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Identifying quality improvement targets to facilitate colorectal cancer screening completion

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ABSTRACT

The colorectal cancer (CRC) screening process involves multiple interfaces (communication exchanges and transfers of responsibility for specific actions) among primary care and gastroenterology providers, laboratory, and administrative staff. After a retrospective electronic health record (EHR) analysis discovered substantial clinic variation and low CRC screening prevalence overall in an urban, integrated safety-net system, we launched a qualitative analysis to identify potential quality improvement targets to enhance fecal immunochemical test (FIT) completion, the system's preferred screening modality. Here, we report examination of organization-, clinic-, and provider-level interfaces over a three-year period (December 2011–October 2014).

We deployed in parallel 3 qualitative data collection methods: (1) structured observation (90+ hours, 10 sites); (2) document analysis ($n > 100$); and (3) semi-structured interviews ($n = 41$) and conducted iterative thematic analysis in which findings from each method cross-informed subsequent data collection. Thematic analysis was guided by a conceptual model and applied deductive and inductive codes.

There was substantial variation in protocols for distributing and returning FIT kits both within and across clinics. Providers, clinic and laboratory staff had differing access to important data about FIT results based on clinical information system used and this affected results reporting. Communication and coordination during electronic referrals for diagnostic colonoscopy was suboptimal particularly for co-morbid patients needing anesthesia clearance.

Our multi-level approach elucidated organizational deficiencies not evident by quantitative analysis alone. Findings indicate potential quality improvement intervention targets including: (1) best-practices implementation across clinics; (2) detailed communication to providers about FIT results; and (3) creation of EHR alerts to resolve pending colonoscopy referrals before they expire.

1. Introduction

Colorectal cancer (CRC) screening delivery is a complex process involving multiple interfaces (communication exchanges and transfers of responsibility for specific actions) among primary care and gastroenterology (GI) teams and pathology laboratory staff to transition patients through detection to diagnostic resolution or treatment (Tiro et al., 2014; Zapka et al., 2010). Recent quantitative analyses of electronic health record (EHR) data from an integrated safety-net healthcare system discovered: substantial clinic variation and low CRC screening prevalence overall (Tiro et al., In Press), and individual-, provider, and system-level factors associated with delays in follow-up to positive fecal immunochemical tests (FIT) (Chubak et al., 2016). But these studies have fallen short of identifying key drivers that underlie such differences.

Prior studies have found significant variation in timely follow-up of abnormal fecal-based tests (occult blood or immunochemical) (Powell et al., 2009; Pruitt et al., 2014). Most relied on patient-level

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Table 1
Qualitative methods, processes, rationales, and objectives.

Qualitative method, process	Rationale for use	Objectives
Document analysis (100+ documents). Photocopies of policies, protocols, training materials, etc. scanned into database using Optical Character Recognition (OCR)	•Understand development, implementation, and prioritization of CRC screening •Characterize organizational culture, structure, and formal protocols of the CRC screening process, including guideline dissemination and training of care teams	•Identify information that may not be recorded in or easily retrieved from HER •Catalog CRC screening-related policies and protocols •Inform chronology of CRC screening policy implementation •Identify information that may be disseminated systematically (e.g. via email vs. word of mouth)
Participant observation (90+ hours). Detailed descriptive field notes transcribed and entered into database	•Describe organizational structure, a broad range of clinical and non-clinical care behaviors as they relate to organizational protocols for CRC screening processes •Evaluate functionality of the system for referring patients with abnormal screening tests	•Inform flowcharts that depict team members' roles, responsibilities, relationships, and behaviors across range of CRC screening steps and interfaces •Validate extent to which protocols are understood and adhered to, and observe 'work-arounds' (deviations)
Semi-structured interviews (n = 41). Audio recordings of interviews and post-interview audio notes by interviewers transcribed and entered into database	•Clarify observations; assess organizational values, beliefs, and norms •Elucidate decision-making pathways for CRC screening processes at the network- and clinic levels •Assess perceptions of organizational protocols and practices (e.g. are they compatible with serving safety-net patients?)	•Solicit feedback about whether protocols are realistic and effective for optimizing CRC outcomes •Solicit feedback about the value of EHR as a barrier and/or facilitator to CRC screening based on experience in practice •Demonstrate degree of concordance between observed behaviors and participants' verbalized understanding of roles and responsibilities •Clarify processes not easily understood during participant-observation (e.g., values, beliefs)

quantitative data from clinical information systems (Singh et al., 2009a; Weiss et al., 2013). Few have studied challenges in screening care delivery (O'Malley et al., 2015), particularly referral of patients with abnormal fecal tests for diagnostic colonoscopy (Hudson et al., 2007; Partin et al., 2015).

Investigators partnered with the healthcare system to understand how to optimize processes within and across clinics to enhance FIT, the preferred screening modality of the system. Here, we report on an analysis that deployed 3 qualitative data collection methods to identify targets for quality improvement in FIT delivery and follow-up of abnormal results.

2. Methods

2.1. Setting

This study was conducted with data from the Parkland-UT Southwestern PROSPR Colorectal Research Center. Patients, providers, and staff were from the Parkland Health & Hospital System (Parkland), an integrated, safety-net system including a hospital, specialty clinics, and 12 primary care clinics serving primarily uninsured, low income residents of Dallas County. Nine clinics are based in low-income neighborhoods, two academic clinics adjacent to the hospital train internal/family medicine residents, and one clinic cares for employees. Based on system feasibility and capacity, Parkland's policy adopted FIT as the primary screening modality for patient at average risk for CRC (American Cancer Society, 2015). Parkland distributes a 3-sample FIT kit consisting of: flushable tissue for sample collection, 3 collection cards, 3 applicator sticks, and a return mailing envelope; English-language instructions are printed on the inside of the kit. All clinics use Epic electronic health record (EHR) system (Verona, WI) to document care delivery activities. Laboratory staff document pathology results in Cerner (Kansas City, MO) which are electronically linked to Epic.

2.2. Preliminary data

This qualitative report is part of a large explanatory, sequential, mixed-method study to inform a quality improvement initiative for Parkland. The first phase quantitatively analyzed EHR data to describe clinic-level variation in CRC screening rates and survey of providers and staff to document use of evidence-based practice across the 12 primary care clinics (Tiro et al., In Press). Although clinics varied in their patient population's recent CRC screening prevalence (range: 10.7 to 19.2%) and preferred modality (FIT versus colonoscopy), all clinics had uniformly sub-optimal rates of screening. Per Health People 2020, recent screening adherence was 40% below the target goal. Drawing from those EHR data, we identified 5 neighborhood clinics and 1 academically-affiliated clinic with the highest and lowest FIT prevalence estimates to further examine behaviors of the primary care team that might impact screening process completion. We focused on FIT delivery because the safety-net system leaders decided to prioritize offering FITs over colonoscopies due to constrained resources. In this qualitative report, we have focused on communication and coordination of roles and responsibilities around FIT distribution and result reporting among patients, primary care and specialty providers, laboratory staff, and administrative staff.

2.3. Data collection

Our conceptual model of the CRC screening process in community settings guided our initial deductive approach to qualitative data collection and analysis (Tiro et al., 2014). Following an explanatory, sequential design (Fetters et al., 2013), three qualitative data collection methods (structured observation, document analysis, semis-structured interviews) were conducted in parallel and iterative analysis facilitated identification of emergent findings that were explored further in subsequent data collection (Table 1). We focused on how providers (primary care and specialty) and staff (nurses, laboratory personnel, and clerks) understood their roles and implemented processes related to distributing FITs, reporting results, and referring patients with abnormal FITs for diagnostic colonoscopy. We were particularly interested in interfaces— "handoffs" in which team members had to communicate information and transfer responsibility for specific actions such as notifying a provider about an unsatisfactory FIT result or placing an electronic referral for a colonoscopy. Our design allowed us to iteratively sample newly identified "targets"—other team members who had a designated role in the FIT screening process. For example, after interviewing a provider or staff member and learning about their protocol, we evaluated (and assessed the existence of) institutional documents to train staff in similar roles on the described protocol. We also observed how interviewees documented their activities in the EHR and who was the receiving party notified electronically.

Data were collected by 6 qualitative scientists and scientific research staff: 3 conducted observations, 2 conducted interviews, and 4