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# Colorectal Cancer Screening in Veterans Affairs

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Colorectal Cancer Screening in Veterans Affairs

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### Abstract

Each year, eligible veterans are referred to the gastroenterology department for colorectal cancer screening, primarily for colonoscopy. Once the colonoscopy is completed and is found to be unremarkable, the patient is asked to return in 10 years for a follow-up colonoscopy. However, if problems are found on the original colonoscopy, such as polyps, the patient enters a surveillance period where more frequent colonoscopy monitoring occurs. While primary care providers are aware of the monitoring guidelines, many providers unnecessarily order fecal immunochemical tests (FITs) during this period of surveillance. Unnecessary costs to the Veterans Affairs Health System (VAHS) include cost of the kit, time for the provider to order the test, technician time to run the test, patient mailing costs to send the kit to the patient, patient time and expense to return the kit, and time interpreting and reporting the results, which ultimately do not change the course of treatment. This project assessed retroactive VAHS data on appropriate utilization of the FIT. Results showed that within the Veteran Affairs Sacramento system, inappropriate FIT utilization existed. Interventions, such as annual colorectal cancer symposiums and ongoing training as part of educational efforts to increase knowledge of guidelines, were implemented. Post-intervention data indicated the effectiveness of interventions through an 8% decrease in the rate of inappropriate FIT ordering. Ensuring appropriate utilization of the FIT improves standardization of care and decreases health care costs.

**Keywords:** *fecal immunochemical test, practice guidelines, utilizations, guideline adherence, colorectal cancer screening, colonoscopy, veteran affairs*

## **Section II. Introduction**

### **Problem Description**

Since the mid-1990s, the importance of colorectal cancer (CRC) screening for adults ages 50 years to 75 years has been well documented and widely accepted by the medical community. In 2017, the American Cancer Society (ACS) reported an estimated 95,520 new cases of colon cancer and 39,910 cases of rectal cancer diagnosed in the United States. In 2010, only 59% of those eligible for CRC screening actually received a screening test (ACS, 2017). Several barriers for the low rate of CRC screening include inadequate knowledge, not being recommended by a doctor, embarrassment, fear of developing cancer, costs, time limits, and transportation problems (Chacko, Macaron, & Burke, 2015).

The Preventative Health Model proposes three elements to find a solution for public health problems: background factors, cognitive/psychosocial factors, and program factors (Salimzadeh, Eftekar, & Majzadeh, 2014). The primary care provider has a major role in promoting CRC screening, so it is critical that primary care providers order appropriate CRC screening tests at the appropriate times and in the appropriate situations. However, inappropriate fecal immunochemical test (FIT) ordering often seems overlooked. The purpose of this project was to assess and improve knowledge of guidelines, recommend ways to ensure adherence to practice guidelines regarding CRC screening, and assess utilization of the FIT.

The major elements to consider when reviewing a program for possible interventions are costs, benefits, and the potential demands of the intervention on the system. From the cost standpoint, return on investment (ROI) and cost savings/avoidance are welcomed by the administrative teams in an organizational setting. As far as benefits and the demands of the



intervention, more effective utilization of time and resources and improved response to an increasing number of beneficiaries results in a more supportive administrative team. There is always a demand for a program that can demonstrate affordability, ease, efficiency, and greater ROI. In this situation, one simple change in a few lines of computerized programming could potentially save millions of dollars for the Veterans Affairs Health System (VAHS) in the United States.

There are almost 22 million veterans in the United States (U.S. Department of Veterans Affairs, 2017a; see Appendix A). Eligibility for CRC screening is based on positive family history of colon cancer, age, symptoms, ethnicity, and history of colon polyps (number, type, and location). Once the initial screening is completed, patients are advised to repeat colonoscopy based on the 2016 U.S. Preventive Services Task Force (USPSTF) guidelines. During this surveillance period, it is inappropriate to send the patient for another screening test, such as FIT.

### **Setting**

The VAHS is the largest integrated health care system in the United States, with 1,233 health care facilities (168 VA medical centers and 1,053 outpatient sites). The VAHS consists of 22 veteran integrated system networks (VISNs; U.S. Department of Veterans Affairs, 2017b; see Appendix B). The VISN 21 covers Northern California, Sierra Nevada, Hawaii, and Guam. The geographic interest for this project was mainly in the Sacramento, Martinez, and Redding areas that are part of VISN 21. These areas have the highest VA referral rate to gastroenterology for CRC screening. In addition, the VA Mather microbiology laboratory processes FITs from these three locations.

Intradepartmental chart reviews from 2014 indicated that out of 800 positive FIT results, only 400 patients were referred to gastroenterology for follow up (see Appendix C). These data

generated additional questions, including whether these 800 FITs were appropriately ordered and what happened to the other 400 positive results that were not referred for follow up to gastroenterology. Additionally, this writer observed that in the assigned monthly patient load referred for colonoscopy consult, there were significant redundancies in referring patients for colonoscopy, and numerous inappropriate FITs were either ordered or completed. This use of the FIT is not supported by current 2017 CRC screening guidelines.

### **Mission and Vision**

The mission of this FIT practice change initiative (PCI) project was to identify a problem, find solutions and interventions, and evaluate the effectiveness of the implemented interventions. The vision for this project was to continue decreasing the rate of inappropriate FIT ordering, which ultimately will affect the VAHS institutional goal in providing excellent health care.

### **PICO**

The population, intervention, comparison, and outcome (PICO) question for this DNP project was: For referring providers (P), does education (I) improve awareness of colorectal guidelines (C), as compared with no education, and improve the appropriate utilization of FIT for CRC screening (O)?

### **Available Knowledge**

The literature review was conducted from December 2016 to June 2018 using the keywords: *colonoscopy, fecal immunochemical test, practice guidelines, utilizations, guideline adherence, veteran affairs, and colorectal cancer screening*. Databases used were DynaMed, PubMed, and CINHALL. Limits were set to only articles written in the English language, date limits were set to the most recent five years, and meta-analysis articles meeting the other inclusion criteria were included. Seventy-nine articles were found, and 18 articles met the

inclusion criteria. There was very limited evidence regarding methods to increase the appropriate utilization of FIT in the eligible population.

### **Review of the Evidence**

The Johns Hopkins Evidence Appraisal tools were used to evaluate each article (Dang & Dearholt, 2017). An evidence synthesis table is presented in Appendix D. While colonoscopy is considered a superior study in the diagnosis of CRC, the literature revealed that there are other methods (FIT, sigmoidoscopy, and CT colonography) that have been researched. Selection of a screening option is partially based on the referring physician's preferences, setting (hospital or office), patient's past medical and family history, and patient preference (Rex et al., 2017).

A systematic review of cohort studies done by Whitlock, Lin, Liles, Beil, and Fu (2008) concluded that CT colonography is as proficient as colonoscopy for detecting adenomas larger than 10 mm. Additionally, the potential for radiation harm and variations in the accuracy of reader results create some degree of uncertainty. Song, Jia, Peng, Xiao, and Li (2017), in their systematic review of cohort and case control studies with meta-analysis, concluded that the risk of CRC can be determined by detecting the degree of DNA methylation of the specific promoter region of the SEPT9 gene in the peripheral blood.

Katsoula, Paschos, Haidich, Tsapas, and Giouleme (2017) conducted a systematic review of 11 cross-sectional studies and one randomized control trial (RCT) with meta-analysis and concluded that the FIT has high overall diagnostic accuracy for CRC, but only moderate accuracy for advanced metaplasia in patients at above average personal or familial risk heterogeneity. Small sample sizes resulted in wide confidence intervals, limiting the trustworthiness of the findings. Multiple RCTs with meta-analysis concluded that combining the two screening tools of FIT and flexible sigmoidoscopy for CRC screening might be helpful in

prolonging the time interval of the next screening (Niedermaier, Weigel, Hoffmeister, & Brenner, 2017).

Colonoscopy remains the current gold standard for CRC screening. Anderson et al. (2017), in a quasi-experimental study, discussed that non-adherence to CRC screening and surveillance guidelines are common among gastroenterologists to bring in patients for repeat colonoscopy sooner than it is recommended. The authors discussed that shorter intervals of screening are statistically and clinically insignificant. Royce, Hendrix, Stokes, Allen, and Chen (2014), in a systematic review cross-sectional study, reported that a large number of the U.S. population with limited life expectancy routinely receive prostate, breast, cervical, and CRC screening. Royce et al. concluded that the risks of follow-up treatments outweigh the benefit for the patient and will not benefit the patient, but also will increase the cost of health care unreasonably. In addition, Van Hees et al. (2014), in a quasi-experimental micro stimulation model study on Medicare beneficiaries, found that screening either through more frequent or shorter intervals than what guidelines suggest will not benefit the patient and may adversely cause harm due to unexpected complications.

Researchers emphasized adherence to current evidence-based guidelines and encouraged that primary care providers avoid duplicating the tests (Royce et al., 2014; Short, Layton, Teer, & Domagalski, 2015). Short et al. (2015) encouraged adherence to guidelines and choosing a test that truly benefits a patient, along with the use of the *choosing wisely campaign* as a reference for current practice tool. Schlichting et al. (2014), in a systematic review of RCTs in a VA health care facility in Iowa City, evaluated compliance to ordered FIT among the veterans and noted that with a reminder phone call, the rate of returning FIT increased. The cost of unreturned FIT was approximately \$6.20 compared to the cost of returned FIT at \$7.40 (Schlichting et al., 2014).

Schlichting et al. (2015), in a cohort study at the same VA health care facility in Iowa City, found that FIT appeared to be an effective method used with overdue patients for CRC screening.

Kruse, Khan, Zaslavsky, Ayanian, and Sequist (2015), in a retrospective cohort study, indicated that use of colonoscopy screening for the average risk population is an inefficient method of screening, and repeat screening earlier than what is recommended causes delays to reach out to the 14 million individuals on the wait list for screening. Johnson et al. (2015), in a multi-center retrospective observational study in a VA health care system, stated that the rate of non-adherence to guidelines ranged from 3% to 80% among VA facilities, with reasons such as bowel prep quality and geographic regions with salaried physicians.

In summary, the literature review revealed that over screening and inappropriate use of procedures in both men and women are statistically and clinically insignificant for promoting health and can result in increased health care expenditures, as well as direct harm to patients (Anderson et al., 2017; Johnson et al., 2015; Kruse et al., 2015; Royce et al., 2014; Schlichting et al., 2014, 2015; Short et al., 2015; Van Hees et al., 2014). The summary of the evidence can be found in Appendix D.

## **Rationale**

### **Gap Analysis**

A retrospective chart review from three sites (Sacramento, Martinez, and Redding) from fiscal years (FY) 2014 – 2015 was completed for the purpose of understanding the rate of ordered FITs. This review indicated 800 positive FIT results were recorded during this time period. However, only 400 of the positive FIT patients were referred to gastroenterology at the VA Sacramento for follow up. Therefore, in a perfect system, we would assume the rest of the 400 positive FITs were done within the surveillance period or were patients with known

symptomatic hemorrhoids, since they were not referred to gastroenterology (see Appendix C). The current state of FIT ordering indicates that 28% of total ordered FIT for three consecutive years (FY2015 – FY2017) was inappropriate (see Appendix E).

### **Conceptual or Theoretical Frameworks**

In order to implement this project within the VAHS, two theories were utilized: complexity leadership theory (Uhl-Bien, Marion, & McKelvey, 2007) and Kotter's change model (Kotter, 1996). The leadership theory has applicability in a complex, multi-layered system, such as the VAHS. Kotter's change model depicts the steps in implementing and maintaining the interventions and aims to achieve goals within the framework of this project.

#### **Leadership Theory**

The goal for successful leadership is to formulate a framework for how to focus on learning, innovating, and adaptability. Uhl-Bien et al. (2007) stated that these elements are the key components of complexity leadership theory, a theory that includes the strengths of renewal and relationships within a system. This theory is applicable in a fast-growing and technology-oriented organization with readily available online tools for users. The talent management system (TMS) and the computerized patient record system (CPRS) are two of these tools easily accessible to VAHS users (see Appendix F). According to Uhl-Bien et al., the complexity leadership theory is not the traditional *top-down* model with formality and bureaucracy but is applicable in complex adaptive systems (CAS).

To be able to achieve real success in a dynamic, fast-growing CAS, the leadership should focus on strengths not weaknesses. Using this model and applying it to the VAHS, the micro system resembles the gastroenterology department and the meso system resembles the medicine department that oversees the gastroenterology department, primary care, and other non-surgical

departments. The macro level would be the central administrative office that oversees the VISN

21. The project was aligned with the leadership theory in the following ways:

Goal. Improved quality of care for patients and adherence to CRC screening guidelines.

Results. Improvements in appropriate FIT utilization within the VAHS.

Objectives. A proposed FIT-PCI to the chief of gastroenterology to change the annual symposium's agenda to reinforce the CRC guidelines and provide ongoing education to primary care providers.

Outputs. Annual training of referring providers, annual FIT data monitoring, and CPRS modifications.

Activities. Project-related literature review identified the best practices for standardizing the appropriate utilization of FIT. Data were collected from the three months before the interventions and the three months after the interventions to compare the effectiveness of the implemented interventions. Interventions were categorized as primary (CRC symposium) and secondary (sending out laminated guidelines via email and intra office mailing systems to all sites).

### **Kotter's Change Model**

Kotter's (1996) change model has eight steps that were followed for this project. Kotter's change theory assisted in implementing the interventions, which include create, build, form, enlist, enable, generate, sustain, and institute. Following the recommendation of Kotter's change theory, the following steps were considered for successful implementation of the FIT-PCI project.

**Create.** Creation of a standardized system through CPRS.

**Build.** Update the practice agreement between the two departments (gastroenterology and primary care) based on the most recent CRC screening guidelines as a current mutually-approved agreement.

**Form.** Engage the identified stakeholders, such as veterans, providers, and VAHS.

**Enlist.** Identify team members and gain support from hospital leaders and primary care team members.

**Enable.** Provide education about current state and current recommended CRC screening guidelines through participating in the annual March CRC symposium and follow-up emails to provide a summary.

**Generate.** Perform a small improvement project to show that results are achievable, such as extracting data for the three months post-intervention and compare the data to the three months pre-intervention.

**Sustain.** Ongoing education and monitoring the appropriate use of FIT.

**Institute.** Post-successful interventions and notable effectiveness and develop a plan to permanently establish CPRS steps in ordering the appropriate CRC screening tests.

### **AIM Statement**

By June 2018, FIT overutilization will be decreased from the current average of 28% to 20% at the VA Sacramento. Objectives included:

- Utilization of the VA annual CRC symposium to disseminate best practices.
- Follow-up with family practice providers post-symposium to provide additional resources.
- Measure pre- and post-intervention the number of inappropriate FIT ordered by primary care providers.



### **Section III. Methods**

#### **Context**

This project began with the intention to impact the disparities that exists for CRC screening of female veterans. The Veteran Population Projection Model reported an estimated veteran population of 21,999,000 in the United States, including approximately 2,000,000 (9%) female veterans (U.S. Department of Veterans Affairs, 2014). According to the U.S. Department of Veterans Affairs (2014), the percentage of female veterans is expected to increase over time, from 9% in 2014 to 17% in 2043. The same source projects an increase in the number of female veterans' visits to the VA health care system, showing an 83% increase in female veterans' visits from 2000 to 2009 (see Appendix G, Figures G1 & G2).

An unofficial report has shown almost 7,500 female veteran visits to women's health between the years of 2015 and 2016. The intra departmental data showed the number of referrals of female veterans from women's health to the gastroenterology department for CRC screening to be about 331 from FY2014 to FY2015. Of the 331 female veterans seen in the gastroenterology department, only 81 were completed for screening colonoscopy, and the remaining 250 were seen for other reasons, such as consults or screening with other methods.

After several email exchanges with the director of primary care at the VA Sacramento, an appointment was made for a face-to-face meeting to discuss the project, where it became apparent that there was not the necessary support for this potential aspect of the issues surrounding proper CRC screening. Subsequently, the focus of the project changed to a new area of CRC screening, looking more at the issues surrounding the overutilization of screening tools, such as FIT, and possibly highlighting the cost avoidance aspect of overutilization.

This author's work as a gastroenterology nurse practitioner since 2015 provided the opportunity to observe and encounter inappropriate FIT ordering. Based on an initial review of 2014 data, 800 positive FIT were referred to gastroenterology; however, only half completed a colonoscopy. Upon further examination of the preliminary data, a significant proportion of those who had a positive FIT and did not complete colonoscopy were due to inappropriate ordering of FIT for average risk population by the provider. Therefore, further examination of inappropriate FIT ordering, as well as ways to reduce the inappropriate FIT ordering, seemed appropriate for further investigation. When this author completed a retrospective data analysis of FY2015, FY2016, and FY2017 and observed the same pattern of inappropriate test ordering, the need for an intervention became apparent.

### **Intervention**

March is CRC awareness month. In the VA Sacramento, the Department of Gastroenterology holds an annual CRC symposium during this month. It seemed reasonable to use the symposium as an educational intervention tool to disseminate information regarding the 28% rate of inappropriate FIT ordering and assess the impact of this intervention.

During the 2017 CRC symposium, the inappropriate FIT ordering data for FY2015, FY2016, and FY2017 were discussed with primary care attendees, and providers' knowledge of appropriate FIT ordering guidelines was assessed before and after the presentation. A follow-up mailing was conducted to reinforce the guidelines for appropriate ordering of the FIT (secondary intervention). Three months of FIT ordering data were collected before the symposium and were compared to the three months after the symposium to review the effectiveness of the educational intervention for primary care providers.

Preliminary data collection was conducted retrospectively using the existing VAHS CPRS at the Sacramento-Mather VA Medical Center. To estimate the number of tests that may have been used inappropriately, data were selected from March to May in 2015, 2016, and 2017 from referring primary care team sites—Chico, Fairfield, Martinez, McClellan, Oakland, Redding, Sacramento, and Yuba (see Appendix E and Appendix F).

### **Study of the Intervention**

This project was designed to assess overutilization of FIT as a retrospective descriptive analysis of VAHS Northern California CPRS data from 2015, 2016, and 2017. The CPRS data collected included a summary of the total FITs ordered and individual variables for each test, including age (younger than 40 years and older than 80 years), anemia, and positive family history of CRC. Although additional exclusion criteria, such as age, anemia, and familial history of colon cancer, are utilized for FIT, these three variables were examined as a preliminary analysis.

### **Outcome Measures**

For this project, there were several outcome measures. The direct measures included:

1. The number of appropriate FITs before and after March 3, 2018, VA Sacramento Colorectal Cancer Symposium.
2. Decrease in inappropriate FIT use from the baseline of 28% to 20% by July 1, 2018.
3. Increase the knowledge of participants who attended the 2018 CRC symposium, as evidenced by email communication with providers.

### **Proposed Intervention – Knowledge of CRC Screening Guidelines**

To assess knowledge of guidelines, an identical pre- and post-dichotomous survey questionnaire was given to participants attending the annual IX Colorectal Cancer Symposium in

the VA Sacramento (see Appendix H). The purpose of the survey was to compare participants' knowledge before and after the presentation of the CRC guidelines (see Appendix I).

McNemar's statistical test was used to evaluate the effect of this author's presentation on the participants' knowledge (see Appendix J).

### **GANTT Chart**

The development of the GANTT chart assisted with additional refinements in changed direction, once further internal feedback was obtained (see Appendix K). Initially, the project was mainly focused on female veterans within VA Sacramento and how to increase the rate of CRC screening among this population. After spending long hours of literature review, presentation in the 2017 annual CRC symposium, and preparation for a Qualtrix online survey, this author was not able to reach agreement with the primary care team to launch the online survey. Therefore, this author chose a new path focused on the utilization of FIT, and the GANTT chart was revised accordingly.

The timeframe for this project was from May 2017 to June 2018. The GANTT chart showed the initiation of the plan, coordination, and tracked specific tasks in the project. The GANTT chart illustrated the start and finish dates of the proposed terminal and summary elements of this project, along with the academic coursework. Examples of the milestones included developing a proposal, identifying the data needs, and conducting a literature review and gap analysis.

### **Strengths, Weaknesses, Opportunities, and Threats (SWOT)**

A SWOT analysis is often a good approach to identify the internal and external threats and opportunities as an approach to manage a project. Strengths and weaknesses are internal elements, as compared to threats and opportunities, which are external factors. The strengths of

this approach were in the improved consistency, efficiency, cost, and time savings associated with changes to the diagnostic test ordering system. The weaknesses of this project were in the difficulties and delays in getting approval and implementing the changes within a large multi-layered government institution. There were many opportunities to meet professional health care providers' educational needs by using tools, such as the VA library or mandatory TMS learning tools. The threats in this project were primarily active and passive resistance to change by primary care providers (see Appendix L).

### **Work Breakdown Structure**

The work breakdown structure (WBS) of the CRC screening project management in the VA Sacramento indicated there were multiple steps in implementing this project (see Appendix M). The WBS embraced five areas for this project: initiation, planning, execution, control, and closeout. The FIT-PCI was a non-research project. The purpose of this project was to improve resource utilization in CRC screening for eligible veterans. The overview of the WBS communicated the work, processes involved, resource requirements, and costs to execute the FIT-PCI project.

### **Develop Project Overview / Vision**

This project included two broad areas—this writer's work setting and academic coursework. Therefore, onsite practice observations with retrospective and routine practice reviews, as well as current evidence-based practice literature reviews, were essential to complete this project. In addition, reaching out to personnel in charge and tallying the number of appropriate FITs (positive and negative), total annual FITs, and eligibility of veterans for CRC screening tests either by colonoscopy or FIT for average risk population was investigated. Ordered FITs for three years (FY2015 – FY2017), with exclusion variable for average risk, such

as age (<40 years and >80 years), anemia, and family history of CRC, were retrospectively collected.

**Deliverables: Submit project overview for review and comment.** The project overview was submitted to this author's academic supervisor and other managers in key departments, such as gastroenterology and primary care, for review and comment.

**Project overview signed/approved.** Comments and suggestions from this writer's academic supervisor and other key managers, as mentioned above, were implemented in the project overview and approvals were obtained (see Appendix N).

**Review preliminary plan with academic supervisor, field supervisor, and clinical practice manager.** A detailed draft was discussed with the academic supervisor and the field supervisor and a final project plan was developed and submitted. Timelines were revised, as needed.

**Milestone.** Project plan approved, with estimated completion of June 2018.

### **Execution/Implementation**

**Project kickoff meeting.** After agency approval was obtained (see Appendix O), kick off meetings were held with participants and the key staff, including Chief of Gastroenterology Dr. Joseph Leung and Associate Chief of Gastroenterology Dr. Andrew Yen. The captured baseline data were shared with the Chief of gastroenterology, as well as with the academic advisor, Dr. Maxworthy. Gap analysis was completed to show the need for educating the primary care providers regarding inappropriate FIT ordering, wasting resources, and potentially saving dollars for veterans. Baseline data collection prior to implementation of changes to assess differences before and after preliminary data were gathered in a two-step fashion:

Step 1. November 6, 2017 indicated 7,516 FITs sent out from October 01, 2016 to October 31, 2017.

Step 2. February 29, 2018 indicated 16,327 inappropriate FIT ordered within FY2015-FY2017.

### **Educational Plan**

During the 2018 annual CRC symposium, the 2017 CRC guidelines were presented to attendees. A pre- and post-survey was conducted to assess the symposium's participants' knowledge of current CRC guidelines. The Northern California VAHS directory was used to email a thank you note, along with an electronic copy of the guidelines, to providers who routinely order FIT. Snail mailed laminated guidelines were provided to all sites in North California VAHS. Additional clarification and laminated guidelines were provided, when needed.

### **Capture and Analyze Post-Change Data**

This author collected and analyzed the data over the project period previously described to compare to the baseline/pre-change data through the first intervention at the IX Colorectal Cancer Symposium and through the second intervention, which was contacting every primary care provider through the VISN 21 VA email and intra-department snail mail. The rate of FITs ordered before and after outreach interventions was calculated.

### **Write Report Summary / Lessons Learned**

A written summary of the project was provided, which identified the lessons learned, and shared with the supervisor and project team members.

### **Implementation Summary**

In order to implement this project, steps needed to be defined and elements described, such as customers or stakeholders, competitors, costs, and service needed. A plan was developed providing a step-by-step procedure for how the algorithm would be developed and implemented (International Council for Nurses, 2004).

- Who were the customers? VAHS providers.
- What would customers require from the business/FIT-PCI? A clear understanding of the rationale for change, including specific data on the cost savings, time saved, and patient benefits.
- What were the start-up costs? These costs depended upon selection of resources, such as laminated materials used and this author's time to educate primary care providers to be retrained and familiarized with the new algorithm.
- When would the services/products be required? As soon as possible; the faster this intervention was implemented, and the less inappropriate FIT ordered, the more money would have been saved.

### **Financial Plan**

In this PCI project, quality improvement project approval was received. Financial planning information were as follows:

- Retroactive chart review for inappropriate FITs ordered by medical providers for baseline assessment hourly income was \$70.
- Scheduled meetings with data manager hourly income was \$30.
- Assumed average FIT ordering test physician hourly income was \$100.
- Assumed average FIT ordering nurse practitioner hourly income was \$65.
- Assumed average laboratory technician hourly income was \$25.



- Actual average FIT kit and shipping was \$35 per test.
- Assumed average time to order FIT for a physician was 15 minutes.
- Assumed average time to order FIT for a nurse practitioner was 15 minutes.
- Assumed average FIT lab technician time to process /document FIT was 15 minutes.
- Flow chart designed to present the findings.

### **Marketing Strategy**

The target for this effort was primary care providers within the VAHS. Marketing and outreach to this audience focused upon ensuring awareness of the guidelines for using FIT, with a significant amount of emphasis placed on conveying the cost and time savings aspect of avoiding erroneous tests. The project aspires in another phase to potentially change the CPRS system to ensure that providers are mandated to use the proper tests at the correct times.

### **Summary for Strengthening FIT in 2017 – 2018**

In order to strengthen FIT as an acceptable method of CRC screening per 2017 guidelines, education and in-service training, such as annual CRC symposium, administration support was needed. This would encourage the VAHS providers to familiarize themselves with current knowledge in a non-threatening manner.

### **Expenses**

**Material expense.** For the development, implementation, and evaluation of the educational aspects of this project, the expense of paper, ink, and cartridge was assumed to be \$100 dollars. The room and utilities were in-kind and were part of a larger event (see Appendix P). The actual expenses related to the inappropriate use of FITs was approximately \$20 per test (Rex et al., 2017). Additional information about the VA costs associated with the test can be found in a subsequent section.

**Labor expense.** In regard to labor expenses related to FIT ordering, it was assumed that the average physician hourly income was \$100 and assumed average time to order FIT for a physician was 15 minutes; therefore, they spent \$25 of their time ordering an inappropriate test, while they could have used that time to see another patient. This affects the physician's workload, reduces their productivity, and increases the backlog of patients needed to be seen. This concept was also relevant to a nurse practitioner. A nurse practitioner uses one-fourth of her time ordering an unnecessary test. Therefore, a nurse practitioner spent \$16.50 of her hourly income. The time involved could have been used to see another patient, to return a patient's call, or to review patient test results. This concept was also applicable to the time that a lab technician is spending processing and documenting on an inappropriate FIT order. If a lab technician spent 15 minutes of their time, which is equivalent to his/her hourly wage divided by four, another \$6.25 dollars was wasted. In the meantime, one FIT kit is also wasted, which was another \$100.

### **Profit and Loss**

There was an assumed loss of \$4,780 for one week to launch this initiative and applied technology (see Appendix Q). The breakdown was as follows:

- This author's time in gathering data, analysis, attending meetings, writing proposal, and recruiting and training one medical assistant for data construction.
  - 8 hours/day x 5 days x \$70/hour = \$2,800
- Hourly pay for medical assistant to assist.
  - 8 hours/day x 5 days x \$17/hour = \$680
- Paper, pen, cartridge = \$100

### **Assumed Cost Savings / Avoidance**

The assumed cost savings / avoidance was as follows:

- a. Physician's time: 15 minutes = \$25.00
- b. Nurse practitioner's time: 15 minutes = \$16.50
- c. Lab technician's time: 15 minutes = \$6.25
- d. FIT kit value = \$20.00

Total savings for one inappropriate kit order by a physician (a+c+d) = \$ 51.25

Total savings for one inappropriate kit ordered by a nurse practitioner (b+c+d) = \$42.75

Recent (November 01, 2016 to October 31, 2017) information from the data system indicated that three referring primary care team sites (Mather, Martinez, and Redding) ordered over 7,516 FIT kits, and approximately 10% (707) were positive. Additional preliminary data from FY2014 – FY2015 showed that approximately half of those were positive FITs and referred to gastroenterology for follow up. Although this project looked at a small number of VA facilities, the actual cost is much higher when all VA facilities in the United States are considered; however, those estimates were beyond the scope of this project. This is clearly a significant potential cost for 1,233 health care facilities (168 VA medical centers and 1,053 outpatient sites of care of varying complexity).

### **Communication Plan**

The communication plan was to review 2017 USPSTF guidelines on CRC screening and overutilization of FIT in average risk population. For achieving this plan, at least once a week communication with USF advisor, Dr. Maxworthy, via email, Zoom, phone call, and SMS (text) messages, was completed. In addition, bimonthly communication regarding this project was done with the field advisor, Dr. Leung, at VA Mather/Sacramento gastroenterology department. To collect data with the practice data manager, Mr. Sozzie, meetings were attended based on timing of the project and requirement of more specific data. In addition, multiple meetings were

attended with VA Mather/Sacramento laboratory staff, Ms. Saralee, regarding the sample collection process (see Appendix R).

### **Analysis**

Quantitative and categorical variables analysis was performed. Excel was used for data management, construction of dichotomous statistical analyses, and graphs. The SPSS software program, McNemar's statistical test, was used on paired nominal data dependent variables. Assistance in data validation and analysis was obtained from the VA Mather practice data manager. Descriptive analysis, including percentages, was used to describe and demonstrate the result.

### **Ethical Considerations**

#### **American Nurses Association Ethical Standards**

**Clinical.** Colorectal cancer screening decisions for elderly individuals are usually based on established guidelines relating almost exclusively to age; other factors are usually not considered. The USPSTF (2016) states that screening for CRC starts at age 50 and ends at age 75. Needless to say, the providers are aware that there are other factors, such as lifestyle (smoking, NSAIDs use), genetics, and race that are important determinants in an individual's health care outcomes, yet age continues to be the sole determining factor to conduct CRC screening.

**Social.** The issue of declining to provide routine health screening services, such as CRC screening, to those who are 75 or older is a complex, multifaceted dilemma, especially as life expectancy continues to increase. Elderly patients in good health and with sound judgment question the USPSTF 2016 guidelines. From a purely clinical and actuarial perspective, the result is that the risk of colonoscopy outweighs the benefit for patients older than 75 years.

However, through the lens of the relatively healthy elderly veteran, the system is unjust and does not follow through on previous societal commitments made in exchange for serving their country. The provider's action may appear to be maleficence or violation of a contract.

Several ethical issues were considered. Van Hees et al. (2014) concluded that personalizing decisions on colonoscopy and incorporating factors other than age, such as existing comorbidities, into the decision-making process is one course of action and takes into account more of what the patient expects and understands. This course of action also covers the 2015 American Nurses Association (ANA) Code of Ethics Provisions 1 and 3, in which the nurse promotes and protects the health and safety of patients. Cornado, Petrik, Bartelmann, Coyner, and Coury (2015) stated that the rapid growth of the Medicaid population and access to preventative health services under the Affordable Care Act of 2010 should be incentivized at the federal and state level, thus supporting more colonoscopy screening in the entire population. This supports non-maleficence and veracity, as in Provision 3 of the ANA 2015 Code of Ethics. This is a practice change initiative project, therefore, Institutional Review Board (IRB) was waived.

#### **Privacy Concerns: Cultural, Language, and Religious**

There were no privacy concerns, patients' records were de-identified, and the patients' charts were reviewed retrospectively for the purpose of practice management improvement. Were these patient records de-identified? If so state that in the previous sentence so it's clear that you could not see names, addresses, or SSNs. The identifiers were age and date of service. There were no language and religious barriers in this case. The cultural differences were that among this cohort of patients, there was a clear and prominent expectation of health care at any age regardless of cost. The current colorectal screening culture at the VAHS is based primarily on actuarial estimated life expectancy.

**Jesuit Values**

The Jesuit values are to drive and guide the leaders and the individuals in leadership positions. *Cura personalis*, or care for the individual person, along with unity of heart, mind, and soul in developing a whole person, are part of the core values of Jesuit education (Otto, 2009). This project goal was to improve the delivery system of the care for the veterans according to the most recent CRC screening guidelines, which will save money for use in supporting veterans who are in need of the basic elements of living. This is where *cura personalis* can be met with good strategic planning (Otto, 2009).

## **Section IV. Results**

### **Organization of FIT**

The VISN 21 includes Northern California, Sierra Nevada, Hawaii, and Guam. Each VA region has multiple sites, including medical centers and community clinics. The rationale for selecting the Northern California region was mainly due to the author working at the VA in Sacramento. Therefore, it made sense to look at the most recent three years of data from the VA Health Care Northern California.

During the 3-year time period examined, 59,251 FIT were ordered, with 16,327 (28%) being inappropriately ordered, using three exclusion variables for average risk (age, anemia, and previous family history of CRC), and included 2,434 duplicate tests. The percentage of inappropriate FIT remained constant across the three years, suggesting minimum yearly variability in FIT ordering. Reasons for duplicate orders for FITs included expiration of the 2-week time limit to turn in the test and having two primary care providers in different departments or regions.

### **Knowledge of CRC Screening Guidelines – Primary Intervention**

As mentioned earlier, during the IX Colorectal Cancer Symposium (primary intervention) there were 40 participants. Of the 40 participants, 30 participants responded (anonymously) to the pre- and post-surveys (75% response rate). Only one question (Question 4) showed a statistically significant difference in comparing the responses before and after the presentation. In one additional question (Question 8), there was a significant increase in the proportion of correct responses; however, this increase was not significant at the  $p > 0.05$  level (see Appendix S).

**Follow Up via Mail System – Secondary Intervention**

To ensure the dissemination of 2017 CRC guidelines, extra efforts were made to reach out to every primary care provider in the Northern California VAHS. Post-secondary intervention results revealed 8% decrease in inappropriate FIT ordered, with three exclusion variables for average risk (age, anemia, and previous family history of CRC) (see Appendix Q). This potentially saved \$66,614 (see Appendix O).



## Section V. Discussion

### Limitations

Several possible limitations existed in the results of baseline assessment data as part of the primary intervention. The limited sample size of the respondents ( $n = 30$ ) in the CRC symposium may have not allowed for the detection of a statistically significant difference between the pre- and post-assessment responses. Future symposiums could be used to validate these findings, perhaps utilizing additional attendees and online surveys. Additionally, answers to several questions did not show an increase in knowledge and two had a decrease in knowledge, with one possible explanation that the symposium presentation simply was not effective or did not provide the necessary detail.

Because only three exclusion criteria (anemia, age, and family history of CRC) were used for assessing whether a FIT was inappropriately ordered, the findings likely represent a very conservative estimate of inappropriate FIT ordering. Additionally, our data may not have identified patients holding multiple health care insurances, those with a history of previous CRC screening with FIT, fecal occult blood test (FOBT), sigmoidoscopy, and barium enema testing outside the VAHS.

Because the participants responded to the questionnaire anonymously, the area of their practice was not captured to increase response rates in a non-threatening fashion. Additional efforts to reach out directly to primary care providers are needed (e.g., group and individual mail).

Despite the issues described above, the surveys provided some valuable information that was used during the next phase of the project. This next phase consisted of contacting all primary

care providers (secondary intervention) in the VISN via email and snail mail with the key information about how best to screen for CRC. This strategy appeared to be an effective tool to educate the primary care providers regarding the proper ordering of FIT for average risk patients. The remaining issue would be how to continue to reinforce the importance of proper FIT ordering, possibly by holding future symposiums and/or incorporating a computer software intervention within the VAHS. The stakeholders of this project included the hospital administration at the VAHS in Sacramento and referring providers. The beneficiaries of this project are the well deserving veterans.

### **Interpretations**

In-service trainings, such as the annual CRC symposium that occurred in March, are one way determined to discuss and disseminate the new guidelines, to review retrospective data from previous years, and to measure baseline knowledge with pre- and post-presentation surveys. In addition, follow-up emails providing contact information and inviting feedback proved effective ways to increase awareness and educate the providers (see Appendices Q, R, and S).

There are at least two major elements to take into consideration when a program is being reviewed to look at possible interventions: cost and benefits/demands. Once these interventions are established, patient satisfaction will occur as a byproduct, and can then be a priority to maximize. From the cost standpoint, a positive ROI, cost savings, and/or cost avoidance are welcomed by administrative teams in an organizational setting. As far as benefits, more effective utilization of time and resources, and an improved availability to an increasing number of beneficiaries are readily apparent and are quickly embraced by administrators. Veterans satisfaction is used as feedback to exceed quality of care catered to each individual's needs, thus individualizing care and reducing unneeded tests. There is always a demand for improvements in

a program that results in care that is more affordable, easier, faster, and with a greater ROI in shorter periods of time and with cost savings/avoidance.

### **Conclusion**

Colorectal cancer is the third most commonly diagnosed cancer and the third highest cause of cancer death in the United States (Chacko et al., 2015). Guidelines for screening and effective screening tests exist for CRC. More recently, a FIT has been introduced as a more reliable test than the FOBT, with higher specificity (not affected by diet and medications) and less false positive results while yield a higher positive predictive value. However, inappropriate use of the FIT can lead to wasted resources, such as the cost of FIT kits, laboratory technician time, and provider's time in ordering and reviewing tests. Through annual symposiums and in-service trainings, the rate of inappropriate FIT ordering decreased from the baseline of 28% to 20%. In addition, the knowledge of participants who attended the 2018 CRC symposium increased, as evidenced by email communication with providers.

The decrease in overutilization of FIT can save money for VAHS, which can be used in other areas in the VAHS to improve the veterans' lives, such as decreasing copayments, hiring more providers, paying providers more to decrease high turnover, purchasing more state-of-the-art equipment, creating a better hospital environment, lowering the cost of healthy food in the cafeteria, increasing the quality of shuttles with more frequent trips, assisting homeless veterans, providing dental care, and many other areas that need improvement. This PCI created consistency among providers in following evidence-based practice guidelines. This uniformity in practice reduced ordering inappropriate FITs and resulted in significant cost and time savings.

## **Section VI. Other Information**

### **Funding**

There were no external funding sources to support this PCI project.

Neda, excellent work on this project paper. You have done an amazing job in identifying a gap in care and offering a solution to reduce costs, improve outcomes, and improve patient satisfaction. I have a few edits which you'll see in the body of the paper. The ethical issue section was very well written, of course I will pay close attention to that section ☺. In APA style, when you have several references from the same author, in this case the VA, list them in chronological order with the oldest first. I corrected this for you in the reference list, see below.

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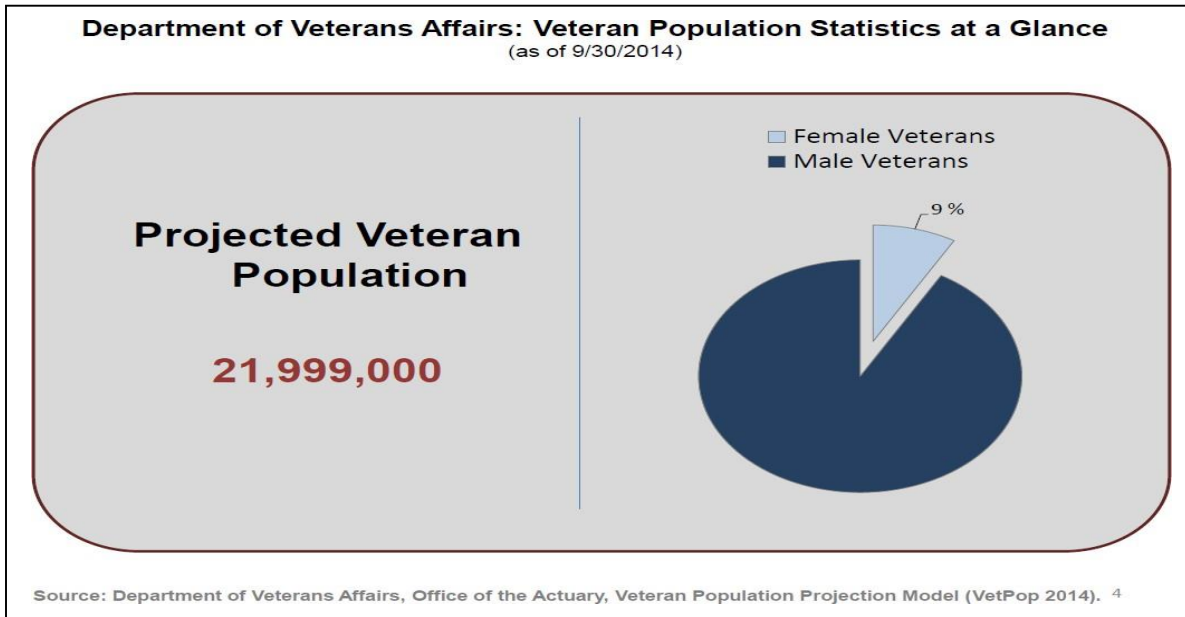
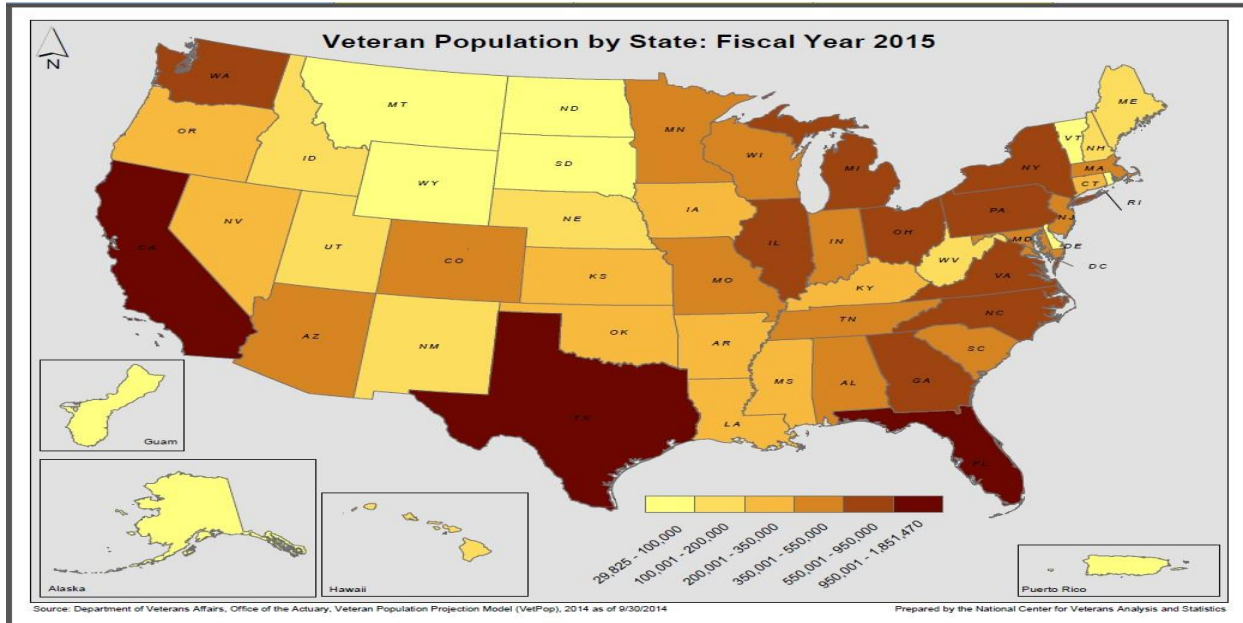
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**Section VIII. Appendices**

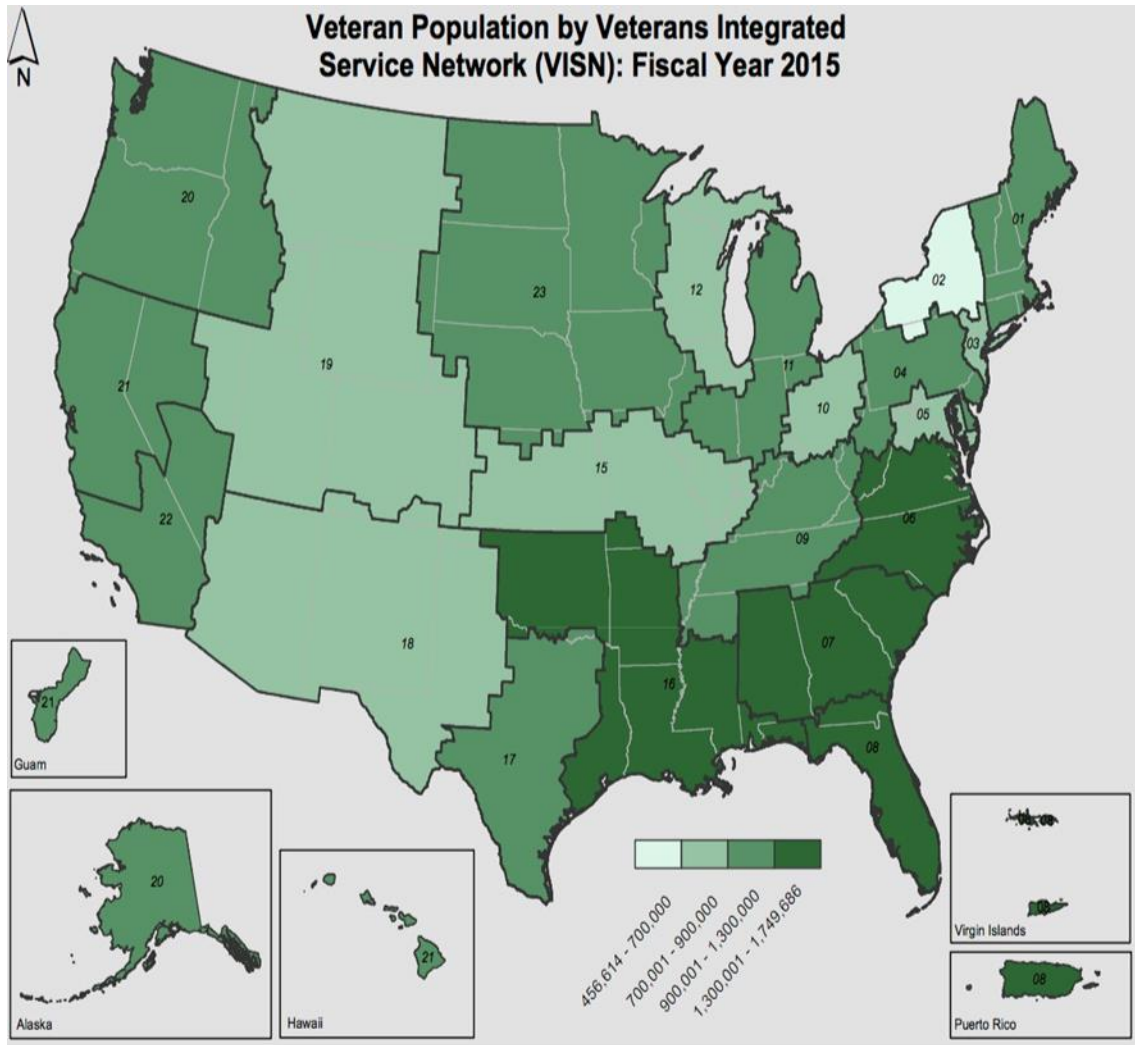
Appendix A

**Veteran Population Projection Model**  
(U.S. Department of Veterans Affairs, 2017)



Appendix B

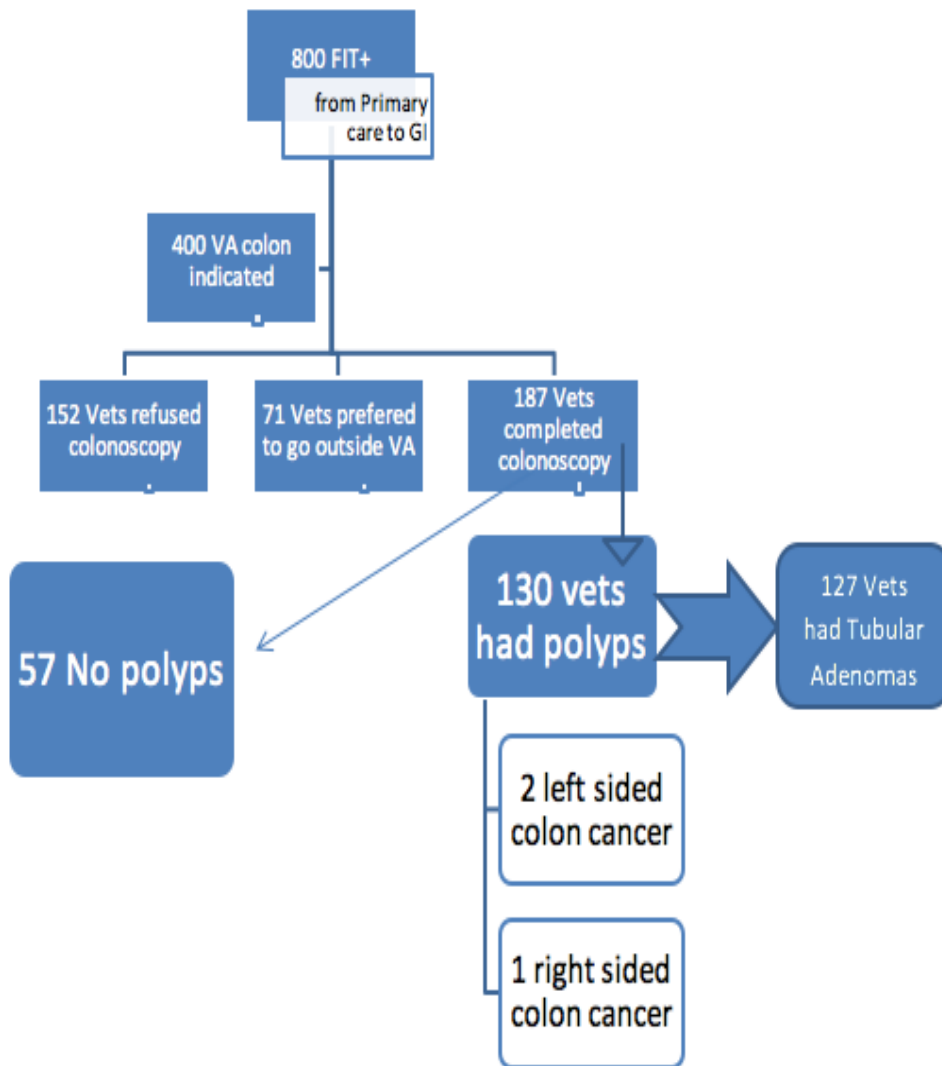
Veterans Integrated Service Network (VISN)



Appendix C

Retrospective Data FY2014

2014 VISN 21: sac, MTZ, Redding



**Appendix D**

**Evidence Summary**

Author	Study Design	Setting	Sample	Evidence Level	Outcomes
Anderson et al., 2017	Quasi-experimental	Not described	Convenience sampling, using previous cancer prevention study ( <i>n</i> = 1,560).	IIA	Authors compared two surveillance time periods (three years vs. five years). The shorter time period showed no clinical or statistical advantages.
Johnson et al., 2015	Observational, multi-center retrospective study	VA health care system	Convenience sampling, using electronic medical records on previous colonoscopy patients ( <i>n</i> = 1,455)	IA	Non-adherence to guidelines ranged from 3%-80% among VA gastroenterology facilities, indicating a shorter surveillance interval.
Katsoula et al., 2017	Systematic review of 11 cross-sectional studies and one RCT with meta-analysis	Not described, PRISMA guidelines	12 studies	IIIB	The FIT has a reliable diagnostic accuracy for CRC, but the test may not be suitable for high-risk patients.
Kruse et al., 2015	Retrospective cohort study	Multispecialty physician group practice	Convenience sampling, using electronic medical records on previous colonoscopy patients, no personal history of CRC	IA	Earlier CRC screening for patients with average risk criteria may not be helpful. An analysis of Medicare data revealed that 50% of patients who end up a seven year follow up screening than a 10-year screening, indicates an uncertain overuse of screening tool.
Niedermaier et al., 2017	Multiple RCTs with meta-analysis	Not described	Quantitative prospective design, using PRISMA guidelines	IA	The author recommends that combining FIT and sigmoidoscopy may extend the screening interval.
Rex et al., 2017	Systematic review without meta-analysis of	Not described	Multi-Society Task Force clinical guideline	IVA	The ranking of CRC screening tests has placed annual FIT in Tier 1, with colonoscopy. Tier 2 options include FIT-

	qualitative studies		This guideline represents: American College of Gastroenterology, American Gastroenterological Association, and American Society of Gastrointestinal Endoscopy		fecal DNA, flexible sigmoidoscopy, CT colonography, and lastly, Tier 3 includes capsule colonoscopy. The guideline does not recommend Septin9.
Royce et al., 2014	Systematic review, cross-sectional, in-person survey	Not described	Convenience sample from the population-based National Health Interview ( $n = 27,404$ )	III A	Over screening increases health care costs and may result in a net harm to patients. Inappropriate screening for prostate, breast, cervical, and CRC is done even for those individuals with limited life expectancy.
Schlichting et al., 2014	Systematic reviews of RCTs	Iowa City VA health care system	Convenience sample from veterans who had not had colonoscopy in the last 10 years or any other methods of CRC screening.	II A	Introductory and reminder phone calls increase the percent of eligible patients returning FITs.
Schlichting et al., 2015	Cohort study	Iowa City VA health care system	Convenience sample from veterans who completed initial FIT testing ( $n = 204$ )	IA	An effective method to provide CRC screening for overdue patients is FIT mailing programs.
Short et al., 2015	Clinical practice guidelines and consensus panels	Not described	Not described	IV A	The <i>Choosing Wisely</i> approach seeks to involve patients in the decision making for their health care.
Song et al., 2017	Systematic review of cohort and case studies with meta-analysis	Not described	Meta-analysis ( $n = 25$ )	IA	The SEPT9 gene can be modified to predict CRC, but is not useful in many cases. It is a relatively new test that has not been fully evaluated.
Van Hees et al., 2014	Quasi-experimental, microsimulation modeling study	Medicare beneficiaries	Convenience sample from two cohorts of Medicare beneficiaries with a negative screening colonoscopy ( $n = 10$ million)	II A	Increased screening resulted in net harm (loss of quality adjusted life years) instead of a gain due to complications from the procedure.

<p>Whitlock et al., 2008</p>	<p>Systematic review of cohort studies</p>	<p>Not described Oregon Evidence-Based Practice Center under contract to the Agency for Healthcare Research and Quality</p>	<p>Using key words, reviewed 490 articles</p>	<p>IA</p>	<p>The disadvantages of CT colonography are potential radiation harm, accuracy of the reader, missing on flat polyps, and polyps smaller than 1cm.</p>
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**Appendix E**

**Retrospective Data: Inappropriate FIT Ordered FY2015 – FY2017**

VA Northern California Health System

VISN 21

Three variables: age, anemia, and familial history of colon cancer

Total Fit Ordered (+/-)	Inappropriate Order of Fit (+/-)	Duplicates	Total Inappropriate Order of Fit (+/-)	Percent Difference
59251	13893	2434	16327	28%

Total FIT ordered 2015 – 2017, March, April, and May

FY15 For March, April, May				
Total Fit Ordered (+/-)	Inappropriate Order of Fit (+/-)	Duplicates	Total Inappropriate Order of Fit (+/-)	Percent of Inappropriate FIT Orders
5087	1290	67	1357	27%
FY16 For March, April, May				
Total Fit Ordered (+/-)	Inappropriate Order of Fit (+/-)	Duplicates	Total Inappropriate Order of Fit (+/-)	Percent of Inappropriate FIT Orders
5446	1202	67	1269	23%
FY17 For March, April, May				
Total Fit Ordered (+/-)	Inappropriate Order of Fit (+/-)	Duplicates	Total Inappropriate Order of Fit (+/-)	Percent of Inappropriate FIT Orders
5193	1111	67	1178	23%



Appendix F

CPRS – Current FIT Ordering Process

Colorectal Cancer Screening

CHOOSE ONE:

High Risk (Pt has family hx of colon ca/adenomatous polyps/gi symptoms)

Surveillance (Pt has hx of polyps/colon ca and informed of CRC options and requests colonoscopy)

Average Risk (Asymptomatic and pt not requesting colonoscopy)

Orders

Order occult blood panel.

Order Colonoscopy

Outside Screening Done Previously

Outside Occult Blood Result (Lab report available)  
Self-report from patient is not adequate

Prior Normal Colonoscopy

Prior Colonoscopy - Abnormal or Result Unknown

Prior Sigmoidoscopy

Prior CT Colonography

No outside colonoscopy, sigmoidoscopy, CT colonography or ACBE.

Deferrals or Refusals

Family history of Colon Cancer in a First Degree Relative

Education

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Occult Blood Testing

Patient Result:  negative  positive  indeterminant

Negative Control:  negative  positive  indeterminant

Positive Control:  negative  positive  indeterminant

Order inpatient occult blood testing

### Appendix G

### Veteran Population Statistics at a Glance

Figure S1

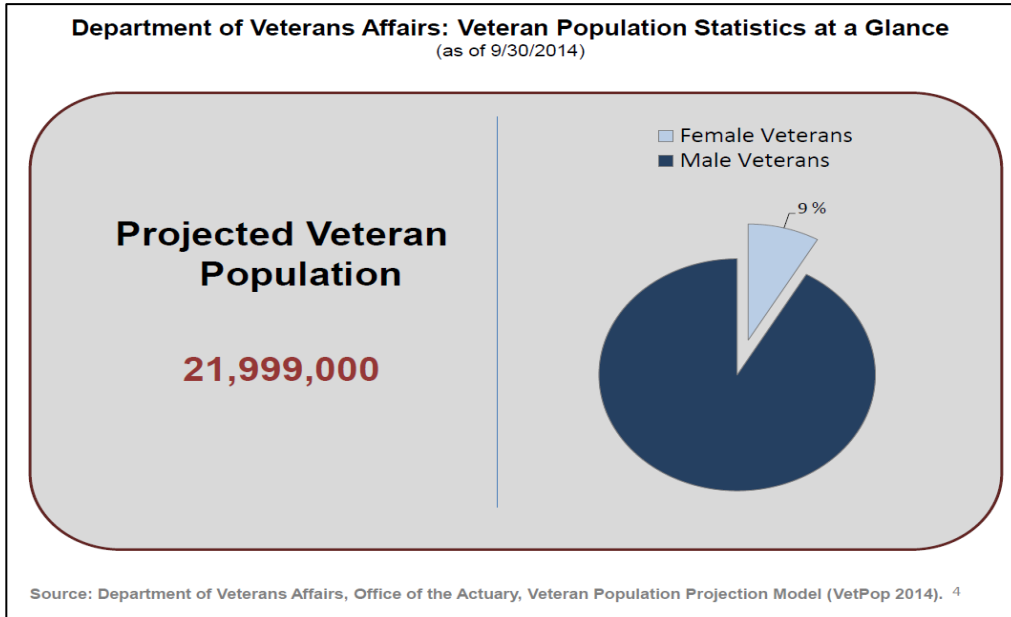
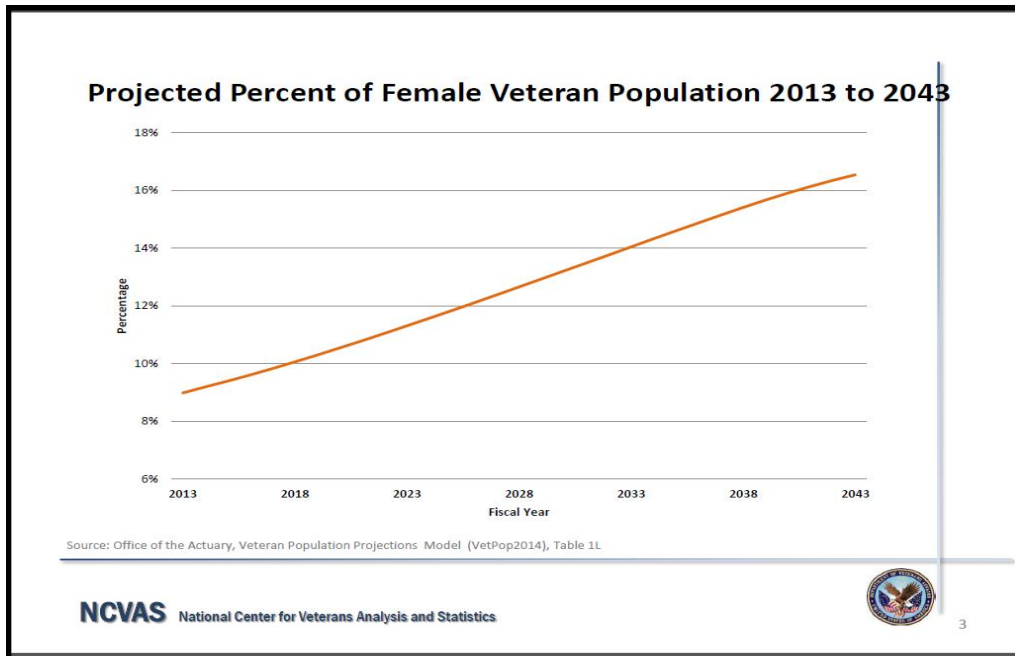


Figure S2

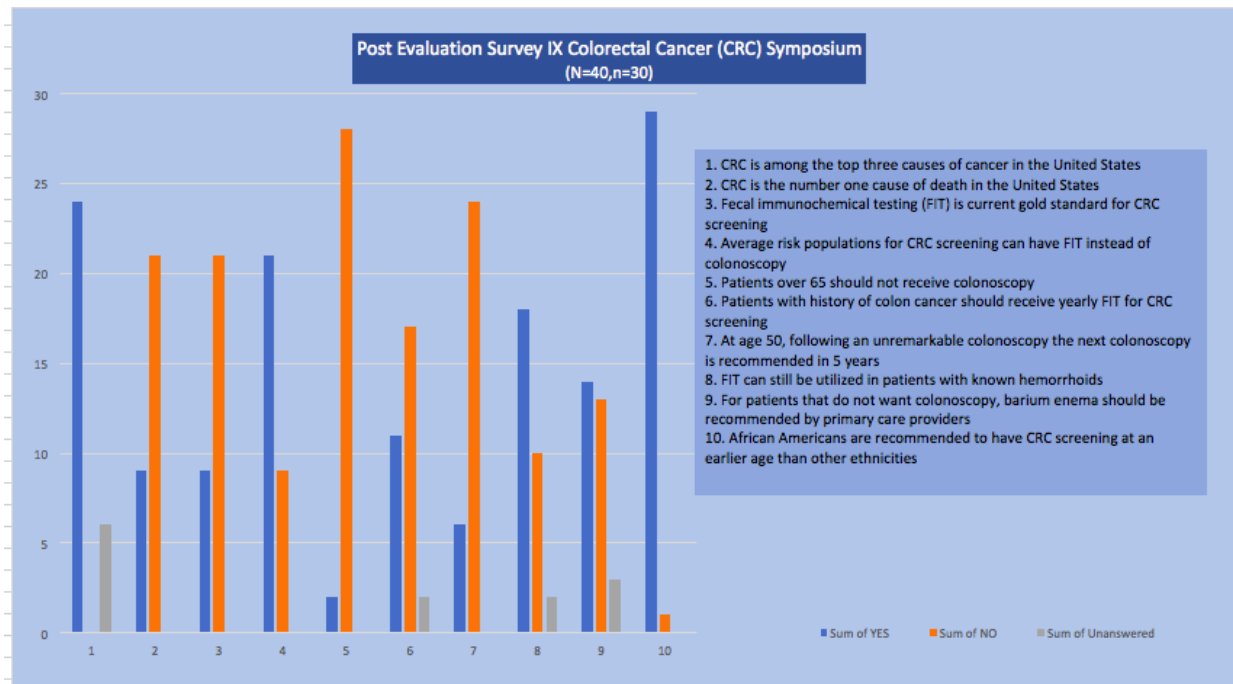
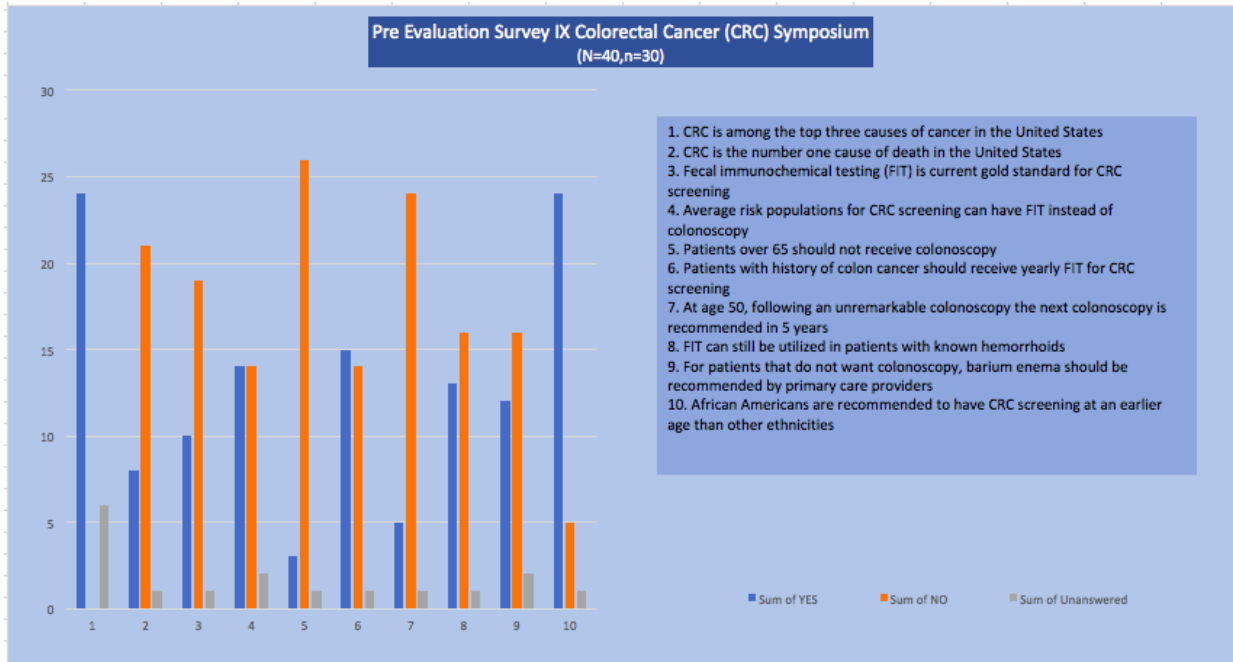


**Appendix H**  
**Survey Questionnaire**

Pre & Post Presentation Evaluation Survey Questions IX Colorectal Cancer (CRC) Symposium March 2018
1. CRC is among the top three causes of cancer in the United States
2. CRC is the number one cause of death in the United States
3. Fecal immunochemical testing (FIT) is current gold standard for CRC screening
4. Average risk populations for CRC screening can have FIT instead of colonoscopy
5. Patients over 65 should not receive colonoscopy
6. Patients with history of colon cancer should receive yearly FIT for CRC screening
7. At age 50, following an unremarkable colonoscopy the next colonoscopy is recommended in 5 years
8. FIT can still be utilized in patients with known hemorrhoids
9. For patients that do not want colonoscopy, barium enema should be recommended by primary care providers
10. African Americans are recommended to have CRC screening at an earlier age than other ethnicities

Appendix I

Pre- and Post-Survey Evaluation



**Appendix J**

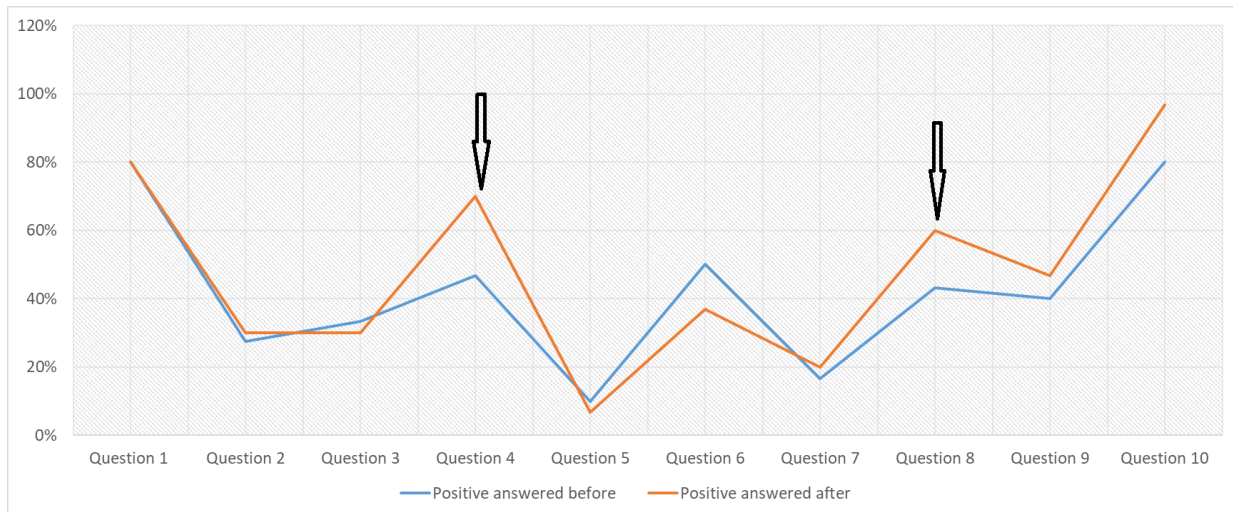
**Pre- and Post-Questionnaire Responses**

McNemar’s Statistical Test

Question 4  $p < 0.01$  and Question 8  $p = 0.06$

Variable N=30	Positive answer before	Positive answer after	P value in McNemar
Question 1	80.0%	80.0%	1.00
Question 2	27.6%	30.0%	0.10
Question 3	33.3%	30.0%	0.10
Question 4	46.7%	70.0%	0.01
Question 5	10.0%	6.70%	1.00
Question 6	50.0%	37.0%	0.20
Question 7	16.7%	20.0%	0.10
Question 8	43.3%	60.0%	0.06
Question 9	40.0%	46.7%	0.50
Question 10	80.0%	96.7%	1.00

The arrow indications the effect of the symposium on the answer to Question 4 and, to some extent, Question 8.



## Appendix K

### GANTT Chart

GANNT CHART	2017			2018								
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Completed Stages of DNP Project in Relation with the DNP Course Work												
Project Stage I: a. Develop Proposal, Identify the Data Needs, b. Literature Review c. Gap Analysis, Contact the Key Players, Complete EBP w/Appraisal NURS 793 Practicum IV NURS 765 Practice Management NURS 754 Policy and Ethics												
Project Stage II: a. Data Collection b. Quality Control Review of Data c. Data Analysis d. Summarize the Findings from the Data Analysis NURS 794 Practicum NURS 749 Qualifying Course												
Project Stage III: a. Draft the Project Report Paper and Get Input b. Finalize the Paper for Submission NURS 795 DNP Residency NURS 789 DNP Project Submission Requirement												

**Appendix L**

**SWOT Analysis**

<p><b>STRENGTH</b></p> <ul style="list-style-type: none"> <li>➤ IMPROVED EFFICIENCY AND CONSISTENCY</li> <li>➤ COST/RESOURCE SAVINGS</li> </ul>	<p><b>WEAKNESS</b></p> <ul style="list-style-type: none"> <li>➤ HURDLES AND DELAYS IN GETTING APPROVAL AND IMPLEMENTING THE CHANGES WITHIN A LARGE MULTI-LAYERED INSTITUTION</li> </ul>
<p><b>OPPORTUNITY</b></p> <ul style="list-style-type: none"> <li>➤ ENSURES UTILIZATION OF MOST CURRENT CLINICAL GUIDELINES</li> <li>➤ TO MEET PROFESSIONAL HEALTH CARE PROVIDERS' EDUCATIONAL NEEDS</li> <li>➤ PROVIDE CONSISTENCY IN PRACTICE</li> </ul>	<p><b>THREAT</b></p> <ul style="list-style-type: none"> <li>➤ ACTIVE AND PASSIVE RESISTANCE TO CHANGE BY PRIMARY CARE PROVIDERS</li> </ul>

## Appendix M

### FIT Change Initiative Work Breakdown Structure

#### OUTLINE VIEW

1. FIT Overutilization
  - 1.1 Initiation
    - 1.1.1 Develop Project Charter/Vision
    - 1.1.2 *Deliverable*: Submit Project Charter
    - 1.1.3 Project Sponsor Reviews Project Charter
    - 1.1.4 Project Charter Signed/Approved
  - 1.2 Planning
    - 1.2.1 Create Preliminary Plan including reviewing literatures
    - 1.2.2 Review Preliminary Plan with academic supervisor and field supervisor; meet with the data practice manager
    - 1.2.3 Develop and Submit Final Project Plan
    - 1.2.4 *Milestone*: Project Plan Approval
  - 1.3 Execution/Implementation
    - 1.3.1 Capture Baseline Data
    - 1.3.2 Intervention by preparing for the 2018 CRC symposium; pre and post presentation knowledge assessment survey
    - 1.3.3 Train Providers by laminating the 2017 CRC guidelines; reaching out to all sites by sending thank you emails and attaching the guidelines, and responding to questions as they arise.
  - 1.4 Control
    - 1.4.1 Project Management: Compare three-month post intervention (symposium, email, and sending out the laminated guidelines) to pre-intervention
    - 1.4.2 Project Status Meetings
  - 1.5 Closeout
    - 1.5.1 Capture Post-Change data
    - 1.5.2 Data Analysis and Report Summary; Lessons Learned; Develop Report Summary and Share with Supervisor



**Appendix N****DNP Statement of Non-Research Determination Form****Student Name:** Neda Afshar**Title of Project:** Colorectal Cancer Screening in Veterans Affairs Sacramento**Brief Description of Project:**

FIT-Practice Change Initiative

There are multiple ways to conduct colorectal cancer (CRC) screening. The most frequently used methods are colonoscopy and fecal immunochemical assay testing (FIT). Colonoscopy is the gold standard but is expensive and is recommended once every 10 years for those over 50; African Americans begin screening at 45. If no polyps are found on the screening colonoscopy, recommendations are to repeat the screening in 10 years. Otherwise, depending on the number, location, and type of polyps found in the procedure, the patient will enter a surveillance algorithm (Rex, et al., 2017).

If a patient or provider prefers to utilize the FIT then annual testing is recommended. If blood was detected in the stool sample, then the FIT is positive. The patient must be offered a colonoscopy to determine the reason for positive result. Over or inappropriate utilization of FIT can occur when the patient is either in the post-colonoscopy surveillance period or after an unremarkable colonoscopy. This overutilization or inappropriate utilization of FIT results in wasted resources. Change can be obtainable by educational interventions with primary care providers, such as the annual CRC Symposiums, followed by and emails with electronic copies of the guidelines. This effort, once fully understood and adopted by primary care providers, can

save hundreds of thousands of dollars for the Veterans Affairs Health System (VAHS).

**A) Aim Statement:**

By June 2018, FIT overutilization will be decreased from the current average of 28% to 20% at the VA Sacramento, by annual colorectal cancer symposium and routine training of referring providers in current colorectal cancer screening guidelines.

**B) Description of Intervention:**

During the 2018 annual colorectal cancer symposium, present the 2017 CRC guidelines to attendees. Conduct a pre and post survey to assess the symposium's participants' knowledge of current CRC guidelines. Use Northern California Veterans Affairs Health Care System (NCVAHCS) directory to email a thank you note along with an electronic copy of the guideline to providers who routinely order FIT. Provide and snail mail laminated guidelines to all sites in NCVAHCS. Work with practice site managers in NCVAHCS to support further educational needs such as sending more laminated guidelines, and providing clarifications on 2017 guidelines via phone or email.

**C) How will this intervention change practice?**

This practice change initiative will create consistency among providers in following evidence-based practice guidelines. This uniformity in practice will reduce ordering inappropriate FITs and will result in significant cost savings.

**Outcome measurements:**

Direct measures:

1. The number of appropriate FITs before and after March 3, 2018, VA Sacramento Colorectal Cancer Symposium.

2. Decrease in inappropriate FIT use from the baseline of 28% to 20% by July 1, 2018.
3. Increase the knowledge of participants who attended the 2018 CRC Symposium.

#### References

Rex, K. D., Boland, R., Dominitz, A. J., Giardiello, M. F., Johnson, A. D., Kaltenbacch, T., ... Robertson, J. D. (2017). Colorectal cancer screening: Recommendations for physicians and patients from the U.S. multi-society task force on colorectal cancer. *Gastrointestinal Endoscopy*, 86(1), 18-33. doi:10.1016/j.gie.2017.04.003

To qualify as an Evidence-based Change in Practice Project, rather than a Research Project, the criteria outlined in federal guidelines will be used:

<http://answers.hhs.gov/ohrp/categories/1569>

This project meets the guidelines for an Evidence-based Change in Practice Project as outlined in the Project Checklist (attached). Student may proceed with implementation.

This project involves research with human subjects and must be submitted for IRB approval before project activity can commence.

**Appendix O**  
**Agency Approval**

VA Medical Center  
10535 Hospital Way, Mather, CA 95655  
Center for Rehabilitation & Extended Care (CREC)  
150 Muir Road, Martinez, CA 94553  
VA Outpatient Clinics:  
2221 Martin Luther King, Jr. Way, Oakland, CA 94612  
150 Muir Road, Martinez, CA 94553  
Building 201, Walnut Avenue, Mare Island, CA 94592  
103 Bodin Circle, Bldg. 778, Travis AFB, CA 94535



VA Outpatient Clinics (cont.):  
280 Cohasset Road, Chico, CA 95926  
5342 Dudley Avenue, McClellan, CA 95652  
351 Hartnell Avenue, Redding, CA 96002  
Mental Health Clinics:  
2505 West 14<sup>th</sup> Street, Oakland, CA 94607  
10633 Grissom Avenue, Mather, CA 95655  
Telephone Care: 1-800-382-8387  
Website: "www.northern-california.med.va.gov"

**Department Of Veterans Affairs**  
**VA Northern California Health Care System (VANCHCS)**  
**10535 Hospital Way, Mather, CA 95655**

March 20, 2018

In Reply Refer To: Neda Afshar

Dear Sir or Madam,

This is a letter of support for Neda Afshar to implement her DNP Comprehensive Project at the Sacramento VA Medical Center (VANCHCS), through the Division of Gastroenterology. Neda Afshar will use the name of our institution in her DNP Comprehensive Project Paper and in future presentations and publications in accordance and consistent with VA policies.

Sincerely,

**Andrew W. Yen, MD, FACP, FASGE**  
Associate Chief of Gastroenterology  
Sacramento VA Medical Center,  
VA Northern California Health Care System (VANCHCS)  
Assistant Clinical Professor of Medicine  
University of California Davis School of Medicine  
andrew.yen3@va.gov

**Appendix P**

**Material and Labor Expenses**

COST AVOIDANCE/BENEFIT ANALYSIS & RETURN ON INVESTMENT(ROI) VA SACRAMENTO				
ASSUMED MATERIAL EXPENSES				
EXPENSE	MONTHLY	ANNUAL	TOTAL	
BUSINESS ROOM /OFFICE (RENT)	\$0.00	\$0.00	\$0.00	
UTILITIES	\$0.00	\$0.00	\$0.00	
OFFICE SUPPLIES	\$100.00	\$0.00	\$0.00	
POSTAGE & LAMINATION	ONE TIME FEE	ONE TIME FEE	\$3 PER PROVIDER	
ASSUMED LABOR EXPENSES				
PERSONAL	HOURS	WAGE	TOTAL	
This author's time (collecting data, analysis, attending meeting, writing proposal, intervention)	400 hours	\$70.00/hour	\$28,000.00	
Medical assistant	40 hours	\$17.00/hour	\$680.00	
Data manager	40 hours	\$30.00/hour	\$1200.00	
ASSUMED PROJECTED COST AVOIDANCE-CATEGORY I PRIMARY CARE PROVIDER (MD, NP)				
PERSONAL	HOURS/WEEK	WAGE/60MIN	WAGE/15 MIN (Income lost per inappropriate ordering FIT)	
a. MD	5days/week (40 hours/week)	\$100.00	\$25.00	
b. NP	5days/week (40 hours/week)	\$65.00	\$16.25	
c. Lab technician	5days/week	\$25.00	\$6.25	
d. FIT KIT VALUE/PER PERSON = \$20.00				
TOTAL SUM COST AVOIDANCE: a+ c+ d				\$51.25
TOTAL SUM COST AVOIDANCE: b+ c+ d				\$42.75

**Appendix Q**

**Profit and Loss**

COST AVOIDANCE/BENEFIT ANALYSIS & RETURN ON INVESTMENT(ROI)				
LOCAL & NATIONAL				
LOSS & PROFIT				
COSTS	PROGRAM IMPLEMENTATION START UP	+FIT	COST OF OVERUTILIZATION FIT PER PRIMARY CARE (MD, NP)	+FIT Avoidable cost for 400 patients (VISN 21)
PROJECT COSTS (MATERIAL & LABOR)	\$29,880	400/800 Patients		
MD			\$51.25	\$20,500
NP			\$42.75	\$17,100
PROPOSED IMPLEMENTATION TIME (GANTT)	MAY 2017-JUNE 2018			
POTENTIAL COST AVOIDANCE FOR THE FIRST YEAR AFTER COST OF THE START UP DEDUCTED				\$7,720* /PER PROVIDER
POTENTIAL COST AVOIDANCE FOR THE THIRD YEAR AFTER COST OF THE START UP DEDUCTED				\$112,800**/PER PROVIDER
16,327 x \$51.25 (a+c+d)/ PER FIT= \$ 832,677 (TOTAL COST OF INAPPROPRIATE FIT) 8% REDUCTION OF \$832,677 (TOTAL COST OF INAPPROPRIATE FIT) = \$ 66,614				TOTAL COST AVOIDANCE= \$66,614

(Above calculations based on the VISN 21 data from 2014)

\*VISN 21 Potential cost avoidance (year 1) \$29,880- (\$20,500+ \$17,100) = \$7,720

\*\* VISN 21 potential cost avoidance (year 3) (\$20,500+ \$17,100) X3= \$112,800

**Appendix R**

**Communication Plan Matrix**

Individuals	Frequency	Route
Academic Advisor /Chair Dr. Maxworthy	At least once a week	Email, Zoom meetings, Phone calls, and text messaging
Field Advisor I. Chief of Gastroenterology Dr. Leung	Bimonthly	Face-to-face meetings and emails
Field Advisor II. Assistant Chief of Gastroenterology Dr. Yen	Bimonthly	Face-to-face meetings and emails
Data Practice Manager VISN 21	As needed	Face-to-face meetings, email, and text messaging
Primary Care Chief and Director of VANCHS Dr. Lorrie Strohecker	Twice	Email and face-to-face
Primary Care Nurse Manager	Four times	Email and face-to-face
VA Laboratory staff	Four times	Email and face-to-face

**Appendix S**

**Post Second Intervention Result**

FY18 For March, April, May					
Total Fit Ordered (+/-)	Inappropriate Fit Ordered (+/-)	Duplicates	Inappropriate Fit Fit Ordered (+/-)	Percent of Total Inappropriate FIT Orders removing Duplicates	Percent of Total Inappropriate FIT Orders
5649	988	145	1133	17%	20%



## Appendix T

### Letter to Participants – Second Intervention

Re: Thank you for attending the IX Colorectal Cancer Symposium March 3, 2018

Hello,

It was nice seeing familiar faces during our annual Colorectal Cancer Symposium here at the VA Mather. By the way, March is also Colorectal Cancer Awareness month! As we have done previously, we hosted presenters from UCLA and UCD in the Gastroenterology field with the goal of providing new information to participants. This year, our program discussed new findings in colorectal cancer (CRC) screening and the new USMSTF (2017) guidelines on CRC screening.

Because of the interest in this topic, please find attached the new (2017) USMSTF guidelines, along with exclusion criteria for FIT testing. Should you have any questions please feel free contact Neda Afshar email: [neda.afshar@va.gov](mailto:neda.afshar@va.gov)

As always, we welcome your feedback on the Symposium and any topic suggestions for next year. Your feedback will allow us to improve our practice and serve our veterans better.

Please mark your calendars for the 2019 March Symposium.

Again, thank you for your participation and feedback!

Regards,

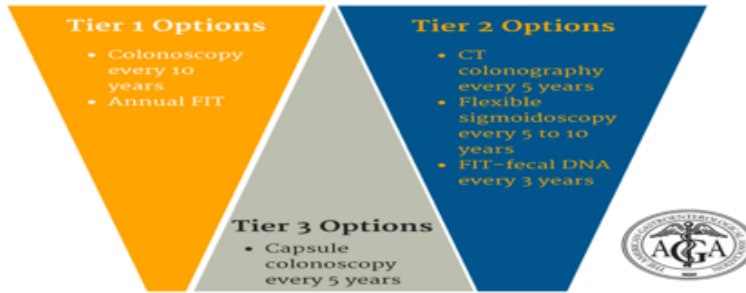
Neda Afshar FNP-C MSN CGRN  
Gastroenterology Nurse Practitioner -VA Mather  
Board Certified Family Nurse Practitioner

Appendix U

Letter to Participants – Summary of 2017 Guidelines

**New Ranking of Colorectal Cancer Screening Tests**

An update from the U.S. Multi-Society Task Force on Colorectal Cancer



**Average vs. Non Average Risk Population and use of FIT:**

FIT should be ordered for average risk populations, meaning age 50-75.

FIT should NOT be ordered in patients with any of the following:

- GI bleeding
- perianal symptoms
- alteration in bowel habit
- recent onset of abdominal pain
- previous colorectal cancer or polyps
- prior resection of any part of colon
- iron-deficiency anemia (low ferritin)
- coexisting visceral cancer
- individuals who had undergone unremarkable colonoscopy within 10 years
- unremarkable sigmoidoscopy, or double-contrast barium enema, or CT colonography within the preceding 5 years
- a positive fecal immunochemical test (FIT) within preceding one year
- individuals with diagnosed inflammatory bowel disease (IBD), familial adenomatous polyposis (FAP) or hereditary nonpolyposis colon cancer
- more than one first-degree relative with colorectal cancer or any first-degree relative with colorectal cancer before the age of 50 years

**\*The above conditions exclude a patient from average risk colorectal cancer screening and should be considered for diagnostic testing \*|**