implement three EBIs: patient reminders, reducing structural barriers and small media.

Evaluation Question 3: Which external factors influenced the adoption and success of EBIs and follow-up colonoscopy?[16]

COVID-19. The most widely recognized external factor that affected MPICCS implementation was COVID-19. MPICCS, like other CRCCP grantees for this funding cycle, started during July 2020 when COVID-19 was at its peak. At this time, many clinics had shifted schedules to accommodate COVID-19; prioritized medical response to COVID-19 cases over other issues; limited non-urgent patient visits; and were experiencing staffing shortages. This made it challenging for MPICCS to introduce itself as a new statewide project and challenged the health facilities to allot time and staff to MPICCS activities. On the flip side, working on a health care issue unrelated to COVID-19 was also a breath of fresh air for the clinical staff.

Change in age recommendations for CRC screenings from 50-75 to 45-75. As discussed earlier in this report, the US Preventive Services Task Force (USPSTF) lowered the recommended age for CRC screening from 50-years-olds to 45-year-olds in 2021, shortly after the MPICCS program began. During this transitional time, screening rates for those 45-49 were lower than for 50–75-year-olds, which brough the overall rates down.

Staff turnover. Key MPICCS contacts and health care clinicians turned over every 1-2 years depending on the health system and clinic. This meant that MPICCS had to re-train new staff about the MPICCS program. The difficulty of re-training varied depending on how deeply embedded that previous staff person was and their role with the MPICCS projects. At the administrative level, our MPICCS partners also saw turnover of key administrative personnel such as CEO (chief executive officer), CMO (chief medical officer), COO (chief operating officer that was often involved in executive decisions regarding quality improvement projects), and Data manager, who is responsible for fixing data mapping issues). Similarly, the QI directors were not stable across the partner clinic systems. This made it difficult to maintain momentum at times.

Data mapping and EHR functionality. MPICCS partners were not all collecting and reporting CRC screening data efficiently or accurately within their EHR systems. This often led to misinformation about which patients were due for screenings, who had completed them, who had been referred for follow-up colonoscopy, etc. As discussed earlier in this report, MPICCS team focused early on getting Azara DRVS training to support data mapping. MPICCS developed an understanding of how to acquire data from each FQHC partner's EHR and implement Community Guide best practices for colorectal cancer screening. Among MPICCS partners, there are five different EHR (eClinicalWorks; NextGen; AthenaHealth; MicroMD; Athena One) plus Azara DRVS and all but one system uses Azara DRVS (a centralized data extraction and analytics software) to retrieve UDS (Uniform Data System) measures, including CRC screening data. Each of the FQHCs uses Missouri Primary Care Association (MPCA) for a range of technical assistance needs, inclusive of Azara DRVS interface with EHR. MPICCS was able to support MPCA's efforts by proactively engaging with clinics and helping them solve these technical problems.

MPICCS also retained an EHR expert to consult on specific data mapping and EHR issues as they arose. Chart reviews have provided an opportunity for MPICCS staff to identify mismatches in patient records,

[16] This section based on field notes, artifact review, informal interviews with MPICCS staff.

help clinics identify where breakdowns in accurate data keeping exist, and help get patients in need of screening scheduled.

Unclear information about follow-up colonoscopy. Many MPICCS partners struggled to keep current on follow-up colonoscopy resources and procedures for regional colonoscopy (hospitals and surgical procedure centers). MPICCS provided regionally specific resource guides for each health system and updates them regularly. Additionally, poor communication between the procedure center, patient, and clinic can cause patients to miss appointments, cause confusion about proper colonoscopy prep, and cause delayed or missing information on the clinic-side about the colonoscopy results, documented in a peer reviewed publication by Dr. McElroy and Dr. Everett (Appendix 5). In summer 2025, a project to facilitate a more streamlined approach for patients seeking colonoscopies will be launched. This involves agreements between the colonoscopy procedural centers and the respective health system on one colonoscopy prep, which health systems can stock at their in-house pharmacy, allowing patients to pick up their prep easily at the same health facility where they get their primary care.

Lack of insurance/inability to pay. While most insurance covers preventive CRC screenings, not all cover follow-up colonoscopy when there is a positive FIT result. Some patients do not have insurance and do not have financial resources to pay for follow-up colonoscopy or associated costs (transportation to and from appointment, childcare, and unpaid time off work, etc.) MPICCS provides a small amount of grant dollars to three partner clinics from ACS Fit2Be project to supplement the cost of follow-up colonoscopy for patients who need it, but it does not cover all needs. For the 5-years of this project, MPICCS supported 10 patients to obtain a follow-up colonoscopy.

Another challenge was covering the cost of FIT kit analysis. Among less resourced patients, the $25 cost is too much for preventive care and therefore they often passed on getting screened. A small award of $5000 was given to partner health systems to support the cost of these for those in need, as it was an allowable expense. Further, in 2024, Dr. McElroy secured American Cancer Society Fit2Be--Missouri, $20,000 that she distributed to three partner clinics to cover costs associated with CRC screening, as it was allowable with the ACS grant award. MPICCS's other partner clinics were independently awarded $20,000 to support CRC screening. This was an additional avenue of resources for low resourced patients to get screened.

Physician focused approach. In health systems with a physician-focused approach, administrative staff do not always feel like they have the authority to address patient barriers, even if MPICCS provides them with tools and supportive materials. Additionally, MPICCS found that in some of these health systems, physicians were not always up to date with current CRC screening practices, such as using home-based CRC screening tests as an alternative to colonoscopy. They might order a colonoscopy by default, even when a home-based test may be a more suitable option for a patient. In other cases, the physicians were not keen on preventive screening. While the physician-focused approach has advantages, such as retention of the clinicians, it can limit successful implementation of CRC screening best practices. By contrast, in clinics that embraced EBI implementations, clinical staff tend to feel more autonomous and empowered to address barriers and make changes in practices based on information received.

Transportation. The MPICCS Core Team did not delineate transportation as one of its original tasks per early guidance from CDC. Nonetheless, research about transportation options for the rural clinics and patients became a very important task throughout the project because transportation for medical appointments in rural areas has been and remains a significant barrier in Missouri. In the first couple

years, this research was carried out by MPICCS unpaid student interns. Additionally, the MPICCS team researched several transportation options for each region and health system. This information is now provided to clinics as part of the regular set of MPICCS resources.[17] These include:

- Home-grown transportation program based on HealthTran. HealthTran, funded by the Missouri Rural Health Association, is a volunteer-based organization aimed at addressing the transportation gap within rural Missouri. Although helpful for some organizations, this program turned out to be too expensive and not reliable enough for MPICCS partners mainly due to scarcity in drivers in those rural areas. However, one MPICCS health system started their own transportation program using volunteer drivers, which turned out to be a more affordable alternative.
- Uber Health allows clinics to set up and pay for rides to and from an appointment and can be used for rides to colonoscopies. Uber Health is HIPAA- compliant because the driver does not know the ride is for a medical appointment and any information stored with Uber is protected and on a separate secure database. The clinic inputs the patients' home address and the address of the colonoscopy site into the Uber Health app/program for the patient. The MPICCS team estimated the approximate cost for Uber Health transportation to several MPICCS partners' regional colonoscopy sites. This program also comes with challenges as Uber Health service is not available in many of those rural areas.
- Angel Flight described earlier in this report is a service made up of volunteer pilots who use their own small airplanes to provide free flights for health care. While the MPICCS team was able to use this option themselves, patients at MPICCS partner facilities have been slow to adopt it. One patient concern for taking a flight, particularly for getting a colonoscopy procedure, is the lack of access to a restroom while in flight.

Transportation to colonoscopy appointments can be a particular challenge for patients for several reasons. Colonoscopy centers can be an hour or more away for many rural Missouri residents. Patients may not have access to a car, money for gas, or alternative mode of transportation to go that far. On top of that, patients are advised not to drive themselves, so they must find a driver who can drive them to the appointment, wait for them to finish and drive them home. This can also be the chaperone, who is mandated to accompany the patient, as required by procedural center. It can be challenging for a person to take a day off work, find transportation and childcare or adult care, etc. for themselves. But asking a second person to take off work and potentially find childcare or adult care is an additional burden.

Gas cards are limited, and the Medicaid/Medicare transport is unreliable or not enough drivers. -survey respondent quote

---

Discussion

MPICCS staff was able to address several of the external factors that influenced the adoption and success of EBIs and follow-up colonoscopy, including data mapping and functionality, unclear information about colonoscopy and follow-up; and transportation to a limited extent. Several external factors, however, remain systemic (lack of insurance, for example) or unpredictable (COVID-19, for example).

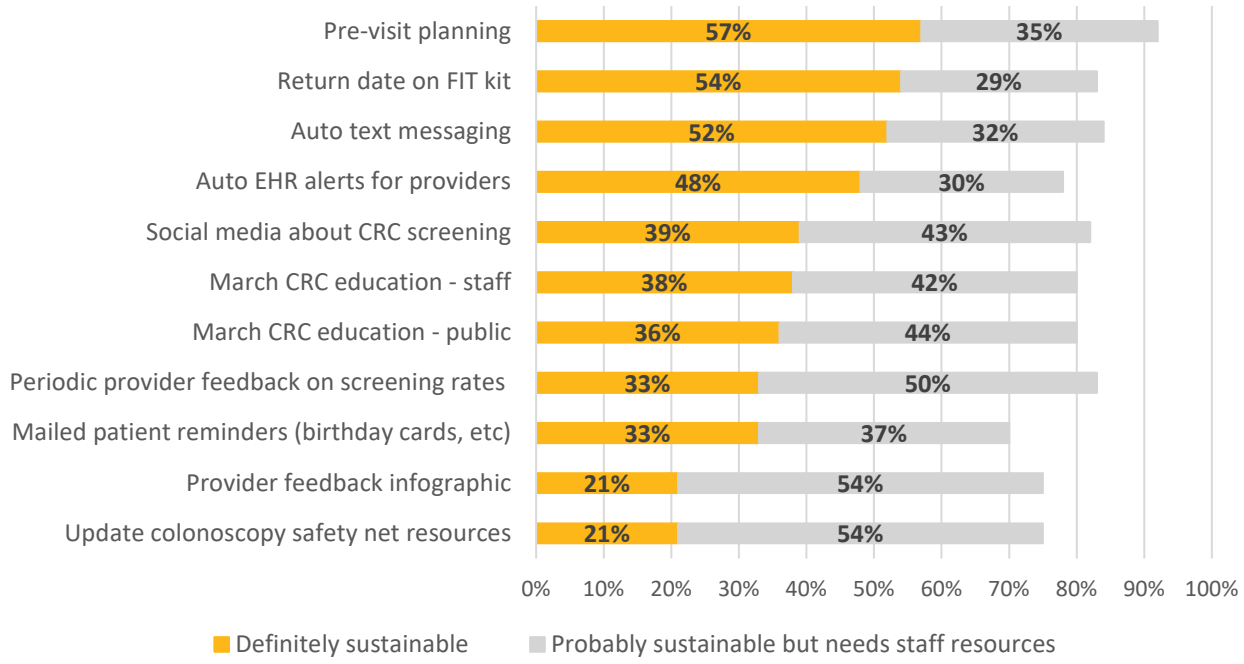
[17] As reported in Interim Report #1, a MPICCS intern presented her findings during the University of Missouri Health Sciences Research Day on November 19, 2021.

Evaluation Question 4: What aspects of MPICCS will be sustained after the program and how will they be sustained at each clinic?

In 2022, the external evaluator conducted semi-structured key informant interviews of 17 representatives from the partner health systems. At that time, all health systems (16 of 17 interviewees) expected to sustain some aspects of MPICCS after the grant was over. MPICCS's approach from the outset had been to identify and address systemic barriers within clinics, such as workflow gaps; accurate and timely data collection and reporting through EHRs; and selection of EBIs that are easy to implement (the "low hanging fruit")—meaning limited disruption to the clinical enterprise. This programmatic approach appeared to have instigated "bricks and mortar" type of changes at the clinics at that time. Two years later, administrative staff were asked follow-up sustainability questions in the *2024 MPICCS Evaluation Survey*.

When asked *"Of the EBIs implemented in your health system, which can be sustained without the MU Colorectal Cancer Project support?"*, a majority (70% to 92%) of administrative staff rated each of the 11 tailored EBIs activities as either "definitely sustainable" or "probably sustainable but needs staff resources."

Figure H: Percentage of administrative staff who said CRC interventions were definitely or probably sustainable (N=23-28)



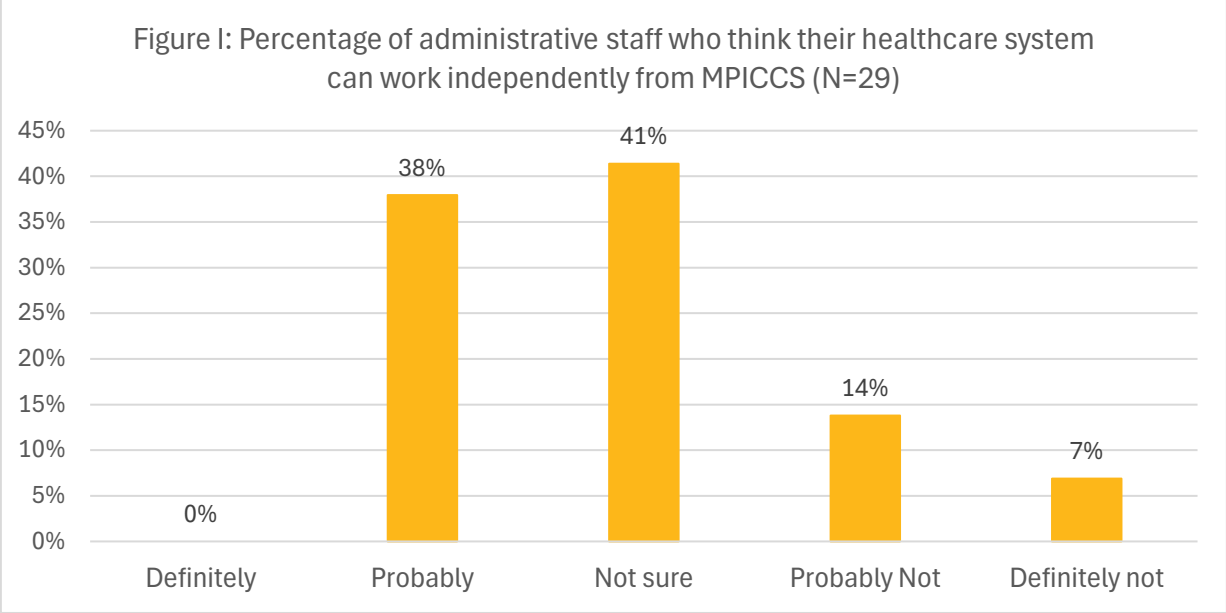
The top four tailored EBIs activities that were rated "definitely sustainable" by administrative staff were:

1. Pre-visit planning (57%)
2. Auto text messaging[18] (52%)
3. Return date on FIT kit (54%)
4. Auto EHR alerts for clinicians (48%)

[18] Refers to automated reminder texts for CRC screening appointments set up by health facilities for their patients

This is consistent with MPICCS practice facilitators' opinion that pre-visit planning is most efficient and common and that adding return dates to FIT Kits is one of the easiest interventions to implement.[19]

However, when asked a more general question about working independently from MPICCS in the same survey (Figure I below), none of the administrative staff responded that they were "definitely ready" to work independently from MPICCS. That said, 38% of administrative staff think that their health system is "probably" ready to work independently.



Discussion

Administrative staff can definitely envision their health facilities continuing specific CRC screening elements without the support of the MPICCS project. However, they do not seem as confident that they could support the whole of the MPICCS infrastructure independently. This is to be expected; health facilities will maintain those aspects of the project that are most beneficial to them and easiest to implement.

[19] Discussion at MPICCS staff meeting 4/21/25

Part X: Recommendations

Evaluation specific

1. Maximize use of CDC required data for internal evaluation. CDC requires annual data reporting and includes a set of quantitative questions on quality and satisfaction. There are now 5 years' worth of data for some clinics and health systems. Monitoring these data both annually and over several years can help the team with iterative evaluation and quality improvement.

2. Consider adding evaluation questions to the CDC required annual data collection process. MPICCS has a well-established method for collecting baseline and annual data for CDC through REDCap surveys. MPICCS could add a small number of questions to these surveys that are more tailored to the MPICCS specific approach and needs. The *2024 MPICCS Evaluation Survey* may include some questions that could be re-fashioned for annual data collection.

3. Continue implementing qualitative evaluation strategies on an annual or biennial basis. Regular key informant interviews and focus groups provide in-depth insights and demonstrate to partners that project leadership values their perspectives and priorities.

4. Identify effective methods for storing CRC screening and other quantitative data to enable quick and efficient analysis, including dashboard reporting.

Overall

5. Continue annual chart reviews which have provided rich data on mapping and identified follow-up care gaps. Although this is not a required CDC element of the project, it has proven to be valuable for quality improvement and for relationship building.

6. Continue to recognize successes of MPICCS partners and provide opportunities to celebrate. MPICCS has prioritized celebrating the successes of clinics, individual clinic staff, and clinicians with awards, email shout outs to high performing staff, celebratory dinners, and conferences. MPICCS staff have also been attentive to small achievements, noting them informally and frequently in daily interactions with partners. This practice, which seems to come effortlessly to the MPICCS team, provides motivation to partners, shows partners that MPICCS truly appreciates them, and bolsters sustainability.

7. Continue to support and emphasize the importance of patient navigation as an EBI. Patient navigation proved invaluable to MPICCS partners who focused on it. Having a dedicated staff member follow-up with patients to complete tests and follow-up on abnormal home-based stool tests can be essential to closing the gap in CRC screening completion.

8. Explore ways that EHR support can come from a CDC centralized effort. The MPICCS team spent a lot of staff time learning about EHRs and Azara DRVS to assist the clinics. While this was crucial to improving data and records, it might be more efficient if technical assistance came from a centralized professional unit at CDC that could assist all CRCCP projects navigate health software.

Acknowledgments

A big thank you to the MPICCS team for their assistance in producing this report. Significant contributions to this document were made by every MPICCS team member. MPICCS team members reviewed and edited this report; provided text for several sections; proposed additional aspects of the project to review; and provided the data to make it possible. Of note, Dr. Jane McElroy (Project Director) and Jamie Smith (University of Missouri Family Community Medicine, Lead Research Analyst) provided the data analysis and interpretation of the *2024 MPICCS Evaluation Survey* reported here in Part VIII.

APPENDIX 1:

Description of health systems

Excerpt from MPICCS internal documentation about health systems (2025):

"Katy Trail Health: We partnered in the fall of 2021 (5 clinics with one was added in 2022) and reached around 4391 patients with screening rates at 28% (baseline) to 34%. Katy Trail went through some major challenges including changing EMR vendor in year 1 and changing of chief executive officer (CEO) and chief operating officer (COO) in year 3 of the project. They also opened another clinic which stretched staff resources. These changes delayed and reduced effectiveness of project implementation activities. The new leadership at Katy Trail Health appears committed to improving CRC screening rates.

Central Ozark Medical Center: We partnered in the summer of 2021 (5 clinics with one was added in 2022) and reached about 5204 patients with screening rate dropping from 37% (baseline) to 32%. This FQHC went through some major challenges over the last five years which impacted the effectiveness of the EBIs. They opened a new clinic, and this stretched staff resources. Staff turnover included quality improvement (QI) director, data manager, and nursing affected their ability to focus on QI projects, such as CRC screening. With that said they are very keen on improving their metrics.

Community Health Center of Central Missouri: We partnered in the summer of 2021 (4 clinics) and reached about 2905 patients with no change in screening rate at 45%. CHCCMO saw major staff turnover in the years following COVID pandemic (screening rates actually decreased for two years). Specific challenges related to staffing of nurses, QI directors, CMO, and COO, negatively affected CRC screening rates. They are committed to improving their metrics.

Health Care Collaborative Network: We partnered in the fall of 2021 (Total 4 clinics with one added in 2024) and reached about 1012 patients with screening rates increasing from 33% to 47%. All clinics in this FQHC are small and this characteristic seems to be associated with more rapid ability to implement a process as well as having the entire staff onboard. They also work with group homes and are able to get all residents screened which is reflected in one clinic's CRC screening rates in the low 60%.

Access Family Care: We partnered in the Spring 2022 (Total 7 clinics with 4 added in 2023) and reached about 4008 with no change in screening rate at 38%. Access had a major EMR change in 2023 disrupting the ability to retrieve reliable data, thus diminishing provider feedback and reminder EBIs effectiveness. These challenges have been overcome recently and for the CRC screening data, the quality has improved significantly.

Fordland Clinic: We partnered in the spring of 2023 (Total 3 clinics) and reached about 1967 patients with screening rate increasing from 42% (baseline) to 53%. This FQHC is small and serves a very rural population. Even though, there has been changes in the CEO, COO, QI director, the impact on their screening rates was minimal. This FQHC seems to have a strong collaborative atmosphere with staff rallying together to get the work done.

Samuel U. Rodgers Health Center: We partnered in the fall of 2024 (Total 4 clinics) and reached about 3905 with no change in screening rate at 41%. This FQHC serves Kansas City metropolitan area and has differing barriers to care compared to our rural-based FQHCs. As this is a 'new' FQHC for MPICCS, we expect their CRC screening rates to improve. However, they are also a large FQHC and changes in practice may be slower than for smaller clinics. They are very keen on improving their CRC screening rates.

<u>The Community Clinic of SW Missouri:</u> We partnered in the spring of 2023 with screening rate increasing from 0% to 7% and 245 patients were screened. This is a free clinic and had never attempted CRC screening. Volunteer subspecialist physicians are now supporting CRC screening during their patient encounters. This clinic has a strong relation with a large local health system and has secured resources for follow-up colonoscopy.

<u>My Neighbors Charitable Pharmacy:</u> We partnered in the fall of 2024 and reached about 417 patients with screening rate increasing from 0% (baseline) to 4%. The healthcare partner works with their patients' primary care clinicians to support CRC screening by offering free Cologuard® to these patients. They communicate with the patients' established provider and if the patient does not have a provider, they support the patient in helping them establish care. This model is exceptional since two different kinds of clinicians are supporting CRC screening for under-resourced patients."

Appendix 2:
MPICCS partner demographics

Table 1. Description of geographic area (county) of clinical location and screening rates[20]

County name	% 45-75 yr screened in county[1]	# 45-75 yr population in county[2]	% rural	Primary care clinic name and city	# 45-75 yr patients	Clinic's 2024 screening rate[3]
Pettis	67.7%	13,893	38%	KT[11]-Sedalia	987	34%
Chariton	55.8%	2665	100%	KT[11]- Versailles	1034	33%
Pettis	67.7%	13,893	38%	KT[11] Sedalia Main	964	30%
Benton	70.1%	9,191	87%	KT[11]-Warsaw	559	40%
Saline	71.1%	7,684	46%	KT[11]-Marshall	847	39%
Jackson	61.2%	227,527	4%	SUR[7]-Downtown	2581	44%
Jackson	61.2%	227,527	4%	SUR[7]-Clay	303	39%
Jackson	61.2%	227,527	4%	SUR[7]-North Oak	294	36%
Jackson	61.2%	227,527	4%	SUR[7]- Cabot	727	31%
Camden	68.4%	21,006	74%	COMC[4]-Camdenton	1770	38%
Camden	68.4%	21,006	74%	COMC[4]-Osage Beach	1045	34%
Pulaski	63.7%	12,352	44%	COMC[4]- Richland	1837	31%
Morgan	61.7%	8036	100%	COMC[4]- Laurie	520	14%
Pulaski	31%	12,352	44%	COMC[4]- Mobile unit	32	28%
Cole	70.5%	25,946	29%	CHCCM[5]- Jeff City	1928	42%
Callaway	69.5%	15,218	62%	CHCCM[5]- Fulton	358	62%
Moniteau	50.0%	4721	53%	CHCCM[5]- California	306	36%
Osage	72.0%	4599	100%	CHCCM5- Linn	313	50%
Jackson	61.2%	227,527	4%	HCC[6]- Buckner	282	59%
LaFayette	56.5%	11,820	57%	HCC[6]- Lexington	158	19%
LaFayette	56.5%	11,820	57%	HCC[6]- Waverly	221	28%
Carroll	51.7%	3069	52%	HCC[6]- Carrollton	17	35%
Webster	50.0%	13,922	74%	FC[8]-Fordland	1190	55%
Greene	57.8%	88,787	14%	FC[8] -Springfield	118	62%
Stone	61.8%	15,397	89%	FC[8]-Kimberling City	659	49%
McDonald	49.6%	8540	100%	Access[9]-Anderson	305	31%
Lawrence	48.6%	13,898	59%	Access[9]-Aurora	406	55%
Barry	55.7%	11,474	73%	Access[9]-Cassville	697	61%
Jasper	64.5%	39,499	24%	Access[9]-Joplin	1700	19%
Barton	53.3%	4382	64%	Access[9]-Lamar	179	25%
Newton	65.5%	20,766	64%	Access[9]-Neosho	666	60%
Barry	55.7%	11,474	73%	Access[9]-Monett	55	42%
Barton	53.3%	4382	64%	Cmty Clinic-Joplin	345	7%
Taney	62.9%	21,264	44%	NP[10]-Branson	417	4%

[1]as reported by the 2022 county level study for colonoscopy with last 10 years or sigmoidoscopy within 5 years among adults aged 45 – 75 years;[2] as reported by the US Census Bureau, 2020 data. https://www.census.gov
[3] Colonoscopy, Fit/FOBT, or FIT-DNA completed in 2024
[4] Central Ozarks Medical Center;[5] Community Health Center of Central Missouri;[6] Health Care Collaborative of Rural Missouri; [7]Samuel U Rodgers; [8] Fordland Clinic; [9]Access Family Care; [10] Neighbor's Pharmacy;[11]Katy Trail

[20] Table from MPICCS project narrative February 2025

Appendix 3:

Infographics, fit kit instructions, and tailored fliers

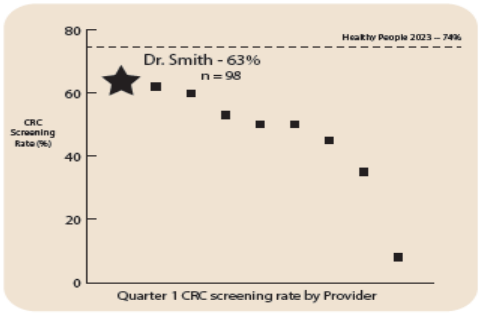
Generic Provider Assessment & Feedback Quarterly Report

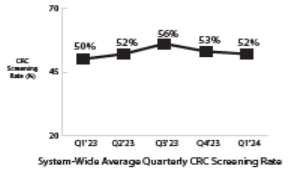
School of Medicine
University of Missouri

MPICCS

Q1 CRC Report for Dr. Smith's Care Team

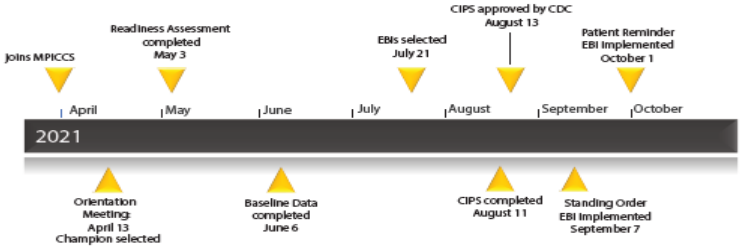
Provider CRC screening rates among patients aged 45-75 seen in Quarter 1





# of additional screenings **per month** to increase CRC screening rate by 10% next quarter:

3-4 patients



Reducing Structural Barriers

1. iFOBT Standing Orders
   a. LPNs and RNs may order a FIT test for eligible patients
   b. Nurse provides patients with FIT completion and return instructions
   c. CHW audits referral tracking to close pending orders

Patient Reminders

1. CHWs reach out to patients with outstanding FIT or colonoscopy
2. NextGen automated text reminders for patients age 45-75 years who are due for CRC screening
3. CRC patients education flyers

Evidence-based Interventions

Provider Reminders

1. Clinics to utilize PVP using DRVS to be used by the care team to identify patients with care gaps including CRC screening

Provider Assessment & Feedback

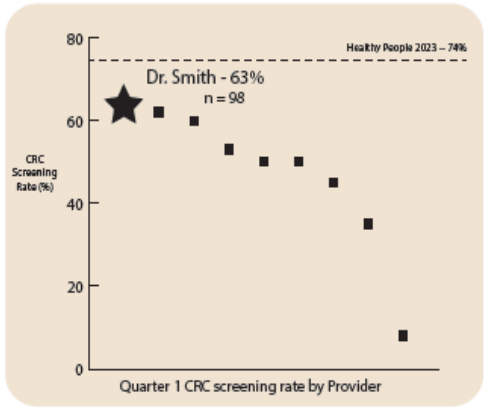
1. Will send quarterly CRC screening data to MPICCS
2. MPICCS to create quarterly blinded CRC screening activities infographic for each provider

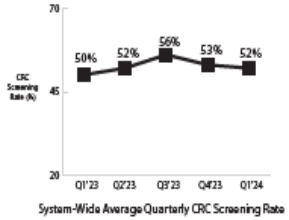
School of Medicine
University of Missouri

MPICCS

Q1 CRC Report for Dr. Smith's Care Team

Provider CRC screening rates among patients aged 45-75 seen in Quarter 1





# of additional screenings **per month** to increase CRC screening rate by 10% next quarter:

3-4 patients

Generic Health System/Clinic Quarterly Report

School of Medicine
University of Missouri

Health system name & logo

MPICCS

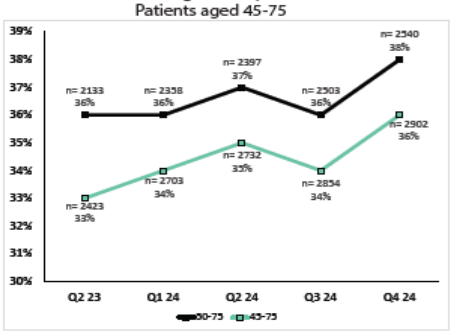
N = 2902

Quarter 4, 2024 CRC Screening Analysis for Ages 45-75

Key Findings

- Overall Quarterly CRC Rate: 36%
- Overall Quarterly CRC Rate for Ages 50-75: 38%
- 22 patients with positive FIT/Cologuard, but no follow-up colonoscopy
- 33 patients with more than one CRC test within compliance range

CRC screening rate - system-wide
Patients aged 45-75



# of additional screenings per week to increase CRC rate by 10% by the end of the next quarter:

25 Patients

Evidence-Based Interventions:

Reducing Structural Barriers

1. CHWs work with referral coordinators to follow-up with patients that had a positive stool test but no follow-up colonoscopy. Work with patients to overcome barriers to having colonoscopy
2. Continues staff trainings to improve workflow & ensure proper documentation of CRC screening in the EHR

Patient Reminders

1. eCW automated text sent to patients due for CRC screening; due date on FIT kits; lab tech calls for unreturned kits
2. CHWs call patients who did not respond to lab tech calls to address any screening barriers;
NCM calls to patients in need of additional education about CRC screening; Patients referred to PCHH team if still no reponse to identify barriers
3. Address CRC screening during diabetic day

Provider Reminders

1. Clinics to utilize PVP using DRVS to be used by the care team to identify patients with care gaps including CRC screening
2. CRC screening standing orders

Provider Assessment & Feedback

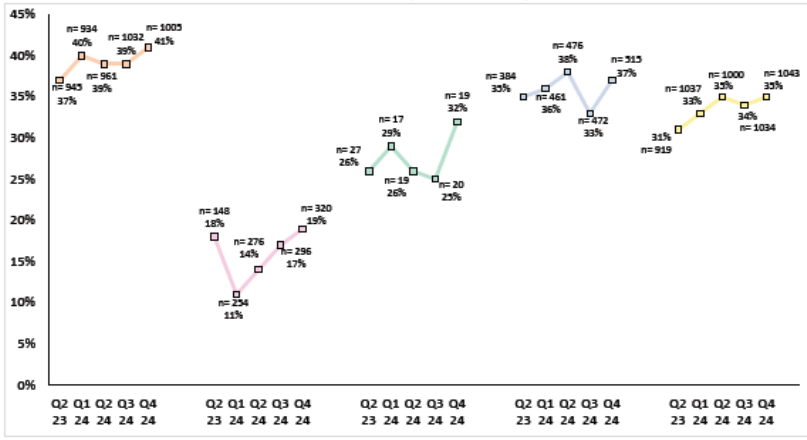
1. COMC will send quarterly CRC screening data to MPICCS
2. MPICCS to create quarterly blinded CRC screening activities infographic for each provider
3. Bonus structure for providers meeting goals set for certain measures including CRC screening

School of Medicine
University of Missouri

Health system name & logo

MPICCS

Quarter 4, 2024
Overall Screening Rate by Clinic by the end of Q4



Test type breakdown among patients who got screened in each quarter

	Clinic A		Clinic B		Clinic C		Clinic D		Clinic E	
Quarter	3	4	3	4	3	4	3	4	3	4
Patients seen and needed screening in the quarter	n = 672	n = 638	n = 254	n = 271	n = 15	n = 13	n = 334	n = 351	n = 726	n = 696
Patients seen who got tested	n = 35	n = 46	n = 5	n = 11	n = 0	n = 0	n = 16	n = 26	n = 33	n = 15
FIT	12% ↘ 7%		0% ↗ 9%		0% ↔ 0%		12% ↔ 12%		3% ↗ 20%	
Cologuard	31% ↘ 22%		20% ↘ 0%		0% ↔ 0%		63% ↘ 19%		33% ↗ 40%	
Colonoscopy	57% ↗ 72%		80% ↗ 91%		0% ↔ 0%		25% ↗ 69%		64% ↘ 40%	

Generic Health System/Clinic Annual Report

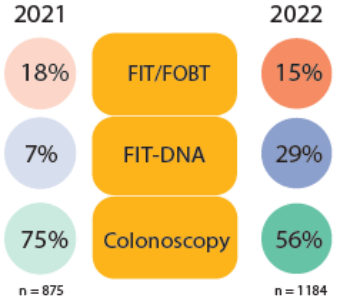
School of Medicine
University of Missouri

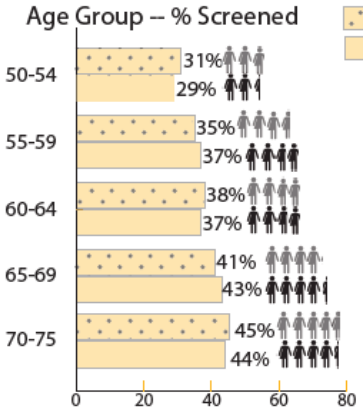
MPICCS

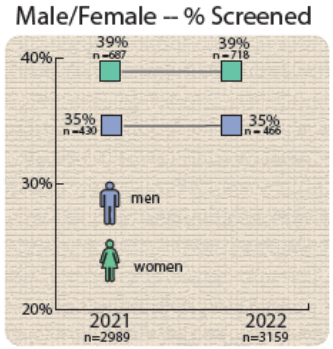
N = 3159

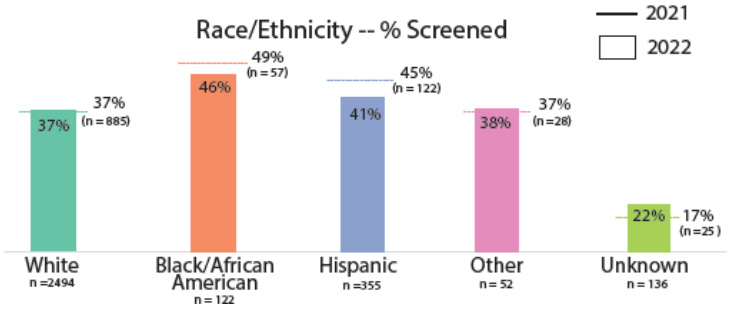
2022 CRC Screening Data for Patients Aged 50-75 years

Key findings:
- Overall Screening Rate: 37%
- Total of 20 patients with positive iFOBT and no follow-up colonoscopy documented
- 30 patients had more than one CRC test in compliance simultaneously
- Black are ≈ 50% more likely to get screened than white, while unknown race is 44% less likely to get screened



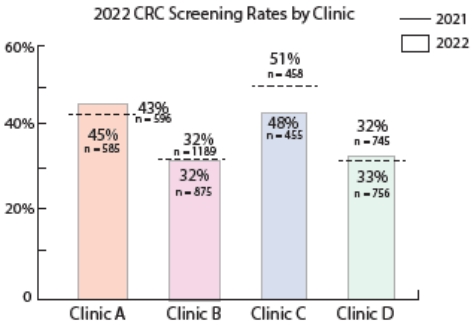


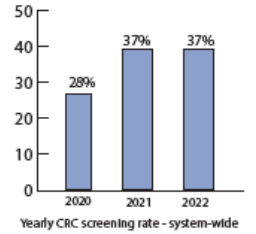




School of Medicine
University of Missouri

MPICCS





EHR vs Chart Review -- % Agreement

	JAN 1 - DEC 31, 2021		JAN 1 - DEC 31, 2022
Clinic A	90% n = 59 6 patients with no screening report found		85% n = 87 2 colonoscopy reports were found 11 out of compliance for screening
Clinic B	89% n =118 4 patients had screening report 9 patients with no screening report found		93% n =131 2 colonoscopy reports were found
Clinic C	80% n =46 2 patients had screening report. 7 patients with no screening report found		91% n=67 6 out of compliance for screening
Clinic D	92% n =74 3 patients had screening report. 3 patients with no screening report found		94% n=112 2 colonoscopy reports were found 5 out of compliance for screening

Colon cancer screening tests

What is it?	A test used to look for disease in people who do not have symptoms of colorectal cancer (CRC)
Who should get it?	45 - 75 year olds
Which test?	At-home tests - FIT & FOBT - done every year Cologuard - done every 3 years Colonoscopies - done every 10 years

Ask your doctor which test is right for you!

The options:

FIT & FOBT (at-home)

Cologuard (at-home)

Colonoscopy (in-clinic)

Abnormal at-home test result: What it really means.

An abnormal result means a tiny amount of blood was found in your stool

Blood can come from several sources, such as Hemorrhoids, Intestinal infections, Ulcers, Diverticular disease, Ulcerative colitis, Crohn's disease, Womens' periods, Growth or polyps of the colon or Cancer.

What next?

It's time to get a colonoscopy.

Your healthcare team will help you.

Why act now?

Make sure you don't have cancer

Remove pre-cancerous growths (polyps) to prevent cancer

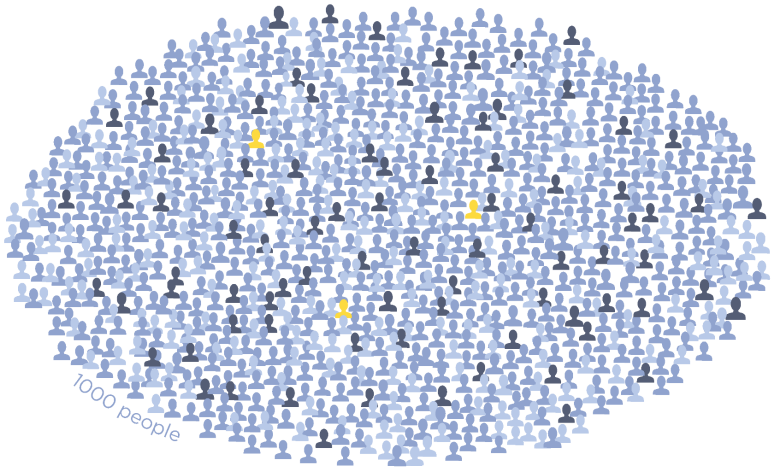
If you do have cancer, detect it at an early stage when it is curable.

Delaying follow-up screening by 10 months or more increases risk of advanced-stage cancer.

Worried about your abnormal result?

Your chances of getting diagnosed with cancer are low.

For every 1000 FITs completed... 85 come back with an abnormal result 1-3 of the abnormal results are cancer

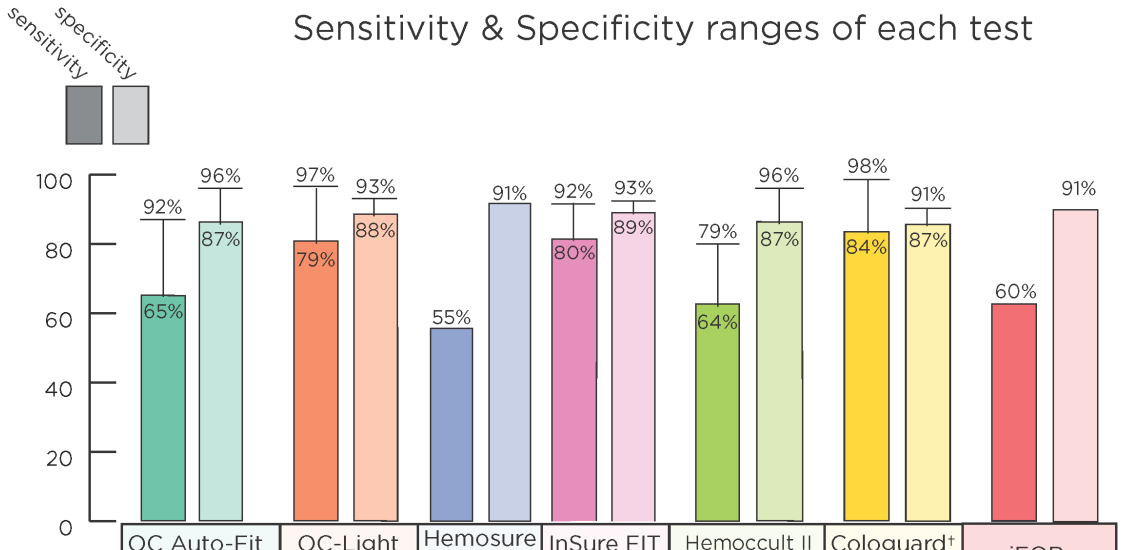


your logo here

CRC home screening test comparison

This information was compiled from the American Cancer Society's Clinician's Reference - Stool-Based Tests For Colorectal Cancer Screening 2019 and a literature search. Ranges of sensitivity and specificity estimates are based on the most recent studies available.

Sensitivity & Specificity ranges of each test



	OC Auto-Fit	OC-Light iFOB	Hemosure One-Step iFOB	InSure FIT	Hemoccult II SENSA (gFBOT)	Cologuard†	iFOB Slide
Brand name							
Manufacturer	Polymedco	Polymedco	Hemosure, Inc.	Clinical Genomics (Quest)	Beckman Coulter	Exact Sciences	McKesson/ Consult diagnostics
Cost estimate*	$20	$20	$45	$45	unable to get estimate from manufacturer	approx. $650	$40
Interval	yearly	yearly	yearly	yearly	yearly	every 3 years	yearly
# of fecal samples required for test	1‡	1‡	1 or 2‡	2‡	3‡	1 full bowel movement	2‡

***Exact costs are difficult to obtain due to variability in insurance and bulk purchasing. Prices shown** are approximated without insurance or charity care assistance using web searches and phone calls/ emails with manufacturers.

† Ladabaum U, Mannalithara A. Comparative Effectiveness and Cost Effectiveness of a Multitarget Stool DNA Test to Screen for Colorectal Neoplasia. Gastroenterology. 2016 Sep;151(3):427-439.e6. doi: 10.1053/j.gastro.2016.06.003. Epub 2016 Jun 14. PMID: 27311556.

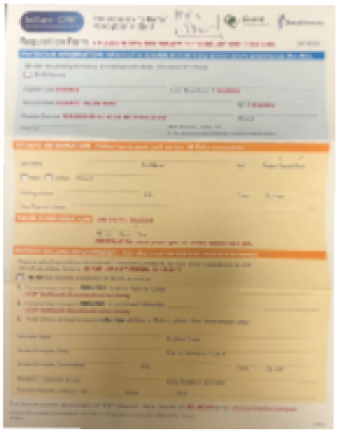
MPICCS
MISSOURI PARTNERSHIPS TO INCREASE COLORECTAL CANCER SCREENING

Video instructions:

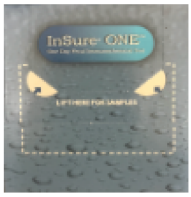
InSure ONE instructions

MPICCS
MISSOURI PARTNERSHIP TO INCREASE COLORECTAL CANCER SCREENING

1. You should have:



(A) Requistion form



(B) Test card

(C) 2 blue bags

(D) Gloves
If included

(E) 2 brushes

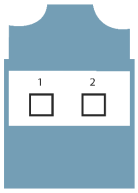
(F) Return envelope
Postage included

2. Before you collect your poop sample you will need to pee and flush the toilet

3. If your kit includes gloves (D) put them on before you start

4. Have a bowel movement in the toilet and wipe, place the used toilet paper into one of the blue bags (C) (not the toilet)

5. Lift the flaps on the test card (B)



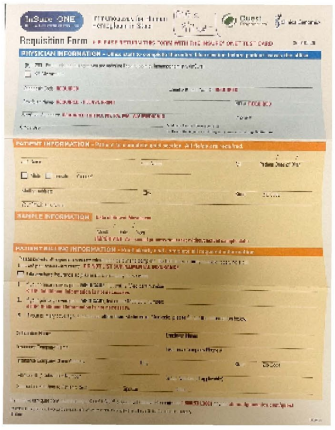
Spanish

Video instructions:

Instrucciones para uso de InSure ONE

MPICCS
MISSOURI PARTNERSHIP TO INCREASE COLORECTAL CANCER SCREENING

1. Usted debe tener:



(A) Formulario de prueba

(B) Tarjeta de prueba


(C) 2 Bolsas azules


(D) Guantes
si está incluido


(E) 2 Cepillos

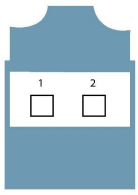
(F) Sobre de retorno
envío incluído

2. Antes de recolectar su muestra, deberá orinar y tirar de la cadena del inodoro.

3. Si su paquete incluye guantes (D), póngaselos antes de comenzar si deseas.

4. Defeque en el inodoro, límpiese y coloque el papel higiénico en una de las bolsas azules (C), no tires el papel en el inodoro.

5. Levante las solapas en la tarjeta de prueba (B).



Instructions on how to use your iFOBT kit

MPICCS
MISSOURI PARTNERSHIP TO INCREASE COLORECTAL CANCER SCREENING

Your kit should should include:

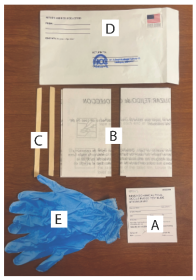
Sample card (A)

2 pieces of collection paper (B)

2 collection sticks (C)

Return envelope (postage included) (D)

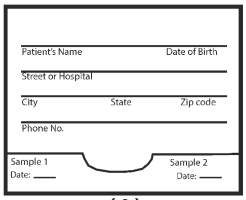
Gloves (if included) (E)



You will need to have 2 separate bowel movements (2 bathroom trips) to complete this test

1. Fill out the sample card label (A), write your name, date of birth (DOB), address, and phone number. (Keep the sample card and a pen near the toilet to fill out dates of completion)

(A)



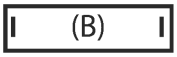
(A)

2. If your kit includes gloves (E), you can use them.

3. Before you collect your poop sample, you will need to pee and flush the toilet.

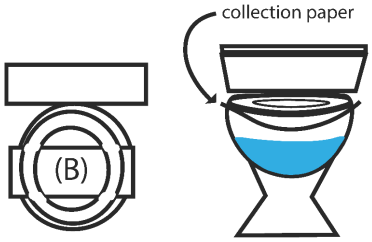
When you are ready to collect your 1st poop sample, open one of your collection paper (B) and lift up the toilet seat.

a. On the back of the collection paper take off the tape on both ends.



b. Place the collection paper tape-side down on the rim of the toilet bowl and let the paper dip so it is not right next to your bottom but does not touch the water.

c. Put the toilet seat down over the collection paper.



Russian

Instructions on how to use your iFOBT kit

MPICCS
MISSOURI PARTNERSHIP TO INCREASE COLORECTAL CANCER SCREENING

У Вас должны быть:

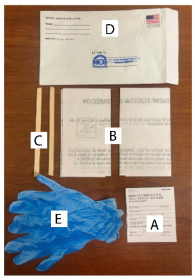
Карточка для образцов (A)

2 Листы бумаги для сбора (B)

2 коллекционные палочки (C)

конверт с обратным адресом (D)

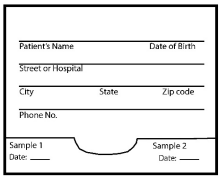
Перчатки, если входят в комплект (E)



Вам нужно будет сделать 2 отдельных акта дефекации (2 похода в туалет), чтобы завершить этот тест

1. Заполните метку на карточке для образцов (A), укажите ваше имя, дату рождения (DOB), адрес и номер телефона. (Держите карточку и ручку рядом с туалетом, чтобы заполнить даты выполнения)

(A)

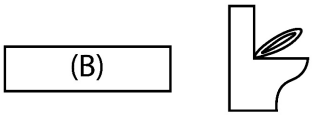


(A)

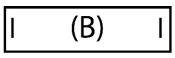
2. Если в вашем наборе есть перчатки (E), вы можете надеть их перед началом

3. Перед тем как взять образец, вам нужно помочиться и спустить воду в туалете.

4. Когда вы будете готовы собрать образец кала, откройте одну из бумажек для сбора и поднимите сиденье унитаза.

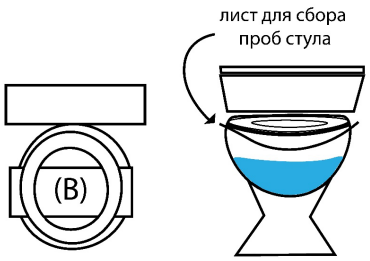


a. На обратной стороне бумаги для сбора проб стула снимите клейкую ленту с обоих концов. Это позволит бумаге приклеиться к унитазу.

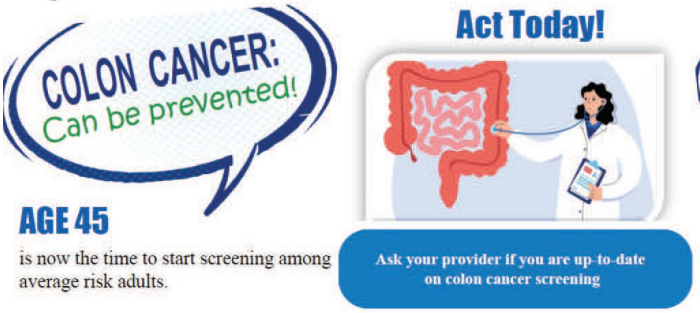


b. Положите бумагу для сбора проб стула стороной вниз на ободок унитаза и опустите ее так, чтобы она не прилегала к днищу, но и не касалась воды.

c. Опустите сиденье унитаза над бумагой для сборапроб стула.



English



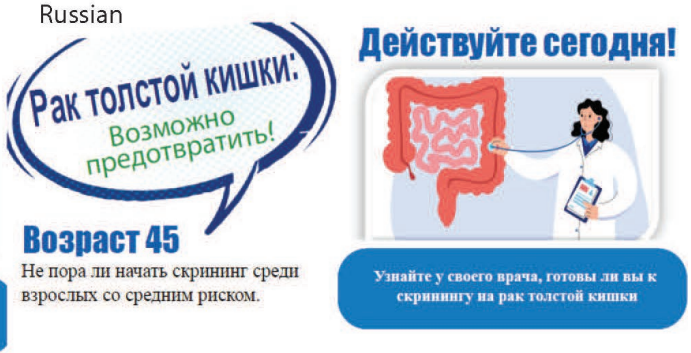
Spanish

Hmong

Arabic

Chuukese

Russian



Let's Talk about Colon Cancer Screening

Do you have any of the following symptoms: rectal bleeding, unexplained weight loss, or change in bowel habits?	**If yes, talk to your doctor**

Do you have any of the following risk factors?

Prior diagnosis of colorectal cancer	☐ Yes	☐ No	☐ Not sure
History of adenomatous polyps	☐ Yes	☐ No	☐ Not sure
Inflammatory bowel disease (ex. Ulcerative Colitis or Crohn's)	☐ Yes	☐ No	☐ Not sure
Family history of colorectal cancer or known genetic disorders that put you at high risk of colorectal cancer (ex. Lynch syndrome, familial adenomatous polyposis (FAP))	☐ Yes	☐ No	☐ Not sure

If you checked "No" to all of the items, you have the option of at-home screening test (FIT, FOBT, Cologuard) or a colonoscopy.

Colon Cancer Screening Tests

What is it?	A test used to look for abnormalities in people who do not have symptoms
Who should get it?	45 - 75 year olds

TEST OPTIONS

FIT & FOBT (at-home)

Done every year

FIT test instructions

Cologuard (at-home)

Done every 1-3 years

Cologuard instructions

Colonoscopy (GI Procedure Office)

Done up to every 10 years

What is a colonoscopy

MPICCS

School of Medicine
University of Missouri

Keep yourself going for the long haul

Your house, your car, and your tools need maintenance as they age. **So do you**.

Colon cancer testing is an important part of staying healthy as you get older.

Anyone ages 45 - 75: it's time to get a colon cancer test.

Colon cancer (CRC) is the second leading cause of cancer deaths in the US, but you can prevent it with regular testing.

The nuts and bolts of CRC screening

There are 3 types of screening tests for CRC. Talk to your provider about which one is best for you.

At home stool tests

- FIT & FOBT — Repeat every year
- Cologuard — Repeat every 3 years

Procedure center

- Colonoscopy — Repeat every 10 years

Make an appointment today

Place Clinic Logo Here

Clinic Name	Phone Number	Clinic Address
Clinic Name	Phone Number	Clinic Address
Clinic Name	Phone Number	Clinic Address
Clinic Name	Phone Number	Clinic Address
Clinic Name	Phone Number	Clinic Address

MPICCS

Humans prefer to be called "domestically challenged"

Don't let your pet judge you for not getting screened for colon cancer

Colon testing is an important part of staying healthy as you get older.

Pet owners aged 45-75: it's time to get colon testing.

Colon cancer (CRC) is the second leading cause of cancer deaths in the US, but you can prevent it with regular testing.

Get the scoop on CRC testinging

There are 3 types of screening tests for CRC. Talk to your provider about which one is best for you.

At-home Stool Test

FIT & FOBT
Repeat every year

Cologuard
Repeat every 3 years

Procedure Center

Colonoscopy
Repeat every 10 years

Make an appointment today

Place Clinic Logo Here

Clinic Name	Phone Number	Clinic Address
Clinic Name	Phone Number	Clinic Address
Clinic Name	Phone Number	Clinic Address
Clinic Name	Phone Number	Clinic Address
Clinic Name	Phone Number	Clinic Address

MPICCS

School of Medicine

The Makeup of Health

Be beautiful. Be proactive. Stay healthy inside and out.

Colon cancer testing is an important part of staying healthy as you get older

Anyone ages 45-75: it's time to get colon testing

Colon cancer (CRC) is the second leading cause of cancer deaths in the US, but you can prevent it with regular testing

Explore your vanity of testing options:

There are 3 types of tests for Colon cancer
Talk to your provider about which one is best for you

At-home stool tests

- FIT & FOBT — Repeat every year
- Cologuard — Repeat every 1-3 years

Procedure center

- Colonoscopy — Repeat every 10 years

Make an Appointment Today

Clinic Name	Phone Number	Clinic Address
Clinic Name	Phone Number	Clinic Address
Clinic Name	Phone Number	Clinic Address
Clinic Name	Phone Number	Clinic Address
Clinic Name	Phone Number	Clinic Address

Place Clinic Logo Here

MPICCS
School of Medicine

Keep your farm Running Strong

by getting colon testing

Your farm and your tractors need maintenance through the seasons. So do you.

Farmers ages 45-75: it's time to get colon testing

Colon cancer (CRC) is the second leading cause of cancer deaths in the US, but you can prevent it with regular screening.

Step into your barnyard of testing options

There are three types of testing.
Talk to your provider about which one is best for you.

At-home stool test

FIT & FOBT
Repeat every year

Cologuard
Repeat every 3 years

Procedure center

Colonoscopy
Repeat every 10 years

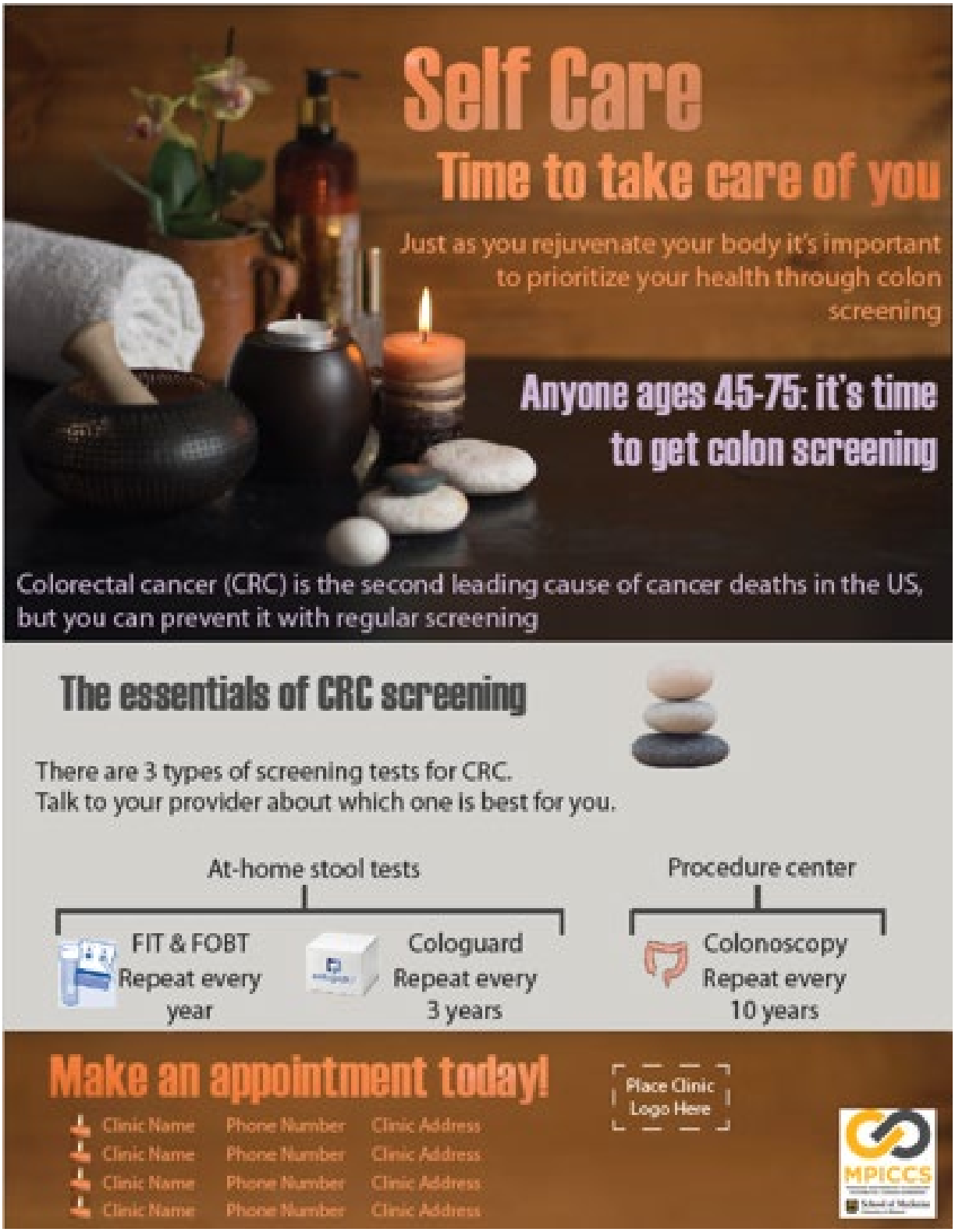
Make an appointment today

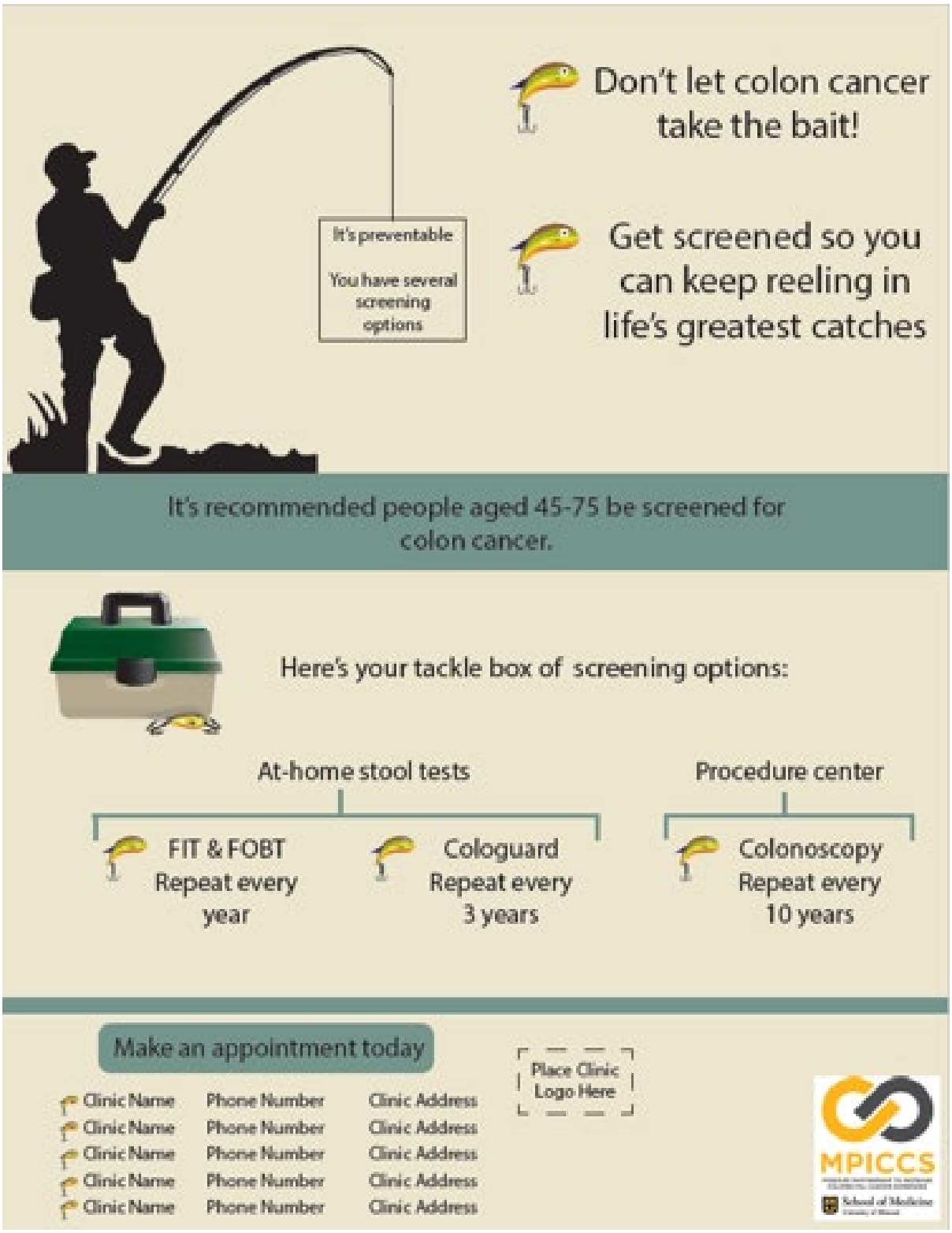
Clinic Name	Phone Number	Clinic Address
Clinic Name	Phone Number	Clinic Address
Clinic Name	Phone Number	Clinic Address
Clinic Name	Phone Number	Clinic Address
Clinic Name	Phone Number	Clinic Address

Place Clinic Logo Here

MPICCS

School of Medicine


Self Care
Time to take care of you
Just as you rejuvenate your body it's important to prioritize your health through colon screening
Anyone ages 45-75: it's time to get colon screening
Colorectal cancer (CRC) is the second leading cause of cancer deaths in the US, but you can prevent it with regular screening
The essentials of CRC screening
There are 3 types of screening tests for CRC.
Talk to your provider about which one is best for you.
At-home stool tests
FIT & FOBT
Repeat every year
Cologuard
Repeat every 3 years
Procedure center
Colonoscopy
Repeat every 10 years
Make an appointment today!
Clinic Name Phone Number Clinic Address
Clinic Name Phone Number Clinic Address
Clinic Name Phone Number Clinic Address
Clinic Name Phone Number Clinic Address
Place Clinic Logo Here
MPICCS


Don't let colon cancer take the bait!
It's preventable
You have several screening options
Get screened so you can keep reeling in life's greatest catches
It's recommended people aged 45-75 be screened for colon cancer.
Here's your tackle box of screening options:
At-home stool tests
Procedure center
FIT & FOBT Repeat every year
Cologuard Repeat every 3 years
Colonoscopy Repeat every 10 years
Make an appointment today
Clinic Name Phone Number Clinic Address
Clinic Name Phone Number Clinic Address
Clinic Name Phone Number Clinic Address
Clinic Name Phone Number Clinic Address
Clinic Name Phone Number Clinic Address
Place Clinic Logo Here
MPICCS

APPENDIX 4:

Informational documents

The following descriptions of informational materials created by the MPICCS Core Team are quoted directly from the 2021 PPMR:

1. ***Clinic Onboarding Guide.*** This document was created and continuously updated during this reporting period and has been disseminated to all partner health systems as they onboard to the program. It outlines the timeline and asks of partner systems as part of the MPICCS program and introduces the Core Team with their contact information.

2. ***CRC Home-based Test Sensitivity & Specificity.*** This document was created during this reporting period and contains important information that partner health systems may want to know about home-based CRC screening tests, such as specificity, sensitivity, cost, interval of test, and number of samples needed. The information was requested by one health system partner, and MPICCS decided it would be beneficial for all partners.[21]

3. ***Baseline Clinic Data Infographic.*** This document was created and disseminated during this reporting period. It was created to represent analysis of Baseline Clinic Data given by partner health systems to give feedback on their screening rates extracted by EHR compared to the rates found during data validation via chart review (i.e., concordance). It also provides key findings from chart review that the health system may want to address, such as patients that have a positive home-based test result and have not had a follow-up colonoscopy. Rates by type of test, age, gender, race/ethnicity, are given, along with concordance by clinic location.

4. ***Quarterly Data Infographic.*** This document was created during this reporting period and will be used in the next reporting period to help partner health systems to track EBI progress. It was created to represent analysis of quarterly extracted data following implementation of EBIs to track progress compared to baseline rates. There is also a timeline of activities thus far as a partner and overview of current EBIs implemented.

5. ***"What an abnormal result means" Infographic.*** This document was created at the request of one of our partner clinic's physicians. It is intended to give to patients an easy to read document that will encourage patients to move forward in scheduling a colonoscopy.

6. ***Resource Document.*** This document has been completed for one health care system in PY2 with all health care systems receiving a resource document tailored to their area. The impetus for creation of this document was discovering that the clinic staff were unaware of all the local resources available to their eligible patients. The content of the resource document includes names, contact personnel, and costs of colonoscopies as well as discounts available by referral system in the partner's area.

[21] In compiling this document, it was discovered that one health system was using a home-based stool kit that had no documented validated sensitivity and specificity. Based on lack of evidence, this health system switched to a more recognized home-based stool kit.

APPENDIX 5:

Article by McElroy and Everett

RE: Maximizing scarce colonoscopy resources: the crucial role of stool-based tests

OXFORD

JNCI: Journal of the National Cancer Institute, 2025, 117(6), 1279–1280
https://doi.org/10.1093/jnci/djaf041
Advance Access Publication Date: February 28, 2025
Correspondence

RE: Maximizing scarce colonoscopy resources: the crucial role of stool-based tests

Jane A. McElroy, PhD*,[1] and Kevin D. Everett, PhD[1]

[1]Family and Community Medicine Department, University of Missouri, Columbia, MO, United States

*Corresponding author: Jane A. McElroy, PhD, Family and Community Medicine Department, University of Missouri, MA306 Medical Science Bldg, DC032.00, 7 Hospital Dr, Columbia, MO 65212, United States (mcelroyja@umsystem.edu).

Coronado and colleagues' argument to adjust the selection of colorectal cancer cancer (CRC)-selection modalities from the preponderant default of colonoscopies as first-line screening to a stool-test first strategy is well crafted.[1] Many European countries have used the stool-test first strategy.[2] A critical component to successfully implement a stool-test first strategy relies on the completion of follow-up colonoscopy for abnormal stool-test results. As noted by Coronado and colleagues, less than 60% of patients with these abnormal stool tests complete a colonoscopy within the first year.[1]

Federally qualified health centers (FQHCs) or primary care clinics that refer their patients to a nearby procedural center face both patient-level and system-level barriers to successful colonoscopy completion. As part of a larger study to improve CRC screening rates in rural FQHC clinics, we examined barriers faced by patients and clinicians at two FQHC systems. Over a 4-month period, 501 open referrals for colonoscopies were made to 18 procedural centers, and 77% of the patients were referred to 4 of these. Some of the procedural centers were willing to work with the FQHCs' patient navigators after concerted efforts; however, the below described barriers were universally experienced by the patient navigators at the 18 procedural centers.

Commonly cited patient barriers are procedural centers having nonhuman automated responses to calls, not returning calls when a message was left, or the person answering calls could not answer questions (and no follow-up call to the patient). The second patient-level barrier is the procedural center not providing sufficient instructions on procedural preparation. A consequence of these patient-level barriers is increased risk of "no-shows" or inadequate preparation for a "clean" colonoscopy. A downstream consequence of no-shows can be these patients' FQHC loses privileges to refer their patients to that procedural center.

System-level barriers are related to procedural centers' communication back to the FQHCs' clinicians. For most small FQHCs, bidirectional communication via electronic medical records (EHRs) with a procedure center is rare due to incongruence of EHR software. Therefore, FQHCs rely on the procedural center to proactively communicate. Without information about the status of an appointment (ie, pending, scheduled, missed, completed) or social determinants of health issues, such as transportation, the FQHC cannot facilitate colonoscopy completion. Another system-level barrier is the FQHCs not receiving the patients' results, and/or receiving gastroenterologists' recommendations that state "pending pathology results" and not subsequently receiving pathology results.

As noted in Coronado et al., overall FQHCs' CRC screening rates are lower than large health care systems. As one can imagine, the aforementioned patient- and system-level barriers can increase the burden on FQHCs' clinicians to address CRC screening among their patient panel. One study[3] modeled the time necessary for primary care clinicians to provide guideline-preventive care for a typical patient panel as unsustainable 14-hour workdays. To encourage prioritization of CRC screening as argued by Coronado et al., addressing the real barriers faced by patients and FQHCs' clinicians related to colonoscopy referral is vital. Addressing these barriers will improve adherence and reduce no-show rates, especially among low-resourced patients of FQHCs, and can close observed screening rate disparities.

Acknowledgments

The contents are those of the authors and do not represent official views of, nor an endorsement, by the Centers for Disease Control and Prevention (CDC), Health and Human Services (HHS), or the US government.

Author contributions

Jane A. McElroy, PhD (Conceptualization; Writing—original draft; Funding acquisition; Conceptualization; Supervision; Project administration) and Kevin D. Everett, PhD (Writing—review & editing; Funding acquisition; Supervision; Project administration).

Funding

This project was supported by the Centers of Disease Prevention and Control award (NU58DP006765).

Conflicts of interest

No conflicts of interest for Jane A. McElroy or Kevin D. Everett.

Received: January 20, 2025. **Revised:** January 23, 2025. **Accepted:** January 25, 2025

Data availability

Deidentified data will be available upon request to the corresponding author.

References

1. Coronado GD, Bienen L, Burnett-Hartman A, Lee JK, Rutter CM. Maximizing scarce colonoscopy resources: the crucial role of stool-based tests. *J Natl Cancer Inst*. 2024;116:647-652. https://doi.org/10.1093/jnci/djae022
2. Zavoral M, Suchanek S, Zavada F, et al. Colorectal cancer screening in Europe. *World J Gastroenterol*. 2009;15:5907-5915. https://doi.org/10.3748/wjg.15.5907
3. Porter J, Boyd C, Skandari MR, Laiteerapong N. Revisiting the time needed to provide adult primary care. *J Gen Intern Med*. 2023;38:147-155. https://doi.org/10.1007/s11606-022-07707-x

JNCI: Journal of the National Cancer Institute, 2025, 117, 1279–1280
https://doi.org/10.1093/jnci/djaf041
Correspondence

APPENDIX 6:

Article by Misty Phillips et al.

Implementing Educational and Systems-Level Changes to Improve Cancer Screening Rates Among State Employees in Missouri

PREVENTING CHRONIC DISEASE
PUBLIC HEALTH RESEARCH, PRACTICE, AND POLICY
Volume 19, E79 DECEMBER 2022

TOOLS FOR PUBLIC HEALTH PRACTICE

Implementing Educational and Systems-Level Changes to Improve Cancer Screening Rates Among State Employees in Missouri

Misty A. Phillips, MSW, MBA[1]; Sarah Chavez, PhD[2]; Maggie Grotefendt, BS[3]; Xarria Lewis, MPH[1]; Melanie Gowdy, MSW, MS[4]; Jane A. McElroy, PhD[5]; Jean S. Wang, MD, PhD[6]; Sandra Hentges, MEd[1]

Accessible Version: www.cdc.gov/pcd/issues/2022/22_0155.htm

Suggested citation for this article: Phillips MA, Chavez S, Grotefendt M, Lewis X, Gowdy M, McElroy JA, et al. Implementing Educational and Systems-Level Changes to Improve Cancer Screening Rates Among State Employees in Missouri. Prev Chronic Dis 2022;19:220155. DOI: https://doi.org/10.5888/pcd19.220155.

PEER REVIEWED

Summary

What is already known on this topic?

Missouri state employees have lower rates of cancer screening compared with statewide averages, despite having access to state-sponsored health insurance.

What is added by this report?

Our screening improvement program used a strength-based approach to identify existing resources and leverage partnerships to promote collaboration among internal and external partners. We implemented a health education campaign that used print materials, email, videos, and digital media and developed a sustainable and scalable evidence-informed health communications campaign aimed at increasing cancer screening rates among state employees, all of whom have access to health insurance.

What are the implications for public health practice?

Results of these efforts have broad implications for public health practice, providing a roadmap for designing and implementing expanded employer-based cancer screening initiatives.

Abstract

As of 2022, only 51% of active eligible state employees in Missouri have been screened for colorectal cancer and 67% for breast cancer, despite having state-sponsored health insurance. In fall 2020, the Missouri Department of Health and Senior Services Comprehensive Cancer Program partnered with the Missouri Cancer Consortium to create a strategy to improve cancer screening rates among state employees. The project was designed to include 3 phases: 1) a colorectal cancer education phase, 2) an expanded education phase that included additional cancers, and 3) a proposed intervention phase that will include screening events. In the first phase, in 2020, colorectal cancer educational materials were sent to all state employees. In the second phase, in 2022, educational resources were expanded to include additional cancers and screening tools. In both initiatives, educational materials and information on current screening recommendations were distributed to approximately 40,000 state employees. A database of screening rates was developed to monitor screening rates and challenge state employees to complete screenings. Evidence-informed interventions were implemented with a focus on health equity. We used a regional approach to identify geographic areas with the greatest need. These efforts will support the next phase of the project, which involves planning breast and colorectal cancer screening events. Policy changes will be encouraged to remove systems-level barriers that discourage employees from being screened for cancer. Recommended tools and strategies can be adopted by similar organizations with complex, multitier employee structures.

Background

The Missouri Comprehensive Cancer Control Program (MCCCP) of the Missouri Department of Health and Senior Services (DHSS) is funded by the Centers for Disease Control and Prevention and provides leadership for the coordination of the state's comprehensive cancer prevention and control efforts (1). To achieve its goals, MCCCP works closely with key partners across the state through participation in the Missouri Cancer Consortium, which is made up of community members, academic partners, health care providers, and other organizations (2). Both MCCCP and the Missouri Cancer Consortium share the overarching goals of preventing cancer and reducing cancer mortality through system-wide advancements in risk reduction, access to early detection methods, improved treatment options, and increased survivorship. Building

PREVENTING CHRONIC DISEASE
PUBLIC HEALTH RESEARCH, PRACTICE, AND POLICY
VOLUME 19, E79
DECEMBER 2022

on a previous work plan, MCCCP collaborated with the Missouri Cancer Consortium to develop a new work plan of goals and strategies for cancer screening interventions among state employees. The goals of this new MCCCP work plan, which also reflect the overarching goals of the Centers for Disease Control and Prevention, are to reduce cancer risk, decrease cancer incidence and mortality, reduce cancer disparities (eg, racial and ethnic, urban vs rural), and improve quality of life among survivors in Missouri. The MCCCP plan has 5 key strategies: 1) enhance the quality and completeness of data submitted to the National Program of Cancer Registries and improve the use and dissemination of data in Missouri; 2) use surveillance systems and population-based surveys to assess the state's cancer burden and inform cancer control programs; 3) support partnerships for cancer control and prevention; 4) implement evidence-based screening interventions; and 5) monitor and evaluate cancer control programs (3).

Cancer control programs in the workplace

The collaboration between MCCCP and the Missouri Cancer Consortium was established, in part, in response to a 2016 study that analyzed the extent to which national comprehensive cancer control programs implemented cancer prevention interventions in the workplace (4). A comparison of current workplace screening programs found that tobacco control was the most common intervention, followed by screening for colorectal cancer and breast cancer (4). Workplace interventions were largely focused on education on tobacco cessation (71.9%) or health-related policies on smoke-free work environments (81.3%) (4). Strategies targeting health benefits of interventions were less common (37.5%), but they included sending reminders to employees who were not up to date on screening or providing a health insurance incentive for employees who participate in a health risk assessment and education session (4). Strategies to provide environmental support were focused on reducing access barriers to cancer screening by providing on-site mobile mammography and colorectal cancer screening via fecal immunochemical test (FIT) or fecal occult blood test (FOBT). However, these strategies were reported in the workplans of only 34.4% of comprehensive cancer control programs (4). The study illustrates the need for such programs to include a wider range of interventions to address modifiable cancer risk factors and increase recommended screenings (4). Rates of colorectal cancer screening were lower than rates set forth in national objectives in all comprehensive cancer control programs, suggesting a need for increased program-driven workplace interventions directed toward adults aged 45 to 75 years (4).

Baseline assessment of cancer screening prevalence among Missouri state employees

Missouri has approximately 40,700 full-time employees working in 24 state agencies, representing 0.007% of the total state population. State employees are a heterogenous population, with a median salary of $41,750, age groups spanning 3 generations, residence in both rural and urban regions, diverse racial and ethnic backgrounds, and a wide range of education and socioeconomic levels. All state employees have access to a state-sponsored health insurance plan (5). Because the state workforce is so diverse, our interventions were designed to promote health equity and overcome any barriers related to social determinants of health (6).

In 2020, MCCCP conducted a needs assessment to compare statewide rates of colorectal and breast cancer screening, screening rates among state employees, and screening rate objectives set forth in Healthy People 2020 (70.5% for colorectal cancer and 81.1% for breast cancer), which have since been updated in Healthy People 2030 (7). Healthy People 2030 objective C-07 is to increase the proportion of adults screened for colorectal cancer to 74.4% (8). At the time of the 2020 assessment only 51.0% of eligible state employees had been screened for colorectal cancer through use of either stool testing or colonoscopy. By comparison, in 2018, 65.2% of US adults aged 50 to 75 years received a colorectal cancer screening based on the most recent guidelines (8), and the 2020 Behavioral Risk Factor Surveillance System survey estimated that 74.7% of people aged 50 years or older in Missouri had ever had colorectal screening (9).

Healthy People 2030 Objective C-05 is to increase the proportion of women in the US who receive a mammogram, with a goal of 80.5% (10). Only 67% of eligible female state employees aged 50 to 74 in Missouri had a mammogram in the previous 2 years. In 2019, an estimated 76.4% of US women aged 50 to 74 years had a mammogram in the previous 2 years in accordance with the most recent guidelines (10). In Missouri, 76.7% of women aged 50 to 74 years had a mammogram in the past 2 years, according to the 2020 Behavioral Risk Factor Surveillance System survey (11). Thus, for both colorectal cancer and breast cancer screening, screening rates among Missouri state employees were lower than state and national rates and lower than Healthy People 2020 and 2030 goals.

Implementation of the 3-Phase Screening Improvement Project

Implementation of the Screening Improvement Project (SIP) began in fall 2020, with an expected completion date of July 2024. The project team selected a strengths-based approach, defined as a

PREVENTING CHRONIC DISEASE
PUBLIC HEALTH RESEARCH, PRACTICE, AND POLICY
VOLUME 19, E79
DECEMBER 2022

process of capitalizing on assets, strengths, and available resources. Thus, the SIP team began by identifying the resources, strengths, and capabilities of MCCCP to leverage existing partnerships through the Missouri Cancer Consortium. This approach allowed the SIP team to build an evidence-informed intervention based on existing team strengths, including an accessible population, an existing infrastructure for communicating health information to state employees, and collaborative partnerships between state programs and MCCCP. The goal of this project is to increase state employee screening rates by tailoring existing educational materials to a diverse audience of state employees with access to state-sponsored insurance. During early project planning meetings with project partners, the key objective of the SIP was defined as changing the behavior of state employees by encouraging them to develop preventive care-seeking behaviors, such as participating in cancer screenings. Expected outcomes include increases in screening rates, knowledge of cancer prevention behaviors, knowledge of how to access care, and awareness of the importance of cancer screenings; increased work productivity; and decreased time off caused by illness. All of this will result in savings in health care costs, improved health behaviors, and, most importantly, decreased mortality.

The SIP project was designed to include 3 distinct phases directed toward specific populations. The first phase focused on convening partners, disseminating readily available tools and resources on colorectal cancer prevention and screening to state employees, and monitoring overall screening rates over time. The second phase included expanded distribution of education materials to state employees and the development of statewide media campaigns to educate all Missouri residents on screening. The third phase will focus on implementation of evidence-based interventions among state employees and evaluation of these screening events.

Phase I: Convening Partners and Disseminating Tools and Resources

Assembling the Screening Improvement Project team

SIP partners were assembled from the Missouri Cancer Consortium, which has multiple workgroups consisting of key partners from around the state, as well as DHSS MCCCP representatives. The partners for this project are the American Cancer Society, DHSS Show Me Healthy Women, DHSS Tobacco Prevention and Control, DHSS Wellness Program, Gateway to Hope, the Masonic Cancer Alliance, the Missouri Cancer Consortium Breast Cancer Workgroup, the Missouri Colorectal Cancer Roundtable, the Missouri Department of Mental Health, the University of Missouri–Columbia School of Medicine, the Siteman Cancer Center, and the Washington University School of Medicine.

The SIP team comprises a diverse group of individuals with a wide range of experience and expertise in cancer control and evidence-based interventions. The team includes 2 master's-level social workers with experience in strengths-based approach theory. A gastroenterologist joined the SIP team to provide clinical oversight for the interventions, based on her extensive experience with colorectal cancer screening; she is also the chairperson of the Missouri Colorectal Cancer Roundtable. The SIP team also includes a professor who works as an epidemiologist, specializing in cancer prevention, rural health, and health promotion in underrepresented populations, including sexual and gender minorities; a senior scientist to support SIP's goals to reduce potential disparities in cancer screening and education in the diverse state employee population; a chief executive officer with a unique understanding and perspective on multisector approaches to complex social challenges, such as health care access; and a cancer partnership expert with experience in clinical quality control and improvement. The team's combined experience is wide ranging and allows for a strong collaboration and partnership for the implementation of SIP's various phases.

Identifying a strategy to reach a diverse audience of state employees

The assembled SIP team began by identifying existing assets and expertise that could support the proposed employee screening efforts. This approach builds on the capacity of the existing environment, promotes systems-level change, and encourages preventive care-seeking behavior among state employees. This multitiered intervention was critical to addressing multilevel barriers that could affect preventive care-seeking behaviors, including individual behaviors and resource alignment. By mobilizing available resources and assets of the health landscape, the employer, and the collaborative community partners, MCCCP and the Missouri Cancer Consortium sought to strategically engage in systems-level change to modify the built environment. Identifying and removing barriers for individuals would increase the likelihood of state employees' potential for successful navigation of systems and use of existing cancer screening resources.

Dissemination of tools and resources on colorectal cancer to state employees

In fall 2020, colorectal cancer screening rate among state employees enrolled in state-sponsored health insurance plans was 16%. The direct mail brochure featured a selection of photographs that reflected our goal of promoting health equity by representing the diverse population of state employees. These brochures included

PREVENTING CHRONIC DISEASE
PUBLIC HEALTH RESEARCH, PRACTICE, AND POLICY
VOLUME 19, E79
DECEMBER 2022

facts about colorectal cancer, how survival rates are improved if the cancer is caught early, an overview of the screening process, recommendations to lower risk, how to find an in-network physician, and sources of additional information. The materials also encouraged employees to ask their physician about being screened earlier on the basis of additional risk factors, such as family history of colorectal cancer.

The SIP program distributed an email to state supervisors to encourage support of a systems-level policy change. Specifically, we asked supervisors to consider approving employee requests to use their 1 hour per month allocated time for health-related activities, such as participating in a cancer screening event. A 2018 study of the Centers for Disease Control and Prevention–funded Colorectal Cancer Control Program reported higher screening rates in primary care clinics (eg, federally qualified health centers, community health centers) with a champion (a clinical person who assumes a leadership role in evidence-based interventions for CRC screening), further illustrating the importance of developing strong messaging across multiple state divisions and identifying champions to encourage screening at each site (12). To monitor the potential impact of SIP, the SIP team collected data on overall employee cancer screening rates from the state-sponsored health insurance provider. This data collection allowed SIP to track selected locations throughout the state and overall screening rates without having access to individual employees' personal health information.

Phase 2: Distribution of Educational Materials, Multimedia Campaigns for All Missouri Residents, Expanded Print Materials

Expanded distribution of cancer education and screening information

In fall 2021, the prevalence of colorectal cancer screening among state employees enrolled in state-sponsored health insurance plans (50.1%) was 15.1 percentage points less than the prevalence among Missouri population overall (65.2%) (8). Therefore, SIP expanded efforts to disseminate educational materials that described different types of cancer screenings (breast, lung, prostate, cervical, and colorectal) in an electronic format to all state employees. A "Get Your Tests" flyer described guidelines for cancers that have screening tests and explained what each screening entails. The state-sponsored health insurance provider sent an email to all current state employees; the email introduced the educational pieces and referred recipients via an embedded link to a web-based education landing page (healthy.mo.gov/cancer) where they could find additional information on all types of cancers. Attention was given to selecting images of people for the educational material who represented various ages and racial and ethnic backgrounds.

Multimedia campaigns for all Missouri residents

In April 2022, two multimedia campaigns were developed for all Missouri residents. One focused on cancer prevention and screening (www.youtube.com/watch?v=YcdFuqTM03Q) and one focused on cancer survivorship (www.youtube.com/watch?v=BypYX20kwVI). Both campaigns were run via television advertisements, Facebook, and Instagram to reach adults aged 25 years or older. We based our decision to use television advertisements on the rationale that advertisements viewed on the largest screen in the home (television) are more likely to reach multiple people in a single household simultaneously. The campaign also included static image messages to be shared on social media, such as an infographic on colorectal cancer (Figure). Both strategies focused on providing education on the importance of cancer prevention through risk reduction and encouraging cancer screenings for all people in Missouri.

PREVENTING CHRONIC DISEASE
PUBLIC HEALTH RESEARCH, PRACTICE, AND POLICY
VOLUME 19, E79
DECEMBER 2022

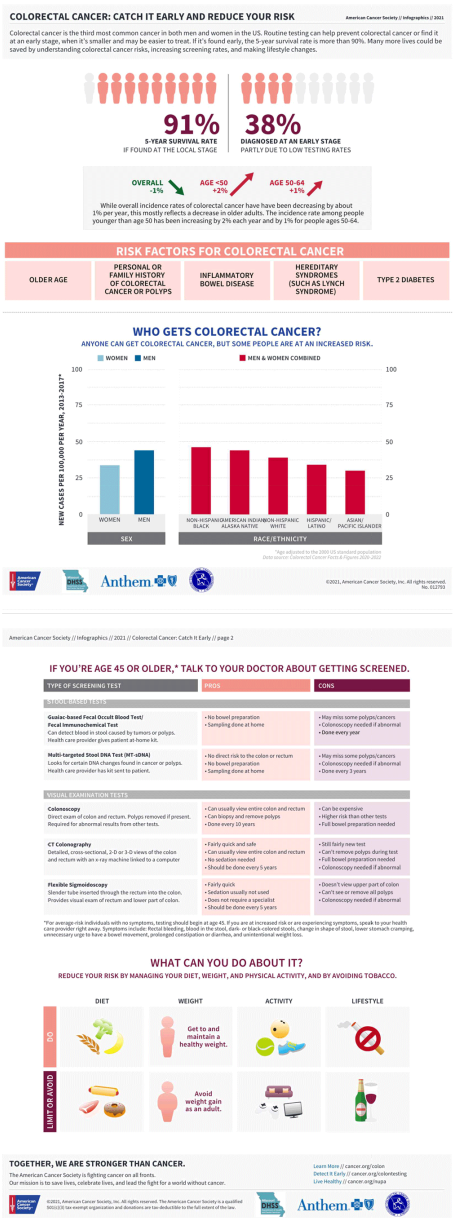


Figure. An infographic on colorectal cancer and colorectal cancer screening developed by the Screening Improvement Project in Missouri in 2021. The infographic was designed to increase knowledge and awareness of colorectal cancer and improve colorectal cancer screening rates among Missouri state employees and the general population in the state. Reproduced with permission from the American Cancer Society.

The SIP team solicited recommendations for people to be featured in the media campaigns. As part of the process of selecting people to be featured, the team reviewed answers to a series of questions the cancer survivor provided about their cancer experience. The featured cancer survivors represented various cultural backgrounds, cancers, sexes, ages, and economic statuses. The prevention campaign included three 60-second videos airing as television commercials in May 2022, with more than 5.2 million household impressions. The survivorship campaign included four 90-second videos airing via television and social media across Missouri in June 2022, with the goal of providing support and education related to screening and survivorship. The survivorship campaign reached nearly 1.4 million households, with approximately 15,000 engagements (ie, likes, clicks, comments, and shares).

Ongoing expansion of print materials for cancer education and screening information (in progress)

In addition to the original cancer education materials, new materials are being developed for lung, colorectal, breast, and cervical cancer. A general cancer screening guide will also be available to print and display in the facilities of 24 state agencies, on bulletin boards throughout buildings and breakrooms frequented by employees. Because some employees may not have reliable access to email or the internet, this phase also seeks to provide accessible resources to state employees not reached through digital media. The development of expanded print materials began in April 2022, with an expected completion by end of summer 2022. By providing both print and electronic versions, we hope to ensure that all employees have access to these materials.

Through implementing these project activities, the SIP team identified several key recommendations to share with other CCCPs (or any employer) seeking to increase cancer screening rates among employees (Table).

Phase 3: Future Directions: Implementation of Evidence-Based Interventions for Screening Events

The strengths-based approach used throughout this project capitalized on resources and capabilities of MCCCP partnerships by building on current evidence-informed interventions and tailoring them to state employees. At least 2 pre-event educational we-

PREVENTING CHRONIC DISEASE
PUBLIC HEALTH RESEARCH, PRACTICE, AND POLICY
VOLUME 19, E79
DECEMBER 2022

binars will be advertised to state employees via email announcements in late fall 2022. These webinars will provide information about breast and colorectal cancer and prevention and what to expect when being screened or if receiving an abnormal test result and time for a question-and-answer session. Two physicians will participate on the expert panel, ready to field general medical questions.

The first on-site event, scheduled for December 12, 2022, will take place in a centralized location in the state capitol, Jefferson City. Fifteen state agency buildings with 3,185 employees are located within a 5-mile radius of the event site. The Ellis Fischel Cancer Center mammography van, which can accommodate 15 appointments per day, will be on site. Approximately 300 stool FIT kits for home-based colorectal cancer screening will be provided by BJC Healthcare/Siteman Cancer Center. Employees who attend the event will complete a brief survey to determine eligibility for screening, and if they are eligible, they will be given a stool FIT kit to take home to complete. Each FIT kit will include a postage-paid addressed envelope for the patient to easily return their stool sample to the laboratory. Test results will be kept confidential, and the referring physician will review results with the patient. Employees with positive test results will be referred for follow-up colonoscopy evaluation. In addition to state employees, other household members on the same health insurance plan can take advantage of the FIT testing opportunity. Others (ie, not state employees or their family/household members) who attend the event and ask about receiving a mammogram or colonoscopy will be provided information about resources. SIP has set a goal of distributing educational pieces to at least 300 attendees at this first pilot event. This event model will be adjusted and replicated at additional events throughout the state in 2023.

Because state employees have diverse demographic characteristics, the SIP team has engaged with the MCCCP Health Equity Workgroup to discuss strategies for planning these events in other parts of the state to reach a diverse population. Our initial selection of evidence-based interventions includes patient reminders and small media (12). Addressing additional barriers will also be considered as we reach out to increase cancer screening behavior in phase 3. For example, in one study, many patients in a safety-net health care setting indicated that their health care provider had not recommended screening or cited concerns about cost and logistic challenges, such as transportation and time (13). Employee reminders will be distributed before the screening events to increase attendance and reduce the number of no-shows.

Evaluation of each of these events — both process evaluation and outcome evaluation — will be completed. The SIP team will meet approximately 2 weeks after each event for a debriefing on such aspects as the pre-event webinars, use of the mammography van, distribution of FIT kits, and volunteers' feedback. For the quantitative evaluation, we will assess the number of FIT kits returned within 1 month of the event, the proportion of mammogram appointments completed, the number of FIT kits distributed, the number of non–state employees asking for breast or colorectal cancer screening referrals, the approximate number of attendees, and the number of volunteers needed versus available. On the basis of this feedback, we will adjust the logistics of the next event to maximize screening opportunities.

Summary

Even among state employees with health insurance coverage for routine cancer screening, compliance with cancer screening recommendations fall far short of Healthy People 2030 goals. Collectively, our 3-phase state employee screening project seeks to build on existing resources, strengthen partnerships among organizations and institutions involved in reducing the burden of cancer, and promote preventive care-seeking behavior among state employees. The first 2 phases increased exposure to information about the importance of cancer prevention and screening among state employees and the overall population in Missouri. The capstone events in phase 3, to begin in late 2022, will provide breast and colorectal cancer screening opportunities for state employees. The ultimate success of this 3-phase initiative will be determined by whether cancer screening rates of state employees increase over time. With a state agency providing leadership and a role model, other workplaces have the opportunity to adopt this process with the overarching goal of better health and less cancer burden among Missourians.

Acknowledgments

We acknowledge Steve Cramer, MA; Paula Fox, BSN; Regan Krummen, BS; and Katie Manga, MS; for their assistance with this project.

Funding from the Centers for Disease Control and Prevention (grant no. 1701) supported the implementation of multiple activities and distribution of educational materials throughout the SIP. The funding allowed MCCCP to partner with additional regional and community partners and efficiently allocate resources throughout multiple state agencies and regional offices. MCCCP work plan activities also support Missouri Cancer Consortium activities and evidence-based interventions to prevent and control cancer in Missouri.

No copyrighted materials or surveys were used in this article.

PREVENTING CHRONIC DISEASE
PUBLIC HEALTH RESEARCH, PRACTICE, AND POLICY
VOLUME 19, E79
DECEMBER 2022

Author Information

Corresponding Author: Misty A. Phillips, MSW, MBA, Bureau of Cancer and Chronic Disease Prevention, Missouri Department of Health and Senior Services, 920 Wildwood, PO Box 570, Jefferson City, MO 65102. Telephone: 573-522-2848. Email: Misty.Phillips@health.mo.gov.

Author Affiliations: [1]Bureau of Cancer and Chronic Disease Prevention, Missouri Department of Health and Senior Services, Jefferson City, Missouri. [2]Siteman Cancer Center, St Louis, Missouri. [3]American Cancer Society, St Louis, Missouri. [4]Gateway to Hope, Maplewood, Missouri. [5]University of Missouri, Columbia, Missouri. [6]Washington University in St Louis, St Louis, Missouri.

References

1. Centers for Disease Control and Prevention. National Comprehensive Cancer Control Program (NCCCP). Updated July 30, 2021. Accessed April 1, 2022. https://www.cdc.gov/cancer/ncccp/index.htm
2. Missouri Cancer Consortium. Missouri Cancer Consortium. Updated March 31, 2022. Accessed April 1, 2022. https://www.cancernmo.org
3. Missouri Department of Health and Senior Services. The burden of cancer in Missouri: a comprehensive analysis and plan, 2016–2020. Missouri Department of Health and Senior Services; 2016.
4. Nahmias Z, Townsend JS, Neri A, Stewart SL. Worksite cancer prevention activities in the National Comprehensive Cancer Control Program. J Community Health 2016;41(4):838–44.
5. Missouri Consolidated Health Care Plan. Missouri Consolidated Health Care Plan. 2022. Accessed April 1, 2022. http://www.mchcp.org
6. Office of Disease Prevention and Health Promotion. Healthy People 2030: social determinants of health. Accessed April 1, 2022. https://health.gov/healthypeople/priority-areas/social-determinants-health
7. Office of Disease Prevention and Health Promotion. Healthy People 2030. Accessed April 1, 2022. https://health.gov/healthypeople
8. Office of Disease Prevention and Health Promotion. Healthy People 2030 objectives and data: increase the proportion of adults who get screened for colorectal cancer — C-07. Accessed April 1, 2022. https://health.gov/healthypeople/objectives-and-data/browse-objectives/cancer/increase-proportion-adults-who-get-screened-colorectal-cancer-c-07
9. National Cancer Institute. State cancer profiles. Screening and risk factors report by state (directly estimated 2020BRFSS Data), ever had colorectal endoscopy (sigmoidoscopy or colonoscopy), all races (includes Hispanic), both sexes, ages 50+. Accessed April 2, 2022. https://statecancerprofiles.cancer.gov/risk/index.php?topic=colorec&risk=v09&race=00&sex=0&datatype=0&type=risk&sortVariableName=default&sortOrder=default#results
10. Office of Disease Prevention and Health Promotion. Healthy People 2030 objectives and data: increase the proportion of females who get screened for breast cancer — C-05. Accessed April 1, 2022. https://health.gov/healthypeople/objectives-and-data/browse-objectives/cancer/increase-proportion-females-who-get-screened-breast-cancer-c-05
11. National Cancer Institute. State cancer profiles. Screening and risk factors report by state (directly estimated 2020 BRFSS data), had a mammogram in past 2 years, all races (includes Hispanic), female, ages 50–74, Healthy People 2020 objective number: C-17. 2020. Accessed April 2, 2022. https://statecancerprofiles.cancer.gov/risk/index.php?topic=women&risk=v05&race=00&type=risk&sortVariableName=default&sortOrder=default#results
12. DeGroff A, Sharma K, Satsangi A, Kenney K, Joseph D, Ross K, et al. Increasing colorectal cancer screening in health care systems using evidence-based interventions. Prev Chronic Dis 2018;15:E100.
13. Muthukrishnan M, Arnold LD, James AS. Patients' self-reported barriers to colon cancer screening in federally qualified health center settings. Prev Med Rep 2019;15:100896.

PREVENTING CHRONIC DISEASE
PUBLIC HEALTH RESEARCH, PRACTICE, AND POLICY
VOLUME 19, E79
DECEMBER 2022

Table

Table. Project to Improve Cancer Screening Rates Among State Employees in Missouri: Lessons Learned and Recommendations for Implementation

Item	Lessons learned and recommendations for implementation
Print and electronic materials	Using existing evidence-based screening health communications materials developed by the Centers for Disease Control and Prevention allowed for parts of the project to move quickly by only needing to add partner logos.
	Using an electronic platform for parts of the project made some of the materials available quickly and also made it easier to refer employees to additional electronic resources when requested.
	Developing a website landing page for resources allowed for convenient access to a substantial amount of information in a centralized location.
Videos	Developing a script and a schedule provided much-needed guidance to the interviewees, allowing the process to move along quickly and efficiently on a tight timeline.
	Leveraging partners for videos allowed us to capitalize on existing relationships, so we were able to quickly identify experts in the field as well as cancer survivors.
	Meeting interviewees at the marketing agency provided a personal connection with Screening Improvement Project team members and also allowed for edits to be made immediately on-site rather than calling interviewees back for re-shoots.

APPENDIX 7:

Article by Sujha Subramanian et al.

Optimizing tracking and completion of follow-up colonoscopy after abnormal stool tests at health systems participating in the Centers for Disease Control and Prevention's Colorectal Cancer Control Program

Cancer Causes & Control
https://doi.org/10.1007/s10552-024-01898-w

ORIGINAL PAPER

Optimizing tracking and completion of follow-up colonoscopy after abnormal stool tests at health systems participating in the Centers for Disease Control and Prevention's Colorectal Cancer Control Program

Sujha Subramanian[1] · Florence K. L. Tangka[2] · Sonja Hoover[1] · Anjali Mathews[1] · Diana Redwood[3] · Lauren Smayda[3] · Esmeralda Ruiz[4] · Rosario Silva[5] · Victoria Brenton[6] · Jane A. McElroy[7] · Brooke Lusk[8] · Susan Eason[9]

Received: 22 March 2024 / Accepted: 8 July 2024

Abstract

Purpose We present findings from an assessment of award recipients' partners from the Centers for Disease Control and Prevention's Colorectal Cancer Control Program (CRCCP). We describe partners' processes of identifying and tracking patients undergoing stool-based screening.

Methods We analyzed data from eight CRCCP award recipients purposively sampled and their partner health systems from 2019 to 2023. The data included number of stool-based tests distributed and returned; abnormal findings; referrals and completion of follow-up colonoscopies; and colonoscopy findings. We also report on strategies to improve tracking of stool-based tests and facilitation of follow-up colonoscopies.

Results Five of eight CRCCP award recipients reported that all or some partner health systems were able to report stool test return rates. Six had health systems that were able to report abnormal stool test findings. Two reported that health systems could track time to follow-up colonoscopy completion from date of referral, while four could report colonoscopy completion but not the timeframe. Follow-up colonoscopy completion varied substantially from 24.2 to 75.5% (average of 47.9%). Strategies to improve identifying and tracking screening focused mainly on the use of electronic medical records; strategies to facilitate follow-up colonoscopy were multi-level.

Conclusion Health systems vary in their ability to track steps in the stool-based screening process and few health systems can track time to completion of follow-up colonoscopy. Longer time intervals can result in more advanced disease. CRCCP-associated health systems participating in this study could support the implementation of multicomponent strategies at the individual, provider, and health system levels to improve tracking and completion of follow-up colonoscopy.

Keywords Colorectal cancer · Screening · Colorectal cancer tracking · Follow-up colonoscopy · Follow-up of abnormal stool tests · Cancer screening programs

Sujha Subramanian and Florence K.L. Tangka are joint first authors.

✉ Sujha Subramanian
sujha.subramanian@implenomics.com

Jane A. McElroy
mcelroyja@umsystem.edu

[1] Implenomics, 8 The Green, Suite # 6172, Dover, DE 19901, USA

[2] Centers for Disease Control and Prevention, Atlanta, GA, USA

[3] Alaska Native Tribal Health Consortium, Anchorage, AK, USA

[4] AltaMed Health Services, Los Angeles, CA, USA

[5] University of Arkansas for Medical Sciences, Little Rock, AR, USA

[6] Iowa Department of Health and Human Services, Des Moines, IA, USA

[7] University of Missouri, Columbia, MO, USA

[8] Black Hills Special Services Cooperative, Pierre, SD, USA

[9] West Virginia University Cancer Institute, Morgantown, WV, USA

Published online: 06 August 2024

Background

Colorectal cancer (CRC) screening is instrumental in reducing CRC-related mortality [1]. Until 2021, screening for CRC was recommended starting at age 50; however, the United States Preventive Services Task Force (USPSTF) lowered the recommendation to age 45 [2]. For people ages 45–75, the most recent data from the 2021 National Health Interview Survey show that 58.7% were up to date with CRC screening [3]. CRC screening rates vary by race and ethnicity, age group, insurance status, as well as education, income, and location of care [3, 4].

Stool-based tests are one type of CRC screening modality. These include fecal occult blood tests (FOBT) and fecal immunochemical tests (FIT), both of which need to be completed annually according to the USPSTF guidelines [2]. The multi-target stool DNA test (Cologuard; FIT-DNA) is recommended to be completed every 1–3 years [5]. Because of barriers, such as long wait times for screening colonoscopy appointments, travel, distance to providers, and bowel prep [6–8], stool-based tests may be a more readily available screening option. Mailed FIT programs have also been shown to be effective in overcoming CRC screening barriers [9].

Stool-based tests require timely follow-up with colonoscopy ("follow-up colonoscopy") to complete the screening process if the initial stool test is abnormal [2]. A recent systematic review showed that the time interval should be no longer than 9 months, as the incidence of CRC and advanced stage diagnosis increases with time between stool test and follow-up colonoscopy [10]. However, the percentage of people completing follow-up ranges widely; studies have indicated that between 15.4 and 95.2% of patients complete a follow-up colonoscopy within 6 months [11–15].

Many health systems and clinics, including FQHCs, have challenges in identifying patients eligible for CRC screening and tracking results. Systems and clinics may be unable to track patients who need follow-up colonoscopies because their electronic medical record system (EMR) is not configured to track or link abnormal stool-based tests in a systematic way that triggers a clinician's referral for a follow-up colonoscopy [16]. Patients need to visit either a hospital or endoscopy center for the follow-up appointment, which facility (i.e., clinic or procedure center) takes on the responsibility for making sure the patient has an appointment is often unclear. Further, these external facilities may not use the same EMR as the clinic or have a health information exchange in place, so there is no seamless electronic linkage between systems [17]. When any of these happen, it becomes much more labor intensive for clinics to monitor status of appointments, as well as obtain and document results of follow-up colonoscopies.

The Centers for Disease Control and Prevention funds the Colorectal Cancer Program (CRCCP). The CRCCP currently consists of 35 award recipients across the USA to promote CRC screening for age-eligible and uninsured or underinsured patients through the implementation of evidence-based interventions (e.g., patient and provider reminders, provider assessment and feedback, activities to reduce structural barriers, and patient navigation) [18]. The award recipients are made up of 20 state health departments, 8 universities, 2 tribal organizations, and 5 other types of organizations (e.g., an FQHC, a hospital), who often partner with FQHCs. In this paper, we report on the extent to which a sample of health systems, that award recipients' partner with, provide support along the continuum of CRC screening to facilitate the completion of the screening episode. We also summarize the challenges and identify strategies that health systems can use to mitigate barriers in tracking data and improving completion of recommended follow-up colonoscopies.

Methods

The eight participating award recipients in this study are a part of the CRCCP Learning Collaborative, a subset of 21 CRCCP award recipients that assess the implementation, effectiveness, and cost of interventions [19]. Members of the Learning Collaborative participate in CDC CRCCP special studies and provide data to generate evidence based on their real-world practices. The eight participating award recipients in this study were selected through a purposive sampling process, using elements that included geographic diversity (and included all U.S. Census Regions) and ability to report data on tracking stool-based test screenings and their outcomes.

We introduced the study to the eight award recipients on videoconference calls in 2023 to gauge their interest in taking part. We provided data collection spreadsheets that the award recipients completed on behalf of their health systems and returned via email. Award recipients were asked to select representative health systems from among those who were participating in the CRCCP. The one inclusion criterion was that the health system had to have the ability to track colorectal cancer screening at some level and provide the requested data. Award recipients provided the sociodemographic characteristics of the CRC screening-eligible populations at the health systems. We report details on sex, race/ethnicity, and the proportion uninsured. We also report the overall screening uptake. Recipients also provided screening and follow-up colonoscopy outcomes data, and we calculated stool test return rates, percentage of abnormal FIT results, CRC screening uptake, and percentage of follow-up colonoscopies completed. We defined stool tests as the sum

of FOBT, FIT, and FIT-DNA tests. The data were analyzed and managed in Microsoft Excel.

The reporting periods used by the award recipients in most instances were the same for demographics and outcome measures. However, three award recipients reported different time periods for demographics and outcome measures because of the lag in implementation. The years for reporting demographics ranged from 2019 to 2022 and for outcomes ranged from 2020 to 2022. The outcome measures were reported for their baseline periods, which we defined as the time immediately prior to the introduction of any strategies to improve the reporting of screening measures.

We also examined whether award recipients were able to track patients at various stages along the CRC screening continuum and what processes health systems had in place to track patients with abnormal stool tests through follow-up colonoscopies. Although the main focus of our assessment was on follow-up colonoscopy, we included the full screening episode to assess the overall ability of health systems to track screening data. First, if the data collection had flaws in the initial screening steps, then the number of patients identified with abnormal stool test findings may not be accurate. Second, similar data issues may impact quality of information available along more than one step in the screening continuum and, thus, these issues may have to be addressed in tandem. Data are reported at the award recipient level and an average was calculated when multiple health systems were included for an award recipient.

Additionally, we conducted in-depth interviews by videoconference with stakeholders from each award recipient to learn more about their current processes as well as the barriers and challenges the health systems faced in tracking follow-up colonoscopies. The stakeholders were the CRCCP program directors or program managers for award recipients and their backgrounds included nursing, epidemiology, and evaluation. Questions included

- How do participating health systems in the CRCCP program identify patients who need CRC screening?
- How do participating health systems track, or plan to track, results of the stool screening test?
- How do health systems track, or plan to track, follow-up colonoscopies using EMR or other approaches?
- What are the challenges for health systems to track and facilitate follow-up colonoscopy? And what, if any, strategies are being implemented to overcome these challenges?

The calls lasted approximately 30 min. We later conducted site visits during the spring of 2023 to five award recipients and some of their partner health systems, which were a convenience sample, where we further discussed the process the health systems used to track colonoscopies after abnormal stool test results. We maintained detailed notes of the interviews and site visit conversations that were maintained in Microsoft Word. These notes were reviewed by staff at Implenomics to derive key themes pertaining to barriers and potential solutions. The data gathered through these sources also provided additional contextual knowledge to interpret the results. Institutional Review Board approval was not required because it was determined this study was not research involving human subjects.

Results

Participating health system and patient characteristics

In Table 1, we present patient and provider characteristics from the health systems partnering with the eight CRCCP award recipients. The number of participating health systems per award recipient in this study ranged from 1 to 9, while the number of total clinics included ranged from 4 to 23. The total number of patients, aged 50–75, included in our assessment ranged from 1,978 to 48,558. Across health systems, more than half of the patients were women. The percentage of patients who were uninsured varied across the health systems. Two award recipients had a low proportion of patients who were uninsured (5.0% and 12.8%), while one recipient had a large proportion of patients who were uninsured (38.0%). Similarly, there were differences in population characteristics by race and ethnicity across the eight award recipients: one award recipient had a population that was predominantly Hispanic people (83.2%) and one reported a large proportion of American Indian or Alaska Native people (39.0%). The screening uptake (the percentage of patients screened for CRC) among the award recipients ranged from 38.7 to 48.5%.

Health system ability to track and report screening measures

In Table 2, we report on health systems' ability to track and report data along the CRC screening continuum at baseline. Two of the award recipients reported that the health systems were able to consistently report the number of stool tests mailed or handed out to patients. Four out of the eight award recipients reported that 33.3% to 80.0% of their health systems were able to track stool tests that were provided in clinic or mailed. All award recipients reported that their health systems were able to track all (5 award recipients) or some (3 award recipients) of the stool tests that were returned. Furthermore, only six award recipients reported that their partner health systems were able to consistently document abnormal stool test findings and, although five of

Table 1 Patient and provider characteristics and screening rates among eight CDC Colorectal Cancer Control Program Award Recipients, 2020–2022

	CDC Colorectal Cancer Control Program Award Recipient							
	1	2	3	4	5	6	7	8
12-month timeframe	2020	2021	2021	2019	2022	2021	2019	2020
Health systems (n)	1	1	2	9	3	1	4	5
Clinics (n)	19	22	8	23	4	4	10	8
Primary care PROVIDERS (n)	201	41	27[a]	141	101	27	102	30
Number of screening-eligible patients, and proportion of women and uninsured patients aged 50–75								
Patients (n)	48,558	6,537	6,001	17,649	19,359	1,978	6,471	5,887
Women (%)	55.0	50.0	58.0	52.9	54.3	58.7	58.7	55.8
Uninsured (%)	20.0	38.0	22.8[a]	18.1	12.8	25.9	21.5	5.0
Race/ethnicity of patients aged 50–75 (%)[b]								
Hispanic	83.2	2.0	3.0	16.6	22.6	3.1	8.2	0.0
White	17.2	55.0	87.6	69.7	38.2	71.8	79.9	96.8
African American	3.7	0.0	7.8	8.1	35.1	15.3	0.6	2.1
Asian	7.5	2.0	0.1	2.1	12.0	0.0	5.0	0.0
Native Hawaiian or other Pacific Islander	0.0	0.0	0.2	0.2	0.6	0.0	0.3	0.0
American Indian or Alaskan Native	0.0	39.0	0.6	0.3	0.1	0.0	8.3	0.0
More than one race	0.0	0.0	0.2	1.1	6.9	0.0	0.4	0.7
Refused to report or missing	0.0	0.0	1.1	1.7	0.0	10.0	0.0	0.0
CRC screening uptake								
Number screened	23,523	2,375	2,774	8,562	6,945	821	3,059	2,790
Screening uptake (%)[c]	48.0	42.0	46.2	48.5	38.7	42.0	47.3	47.0

[a]Only 1 health system reported these details; [b]Race /ethnicity of patients may not sum to 100% because of double counting of multiple race/ethnicity. Data for Recipient 4 excludes 1 health system when reporting percentage of women and 2 health systems when reporting race/ethnicity. [c]The proportion of patients screened compared to the number of patients eligible for screening. Screening uptake includes all methods of screening

these could also report follow-up colonoscopy completion, only two award recipients had health systems who tracked the completion timeframe. Four of the award recipients had health systems partners who were able to report all or some of the findings from the follow-up colonoscopy. All award recipients reported that their health systems were using, or will be using, an EMR system to track stool-based screening, while only five out of the eight reported the use of EMRs for follow-up colonoscopy tracking. All but one health system were using or initiating the use of other tools, such as REDCap or Excel, to supplement EMRs to track screening and follow-up colonoscopy.

Table 3 shows screening outcomes from the award recipients who were able to report data for the screening steps. The proportion of stool tests returned ranged from 34.7 to 64.6% (average of 51.7%), while the proportion of abnormal stool tests ranged from 6.9 to 16.8% (average of 12.4%). The referral rate for follow-up colonoscopy ranged from 70.9 to 89.8% (average of 80.9%). The follow-up colonoscopy completion varied substantially across the award recipients from 24.2 to 75.5% (average of 47.9%); one recipient had a completion rate above 70%, while all others had rates below 58%. Only two award recipients were able to report on the follow-up colonoscopy rate within 6 months after abnormal test findings: the completion rate was 16.3% and 63.3% (average of 39.8%). The percentage of award recipients reporting abnormal findings from follow-up colonoscopy ranged from 56.3 to 84.2% (average of 70.6%). The percentage of adenomatous polyps found in colonoscopy follow-ups ranged from 14.0 to 54.1% (average of 35.0%). There was one case of CRC reported.

Improving tracking and completing of follow-up colonoscopies: summary of barriers and solutions

In Fig. 1, we summarize the feedback from award recipients' health systems on abnormal stool test follow-up barriers and impact on patient outcomes. Ideally the EMR tracking process would proceed as follows: a health clinic would receive stool-based test results and record normal and abnormal tests into the EMR. If a stool test was abnormal, a referral for a colonoscopy would be made and an appointment would be scheduled and documented. The health clinic would then subsequently be notified that a patient completed a follow-up colonoscopy and would receive the patient's results. This information, including when the next colonoscopy should be performed, would also be entered into the EMR. However, award recipients noted a number of barriers that interfere

Table 2 Clinic/health system ability to report data along the CRC Screening Continuum at baseline

	CDC Colorectal Cancer Control Program Award Recipient							
	1	2	3	4	5	6	7	8
12-month timeframe	2020	2021	2021	2021	2022	2021	2021	2021–2022
Health systems (n)	1	1	2	9	3	1	4	5
Clinics (n)	19	22	8	23	4	4	10	8
Do clinics within health systems track stool test distribution and return?								
Provided in clinic/mailed stool tests	None	None	None	Some (51.4%)	Some (33.3%)	All	All	Some (80.0%)
Returned stool tests	All	All	Some[a]	Some (62.5%)	Some (33.3%)	All	All	All
Abnormal stool test findings	All	All	All	None	None	All	All	All
Do clinics within health systems track referral and completion of follow-up colonoscopy after abnormal stool test?								
Referred for a follow-up colonoscopy	All	All	All	None	None	None	All	All
Completed follow-up colonoscopy	All	All	All	None	None	All[b]	All	All
Completed follow-up colonoscopy within 6 months of abnormal findings	All	All	None	None	None	None	None	None
Do clinics within health systems track results from follow-up colonoscopy?								
Any abnormal findings	None	All	All	None	None	None	Some	All
Adenomatous polyps	None	All	None	None	None	None	All	All
CRC diagnosis	None	All	None	None	None	None	Some	All
Do clinics within health systems track, or plan to track, the results of the stool-based screening test?								
Track within EMR	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Track using other approaches[c]	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
Do clinics within health systems track, or plan to track, follow-up colonoscopies?								
Track within EMR	Yes	No	Yes	Yes	Yes	No	No	Yes
Track using other approaches[c]	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes

We defined stool tests as FOBT, FIT, and FIT-DNA tests. [a]Not able to consistently track all returns; [b]The recipient did not report number referred so it is not possible to verify all colonoscopies are for follow-up after abnormal stool tests; [c]Most common approaches were to use REDCap or Excel and at baseline data collection these approaches may not have been fully functional

with this process at each step, including not tracking stool test distribution and not knowing if a colonoscopy was for initial screening or follow-up. Along the continuum, award recipients also reported challenges related to lack of staff to enter or abstract data into the EMR, as well as delays and challenges in receiving findings from facilities outside the clinic/health system. In turn, these challenges impact patient outcomes negatively in numerous ways. For instance, recipients noted that health clinics cannot conduct patient reminders if they do not know who received and returned stool-based tests or who had appointments for follow-up colonoscopies. And, if a patient had a follow-up colonoscopy and if the results were abnormal, it was not possible for a health clinic to assist or navigate the patient through treatment without these tracking data.

In Table 4, we present a summary of strategies that CRCCP health systems have begun implementing to improve follow-up colonoscopy completion after the baseline data were collected. Health systems shared multiple strategies to improve data tracking as well as to facilitate follow-up colonoscopies, which we categorized into individual, provider, health system, and community levels of implementation. To improve data tracking of colonoscopy completion, health systems used patient self-reports to enter information into the EMR, as well as trained all staff, including providers, to enter information directly into the EMR. At the health system level, health systems implemented strategies to put into place or enhance the EMR, population health systems, and supplemental platforms, such as REDCap. Patient navigators were also tasked with finding and entering patient test results. At the community level, one award recipient created a website to support making follow-up colonoscopy appointments and providing results.

Health systems have put into practice numerous interventions at the individual level in order to facilitate follow-up colonoscopies. Patients were educated on how to prepare for a follow-up colonoscopy as well as how to interpret test results. Patient navigators, nurses, and other office staff provided instructions or assisted with scheduling appointments for follow-up colonoscopies and, in instances where cost was a concern, provided assistance in finding and enrolling patients in insurance or charitable care. Health center staff also implemented patient reminders and navigation support. At the provider level, health systems added follow-up

Table 3 Screening outcomes among health systems able to report the required data

	CDC Colorectal Cancer Control Program Award Recipient								Mean
	1	2	3	4	5	6	7	8	
12-month timeframe	2020	2021	2021	2021	2022	2021	2021	2021–2022	
Steps along the Screening Continuum									
Stool tests returned, n (%)	–	–	–	2,572 (57.4)	263 (45.0)	236 (57.0)	820 (64.6)	522 (34.7)	51.7 [34.7–64.6]
Abnormal stool test results, n (%)	1,032 (6.9)	57 (16.8)	141 (-)	–	–	24 (11.4)	104 (12.7)	74 (14.2)	12.4 [11.4–16.8]
Referral for follow-up colonoscopy, n (%)	927 (89.8)	49 (86.0)	100 (70.9)	–	–	–	87 (83.7)	55 (74.3)	80.9 [74.3–89.8]
Follow-up colonoscopy completed–based on available records, n (%)[a]	224 (24.2)	37 (75.5)	48 (48.0)	–	–	–	50 (57.5)	19 (34.5)	47.9 [24.2–75.5]
Follow-up colonoscopy completion rate—within 6 months, n (%)[a]	151 (16.3)	31 (63.3)	–	–	–	–	–	–	39.8 [16.3–69.3]
Screening Outcomes									
Any abnormal findings, n (%)[b]	–	28 (75.7)	27 (56.3)	–	–	–	33 (66.0)	16 (84.2)	70.6 [56.3–84.2]
Adenomatous polyps, n (%)[b]	–	20 (54.1)	–	–	–	–	n/r (14.0)	n/r (36.8)	35.0 [14.0–54.1]
CRC diagnosis, n(%)[b]	–	0 (0.0)	–	–	–	–	n/r (2.0)	0 (0.0)	0.7 [0.0–2.0]

We defined stool tests as FOBT, FIT and FIT-DNA tests

A '-' indicates that the information was not available

[a]Among those referred for follow-up colonoscopy; [b]Among those who completed follow-up colonoscopy

n/r = cannot report due to small sample size

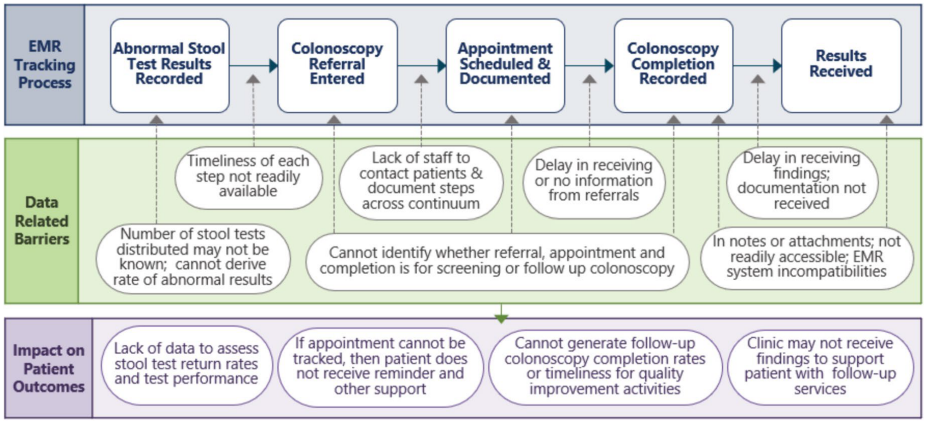


Fig. 1 Challenges in tracking data on follow-up colonoscopy completion

colonoscopy completion to their provider assessment and feedback reports. Again, where cost was a concern for patients, health systems were able to use either CRCCP funds or charitable funds for follow-up. Health systems also established Memoranda of Understanding with providers who perform endoscopies to provide a certain number of colonoscopies for health system patients at reduced rates or for free. Lastly, at the community level, because colonoscopies require a medical escort to take a patient home, and having an escort and transportation are often barriers, health

Table 4 Summary of strategies initiated by CDC Colorectal Cancer Control Program award recipients to improve data tracking and follow-up colonoscopy completion

Level of implementation	Data improvement to TRACK completion	Facilitating follow-up colonoscopy
Individual	Request information on colonoscopy completion from patients and enter into the EMR system	Educate patients on test results and train them on bowel preparation Offer patients support to schedule appointments Provide assistance to enroll patients in insurance or other programs Send patient reminders and offer navigation support to address barriers
Provider	Train all team members to enter accurate data in the appropriate fields in the EMR system	Implement a Provider Assessment and Feedback system
Health System	Enhance EMR for tracking CRC screening Implement overlay systems for population health analyses Build dashboard to easily review data for tracking Collect data in tools outside of the EMR Track data with the assistance of patient navigators	Initiate new payment processes to reimburse follow-up colonoscopy using CRCCP or donated funds Establish agreements with providers who perform endoscopies (i.e., securing additional appointments; donated colonoscopies for uninsured or underserved patients)
Community	Create website to support appointments and return of colonoscopy results	Develop partnerships with transport providers for rides and chaperone services Expand interpretation support to cover all languages spoken by patients

systems worked to develop partnerships with transportation services, such as Uber Health. Health systems also used existing translated materials from organizations for small media as well as worked to provide interpretation services.

Discussion

In this study, we report on the experiences of selected CRCCP award recipients and health systems in tracking stool-based screening (defined as FIT, FOBT, and FIT-DNA), with specific focus on follow-up colonoscopies after abnormal stool testing. During this baseline assessment, we found that only two of the award recipients reported that all their participating health systems could consistently track the number of stool-based tests distributed. In general, most of the health systems were able to document the stool tests that were returned, although three award recipients reported that some of their health systems were not able to track consistently. Overall, 75% (6 out of 8) of the award recipients reported that the health systems were able to document abnormal findings. These gaps may hinder the ability of health systems to monitor screening to maximize stool test returns and to accurately generate the proportion of abnormal findings, which is required for assessing test performance and informing quality assurance processes [20, 21]. Furthermore, only six of the eight award recipients reported that all participating health systems were able to report referrals and overall completion of follow-up colonoscopies. Importantly, only two award recipients indicated that their partners could report follow-up colonoscopy completion within specified timeframes, such as 6 months from date of abnormal test results. The ability to track timely completion of follow-up colonoscopy is essential, as studies have shown that longer time intervals can result in more advanced disease [10, 22, 23].

These findings highlight the importance of implementing approaches to improve tracking along the screening continuum. Health systems participating in the CRCCP are implementing and testing a range of approaches to improve tracking and follow-up of abnormal stool tests. There is limited evidence on the optimal approach to enhance or supplement EMRs [24], and we found that most health systems are incorporating approaches to track stool-based screenings as well as follow-up colonoscopies using additional data tracking tools, such as REDCap and Excel. Participants at CDC's 2019 Mailed FIT summit also spoke to the importance of data infrastructure [9] and developed a mailed FIT implementation guide [25] with information on managing and tracking mailed FITs, which is also instructive for tracking abnormal FITs. Furthermore, the strategies highlighted by participants involve both improvement in data entry and the ability to capture the existing information for decision-making. Health systems are therefore looking beyond technological enhancements. Importantly, training and dedicated staff time were reported as essential to ensure accurate and complete data to track stool-based screening and follow-up colonoscopies.

We found wide variation in the screening process measures among the award recipients in this study whose partner health systems were able to report details on the steps along the screening continuum. On average, 12.3% (6.9 to

16.8%) had abnormal findings and the referral rate was an average of 80.9% (70.9 to 89.8%). Post-analysis conversations with study participants indicated that potential reasons why referrals were not provided may include evidence of a recent colonoscopy in the patients' records and patient health status. The uptake of follow-up colonoscopy ranged from 24.2 to 75.5% with an average of 47.9%. Colonoscopy completion within 6 months of referral was lower with an average of 39.8%. Similarly, low follow-up colonoscopy uptake from 18 to 57% have been reported at FQHCs [12, 13], which are below the 80% target recommended by the Multi-Society Task Force on Colorectal Cancer [26]. Only one health system in our study was able to report a follow-up uptake of 75.5%. However, an evaluation of the CRCCP when the program first began indicated that, when quality measures were in place with systems in place to track and monitor follow-up, 82.9% of people with an abnormal blood stool test completed colonoscopy [11].

Additional research is required to explore the variability reported in this study and to identify optimal strategies to track follow-up colonoscopy completion rates as well as individual, provider, health system, and community-level strategies to support completion of follow-up colonoscopies. As shown above, individual health systems have implemented strategies regarding use of EMR and health population tools; however, there is no one system, as reported by respondents, which tracks individuals along the CRC screening spectrum. Further, the volume of patients served could be an important factor. On the one hand, large health systems may have more resources to implement strategies to improve data tracking and follow-up colonoscopy completion. On the other hand, large health systems may have a greater number of uninsured patients with abnormal stool test findings for whom they need to identify providers who can offer free colonoscopies or identify a payment source for the colonoscopies. And, rural locations and geographic distribution of colonoscopy capacity could also impact follow-up colonoscopy completion rates [27, 28]. Prior studies have indicated that multi-level interventions can likely support individual, provider, health system, and community-level strategies to improve adherence to follow-up colonoscopy [29–35]. In addition, research is required to expand the age range of these analyses to include the age group 45–49.

There are a few limitations that should be considered in interpreting the study findings. First, we included only a limited number of health systems, which were purposively sampled. Therefore, the findings may not be generalizable to community health centers with different context factors, including patient language preferences, payer mix, and relationships with providers to perform colonoscopies. There may also be selection bias in the health systems chosen by the award recipients. Second, as we did not conduct detailed chart reviews, there could potentially be inaccuracies in the baseline data reported, as health systems were just initiating data quality improvement activities via their participation in CRCCP. Third, there were differences in the annual periods for which the data were reported and, in some instances, the COVID-19 pandemic may have impacted the stool-based screening process and follow-up colonoscopy completion. Fourth, there was substantial variability in the tracking process and outcomes reported; hence, the means reported may be skewed. We have reported the range for each measure to accurately reflect the variation among the participants. Lastly, only a few award recipients reported on FIT-DNA and therefore, we combined all stool test return rates. The return rates may vary as FIT-DNA patients receive patient navigation services from Cologuard, but many health systems also offered various interventions to promote stool test returns. Any patient with abnormal findings though received similar support services at a given health system for completion of follow-up colonoscopies.

Findings from this study offer important lessons for tracking and timely completion of follow-up colonoscopies after abnormal stool tests to complete the screening episode. The health systems in this study that the CDC award recipients partnered with were often unable to track the entire stool-based screening episode accurately and therefore could use support to enhance their EMRs, implement additional tracking tools, and train providers. Furthermore, these health systems could be aided by guidance on evidence-based strategies that can be implemented to improve tracking and increase completion of follow-up colonoscopies after abnormal stool tests. More active engagement by health centers providing follow-up colonoscopies in communicating appointments and test results could support patients' adherence to receiving follow-up colonoscopies. Improvements in data tracking and screening completion may also help to improve health equity and reduce mortality from CRC.

Acknowledgments We would like to thank the following individuals and institutions of the CRCCP Learning Collaborative for their time and for contributing data for this study: AltaMed Health Services; Alaska Native Tribal Health Consortium; Nuha K. Wareg and Kevin D. Everett of the University of Missouri; Devon Gurnett from the Iowa Primary Care Association; Shioban Torres, Thuha Le, and Joelynn Muwanga from the Massachusetts Department of Health and Leslie Salas Karnes and Katherine D'Onfro from the Massachusetts League of Community Health Centers: Sarah Quail from the South Dakota Department of Health; Marybeth Curtis and Jessica Presley from the University of Arkansas for Medical Sciences and Stacey George from the Arkansas Foundation for Medical Care; Stephenie Kennedy-Rea from the West Virginia University Cancer Institute; and Andrea Calkins and Adam Baus from West Virginia University.

Author contributions Sujha Subramanian, Florence Tangka, and Sonja Hoover contributed to the study conception and design. Material preparation, data collection, and analysis were performed by Sujha Subramanian and Sonja Hoover. The first draft of the manuscript was written by Sujha Subramanian, Florence Tangka, and Sonja Hoover, and all

authors commented on previous versions of the manuscript. All authors read and approved the final manuscript.

Funding The findings and conclusions in this manuscript are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention. Funding support was provided by the Centers for Disease Control and Prevention (CDC) (Contract No. 200–2014-61263 Task 4) to RTI International and Implenomics. The provision of data by awardees was supported through funding under a cooperative agreement (DP20-2002) with CDC.

Data availability The datasets generated during and/or analyzed during the current study are not publicly available because they were collected by Implenomics for the purpose of this analysis and under contract with the Centers for Disease Control and Prevention.

Declarations

Competing interests The authors declare no competing interests.

Conflict of interests The authors have no relevant financial or non-financial interests to disclose.

Ethics approval Institutional Review Board approval was not required because it was determined this study was not research involving human subjects.

Consent to participate Not applicable.

Consent to publish Not applicable.

References

1. Kanth P, Inadomi JM (2021) Screening and prevention of colorectal cancer. BMJ 374:n1855
2. Davidson KW, Barry MJ, Mangione CM, Cabana M, Caughey AB, Davis EM, Donahue KE, Doubeni CA, Krist AH, Kubik M, Li L, Ogedegbe G, Owens DK, Pbert L, Silverstein M, Stevermer J, Tseng CW, Wong JB (2021) Screening for colorectal cancer: US preventive services task force recommendation statement. JAMA 325(19):1965–1977
3. Henley SJ, Thomas CC, Lewis DR et al (2020) Annual report to the nation on the status of cancer, part II: Progress toward healthy people 2020 objectives for 4 common cancers. Cancer 126(10):2250–2266. https://doi.org/10.1002/cncr.32801
4. Sabatino SA, Thompson TD, White MC, Villarroel MA, Shapiro JA, Croswell JM, Richardson LC (2023) Up-to-Date breast, cervical, and colorectal cancer screening test use in the United States, 2021. Prev Chronic Dis 20:E94. https://doi.org/10.5888/pcd20.230071
5. Anand S, Liang PS (2022) A practical overview of the stool DNA test for colorectal cancer screening. Clin Transl Gastroenterol 13(4):e00464
6. Hubers J, Sonnenberg A, Gopal D, Weiss J, Holobyn T, Soni A (2020) Trends in wait time for Colorectal Cancer screening and diagnosis 2013–2016. Clin Transl Gastroenterol 11(1):e00113
7. Agunwamba AA, Zhu X, Sauver JS, Thompson G, Helmueller L, Finney Rutten LJ (2023) Barriers and facilitators of colorectal cancer screening using the 5As framework: A systematic review of US studies. Prev Med Rep. 35:102353
8. Wagner MS, Burgess J, Britt RC (2019) Barriers to colonoscopy in an uninsured patient population-a quality improvement project. Am Surg 85(1):111–114
9. Gupta S, Coronado GD, Argenbright K, Brenner AT, Castañeda SF, Dominitz JA, Green B, Issaka RB, Levin TR, Reuland DS, Richardson LC, Robertson DJ, Singal AG, Pignone M (2020) Mailed fecal immunochemical test outreach for colorectal cancer screening : summary of a centers for disease control and prevention–sponsored summit. CA Cancer J Clin 70(4):283–298
10. Forbes N, Hilsden RJ, Martel M, Ruan Y, Dube C, Rostom A, Shorr R, Menard C, Brenner DR, Barkun AN, Heitman SJ (2021) Association between time to colonoscopy after positive fecal testing and colorectal cancer outcomes: a systematic review. Clin Gastroenterol Hepatol 19(7):1344-1354.e8
11. Nadel MR, Royalty J, Joseph D, Rockwell T, Helsel W, Kammerer W, Gray SC, Shapiro JA (2019) Variations in screening quality in a federal Colorectal Cancer Screening Program for the uninsured. Prev Chronic Dis 16:E67
12. Bharti B, May FFP, Nodora J, Martinez ME, Moyano K, Davis SL, Ramers CB, Garcia-Bigley F, O'Connell S, Ronan K, Barajas M, Gordon S, Diaz G, Ceja E, Powers M, Arredondo EM, Gupta S (2019) Diagnostic colonoscopy completion after abnormal fecal immunochemical testing and quality of tests used at 8 federally qualified health centers in Southern California: opportunities for improving screening outcomes. Cancer 125(23):4203–4209
13. Coronado GD, Kihn-Stang A, Slaughter MT, Petrik AF, Thompson JH, Rivelli JS, Jimenez R, Gibbs J, Yadav N, Mummadi RR (2021) Follow-up colonoscopy after an abnormal stool-based colorectal cancer screening result: analysis of steps in the colonoscopy completion process. BMC Gastroenterol. https://doi.org/10.1186/s12876-021-01923-1
14. Mohl JT, Ciemins EL, Miller-Wilson L-A, Gillen A, Luo R, Colangelo F (2023) 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 6(1):e2251384
15. Chubak J, Garcia MP, Burnett-Hartman AN, Zheng Y, Corley DA, Halm EA, Singal AG, Klabunde CN, Doubeni CA, Kamineni A, Levin TR, Schottinger JE, Green BB, Quinn VP, Rutter CM (2016) Time to colonoscopy after positive fecal blood test in four us health care systems. Cancer Epidemiol Biomark Prev 25(2):344–350. https://doi.org/10.1158/1055-9965.EPI-15-0470
16. Petrik AF, Green BB, Vollmer WM, Le T, Bachman B, Keast E, Rivelli J, Coronado GD (2016) The validation of electronic health records in accurately identifying patients eligible for colorectal cancer screening in safety net clinics. Fam Pract 33(6):639–643
17. *Electronic Health Information Exchange: Use Has Increased, but Is Lower for Small and Rural Providers*. Published: Apr 21, 2023. Publicly Released: Apr 21, 2023., General Acounting Office.
18. Centers for Disease Control and Prevention. *Colorectal Cancer Control Program: About the Program*. 3/6/2023 [cited 2023 9/28]; Available from: https://www.cdc.gov/cancer/crccp/about.htm.
19. Subramanian S, Tangka FKL, Hoover S (2020) Role of an Implementation Economics Analysis in Providing the Evidence Base for Increasing Colorectal Cancer Screening. Prev Chronic Dis. https://doi.org/10.5888/pcd17.190407
20. Berry E, Miller S, Koch M, Balasubramanian B, Argenbright K, Gupta S (2020) Lower abnormal fecal immunochemical test cut-off values improve detection of colorectal cancer in system-level screens. Clin Gastroenterol Hepatol 18(3):647–653
21. Symonds EL, Osborne JM, Cole SR, Bampton PA, Fraser RJ, Young GP (2015) Factors affecting faecal immunochemical test positive rates: demographic, pathological, behavioural and environmental variables. J Med Screen 22(4):187–193
22. Lee YC, Fann JC, Chiang TH, Chuang SL, Chen SL, Chiu HM, Yen AM, Chiu SY, Hsu CY, Hsu WF, Wu MS, Chen HH (2019)

Time to colonoscopy and risk of colorectal cancer in patients with positive results from fecal immunochemical tests. Clin Gastroenterol Hepatol 17(7):1332-1340.e3
23. Corley DA, Jensen CD, Quinn VP, Doubeni CA, Zauber AG, Lee JK, Schottinger JE, Marks AR, Zhao WK, Ghai NR, Lee AT, Contreras R, Quesenberry CP, Fireman BH, Levin TR (2017) Association between time to colonoscopy after a positive fecal test result and risk of colorectal cancer and cancer stage at diagnosis. JAMA 317(16):1631–1641
24. Baus AD, Wright LE, Kennedy-Rea S, Conn ME, Eason S, Boatman D, Pollard CR, Calkins A, Gadde D (2020) Leveraging electronic health records data for enhanced colorectal cancer screening efforts. J Appalach Health 2:53–63
25. National Association of Chronic Disease Directors, Mailed FIT Implementation Guide, 06/14/2022 [Cited 2023, Dec 12]. Available from: https://chronicdisease.org/wp-content/uploads/2022/06/Mailed-FIT-Guide-Revised-2022.pdf
26. Robertson DJ, Lee JK, Boland CR, Dominitz JA, Giardiello FM, Johnson DA, Kaltenbach T, Lieberman D, Levin TR, Rex DK (2017) Recommendations on fecal immunochemical testing to screen for colorectal neoplasia: a consensus statement by the US multi-society task force on colorectal cancer. Gastroenterology 152(5):1217-1237.e3
27. Joseph DA, Meester RG, Zauber AG, Manninen DL, Winges L, Dong FB, Peaker B, van Ballegooijen M (2016) Colorectal cancer screening: estimated future colonoscopy need and current volume and capacity. Cancer 122(16):2479–2486
28. Ramalingam N, Coury J, Barnes C, Kenzie ES, Petrik AF, Mummadi RR, Coronado G, Davis MM (2024) Provision of colonoscopy in Rural Settings: A qualitative assessment of provider context, barriers, facilitators, and capacity. J Rural Health: Official J Am Rural Health Assoc Nat Rural Health Care Assoc 40(2):272–281. https://doi.org/10.1111/jrh.12793
29. Cusumano VT, Myint A, Corona E, Yang L, Bocek J, Lopez AG, Huang MZ, Raja N, Dermenchyan A, Roh L, Han M, Croymans D, May FP (2021) Patient navigation after positive fecal immunochemical test results increases diagnostic colonoscopy and highlights multilevel barriers to follow-up. Dig Dis Sci 66(11):3760–3768
30. Idos GE, Bonner JD, Haghighat S, Gainey C, Shen S, Mulgonkar A, Otero KJ, Geronimo C, Hurtado M, Myers C, Morales-Pichardo J, Kahana DD, Giboney P, Dea S (2021) Bridging the gap: patient navigation increases colonoscopy follow-up after abnormal FIT. Clin Transl Gastroenterol 12(2):e00307
31. Selby K, Baumgartner C, Levin TR, Doubeni CA, Zauber AG, Schottinger J, Jensen CD, Lee JK, Corley DA (2017) Interventions to improve follow-up of positive results on fecal blood tests: a systematic review. Ann Intern Med 167(8):565–575
32. Dougherty MK, Brenner AT, Crockett SD, Gupta S, Wheeler SB, Coker-Schwimmer M, Cubillos L, Malo T, Reuland DS (2018) Evaluation of interventions intended to increase colorectal cancer screening rates in the united states: a systematic review and meta-analysis. JAMA Intern Med 178(12):1645–1658
33. Coronado GD, Kihn-Stang A, Slaughter MT, Petrik AF, Thompson JH, Rivelli JS, Jimenez R, Gibbs J, Yadav N, Mummadi RR (2021) Follow-up colonoscopy after an abnormal stool-based colorectal cancer screening result: analysis of steps in the colonoscopy completion process. BMC Gastroenterol 21(1):356
34. Martin J, Halm EA, Tiro JA, Merchant Z, Balasubramanian BA, McCallister K, Sanders JM, Ahn C, Bishop WP, Singal AG (2017) Reasons for lack of diagnostic colonoscopy after positive result on fecal immunochemical test in a safety-net health system. Am J Med 130(1):93.e1-93.e7
35. Cooper GS, Grimes A, Werner J, Cao S, Fu P, Stange KC (2021) barriers to follow-up colonoscopy after positive FIT or multitarget stool DNA testing. J Am Board Fam Med 34(1):61–69

APPENDIX 8:

Article by McElroy, Smith, and Everett

Monthly Variations in Colorectal Cancer Screening Tests Among Federally Qualified Health Center Patients in Missouri: Quality Improvement Project

JMIR CANCER McElroy et al

Short Paper

Monthly Variations in Colorectal Cancer Screening Tests Among Federally Qualified Health Center Patients in Missouri: Quality Improvement Project

Jane A McElroy*, PhD; Jamie B Smith*, MA; Kevin D Everett*, PhD

Family and Community Medicine Department, University of Missouri, Columbia, MO, United States
*all authors contributed equally

Corresponding Author:

Jane A McElroy, PhD
Family and Community Medicine Department
University of Missouri
1 Hospital Dr DC032.00
Columbia, MO, 65212
United States
Phone: 1 5738824993
Email: mcelroyja@umsystem.edu

Abstract

Background: Cancer is the second leading cause of death in the United States. Compelling evidence shows screening detects colorectal cancer (CRC) at earlier stages and prevents the development of CRC through the removal of precancerous polyps. The Healthy People 2030 goal for CRC screening is 68.3%, but only 36.5% of Missouri federally qualified health center patients aged 50-75 years are up-to-date on CRC screening. For average risk patients, there are three commonly used screening tests in the United States—two types of stool tests collected at home (fecal immunochemical test [FIT]–immunochemical fecal occult blood test [FOBT] and FIT-DNA, such as Cologuard) and colonoscopies completed at procedural centers.

Objective: This study aims to examine variation by month for the three types of CRC testing to evaluate consistent patient care by clinical staff.

Methods: Data from 31 federally qualified health center clinics in Missouri from 2011 to 2023 were analyzed. A sample of 34,124 unique eligible "average risk" patients defined as persons not having a personal history of CRC or certain types of polyps, family history of CRC, personal history of inflammatory bowel disease, and personal history of receiving radiation to the abdomen or pelvic to treat a previous cancer or confirmed or suspected hereditary CRC syndrome. Another eligibility criterion is that patients need to be seen at least once at the clinic to be included in the denominator for the screening rate calculation. Descriptive statistics characterize the sample, while bivariate analyses assess differences in screening types by month.

Results: Completion of CRC screening yielded statistically significant differences for patients completing the different types of CRC screening by month. October-January had the highest proportions of patients (644-680 per month, 8.5%-10.2%) receiving a colonoscopy, while February-April had the lowest (509-578 per month, 6.9%-7.8%), with 614 being the average monthly number of colonoscopies. For FIT-FOBT, June-August had the higher proportions of patients receiving this test (563-613 per month, 8.9%-9.6%), whereas December-February had the lowest (453-495 per month, 7.1%-8%), with 541 being the average monthly number of FIT-FOBT kits used. For FIT-DNA, March was the most popular month with 11.3% (n=261 per month) of patients using the Cologuard test, followed by April, May, and November (207-220 per month, 8.7%-9.4%), and January and June (168-171 per month, 7.2%-7.3%) had the lowest proportion of patients using Cologuard, with 193 being the average monthly number of FIT-DNA kits used. Combining all tests, February had the fewest CRC tests completed (1153/16,173, 7.1%).

Conclusions: Home-based tests are becoming popular, replacing the gold standard colonoscopy, but need to be repeated more frequently. Monthly variation of screening over the course of a year suggests that CRC screening efforts and patient care may be less than ideal. Months with lower rates of screening for each type of CRC test represent opportunities for improving CRC screening.

JMIR CANCER McElroy et al

JMIR Cancer 2025;11:e64809; doi: 10.2196/64809

Keywords: colorectal cancer screening; federally qualified health center; FQHC; fecal immunochemical test; FIT; FIT-DNA; colorectal cancer; CRC; cancer; cancer screening; colonoscopy; United States; health center; quality improvement

Introduction

Colorectal cancer (CRC) is the third most common cancer in the United States and the second leading cause of cancer deaths [1]. Evidence shows that screening detects CRC at earlier stages, and its development can be prevented by removing precancerous polyps. For average risk patients, there are three common screening tests—two types of stool tests collected at home (fecal immunochemical test [FIT]–immunochemical fecal occult blood test [FOBT] and FIT-DNA, like Cologuard) and colonoscopies completed at procedural centers. The revised Healthy People 2030 goal for CRC screening among people aged 45-75 years changed from 74.4% to 68.3% [2]. Federally qualified health centers (FQHCs) provide low-cost care for approximately 30 million people, and 90% of FQHCs' patient population (n=17,562,189) have an income less than 200% of the federal poverty level [3,4]. The CRC screening rate of patients using FQHCs in Missouri (n=95,191) is 36.5% compared to 74.1% for patients not using FQHCs (n=1,657,026) [5].

Colonoscopy is considered the gold standard of CRC screening since precancerous polyps can be removed at the time of the test, preventing cancer. However, numerous patient and health system barriers to colonoscopies have been identified [6]. Home-based testing is becoming more common, and FIT-DNA use has increased post COVID-19 [7]. The increased FIT-DNA use may reflect patient preference for home-based testing that does not incur being wait-listed for months to get a colonoscopy [8]. Additionally, the manufacturer of FIT-DNA provides a full service in facilitating patients' completion of the test. This service includes a patient follow-up to encourage returning the kits and results sent directly to the patient's electronic medical record. For the FIT tests, a clinic is responsible for patient follow-ups regarding stool collection and sending the kit in for analysis [9].

Since screening opportunities take place at patients' routine visits to health centers, determining screening variation by month can assist health care systems adjust outreach efforts, targeting low use months to establish consistently high CRC screening opportunities throughout the year.

Objective

This quality improvement project aims to determine if there is variation in the 3 types of CRC testing by month. Identifying variations by month can support targeted attention. The global aim of the quality improvement project was to support FQHCs' in providing CRC screening opportunities with consistent screening rates each month.

Methods

Overview

Starting in 2020 as part of a 5-year Centers for Disease Control and Prevention–funded quality improvement program, our project supported eight health care systems' initiation or enhancement of four evidence-based interventions to increase CRC screening rates of age-eligible patients using a practice facilitator model. As part of this quality improvement program, up to 4 years of annual data on CRC screening by type and date of completed CRC test for the eligible patient population in the selected health care system were available. Patient characteristics including age, race/ethnicity, primary language, and sex were gathered. Screening compliance was defined as a colonoscopy recommended every 10 years, FIT-FOBT every year, and FIT-DNA every 3 years. Screened for CRC was defined as having a medical record of being up-to-date on one of the three types of tests. For this analysis, eligible patients were aged 50-75 years with no prior diagnosis of CRC, adenomatous polyps, or inflammatory bowel disease, and no personal diagnosis or family history of known genetic disorders that predispose them to a high lifetime risk of CRC such as Lynch syndrome or familial adenomatous polyposis [10]. Descriptive statistics characterize the sample, while bivariate analyses assess differences in screening types by month. While examining monthly CRC screening rates, data were limited to exclude years where fewer than 10 screenings occurred for any given month. Monthly totals were first calculated, and the average number of tests across all months was used to calculate the average percentage change (increase or decrease) month to month. A χ^2 test for equal proportions of the CRC screening tests by month among the 3 types of CRC tests was then examined. Month was chosen as the unit of analysis since it is easily understood, helping plan and implement activities. A weekly analysis has fewer observations leading to less stable numbers, and holidays influence the days in any week. SAS 9.4 (SAS Institute) was used for the analysis.

Ethical Considerations

This project was approved by University of Missouri's Institutional Review Board (IRB 2034264), which allowed analysis of clinical data extracted from electronic medical records without additional consent for the secondary analysis. The data were deidentified for the analysis. All data were transmitted and stored in a Health Insurance Portability and Accountability Act (HIPAA)–compliant secure system (REDCap) [11].

Results

A total of 31 clinics servicing predominately rural residents yielded 34,124 unique eligible patients from 2011 to 2023.

Among these, 6238 (18.3%) were up to date on their CRC screening, another 5170 (15.2%) had received a CRC screening at some time in the past but were not up to date, and the remaining 22,716 (66.6%) patients had no record of being screened for CRC. Most participants were 50-64 years old (n=24,014, 70.4%), were female (n=19,229, 56.4%), used English as their primary language (n=31,686, 92.9%), and were White (n=27,677, 81.1%; Table S1 in Multimedia Appendix 1). Fewer participants younger than 65 years were up to date on their CRC screening than those 65 years and older. Patients with the highest proportion of ever being screened were Hispanic (837/2032, 41.2%), compared to White (9391/27,677, 33.9%) and Black (533/1385, 38.5%), but fewer Hispanic participants (n=260, 12.8%) were up to date compared to White (n=5386, 19.5%) and Black (n=268, 19.4%) participants (Table S1 in Multimedia Appendix 1). The FQHC systems in this analysis served 87% of patients who were at or below 200% of the federal poverty guidelines. Most clinics (n=28, 90.3%) were located in rural areas of Missouri. Among the clinics, the 2023 annual CRC screening rates ranged from 13.7% to 63.1% (62/451 and 238/377 eligible patients, respectively).

Table S2 in Multimedia Appendix 1 breaks down the descriptive statistics on monthly CRC screenings. There were 7368 patients who were up to date on CRC screening by colonoscopy with an average of 614 screenings per month from 2014 to 2023. A χ^2 test for equal proportions found significant differences across monthly colonoscopy screenings (χ^2_{11}=38.9; P<.001). January was the highest month for colonoscopy screenings (n=680, 11% higher than the average), while February was the lowest (n=509, 17% lower than the average; Figure 1). For FIT-FOBT (n=6486), there were an average of 540.5 screenings per month from 2017 to 2023. A χ^2 test for equal proportions found significant differences across monthly FIT-FOBT screenings (χ^2_{11}=51.7; P<.001). August was the highest month for FIT-FOBT screenings (n=613, 13% higher than the average) compared to January (n=468, 14% lower than the average) and February (n=453, 16% lower than the average; Figure 2). There were 2319 FIT-DNA screenings, with an average of 193.3 per month from 2020 to 2023. A χ^2 test for equal proportions found significant differences across monthly FIT-FOBT screenings (χ^2_{11}=49.2; P<.001). March was the highest month (n=261, 35% higher than the average) while January (n=168, 13% lower than the average) and August (n=153, 21% lower than the average) were the lowest months for FIT-DNA testing (Figure 3).

Figure 1. Colonoscopy by month (2014-2023).

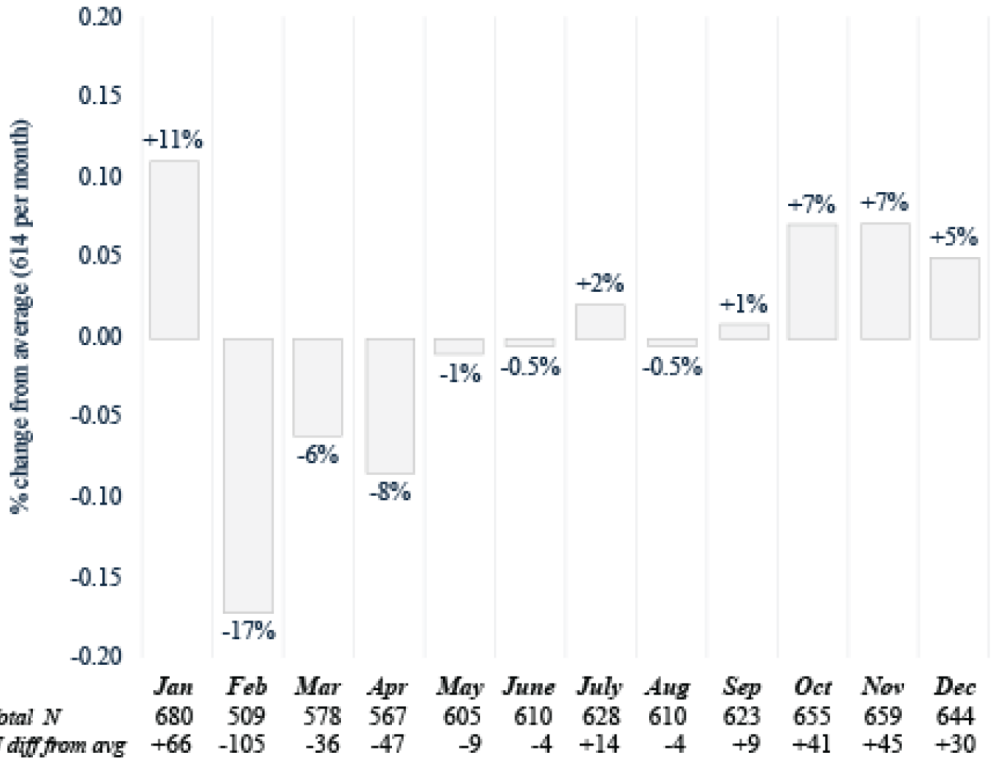


Figure 2. Fecal immunochemistry test–immunochemical fecal occult blood test by month (2017-2023).

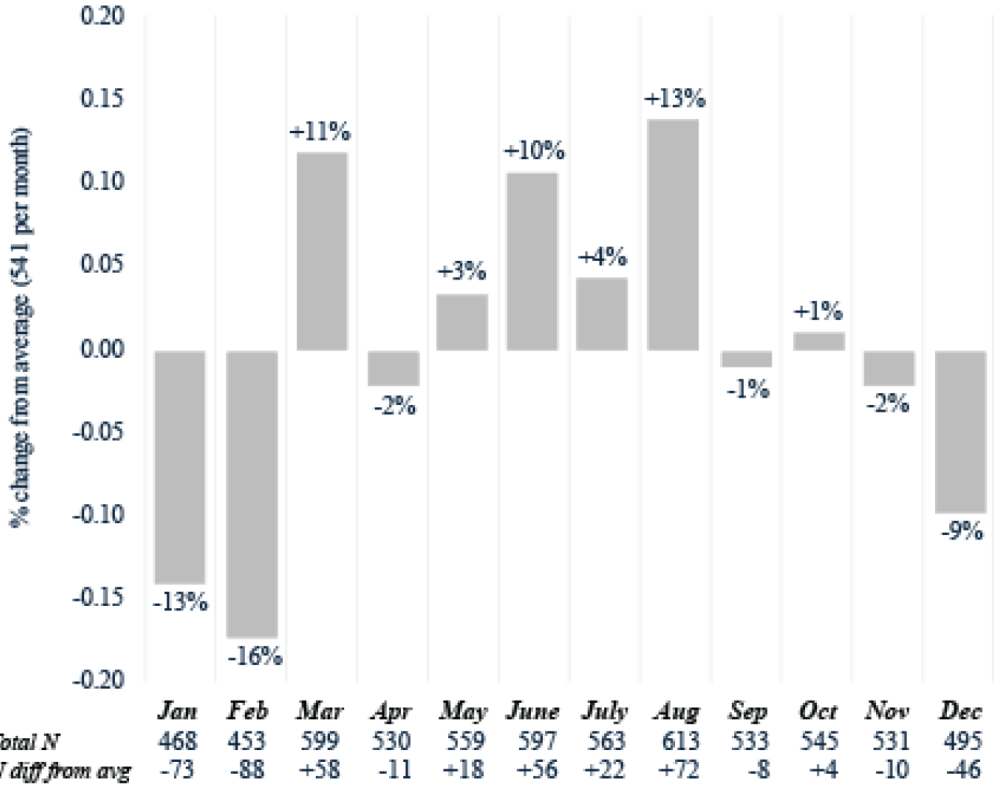
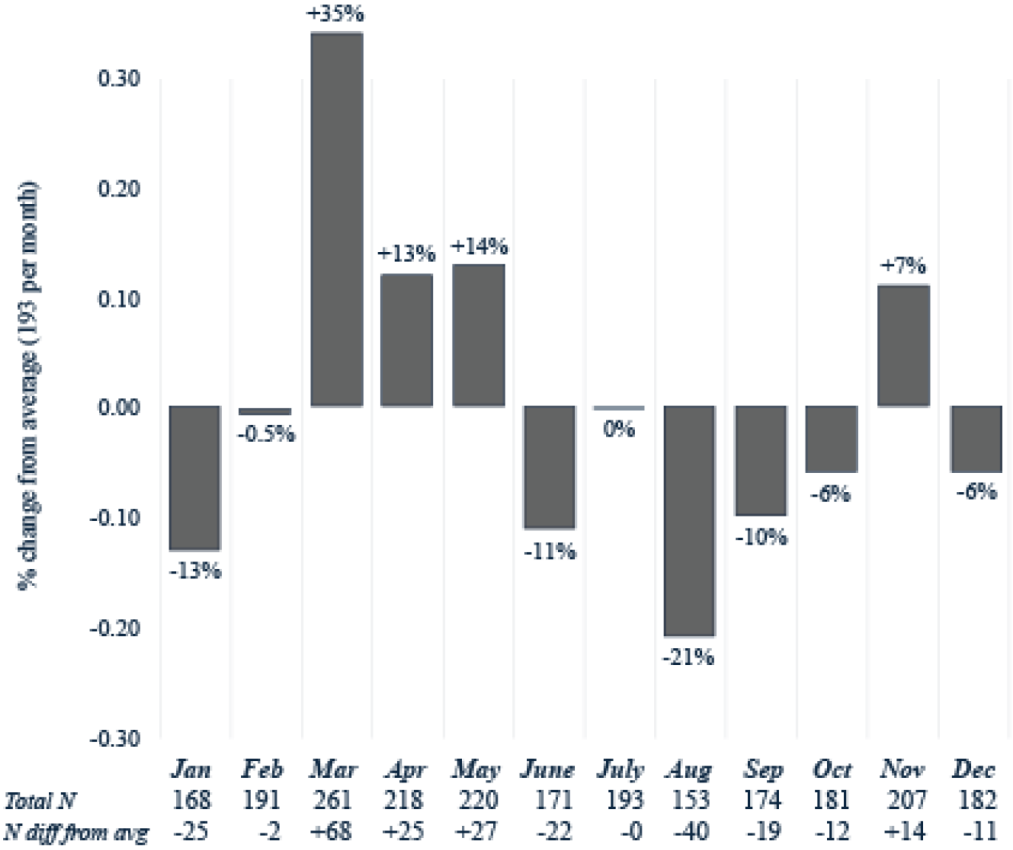


Figure 3. Fecal immunochemistry test–DNA by month (2020-2023).



Discussion

Principal Findings

Among the 3 types of CRC screening for average risk patients seen at our FQHCs in the United States, no test was completed consistently by month, and each test had different peak months of completion. We were not able to find any research that compared variation by month in CRC screening test types of colonoscopy, FIT-FOBT, and FIT-DNA. To our knowledge, this is the first study that provides results of CRC screening type by month.

As reflected in our screening choices by patients seen at FQHC clinics, home-based CRC screening increased during the COVID-19 pandemic's closures of specialty care including elective procedures (eg, colonoscopies) [7]. This change in CRC screening options allowed for testing at the discretion of the patient rather than appointment availability.

Strengths and Limitation

One strength of this study was evaluating patients over 12 years from several FQHCs. These data were snapshots of each year's CRC screening behavior by the health care systems. This also captured screening behavior before and after the pandemic.

One limitation of this study was our inability to explain the variability by month of the different screening tests. For example, FIT-DNA and FIT-FOBT tests peaked in CRC awareness month in March but not colonoscopies. Additionally, while the results are informative, only a simple analysis of screening variability was performed, which excluded an examination of temporal changes over time.

The preferences of clinicians on which CRC screening test is recommended and their patient care style were not captured. For example, some clinicians only recommend colonoscopy [12-14]; however, some patients who decline a colonoscopy [15] would be willing to complete a home-based CRC screening test if offered. Further reasons for CRC screening refusal of any test were also not captured. These could be a factor in the CRC test variation by month.

Future Direction

Among the selected participant characteristics, attention is needed on those younger than 65 years to encourage CRC screening. Similarly, while 41.2% of Hispanic participants showed a positive attitude toward CRC screening, only 12.8% were up to date with their screening. This suggests that tailored campaigns and outreach programs could encourage greater participation in CRC screening. For all populations, screening matters since the variance in testing over a year can impact the health care system's capacity for timely preventive patient care. Gastroenterologist availability to complete colonoscopies may be limited in some regions of the country, but home-based tests can be completed each month [8]. Undoubtedly, individual-level barriers influence CRC screening rates, such as transportation, medical mistrust, financial issues, and low health literacy [16]. However, organizational factors, including monitoring and feedback, have been identified as implementation facilitators [16]. Rockwell and colleagues [6] described health system barriers, especially for colonoscopies, as sludge, "frictions or administrative burdens that make it difficult for people to attain what they want or need." Providing clinical staff information on completed CRC screening rates by month for each test type may facilitate addressing these "sludge" issues and increase CRC screening [8,17].

Acknowledgments

This work was supported by the Centers for Disease Prevention and Control (CDC; award NU58DP006765). The contents are those of the authors and do not represent official views of, nor an endorsement by, the CDC, Health and Human Services, or the US Government.

Data Availability

The deidentified dataset is available from the corresponding author upon reasonable request.

Authors' Contributions

JAM was a multiple principal investigator for the project in which data were available, conceptualized the research aims, worked with the analyst on the analytical plan, and wrote the original draft. JBS curated the data and applied the statistical techniques to analyze study data. KDE was a multiple principal investigator for the project in which data were available and reviewed and edited the manuscript. No generative artificial intelligence was used in writing this manuscript.

Conflicts of Interest

None declared.

Multimedia Appendix 1

Patient characteristics and descriptive statistics for monthly screenings.
[DOCX File (Microsoft Word File), 30 KB-Multimedia Appendix 1]

References

1. Cancer facts & figures. American Cancer Society. 2024. URL: https://www.cancer.org/content/dam/cancer-org/research/cancer-facts-and-statistics/annual-cancer-facts-and-figures/2024/2024-cancer-facts-and-figures-acs.pdf [Accessed 2025-03-13]
2. Increase the proportion of adults who get screened for colorectal cancer — C-07: data methodology and measurement. Office of Disease Prevention and Health Promotion. 2024. URL: https://health.gov/healthypeople/objectives-and-data/browse-objectives/cancer/increase-proportion-adults-who-get-screened-colorectal-cancer-c-07/data-methodology [Accessed 2025-03-13]
3. National health center program uniform data system (UDS) awardee data - archive. Health Resources & Services Administration. 2024. URL: https://web.archive.org/web/20241220121332/https://data.hrsa.gov/tools/data-reporting/program-data/national [Accessed 2025-03-18]
4. What is a health center? Health Resources & Services Administration. 2024. URL: https://bphc.hrsa.gov/about-health-center-program/what-health-center [Accessed 2025-03-13]
5. Amboree TL, Montealegre JR, Parker SL, et al. National breast, cervical, and colorectal cancer screening use in federally qualified health centers. JAMA Intern Med. Jun 1, 2024;184(6):671-679. [doi: 10.1001/jamainternmed.2024.0693] [Medline: 38683574]
6. Rockwell MS, Frazier MC, Stein JS, et al. A "sludge audit" for health system colorectal cancer screening services. Am J Manag Care. Jul 1, 2023;29(7):e222-e228. [doi: 10.37765/ajmc.2023.89402] [Medline: 37523455]
7. Liu PH, Singal AG, Murphy CC. Stool-based tests mitigate impacts of COVID-19 on colorectal cancer screening. Clin Gastroenterol Hepatol. Jun 2023;21(6):1667-1669. [doi: 10.1016/j.cgh.2022.12.014] [Medline: 36566814]
8. Webber C, Flemming JA, Birtwhistle R, Rosenberg M, Groome PA. Regional variations and associations between colonoscopy resource availability and colonoscopy utilisation: a population-based descriptive study in Ontario, Canada. BMJ Open Gastroenterol. Jun 2022;9(1):e000929. [doi: 10.1136/bmjgast-2022-000929] [Medline: 35680174]

9. Brodney S, Bhat RS, Tuan JJ, et al. Barriers and proposed solutions to at-home colorectal cancer screening tests in medically underserved health centers across three US regions to inform a randomized trial. Cancer Med. Aug 2024;13(15):e70040. [doi: 10.1002/cam4.70040] [Medline: 39118261]
10. US Preventive Services Task Force, Davidson KW, Barry MJ, et al. Screening for colorectal cancer: US Preventive Services Task Force recommendation statement. JAMA. May 18, 2021;325(19):1965-1977. [doi: 10.1001/jama.2021.6238] [Medline: 34003218]
11. Harris PA, Taylor R, Minor BL, et al. The REDCap consortium: building an international community of software platform partners. J Biomed Inform. Jul 2019;95:103208. [doi: 10.1016/j.jbi.2019.103208] [Medline: 31078660]
12. Wolf MS, Baker DW, Makoul G. Physician-patient communication about colorectal cancer screening. J Gen Intern Med. Nov 2007;22(11):1493-1499. [doi: 10.1007/s11606-007-0289-y] [Medline: 17851721]
13. McQueen A, Bartholomew LK, Greisinger AJ, et al. Behind closed doors: physician-patient discussions about colorectal cancer screening. J Gen Intern Med. Nov 2009;24(11):1228-1235. [doi: 10.1007/s11606-009-1108-4] [Medline: 19763699]
14. Selby K, Cornuz J, Gachoud D, et al. Training primary care physicians to offer their patients faecal occult blood testing and colonoscopy for colorectal cancer screening on an equal basis: a pilot intervention with before-after and parallel group surveys. BMJ Open. May 13, 2016;6(5):e011086. [doi: 10.1136/bmjopen-2016-011086] [Medline: 27178977]
15. Martin Y, Braun AL, Biller-Andorno N, et al. Screening refusal associated with choice of colorectal cancer screening methods. a cross-sectional study among Swiss primary care physicians. J Gen Intern Med. Aug 2019;34(8):1409-1411. [doi: 10.1007/s11606-019-05096-2] [Medline: 31190255]
16. Glaser KM, Crabtree-Ide CR, McNulty AD, et al. Improving guideline-recommended colorectal cancer screening in a federally qualified health center (FQHC): implementing a patient navigation and practice facilitation intervention to promote health equity. Int J Environ Res Public Health. Jan 24, 2024;21(2):126. [doi: 10.3390/ijerph21020126] [Medline: 38397617]
17. Shim HG, Gupta A, Fu A, et al. A quality improvement study on colonoscopy wait times in underinsured patients following the COVID-19 pandemic. Clin Transl Gastroenterol. Sep 1, 2024;15(9):e1. [doi: 10.14309/ctg.0000000000000730] [Medline: 38916225]

Abbreviations

CRC: colorectal cancer
FIT: fecal immunochemical test
FOBT: immunochemical fecal occult blood test
FQHC: federally qualified health center
HIPAA: Health Insurance Portability and Accountability Act

Edited by Naomi Cahill; peer-reviewed by Kayode Matthew, Lei Guo; submitted 26.07.2024; final revised version received 19.02.2025; accepted 19.02.2025; published 19.03.2025

Please cite as:
McElroy JA, Smith JB, Everett KD
Monthly Variations in Colorectal Cancer Screening Tests Among Federally Qualified Health Center Patients in Missouri: Quality Improvement Project
JMIR Cancer 2025;11:e64809
URL: https://cancer.jmir.org/2025/1/e64809
doi: 10.2196/64809

APPENDIX 9:

Presentation and posters

Oral Presentation

Wareg, N.K., Maltagliati, C., (2025, June 11-13). *Colorectal Cancer Screening in Rural Clinics in Missouri: Updates on the MPICCS Project to Improve CRC Screening in MO* [Oral presentation]. The 2025 South East Colorectal Cancer Consortium, Savannah, GA, USA.

Liu, J., & Maltagliati, C. (2024, June 11–13). *Missouri CRCCP updates* [Oral presentation]. Southeast Consortium, Nashville, TN.

Wareg, N.K., Vaca, A., Chavez, S.J., Housten, A.J.,McElroy, J.A., Everett, K., (2023, November 8-9). *Challenges and Opportunities to Increase CRC Screening in Rural Missouri* [Oral presentation]. The 2023 Missouri Rural Health Association Conference (MRHA) Camdenton, MO, USA.

McElroy, J.A., (2023, November 9). *MPICCS: Missouri Partnership to Increase Colorectal Cancer Screening program* [Oral presentation]. Missouri Gastroenterology Society, Virtual.

McElroy, J.A. (2023, November 9). *CRC FIT test standing orders for 45–49-year-olds to improve CRC screening rates* [Oral presentation]. American Cancer Society North Learning Collaborative, Virtual.

McElroy, J.A., & Wareg, N.K., (2023, November 3). *Preventing colon cancer—Testing is worth it* [Oral presentation]. 18th Annual Women's Multicounty Health Conference, Sikeston, MO.

Vaca, A., (2023, October 4). *Successes and challenges for CRC screening in rural Missouri* [Oral presentation]. University of Georgia ECHO Session, Virtual.

McElroy, J.A., & Everett, K. (2023, September 20–21). *Strategies for improving colorectal cancer screening rates: Practice facilitation to improve colorectal cancer screening in rural clinics in Missouri* [Oral presentation]. Joint Public Health Conference, Columbia, MO.

Wareg, N.K., Vaca, A., Spratt, B., McElroy, J.A., Everett, K., (2023, August 29-30). *Practice Facilitation to Improve Colorectal Cancer Screening in Rural Clinics in Missouri: Innovation and Technology Leveraging of the Practice Facilitation Model* [Oral presentation]. The 2023 North American Practice Facilitation Annual Conference (NAPCRG) Annual Meeting, Portland, OR, USA.

Lake, A. (2023, March 22). *Evaluation for MPICCS* [Oral presentation]. Peer-2-Peer (P2P) Learning Series, Virtual.

Wareg, N.K., Spratt, B., (2021, September 9). *Overview of the Missouri Partnerships to Increase Colorectal Cancer Screening Rates in Clinical Settings (MPICCS)* [Oral Presentation]. CHRIS Seminar series, University of Missouri, Columbia, USA.

Wareg, N.K., Spratt, S., Vaca, A., Liu, J., & Maltagliati, C. (2023). *Monthly updates and sharing of resources at the Missouri Colorectal Cancer Roundtable (MCCRT) meetings* [Meeting presentation]. MCCRT Monthly Meeting Series, Missouri Department of Health and Senior Services, Virtual.
Wareg, N.K., Spratt, S., Vaca, A., & Maltagliati, C. (2022–2023). *MPICCS Learning Collaborative: Bimonthly virtual learning sessions to support effective colorectal cancer screening* [Learning series]. Missouri Partnership to Increase Colorectal Cancer Screening (MPICCS), Virtual.

Poster Presentation

Liu, Y., Vaca, A., Wareg, N., Maltagliati, C., Everett, K., & McElroy, J. A. (2024, November 21). *Nursing students are making a difference in colorectal cancer screening through colonoscopy navigator program* [Poster presentation]. 2024 University of Missouri Health Science Research Day, Columbia, MO, United States.

Vaca, A., Wareg, N.K., Spratt, B., Everett, K., & McElroy, J.A. (2023, June 21). *Practice Facilitation to Improve Colorectal Cancer Screening in Federally Qualified Health Care Clinics in Rural Missouri: Innovation & Technology of the Practice Facilitation Model* [Poster presentation]. The Southeastern Colorectal Cancer Consortium, Norfolk, VA, USA.

Wareg, N.K., Spratt, B., Staudt, L., Hemme, S., Everett, K., & McElroy, J.A. (2021, November 19). *Practice Facilitation to Improve Colorectal Cancer Screening in Federally Qualified Health Care Clinics in rural Missouri* [Poster presentation]. The 2021 University of Missouri Health Science Research Day, Columbia, MO, USA.

Hemme, S., Staudt, L., Wareg, N., Everett, K., & McElroy, J. A. (2021, November 19). *The current state of medical transportation in Missouri: Qualitative analysis of current barriers* [Poster presentation]. 2021 University of Missouri Health Science Research Day, Columbia, MO, United States.

Hemme, S., Wareg, N., Staudt, L., Spratt, B., Everett, K., & McElroy, J. A. (2021, November 19). *Resource mapping of charity care options around Missouri: The need for collaboration and comprehensive data compilation* [Poster presentation]. 2021 University of Missouri Health Science Research Day, Columbia, MO, United States.

Family and Community Medicine
School of Medicine
University of Missouri

Nursing Students Are Making A Difference In Colorectal Cancer Screening Through Colonoscopy Navigator Program

Ying Liu, MD, MA; Alicia Vaca, MPH, BSN, RN; Nuha Wareg MPH, MBBS, Nursing PhD Student; Chloe Maltagliati, BS; Kevin Everett PHD; Jane A McElroy PHD

MPICCS

Introduction

The Missouri Partnership to Increase Colorectal Cancer Screening (MPICCS) helps to improve colorectal cancer (CRC) screening rates in rural Missouri primary care clinics.
Completing a colonoscopy requires access to a procedural center and multiple other steps by patients.
Patient navigators (PN) facilitate the successful completion of this medical procedure by assisting patients every step along the way.
MPICCS facilitates patient completion of colonoscopy by having nursing students work as patient navigators.

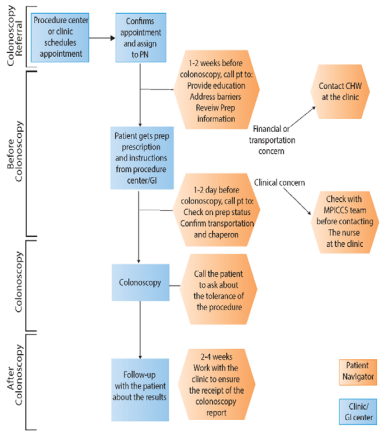
Method

❖MPICCS designed a patient navigator program for Sinclair School of Nursing (SSON) students to complete a one-semester long community health course, as a requirement for graduation.

❖Two Federally Qualified Healthcare systems (FQHC) have benefited from the program since Spring of 2023.

❖Nursing students obtained training on
- •patient interactions
- •clinical workflow and electronic health record (EHR)
- •confirming procedure center appointments
- •colonoscopy preparation
- •communication and organization skills.

The Patient Navigation Process



Spring 2024

One medical system, **5** clinics enrolled
10 nursing students

- ❖ Every student was assigned up to 5 patients
- ❖ **11** patients parciticated in the program
- ❖ **4** patients completed colonoscopy with the program

Fall 2024

Two medical systems, altogether **9** clinics enrolled
5 nursing students

- ❖ Studens went through 531 patients' charts and contacted **21** colonoscopy procedure centers
- ❖ **16** patients participated in the program.
  - ❖ 5 patients completed colonoscoy, 5 are still in the process, 6 didn't respond to the navigation calls

Conclusion

Patient navigator program using nursing students is an effective strategy to alleviate barriers to completing colonoscopies. The training provided real-world professional development opportunities for the students. Patients were assisted to complete their CRC screening successfully with no additional financial costs to the FQHC.

Practice Facilitation to Improve Colorectal Cancer Screening in Federally Qualified Health Care Clinics in Rural Missouri: Innovation & Technnology of the Practice Facilitation Model

School of Medicine

Alicia Vaca, Program Facilitator • Nuha Wareg, Program Facilitator • Brandon Spratt, Program Facilitator • Chloe Maltagliati, Program Coordinator • Kevin Everett, Project Director • Jane McElroy, Project Director

MPICCS

Objective

Maximize tailored communication utilizing clinic data to increase implementation of evidence-based interventions (EBI).

Approach

The Practice Facilitation Model (PFM) is guided by the Evidence NOW Model

Process
- Obtain quarter and annual data
- Use SAS to analyze data
- Produce infographics based on results
- Share with clinics, give bi-directional feedback
- Adjust EBI as needed from review of data

Participating Sites

- 9 Health Care Systems (8 FQHC, 1 Free Clinic)
- 34 Clinics (7 of 27 in urban counties)

Patient Characteristics
- 84% White; 4% Black; 6% Hispanic
- 28% Uninsured
- 7% Non-English Speaking

Innovation & Technology of PFM

Phase 1: Quarter & annual screening data to MPICCS
Mock Data

Phase 2: Data are analyzed using SAS

Phase 3: Data shared with clinics via infographics

Annual Data Summary
Patient Demographic Comparison

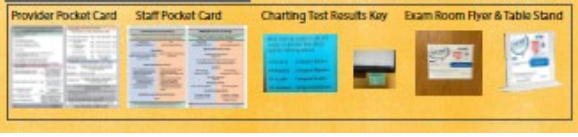
Quarterly Data Summary
CRC Screening Rates Over Time

Chart Review Concordance

Provider Assessment & Feedback

Interative Process

Tailored Provider Education



Tailored Patient Education

Summary

Multiple avenues for gathering feedback. Converting and analyzing data received by clinics into infographics highlights unique factors in the screening process.

Infographics used to promote discussions and problem solving with different providers, clinic staff, or administrative leaders.

Discussions result in tailored patient and provider education identified through data analysis to improve screening rates.

Contact us at mpiccs@umsystem.edu

School of Medicine
University of Missouri

Practice Facilitation To Improve Colorectal Cancer Screening in Federally Qualified Health Care Clinics in Rural Missouri

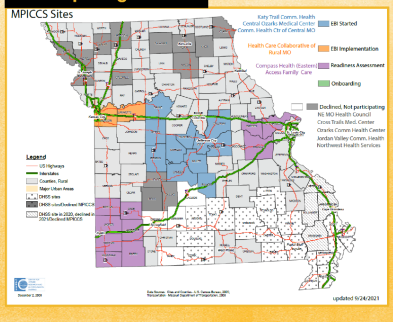
Nuha Wareg MPH, MBBS, Nursing PhD Student; Brandon Spratt DNP, FNP-BC; Lindsay Staudt MPH; Sarah Hemme, MPH Student; Kevin Everett PHD; Jane McElroy PHD

Background

Colorectal carcinoma (CRC) is the third most common cancer in the United States. Compelling evidence shows that early screening detects CRC at earlier stages, improving survival rates.

Missouri Partnership to Increase Colorectal Cancer Screening (MPICCS) **utilizes staff members called practice facilitators to increase CRC screening rates** at rural health care clinics. Practice facilitators assist partner clinics in implementing evidence-based interventions (EBIs).

Participating clinics



Core functions of practice facilitators

- Establish functional working partnerships with clinic personnel
- Assess baseline performance at each clinic at onset of study
- Help staff modify clinics' policies and procedures to implement EBIs sustainably
- Form and maintain of long-term relationships with providers and support staff at clinics

MPICCS

The Missouri Partnership to Increase Colorectal Cancer Screening (MPICCS) is working to improve colorectal cancer screening rates in rural Missouri through evidence-based interventions.

Enrollment

Of the **26** clinics enrolled in MPICCS over a 12-month period:

- **16** are actively implementing one or more EBI
- **6** are onboarding
- **4** are no longer participating

Best practices

Successful practice facilitation requires:

- Timely responses to clinics' questions and frequent meetings with staff
- Trust-building between clinic staff and facilitators
- Documenting and tracking clinic workflow using REDCap
- Identifying root causes of screening issues by asking pointed questions and bringing the right staff members to the table

Discussion

Practice facilitation allows researchers to maintain consistent communication with clinic staff and provide improved support while implementing new, care-improving interventions.

School of Medicine
University of Missouri

The Current State of Medical Transportation in Missouri: Qualitative Analysis of Current Barriers

Sarah Hemme BS, MPH student; Lindsay Staudt MPH; Nuha Wareg MPH, MBBS; Kevin Everett PHD; Jane A. McElroy PHD

Introduction

Medical transportation has been identified as a significant barrier to adequate CRC screening for many patients, especially those living in rural areas. The goal of this project is to describe persistent issues with Missouri's medical transportation system and identify potential solutions.

Methods

The MPICCS team interviewed 5 community health workers at Federally Qualified Health Centers (FQHCs) and 13 hospital foundation directors or other hospital personnel to collect qualitative data about medical transportation.

Current transportation programs

- **Volunteer-based transport:** Volunteers use personal vehicles to get patients to and from appointments. Individual clinics contract with programs with volunteer pool. Volunteers are reimbursed per mile.
- **Non-Emergency Medical Transportation (NEMT):** MO HealthNet (Medicaid) recipients with transportation-eligible care plans can get free transport (NEMT) to and from medical appointments through MoDivCare, which arranges rides with area transportation companies.

MPICCS

The Missouri Partnership to Increase Colorectal Cancer Screening (MPICCS) is working to improve colorectal cancer screening rates in rural Missouri through evidence-based interventions.

Issues with current transportation system(s)

- Too few volunteer drivers in rural areas.
- Few transport companies in NEMT network willing to transport patients' long distances.
- Last-minute cancellations by transportation companies cause patients to miss appointments or leave patients stranded after appointments.
- Lack of accountability for transport companies for repeated cancellations and other poor behavior.
- Medicaid does not cover trips >100 miles unless patient has a cancer diagnosis. Patients who live outside this radius are not eligible for transportation to cancer screening appointments.

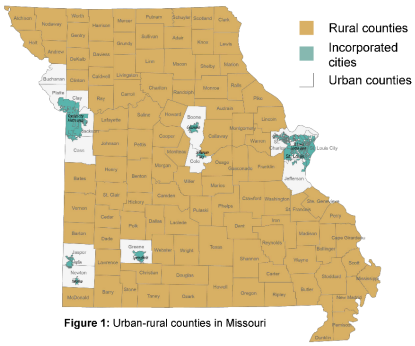


Figure 1: Urban-rural counties in Missouri

Clinic-initiated solutions

Clinics have developed workarounds to address patients' transportation challenges with limited resources, including:

- Contracting with individual taxi services.
- Giving patients gas station gift cards to get them to appointments.
- Community health workers driving to pick up and drop off patients for appointments in their personal vehicles.

Potential long-term solutions

1) Shift the burden of transportation from individual clinics/patients to large hospital systems.

- Systems selected based on location and capacity.
- Distribution of transportation hubs would ensure availability of transportation services in every county.

2) Exempt transportation programs at (non-profit) clinics and hospitals from federal and state enticement laws

- Enticement laws prohibit clinics and hospitals from offering transportation services
- The Federal Anti-Kickback Statute does not exempt services that increase access to care, such as transportation, whereas the Civil Monetary Penalties Law does allow for transportation programs
- The harmonization of these two laws would allow opportunities for clinics/hospitals to provide transportation services

School of Medicine
University of Missouri

Resource Mapping of Charity Care Options Around Missouri: The Need for Collaboration and Comprehensive Data Compilation

Sarah Hemme BS, MPH student,, Nuha Wareg MPH MBBS, Lindsay Staudt MPH, Brandon Spratt DNP FNP-DC, Kevin Everett PHD, Jane A. McElroy PHD

Introduction

Inability to pay for health services, such as Colorectal Cancer (CRC) screening, is a significant barrier for many patients, particularly for those who are un– or underinsured. The un– or underinsured population is especially large at Federal Qualified Health Centers (FQHCs) and in rural areas. Our objective was to create individualized resource maps for FQHCs and rural clinics by compiling information about:

- Financial assistance policies,
- Local charity care resources, and
- Cost of CRC screening, with emphasis on colonoscopies

Methods

Interviews were conducted in locations proximal to MPICCS partners and included:

- 4 Federally Qualified Heath Centers
- 7 rural hospitals
- 8 hospital foundations
- 4 United Way chapters
- American Cancer Society
- 3 other health advocacy groups

All interviews occurred between June 2021-September 2021

The Missouri Partnership to Increase Colorectal Cancer Screening (MPICCS) is working to improve colorectal cancer screening rates in rural Missouri through evidence-based interventions.

Example resource map

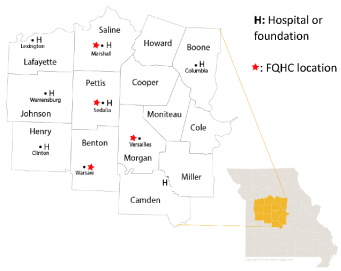


Fig. 1: Katy Trail Community Health resource map. Maps are accompanied by lists of area hospitals, financial aid policies, local charity care organizations, and contact information.

Table 1: Profile of patient population at Federally Qualified Health Centers in Missouri, 2020.

Percent patients at or below 100% of federal poverty level	Percent uninsured patients	Percent patients with Medicaid
68%	26%	41%

Results/Conclusion

- Patients reluctant to seek out medical services due to lack of knowledge about cost and fear of ability to pay
- Communication about charity care resources is largely absent
- Hospitals and foundations expressed willingness to assist financially at-risk patients referred from clinics
- **Lack of information sharing between hospitals and foundations and health care facilities creates barriers for un-or underinsured patients to receive quality healthcare**

Discussion

- Resource mapping for individual clinics is a short-term solution
- Cancer screening costs are available by hospital/health system but are not compiled in a way primary care providers can access while seeing patients
- The compilation of financial aid, cost, and charity care information into a comprehensive and easily accessible format would decrease barriers to cancer screening

Next steps

For more equitable healthcare, we propose building a database that would house all financial aid policies, charity care resources, and cost of cancer screenings for medical centers across Missouri. This tool would allow providers to help patients choose a referral location based on desired characteristics, therefore increasing personalization and access to quality healthcare.

APPENDIX 10:

List of news stories

List of news stories produced by
MU Department of Family Community Medicine in support of MPICCS clinics

Date	Title	Author	Newspaper/Media Outlet	Link
3/13/2025	Affinia Healthcare Tackles Vaccine Hesitancy Head-On	Bre Chamley	MU School of Medicine News	https://medicine.missouri.edu/news/affinia-healthcare-tackles-vaccine-hesitancy-head
3/26/2025	Raising Awareness One Giant Colon at a Time	Bre Chamley	MU School of Medicine News	https://medicine.missouri.edu/news/raising-awareness-one-giant-colon-time
3/26/2025	Access Family Care Opens Area's First Medicaid-only Dental Clinic	Bre Chamley	Lamar Democrat	https://medicine.missouri.edu/news/access-family-care-opens-areas-first-medicaid-only-dental-clinic
3/26/2025	"Promotional blurb about the Carrollton HCC clinic's coffee talk on 3/27/25"	Janet Zullig	Carrollton Democrat	
4/3/2025	Preventative colon cancer screenings not accessible by all	Sophie Carite	Jefferson City News Tribune	https://www.newstribune.com/news/2025/apr/03/preventative-colon-cancer-screenings-not/#:~:text=Colonoscopies%2C%20a%20common%20form%20of,like%20Jefferson%20City%20or%20Columbia.
4/9/2025	Desirae Kelley with COMC Wins Rural Community Health Worker of the Year	Bre Chamley	Pulaski County Weekly	https://www.pulaskicountyweekly.com/news/desirae-kelley-with-comc-wins-rural-community-health-worker-of-the-year/article_747f83ae-f1b4-4bf9-b3a4-83c9be1bfbbb.html
4/11/2025	Health officials prepare as measles cases creep closer to Missouri	Michele Munz	St. Louis Post-Dispatch	https://www.stltoday.com/news/local/metro/article_d61b2cc8-4176-4a7a-a67f-1f2145a7a81d.html#tracking-source=home-top-story
4/16/2025	Building Community Through Nutrition Classes at the Community Clinic of Southwest Missouri	Bre Chamley	Carthage News	https://carthagenewsonline.com/news/lifestyle/building-community-through-nutrition-classes-at-the-community-clinic-of-southwest-missouri/
4/18/2025	Pediatrician discusses vaccines at MRRL	Sophie Carite	Jefferson City News Tribune	https://www.newstribune.com/news/2025/apr/18/pediat

				rician-discusses-vaccines-at-mrrl/
4/18/2025	Federal government slashes Missouri vaccine funds, as child immunization rates fall	Sarah Fentem	St. Louis Public Radio	Federal government slashes Missouri vaccine funds, as child immunization rates fall | KCUR - Kansas City news and NPR
5/6/2025	Federal funding cuts end Missouri youth immunization program	Sophie Carite	Jefferson City News Tribune	https://www.newstribune.com/news/2025/may/06/federal-funding-cuts-end-missouri-youth/
5/6/2025	MU School of Medicine ends childhood immunization program following federal cuts	Marie Moyer	KMIZ	https://abc17news.com/news/top-stories/2025/05/06/mu-health-care-ends-childhood-immunization-program-following-federal-cuts/
5/7/2025	Nurse Practitioner Continues Career Amid Stage 4 Colon Cancer Battle	Bre Chamley	Aurora Advertiser	https://auroraadvertiser.net/nurse-practitioner-continues-career-amid-cancer-battle/
5/15/2025	Nurse Practitioner Continues Career Amid Stage 4 Colon Cancer Battle	Bre Chamley	Neosho Daily News	https://neoshodaily.com/nurse-practitioner-continues-career-amid-cancer-battle/
5/15/2025	Branson pharmacy offers free colon cancer screenings	Bre Chamley	Branson Globe	https://www.bransonglobe.com/post/branson-pharmacy-offers-free-colon-cancer-screenings
5/13/2025	Nonprofit breaks ground on new health care center for women, children	Sophie Carite	Jefferson City News Tribune	https://www.newstribune.com/news/2025/may/13/nonprofit-breaks-ground-on-new-health-care-center/
Spring 2025	Calming Chronic Disease		The Magazine of the Mizzou Alumni Association	Print
5/16/2025	Community Clinic of Southwest Missouri Celebrates 1 Year of Pop-Up Clinic with Salvation Army	Bre Chamley	Carthage News	Community Clinic of Southwest Missouri Celebrates 1 Year of Pop-Up Clinic with Salvation Army - Carthage News Online
5/22/2025	RHRC Patient Navigators Break Down Obstacles for Colonoscopy Patients	Bre Chamley	MU School of Medicine News	RHRC Patient Navigators Break Down Obstacles for Colonoscopy Patients - MU School of Medicine

5/27/2025	Community Clinic celebrates one year of mobile outreach	Gretchen Bolander	KSN16/KODE 12	https://www.fourstateshomepage.com/video/community-clinic-celebrates-first-year-of-mobile-outreach/10754798/
2/28/2025	RE: Maximizing scarce colonoscopy resources: the crucial role of stool-based tests	Jane McElroy & Kevin Everett	Journal of the National Cancer Institute (JNCI)	RE: Maximizing scarce colonoscopy resources: the crucial role of stool-based tests | JNCI: Journal of the National Cancer Institute | Oxford Academic
2025	Improving Colorectal Cancer Screening Rates: Strategies for Equitable Care	Jane McElroy, Jean Wang, Nuha Wareg & Charles Turck		
6/13/2025	Joplin pop-up clinic brings essential care to underserved residents	Jeremiah Cook	KSN16/KODE 12	www.fourstateshomepage.com/news/local/joplin-pop-up-clinic-brings-essential-care-to-underserved-residents/

APPENDIX 11:

Copies of news stories related to MPICCS

Access Family Care Opens Area's First Medicaid-Only Dental Clinic

Access Family Care is transforming dental care in Barton County with the opening of its first Medicaid-only dental clinic located in Lamar, MO. The clinic is now accepting patients.

"Bringing dental care to Barton County is huge because for Medicaid acceptance, people would have to travel probably 30 to 45 minutes on a good day, to even find dental care that would accept them," said Steve Douglas, marketing and public relations coordinator for Access Family Care.

This initiative addresses pressing dental care needs of Barton County, where 1 in 4 residents rely on Medicaid which is nearly 5% above the state average according to the Georgetown University McCourt School of Public Policy in 2023. By reducing the need for long commutes and missed work to find Medicaid-accepting clinics, the new dental clinic will help overcome barriers to care. This ensures that rural Missouri residents can access their dental care services locally.

The Lamar dental clinic will also reduce the strain on Cox Barton County Hospital's emergency room staff by managing tooth pain and dental emergencies that residents have been previously seeking treatment for at the hospital.

Access Family Care, a federally qualified health center (FQHC), ensures high-quality care for all its patients, including those covered by Medicaid. To schedule an appointment at the dental clinic, visit accessfamilycare.org, select "Schedule an Appointment," fill out your information and the clinic will confirm your booking via phone or email.

Not only does the dental clinic take care of dental health but also helps with colon cancer screening by passing out information on colon cancer screening to their patients. Access Family Care is dedicating their time and resources to educate patients on the importance of colon cancer screening with the help of practice facilitation from the Missouri Partnership to Increase Colorectal Cancer Screening (MPICCS) at the University of Missouri.

The LAMAR DEMOCRAT EST. 1870

PUBLISHED WEEKLY | VOL. 124, NO. 13 | Wednesday, March 26, 2025 | 2 SECTIONS, 18 PAGES | $1.25

Serving Lamar, Golden City, Liberal, Mindenmines, Lockwood, Jasper and Sheldon. lamardemocrat.com

Lamar Cruise Night set for April 4

The first Lamar Cruise Night of the 2025 season will be held Friday, April 4, on the Lamar square.

The theme will be "Cars and Trucks Unite", with six trophies being awarded to the Top 3 Cars and Top 3 Trucks.

The Cruise Night committee will be serving chili pie.

For updated information visit their Facebook page at LamarCruiseNight or call 417-214-2378 or 417-214-5436.

Don't miss out on BBQ and Benjamins for Mental Health

BBQ and Benjamins for Mental Health will be held at The Belt on Friday, March 28, around 5:30 p.m., after the 3rd Annual Mental Health Fair. The Belt is located on the east side of the Lamar square.

An "elevated" menu from Big Ren's will be consisting of salad, three proteins, three sides and desserts, along with cocktails and mocktails courtesy of The Belt.

Speakers from the mental health profession will be speaking, with the event to conclude with a silent and live auction to support the AOK Mental Health (AOKMH) Program, where they strive to provide mental health services to all.

Some of the items to be auction include a Rolex watch, an authentic Louis Vuitton handbag, a one day guided duck hunt for two with George Nichols, a one day guided coyote hunt for two in SE Kansas with Heather Baker, a three day, two night stay at the historic Miller Mansion in Pittsburg, Kan., a Kansas City Chiefs package, a gift certificate to the Animal Clinic of Diamond, a one year membership to Hydra Fitness, a Big Ren's $50 gift certificate and a one hour mental health therapy session in support of youth/adults, with no insurance or benefits.

A total of 50 tickets will be sold for the event so please contact jerod@aokyouth.org ASAP or call/text 417-682-6002 to reserve tickets and tables.

INDEX

Adleigh Taylor wins Coloring contest

(First) Adleigh with her first place entry, (Second) Pictured are, left to right, Laniyah, Adleigh and Kyrah.

By JOE DAVIS
Barton County Memorial Park

One of the things that we are trying to do at the Barton County Memorial Park is get the younger generation involved with what we are doing here. It is so important that they understand not only the nation's history, but Barton County history. We have so many different areas of the park dedicated to both of those.

Several grade school classes have come to the park, as well as the 4H Club. It is neat to see the teachers sit the kids down in front of a monument and explain to them what it says and how this affected Barton County.

One of our latest projects directly involved this younger generation and how they were able to contribute to the Memorial Park in a way that will make them proud to say "I did that."

In October of 2023 a fire hydrant, donated by the City of Lamar, was placed on the north side of the park, next to one of the dog-waste stations donated by Eva Buchanan. The hydrant was sandblasted and painted fire engine red. But in less than a year it had faded to almost pink. Instead of taking it back to Washburn's to have it redone, we thought we would give it a patriotic red, white and blue paint job this time. So, we held a coloring contest. The winner would not only get their design painted on the hydrant for all to see, but they would receive a $50 gift certificate to the Plaza Theater.

The kids at AOK submitted 29 entries. It was hard to narrow them down to a first, second and third place, but we did. There were some really good ones.

On March 17, Mandy Sturgell brought all the kids up to the park's office and we announced the winners. First place went to Adleigh Taylor. A $20 gift certificate was awarded to second place winner Kyrah McElroy and third place winner Laniyah Branson received a $10 gift certificate.

Paulletta Orahood with the Barton County Historical Society will be painting the fire hydrant with Adleigh's design this spring. It will make a fitting tribute to the Memorial Park.

By the way, Adleigh not only colored a fantastic picture, but she nailed the KSN interview. She did great. You can go to our Facebook page and see for yourself.

Fast to retire after 46 years of helping customers at LBT

Lamar Bank and Trust Company (LBT) recently announced that Jill Fast, one of its most beloved and longest-tenured employees, will retire at the end of March after 46 years of serving customers.

A friendly, familiar face to generations of LBT customers, Fast started working at the bank in 1978 as a bookkeeper and soon became a teller. After serving in the loan department and as a new account representative, Fast has spent the last 40 years working in the bank's customer service department.

During her time at LBT, Fast helped the bank grow its numerous programs for the Barton County community, including the bank's Travel Club she oversaw for decades.

"My favorite part about working at LBT is the people," she said. "I have become very close with my customers and co-workers and there are so many friends I would have never crossed paths with if not for working at LBT. Now that I'm retiring, I plan on helping my husband Gary on the farm, working in my yard, traveling and spending more time with my grandson Bentley."

LBT President and CEO Pat O'Neal is quick to point out just how much Fast will be missed by her co-workers and customers.

"It's not every day you say goodbye and thank you to an employee with 46 years of tenure," he said. "Jill has been a constant here for nearly half of our 100 years of existence. Her knowledge and relationships with our customers will be missed. We wish her a long and healthy retirement as a full-time grandma and farm hand for Gary."

As Lamar Bank and Trust Company celebrates its 100th anniversary of service to the Barton County community this year, the bank remains steadfast in its mission to provide personalized financial services and support for individuals and businesses across the region.

For more information about Lamar Bank and Trust Company and its services, visit LBT.com.

About Lamar Bank & Trust: Lamar Bank and Trust Company (LBT) has served the financial needs of individuals and businesses in the Barton County area since 1925. With a focus on community and personalized service, LBT is committed to being a reliable partner for its customers through every stage of their financial journey. LBT offers a full range of banking products and services, including personal and business banking, lending, and wealth management. For more information, visit LBT.com. "A better way to bank."

Hospital earns top honor for third straight year

Excellence is not a one-time achievement; it is a standard. For the third consecutive year, the Chartis Center for Rural Health has recognized Cox Barton County Hospital as a Top 100 Critical Access Hospital, reinforcing its status as a leader in rural health care.

Only four rural hospitals in Missouri, including Cox Barton, have earned this top honor.

This national recognition, based on the results of the Chartis Rural Hospital Performance INDEX®, highlights the hospital's outstanding patient care, quality measures, and commitment to excellence in rural medicine.

"Year after year, our team demonstrates that rural health care can be compassionate and effective as any other location in the country," says Andrea McKay, president of Cox Barton County Hospital. "Being named a Top 100 Rural Hospital for the third consecutive year reaffirms our commitment to providing personalized care to every patient, every time."

To determine the 2025 list, Chartis used the Chartis Rural Hospital Strength INDEX®, which assesses performance in inpatient market share, outpatient market share, quality, outcomes, patient perspective, cost, charge and finance.

"Cox Barton County Hospital continues to elevate its standards by investing in advanced technology, expanding its services and prioritizing patient-centered care," says McKay. "To be recognized once again highlights that the hospital is not only meeting expectations but consistently exceeding them."

To learn more about Cox Barton County Hospital and discover why it is consistently ranked among the nation's best visit coxhealth.com or follow them on Facebook.

Cox Barton County Hospital employees, pictured left to right, are Chris Judd from the laboratory, Kara Sloan from patient registration, Rosie Hubbard, the administrative director of Nursing, Bre Hinds, a registered nurse and Sean Guiheen, the ER and Med-Surg nurse manager. They are celebrating the hospital's third consecutive year being recognized as a Top 100 Rural Hospital by the Chartis Center for Rural Health.

Access Family Care opens area's first Medicaid-only dental clinic

Access Family Care is transforming dental care in Barton County with the opening of its first Medicaid-only dental clinic located in Lamar. The clinic is now accepting patients.

"Bringing dental care to Barton County is huge because for Medicaid acceptance, people would have to travel probably 30 to 45 minutes on a good day, to even find dental care that would accept them," said Steve Douglas, marketing and public relations coordinator for Access Family Care.

This initiative addresses pressing dental care needs of Barton County, where one in four residents rely on Medicaid which is nearly five percent above the state average according to the Georgetown University McCourt School of Public Policy in 2023. By reducing the need for long commutes and missed work to find Medicaid-accepting clinics, the new dental clinic will help overcome barriers to care. This ensures that rural Missouri residents can access their dental care services locally.

The Lamar dental clinic will also reduce the strain on Cox Barton County Hospital's emergency room staff by managing tooth pain and dental emergencies that residents have been previously seeking treatment for at the hospital.

Access Family Care, a federally qualified health center (FQHC), ensures high-quality care for all its patients, including those covered by Medicaid. To schedule an appointment at the dental clinic visit accessfamilycare.org, select "Schedule an Appointment," fill out your information and the clinic will confirm your booking via phone or email.

Not only does the dental clinic take care of dental health but also helps with colon cancer screening by passing out information on colon cancer screening to their patients. Access Family Care is dedicating their time and resources to educate patients on the importance of colon cancer screening with the help of practice facilitation from the Missouri Partnership to Increase Colorectal Cancer Screening (MPICCS) at the University of Missouri.

Remodeling of police department building approved

By MELODY METZGER
Lamar Democrat

The March 17 meeting of the Lamar City Council was held at the Thiebaud meeting rooms. After being called to order by Mayor Rick Oeltjen and followed with the opening rituals, Elaine McCulloch spoke to the council, reading a letter that expressed her views on the Aquatic Park.

Jim Buzzard, building inspector, reported on three nuisance structures. Two of them, after receiving a unanimous vote, were tabled until the May 19 meeting and one was unanimously tabled until the April 21 meeting. One of the buildings is located at 909 Gulf and the city is currently working to secure a historical preservation grant. City Administrator Rusty Rives commented he is busy checking with businesses on the square and a block either way, as 25 percent of them would have to participate to receive the grant.

Lamar Police Chief Shannon Crouch reported on police activity, along with giving the nuisance abatement report.

Lamar Fire Chief Rick Heinen reported on city and rural fire calls that were made this past month. The majority of the calls were rural.

Heidi Johnson, speaking on behalf of the Park Board, reported that work on the bathroom by the playground is progressing. She also reported on the parking lot being laid, cleaning of the flower beds and repairs made to a handrail on the Lamar City Park walking trail, reinforcing what was already there. She noted that there was a large sign-up for baseball/softball, which will make for a fun, but busy summer. Also reported was vandalism that occurred at the Wheeler Park bathroom, as well as the city park's shelter No. 7.

In general business, a discussion ensued regarding the MoDOT ADA sidewalk easement at the corner of Poplar and Hwy. 160 (12th St.) Following a discussion, unanimous approval was given by the council. Next was the first and second reading of Council Bill No. 1956, an ordinance to authorize the mayor to execute a landfill gas generation purchase agreement between the City of Lamar, Missouri, and the Missouri Joint Municipal Electric Utility Commission. An extensive discussion ensued before the bill's unanimous approval.

Approval was unanimously given for Sprouls Construction to move forward with the construction of a new police department. The department will be located at its present site, with the old city offices and present police department to be housed under one 6400 sq. ft. building. A total cost of $561,795 would include labor, materials, equipment and having to lease a building for Sprouls to gut the old one for remodeling, plus redoing the outside of the building. The cost would be spread out over three budget cycles, with $387,000 already having been funded, leaving $174,795, which would go into next year's budget.

It was reported that the current 4-wheeler that is being used by the fire department is in need of replacement. A John Deere Gator at a cost of $7500 has been located, with a trade-in on the current 4-wheeler being $3500.

Resolution No. 518 was unanimously approved, amending or revising the general fund and authorizing expenditures of funds.

During the city administrator's report, Rives mentioned the water lines being laid around the square, stating they had come in under the engineering estimated budget so work would be done as far north as they could go on Gulf St. He reported that the railing on the bridge by the Lamar City Lake had been redone and that the date for the next fly-in had been set for October 11. He also stated that work had been completed on the blue building located beside the police station. Also reported on was the fiber update, with construction anticipated in October and Bethany Aborn had been hired as the new assistant city administrator/finance officer. She will begin on March 24.

The meeting adjourned to meet again on Monday, April 21.

Letter to the editor

(Editor's note: This letter was presented at the March 17 Lamar City Council meeting.)

Dear Editor:

Looking from the Outside.

Almost four years ago the city council made the decision to close the city pool. There were issues including major leaks and operating costs. The usage at the pool was not accurately reported to the city. The number was lower than the swim team membership and the water aerobic members. The cost for repairs came from Water's Edge. The citizens trusted that the city council would find a solution, especially since they passed a tax. Nothing occurred for three years, then the council decided to destroy the entire facility. I believe this was done without consideration of the assets at the location or the needs of the taxpayers. Concerned citizens expressed that the pool was an important attraction and service to the community. At this time the decision to remove the aquatic park was reversed.

The mayor reinstated the aquatic committee, that is to operate under the direction of the park board. Per the mayor no meetings were to

see LETTER, page 3

Affinia Healthcare Tackles Vaccine Hesitancy Head-On

"Half of what you'll learn in medical school will be shown to be either dead wrong or out of date within five years of your graduation; the most important thing to learn is how to learn," said David Sackett, the father of evidence-based medicine. With constantly changing medical knowledge, staying updated can seem nearly impossible. However, it's crucial for healthcare workers to remain informed about the latest medical information to provide the highest quality care to their patients.

Affinia Healthcare, a Federally Qualified Health Center serving the St. Louis area, is committed to keeping its staff up to date on the latest health information. To uphold this commitment, on Tuesday, March 4th, Affinia Healthcare delayed opening all six clinics for its routine in-service meeting. This month's focus was on vaccine education for its clinical staff. This is especially important as the low vaccination rate, combined with the rising number of measles cases across the United States, has put Missouri citizens at risk for the next outbreak.

"While we do not have any recorded measles cases in Missouri yet, it is knocking on our door," said Lynelle Phillips, Board President of the Missouri Immunization Coalition. "Roughly ¾ of our counties have less than 95 percent MMR vaccination rates for kindergartners. This means, once measles arrives and hits those counties, it will spread. Our providers need to be ready!"

During the in-service, guest speaker Dr. Kate Lichtenberg, board-certified in both Family and Preventive Medicine, emphasized the importance of educating parents about the threat of childhood diseases that can be reduced through vaccination.

Giavonna Buck, Affinia Healthcare Clinic Director and registered nurse with 32 years of experience, highlighted the value of the vaccine training.

"[The in-service] gives us [narratives] to share when we're talking about vaccine hesitancy and trying to encourage parents to get their kids vaccinated," Buck said.

Dr. Lichtenberg discussed the concept of herd immunity with the nurses and the need to maintain high rates of vaccination. The CDC reports 94 percent of the measles cases in the United States involve both children and adults who are either unvaccinated or unaware of their vaccination status. She outlined strategies which enable nurses to connect with patients on a personal level, encourage informed decision-making and address hesitancy.

"[The in-service] definitely gives me insight on… how we can pursue [vaccine education] with more patients to make sure they're vaccinated without making it forcible," said Deja Hughes, a vaccine assistant at Affinia Healthcare.

Affinia Healthcare continues to prioritize improving its vaccination completion rates with their Community Vaccine Clinic at the Salvation Army Midtown Treatment Center. Free vaccines are available from 9 a.m. until noon on Mondays, Wednesdays and Thursdays. For more information, call (314) 797-7486.

In support of increasing their vaccination rates, Affinia Healthcare participates in the Vaccine Improvement Project for Children and Adolescents, a Missouri Department of Health and Senior Services funded initiative. This program, in partnership with University of Missouri, Washington University and the Missouri Immunization Coalition, provides practice facilitation and training to increase vaccination rates at the clinic level.

Submitted to Branson Globe
May 15 · 1 min read

Branson pharmacy offers free colon cancer screenings

My Neighbor's Charitable Pharmacy partners with one of Exact Sciences' assistance programs, the ACT Now program, to provide free colon cancer screenings. Through this program, the pharmacy can order up to 10 Cologuard tests per month, totaling 100 per year, at no cost.

These Cologuard kits are completely free for individuals who need to be screened for colon cancer, as long as they are uninsured and earn less than 300% of the federal poverty limit $46,950 annually for a single person or $96,450 for a family of four. Recipients do not need to be current patients or members of the pharmacy to receive a kit. The pharmacy operates on a membership model, where patients can access all their medications for just $10 per month if they fit the criteria of being uninsured and earning less than 300% of the federal poverty limit.

Currently, Cologuard kits are shipped directly to recipients' homes. Once they arrive, individuals also have the option to pick them up at the pharmacy. After completing the test, kits can be returned at no cost by dropping them off at a UPS store or scheduling a home pickup for shipment back to Cologuard. Once testing is complete, the results are sent to the pharmacy, which then informs both the primary care doctor and the patient of the results.

If a screening result indicates the need for a colonoscopy, the pharmacy has a partnership with CoxHealth to help schedule the procedure. This is facilitated through Cox's Gates Foundation under its CRAP (Colorectal Awareness Party) program.

They are the first pharmacy in Missouri at the moment to provide CRC screening to patients and the public.

Building Community Through Nutrition Classes at the Community Clinic of Southwest Missouri

By **Bre Chamley** - April 16, 2025

JOPLIN, Mo. — At the Community Clinic of Southwest Missouri nutrition means more than just eating well; it's about building relationships, fostering skills and empowering individuals to make healthier choices.

The clinic's free 16-week nutrition class offers participants the chance to learn how to cook nutritious meals on a budget. The program also teaches essential skills like reading food labels, practicing mindful eating and navigating grocery shopping.

"I was surprised by just how much I am learning in the cooking class! I have diabetes and was struggling to really know what was good for me to cook," said one program participant. "And I love that I get to take the ingredients home to make it at night for my family."

Participants prepare meals together, dine communally and take home the ingredients to recreate the dishes. For some, the shared experience is the only time they sit down to enjoy a meal with others.

The program focuses on hands-on learning, where participants can learn how to fuel their body.

"I look forward to each class and our instructor's easy way of communication," said Cathline Pollard, another program participant. "The relaxed atmosphere encourages us all to share our thoughts and ideas in open discussions. I think it is a perfect class for anyone in our community!"

Over time, the classes build friendships and support networks, with participants exchanging recipes, texting one another and organizing walks outside of class.

"The cooking program has become so important to the health of many of our patients," said Stephanie Brady, executive director of the clinic. "We are so thankful that we can offer such a fun class for our patients."

Amber Warner (pictured) helps coordinate the class with Stephanie Brady, the executive director of the clinic. Photo provided

Classes are held Thursday mornings at 10:30 a.m. and Tuesday afternoons at 3 p.m. Each session is limited to 10 participants, with priority given to clinic patients before opening to the public. The clinic hopes to raise awareness about the program, ensuring that more people can benefit from the nutrition classes.

The Community Clinic of Southwest Missouri is dedicated to improving the health of individuals in the community who lack access to medical, dental or mental health care. The clinic is funded through donations and grants and receives practice facilitation from the Family and Community Medicine Department at University of Missouri.

Bre Chamley

Community Clinic of Southwest Missouri Celebrates 1 Year of Their Pop-Up Clinic with Salvation Army

One year ago, the Community Clinic of Southwest Missouri set out to make health care more accessible to all Missourians. Partnering with the Salvation Army, they launched a free pop-up clinic that sees patients every second Friday of the month.

What began with one volunteer doctor seeing seven patients and clinic staff administering 25 vaccines has since grown into a thriving program. Now the pop-up clinic includes two doctors, clinic staff, volunteers and a patient advocate, an expansion made possible by the community's dedication to volunteerism.

Initially envisioned as a mobile unit, the program adapted to provide scheduled care at a single, reliable location. This consistency has helped patients overcome both physical and mental barriers to care.

"We've realized there's a whole population who, for various reasons, are forgotten about, not seeking care or don't know they can receive care from us," said Stephanie Brady, executive director of the clinic.

The pop-up clinic also has a patient advocate work with patients to set up care with the Community Clinic for chronic issues needing regular long-term care.

Moving into their second year, the Community Clinic of Southwest Missouri remains committed to expanding access to care. The pop-up clinic is available to the community on the second Friday of each month from 12 p.m. to 2 p.m. at the Salvation Army in Joplin, Mo.

The Community Clinic can provide care and the pop-up clinic due to volunteers from the community as well as practice facilitation from the University of Missouri Family and Community Medicine department.

Preventative colon cancer screenings not accessible by all

Sophie Carite
scarite@newstribune.com

Colon cancer develops from polyps, which begin as small, non-cancerous growths formed in the lining of the colon.

Detecting and removing these polyps early is the key to preventing colon cancer, said Dr. Crystal Sullivan, CEO of Community Health Center of Central Missouri (CHCCM).

However, preventative screenings are not equally accessible for everyone, putting low-income and rural Missourians at a greater risk.

CHCCM has clinics in Jefferson City, Linn, Fulton and California. It primarily serves patients who either don't have health insurance or are on Medicaid.

Sullivan, who is also a family medicine physician, said poor access to reliable transportation is one of the biggest barriers to getting these patients in for colon cancer screenings.

"A lot of our patients don't have reli-

Please see Cancer, p. 5

Julie Smith/News Tribune

Dr. Crystal Sullivan, CEO of Community Health Center of Central Missouri, talks about CHCCM being in a partnership program with MU to make the process of accessing a colonoscopy easier for patients.

www.newstribune.com

Federal government slashes Missouri vaccine funds, as child immunization rates fall

St. Louis Public Radio | By Sarah Fentem
Published April 18, 2025 at 4:00 AM CDT

Tristen Rouse / St. Louis Public Radio

A sign advertising free COVID-19 vaccinations in August 2023 at the John C. Murphy Health Center in Berkeley. The federal government has cut funds that encourage vaccination education and advocacy among Missourians.

Two dozen states, but not Missouri, have filed suit to block the federal cuts to immunization and other public health programs.

The federal government has cut money earmarked to encourage vaccinations among Missourians as part of its mission to slash spending.

The cuts come as vaccination rates among Missouri children have gone down and as vaccine-preventable measles has gone up nationally.

The cuts, announced in March, were to grants to the Missouri Department of Health and Senior Services from the Centers for Disease Control and Prevention.

DHSS distributed the federal money in the form of grants and contracts to organizations such as the Missouri Immunization Coalition, which educates and advocates for immunizations.

"I'm really concerned about the effects it's going to have for our health and safety of the population here in Missouri," said Missouri Immunization Coalition Executive Director Lawrence Simonson. "Continuing to defund any of the vaccination efforts that we're seeing at our local health department, those vaccination rates are going to continue to decline."

According to DHSS spokeswoman Lisa Cox, the CDC notified the department it was cutting three funding streams worth $255 million.

DHSS representatives did not say how much of that terminated funding was earmarked for immunization projects.

"The termination of this funding impacts a number of projects currently underway supporting Missouri's public health system, totaling about $135 million," Cox said, adding the reduction in grants would likely affect employees of local and state-level agencies.

Federal sources also cut an additional $119 million for projects that were still being determined, Cox said.

"DHSS is working to understand the full impact of this federal action and searching for options to carry on some of this work," she wrote in an email.

While the Missouri Immunization Coalition had been supported through other funding in the past, this year the $1.5 million DHSS contract using federal funds was the only money sustaining the group, said the organization's president, Lynelle Phillips.

Phillips said vaccination education is more important than ever as cases of measles go up around the country. According to the CDC, more than 700 cases of measles have been reported in 25 states this year. Almost all are in people who are unvaccinated or whose vaccination status is unknown.

At the same time, vaccination rates among MIssouri schoolchildren have decreased, with 85% of private school kindergarteners and 90% of public school kindergarteners being fully vaccinated against measles, mumps and rubella, according to state health data.

"If measles hit St. Louis, it's hitting fertile ground because the immunization rate is so low for city kids in the school system," Phillips said. "Those immunization rates don't raise themselves. That leaves our population at the mercy of whatever local health departments can muster."

Other vaccine-preventable diseases, such as whooping cough, have also seen increases in cases. (Health officials said the rise in whooping cough cases is likely due to the infection returning to pre-pandemic levels.)

Immunization Coalition leaders were forced to cancel their spring conference at the last minute when its members learned of the cuts.

Two dozen states (but not Missouri) have filed suit to block the federal cuts to immunization and other public health programs.

In the lawsuit, the plaintiffs state HHS made the cuts because they were appropriated through coronavirus-era laws. The funding was no longer needed because the pandemic is over, HHS wrote in notices to governments, according to the lawsuit.

Heidi Lucas, the executive director of the Missouri Rural Health Association, said the federal funding for its own vaccination program had been halted.

"We received an email a couple weeks ago that basically said, 'Your funding is stopped, effective immediately,'" she said. "We lost approximately a million dollars."

The MRHA grant funding was being used to collect information about immunizations among adults who use rural health clinics, Lucas said. The information gathered would be used to help the organization educate providers about how to best talk to residents in a nonjudgmental and supportive way.

She said the funding was intended for influenza and COVID-19 vaccine research, but the lessons learned from the project could also be applied to other vaccines. Health providers are still the first place most people turn to when they have concerns or questions about immunizations, she said, so it's important for

workers to know how to discuss them with patients in a way that doesn't feel punitive.

"We only had a couple of months left on the project," she said. "All of the research was done. We paid for the research. We paid for how to have these conversations, the training, everything, everything is done. The only thing that was left was to get the information out....We have a lot of stuff in our back pocket, and just nowhere to put it."

Nurse Practitioner Continues Career Amid Stage 4 Colon Cancer Battle

After 16 years as a registered nurse, Sabrina Barratt returned to school to become a nurse practitioner. Shortly after starting her new role at the Access Family Care clinics in Monett and Aurora, she received life-changing news: a stage 4 colon cancer diagnosis.

“There was no family history or anything. When I was diagnosed, I just turned 41,” said Barratt. “I had mild, low back pain.”

Barratt’s back pain started nine months before her diagnosis on Nov. 3, 2020. She first blamed the strain of remodeling her home, but when the pain persisted despite normal tests, she knew something was wrong.

Further testing confirmed she had stage 4 colon cancer, with a lymph node pressing on a sacral nerve, the source of her prolonged back pain.

Barratt’s treatment started immediately with chemotherapy, followed by radiation and multiple surgeries, including lung and liver procedures.

She has now been battling stage 4 colon cancer for four and half years. Today, one spot remains inoperable, requiring ongoing maintenance chemotherapy and evaluations every three months.

Despite her diagnosis, Barratt remains dedicated to her career.

“It keeps me going. I'm a very active person, and I don’t think I could just stay home,” said Barratt. “There are times I need to take extra days off, but Access [Family Care] is very accommodating.”

As a Nurse Practitioner, Barratt uses her own story to encourage hesitant patients to prioritize screenings.

“When people tell me they have no symptoms or risk factors, I tell them a story [about a colon cancer diagnosis],” said Barratt. “At the end [of the story], I tell them, ‘That’s *my* story,’ and they realize the importance [of colon screenings].”

So far, three of Barratt’s patients have told her they would not have scheduled a colonoscopy if not for her experience, each of which had precancerous polyps removed.

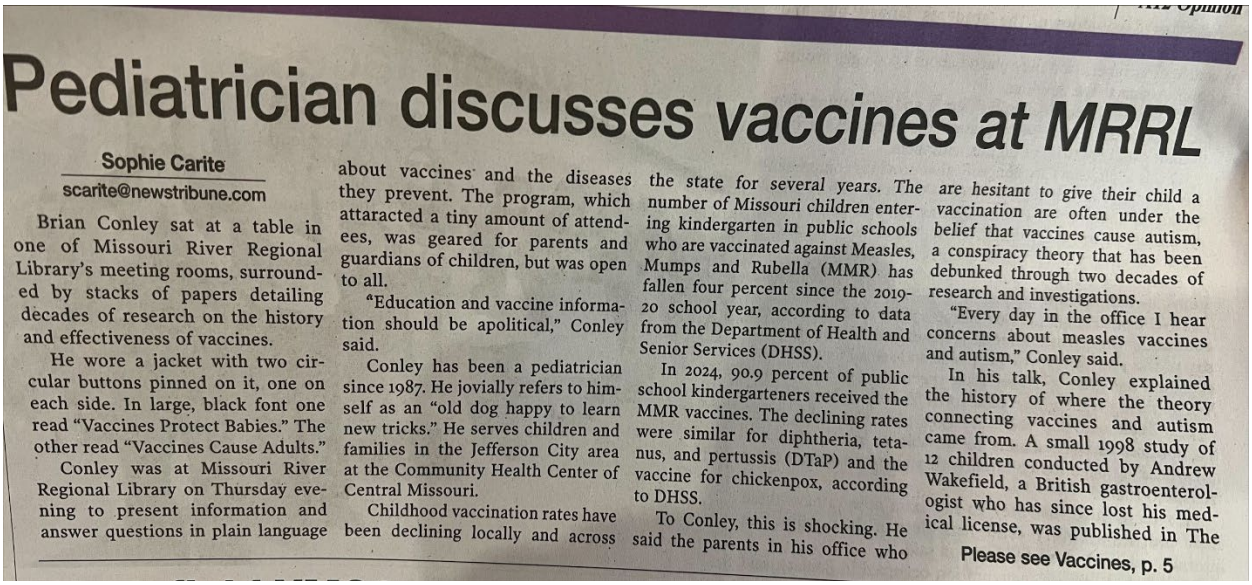
Barratt can’t express the importance of regular screenings enough.

“I know it's inconvenient for one or two days, but I guarantee you that's way less inconvenient than years of treatment,” said Barratt.

Barratt's career, along with the support of her community, faith and family, has helped her through her diagnosis. However, Barratt also found her *why*. Many cancer patients search for meaning behind their diagnosis and while not everyone finds an answer, Barratt's was clear: protecting her daughter from facing the same journey.

Because of Barratt's diagnosis, doctors recommended her children begin screenings at age 20. During her daughter's first screening, a precancerous polyp was found. Catching it early allowed her to have it removed, increasing her chances of not ever getting colon cancer with continued screening---and that is Barratt's *why*.

Barratt and the entire Access Family Care health system are dedicated to improving colorectal screening rates in the communities that they serve. The clinic receives practice facilitation from the Family and Community Medicine Department at the University of Missouri through the Missouri Partnership to Increase Colorectal Cancer Screening.



Pediatrician discusses vaccines at MRRL

Sophie Carite
scarite@newstribune.com

Brian Conley sat at a table in one of Missouri River Regional Library's meeting rooms, surrounded by stacks of papers detailing decades of research on the history and effectiveness of vaccines.

He wore a jacket with two circular buttons pinned on it, one on each side. In large, black font one read "Vaccines Protect Babies." The other read "Vaccines Cause Adults."

Conley was at Missouri River Regional Library on Thursday evening to present information and answer questions in plain language about vaccines and the diseases they prevent. The program, which attaracted a tiny amount of attendees, was geared for parents and guardians of children, but was open to all.

"Education and vaccine information should be apolitical," Conley said.

Conley has been a pediatrician since 1987. He jovially refers to himself as an "old dog happy to learn new tricks." He serves children and families in the Jefferson City area at the Community Health Center of Central Missouri.

Childhood vaccination rates have been declining locally and across the state for several years. The number of Missouri children entering kindergarten in public schools who are vaccinated against Measles, Mumps and Rubella (MMR) has fallen four percent since the 2019-20 school year, according to data from the Department of Health and Senior Services (DHSS).

In 2024, 90.9 percent of public school kindergarteners received the MMR vaccines. The declining rates were similar for diphtheria, tetanus, and pertussis (DTaP) and the vaccine for chickenpox, according to DHSS.

To Conley, this is shocking. He said the parents in his office who are hesitant to give their child a vaccination are often under the belief that vaccines cause autism, a conspiracy theory that has been debunked through two decades of research and investigations.

"Every day in the office I hear concerns about measles vaccines and autism," Conley said.

In his talk, Conley explained the history of where the theory connecting vaccines and autism came from. A small 1998 study of 12 children conducted by Andrew Wakefield, a British gastroenterologist who has since lost his medical license, was published in The

Please see Vaccines, p. 5

Vaccines:

Continued from p. 4

Lancet and claimed to find a link between the MMR vaccine and autism.

The study has since been retracted for having flawed methodology and scientific misconduct. Several larger-scale studies have disproven its claims, according to Autism Speaks.

Wakefield, it was later revealed, had a number of financial conflicts that motivated him to attempt to steer families away from giving their child the MMR vaccine.

In his talk Thursday, Conley spoke about how several childhood vaccines were developed and the safety and efficacy of giving them to children.

He also accepted questions from the audience, many of which related to the safety of the COVID vaccine.

Raising Awareness One Giant Colon at a Time

A giant inflatable colon caught the attention of 830 visitors at the COMO Man Show on March 15 at the Boonville Fairgrounds where the Missouri Partnership to Increase Colorectal Cancer Screening (MPICCS) used the 6'x6'x27' inflatable display to raise awareness about colon cancer prevention.

The COMO Man Show, an annual Mid-Missouri expo celebrating "all things manly," features booths, activities and vendors showcasing hunting, fishing, sports and food. This event attracts a diverse crowd, including Columbia locals and residents of nearby rural towns such as Mexico, Ashland, Boonville and Centralia.

What's the purpose of a giant inflatable colon at a men's expo? It's a practical way to connect with men at an event tailored to them.

According to a national survey by Cleveland Clinic, 72% of men would rather do household chores than go to the doctor. They're a hard group to reach because they've been told from a young age to not complain about their health issues. This includes getting a life-saving colon cancer test.

With March recognized as Colon Cancer Awareness Month, the MPICCS team saw the COMO Man Show as both a unique opportunity to educate attendees about colon cancer prevention and meet men where they already are.

"Well, I was up at Crown Power [& Equipment], and I got a free ticket. Then I saw [the expo] was just down the road, so I thought, I'll stop in and see [what the event has to offer]," said attendee John Blevins.

While visitors didn't come for the colon, it grabbed their attention long enough to deliver an important message about colon cancer screening.

"It's definitely eye-catching and [it] got me to come over here and go through it," added Blevins.

Chloe Maltagliati, MPICCS project coordinator, led the effort and was joined by student volunteers. Maltagliati concentrated on raising awareness about the revised recommendation to start colonoscopies at age 45. She also had a meaningful conversation with a man whose father died of colon cancer in 1995. His father had never been screened, and after learning about the screening process and the importance of early detection, the man expressed his commitment to schedule a screening.

He wasn't the only person impacted by the giant inflatable colon. Centralia-native Tom Barbada shares his personal connection to the colon.

"I love it," Barbada said. "I have a history of some colon stuff, so I know how important colon health is."

Reactions to the display varied though; some attendees thought it was strange.

"It's weird, but it's thought-provoking," said Amy Hayes from Ashland.

Others resonated with the creative approach like Dulce Matias, a teacher in Columbia.

"It's so cool. This is exactly what we need to create long-term memory," said Matias.

For others, it opened the door to personal stories about their experiences with colonoscopies or plans to schedule one. Others found humor in the topic, playfully referring to the procedure as the best nap they've ever had.

The importance of colon cancer awareness was also emphasized by health care professionals passing through, such as Michelle Branan.

"I think anytime you can bring this to people's attention, it's great," said Branan. "The test isn't bad, just get it over with, and you feel safe."

MPICCS, based at the University of Missouri, works to promote colon cancer screenings through innovative outreach initiatives like the inflatable colon. The organization also collaborates with over 30 Missouri clinics, located mostly in rural areas, offering practice facilitation to improve screening rates across rural Missouri.

RHRC Patient Navigators Break Down Obstacles for Colonoscopy Patients

May 22, 2025

Colon cancer affects 150,000 Americans every year, according to the Colorectal Cancer Alliance. The good news is that early screening and timely colonoscopies prevent 75% of colon cancer

cases. However, many patients need support to navigate the process and ensure they complete this crucial procedure.

That's where the RHRC Patient Navigator program comes in. By pairing nursing students from the University of Missouri's Sinclair School of Nursing with patients, the program offers guidance every step of the way.

The program is designed to connect patients with navigators who provide personalized support to tackle obstacles such as understanding the steps needed to prepare for their colonoscopy (drinking the prep), confirming appointment time and date, helping them get answers to questions prior to the procedure, making sure they have a chaperone and transportation, and addressing other challenges.

"It was a little bit surprising to me to see how many people fall through the cracks and it's no one's fault, but there just needs to be someone to navigate that and make sure no one is left behind," said Emma Rayle, a senior nursing student at Sinclair School of Nursing.

The program partners with two health systems, Katy Trail Community Health and the Community Health Center of Central Missouri. Katy Trail became the pilot site for the program in response to challenges with patient attendance for colonoscopy appointments. Later, Community Health Center would join and bring more patients to the program.

Throughout the semester, each nursing student in the navigation program dedicated 90 hours to first learning about CRC screening and then contacting patients and procedural centers to ensure colonoscopies were completed.

The Patient Navigator program has expanded its reach, guiding a growing number of patients through the colonoscopy process. During its first semester, nursing students navigated 10 patients. With the integration of the Community Health Center of Central Missouri, that number more than doubled over the following two semesters.

"The most important thing is that patients are getting screened," Project Coordinator and Program Preceptor Chloe Maltagliati said. "Even helping one person is impactful, as it can lead to early detection and treatment."

The program not only assists patients in accessing care but also provides nursing students at the university with early hands-on patient experience, while highlighting the reality of existing obstacles to health care.

"I think it's good for me to see how confusing [the colonoscopy process] can be and where [patients] may need help. Then, I can understand how to better help [patients] when I'm a nurse too," said Liz Manthe, a senior in the Sinclair Nursing program.

As the semester reaches its final stretch for nursing students, the Missouri Partnership to Increase Colorectal Cancer Screening (MPICCS) team is looking forward to seeing the effects of the program and helping eliminate obstacles to care for patients with colonoscopy appointments.

The Patient Navigator program is a component of MPICCS's broader mission to improve CRC screenings across rural Missouri. Funded by the Centers for Disease Control and Prevention (CDC), MPICCS has partnered with eight health systems and 31 clinics statewide. This initiative is part of the Rural Health Research Center's efforts on collaborating with rural communities to find solutions to health-related challenges.

Read More About
RURAL HEALTH RESEARCH CENTER

Tags

Outreach Programs Rural Health Research Center

RELATED NEWS

APPENDIX 12:

Transcript from ReachMD podcast

Improving Colorectal Cancer Screening Rates: Strategies for Equitable Care

ReachMD
Be part of the knowledge.®

TRANSCRIPT

Transcript Details
This is a transcript of an educational program. Details about the program and additional media formats for the program are accessible by visiting: https://reachmd.com/programs/clinicians-roundtable/improving-colorectal-cancer-screening-rates-strategies-for-equitable-care/33057/

ReachMD
www.reachmd.com
info@reachmd.com
(866) 423-7849

Improving Colorectal Cancer Screening Rates: Strategies for Equitable Care

Dr. Turck:

Welcome to *Clinician's Roundtable* on ReachMD. I'm Dr. Charles Turck, and joining me to discuss strategies for optimizing colorectal cancer screening are Drs. Jane McElroy, Jean Wang, and Nuha Wareg. Dr. McElroy is a Professor in the University of Missouri's Family and Community Medicine Department and the Co-Director of its Rural Health Research Center. Dr. McElroy, thanks for being here today.

Dr. McElroy:

Yeah. Thanks for having us.

Dr. Turck:

And Dr. Wang is a board-certified gastroenterologist and Professor of MedicineandSurgery in the Division ofGastroenterology at Washington University School of Medicine in St. Louis. Dr. Wang, welcome to the program.

Dr. Wang:

Thank you so much.

Dr. Turck:

And last but not least, Dr. Wareg serves as a Practice Facilitator for the Missouri Partnership to Improve Colorectal Cancer Screening program at the University of Missouri, which has been funded by the CDC. Dr. Wareg, it's a pleasure to have you here today.

Dr. Wareg:

Pleasure is mine. Thank you.

Dr. Turck:

So, Dr. McElroy, let's start with you. For some context, what does the colorectal cancer screening landscape look like today, particularly with regard to uptake and which patient populations are being under-screened?

Dr. McElroy:

Yeah, uptake continues to be uneven across the populations. When we look at people of color, like Black and Indigenous or Alaskan Native folks, they're less likely to be screened for colorectal cancer, yet they face higher CRC mortality and incidence rates. Also, Hispanics with limited English proficiency have lower colorectal cancer screening rates. When we look at people living in rural areas, they're also less likely to be screened—particularly with colonoscopies—for a couple of reasons, and one of those is lack of access to procedure centers where those can happen. Those are not in your neighborhood or right down the street, so those are often a distance from where people live, as well as shortage of gastroenterologists to be able to perform the colonoscopy.

Dr. Turck:

And turning to you, Dr. Wang, given some of those population-level challenges, what are some quality factors related to procedures that are most critical in determining whether a

screening program actually prevents cancers?

Dr. **Wang**:

Well, patients have several options for colorectal screening. The most common options are either a stool-based test that patients can do at home or a colonoscopy where they have to come into a procedure center and get sedated and have a camera put in to look directly inside the colon. Now, the stool-based testing is pretty easy to do on your own at home, but the most important thing is that if you get an abnormal test result on the stool test, you have to then follow up with a colonoscopy. And we are finding that there are many patients who go through the process of the stool test but then don't follow up to get that colonoscopy if their test is abnormal, and so that's one area where we're working to try and increase and make sure that everyone who has an abnormal stool test will go on and get that follow-up colonoscopy.

Now, as far as the colonoscopy, it's very important that both the patient and the doctor do their parts in ensuring a good quality exam for screening. And what the patient has to do before a colonoscopy is a colon cleansing and basically clean out the colon of all the stool that's in there, and so we prescribe a medication which will basically cause the patient to have diarrhea and clean out all the stool from the colon. And it's very important that patients follow those directions carefully so that when we go in to actually do the procedure with the camera, we can get a good look at the inside of the colon without any parts of the colon being covered up with stool. Now, from a doctor's standpoint, it's very important that the doctor has a lot of experience doing colonoscopies for screening and also that they're taking their time and looking carefully around as they're doing the procedure.

Dr. **Turck**:

Now, Dr. Wareg, in your experience, what interventions have you found most

effective for boosting screening rates in busy clinical settings?

Dr. **Wareg**:

So in my experience working with rural clinics, there were some interventions that have higher success rates. The first one is handing out a stool-based test during clinic visits with a return date on the kit. And to make that even more successful, follow up systematically, so clinics who follow up on those handed-out stool-based kits see higher return rate and screening completion rate.

The other intervention is stool-based test standing orders and team-based workflow, meaning preparing for the visit either during the huddle with a lot of our clinics called pre-visit planning or some form of checklist that they use during their huddles. So for standing orders, empowering medical assistants or nurses to distribute and explain the stool-based FIT kits offloads a lot of these screening processes from basic clinicians. And for the pre-visit planning, embedding the screening into that routine vital sign workflow or annual wellness visit checklist ensures that the colorectal cancer screening doesn't get overlooked. So this is a whole team approach. When the whole team is involved, screening is viewed as shared responsibilities, and rates improve.

The third and the last one is a type of a patient reminder, but it has to be data-driven patient outreach; that is, clinics who have someone who can pull reports from their EHR or registry to identify patients that are due for screenings or patients who didn't complete their screening and conduct a proactive outreach, either with phone calls, letters, or texts, have better success.

Dr. **Turck**:

For those just tuning in, you're listening to *Clinician's Roundtable* on ReachMD. I'm Dr. Charles Turck, and I'm speaking with Drs. Jane McElroy, Jean Wang, and Nuha Wareg about how we can improve colorectal cancer screening uptake and quality.

Now, coming back to you, Dr. McElroy, aside from what we've already discussed, would you talk a bit about clinic level and policy changes that you believe are the most important in increasing uptake and closing equity gaps?

Dr. **McElroy**:

Sure. And we've worked mostly with federally qualified health centers— most of our federally qualified health centers are in rural Missouri. We've done analysis looking at their data, and we found that their screening rates by race are similar, and that's fantastic because what that means is that Blacks are as likely to be screened as Whites, and that speaks really highly of our FQHCs in closing that gap in the disparity I mentioned previously. This behavior needs to be uniformly practiced throughout the United States so that all people should be screened regardless of race or ethnicity.

A second thing is finding safety net resources for those who have legitimate concerns about the cost of taking care of their health. That continues to be a work in progress. Transportation is a huge problem. Patients literally cannot get to appointments because they don't have a reliable means of transportation, or they can't afford the gas. Transportation systems just don't serve many parts of the United

States, and figuring out how to support people getting to the clinic appointments will increase the screening rates.

Persistent repeated encouragement is another key factor that can drive increased screening rates, particularly among rural populations. Keep encouraging people to get screened even if they may be resistant or may say "no, thank you" at the yearly appointment. The next time you see them, bringing it up again is important, but also equally important is persistence in outreach efforts along with involvement of trusted community members, such as community health workers. These workers reflect the populations they serve. They look like them, and that's meaningful. When they speak to what really, truly matters, such as getting screened for the sake of your family or to be there for a future milestone like your grandkid's graduation, that can make a powerful, relatable impact on people, and it may be that "I'll get screened not for me, but for my kids or my family," and that can help improve the screening rates.

Dr. **Turck**:

And, Dr. Wang, how should we decide when to offer stool or blood-based tests versus heading straight to colonoscopy, especially in those younger and higher-risk patients?

Dr. **Wang**:

That's a great question. We consider patients to be higher risk if they have a family history of colon or rectal cancer. Studies have shown that patients with a family history of colorectal cancer have a three times higher risk of cancer themselves in the colon or rectum, and so those patients with a family history should only be getting colonoscopy as their screening option.

Now, if someone does not have a family history of colorectal cancer, then they can choose a noninvasive option, such as a stool test or blood-based test. Now, for the stool tests, there are two main types. One is called the fecal immunochemical test, which detects traces of blood in the stool, and then there's another common stool test, which is the DNA-based stool test, which looks at not only traces of blood in the stool, like the fecal immunochemical test, but also looks for abnormal DNA changes. These tests are very good for our patients who are average risk, meaning no family history, and who may not be able to take a day off work to come in for a colonoscopy. These stool tests are considered to be almost as good as a colonoscopy as far as detecting early cancer in the colon or rectum, but they're not as good at detecting the precancerous growths. But they are definitely a good option for screening.

Now, the blood-based tests are very new and have just recently come out, and so far, those studies have shown that the blood-based tests are not as good as the stool or colonoscopy tests for screening for colorectal cancer, but the blood test may still be a good option for patients who, for any reason, do not want to undergo colonoscopy or the stool testing.

Dr. **Turck**:

And, Dr. Wareg, before we wrap up our program, let's look ahead for a moment. What should we keep an eye out for in the next few years in colorectal cancer screening, and what new skills or infrastructure will clinics need to sustain equitable and high-quality screening?

Dr. **Wareg**:

From our experience working with rural clinics here in Missouri, I think in the next few years several important shifts are likely to impact how we approach colorectal cancer screening. One of them is the shift toward multimodal personalized screening, meaning we will likely see more tailored approaches to screening based on patients' risk profiles and preference and access. And so clinics will need protocols to help patients navigate these new choices and ensure appropriate follow-up for positive results. The other thing is the importance of population health infrastructure, so they need sustainable, equitable screening, like a system in place to track who has been screened and who needs a follow-up. This means investing in the EHR optimization registries and other management tools, and clinics also will need staff trained to use these tools.

The last thing I would say is integration of CRC screening with broader preventive care efforts. Especially in resource-limited settings, CRC screening will increasingly be embedded in cancer prevention bundles during annual wellness visits along with breast cancer and cervical cancer, so they do a bundle together.

Dr. **Turck**:

With those final insights in mind, I want to thank my guests, Drs. Jane McElroy, Jean Wang, and Nuha Wareg, for joining me to provide their recommendations on optimizing colorectal cancer screening. Dr. McElroy, Dr. Wang. Dr. Wareg, it was great having you all on the program.

Dr. **McElroy**:

Thank you so much.

ReachMD
Be part of the knowledge.®

TRANSCRIPT

Dr. **Wareg**:

Thank you.

Dr. **Wang**:

Thank you.

Dr. **Turck**:

For ReachMD, I'm Dr. Charles Turck. To access this and other episodes in this series, visit *Clinician's Roundtable* on ReachMD.com, where you can Be Part of the

Knowledge. Thanks for listening.