Developing and Sustaining Quality Improvement Partnerships in the VA: The Colorectal Cancer Care Collaborative

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OBJECTIVE: The Veterans Affairs (VA) Quality Enhancement Research Initiative (QUERI) seeks to develop partnerships between VA health services researchers and clinical managers, with the goal of designing and evaluating interventions to improve the quality of VA health care.

METHODS: In the present report we describe one such initiative aimed at enhancing the continuum of colorectal cancer (CRC) care, including diagnosis, treatment and surveillance—the Colorectal Cancer Care Collaborative (C4).

RESULTS: We describe the process and thinking that led to two parallel quality improvement “collaboratives” that addressed (1) CRC screening and diagnostic follow-up and (2) the guideline concordance and timeliness of CRC treatment. Additionally, we discuss ongoing effort to spread lessons learned during the first stages of the project, which initially occurred at only a subset of VA facilities, throughout the VA health care system. The description of this initiative is organized around key

questions that must be answered when developing, sustaining and spreading multi-component quality improvement interventions.

CONCLUSION: We conclude with a discussion of lessons learned that we believe would apply to similar initiatives elsewhere, even if they address different clinical issues in health care settings with different organizational structures.

KEY WORDS: colorectal cancer; United States Department of Veterans Affairs; quality assurance; health care.

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Beginning in 2005, the research and operation/clinical arms of the Veterans Affairs (VA) health care system formed a partnership aimed at improving the quality of colorectal cancer (CRC) diagnosis and care. The Office of Quality and Performance, Quality Enhancement Research Initiative (QUERI), Systems Redesign Program, Office of Patient Care Services and Office of the Deputy Under-Secretary for Health for Operations and Management (DUSH-OM) noted the need to reduce the time from positive CRC screening to diagnosis and enhance the timeliness and use of guideline-concordant CRC care. As a result, they conducted the Colorectal Cancer Care Collaborative (C4). C4 started with a diagnosis quality improvement collaborative, which was

followed by a CRC treatment improvement collaborative, and ongoing efforts to spread both diagnosis and treatment improvements throughout the VA. Lessons learned about the organization of quality improvement (QI) and measurement are providing a framework for ongoing efforts to improve cancer care in the VA.

The focus of QUERI is bringing together research and operations to address significant health care issues facing veterans. However, C4 represents one of the first times that the specific combination of primary partner organizations have worked together on such an expansive QI initiative. This effort embodies a melding of perspectives and skills with the common goal of enhancing care.

Cancer care specialties are relatively new to the types of quality measurement and improvement techniques that have been extensively utilized to improve chronic illness care in primary care settings. Although successful collaboratives focused on increasing the rate of cancer screening (e.g., among Federally Qualified Health Centers)¹ have occurred, we are unaware of any previous large-scale efforts to conduct collaboratives aimed at the continuum of cancer diagnosis and treatment. Our objective is to discuss how C4 sought to answer questions key to the development of a comprehensive program to address the quality of care for specific chronic illnesses, including cancer.

WHAT ISSUES SHOULD BE ADDRESSED? DETERMINING WHERE TO FOCUS QUALITY INITIATIVES

As suggested by the QUERI framework, areas of quality improvement and research focus most frequently upon conditions that have: (1) high levels of morbidity and/or mortality, (2) significant treatment costs, (3) gaps in quality of care and/or (4) identified interventions that may improve quality.^{2,3}

The Veterans Health Administration (VHA) treats approximately three percent of cancer cases in the US (>43,000 VHA-treated cases in 2005). Reflecting the rest of the country, CRC is the third most common cause of cancer in the VA health care system. There were >4,600 new cases of CRC entered into the VA Central Cancer Registry in 2005 (11% of VA cancer cases). In 2000, the VA spent almost \$400 million on the care of patients with CRC.⁴

HOW DO YOU KNOW IF THE SYSTEM IS PROVIDING QUALITY CARE? DEFINING THE MEANING OF QUALITY OF CARE

Before engaging in improvement activities, it is important to define best practices.^{2,3} The first part of this process is to determine what represents high quality clinical care for a given condition. Figure 1 presents a conceptualization of the steps in providing quality care for the detection and treatment of CRC. Delivering quality CRC care can be divided into: (1) providing initial disease screening, (2) offering timely diagnostic evaluation, (3) providing guideline-concordant disease treatment and (4) conducting appropriate disease surveillance for survivors after primary treatment.

Adapted from material developed by the Colorectal Cancer Quality Enhancement Research Initiative (QUERI)

Figure 1. Colorectal cancer care continuum.

Central to improving care for any type of chronic illness, including cancer, is identifying clinical guidelines to provide a map for overall quality of care.⁵ Multiple organizations have issued CRC guidelines.⁶⁻¹¹ C4 utilized National Comprehensive Cancer Network (NCCN) guidelines because they cover issues across the continuum of treatment decisions. NCCN guidelines are reviewed yearly and represent a combination of evidence-based recommendations in areas for which peer-reviewed evidence is available and consensus-based for areas in which the evidence base is not fully developed.¹² While it is desirable to rely on evidence-based recommendations, some treatment decisions lack comprehensive clinical evidence.¹³ NCCN guidelines clearly identify recommendations based on evidence and facilitate discussions about other key clinical decisions.

The VA has focused for more than a decade on providing timely care.¹⁴⁻¹⁶ While evidence concerning the possible association between timeliness of cancer care and outcomes is limited,¹⁷ there is a general consensus among oncology societies that timeliness of cancer care is an important indicator of cancer care quality.¹⁸ The overarching organizational goal of providing care as quickly as clinically appropriate served as a driver for a focus on improving timeliness of care. For example, while there are no evidence-based guidelines addressing the appropriate time from positive non-colonoscopy screening test to diagnostic colonoscopy, based on a consensus process, the VA established a policy that follow-up should occur within 60 days.

HOW ARE WE GOING TO CHANGE? IDENTIFYING A FRAMEWORK FOR CHANGE

Once a roadmap for appropriate care has been defined, it is necessary to determine how systems can be organized to provide timely, guideline-concordant care. The Advanced Clinic Access (ACA) model provides strategies for reducing delays in providing care and matching system resources to demand for care.^{16,19,20} Primary changes suggested by ACA focus on measuring supply and demand, reducing inappropriate demand (e.g., providing cancer screening at recommended intervals, not more frequently), ensuring sufficient resources (e.g., staff) to provide needed services and managing potential constraints on the delivery of care.¹⁶

Complementing ACA, the Chronic Care Model (CCM) was developed to understand how system-level interventions can improve chronic illness care. The CCM postulates that patient outcomes would be enhanced in health care systems organized for chronic illness management. Specifically, systems that offer self-management support, are organized around integrated teams, utilize tools to support evidence-based guidelines and include clinical information systems (e.g., computerized reminders) are more likely to have “productive interactions between informed, activated patients and prepared proactive practice teams.”^{5,21–23} While the CCM has often been used as a way of organizing strategies to improve the delivery of chronic illness care in the primary care setting, the elements of the system can also be applied to improving cancer care provided by different specialists.²⁴

HOW ARE WE GOING TO LEARN FROM EACH OTHER? HAVING A MODEL FOR LEARNING

Learning can be facilitated by the use of a learning model to organize these efforts. Based on the quality improvement collaborative methodology developed by the Institute for Healthcare Improvement (IHI) in the 1990s,²⁵ C4 conducted two collaboratives. The first focused on improving the process of CRC diagnosis and reducing the time from an initial positive CRC screening result [usually fecal occult blood test (FOBT)] or presentation with symptoms to diagnostic evaluation. Running from September 2005–October 2006, this collaborative involved one facility from each of the 21 regional Veterans Integrated Service Networks (VISNs). The second collaborative focused on improving the guideline concordance and timeliness of CRC treatment and follow-up. This collaborative ran from March 2007–May 2008 and included 28 VA facilities. Nineteen medical centers participated in both collaboratives. Facilities volunteered to participate in the C4 collaboratives through an agreement signed by the medical center Director, Chief of Staff and Nursing Executive. Each facility had teams led by a designated project manager and consisting of clinicians and administrators involved in delivering care or organizing related resources, including information technology. In the diagnosis collaborative, individuals mainly came from primary care and gastroenterology. Treatment collaborative teams typically also included representatives from medical oncology, radiation oncology and surgery.

Teams were initially involved in “prework” that included flow-mapping current care systems, initial measurement of care processes and setting overall improvement aims. Two in-person meetings were held for each collaborative. The first focused on disseminating information about clinical care, teaching about evaluating care processes for changing systems, completing prework and collaborative logistics. The second meeting focused on teams learning from each other’s initial improvement changes and reinforcing QI and system redesign lessons. During the collaborative, teams conducted a series of rapid-cycle changes to care (process discussed below) and measured progress in achieving objectives. They also prepared monthly reports that were sent to collaborative and facility leadership. Structured sharing through monthly collaborative calls, an intranet website and listserv also took place. The diagnosis collaborative included coaches in improv-

ing care assigned to each team, while the treatment collaborative relied on coaching from centralized collaborative staff.

Facility/team activities were targeted to their specific situation. In the diagnosis improvement collaborative, activities supported by both ACA and the CCM included: (1) decreasing inappropriate screening (ACA); (2) strengthening agreements between clinical services (ACA, CCM); (3) improving patient colonoscopy preparation and appointment attendance (type of self-management, CCM), (4) using the VA computerized medical record to better track patients with positive screening results (CCM); (5) adding new staff, equipment and space to increase colonoscopy capacity (ACA). As suggested by the CCM, much of the focus of the treatment improvement collaborative was on better utilizing the computerized record to improve the rate and timeliness of guideline-concordant care. Enhancements included clinical reminders, quick orders, note templates and systems for tracking patients through post-treatment surveillance. To improve team functioning (CCM), several facilities also hired cancer care coordinators who focused on streamlining the care process for patients and monitoring care.

HOW DO WE MEASURE OUR QUALITY? DEVELOPING SYSTEMS TO MEASURE CURRENT AND ONGOING QUALITY OF CARE

Also central to collaboratives is the use of data to target improvement activities and monitor the impact of changes.²⁶ However, few data systems in the US allow for the efficient measurement of health care quality across the continuum of screening, diagnosis, treatment and surveillance.^{27,28} The C4 collaboratives utilized three different data collection systems to measure quality. These included: (1) baseline chart extraction to establish pre-collaborative rates of time from a positive FOBT result to receiving a diagnostic colonoscopy; (2) a Microsoft Excel-based self-measurement tool for ongoing facility measurement of time from FOBT result to colonoscopy; (3) a centralized computer medical record abstraction system to determine the level of guideline concordance and timeliness of CRC care.

Baseline data on the time from positive FOBT to colonoscopy were obtained by applying an algorithm to facility computerized record systems. Positive FOBT laboratory test results were identified, and a search was then done for colonoscopies for patients with positive screening FOBT tests. Facilities were provided with the percentage of patients with a follow-up colonoscopy recorded and the mean and median time from positive screening FOBT to colonoscopy.

Because the data extraction process was a research tool and could not be used for real-time measurement, a Microsoft Excel FOBT Tracking Tool was developed to enable teams in the diagnosis improvement collaborative to assess their improvement progress. This tool is currently used by most VA medical centers to track FOBT-positive patients, evaluate the effectiveness of QI activity and measure their performance on the VHA “Colonoscopy Follow-Up of Positive Fecal Occult Blood Tests” QI monitor (described below). Currently, facilities abstract data on at least 20 patients per month with a positive FOBT test. After the facility enters data, the tool calculates in real-time key measures of timely positive FOBT follow-up (percent of colonoscopy-appropriate patients receiving a colonoscopy within 30, 60 and 90 days) and a series of supporting

measures [e.g., percent of positive FOBT patients for whom: (1) FOBT screening was indicated; (2) a VA colonoscopy was appropriate; (3) the primary care provider acted on the FOBT result within 14 days].

In order to evaluate CRC treatment, the Cancer Care Quality Measurement System (CCQMS) was developed as an electronic medical record abstraction tool. The purpose of the CCQMS is to identify deviations from established standards of care. The CCQMS provided facilities with a standardized method to enter abstracted data and receive real-time reports on quality of care based on the information that was entered (see Fig. 2 for example format).

The CCQMS is comprised of approximately 230 data elements. Abstractors at each facility in the CRC Treatment Improvement Collaborative entered information pertaining to newly diagnosed CRC patients who received care at their medical center. These data were used to evaluate compliance with 24 quality indicators based on the NCCN treatment guidelines for colon⁸ and rectal⁹ cancer (e.g., proportion of patients with resected colon cancer with ≥ 12 lymph nodes examined by pathology). In addition, the CCQMS calculates the number of elapsed days for nine time intervals (e.g., number of days between a patient's diagnosis and the first treatment date). During the collaborative, data on 1,375 patients with an incident diagnosis of CRC were entered into the CCQMS. The area of the greatest opportunity for improve-

ment identified in the treatment improvement collaborative was timely surveillance of cancer survivors.

HOW DO WE MAKE CHANGES? CHANGE MODELS

While ACA and CCM concepts offer a framework for change, it is necessary for organizations to make real change at the facility level. Plan-do-study-act (PDSA) cycles apply concepts of the scientific method to drive improvement.²⁹ Each PDSA cycle involves: (1) planning objectives and how to carry out tests of change; (2) doing the change and documenting observations (measurement); (3) studying/analyzing measurements about what happened during the change; (4) acting upon what was learned to plan the next change. Facilities choose small-scale changes that can be tested over a short period of time. Each new change builds on what was previously learned until significant changes in the health care system have occurred.^{29,30} For example, a pathology department may have a PDSA cycle in which key fields in standardized pathology reports are defined, a second cycle where the report is used by one pathologist for five patients and a third cycle where the report is mandated for use in all pathology reports. In the C4 collaboratives, many facilities conducted several simultaneous series of PDSA cycles.

Figure 2. Example of a quality indicator report produced by the c4 cancer care quality measurement system (based on hypothetical data).

HOW DO WE INCORPORATE WHAT HAS BEEN LEARNED? SPREADING THE IMPROVEMENT

A significant goal of quality improvement is to spread lessons learned to all facilities and continue the work of improvement. Specific products that came from the CRC diagnosis and treatment improvement collaborative include: (1) models and tools for improving cancer diagnosis and treatment (e.g., note and reminder templates; comprehensive CRC Diagnosis Improvement Guide); (2) measurement systems; (3) models for developing surveys to identify best practices and barriers;³¹ (4) protocols for bringing together partnerships to develop collaboratives; (5) an infrastructure for sharing insight (e.g., QI listservs and resource websites).

As the C4 diagnosis improvement effort transitioned from a pilot program to a national initiative, the Systems Redesign Program developed a GI Community of Practice aimed at encouraging discussion and disseminating information on CRC diagnosis. This was accomplished through an e-mail listserv, monthly conference calls and a Web page devoted to CRC diagnosis improvement on the VA intranet. Several medical centers from the collaborative led regional collaborative initiatives. These activities are addressing VA performance monitors to evaluate and report on the quality of CRC diagnosis.

A critical component for dissemination of improvement efforts is central organizational commitment to enhancing care.³² The VHA has demonstrated that commitment through two quality monitors issued by the Office of the Deputy Under-Secretary for Health for Operations and Management (DUSH-OM). In Fiscal Year (FY) 2007, the Office of the DUSH-OM first issued the "Colonoscopy Follow-Up of Fecal Occult Blood Test" monitor. Facilities were required to begin the process of improving CRC diagnosis by submitting a flow map of their local CRC screening and diagnosis process. Beginning in the 4th quarter of FY 2007, facilities have been required to monitor and report quarterly on the proportion of positive FOBT patients in which VA colonoscopy is indicated who have a diagnostic colonoscopy within 60 days.

Additional efforts in dissemination of treatment improvement activities include a FY09 Systems Redesign Cancer Care Collaborative. This collaborative includes 20 facilities and represents an expansion to other forms of cancer. Each collaborative team is focusing on one of the following cancers: lung, prostate, breast or colorectal. In addition to the collaborative, the Office of Quality and Performance and Health Services Research and Development have collaborated to produce a national report on the quality of CRC care in the VA to help focus future improvement activities. Similar reports are underway for lung and prostate cancer.

In FY 2009, the Office of the DUSH-OM issued the monitor "Colorectal Cancer Treatment and Surveillance." This monitor requires all VHA medical centers to submit a process flow chart describing the facility's current CRC treatment process by the end of the 2nd quarter and submit reports on plans (end of 3rd quarter) and initial progress (end of 4th quarter) on at least one targeted improvement area related to CRC care.

WHAT ADDITIONAL LESSONS HAVE WE LEARNED? CONCLUSION

The evaluation of various components of C4 is still ongoing. A survey of teams participating in the diagnosis improvement

collaborative revealed that teams were more likely to indicate success at achieving team goals if they had: (1) support from senior leadership; (2) team members who understood their roles and team goals; (3) sufficient time; (4) were engaged in data tracking activities.³³ Because of the relatively novel use of QI techniques for cancer treatment, C4 organizers had to develop tools (e.g., measurement) and focus techniques on the needs of diverse specialties. Analyses from the national diagnosis QI spread effort indicate that focusing initially on the development of QI infrastructure and then implementing process change strategies may be an effective approach to improvement.³¹ Additional pre-post analyses of the effect of the collaboratives on provided care are in progress.

C4 development involved aligning the points of view of research and health care operations. While both groups strive to improve care, the traditional goal of research is to produce generalizable results, and the focus of operations is on implementation in real-time. Operations must respond to demands from many stakeholders; however, individuals in operations do not experience academic pressure for publications and grants. In C4: (1) researchers have been involved in operations and operations representatives either have conducted or provided input into research activities; (2) different needs were explicitly discussed from the inception of the collaborative; (3) partners were encouraged to raise and negotiate concerns. The skills and perspectives of both research and operations were critical as we worked to help diverse facilities integrate C4-inspired changes into their health care processes. As suggested by Wagner,³⁴ we believe that addressing the key components needed to change systems—evidence-based guidelines, change strategy, learning model, change model—is at the heart of successful research-operations quality initiatives.

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