PUBLIC HEALTH REPORTS

Public Health Reports
2021, Vol. 136(5) 548-553

DOI: 10.1177/0033354920974668
journals.sagepub.com/home/phr
SAGE

A Correctional–Public Health Collaboration for Colorectal Cancer Screening in a State Prison System

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Abstract

Correctional facilities provide health care to large numbers of medically underserved people. As such, preventive health in correctional settings is an important yet underused investment in public health. Because they often have histories of poor access to health care, the justice-involved population is more likely than the general population to be diagnosed with advanced-stage cancers. We report on the first 2 years of an ongoing collaboration between a state correctional system and state health department to implement annual colorectal cancer screening for sentenced people using fecal immunochemical testing (FIT). Preparation for the annual iterations begins in January, and patient engagement begins in March. In the first year of implementation (2018), 1396 of 1856 (75.2%) sentenced people completed an eligibility screen, and 254 of 321 (79.1%) eligible patients completed a FIT (eligible patients were aged ≥50 [≥45 if Black] in year 1 [lowered to ≥45 in year 2] and reported no previous relevant medical or family history of colorectal cancer); 54 (21.3%) completed FITs were positive. Of the 54 patients with positive FITS, 33 (61.1%) completed follow-up colonoscopies resulting in the identification of polyps in 26 (48.1%) patients with a positive FIT. We found invasive adenocarcinoma for 2 (3.7%) of the positive FITs (6.1% of colonoscopies performed). In the second year (2019), after a conversion from paper to tablet-based eligibility screening, 1707 of 2059 (82.9%) sentenced people completed an eligibility screen, and 200 of 285 (70.2%) eligible patients completed a FIT, 27 (13.5%) of whom had a positive result. We share lessons learned about implementing mass screening to encourage further communication among departments of health and corrections to advance preventive health.

Keywords

colorectal cancer, cancer screening, prison, correctional facilities

Despite expanded access to health care in the United States with the implementation of the Affordable Care Act, prisons and jails still serve as health care providers for many people with both poor access to health care and complex physical and/or behavioral health needs. At the same time, preventive health in the correctional setting is often curtailed by limited resources and the logistical complexity of population health in a highly controlled environment.

Correctional facilities differ in the extent and quality of preventive services they provide. In theory, the incarcerated population is one of few groups in the United States with a constitutional right to health care. In practice, several institutional structures can discourage health care encounters (eg, by mandating copays or implementing stringent rules for sick call) even when staff members are invested in providing quality care to a vulnerable population. Almost all correctional health services operate with limited budgets. As a result, preventive health care such as cancer screening may reach fewer patients in correctional facilities than in the community. We sought to increase colorectal cancer (CRC) screening rates by moving prescreening eligibility determination from medical offices to the population in its residential setting.

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Colorectal cancer is the second leading cause of cancer-related mortality, but its prognosis is generally good if diagnosed and treated early.[1,2] Although CRC screening has a grade of A from the US Preventive Services Task Force (USPSTF), only an estimated 62.4%-67.6% of eligible adults are up to date with screening,[3,4] and rates are lower among non-Hispanic Black, Hispanic/Latinx, and lower-income adults as compared with non-Hispanic White and higher-income adults.[3,5-8] In one correctional population, only 25% of adults aged ≥50 could even identify a test for colon cancer.[9] Delayed diagnosis continues to contribute to poorer outcomes compared with earlier diagnosis despite the widespread availability of fecal immunochemical tests (FITs), which provide an alternative to invasive colonoscopies in initial CRC screening.

This study reports on lessons learned from the first 2 years of a cross-agency collaboration between public health and corrections to screen for CRC in a state prison system. The intent of this intervention was to implement and evaluate a population health approach to preventive care in the correctional setting rather than the traditional patient–provider encounter.

Methods

Rhode Island has a highly centralized correctional system and a single statewide health department. Rhode Island Department of Corrections (RIDOC) health care services and staff members from the Rhode Island Department of Health (RIDOH), with support from the American Cancer Society's regional branch manager, worked together to develop and implement a prescreening instrument to identify inmates eligible for CRC screening in accordance with clinical guidelines. The 2 agencies established an ongoing collaboration for annual CRC screening, with preparations beginning in January and patient engagement beginning in March of each calendar year. We targeted all sentenced incarcerated people for the eligibility determination prescreening. In the first year (2018), the intervention followed USPSTF guidelines, and patients were considered eligible for routine CRC screening via FIT if they were aged ≥50 and reported no previous relevant medical history or family history of CRC. However, in light of evidence of increased risk among younger Black adults,[5] the age cutoff was reduced to ≥45 if the respondent self-identified as Black. Given data on increasing CRC rates among adults aged <45 in general,[10-12] we adjusted screening in the second year (2019) to age ≥45 for all adults, in accordance with American Cancer Society guidelines.[13] Because of the rapid turnover of the nonsentenced population, we did not include them in the intervention. RIDOC secured the collaboration of security and the laboratory contracted to test RIDOC samples, both of which adjusted routine operations to allow for mass determination of prescreening eligibility and screening (eg, RIDOC rearranged scheduling on those days and the laboratory worked with staff members to determine labeling and sample return packaging for bulk processing).

In the first year of the intervention, staff members conducted the prescreening process to determine eligibility for CRC screening using paper forms. (The prescreening instrument and all other materials or details on logistics are available from the authors.) Staff members and some volunteers from the local medical school and RIDOH coordinated with custody leadership in each facility to distribute forms and explain the intervention's purpose; depending on each facility's level of security, staff members went cell by cell or worked with groups in a common area. Staff members then reviewed each form carefully to determine 1 of 3 designations: no action required in the current screening year, FIT, or further review by a medical provider to see if their risk profile indicated they should be scheduled directly for a colonoscopy—when respondents answered yes to any question related to ulcerative colitis, Crohn's disease, previous CRC, or family history of CRC.

In the second year of the intervention, the processes for data collection and determination of designation were improved by shifting from paper to secured tablets loaded with only Questionnaire Development Software (Nova Research Company). This software allows for survey design and administration, with data automatically encrypted until processed in the software's data warehouse manager. In correctional facilities, where internet access can pose a security risk, the survey administration does not have to be web based. The transition from paper to tablets facilitated data processing of the multiple responses used to determine appropriate disposition, communication of data to health care providers about patients who needed follow-up information before determining whether they should receive a FIT or colonoscopy in the current screening year, and the creation of centralized lists to more readily allow both summary statistics on outcomes (numbers screened and results) and cross-checking that all patients were accounted for at the completion of each phase, which would have been more difficult to confirm with reliance on electronic medical records (EMRs) alone.

In both years, staff members subsequently prepared and distributed FITs to patients identified as eligible for routine screening. A sample FIT kit had been previously approved by the prison administration, and the medical director had informed the laboratory that large numbers of kits would be submitted. The laboratory agreed to provide a bulk quantity of kits to be specially prepared for the correctional population. (Whereas standard kits instruct the patient to write his or her name and date of birth on a label and return the sample via mail, the correctional setting required double prelabeling and clear instructions to return samples to the dispensary; staff members then matched sample labels to retained requisition slips to allow identification of any unreturned kits and send all samples to the laboratory.) A small team adjusted

normal EMR ordering procedures, labeling, and kit components/assembly to prepare the kits for distribution. A primary concern was clarity and adaptation of instructions for the correctional setting (eg, taking into account toilet design and arrangements for return of the samples) and for a population with a large proportion of people with low levels of education and health literacy. We therefore rewrote the manufacturer's instructions with additional photos and language appropriate to a fifth-grade reading level. As with the other materials, staff members provided the instructions in English and Spanish. Small teams distributed kits in residential settings (ie, not the clinical areas) to allow for explanations and questions in face-to-face encounters.

As FIT results were sent back from the laboratory, positive results (ie, tests indicating blood found in the stool sample) joined the usual clinical workflow for individual patient–provider communication and ordering of diagnostic colonoscopies. After staff members had communicated all positive results and referred those patients for appropriate clinical action, staff members communicated negative results to the rest of the patients who completed a FIT, along with basic information about colon health. Because this study was an evaluation of a public health intervention, it was not subject to institutional review board review.

Data Analysis

We calculated the number and percentage of patients who completed prescreening eligibility determination, were eligible for CRC screening, completed a FIT, had a positive laboratory result, and had a subsequent colonoscopy and the results of the colonoscopy. At the time of writing, we were unable to collect data on the second year's follow-up colonoscopies because of the time needed to schedule with the offsite gastrointestinal practice and process and confirm pathology reports.

Study Setting

In the first year of the intervention, 2018, the average daily census at RIDOC was >2700, reflecting a state incarceration rate per 100 000 population of 204. (In 2019, the average daily census was >2600; the decline from 68.4% of capacity in year 1 to 65.4% in year 2 largely reflects changes in state policies about treatment and sentencing for drug offenses.) The sentenced population was 25.0% Hispanic/Latinx and 28.5% Black. Most incarcerated people were male (95.2%), and 19.8% were aged ≥50.

Outcomes

Of the sentenced population, a substantial majority completed prescreening eligibility determination in both years: 1396 of 1856 (75.2%) in 2018 and 1707 of 2059 (82.9%) in 2019 (Table 1). Nearly all sentenced people who were not prescreened were refusals, especially among younger men. Most people who completed the prescreening instrument did not meet the age criteria for CRC screening. Of 321 people identified as eligible for FIT screening in 2018, 254 (79.1%) completed a FIT; 200 of 285 (70.2%) eligible people completed a FIT in 2019. In 2018, 54 of 254 (21.3%) FITs were positive, 33 (63.0%) of whom completed follow-up colonoscopies. The remaining 21 people either refused the colonoscopy or were released before the colonoscopy could be scheduled; when advance notice of release allowed for it, these people were urged to arrange follow-up after release. Two patients were identified with invasive adenocarcinoma (6.1% of colonoscopies performed; 3.7% of positive FITs), and polyps were found in 26 (48.1%) positive FITs (Table 2). In 2019, 27 of 200 (13.5%) FITs performed were positive.

Table 1. Prescreening and colorectal cancer screening outcomes for sentenced patients at the Rhode Island Department of Corrections, 2018-2019

Outcome	Year 1 (2018)	Year 2 (2019)
No. (%) of sentenced incarcerated people who completed eligibility determination prescreening	1396 of 1856 (75.2)	1707 of 2059 (82.9)
No. determined eligible for routine screening	321	285
Percentage of people who completed prescreening who were eligible for routine screening[a]	23.0	16.7
No. of people who completed a FIT	254	200
Percentage of people deemed eligible for routine screening who completed a FIT	79.1	70.2
No. of people with a positive laboratory result	54	27
Percentage of people who completed FITs with a positive laboratory result	21.3	13.5
Percentage of all people eligible for routine screening with a positive laboratory result	16.8	9.5

Abbreviation: FIT, fecal immunochemical test.
[a]People were deemed eligible for colorectal cancer (CRC) screening if they met the age requirement (in year 1: ≥50 years for all or ≥45 years if Black; in year 2: ≥45 years for all) and had no previous relevant medical or family history of CRC.

Table 2. Outcomes of positive FITs at the Rhode Island Department of Corrections in year 1 of a 2-year colorectal cancer screening program, 2018

Outcome	No.	As a percentage of colonoscopies performed (n = 33)	As a percentage of all positive FITs (n = 54)
Colonoscopy performed			
No polyps	5	15.2	9.3
Single polyp	8	24.2	14.8
Multiple polyps	18	54.5	33.3
Invasive adenocarcinoma	2	6.1	3.7
No colonoscopy performed			
Refused colonoscopy	8	NA	14.8
Discharged/other	13	NA	24.1

Abbreviations: FIT, fecal immunochemical test; NA, not applicable.

Lessons Learned

Collaboration between RIDOC and RIDOH enabled the implementation of large-scale CRC screening for a historically medically underserved population. The rate of positive FITs at the correctional facility was higher than the rate in community-based studies,[14] indicating that correctional facilities are a valuable setting for broad-based CRC detection. Implementation of the screening program improved from 2018 to 2019, but evaluation of the first 2 years together provided important lessons for public health stakeholders entering a unique social setting.

The first 2 lessons learned were ultimately lessons in humility. First, the intervention provided new insight into the importance of relationships in working out logistical problems. When components of preventive care operations were moved outside the clinical offices, each step had to be operationalized in coordination with custody personnel—who sometimes had different approaches even within different blocks in the same facility—while still maintaining the firewall between custody and health information. In the Rhode Island state system, prison leadership and custody staff members were willing to facilitate access for the intervention because the medical program director and the head of health promotion were both widely trusted on the basis of years of service.

The second lesson concerns the other half of this complex enclosed society: the incarcerated population. Public health staff members may assume their intervention will be unilaterally welcomed by the intended beneficiaries, but criminal justice–involved populations often have complex histories with health care providers, both outside and inside the correctional facility,[15] and little familiarity with the role and functions of public health agencies. Despite some improvement in the prescreening eligibility determination rates in the second year, some of the target population still refused to answer questions, and some patients who were eligible for CRC screening refused to take a test kit. People who refused to answer the questions were primarily younger men (in their 20s and 30s) who felt the intervention was irrelevant to them; however, some incarcerated people voiced suspicion about the intervention as a ploy to gather DNA. Multiple people who initially refused, however, changed their minds and agreed to answer questions or accept a FIT kit after speaking with the head of health promotion, who was widely known and trusted among them.

A third lesson pertains to the integration of the screening process and data into the routine clinical work and records. The survey software allowed staff members to generate clear spreadsheets of all respondents who needed follow-up (ie, those who indicated possible relevant medical or family history), thereby ensuring that the intervention supplemented but did not replace the patient–provider encounter. Finally, using this population health approach in conjunction with the EMR system allowed us to engage people who did not initiate routine clinical encounters; moving forward, it will also enable the identification of patients who do not have repeat FITs as clinically indicated.

Limitations

This case study had several limitations. First, we did not have a way to identify preintervention screening rates and, thus, could not calculate improvement in screening rates as a result of the intervention. Second, we could not determine what percentage of additional colonoscopies (ie, colonoscopies scheduled directly by a health care provider rather than performed after a positive FIT) performed during the follow-up period were for patients identified during the prescreening eligibility determination process rather than patients identified by health care providers during routine clinical encounters. As such, we could not determine the total number of CRC cases identified by the intervention. However, we anticipate that the conversion to software will allow us to quantify the number of CRC cases identified by the intervention rather than routine clinical encounters.

Third, cancer prevention is difficult to quantify in light of continued uncertainty about which precancerous growths are likely to progress to cancer if left undetected.[16] Given the high rate of polyps found in post-FIT colonoscopies, though, it seems safe to assume that at least some additional cases of CRC were prevented by this intervention.

Fourth, the time from eligibility determination through completion of all colonoscopies is still lengthy despite workflow improvements. The prison's health care services improved this process by having all scheduling conducted by a clerk rather than individual health care providers, and the key barriers are now largely external: limited flexibility in scheduling appointments with the gastroenterologist practices contracted to conduct colonoscopies and correctional officers' time for off-site clinical visits. Fifth, depending on manufacturer, FITs can vary in sensitivity and specificity.[17-19] The one used in this intervention had 90.5% specificity but only 54.5% sensitivity.[17] Although false-positive tests can result in unnecessary follow-up colonoscopies, false-negative tests are also a concern, and future interventions should be especially alert to a possible increase in false-negative tests resulting from delayed sample returns (eg, midweek kit distribution and end-of-week sample return when laboratories do not have weekend pickup) and high temperatures.[20-22] However, FITs are intended for annual use, and a large-scale intention-to-treat analysis showed a higher cumulative diagnostic yield for FIT than other screening tools,[23] and FITs also appear to provide other important advantages in the correctional setting. Because FITs are less prone than guaiac-based fecal occult blood tests to picking up nonhuman blood, FITs do not require dietary adjustment,[24] and wardens were willing to allow their distribution for completion in cells or bathrooms because the kit components presented no security risk. Finally, all health care procedures in the correctional setting should take into account that in this vulnerable population, any invasive procedure can be seen as threatening or traumatic[25]; FITs are valuable in that respect as well.

Conclusion

Rapid improvements in procedures during the first 2 years of CRC screening may encourage other states to explore and share additional approaches and cross-agency collaborations to implement population-health interventions in correctional systems. Large states may face different logistical challenges, but the intervention provides a model that may be adapted for scaling up to larger systems that seek supplements to the traditional clinical encounter as a way to provide preventive health.

Acknowledgments

The authors appreciate the assistance of prison administration and participating correctional officers.

Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The authors received no financial support for the research, authorship, and/or publication of this article.

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