Brief Report

Planning a national-level data collection protocol to measure outcomes for the Colorectal Cancer Control Program

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ABSTRACT

Background: The Colorectal Cancer Control Program (CRCCP) of the Centers for Disease Control and Prevention (CDC) funded 30 grantees to partner with health systems with the goal of increasing screening for colorectal cancer (CRC).

Methods: Evaluators applied CDC's Framework for Program Evaluation to design a national level outcome evaluation for measuring changes in CRC screening rates in partner health systems.

Results: The resulting evaluation design involves the collection and reporting of clinic-level CRC screening rates supplemented by various tools to support the reporting of high quality, reliable data.

Conclusions: The CRCCP evaluation represents a strong design to measure the primary outcome of interest, CRC screening rates, and public health practitioners can benefit from lessons learned about stakeholder involvement, data quality, and the role of evaluators in data dissemination.

Key words: colorectal cancer screening, evaluation, outcome

Statement of Student-Mentored Research: The lead author of this report, Anamika Satsangi, a recent Master of Public Health graduate, participates in the Oak Ridge Institute for Science and Education fellowship program at the CDC. Dr. Amy DeGroff, the senior author, serves as her mentor.

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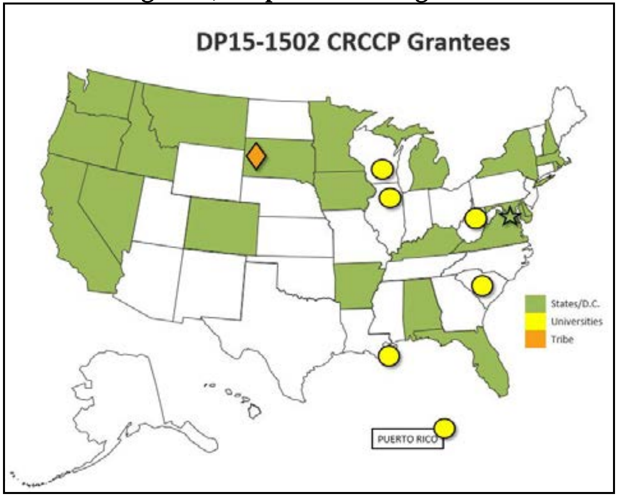
INTRODUCTION

Colorectal cancer (CRC) is a leading cause of cancer-related death in the U.S. (U.S. Cancer Statistics Working Group, 2016). Although screening reduces CRC incidence and mortality (Whitlock, Lin, Liles, Beil, & Fu, 2008), screening rates remain low (CDC, 2014). To increase screening rates, the Centers for Disease Control and Prevention (CDC) funded the Colorectal Cancer Control Program (CRCCP) in 2015 for five years (CDC, 2016). Thirty grantees partnered with healthcare systems to implement evidence-based interventions (EBIs) such as provider and client reminders recommended in the Community Guide (Community Preventive Services Task Force, 2016) (Figure 1). This report describes an outcome evaluation designed to assess changes in screening rates in partner health systems.

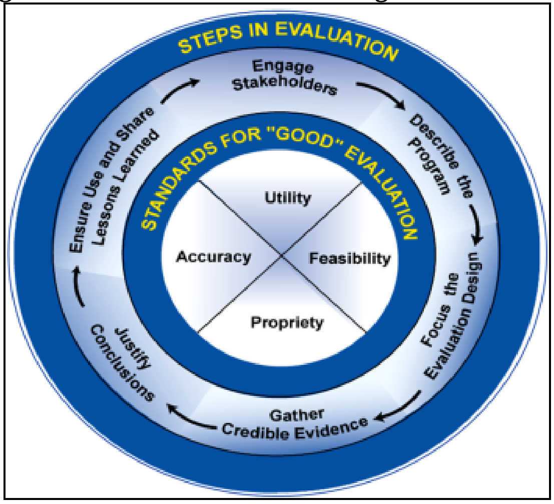
Figure 1, Map of CRCCP grantees



METHODS

CDC evaluators applied the Framework for Program Evaluation to design a national-level CRCCP evaluation (Figure 1) (CDC, 1999). The framework includes (1) engaging stakeholders, (2) describing the program, (3) focusing the evaluation design, (4) gathering credible evidence, (5) justifying conclusions, and (6) ensuring use and sharing lessons learned.

Figure 2: CDC Framework for Program Evaluation



Stakeholders, including CDC program consultants, leaders, CRCCP grantees, and healthcare experts, helped to define the purpose of the evaluation (i.e., program improvement, accountability) and provided guidance throughout the evaluation planning process. Evaluators created a program logic model (Appendix) describing CRCCP activities and outcomes that helped focus the design. Using the logic model, process and outcome evaluation questions were drafted and vetted with stakeholders. The primary outcome evaluation question was, "Do CRC screening rates increase in CRCCP partner health systems?" To examine this question, evaluators determined that screening rates would be assessed annually over the five-year program period. In consultation with stakeholders, evaluators learned that many grantees planned to work with subsets of primary care clinics within given health systems rather than all clinics in a given system. Therefore, clinic-level screening rate data (vs. health system-level) were needed.

Evaluators developed a data dictionary detailing the variables to be reported to CDC by grantees along with data collection tools and guidance documents. Variable selection was informed by the evaluation purpose and questions. With five grantees, materials were pilot-tested to assess clarity, feasibility, and, for tools, functionality. Based on pilot testing, needed changes were incorporated. Evaluators also solicited advice from several national healthcare experts. Strategies to strengthen data quality were incorporated into the evaluation design. Finally, evaluators developed an analysis plan and selected dissemination strategies to ensure feedback of evaluation results.

RESULTS

Grantees reported baseline clinic-level data, including screening rates, for all clinics participating in the CRCCP. Given the longitudinal evaluation design, grantees also reported screening rates annually for each clinic through the end of the cooperative agreement. The data dictionary was comprised of 110 variables, including health system and clinic identification codes used to link records over time. Other variables captured descriptive data (e.g., health system name, clinic name, number of patients) and longitudinal data (e.g., screening rate, EBI implementation).

Grantees calculated screening rates by medical chart review and/or electronic health record data. CDC evaluators developed a guidance document for grantees to support the consistent and accurate measurement of screening rates (CDC, 2016). For each clinic, grantees defined the 12-month measurement period (e.g., calendar year) and chose one of four screening rate measures recommended by CDC (e.g., National Committee for Quality Assurance, Health Resources and Services Administration). The guidance document also offered strategies to validate the screening rate.

Excel-based data collection forms were created, and grantees used them to gather baseline and annual data (Appendix 2). To improve data quality, these forms incorporated validation features (e.g., specified ranges, drop-down boxes). To report clinic data, grantees used a web-based data reporting system, Clinic Baseline and Annual Reporting System (CBARS), which incorporates similar data field edit checks to strengthen data quality. To support grantees in their data collection and reporting, evaluators conducted webinars, provided individual technical assistance, and maintained a document of frequently asked questions.

Baseline data for clinics recruited in program year 1 were analyzed by CDC, and reports were developed for stakeholders. Future dissemination efforts will use data visualization software that allows grantees to examine their own data.

DISCUSSION/CONCLUSIONS

Representing the integration of public health and primary care, the CRCCP offers an opportunity to increase CRC screening. Using CDC’s Framework for Evaluation, a strong evaluation has been designed to assess the CRCCP’s primary outcome of interest, CRC screening rates, using medical record data.

Several lessons can be derived from this experience. First, conducting high quality, systematic outcome evaluations of Federal programs such as the CRCCP is difficult when many grantees and potentially hundreds of implementation sites are involved. Such scenarios inherently involve data access and quality challenges (DeGroff, Schooley, Chapel, & Poister, 2010). However, broad stakeholder involvement ensured that CDC crafted a meaningful outcome evaluation question, identified a feasible data collection strategy that was not overly burdensome, and selected data variables accessible to all participating health system clinics. Second, CDC evaluators integrated various strategies to ensure data quality and strengthen reliability, including developing a data dictionary with standardized variable definitions, developing guidance on how to measure screening rates, providing data collection forms and a web-based reporting system with built-in validation features, and delivering various types of technical support. Finally, evaluators have a critical role to play in data use such as facilitating interpretation. For the CRCCP, data feedback mechanisms are in place, with more sophisticated dissemination efforts being planned using data visualization software. Timely dissemination of data to grantees in a digestible fashion enables meaningful data feedback and use, and reinforces the importance of grantees reporting high-quality data.

Evaluation of public health programs is essential to ensure accountability to stakeholders, including funders, and to improve programs. Good evaluation planning is foundational to realizing these aims. Public health practitioners and evaluators can apply CDC's Framework for Program Evaluation and the lessons identified here to support their own evaluation planning.

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Disclaimer: 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.

References

CDC. (1999). *Framework for program evaluation in public health*. Retrieved September 20, 2016 from http://www.cdc.gov/eval/framework/index.htm

CDC. (2014). *Behavioral Risk Factor Surveillance System Survey Data*.

CDC. (2016). Colorectal Cancer Control Program. Retrieved September 22, 2016 from http://www.cdc.gov/cancer/crccp/about.htm

CDC. (2016). Guidance for Measuring Colorectal Cancer (CRC) Screening Rates in Health System Clinics. Retrived November 15, 2016 from http://www.cdc.gov/cancer/crccp/guidance_measuring_crc_screening_rates.htm

Community Preventive Services Task Force. (2016). The Community Guide. Retrieved September 22, 2016 from https://www.thecommunityguide.org/topic/cancer

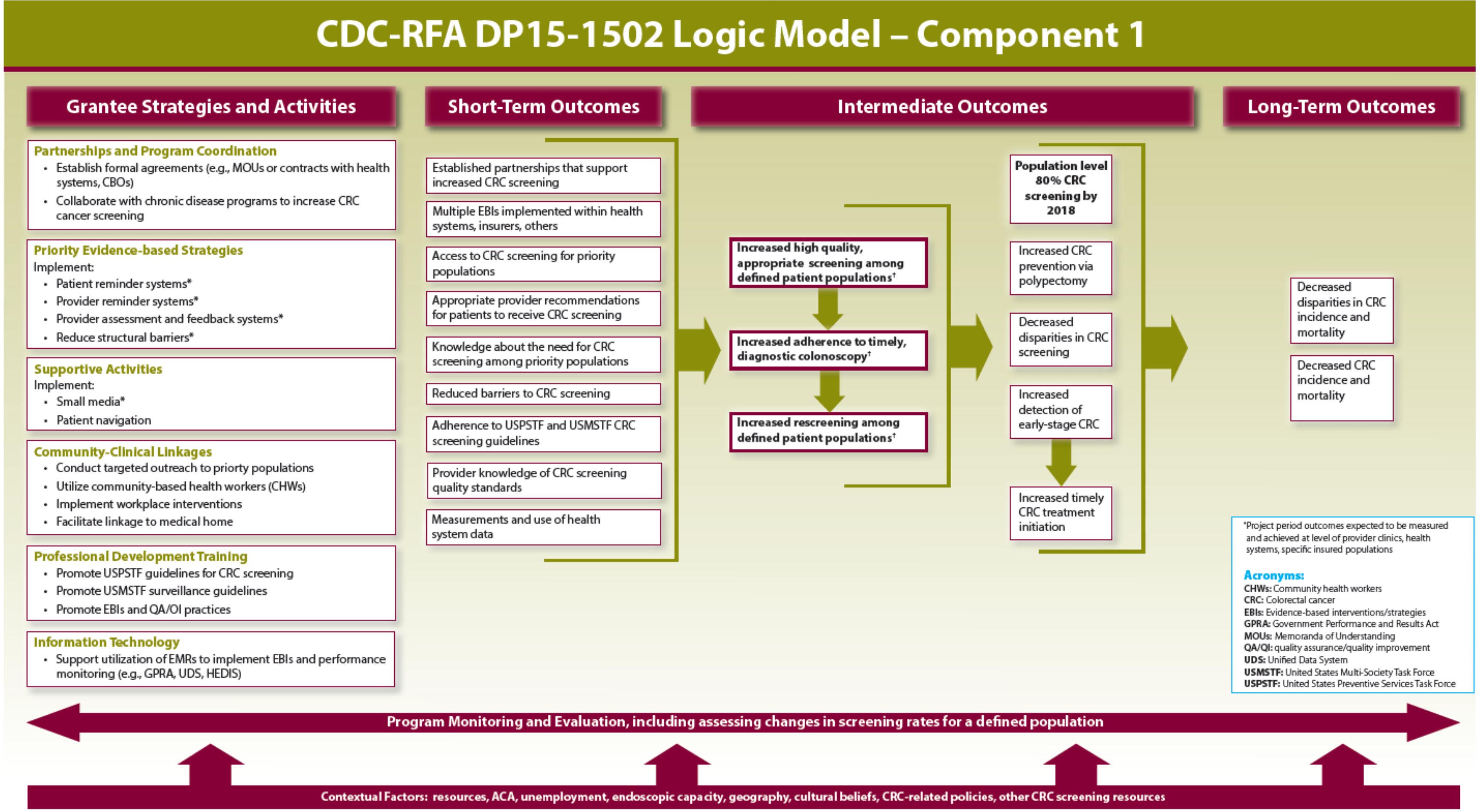
DeGroff, A., Schooley, M., Chapel, T., & Poister, T. H. (2010). Challenges and strategies in applying performance measurement to federal public health programs. *Eval Program Plann, 33*(4), 365-372. doi:10.1016/j.evalprogplan.2010.02.003

U.S. Cancer Statistics Working Group. (2016). United States Cancer Statistics: 1999–2013 Incidence and Mortality Web-based Report. Retrieved September 25, 2016 from https://nccd.cdc.gov/uscs/

Whitlock, E. P., Lin, J. S., Liles, E., Beil, T. L., & Fu, R. (2008). Screening for colorectal cancer: a targeted, updated systematic review for the U.S. Preventive Services Task Force. *Ann Intern Med, 149*(9), 638-658.

Appendix 1

CRCCP Logic Model



CDC-RFA DP15-1502 Logic Model – Component 1

Grantee Strategies and Activities

Partnerships and Program Coordination
- Establish formal agreements (e.g., MOUs or contracts with health systems, CBOs)
- Collaborate with chronic disease programs to increase CRC cancer screening

Priority Evidence-based Strategies
Implement:
- Patient reminder systems*
- Provider reminder systems*
- Provider assessment and feedback systems*
- Reduce structural barriers*

Supportive Activities
Implement:
- Small media*
- Patient navigation

Community-Clinical Linkages
- Conduct targeted outreach to priorty populations
- Utilize community-based health workers (CHWs)
- Implement workplace interventions
- Facilitate linkage to medical home

Professional Development Training
- Promote USPSTF guidelines for CRC screening
- Promote USMSTF surveillance guidelines
- Promote EBIs and QA/OI practices

Information Technology
- Support utilization of EMRs to implement EBIs and performance monitoring (e.g., GPRA, UDS, HEDIS)

Short-Term Outcomes

Established partnerships that support increased CRC screening

Multiple EBIs implemented within health systems, insurers, others

Access to CRC screening for priority populations

Appropriate provider recommendations for patients to receive CRC screening

Knowledge about the need for CRC screening among priority populations

Reduced barriers to CRC screening

Adherence to USPSTF and USMSTF CRC screening guidelines

Provider knowledge of CRC screening quality standards

Measurements and use of health system data

Intermediate Outcomes

Increased high quality, appropriate screening among defined patient populations†

Increased adherence to timely, diagnostic colonoscopy†

Increased rescreening among defined patient populations†

Population level 80% CRC screening by 2018

Increased CRC prevention via polypectomy

Decreased disparities in CRC screening

Increased detection of early-stage CRC

Increased timely CRC treatment initiation

Long-Term Outcomes

Decreased disparities in CRC incidence and mortality

Decreased CRC incidence and mortality

†Project period outcomes expected to be measured and achieved at level of provider clinics, health systems, specific insured populations

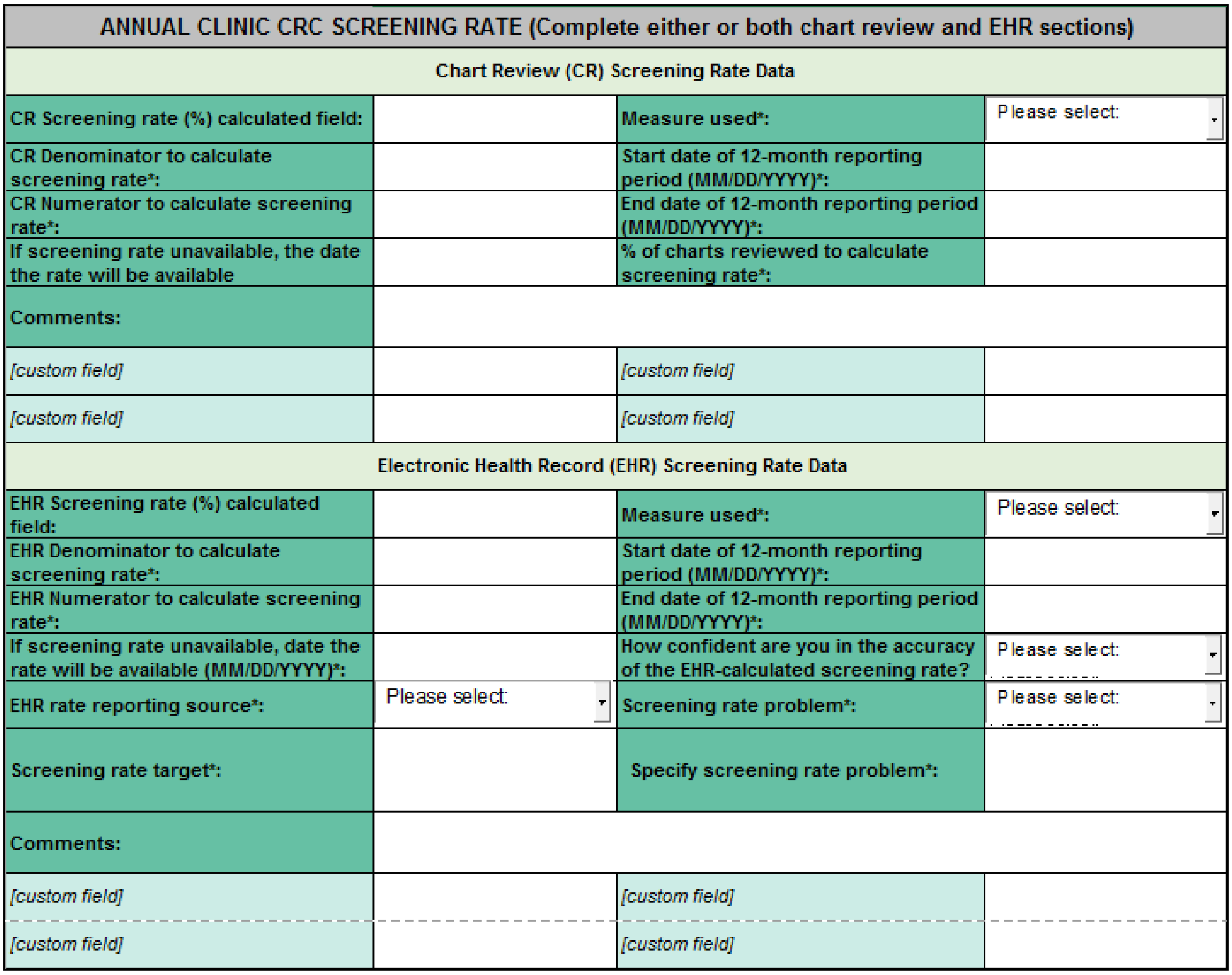
Acronyms:
CHWs: Community health workers
CRC: Colorectal cancer
EBIs: Evidence-based interventions/strategies
GPRA: Government Performance and Results Act
MOUs: Memoranda of Understanding
QA/QI: quality assurance/quality improvement
UDS: Unified Data System
USMSTF: United States Multi-Society Task Force
USPSTF: United States Preventive Services Task Force

Program Monitoring and Evaluation, including assessing changes in screening rates for a defined population

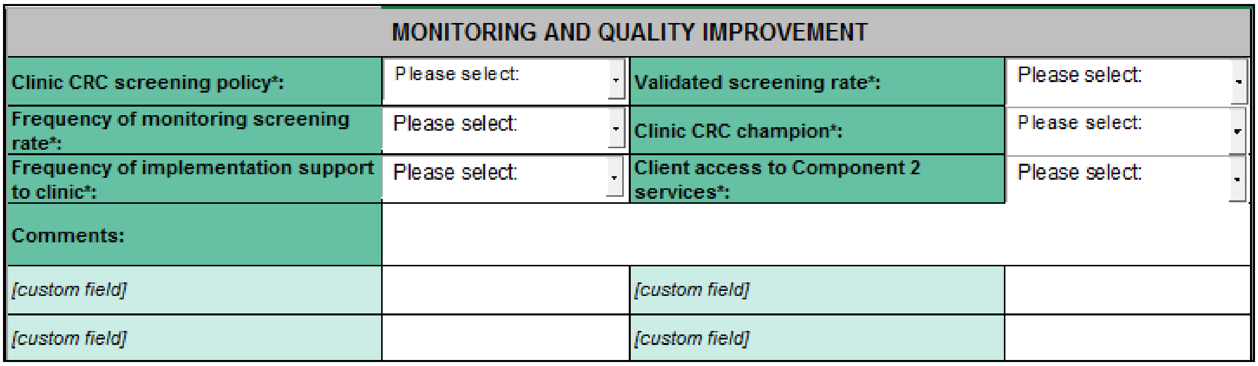
Contextual Factors: resources, ACA, unemployment, endoscopic capacity, geography, cultural beliefs, CRC-related policies, other CRC screening resources

Appendix 2

Screening Rate and Monitoring and Quality Improvement Sections of CRCCP Annual Clinic Data Collection Form



ANNUAL CLINIC CRC SCREENING RATE (Complete either or both chart review and EHR sections)			
Chart Review (CR) Screening Rate Data			
CR Screening rate (%) calculated field:		**Measure used*:**	Please select:
CR Denominator to calculate screening rate*:		**Start date of 12-month reporting period (MM/DD/YYYY)*:**	
CR Numerator to calculate screening rate*:		**End date of 12-month reporting period (MM/DD/YYYY)*:**	
If screening rate unavailable, the date the rate will be available		**% of charts reviewed to calculate screening rate*:**	
Comments:			
[custom field]		*[custom field]*	
[custom field]		*[custom field]*	
Electronic Health Record (EHR) Screening Rate Data			
EHR Screening rate (%) calculated field:		**Measure used*:**	Please select:
EHR Denominator to calculate screening rate*:		**Start date of 12-month reporting period (MM/DD/YYYY)*:**	
EHR Numerator to calculate screening rate*:		**End date of 12-month reporting period (MM/DD/YYYY)*:**	
If screening rate unavailable, date the rate will be available (MM/DD/YYYY)*:		**How confident are you in the accuracy of the EHR-calculated screening rate?**	Please select:
EHR rate reporting source*:	Please select:	**Screening rate problem*:**	Please select:
Screening rate target*:		**Specify screening rate problem*:**	
Comments:			
[custom field]		*[custom field]*	
[custom field]		*[custom field]*	



MONITORING AND QUALITY IMPROVEMENT			
Clinic CRC screening policy*:	Please select:	**Validated screening rate*:**	Please select:
Frequency of monitoring screening rate*:	Please select:	**Clinic CRC champion*:**	Please select:
Frequency of implementation support to clinic*:	Please select:	**Client access to Component 2 services*:**	Please select:
Comments:			
[custom field]		*[custom field]*	
[custom field]		*[custom field]*	