Colorectal Cancer Screening: A Standardized Performance Assessment Laboratory Approach

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Abstract

Colorectal cancer is a prominent and difficult disease that greatly impacts public health. The disease affects both men and women, and risk of developing colorectal cancer increases with age. Screening is effective in identifying colorectal cancer, and this type of cancer is highly treatable when detected early in the disease course. Although screening is life-saving, there are still members of the public that do not get screened. A primary barrier to colorectal cancer screening is a lack of physician knowledge regarding screening options and a lack of physician recommendation to be screened in general. This project was created to bring awareness to physicians and impact colorectal cancer screening recommendations in the primary care setting by educating and enabling health care providers through a simulation encounter within a Standardized Performance Assessment Laboratory. This style of education immerses the learner in a simulated scenario, and has been demonstrated to increase retention and produce behavioral change more effectively than generic lecture-style interaction. Participants worked though a simulated case scenario and completed a pre-workshop test, post-workshop test, and self-reflective learning evaluation. Results from the project indicated that the participants enjoyed the experience, learned new information from their involvement, and intended to make positive changes in their current practice. Simulation-based learning was effective and well-received, and is a useful, underutilized tool for physician education.

Colorectal Cancer Screening: A Standardized Performance Assessment Laboratory Approach

Colorectal cancer (CRC) is an important and complicated public health concern. CRC is health condition in which a tumor or abnormal growth originates on the inner lining of the colon or intestinal tract and, over the course of several years, becomes a cancerous lesion (American Cancer Society [ACS], 2017a). Most CRC cases begin with a non-malignant, or non-cancerous, growth called a polyp. Polyps are very common in adults, with 30 – 50% being diagnosed with at least one in their lifetime (Doubeni, 2015). However, not all polyps become cancerous, and there are countless factors that can lead to the transition from non-malignancy to cancer.

CRC is a cancer that develops largely due to external factors rather than genetic influence. Only three to five percent of CRC cases can be directly linked to an inherited condition, up to 30% are linked to genetics mediated by environmental factors, and the remaining 65% are linked solely to environmental and lifestyle factors (Burt, 2007). Behaviors such as nutrition intake (e.g. diets with low fruit or vegetable and high fat or red meat content), smoking, alcohol use, and lack of physical activity are all associated with an increased risk for CRC (Potter, 1996). Unfortunately, these factors interact with one another and there is not a single factor that consistently results in the development of CRC, making this type of cancer difficult to prevent and identify.

CRC is a wide-spread, national health issue. CRC is the third most commonly diagnosed cancer among males and females of all ages in the United States (Siegel et al., 2014). The prevalence of CRC is estimated at 1,318,000 (National Cancer Institute, 2014). Men, in general, and African American women are at the greatest risk for CRC (Mostafa et al., 2004). The incidence rate of United States males and females of all races is 46.9 and 35.6 out of 100,000,

respectively; and the highest priority race is African American, with incidence rates at 58.3 for males and 42.7 for females (ACS, 2017b). The risk for CRC increases with age, and it is the most prominent form of cancer in individuals over age 75 (Boyle & Leon, 2002). However, there is increasing incidence in individuals between 40 – 50 years of age and the proportion of these early-onset cases has increased from six percent of all CRC cases in 1990 to 11% in 2013 (ACS, 2017b).

CRC is the second leading cause of cancer deaths in men and the third leading cause of cancer deaths in women (ACS, 2017b). The mortality rate for all races is 17.7 and 12.4 out of 100,000 for males and females, respectively. CRC can be prevented by identifying colorectal polyps before they become cancer; and the mortality rate for CRC has been steadily decreasing over the past 10 years (ACS, 2016a). Early detection and removal of polyps is the single most-effective method for preventing CRC.

Literature Review

Given the evidence that (1) CRC develops over a lifetime of lifestyle choices, (2) CRC is difficult to prevent due to the multitude of factors that contribute to its development, and (3) it can be detected early by identifying polyps when they first start to grow, it is important that methods for CRC screening are available to find and eliminate polyps before they become malignant. The good news is that a variety of screening methods are indeed available, and many of them are highly effective in decreasing morbidity and mortality from CRC (Siegel et al., 2016).

Screening Options

There are a variety of CRC screening tests currently available, with some of the most common options being the fecal occult blood test (FOBT), fecal immunochemical test (FIT),

CT colonography, and colonoscopy (Lin et al., 2016). A primary difference between the tests is that some are able to identify both pre-cancerous and cancerous conditions, while others are only able to identify cancerous conditions (ACS, 2017c). These tests vary significantly in invasiveness, convenience, adherence, and sensitivity; and all of these factors must be carefully considered by providers when discussing which screening options are best for each patient.

The gold standard for colorectal screening is a colonoscopy (Zauber et al., 2008). During a colonoscopy, a colonoscope, a thin, scoped tube, is inserted through the anus to view the inside of the colon and look for abnormalities (ACS, 2017c). A colonoscopy can detect both cancerous and pre-cancerous lesions. It also allows health care providers to intervene before cancer is formed by passing instruments though the colonoscope to perform a biopsy or polypectomy if pre-cancerous conditions are identified.

There is hesitation from patients to receive colonoscopies, due in part to the prep that is required to clean out the colon and the risk for serious injury in the case of the colonoscope puncturing a digestive wall (ACS, 2017c). Colonoscopies are the preferred CRC screening method because the procedure can actually prevent cancer from developing rather than only identifying it after it has occurred. However, colonoscopies have lower rates of adherence to the prescribed screening schedule than other less invasive tests; and therefore, it is important that other options are also available (Quintero et al., 2012).

Another screening option that is similar to a colonoscopy is a computed tomographic (CT) colonography. It is similar in that it can detect both cancerous and pre-cancerous conditions; however, it is different because it is largely a non-invasive procedure (ACS, 2017c). A CT colonography is a scan that takes multiple x-rays of the colon in order to create a three-dimensional image of the inside; and to do this, the colon must be clean, and a small tube is

placed in the anus before the scan to fill the colon with air and allow for a good image to be developed (Levine & Yee, 2014). There is also a small risk for injury by a CT colonography that is due to exposure to radiation during imaging and potential complications with the air that is used to inflate the colon.

A CT colonography is only recommended for average-risk individuals (Atkin et al., 2013). This is because there is no possibility to intervene during the procedure if an abnormality is identified; resulting in the patient still requiring a colonoscopy or surgery to explore or treat any problem areas. This causes increased medical costs due to subsequent referrals for colonoscopies and a greater burden on patients, especially if they are already at a high risk for CRC (Atkin et al., 2013).

Recent developments in CRC screening resources have made way for at-home tests that increase convenience and privacy for the patient. The two most common at-home options are the FIT and FOBT (ACS, 2017c). The patient collects samples from three consecutive bowel movements and smears them each on their own portion of a card to be sent back to the physician's office; the office analyzes the samples using a guaiac-based test for the FOBT or an immunochemical test for the FIT.

Both of these tests detect blood in the stool, which is likely caused by a polyp or CRC, but could also occur under other circumstances (ACS, 2017c). This means that, if blood is found, a follow-up colonoscopy will be required for further investigation. Both the FIT and FOBT have better adherence to the recommended screening schedule than the colonoscopy and are effective in their purpose; but FIT has shown to be better at detecting abnormalities and has fewer false negatives than the FOBT (Mousavinezhad et al., 2016).

It is difficult to name a single best screening measure for CRC; and it is recommended

that a combination of methods be used for the most effective identification and prevention (Pignone et al., 2002). Because CRC develops due to a variety of factors and can be diagnosed during a range of ages, there is not a single screening recommendation that fits every individual (Knudsen et al., 2016). CRC screening should begin no later than age 50 for average-risk individuals and as early as age 40 for high-risk individuals; and FIT or FOBT should be conducted on an annual basis, colonography on a five-year schedule, and colonoscopy on a 10-year schedule (Smith et al., 2013). Screening per these established recommendations has the capability to decrease the risk of morbidity and mortality from CRC by up to 75% (Eddy, 1990).

Despite the demonstrated need for regular CRC screening by the age of 50, only 50% of at-risk individuals are appropriately screened (ACS, 2014). A prominent public health goal of the National Colorectal Cancer Roundtable (NCCRT), an organization founded by the ACS and the Centers for Disease Control and Prevention (CDC), is to increase CRC screening rates to 80% by 2018 (Simon, 2014). The NCCRT identifies a variety of barriers to screening, with the most prominent being lack of patient education, lack of health insurance, lack of physician recommendation, and lack of CRC screening knowledge and programming in the primary care setting (Guessous et al., 2010).

Barriers to Screening

Many of the barriers to CRC screening fall in either a patient-centered category (e.g. lack of patient education or health insurance) or a provider-centered category (e.g. lack of physician recommendation or knowledge in the primary care setting). Both of these categories can impact screening rates and are important to consider when designing interventions aimed to increase CRC screening participation.

Primary barriers reported by patients that do not participate in screening are the fear of injury during colonoscopy, unwillingness to complete the bowl preparation, and lack of knowledge of other screening options (Jones et al., 2010). Additionally, patients generally perceive themselves as healthy and are unaware of their risk for CRC (Wee et al., 2005). Patient education aimed to raise awareness regarding colonoscopy risks, benefits, and other screening options resulted in increased participation in CRC screening (Davis et al., 2001). Furthermore, bringing awareness to patient risk, by methods such as completion of a risk analysis with a health care provider, increases screening participation and adherence to the recommended screening schedule (Atkinson et al., 2015). Many effective programs have been designed to address barriers due to patient knowledge; but it is not enough by itself to bring screening participation to the desired level.

Colonoscopies and other screening modalities can be pricey. This is an important barrier to CRC screening, especially for low-income populations or individuals without health insurance. The expansion of preventative care in state Medicare and Medicaid programs due to the Affordable Care Act resulted in an increase in CRC screening practices, illustrating the importance of coverage by public insurance (Joseph et al., 2012). Additionally, research interventions aimed to reduce financial barriers to CRC screening, such as providing gas money or sharing the cost of the procedure, resulted in increased participation by low-income patients (Boehm et al., 2015). Financial decisions surrounding screening, such as whether or not insurance will even cover screening, the frequency of screening or types of tests covered by insurance, and implementation of income-based screening costs are tough to navigate and require cooperation from a variety of stakeholders; making this barrier time consuming and difficult to address (ACS, 2016b).

Another important barrier to CRC screening is a lack of physician recommendation to be screened. This is an important barrier because patients are largely unaware of their risk for the disease, and a lack of recommendation from a provider is cited as the primary reason for failure to be screened (Klabunde et al., 2005). When providers do make a screening recommendation, many solely recommend a colonoscopy; and certain patients are less likely to pursue a colonoscopy if they are over 65 years of age, perceive themselves as healthy, or do not have a family history of CRC (Wong et al., 2010).

It is important that physicians are able to offer alternate screening options that fit the individual patient's needs and assumptions. When a patient is hesitant to receive a colonoscopy, but participates in a FIT/ FOBT test and receives a positive result, they are then more aware of their risk and less hesitant to participate in the colonoscopy (Bobridge et al., 2014). By being able to offer multiple options for CRC screening, providers can connect with more individuals and increase adherence to screening recommendations in their service population.

A patient's most common interaction with a health care provider is in a primary care setting, but primary care providers commonly report lack of knowledge and lack of resources as a prominent barrier to patient screening (O'Malley et al., 2004). In addition to the need for increased physician knowledge, many primary care practices largely lack a standardized screening program that targets CRC screening in at-risk patients, such as regular reminders and outreach to patients or goals for screening referrals by providers (National Cancer Institute, 2003). The implementation of screening programs in primary care have a significant impact on actual screening outcomes, such as increased referrals for screening, increased patient completion of screening orders, and decreased timeframe from screening referral to completion of screening (Ouzounian, 2016).

Countless strategies have been used to attempt to overcome these barriers; but they still persist today. Therefore, something different and novel needs to be attempted. Comparison of outcomes of patient-centered interventions and provider-centered interventions reveal that efforts to increase provider capabilities were more effective at increasing screening rates than education directed towards patients (Verma et al., 2015). Prevention of CRC is multi-faceted and difficult; however, in order to do the most good in the shortest amount of time while reaching the maximum number of individuals, priority should be given to improving physician-based methods of increasing CRC screening rates in the primary care setting.

Education of Physicians

There are unlimited ways that one could go about improving provider knowledge and increasing physician recommendation for CRC screening. However, it is important to understand adult learning principles and incorporate them into provider education. Passive educational methods, such as didactic lecturing, are being phased out in adult learning due to the increased effectiveness of innovative, active-learning styles such as role playing and hands-on, practice-based learning (BBC Active, 2010).

An emerging format for health care education is simulation-based learning in a scenario such as a standardized performance assessment laboratory (SPAL). A SPAL provides a controlled educational environment in which the learner is able to interact with a real human individual, also knows as a *standardized patient* (SP), in a simulation exercise (Miller, 1990). During a SPAL, the learner approaches the situation with only a patient chart, and they are left to obtain the remaining information need to make a diagnosis from the SP by asking appropriate questions during the visit. SPs are trained to offer specific responses to certain questions and are given a script to help guide the encounter.

The use of a SPAL encounter in health care education increases integration of information by utilizing practice-based learning to work through a particular case scenario with the SP. A variety of evaluation methods are executed by different stakeholders in the process, including one's self, at least one peer or other specialized professional that observes the encounter, and the SP, resulting in more effective provider understanding of the educational content (Gibbons, 2002).

Providers that go through SPAL training are more likely to understand and implement changes related to specified guidelines in their practice than providers that undergo the same educational content in a lecture-style encounter (Okuda, 2009). Role playing and simulation has revolutionized the realm of medical education because it requires the individual to engage in progressive decision-making rather than respond to a set of pre-determined stimuli (Ziv et al., 2006).

Despite their demonstrated effectiveness in influencing performance of health care providers, there is a lack of utilization of SPAL scenarios in the realm of increasing cancer screening. Given the evidence that a gap exists in physician knowledge related to CRC screening, a capstone project was developed to educate practicing physicians and current medical students through a SPAL encounter. This project allowed for the exploration of a novel approach to provider education aimed to promote appropriate CRC screening practices in the primary care setting. The learning objectives for this educational activity were to (1) review risk factors, signs, and symptoms of colorectal cancer; (2) describe importance of accurate patient history in early detection of colorectal cancer; (3) identify individuals at high-risk for colorectal cancer; (4) recommend appropriate colorectal cancer screening options; and (5) refer to a GI specialist when necessary.

Methods

This project was partially funded by a grant from the Iowa Department of Public Health (IDPH) that aimed to address CRC screening rates in Iowa, and the remainder of the funding was provided by Des Moines University Continuing Medical Education. The SPAL workshop was held on two separate dates for three hours each and had a different group of participants at each activity. Both workshops were held at the Iowa Simulation Center at Des Moines University in Des Moines, IA.

Participants

There were 22 participants in this program: two doctors of osteopathic medicine, one physician assistant, one nurse, one doctor of podiatric medicine student, five physician assistant students, and 12 doctor of osteopathic medicine students. The participants were students of Des Moines University and health care professionals from the central Iowa area that indicated they specialized or were interested in specializing in family medicine. Medical students were the primary target audience for the first activity held on April 17, 2017, and health care providers were the primary target audience for the activity held on May 6, 2017; however, one osteopathic medical student participated in the second activity due to a scheduling conflict. There were 17 participants on April 17 and five participants on May 6.

The activities were promoted using connections through IDPH, Des Moines University, and the Iowa Medical Society; and the promotion for each workshop began approximately six weeks in advance of the scheduled activity date. The primary format of promotion was electronic communication, including internet and social media posts, as well as emails to established distribution lists; a post card campaign was sent to a Des Moines University mailing list as well (see Appendix A for promotional materials). The goal of the recruitment was to establish an even

number of participants in order to allow the group to be split into pairs during the workshop activities. However, the group ended up with an odd number of participants for both activities and the Director of Continuing Medical Education at Des Moines University filled in to allow participation by all interested individuals.

Procedures

Several steps were taken prior to the SPAL workshops to prepare for the activities. This preparation included writing two CRC case scenarios and having them reviewed and approved by a medical professional (see Appendix B for the case scenarios), creating mock provider charts that corresponded with the written cases (see Appendix C for the mock provider charts), creating promotional items for each activity, and recruiting participants. Additionally, items relating to the execution of the activity were facilitated, such as scheduling of the workshops, ordering catering, and other logistical aspects of putting on an educational event.

The content and execution of the SPAL encounters was identical for both activities; and there were two SPAL cases presented per workshop. To allow participants to gain insights from the patient-perspective, participants played the role of both the patient and the provider rather than utilizing SPs to play the patient role. The promotional materials requested that individuals register no later than two weeks prior to the activity so that participants for each date could be divided into two groups. One group served as “patient one” and participated as the simulated patient during the first SPAL case; the second group served as “patient two” and participated as the simulated patient during the second SPAL case. Both participant groups played the role of the simulated health care provider for the case that they did not participate as the simulated patient.

In order to allow for preparation and standardized responses from the participants, the

assigned patient case scenario scripts were distributed to each group approximately one week prior to the activity. The participants were notified during the registration process that they would receive their patient scripts via email and should fully review the content before they arrived to the workshop.

At the workshop, participants were welcomed and completed a pre-workshop questionnaire before any discussion was initiated (see Appendix C for the pre-workshop questionnaire). Each workshop began with a 45-minute presentation by a practicing CRC expert regarding the background and demographics of CRC, screening importance and barriers, screening options, and resources for providers. Next, participants were split into their two groups (i.e. “patient one” and “patient two”) and assigned a partner from the opposite group.

The participants were then directed to the SPAL encounter rooms; the simulated patient was allowed to enter the room, while the simulated provider waited in the hallway. Instructions were given over an intercom that each case would last approximately 20 minutes and a warning was given when only five minutes remained. The simulated provider was instructed to enter the room and begin working through the case. After completion of the first case, the simulated patients left the room to begin their provider role and the same procedure was used for the second case.

Upon completion of the case scenarios, a 45-minute debrief discussion was held to highlight important differential diagnostic techniques and best-practices, provide feedback between partners regarding performance aspects such as behaviors and communication techniques, discuss insights gained from the patient-perspective, and share ideas between participants. The discussion was facilitated by the guest speaker and provoked dialogue such as having difficult conversations and helping patients that are without sufficient insurance. At the

close of the workshop, a post-activity questionnaire was administered to participants in conjunction with a self-reflective learning evaluation (see Appendix D and E for the post-workshop questionnaire and self-reflective learning evaluation, respectively). Completion of the post-workshop documents concluded the individual's participation in the activity.

Measures

The pre- and post-workshop questionnaires served as the primary units of analysis for this program. The pre-workshop questionnaire was composed of five close-ended questions, with three intended to assess current knowledge of CRC statistics (e.g. *colorectal cancer is the ____ leading cause of cancer-related mortality in men*), one to assess knowledge of screening guidelines (e.g. *which of the following is a recommended CRC screening test?*), and one to assess knowledge of screening barriers (e.g. *which of the follow is NOT considered a barrier to CRC screening?*). Additionally, participants were asked through a final open-ended question to list all of the CRC screening resources that they were aware of.

In addition to the statistically analyzed questions, there were also bonus questions added to the pre-workshop questionnaire that were intended to collect insights on current practices in primary care. The items were presented to health care providers, who were asked two additional close-ended questions regarding their current practices related to taking patient history (e.g. *what percentage of the time do you inquire regarding CRC screening in patients over 50 years of age?*) and availability of screening resources in their office setting (e.g. *what methods does your office use to ensure patients are reminded they are due for screening?*). These two questions were slightly rephrased on the providers' post-workshop questionnaire, asking participants how frequently they plan to inquire regarding CRC screening in patients over 50 years of age and what methods they learned of at the workshop that can be incorporated into a screening program

at their office.

After completion of the post-workshop questionnaire, all participants completed a self-reflective learning evaluation. One goal of the evaluation was to assess self-reported changes in knowledge (i.e. facts and information acquired by a person through experience or education), competence (i.e. having the ability to apply knowledge, skills, or judgment in practice if called upon to do so), performance (i.e. what the participant actually does in practice), patient outcomes (i.e. actual anticipated outcomes in individual patients and/or patient populations), and community outcomes (changes in population health status). This information was asked in a single question and participants were directed to select the responses that applied to their own personal changes that came as a result of their participation in the activity.

Another goal of the evaluation was to identify the extent to which the activity met the prescribed learning objectives. Analysis of this measure is useful in evaluating the workshop to identify if changes need to be made to the educational methods and/or content for future activities. This question was asked as a single matrix and participants selected one of the following five responses for their perception of each learning objective: completely, mostly, partially, minimally, or not at all.

The participants were also guided to reflect on their experience using open-ended questions related to educational take-aways from the workshop (e.g. *please describe any pearls or take-away messages*), planned changes in their performance (e.g. *please describe any changes in the care of your [future] patients that you plan to make as a results of attending this educational activity*), barriers in implementing any changes they would like to make in their practice or future practice (e.g. *what barriers do you perceive in implementing your identified changes?*), and any additional comments they would like to share. These items were primarily

asked to help participants reinforce take-aways from the activity, facilitate participants in working through the barriers they may encounter during practice, and provide insights to the planning committee.

Analytic Strategy

Data obtained from the workshop questionnaires and the self-reflective learning evaluation were organized and analyzed based on the date of the workshop. The responses from the April 17 group of participants were analyzed together, and all May 6 responses were analyzed together. Analysis was done in this fashion, rather than grouping by students and health care professionals, due to grant reporting requirements that requested summary data for each activity.

It was expected that participants would have an increase in correct responses and be able to list a greater number of screening resources on the post-workshop questionnaire due to their participation in the training. If there was no improvement as a result of the workshop, it was expected that the statistics would remain the same between the pre- and post-workshop questionnaires; therefore, the data from the pre-workshop questionnaire was used as the null hypothesis for post-workshop analysis.

Five of the close-ended questions on the pre- and post-workshop questionnaires had a correct answer. To evaluate whether the participants experienced an actual change in knowledge due to their participation in the workshop, the percentage of correct responses pre- and post-workshop was calculated and compared within each group for each of these items (a summary can be found in Table 1 and Appendix F). The final item on the questionnaire, which directed participants to list the screening resources they were aware of, was designed to assess any change in knowledge regarding CRC screening options pre- and post-workshop. The average number of

listed resources was calculated and can also be found in Table 1 and Appendix F, and statistical analysis was performed to identify the variance and standard deviation for each mean. The pre-workshop baseline average of each group was used to complete a paired-sample *t*-test, which was converted to a *p*-value to analyze the significance in the improvement of knowledge on the post-workshop questionnaire.

Aside from measuring actual changes in knowledge utilizing the post-workshop questionnaire, participants were also asked on the self-reflective learning evaluation about perceived changes in knowledge, competence, performance, patient outcomes, and community outcomes. The percentage of individuals that reported change in each category was calculated and summarized (results can be found in Table 2 and Appendix F). Additionally, participants were asked to rate the extent to which the activity objectives were met. The percentage of individuals that selected each category (i.e. completely, mostly, partially, minimally, not at all) was calculated. The summary for the April 17 participants can be found in Table 3, and the summary for the May 6 group can be found in Table 4 (the data for both tables can be found in Appendix F).

The two bonus questions that were asked of the practicing providers were used solely to identify current behaviors regarding screening knowledge and resources. Additionally, the open-ended questions on the self-reflective learning evaluation were designed to facilitate the participants' learning. These items were not statistically analyzed; the responses were summarized into a single report and provided to IDPH for use in grant reporting requirements and the planning of future educational activities (summary can be found in Appendix F).

Results

Seventeen individuals (n=17) participated in the April 17 workshop; five individuals

(n=5) participated in the May 6 workshop. All 22 individuals completed the pre-workshop questionnaire; however, three individuals at the April 17 activity did not complete the post-workshop questionnaire or self-reflective learning evaluation and their responses could not be evaluated. The final participant numbers for statistical analysis were n=14 for the April 17 activity and n=5 for the May 6 activity.

Analysis of the percent change in correct answers pre- and post-workshop revealed that nearly every item resulted in a positive percent change. As seen in Table 1, four out of the five questions improved pre- to post-workshop. Three questions regarding CRC statistics improved from 53.3%, 73.3%, and 66.7% percent correct pre-workshop to 78.6%, 78.6%, and 100% post-workshop, respectively; and knowledge of screening guidelines improved from 46.7% correct pre-workshop to 100% correct post-workshop. The question regarding identification of barriers to CRC screening resulted in no change because participants from both workshops answered at nearly 100% correct on the pre-workshop questionnaire, leaving no room for improvement post-workshop (a summary of this data is found in Table 1).

The mean number of CRC screening resources listed pre-workshop by the April 17 group was 0.93 (sd=0.93). Post-workshop, the group was able to list an average of 2.64 resources (sd=1.87). This increase was significant at the p=0.05 level (t=3.05, p=0.01225). The mean number of resources listed pre-workshop by the May 6 group was 2.4 (sd=1.02). Post-workshop, this group listed an average of 3.6 resources (sd=1.5). Although an improvement, this increase was not significant at the p=0.05 level (t=1.79, p=0.14). This information is summarized in Table 1.

The participants involved with each workshop reported positive changes in all five learning assessment categories: knowledge, competence, performance, patient outcomes, and

community outcomes. 100% of participants at both workshops reported a change in knowledge resulting from their participation in the educational activity. A change in competence was next highest for the April 17 activity at 86.7% reporting change; while the next highest response from the May 6 group was a change in performance reported by 80% of participants, indicating they intended to alter their behaviors in practice due to their participation in the activity. A summary of these results is found in Table 2.

Analysis of the evaluation of the objectives for the activity revealed that they were met by the content of the workshop. Table 3 displays the extent to which the objectives were met at the April 17 workshop, and Table 4 displays the data for the May 6 workshop. The objectives were met to a greater extent for the May 6 activity, where 92% of responses fell under the *completely* category and 8% fell under the *mostly* category. April 17 data showed 79% of responses in the *completely* category, 18% in the *mostly* category, and three percent in the *partially* category. No responses were received for the categories of *minimally* or *not at all*.

A review of the open-ended responses (i.e. educational pearls, changes to their practice, and any additional comments) was completed to see what the participants thought about the activity. Comments indicated that the information was effective in improving knowledge and comfort in addressing CRC screening, participants had actionable take-home messages to employ, and that they enjoyed the activity and learned of new resources such as options for individuals without insurance. This information was summarized and provided to IDPH. The summary can be found in Appendix F.

Discussion

The utilization of a SPAL encounter was effective in improving knowledge and awareness regarding CRC statistics, resources, and barriers. The data from the pre- and post-workshop

questionnaires and self-reflective learning evaluations indicated that actual and self-reported changes occurred in all participants. Overall, this project went very well and met its objectives; however, there are a few things to consider that may have had an impact on the results.

Although both groups displayed an increase in CRC knowledge due to participation in the workshop, there was a large variation in the magnitude of that change. The April 17 group, comprised of current medical students, consistently reported higher rates of change than the May 6 group comprised mostly of practicing professionals. Some of the increase in knowledge for medical students was likely due to this being their first in-depth exposure to CRC screening information. Additionally, because they started with a lower understanding in general, the workshop objectives were not met as fully for the April 17 activity as they were at the May 6 activity. Even though they gained more knowledge, the workshop itself was not enough to make the students feel they fully understood how to work through a CRC case.

Another thing that fell short for the students was the objective of *when to refer to a GI specialist*. This was the lowest scoring objective for this group, while 100% of individuals at the May 6 activity reported complete understanding for this item. Because the May 6 group was comprised of mostly practicing professionals, perhaps this group was already aware that GI specialists execute CRC screening tests and that referring to a GI specialist, in this context, also means referring the patient for screening. Students may have not had this awareness and were not sure what was meant by referral to a GI specialist. This objective should be better defined for future activities to improve clarity and understanding.

A complication also arose in the open-ended listing of CRC resources. Rather than listing all of the screening tests they were aware of, one responder from the May 6 activity listed a single non-medical resource, the Iowa Department of Public Health, as their response. This

caused a problem in the statistical analysis due to an outlier, as this person only listed one item while the other responders listed three to five items. Additionally, the May 6 pre-workshop responses listed two to four items, giving further evidence that this was an incomplete response. The outlier resulted in a lower mean, increased variance, and statistically non-significant changes. Perhaps the question should be rephrased in the future to ask what screening tests or non-medical resources are they aware of in regard to CRC screening.

Limitations

Although there were successful outcomes overall, there are still limitations to this project. First, the audience for this activity was small and were all recruited from the central Iowa area. The participants all specialized in family medicine and practiced in urban settings or were still in medical school; and there was no representation from minority communities. The results have a very limited impact, as there is no way to know if these same outcomes would be displayed if the workshop were to be held with a different audience, such as geriatrics, rural medicine, or minority health care.

The next limitation comes with the design of the workshop. The planning committee decided to refrain from using SPs so that participants could experience an office visit from the patient-perspective. However, this ended up making the event less formal and participants sometimes asked questions of each other as they were going through the experience. This is not necessarily a bad thing, as it stimulated discussion between individuals; however, the intent of the project was to have a more formal setting in which participants could be serious and truly practice and refine their skills.

The final limitation is in the data quality. The data only allows for comparison of intragroup change, rather than intergroup, due to significantly different levels of initial understanding. The

students greatly benefited from the experience, but the practicing professionals did not show as large of an impact. Perhaps a more difficult case needs to be presented to experienced providers in order to facilitate learning of new material rather than review of already known information. Additionally, all data was collected at the time of the activity. An effective way to demonstrate actual changes in practice is to have participants complete a follow-up survey a certain amount of time after the training (e.g. 3 months later). Because of the way the data was collected, only anticipated changes could be evaluated, not whether or not the anticipated changes were actually implemented.

Recommendations

The first improvement to this project would be to expand the target audience to a more diverse population. Given the evidence that African American individuals experience higher rates of morbidity and mortality due to CRC, it would be beneficial to reconduct this workshop and attempt to target providers in minority communities to increase urgency surrounding racial differences in incidence and mortality. It would also be beneficial to explore holding the workshop with other specialties or geographical areas that are high in at-risk populations. For example, it may be effective to talk with providers that address co-morbidities to CRC, such as obesity and heart disease, or involve participants in rural areas that have restricted access to CRC screening services. In doing this, it would be important to customize the SPAL cases to fit challenging scenarios that may arise in the various environments. This may help to raise awareness of the relationship of other specialties to CRC and provide rural areas with more ideas for helping their underserved patients.

Next, it would be beneficial to use actual SPs, and even try standardized providers in the case encounters. Taking a patient history that leads to recommended CRC screening can involve

difficult conversations. By utilizing standardized actors, and still allowing participants to play the role of both the provider and the patient, perhaps more realistic discomfort could arise when confronted with personal questions such as sexual behaviors and details regarding bowel movements. This could allow the participant to gain better insights regarding conversational approaches and increase empathy towards their patients.

Finally, it is recommended that a follow-up survey be administered with greater time between completion of the workshop and collection of the data. This allows for evaluation of the extent of knowledge retention and actual implementation of intended changes in performance. It is good to be able to demonstrate that a program results in positive outcomes, but it is better to be able to verify that on-going improvements were made as a result of participation in the educational activity.

Conclusion

CRC is a complicated and prominent public health concern in the United States. Although the disease is associated with high rates of morbidity and mortality, harm can be greatly reduced through prevention and early detection of the disease. The single most effective way to reduce morbidity and mortality due to CRC is to increase screening recommendations in the primary care setting. Numerous approaches have been taken to reduce the incidence of CRC, and the most promise has been found in the education of health care providers.

This project aimed to increase knowledge of CRC screening resources and guidelines in the primary care setting by facilitating participation in a SPAL encounter for practicing health care providers and medical students; and was designed to assist with the promotion of the NCCRT initiative, 80% by 2018. Simulation-based educational programming resulted in positive changes in knowledge of CRC screening statistics and principles. The data obtained as a result of this

program indicated that participants enjoyed the active-learning style of the encounter and gained actionable ideas to take back to their practice.

This project was able to shed light on current provider knowledge and barriers related to CRC screening; and will be used to help to inform and improve future interventions that are aimed to increase screening in the primary care setting. The utilization of simulation-based education is effective in removing primary barriers to CRC screening that result from a lack of health care provider knowledge and screening resources in the primary care setting.

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Table 1. Pre- and post-workshop questionnaire summary.

	April 17, 2017		May 6, 2017	
Item	Pre	Post	Pre	Post
% correct; identify CRC deaths in men.	53.30%	78.60%	80%	80%
% correct; identify CRC deaths in women.	73.30%	78.60%	60%	80%
% correct; identify factual statements regarding CRC.	66.70%	100%	75%	100%
% correct; identify appropriate CRC screening tests.	46.70%	100%	60%	100%
% correct; identify barriers to CRC screening.	93.30%	92.90%	100%	100%
# listed; list CRC screening resources.	0.93	2.64*	2.4	3.6

Note: Participants on April 17 were 14 medical students; participants on May 6 were four primary care providers and one medical student. *significant at the p=0.05 level.

Table 2. Self-reflective learning evaluation summary.

	April 17, 2017	May 6, 2017
Knowledge (facts and information acquired by a person through experience or education)	100.00%	100.00%
Competence (having the ability to apply knowledge, skills, or judgment in practice if called upon to do so)	86.70%	60.00%
Performance (what the participant actually does in practice)	73.30%	80%
Patient outcomes (actual outcomes in individual patients and/or patient populations)	73.30%	40.00%
Community (change in population health status)	73.30%	60.00%

Note: Participants selected the categories that they perceived improvement in due to participation in the activity. Participants on April 17 were 14 medical students; participants on May 6 were four primary care providers and one medical student.

Table 3. Evaluation of objectives for April 17.

	Completely	Mostly	Partially	Minimally	Not at all
Review risk factors, sign, and symptoms of colorectal cancer.	80%	20%	0%	0%	0%
Describe importance of accurate patient history in early detection of colorectal cancer.	93%	7%	0%	0%	0%
Identify individuals at high-risk for colorectal cancer.	87%	13%	0%	0%	0%
Recommend appropriate colorectal cancer screening options.	73%	27%	0%	0%	0%
Refer to a GI specialist when necessary.	54%	33%	13%	0%	0%

Note: Proportion of participants that indicated their understanding was at each specific level.

Participants were 14 medical students.

Table 4. Evaluation of objectives for May 6.

	Completely	Mostly	Partially	Minimally	Not at all
Review risk factors, sign, and symptoms of colorectal cancer.	100%	0%	0%	0%	0%
Describe importance of accurate patient history in early detection of colorectal cancer.	80%	20%	0%	0%	0%
Identify individuals at high-risk for colorectal cancer.	100%	0%	0%	0%	0%
Recommend appropriate colorectal cancer screening options.	80%	20%	0%	0%	0%
Refer to a GI specialist when necessary.	100%	0%	0%	0%	0%

Note: Proportion of participants that indicated their understanding was at each specific level.

Participants were four health care providers and one medical student.

Appendices

Promotional Materials

Patient Case Scenarios

Provider Charts

Pre- and Post-Workshop Questionnaires

Self-Reflective Learning Evaluations

Questionnaire and Evaluation Summaries

Capstone Project Timeline

Capstone Process Reflection

Appendix A. **Promotional Materials**

April 17 promotional materials: email message, poster, digital sign, website.

Colorectal cancer is a life-threatening disease that is highly treatable when found early. It is estimated that individuals that are diagnosed with localized colorectal cancer will have a **90% 5-year survival rate**, and that individuals diagnosed at late stages will only have a **10% 5-year survival rate**.

This brings us to the 90/90 rule: individuals with colorectal cancer have a 90% chance for survival when treatment begins early, and a 90% chance for mortality when early diagnosis is missed.

Health care providers play a critical role in ensuring that their patients are appropriately screened for colorectal cancer. Join us for this great opportunity to learn more about barriers to colorectal cancer screening, practice your dialogue skills, and discover unique insights from the patient perspective.

There is no cost to attend. Food will be provided.
Space is limited to 24 participants!

Target Audience

This activity is open to DMU DO, DPM, and PA students only.

Learning Objectives

- Review risk factors, signs, and symptoms of colorectal cancer.
- Describe the importance of accurate patient history in early detection of colorectal cancer.
- Identify individuals at high-risk for colorectal cancer.
- Recommend appropriate colorectal cancer screening options.
- Refer to a GI specialist when necessary.

Agenda

Time	Session	Location
2 pm	David Newton, MD *Surgeon & Gastroenterologist, Iowa Digestive Disease Center*	Ryan Hall 181
3 pm	1st SPAL Encounter	Ryan Hall Lower Level
3:30 pm	2nd SPAL Encounter	Ryan Hall Lower Level
4:15 pm	Debrief	Ryan Hall 181
5 pm	Adjourn	

Sponsors

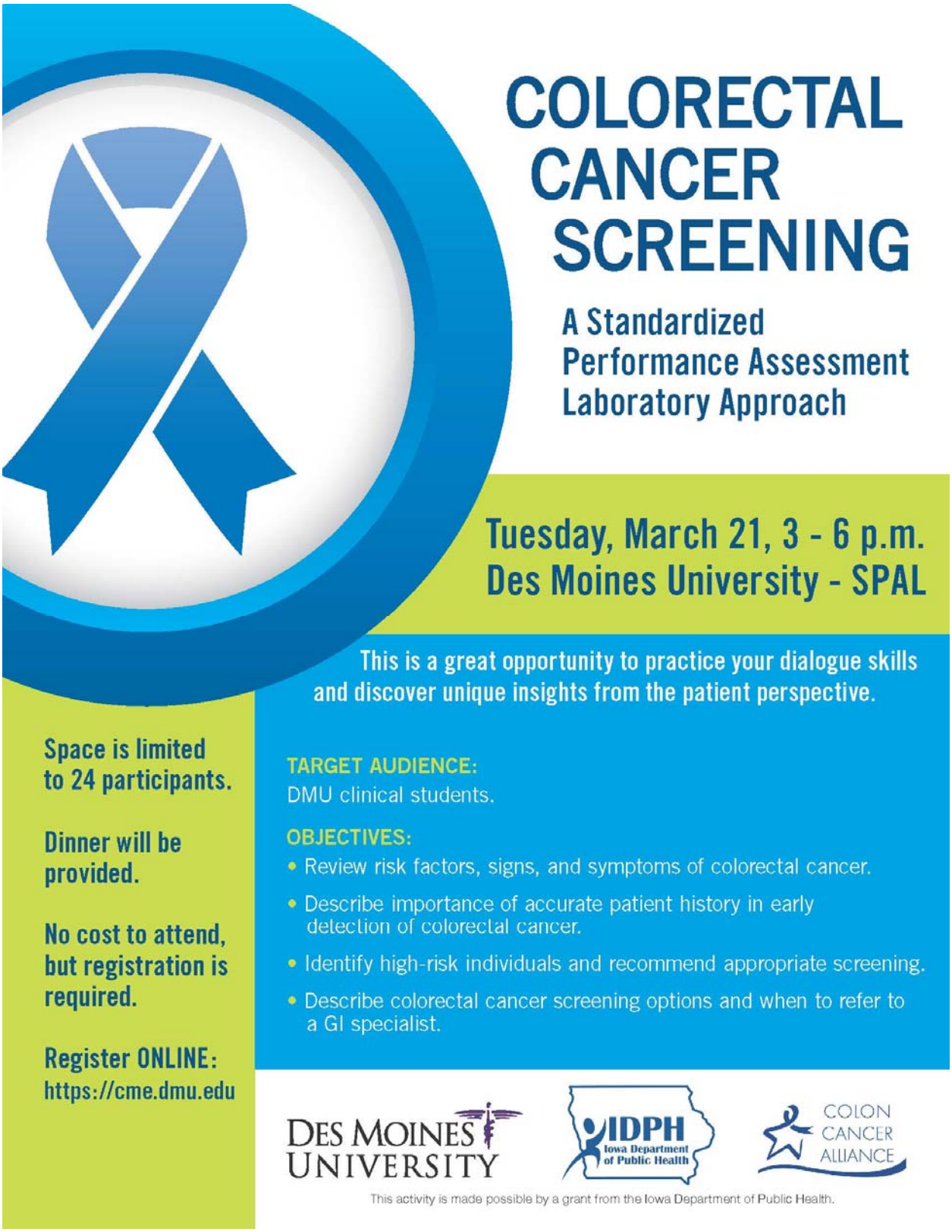
This activity was provided by a grant from the Iowa Department of Public Health.

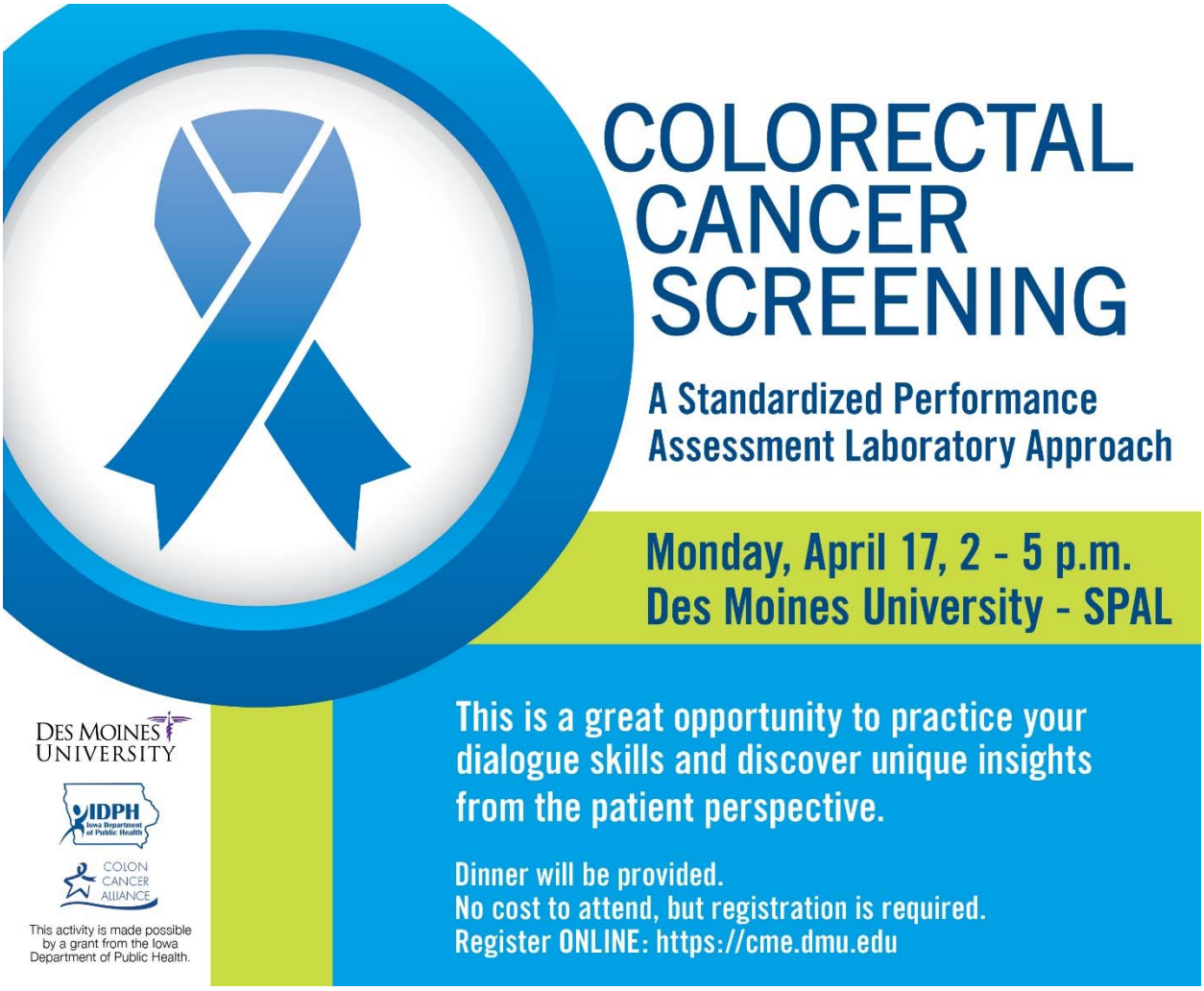
Cancellation Policy

Due to the nature of this activity, it is **VERY IMPORTANT** to notify DMU at cme@dmu.edu as soon as possible if you are unable to attend. Participants will be split into groups for the SPAL encounters and cases are assigned prior to the activity. "No shows" are not fair to your partner, and cancelling ahead of time allows the activity director to adjust the groups and ensure that all participants will have a successful and educational experience.

Contact

515-271-1596
cme@dmu.edu
https://cme.dmu.edu/


COLORECTAL CANCER SCREENING
A Standardized Performance Assessment Laboratory Approach
Tuesday, March 21, 3 - 6 p.m.
Des Moines University - SPAL
This is a great opportunity to practice your dialogue skills and discover unique insights from the patient perspective.
Space is limited to 24 participants.
Dinner will be provided.
No cost to attend, but registration is required.
Register ONLINE: https://cme.dmu.edu
TARGET AUDIENCE:
DMU clinical students.
OBJECTIVES:
• Review risk factors, signs, and symptoms of colorectal cancer.
• Describe importance of accurate patient history in early detection of colorectal cancer.
• Identify high-risk individuals and recommend appropriate screening.
• Describe colorectal cancer screening options and when to refer to a GI specialist.
DES MOINES UNIVERSITY
IDPH Iowa Department of Public Health
COLON CANCER ALLIANCE
This activity is made possible by a grant from the Iowa Department of Public Health.


COLORECTAL CANCER SCREENING
A Standardized Performance Assessment Laboratory Approach
Monday, April 17, 2 - 5 p.m.
Des Moines University - SPAL
This is a great opportunity to practice your dialogue skills and discover unique insights from the patient perspective.
Dinner will be provided.
No cost to attend, but registration is required.
Register ONLINE: https://cme.dmu.edu
DES MOINES UNIVERSITY
IDPH Iowa Department of Public Health
COLON CANCER ALLIANCE
This activity is made possible by a grant from the Iowa Department of Public Health.

COLORECTAL CANCER SCREENING: A STANDARDIZED PERFORMANCE ASSESSMENT LABORATORY APPROACH
Des Moines, IA US
April 17, 2017

Registration

This course is open to **residents and DMU DO, DPM, and PA students** only.

Click here to register for the provider activity on May 6.

There is **no cost to attend** but registration is required. Food will be served. Registration is limited to 24 participants.

You must login or create an account before enrolling in this educational activity.

Once you're logged in, click the green **"ENTER"** button found in the Course Summary box to the right. Your registration will then be confirmed.

COLON CANCER ALLIANCE

Colorectal cancer is a life-threatening disease that is highly treatable when found early. It is estimated that individuals that are diagnosed with localized colorectal cancer will have a 90% 5-year survival rate, and that individuals diagnosed at late stages will have a 10% 5-year survival rate.

This brings us to the 90/90 rule: ***individuals with colorectal cancer have a 90% chance for survival when treatment begins early, and a 90% chance for mortality when early diagnosis is missed.***

Health care providers play a critical role in ensuring that their patients are appropriately screened for colorectal cancer. Join us for this great opportunity to learn more about barriers to colorectal cancer screening, practice your dialogue skills, and discover unique insights from the patient perspective.

TARGET AUDIENCE

This activity is open to residents and DMU DO, DPM, and PA students only.

Click here to register for the provider activity on May 6.

OBJECTIVES

- Review risk factors, signs, and symptoms of colorectal cancer.
- Describe importance of accurate patient history in early detection of colorectal cancer.

- Identify individuals at high-risk for colorectal cancer.
- Recommend appropriate colorectal cancer screening options.
- Refer to a GI specialist when necessary.

AGENDA

Time	Session	Location
2 pm	**Colorectal Cancer: A Focus on Early Detection in 2017** David Newton, MD *Gastroenterologist, Iowa Digestive Disease Center*	**Ryan Hall 181**
2:45 pm	**Break**	
3 pm	**1st SPAL encounter**	**Ryan Hall Lower Level**
3:30 pm	**2nd SPAL encounter**	**Ryan Hall Lower Level**
4 pm	**Break**	
4:15 pm	**Debrief**	**Ryan Hall 181**
5 pm	**Adjourn**	

SPEAKER

David Newton, MD
Gastroenterologist, Iowa Digestive Disease Center

Sponsors

DES MOINES UNIVERSITY

IDPH Iowa Department of Public Health

EDUCATIONAL GRANT

This activity was provided by a grant from the Iowa Department of Public Health.

May 6 promotional materials: email message, post card, website.

Colorectal cancer is a life-threatening disease that is highly treatable when found early. It is estimated that individuals that are diagnosed with localized colorectal cancer will have a **90% 5-year survival rate**, and that individuals diagnosed at late stages will only have a **10% 5-year survival rate**.

This brings us to the 90/90 rule: individuals with colorectal cancer have a 90% chance for survival when treatment begins early, and a 90% chance for mortality when early diagnosis is missed.

Health care providers play a critical role in ensuring that their patients are appropriately screened for colorectal cancer. Join us for this great opportunity to learn more about barriers to colorectal cancer screening, practice your dialogue skills, and discover unique insights from the patient perspective.

There is no cost to attend. Breakfast and snacks will be provided.

Space is limited to 24 participants!

Register Online

Target Audience

Health care providers in primary care, family medicine, or other related specialties.

Learning Objectives

- Review risk factors, signs, and symptoms of colorectal cancer.
- Describe the importance of accurate patient history in early detection of colorectal cancer.
- Identify individuals at high-risk for colorectal cancer.
- Recommend appropriate colorectal cancer screening options.
- Refer to a GI specialist when necessary.

SPAL

A Standardized Performance Assessment Laboratory (SPAL) provides a controlled educational environment in which the subject is able to interact with a real human individual, also knows as a standardized patient (SP), in a simulation exercise. During a SPAL encounter, the individual serving as a "provider" approaches the situation with only a patient chart, and they are left to obtain the remaining information need to make a diagnosis from the SP by asking appropriate questions during the visit. The use of a SPAL in health care education increases integration of information by working through a particular case scenario with the SP.

Each participant will participate in a SPAL encounter as a provider and as a patient. There is much to gain from experiencing an office visit from the patient-perspective. As written by Rana Awdish, MD, in *A View from the Edge - Creating a Culture of Caring*, **"as a patient, I was privy to the failures that I'd been blind to as a clinician."**

Join us to learn more and experience first-hand what you can do to better connect with your patients and ensure that you're providing the life-saving services that they need.

Agenda

Time	Session	Location
8:45 am	**Registration and Breakfast**	**Ryan Hall 181**

9 am	**Jorge A. Zapatier, MD** *Gastroenterologist, Mercy Clinics*	**Ryan Hall 181**
9:45 am	**Break**	
10 am	**1st SPAL Encounter**	**Ryan Hall Lower Level**
10:30 am	**2nd SPAL Encounter**	**Ryan Hall Lower Level**
11 am	**Break**	
11:15 am	**Debrief**	**Ryan Hall 181**
12 pm	**Adjourn**	

Sponsors

This activity is provided by a grant from the Iowa Department of Public Health.

Continuing Education Credit

MD: This activity has been planned and implemented in accordance with the accreditation requirements and policies of the Iowa Medical Society (IMS). Des Moines University (DMU) is accredited by the IMS to provide continuing medical education for physicians. DMU designates this live activity for 2.5 *AMA PRA Category 1 Credit(s)*™. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

DO: Des Moines University (DMU) is accredited by the American Osteopathic Association (AOA) to provide osteopathic continuing medical education for physicians. DMU designates this program for a maximum of 2.5 AOA Category 2-A credits and will report CME and specialty credits commensurate with the extent of the physician's participation in this activity.

Nurses: Des Moines University continuing education is Iowa Board of Nursing approved provider #112. This live activity has been reviewed and approved for 3.0 continuing education contact hour(s). No partial credit awarded.

Other: This live activity is designated for 2.5 *AMA PRA Category 1 Credit(s)*™.

COLORECTAL CANCER SCREENING

A Standardized Performance Assessment Laboratory Approach

Saturday, May 6 • 9 a.m. - noon • Des Moines University - SPAL

Individuals with colorectal cancer have a **90% chance for survival** when treatment begins early, and a **90% change for mortality** when early diagnosis is missed.

EARN CME CREDIT

This activity is made possible by a grant from the Iowa Department of Public Health.

DES MOINES UNIVERSITY

IDPH Iowa Department of Public Health

COLON CANCER ALLIANCE

You play a critical role in ensuring that your patients are screened for colorectal cancer.

COLORECTAL CANCER SCREENING

Saturday, May 6 • 9 a.m. - noon • Des Moines University - SPAL

Join us for this great opportunity to

- review risk factors, signs and symptoms of colorectal cancer
- learn more about barriers to colorectal cancer screening
- identify individuals at high-risk for colorectal cancer
- practice your dialogue skills
- discover unique insights from the patient perspective

EARN CME CREDIT

REGISTER ONLINE TODAY! https://cme.dmu.edu/CRCSPAL2017

There is no cost to attend but registration is required. Space is limited to 24 participants. Breakfast will be provided. For more information call 515-271-1596 or email cme@dmu.edu.

DES MOINES UNIVERSITY
3200 Grand Avenue, Des Moines, Iowa 50312

Continuing Education Credit

- **MD:** This activity has been planned and implemented in accordance with the accreditation requirements and policies of the Iowa Medical Society (IMS). Des Moines University (DMU) is accredited by the IMS to provide continuing medical education for physicians. DMU designates this live activity for 2.5 *AMA PRA Category 1 Credit(s)*™. Physicians should claim only the credit commensurate with the extent of their participation in the activity.
- **DO:** Des Moines University (DMU) is accredited by the American Osteopathic Association (AOA) to provide osteopathic continuing medical education for physicians. DMU designates this program for a maximum of 2.5 AOA Category 2-A credits and will report CME and specialty credits commensurate with the extent of the physician's participation in this activity.
- **Nurses:** Des Moines University continuing education is Iowa Board of Nursing approved provider #122. This live activity has been reviewed and approved for 3.0 continuing education contact hour(s). No partial credit awarded.
- **Other healthcare providers:** This live activity is designated for 2.5 *AMA PRA Category 1 Credit(s)*™.

IMS IOWA MEDICAL SOCIETY

COLORECTAL CANCER SCREENING: A STANDARDIZED PERFORMANCE ASSESSMENT LABORATORY APPROACH
Des Moines, IA US
May 6, 2017

Registration

This course is open to **health care providers** only.

There is **no cost to attend** but registration is required. Registration is limited to 24 participants.

You must login or create an account before enrolling in this educational activity.

Once you're logged in, click the green **"ENTER"** button found in the Course Summary box to the right. Your registration will then be confirmed.

Colorectal cancer is a life-threatening disease that is highly treatable when found early. It is estimated that individuals that are diagnosed with localized colorectal cancer will have a 90% 5-year survival rate, and that individuals diagnosed at late stages will have a 10% 5-year survival rate.

This brings us to the 90/90 rule: *individuals with colorectal cancer have a 90% chance for survival when treatment begins early, and a 90% chance for mortality when early diagnosis is missed*.

Health care providers play a critical role in ensuring that their patients are appropriately screened for colorectal cancer. Join us for this great opportunity to learn more about barriers to colorectal cancer screening, practice your dialogue skills, and discover unique insights from the patient perspective.

TARGET AUDIENCE

Health care providers in primary care, family medicine, or other related specialties.

Click here for the April 17 activity for residents and DMU DO, DPM, and PA Students.

OBJECTIVES

- Review risk factors, signs, and symptoms of colorectal cancer.
- Describe importance of accurate patient history in early detection of colorectal cancer.
- Identify individuals at high-risk for colorectal cancer.
- Recommend appropriate colorectal cancer screening options.
- Refer to a GI specialist when necessary.

SPAL

A Standardized Performance Assessment Laboratory (SPAL) provides a controlled educational environment in which the subject is able to interact with a real human individual, also knows as a *standardized patient* (SP), in a simulation exercise. During a SPAL encounter, the individual serving as a "provider" approaches the situation with only a patient chart, and they are left to obtain the remaining information need to make a diagnosis from the SP by asking appropriate questions during the visit. The use of a SPAL in health care education increases integration of information by working through a particular case scenario with the SP.

Each participant will participate in a SPAL encounter as a provider and as a patient. There is much to gain from experiencing an office visit from the patient-perspective. As written by Rana Awdish, MD, in *A View from the Edge - Creating a Culture of Caring*, "as a patient, I was privy to the failures that I'd been blind to as a clinician."

Join us to learn more and experience first-hand what you can do to better connect with your patients and ensure that you're providing the life-saving services that they need.

AGENDA

Time	Session	Location
8: 45 am	**Registration & breakfast**	**Ryan Hall 181**
9 am	**Jorge A. Zapatier, MD** *Gastroenterologist, Mercy Clinics*	**Ryan Hall 181**
9:45 am	**Break**	
10 am	**1st SPAL encounter**	**Ryan Hall Lower Level**
10:30 am	**2nd SPAL encounter**	**Ryan Hall Lower Level**
11 am	**Break**	
11:15 am	**Debrief**	**Ryan Hall 181**
12 pm	**Adjourn**	

SPEAKER

Jorge A. Zapatier, MD
Gastroenterologist, Mercy Clinics

Dr. Zapatier indicated he has no financial relationships to disclose relevant to the content of this CME activity.

SPONSORS

EDUCATIONAL GRANT

This activity was provided by a grant from the Iowa Department of Public Health.

QUESTIONS

3200 Grand Avenue
Des Moines, IA 50312
515-271-1596
cme@dmu.edu

Appendix B. **Patient Case Scenarios**

DES MOINES UNIVERSITY
CONTINUING MEDICAL EDUCATION

Colorectal Cancer Screening: A Standardized Performance Assessment Laboratory Approach
Des Moines University, Des Moines, IA

Patient Script #1

Gender: your gender

Notes/excluded conditions/surgical scars: no abdominal/colon surgery scars

---

Patient Name: Sam Jennings **Age/DOB:** 49 years, 9/27/1967

Insurance: No insurance **Last physical exam:** September 2016

Chief Complaint: Constipation.
Background: I came to the doctor because of constipation for the past 6 – 8 weeks. Increasing water intake doesn't really help, but laxatives (Milk of Magnesia) has provided some relief.

Appearance and Behavior: If upon entering the provider asks "how are you," say, "**OK, I hope.**" Sitting at the exam table, you are calm & in no distress.

History

1. What can I do for you today?
I've been constipated.

2. When did this start?
The constipation started about 2 months ago.

3. Has it changed or gotten worse since you first noticed it?
It's definitely gotten worse. *(Used to have movements every day, but the last one was 2 days ago. It*
seems like it is every 2 or 3 days now.

4. Does anything make this worse?
It's worse when I don't drink as much fluid. What I eat doesn't seem to make a difference. *(drink approximately 4 tall glasses of water per day)*

5. Does anything make this better?
Laxatives help ease the constipation a little - there's a little less straining.

6. Have you ever had any problems like this before?
No, nothing like this.

7. How often does this happen? Is it constant?
My bowel movements are every 2 or 3 days now.
(If asked: used to have movements every day, but the last one was two days ago.)

8. Can you describe it?
My stools are harder and narrower (about as thick as a thumb).

9. Is there/Where is the pain?
There's no real pain normally, but I feel gassy and full (bloated) **all the time.** *(whole abdomen)*

10. How would you rate the pain, on a scale of 1 to 10….?
There's no pain; it's just a fullness. I couldn't rate it. *(whole abdomen feels full/bloated)*

11. How bad is this? How is it affecting your daily life?
It's really annoying. I have to sit there forever, and sometimes I still can't go.

12. Have you tried anything to make this better?
I've tried drinking more water, but haven't had much relief. *(If asked: 8 glasses a day for 6 weeks)* **Milk of Magnesia has helped some - I don't have to strain as hard.**

13. Is there a time of day you notice this more?
No *(doesn't matter the time, I can't seem to feel better)*

14. Have you noticed any other problems or symptoms/anything that is not normal for you?
I've lost my appetite. *(For past 3 weeks)*

15. Has anyone in your family had problems like these? **Nothing like this that I'm aware of. My father did die of rectal cancer years ago, but I don't know what his symptoms were because he was very private about it. He was diagnosed at stage IV and it was a surprise to me.**

16. Is anyone else at home or work ill? **No.**

17. Do you take any medications? *(did not bring bottles to appointment)*

Name: Multivitamin *(no complications)*
Dose: I don't know, one per day
Frequency: Every morning
Route: By mouth
Duration: 10 years
Last dose: This morning

Name: Milk of Magnesia *(no complications)*
Dose: 2 tablespoons
Frequency: twice a day
Route: by mouth
Duration: 4 weeks
Last dose: this morning

18. Any past or current medical problems or illnesses/anything you see a doctor for?

No past history of heart/coronary artery disease, emphysema, cancer, high blood pressure, asthma, diabetes, stroke or seizure.

19. Review of Systems: *only if asked:*
Loss of appetite? Yes, I haven't been as hungry. *(3 weeks)*
Last meal? Dinner last night. Full after a ½ sandwich. Until lately, I would eat the whole thing.
Fluid intake? 3-4 tall glasses of water, 1-2 tall glasses of milk, 1-2 beers
Weight loss? Yes, I've lost 10 lbs in the last 2 months.
What color are your stools? Medium brown *(looks the same as always)*
Any gas? I feel gassy and full all the time. *(for 1 month)*
No to: floating stools, no blood or mucus in stools, nausea

20. Preventive:
Last annual exam was 8-10 years ago. *(No flu shot, tetanus shot 5 yrs ago) (if asked about colon screening: "Not that I'm aware of. What is it?" No to colonoscopy.)*

21. Any surgeries? **None.**

22. Any serious injuries or trauma? **No**

23. Are you allergic to anything?
Medications? No
Foods? No
Environmental? Bee/wasp stings
Reaction? Get very swollen and tender.

24. Social History
Occupation: Farmer *(cattle, corn, beans)*
Relationship/Marital status: Married *(heterosexual)*
Tobacco use: None *(never smoked)*

Alcohol use: Yes, 1-2 beers on most days
Illegal drug use: No
Diet: Stuff off the farm – eggs, bacon, beef, potatoes and gravy
Caffeine: 2 cups of coffee a day
Exercise: Yes *(chores, feeding livestock, etc.)*
Sexual behavior: Heterosexual, oral and intercourse
Sexually transmitted diseases: No
Travel: None
Immunizations: No. *(Flu shot? No. Tetanus? 5 yrs ago.)*
Military: No
Exposure: Live on a farm so work with fertilizers, herbicides. *(use goggles, gloves, mask, etc. and follow precautions)*

25. Family History: *(only give info as asked)*
Mother: status: deceased.
Health/cause of death: Stroke.
Age: 70
Father: status: deceased.
Health/cause of death: Rectal cancer.
Age: 58
Siblings: 1 sister and 1 brother: **status:** living.
Health: Brother slightly overweight but otherwise both are healthy.
Age: age appropriate.
Children: 1 son and 1 daughter: **status:** living.
Health: healthy.
Age: age appropriate.

<u>Presenting Vitals</u>:

Temp: 98.5° F Pulse: 68 regular Resp: 14 non-labored BP: 119/78

<u>Other Information</u>

Appearance: Clean, no scents.

Simulations: Calm, no distress.

If physical exam is performed: Grimace and say **"It's tender there,"** *(5 or 6 on a 10-point scale)* when the provider does light & deep palpitations in lower left groin area (about 2 inches above bend of the left leg).

If the provider suggests to be screened for colon cancer, the patient should inquire about the options.

- If colonoscopy is recommended…
  - What is a colonoscopy?
  - Is there any other way to find out what is wrong with me?

        - Is there any research on the screening options? What do you recommend?
    - What happens if you find something?
    - How can I do this without insurance?

DES MOINES UNIVERSITY
CONTINUING MEDICAL EDUCATION

Colorectal Cancer Screening: A Standardized Performance Assessment Laboratory Approach
Des Moines University, Des Moines, IA

Patient Script #2

Gender: your gender

Notes/excluded conditions/surgical scars: no abdominal/colon surgery scars

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Patient Name: Danny Wilson **Age/DOB:** 54 years, 6/3/1962

Insurance: Wellmark **Last physical exam:** September 2016

Chief Complaint: Weakness and abdominal discomfort.
Background: I've been having persistent abdominal discomfort and it seems to be physically exhausting me.

Appearance and Behavior: If upon entering the provider asks "how are you," say, **"Doing alright."** Sitting at the exam table, you are calm and in no distress.

History

1. What can I do for you today?
I've been really weak and tired lately and have had moderate abdominal discomfort.

2. When did this start?
The abdominal issues started about a month ago. I feel like I've always been a little tired, but recently started feeling weak. *(2 weeks)*

3. Has it changed or gotten worse since you first noticed it?
The discomfort has been intermittent for a few weeks but seems to be more persistent now (noticeable every day). I'm getting so exhausted that I'm feeling weak on a regular basis.

4. Does anything make this worse?
No.

5. Does anything make this better?
Taking a nap in the afternoon helps give me a little energy. Taking Pepto Bismol does not help.

6. Have you ever had any problems like this before?
I've had regular gas pains in the past, and have always been a little tired, but nothing like this.

7. Can you describe it?
In the past month, I've had persistent gas-like discomfort in my abdomen, but it is not as sharp as gas pains. It is mostly just uncomfortable. I need to take a nap in the afternoon in order to be able to cook dinner and do things around the house in the evening.

8. Is there any pain?
I've had persistent gas-like discomfort in my abdomen, but it is not a sharp as gas pains. It is mostly just uncomfortable.

9. How would you rate the pain, on a scale of 1 to 10….?
It is just uncomfortable, I can't rate it.

10. How bad is this? How is it affecting your daily life?
The tiredness is keeping me from being able to work a full shift in the office. Combine this with the discomfort and I feel discouraged and helpless.

11. Have you tried anything to make this better?
I've tried Pepto Bismol and it does not help. I've also tried taking naps on my lunch, and it helps a little, but I can't keep doing this. *(have not tried laxatives because I've also had diarrhea for the past 1-2 weeks)*

12. Is there a time of day you notice this more?
I wake up tired, and it progresses throughout the day. I notice the discomfort every day now, and the time of day doesn't seem to matter.

13. Have you noticed any other problems or symptoms/anything that is not normal for you?
I've had some diarrhea lately. *(For past 1-2 weeks; 3-4 days per week; 5-7 times per day)*

14. Has anyone in your family had problems like these?
Not specifically. But my mother has something called Lynch syndrome that caused ovarian cancer. She was diagnosed at stage II and has been receiving treatment for about 3 months.

15. Is anyone else at home or work ill?
No.

16. Do you take any medications? *(did not bring bottles to appointment)*

Name: Multivitamin *(no complications)*

Dose: I don't know, one per day
Frequency: Every morning
Route: By mouth
Duration: 15 years
Last dose: This morning

17. Any past or current medical problems or illnesses/anything you see a doctor for?
I've been told to watch what I eat because of my cholesterol, but there isn't anything bad enough to need medication.

No past history of heart/coronary artery disease, emphysema, cancer, high blood pressure, asthma, diabetes, stroke or seizure.
18. Review of Systems: *only if asked:*
Loss of appetite? Yes, I haven't been as hungry. *(4 weeks)*
Last meal? Dinner last night. Full after a ½ sandwich. Until lately, I would eat the whole thing.
Fluid intake? 5-6 glasses of water per day, 1-2 mixed alcoholic drinks *(usually rum or whisky)*
Weight loss? Yes, I've lost 7 lbs this month.
What color are your stools? Dark brown *(darker than before)*
Any gas? No
Blood or mucous in stool? Not that I've noticed.
Diarrhea? Yes
Frequency per week: 3 or 4 days out of every week
Frequency per day: 5 - 7 times per day
No to: floating stools, nausea

19. Preventive:
Up to date on annual exams. I'm told I'm in good condition. Last year I was told my RBC count is slightly low but nothing that required follow-up. *(if asked about colon screening: "What is colon screening?" "I've thought about it because of my family's history with cancer, but I'm told I'm healthy so I've never pursued it.")*

20. Any surgeries?
Tonsils out at 10 yrs and wisdom teeth removed in college

21. Any serious injuries or trauma?
No

22. Are you allergic to anything?
Medications? Penicillin
Reaction? Rash and have trouble breathing.
Foods? Nuts
Reaction? Get swollen in the face and arms and have trouble breathing.
Environmental? No

23. Social History
Occupation: Work in an office.

Relationship/Marital status: Married (25 years; heterosexual)
Tobacco use: ½ pack per day (for about 30 years; regular filtered cigarettes)
Alcohol use: 1-2 drinks per day (for about 30 years; mixed drinks, rum or whisky)
Illegal drug use: No
Diet: Steak, potatoes, pasta, occasional fast food
Caffeine: 2 cans of diet soda a day
Exercise: Take dogs for a walk 2x per week
Sexual behavior: Heterosexual, oral and intercourse
Sexually transmitted diseases: HPV (about 30 years) *Both spouse and I have HPV. Checked annually and any abnormalities are removed. Female has had abnormalities removed twice (cervical lesions), male has had 8 – 10 wart treatments. Unsure of who was responsible for transmission of the virus.*
Travel: None
Immunizations: Flu shot? Yes. Tetanus? Can't remember, years ago.
Military: No
Exposure: Busy lifestyle, family history, lack of exercise.
24. Family History: (only give info as asked)
Mother: status: living.
Health/cause of death: Lynch syndrome; ovarian cancer.
Age: 76.
Father: status: deceased.
Health/cause of death: emphysema.
Age: 75.
Siblings: 1 sister and 1 brother. **status:** living.
Health: Sister (older) has bladder cancer, brother (younger) is healthy.
Age: age appropriate.
Children: 1 daughter. **status:** living.
Health: healthy.
Age: age appropriate.

Presenting Vitals:

Temp: 98.9° F Pulse: 81 regular Resp: 17 non-labored BP: 127/85

Other Information

Appearance: Clean, no scents

Simulations: Calm, no distress. Tired.

If physical exam is performed: Grimace and say **"It actually is tender there,"** when the provider does deep palpitations in lower right groin area (about 2 inches above bend of the left leg).

If the provider suggests to be screened for colon cancer, the patient should inquire about the options.

- If colonoscopy is recommended…
    - What is a colonoscopy?
    - Is there any other way to find out what is wrong with me?
        - Is there any research on the screening options? What do you recommend?
    - What happens if you find something?
    - Will my insurance cover the screening(s)?

Appendix C. **Provider Charts**

Presenting Information

Patient Name: Sam Jennings **Age:** 49 **DOB:** 9/27/1967
Insurance: No insurance
Last physical exam: 8 – 10 years
Clinical Setting: Primary Care
Case Information: Primary concern is constipation.
Vital Signs:
Temperature: 98.5°F
Pulse: 68 regular
Respiration: 14 Non-labored
Blood Pressure: 119/78

Evaluate and treat as you see fit

Presenting Information

Patient Name: Danny Wilson **Age:** 54 **DOB:** 6/03/1962
Insurance: Wellmark
Last physical exam: September 2016
Case Information: Primary concern is weakness and abdominal pain.
Vital Signs: Temperature: 98.9°F
Pulse: 81 regular
Blood pressure: 127/85
Respiration: 17 Non-labored

Evaluate and treat as you see fit

Appendix D. **Pre- and Post-Workshop Questionnaires**

Colorectal Cancer Screening: A Standardized Performance Assessment Laboratory Approach
April 17, 2017

Pre-Workshop Questionnaire

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1. In general, which of the following statements regarding colorectal cancer in MEN is **true**?
    a. Colon cancer is the leading cause of cancer deaths in men.
    b. Colon cancer is the 2nd leading cause of cancer deaths in men.
    c. Colon cancer is the 3rd leading cause of cancer deaths in men.
    d. There is little mortality associated with colon cancer in men.

2. In general, which of the following statements regarding colorectal cancer in WOMEN is **true**?
    a. Colorectal cancer is the leading cause of cancer deaths in women.
    b. Colorectal cancer is the 2nd leading cause of cancer deaths in women.
    c. Colorectal cancer is the 3rd leading cause of cancer deaths in women.
    d. There is little mortality associated with colon cancer in women.

3. Which of the following statements regarding colorectal cancer is **false**?
    a. The mortality rate from colorectal cancer has increased over the last 10 years.
    b. There are multiple methods for patients to be screened for colorectal cancer.
    c. It is recommended that colorectal cancer screening begins no later than age 50.
    d. The risk for developing colorectal cancer increases beyond age 50.

4. What is **NOT** a recommended colorectal cancer screening tests:
    a. Colonoscopy or flexible sigmoidoscopy
    b. Fecal Immunological test (FIT) or high-sensitive guaiac (FOBT) tests
    c. DNA test such as Cologard
    d. In office - Digital Rectal Exam (DRE)

5. What are **NOT** considered barriers for patients to get screened for colorectal cancer?
    a. Cost of lack of insurance
    b. Transportation
    c. Not wanting to do the prep
    d. Grossed out by the test; no one is "going to put anything up there" mentality
    e. All answers are correct

6. What colorectal cancer screening resources are you familiar with? Please describe.

DES MOINES UNIVERSITY
CONTINUING MEDICAL EDUCATION

Colorectal Cancer Screening: A Standardized Performance Assessment Laboratory Approach
April 17, 2017

Post-Workshop Questionnaire

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1. In general, which of the following statements regarding colorectal cancer in MEN is **true**?
    a. Colon cancer is the leading cause of cancer deaths in men.
    b. Colon cancer is the 2nd leading cause of cancer deaths in men.
    c. Colon cancer is the 3rd leading cause of cancer deaths in men.
    d. There is little mortality associated with colon cancer in men.

2. In general, which of the following statements regarding colorectal cancer in WOMEN is **true**?
    a. Colorectal cancer is the leading cause of cancer deaths in women.
    b. Colorectal cancer is the 2nd leading cause of cancer deaths in women.
    c. Colorectal cancer is the 3rd leading cause of cancer deaths in women.
    d. There is little mortality associated with colon cancer in women.

3. Which of the following statements regarding colorectal cancer is **false**?
    a. The mortality rate from colorectal cancer has increased over the last 10 years.
    b. There are multiple methods for patients to be screened for colorectal cancer.
    c. It is recommended that colorectal cancer screening begins no later than age 50.
    d. The risk for developing colorectal cancer increases beyond age 50.

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    b. Fecal Immunological test (FIT) or high-sensitive guaiac (FOBT) tests
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    b. Transportation
    c. Not wanting to do the prep
    d. Grossed out by the test; no one is "going to put anything up there" mentality
    e. All answers are correct

6. What colorectal cancer screening resources are you familiar with? Please describe.


DES MOINES UNIVERSITY
CONTINUING MEDICAL EDUCATION

Colorectal Cancer Screening: A Standardized Performance Assessment Laboratory Approach
May 6, 2017

Pre-Workshop Questionnaire

1. Which of the following statements regarding colorectal cancer in MEN is **true**?
    a. Colon cancer is the leading cause of cancer deaths in men.
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    d. There is little mortality associated with colon cancer in men.

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    a. Colorectal cancer is the leading cause of cancer deaths in women.
    b. Colorectal cancer is the 2nd leading cause of cancer deaths in women.
    c. Colorectal cancer is the 3rd leading cause of cancer deaths in women.
    d. There is little mortality associated with colon cancer in women.

3. Which of the following statements regarding colorectal cancer is **false**?
    a. The mortality rate from colorectal cancer has increased over the last 10 years.
    b. There are multiple methods for patients to be screened for colorectal cancer.
    c. It is recommended that colorectal cancer screening begins no later than age 50.
    d. The risk for developing colorectal cancer increases beyond age 50.

4. What is **NOT** a recommended colorectal cancer screening test?
    a. Colonoscopy or flexible sigmoidoscopy
    b. Fecal Immunological Test (FIT) or high-sensitive guaiac (FOBT) tests
    c. DNA test such as Cologard
    d. In office - Digital Rectal Exam (DRE)

5. What are **NOT** considered barriers for patients to get screened for colorectal cancer?
    a. Cost of lack of insurance
    b. Transportation
    c. Not wanting to do the prep
    d. Grossed out by the test; no one is "going to put anything up there" mentality
    e. All answers are correct

6. What colorectal cancer screening resources are you familiar with? Please describe.

7. When collecting a history and physical, what percentage of the time do you ask a patient over age 50 if they've had a colonoscopy or ask when their last colonoscopy was?
    a. 0 - 25%

b. 26 - 50%
c. 51 - 75%
d. 76 - 100%

8. Does your clinic or hospital currently remind patients over age 50 that they are due for a colonoscopy screening test? If so, what method(s) do you utilize (e.g. phone calls, letters, etc.)?

Colorectal Cancer Screening: A Standardized Performance Assessment Laboratory Approach
May 6, 2017

Post-Workshop Questionnaire

1. Which of the following statements regarding colorectal cancer in MEN is **true**?
   a. Colon cancer is the leading cause of cancer deaths in men.
   b. Colon cancer is the 2nd leading cause of cancer deaths in men.
   c. Colon cancer is the 3rd leading cause of cancer deaths in men.
   d. There is little mortality associated with colon cancer in men.

2. Which of the following statements regarding colorectal cancer in WOMEN is **true**?
   a. Colorectal cancer is the leading cause of cancer deaths in women.
   b. Colorectal cancer is the 2nd leading cause of cancer deaths in women.
   c. Colorectal cancer is the 3rd leading cause of cancer deaths in women.
   d. There is little mortality associated with colon cancer in women.

3. Which of the following statements regarding colorectal cancer is **false**?
   a. The mortality rate from colorectal cancer has increased over the last 10 years.
   b. There are multiple methods for patients to be screened for colorectal cancer.
   c. It is recommended that colorectal cancer screening begins no later than age 50.
   d. The risk for developing colorectal cancer increases beyond age 50.

4. What is **NOT** a recommended colorectal cancer screening test?
   a. Colonoscopy or flexible sigmoidoscopy
   b. Fecal Immunological Test (FIT) or high-sensitive guaiac (FOBT) tests
   c. DNA test such as Cologard
   d. In office - Digital Rectal Exam (DRE)

5. What are **NOT** considered barriers for patients to get screened for colorectal cancer?
   a. Cost of lack of insurance
   b. Transportation
   c. Not wanting to do the prep
   d. Grossed out by the test; no one is "going to put anything up there" mentality
   e. All answers are correct

6. What colorectal cancer screening resources are you familiar with? Please describe.

7. When collecting a history and physical, what percentage of the time will you ask a patient over age 50 if they've had a colonoscopy or when their last colonoscopy was?
    a. 0 - 25%
    b. 26 - 50%
    c. 51 - 75%
    d. 76 - 100%

8. Does your office plan to remind patients over age 50 that they are due for a colonoscopy screening test? If so, what method(s) will be utilized (e.g. phone calls, letters, etc.)?

Appendix E. **Self-Reflective Learning Evaluations**

Evaluation

Which of the following best describes your role?

☐ DO Student ☐ DPM Student ☐ PA Student ☐ Other: _____

What is your anticipated graduation year?

☐ 2017 ☐ 2018 ☐ 2019 ☐ 2020

How did you find out about this activity? Mark all that apply.

☐ Email ☐ Flyer/Poster ☐ DMU CME Website
☐ Professor ☐ Word of Mouth ☐ Other: _____

Please indicate the extent to which you agree with the following statements.	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
The content was appropriate to my future practice.					
This activity will make me more effective in my future practice.					
This activity was balanced and free of commercial bias.					

Did the activity meet your expectations in accomplishing the stated objectives?	Completely	Mostly	Partially	Minimally	Not at all
1. Review risk factors, signs, and symptoms of colorectal cancer.					
2. Describe importance of accurate patient history in early detection of colorectal cancer.					
3. Identify individuals at high-risk for colorectal cancer.					
4. Recommend appropriate colorectal cancer screening options.					
5. Refer to a GI specialist when necessary.					

Please rate the following:	Excellent	Very Good	Good	Fair	Poor
Overall administration of the activity.					
Adequacy of facilities and resources.					
Quality of the instructional process and presentation including the effectiveness of educational methods.					
Dr. Newton's teaching effectiveness, knowledge, and organization.					
Dr. Newton's ability to communicate ideas and information clearly.					

This educational activity will result in a change in my (mark all that apply):

- ☐ Knowledge (facts and information acquired by a person through experience or education)
- ☐ Competence (having the ability to apply knowledge, skills, or judgment in practice if called upon to do so)
- ☐ Performance (what the participant actually does in practice)
- ☐ Patient outcomes (actual outcomes in individual patients and/or patient populations)
- ☐ Community (change in population health status)
- ☐ This activity did not result in a change.

Please describe any 'pearls' or takeaway messages.

Please note any changes or improvements in the care of your (future) patients that you plan to make as a result of attending this educational activity. If no changes are identified, please explain why (activity format, content not appropriate, nothing learned, etc.).

Do you have any unanswered questions or additional comments?

Evaluation

Which of the following best describes your role?

☐ Physician (DO, MD) ☐ Physician Assistant ☐ Nurse ☐ Other: _____

How did you find out about this activity? Mark all that apply.

☐ Email ☐ IMS Communication ☐ DMU CME Website
☐ Flyer/Poster ☐ Word of Mouth ☐ Other: _____

Please indicate the extent to which you agree with the following statements.	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
The content was appropriate to my practice.					
This activity will make me more effective in my practice.					
This activity was balanced and free of commercial bias.					

Did the activity meet your expectations in accomplishing the stated objectives?	Completely	Mostly	Partially	Minimally	Not at all
1. Review risk factors, signs, and symptoms of colorectal cancer.					
2. Describe importance of accurate patient history in early detection of colorectal cancer.					
3. Identify individuals at high-risk for colorectal cancer.					
4. Recommend appropriate colorectal cancer screening options.					
5. Refer to a GI specialist when necessary.					

Please rate the following:	Excellent	Very Good	Good	Fair	Poor
Overall administration of the activity.					
Adequacy of facilities and resources.					
Quality of the instructional process and presentation including the effectiveness of educational methods.					
Dr. Newton's teaching effectiveness, knowledge, and organization.					
Dr. Newton's ability to communicate ideas and information clearly.					

This educational activity will result in a change in my (mark all that apply):

- ☐ Knowledge (facts and information acquired by a person through experience or education)
- ☐ Competence (having the ability to apply knowledge, skills, or judgment in practice if called upon to do so)
- ☐ Performance (what the participant actually does in practice)
- ☐ Patient outcomes (actual outcomes in individual patients and/or patient populations)
- ☐ Community (change in population health status)
- ☐ This activity did not result in a change.

Please describe any 'pearls' or takeaway messages.

Please note any changes or improvements in the care of your (future) patients that you plan to make as a result of attending this educational activity. If no changes are identified, please explain why (activity format, content not appropriate, nothing learned, etc.).

Do you have any unanswered questions or additional comments?

Appendix F. **Questionnaire and Evaluation Summaries**

Pre-Workshop Questionnaire Summary

In general, which of the following statements regarding colorectal cancer in MEN is true?		
Answer Options	**Response Percent**	**Response Count**
Colon cancer is the leading cause of cancer deaths in men.	0.0%	0
Colon cancer is the 2nd leading cause of cancer deaths in men.	46.7%	7
Colon cancer is the 3rd leading cause of cancer deaths in men.	**53.3%**	**8**
There is little mortality associated with colon cancer in men.	0.0%	0

In general, which of the following statements regarding colorectal cancer in WOMEN is true?		
Answer Options	**Response Percent**	**Response Count**
Colon cancer is the leading cause of cancer deaths in women.	0.0%	0
Colon cancer is the 2nd leading cause of cancer deaths in women.	20.0%	3
Colon cancer is the 3rd leading cause of cancer deaths in women.	**73.3%**	**11**
There is little mortality associated with colon cancer in women.	6.7%	1

Which of the following statements regarding colorectal cancer is false?		
Answer Options	**Response Percent**	**Response Count**
The mortality rate from colorectal cancer has increased over the last 10 years.	**66.7%**	**10**
There are multiple methods for patients to be screened for colorectal cancer.	20.0%	3
It is recommended that colorectal cancer screening begins no later than age 50.	13.3%	2
The risk for developing colorectal cancer increases beyond age 50.	0.0%	0

What is NOT a recommended colorectal cancer screening test?		
Answer Options	**Response Percent**	**Response Count**
Colonoscopy or flexible sigmoidoscopy	6.7%	1
Fecal Immunological Test (FIT) or high-sensitive guaiac (FOBT) test	6.7%	1
DNA test such as Cologard	40.0%	6
In office - Digital Rectal Exam (DRE)	**46.7%**	**7**

What are NOT considered barriers for patients to get screened for colorectal cancer?		
Answer Options	**Response Percent**	**Response Count**
Cost due to lack of insurance	0.0%	0
Transportation	0.0%	0
Not wanting to do the prep	0.0%	0
Grossed out by the test; no one is "going to put anything up there" mentality	6.7%	1
All answers are correct	**93.3%**	**14**

What colorectal cancer screening resources are you familiar with? Please describe.	
Response	Number of Resources Listed
AHRQ ePSS app	1
Colonoscopy and DRE X2	2
Colonoscopy and FOBT	2
Colonoscopy X3	1
Colonoscopy, DRE, FOBT	3
FOBT	1
None X6	0
➔ Total average number of resources listed = 0.93	

Post-Workshop Questionnaire Summary

In general, which of the following statements regarding colorectal cancer in MEN is true?		
Answer Options	**Response Percent**	**Response Count**
Colon cancer is the leading cause of cancer deaths in men.	0.0%	0
Colon cancer is the 2nd leading cause of cancer deaths in men.	21.4%	3
Colon cancer is the 3rd leading cause of cancer deaths in men.	**78.6%**	**11**
There is little mortality associated with colon cancer in men.	0.0%	0

In general, which of the following statements regarding colorectal cancer in WOMEN is true?		
Answer Options	**Response Percent**	**Response Count**
Colon cancer is the leading cause of cancer deaths in women.	0.0%	0
Colon cancer is the 2nd leading cause of cancer deaths in women.	21.4%	3
Colon cancer is the 3rd leading cause of cancer deaths in women.	**78.6%**	**11**
There is little mortality associated with colon cancer in women.	0.0%	0

Which of the following statements regarding colorectal cancer is false?		
Answer Options	**Response Percent**	**Response Count**
The mortality rate from colorectal cancer has increased over the last 10 years.	**100.0%**	**14**
There are multiple methods for patients to be screened for colorectal cancer.	0.0%	0
It is recommended that colorectal cancer screening begins no later than age 50.	0.0%	0
The risk for developing colorectal cancer increases beyond age 50.	0.0%	0

What is NOT a recommended colorectal cancer screening test?		
Answer Options	**Response Percent**	**Response Count**
Colonoscopy or flexible sigmoidoscopy	0.0%	0
Fecal Immunological Test (FIT) or high-sensitive guaiac (FOBT) test	0.0%	0
DNA test such as Cologard	0.0%	0
In office - Digital Rectal Exam (DRE)	**100.0%**	**14**

What are NOT considered barriers for patients to get screened for colorectal cancer?		
Answer Options	**Response Percent**	**Response Count**
Cost due to lack of insurance	0.0%	0
Transportation	7.1%	1
Not wanting to do the prep	0.0%	0
Grossed out by the test; no one is "going to put anything up there" mentality	0.0%	0
All answers are correct	**92.9%**	**13**

What colorectal cancer screening resources are you familiar with? Please describe.	
Response	**Number of Resources Listed**
Websites	1
Flexible sigmoidoscopy, colonoscopy, CT colongraph, Guiac, FIT	5
Colonoscopy, FIT, FOBT, Sigmoidoscopy, CT	5
Colonoscopy, sigmoidoscopy, FOBT, FIT, Cologard	5
Colonoscopy	1
[SKIPPED QUESTION]	0
Colonoscopy, sigmoidoscopy, FIT, cologard	4
[SKIPPED QUESTION]	0
Cologard, FIT, FOBT	3
Colonoscopy, FOBT	2
Colonoscopy, FIT, FOBT	3
➔ Total average number of resources listed = 2.64	

Evaluation Summary

Which of the following best describes your role?		
Answer Options	**Response Percent**	**Response Count**
DO Student	**73.3%**	**11**
DPM Student	6.7%	1
PA Student	20.0%	3
Other (please specify)	0.0%	0

What is your anticipated graduation year?		
Answer Options	**Response Percent**	**Response Count**
2017	6.7%	1
2018	13.3%	2
2019	33.3%	5
2020	**46.7%**	**7**

How did you find out about this activity? Mark all that apply.		
Answer Options	**Response Percent**	**Response Count**
Email	**86.7%**	**13**
Flyer/Poster	6.7%	1
DMU CME Website	0.0%	0
Professor	6.7%	1
Word of Mouth	6.7%	1
Other (please specify)	0.0%	0

Please indicate the extent to which you agree with the following statements:					
Answer Options	**Strongly Agree**	**Agree**	**Neutral**	**Disagree**	**Strongly Disagree**
The content was appropriate to my future practice.	**13**	2	0	0	0
This activity will make me more effective in my future practice.	**13**	2	0	0	0
Overall, this activity was balanced and free of commercial bias.	**15**	0	0	0	0

Did the activity meet your expectations in accomplishing the stated objectives?					
Answer Options	**Completely**	**Mostly**	**Partially**	**Minimally**	**Not at all**
Review risk factors, sign, and symptoms of colorectal cancer.	**12**	3	0	0	0
Describe importance of accurate patient history in early detection of colorectal cancer.	**14**	1	0	0	0
Identify individuals at high-risk for colorectal cancer.	**13**	2	0	0	0
Recommend appropriate colorectal cancer screening options.	**11**	4	0	0	0
Refer to a GI specialist when necessary.	**8**	5	2	0	0

Please rate the following:					
Answer Options	**Excellent**	**Very Good**	**Good**	**Fair**	**Poor**
Overall administration of the activity.	**12**	2	1	0	0
Adequacy of facilities and resources.	**13**	2	0	0	0
Quality of the instructional process and presentation including the effectiveness of educational methods.	**13**	2	0	0	0
Dr. Newton's teaching effectiveness, knowledge, and organization.	**13**	2	0	0	0
Dr. Newton's ability to communicate ideas and information clearly.	**14**	1	0	0	0

This educational activity will result in a change in my:		
Answer Options	**Response Percent**	**Response Count**
Knowledge (facts and information acquired by a person through experience or education)	**100.0%**	**15**
Competence (having the ability to apply knowledge, skills, or judgment in practice if called upon to do so)	86.7%	13
Performance (what the participant actually does in practice)	73.3%	11
Patient outcomes (actual outcomes in individual patients and/or patient populations)	73.3%	11
Community (change in population health status)	73.3%	11
This activity did not result in a change.	0.0%	0

Please describe any 'pearls' or takeaway messages.

- Different screening options for colorectal cancer.
- I knew of DRE limitations, but not the extent of them.
- DRE is NOT recommended for colorectal cancer screening.
- Patients are unaware of recommended screening options and what procedures are like.
- Be sure to ask about colorectal screening and say NO to the DRE!
- DRE is not a recommended method for screening.
- To explore with patients the importance of screening.
- I learned a lot about Lynch Syndrome.
- I did not know about the Cologuard test.
- It was very nice to be in a low-stress SPAL situation and I appreciated the clinical applications.
- DRE's are not considered proper colorectal exams.
- I was unaware of alternative methods to colonoscopy.
- Colonoscopy is a sensitive subject for some. Approach the idea gently.
- I learned more about grading of colorectal cancers.
- I learned that patients older than 50 years are indicated for screening. Also, insurance pays for colonoscopy, so long as the patient did not have any other diagnostic tests done. Some tests are good alternatives to a colonoscopy but a colonoscopy is most effective.

Please note any changes or improvements in the care of your (future) patients that you plan to make as a result of attending this educational activity. If no changes are identified, please explain why (program format, content not appropriate, nothing learned, etc.).

- Being more sensitive to options available to those without insurance.
- I will stay educated on screening options and try to stay up-to-date on financial options. I did not realize we were taught outdated techniques (DRE) and did not know of certain financial factors.
- I would make an effort to privatize colorectal screening in at-risk populations.
- Take time to educate patients on preventative medicine.
- I will avoid useless screening tests and am more knowledgeable about insurance.
- I plan to explore colorectal cancer screening with my future patients.
- I will regularly recommend screening.

Do you have any unanswered questions or additional comments?

- Thank you!!
- This was informative and fun!
- This was fun and educational!
- Some of the data was fast; but if the post-exam is an indicator, it must not have been too fast!
- Thank you!
- This was really informative and I feel more knowledgeable about colorectal cancer screening information and options. Thank you!
- Rather than a SPAL, I would suggest calling it a patient education discussion. This was more of an educational Q&A between patient and provider than an actual SPAL.
- Are there any special populations that have special risk for CRC?

Pre-Workshop Questionnaire Summary

In general, which of the following statements regarding colorectal cancer in MEN is true?		
Answer Options	**Response Percent**	**Response Count**
Colon cancer is the leading cause of cancer deaths in men.	0.0%	0
Colon cancer is the 2nd leading cause of cancer deaths in men.	20.0%	1
Colon cancer is the 3rd leading cause of cancer deaths in men.	**80.0%**	**4**
There is little mortality associated with colon cancer in men.	0.0%	0

In general, which of the following statements regarding colorectal cancer in WOMEN is true?		
Answer Options	**Response Percent**	**Response Count**
Colon cancer is the leading cause of cancer deaths in women.	0.0%	0
Colon cancer is the 2nd leading cause of cancer deaths in women.	20.0%	1
Colon cancer is the 3rd leading cause of cancer deaths in women.	**60.0%**	**3**
There is little mortality associated with colon cancer in women.	20.0%	1

Which of the following statements regarding colorectal cancer is false?		
Answer Options	**Response Percent**	**Response Count**
The mortality rate from colorectal cancer has increased over the last 10 years.	**75.0%**	**3**
There are multiple methods for patients to be screened for colorectal cancer.	25.0%	1
It is recommended that colorectal cancer screening begins no later than age 50.	0.0%	0
The risk for developing colorectal cancer increases beyond age 50.	0.0%	0

What is NOT a recommended colorectal cancer screening test?		
Answer Options	**Response Percent**	**Response Count**
Colonoscopy or flexible sigmoidoscopy	0.0%	0
Fecal Immunological Test (FIT) or high-sensitive guaiac (FOBT) test	0.0%	0
DNA test such as Cologard	40.0%	2
In office - Digital Rectal Exam (DRE)	**60.0%**	**3**

What are NOT considered barriers for patients to get screened for colorectal cancer?		
Answer Options	**Response Percent**	**Response Count**
Cost due to lack of insurance	0.0%	0
Transportation	0.0%	0
Not wanting to do the prep	0.0%	0
Grossed out by the test; no one is "going to put anything up there" mentality	0.0%	0
All answers are correct	**100.0%**	**5**

What colorectal cancer screening resources are you familiar with? Please describe.	
Response	**Number of Resources Listed**
FIT, FOBT, DNA, colonoscopy	4
Colonoscopy	1
Hemocult stool test, colonoscopy	2
FOBT, colonoscopy	2
Guiac, cologuard, colonoscopy	3
➔ Total average number of resources listed = 2.4	

When collecting a history and physical, what percentage of the time do you ask a patient over age 50 if they've had a colonoscopy or when their last colonoscopy was?		
Answer Options	**Response Percent**	**Response Count**
0 – 25%	0.0%	0
26 – 50%	0.0%	0
51 – 75%	25.0%	1
76 – 100%	**75.0%**	**3**

Does your office currently remind patients over age 50 that they are due for a colonoscopy screening test? If so, what method(s) do you utilize (e.g. phone calls, letters, etc.)?

- Letters, but it is not consistently.
- I am a student so do not have my own office yet.
- Screening with nurse during vitals. We are non-profit so patients generally opt for FOBT.
- Letters, my chart, phone calls

Post-Workshop Questionnaire Summary

In general, which of the following statements regarding colorectal cancer in MEN is true?		
Answer Options	**Response Percent**	**Response Count**
Colon cancer is the leading cause of cancer deaths in men.	0.0%	0
Colon cancer is the 2nd leading cause of cancer deaths in men.	20.0%	1
Colon cancer is the 3rd leading cause of cancer deaths in men.	**80.0%**	**4**
There is little mortality associated with colon cancer in men.	0.0%	0

In general, which of the following statements regarding colorectal cancer in WOMEN is true?		
Answer Options	**Response Percent**	**Response Count**
Colon cancer is the leading cause of cancer deaths in women.	0.0%	0
Colon cancer is the 2nd leading cause of cancer deaths in women.	20.0%	1
Colon cancer is the 3rd leading cause of cancer deaths in women.	**80.0%**	**4**
There is little mortality associated with colon cancer in women.	0.0%	0

Which of the following statements regarding colorectal cancer is false?		
Answer Options	**Response Percent**	**Response Count**
The mortality rate from colorectal cancer has increased over the last 10 years.	**100.0%**	**4**
There are multiple methods for patients to be screened for colorectal cancer.	0.0%	0
It is recommended that colorectal cancer screening begins no later than age 50.	0.0%	0
The risk for developing colorectal cancer increases beyond age 50.	0.0%	0

What is NOT a recommended colorectal cancer screening test?		
Answer Options	**Response Percent**	**Response Count**
Colonoscopy or flexible sigmoidoscopy	0.0%	0
Fecal Immunological Test (FIT) or high-sensitive guaiac (FOBT) test	0.0%	0
DNA test such as Cologard	0.0%	0
In office - Digital Rectal Exam (DRE)	**100.0%**	**5**

What are NOT considered barriers for patients to get screened for colorectal cancer?		
Answer Options	**Response Percent**	**Response Count**
Cost due to lack of insurance	0.0%	0
Transportation	0.0%	0
Not wanting to do the prep	0.0%	0
Grossed out by the test; no one is "going to put anything up there" mentality	0.0%	0
All answers are correct	**100.0%**	**5**

What colorectal cancer screening resources are you familiar with? Please describe.	
Response	**Number of Resources Listed**
FOBT, FIT, Sigmoidoscopy, Colonoscopy	4
FIT, Colonoscopy, Sigmoidoscopy, FOBT, Cologuard	5
Guiac, FIT, Cologuard, Colonoscopy, [illegible] Colonosopy	5
Colonoscopy, FIT, Cologuard	3
Iowa Department of Public Health	1
➔ Total average number of resources listed = 3.6	

When collecting a history and physical, what percentage of the time will you ask a patient over age 50 if they've had a colonoscopy or when their last colonoscopy was?		
Answer Options	**Response Percent**	**Response Count**
0 – 25%	20.0%	1
26 – 50%	0.0%	0
51 – 75%	0.0%	0
76 – 100%	**80.0%**	**4**

Does your office plan to remind patients over age 50 that they are due for a colonoscopy screening test? If so, what method(s) will be utilized (e.g. phone calls, letters, etc.)?

- Phone calls.
- Nothing right now.
- Post cards, letters, phone calls.
- We need to do huddles.

Evaluation Summary

Which of the following best describes your role?		
Answer Options	**Response Percent**	**Response Count**
Physician (DO, MD)	**40.0%**	**2**
Physician Assistant	20.0%	1
Nurse	20.0%	1
Other (please specify) • Student	20.0%	1

How did you find out about this activity? Mark all that apply.		
Answer Options	**Response Percent**	**Response Count**
Email	**40.0%**	**2**
Flyer/Poster	20.0%	1
IMS Communication	0.0%	0
DMU CME Website	20.0%	1
Word of Mouth	0.0%	0
Other (please specify) • Iowa Board of Nursing Newsletter	20.0%	1

Please indicate the extent to which you agree with the following statements:					
Answer Options	**Strongly Agree**	**Agree**	**Neutral**	**Disagree**	**Strongly Disagree**
The content was appropriate to my practice.	**4**	1	0	0	0
This activity will make me more effective in my practice.	**4**	1	0	0	0
Overall, this activity was balanced and free of commercial bias.	**5**	0	0	0	0

Did the activity meet your expectations in accomplishing the stated objectives?					
Answer Options	**Completely**	**Mostly**	**Partially**	**Minimally**	**Not at all**
Review risk factors, sign, and symptoms of colorectal cancer.	**5**	0	0	0	0
Describe importance of accurate patient history in early detection of colorectal cancer.	**4**	1	0	0	0
Identify individuals at high-risk for colorectal cancer.	**5**	0	0	0	0
Recommend appropriate colorectal cancer screening options.	**4**	1	0	0	0
Refer to a GI specialist when necessary.	**5**	0	0	0	0

Please rate the following:					
Answer Options	**Excellent**	**Very Good**	**Good**	**Fair**	**Poor**
Overall administration of the activity.	**4**	1	0	0	0
Adequacy of facilities and resources.	**4**	1	0	0	0
Quality of the instructional process and presentation including the effectiveness of educational methods.	**4**	1	0	0	0
Speaker's teaching effectiveness, knowledge, and organization.	**4**	1	0	0	0
Speaker's ability to communicate ideas and information clearly.	**4**	1	0	0	0

This educational activity will result in a change in my:		
Answer Options	**Response Percent**	**Response Count**
Knowledge (facts and information acquired by a person through experience or education)	**100.0%**	**5**
Competence (having the ability to apply knowledge, skills, or judgment in practice if called upon to do so)	60.0%	3
Performance (what the participant actually does in practice)	80.0%	4
Patient outcomes (actual outcomes in individual patients and/or patient populations)	40.0%	2
Community (change in population health status)	60.0%	3
This activity did not result in a change.	0.0%	0

Please describe any 'pearls' or takeaway messages.
• There are so many resources out there that could be used! • This was all very helpful. • Great conversation and discussion on options for patients without insurance coverage, cost, and other barriers. • It was great to be reminded of the HPV link to anal/rectal cancers.

Please note any changes or improvements in the care of your (future) patients that you plan to make as a result of attending this educational activity. If no changes are identified, please explain why (program format, content not appropriate, nothing learned, etc.).
• Continue efforts to decrease barriers of patients (e.g. resources for patients with a positive FOBT). • Cologuard will be recommended more. I may want to create a "huddle" frame work so we look at rectal screening for patients at least yearly.

Do you have any unanswered questions or additional comments?
• Thank you again. Jeanna was great! • It would be great to go over the myths and FAQs again that we hear so frequently. • Jeanna was great and was very open to questions and dialogue.

Appendix G. **Capstone Project Timeline**

This project began in January 2017. The activities were planned in January, February, and March. The first activity was held on April 17, 2017 and the second activity was held May 6, 2017. The questionnaires and evaluations were reviewed in May and June; and a copy of the summary data was submitted to IDPH in June. July through November consisted of writing and redrafting this report. Below is a timeline of the project that documents many of the steps that were involved with offering these two workshops.

Due Date	Activity	Responsible Party	Completed Date	Notes
1/1/17	Visit SPAL space and initiate relationship	DMU	Jan 2017	
1/1/17	Planning meeting	DMU/IDPH	Jan 2017	
2/1/17	Student and provider dates confirmed	DMU/IDPH	Feb 2017	
2/1/17	Promotional materials drafted	DMU	Feb 2017	
2/16/17	Patient scripts and charts drafted and sent to VR for review	CB	2/16/17	
2/16/17	Provider banner and banner with both dates	CB	2/16/17	
2/17/17	Marketing Materials Approved	IDPH	Feb 2017	
2/17/17	Student promotional email final	CB	2/17/17	
2/20/17	Promotion starts (digital sign, banner, poster, email, FB)	DMU	2/20/17	No registration questions for student activity
2/20/17	Communications request - provider mailer	CB	2/14/17	
2/22/17	Provider Speaker Confirmed	IDPH	2/28/17	
2/22/17	Patient scripts and charts reviewed and sent to JJ for review	CB	2/22/17	
2/24/17	Info to student clubs and campus announcements	CB	2/20/17	Chris Moore to send
2/28/17	Mailing Distribution List Confirmed (addresses and emails)	IDPH	2/28/17	Will be added to DMU's distribution list
3/1/17	Confirm account number	VR	2/20/17	115-3809-50999
3/1/17	Order USBs	CB	2/16/17	2-week delivery

3/1/17	Provider website sent to IBON	CB	2/28/17	DUE TODAY
3/1/17	Provider mailing list finalized & sent to marketing	CB	3/1/17	IDPH list + DMU Fam Med + CME Fam Med
3/1/17	CME credit confirmed for provider activity	DMU	2/28/17	
3/1/17	Provider mailers drafted	DMU	2/20/17	
3/3/17	Finalize student speaker	CB	3/3/17	
3/3/17	Planning meeting	DMU/IDPH	3/3/17	
3/6/17	Catering Order Submitted (students)	CB	3/7/17	Include speaker(s), IDPH staff, CME staff, SPAL staff
3/6/17	Provider mailers approved	DMU	2/28/17	
3/6/17	Debrief questions drafted and to VR/JJ for review	CB	3/6/17	
3/6/17	Pre- post- workshop questions drafted and to VR/JJ	CB	3/6/17	
3/7/17	Planning meeting	DMU/IDPH	3/7/17	
3/7/17	Mailers to printer/distribution list to DMU Marketing	CB	3/7/17	
3/8/17	Patient scripts and charts approved	IDPH	3/8/17	
3/8/17	USB Drive materials drafted	CB	3/8/17	
3/9/17	Debrief and pre/post workshop questions approved	JJ/VR	3/7/17	Including IDPH questions
3/9/17	Patient script to participants	CB	3/9/17	
3/9/17	Planning meeting	DMU/IDPH	3/7/17	
3/9/17	USB Drive materials approved	JJ/VR	3/9/17	
3/10/17	Provider mailers printed	DMU	3/13/17	
3/13/17	Provider mailers mailed	DMU	3/15/17	
3/15/17	Program planning evaluation	DMU/IDPH	3/15/17	Decided to postpone activity to 4/17/17 due to speaker cancellation.
3/15/17	Communications request - provider poster/digital sign	CB	N/A	IF we do a poster/digital sign...
4/1/17	Promotional email to IDPH contacts	CB	4/11/17	
4/10/17	Student evaluation drafted, sent to VR for review	CB	4/12/17	

4/11/17	Planning meeting	DMU/IDPH	4/11/17	
4/12/17	Final catering Order Submitted (student event)	CB	4/12/17	
4/14/17	Patient script to newly registered participants	CB	4/14/17	
4/14/17	Student evaluation approved by VR, sent to JJ	DMU	4/14/17	
4/14/17	Received speaker CME documents	DMU	4/12/17	
4/17/17	Received speaker presentation	IDPH	4/16/17	
4/17/17	Student evaluation approved	IDPH	4/17/17	
4/17/17	Handouts, pateint charts printed	CB	4/14/17	
4/17/17	Student Event Date		4/17/17	
4/19/17	Review notes and feedback; make adjustments as necessary	CB	4/19/17	
4/21/17	Evaluations summarized, sent to VR	CB	4/21/17	
4/24/17	Invite admissions/Community Relations to the provider SPAL	CB	4/24/17	Will share a table; MHA/MPH info and clinic promo
4/24/17	Patient script to participants	CB	4/24/17	
4/24/17	Final Catering Order Submitted (providers)	CB	4/26/17	
5/3/17	Evaluation summary approved	VR	5/5/17	
5/3/17	Finalize USB Materials (including speaker handout)	DMU/IDPH	5/3/17	
5/5/17	Handouts, pateint charts printed	CB	5/5/17	
5/6/17	Provider event date		5/6/17	
5/24/17	Evaluations summarized, sent to VR	CB	5/24/17	
5/31/17	Evaluation summary approved	CB	5/31/17	
6/13/17	Capstone final draft to JJ/VR	CB	6/13/17	

Appendix H. **Capstone Process Reflection**

Every aspect of this project was directly in line with many of the competencies outlined for the MPH program. A foundational characteristic of public health is partnership with multiple health care stakeholders. Through this project, I was able to make connections with a state-wide public health program, CRC experts, simulation and adult learning experts, practicing health care providers, medical students, and other public health professionals. Additionally, the science of public health, including literature review and evidence-based learning, is imperative and was a significant component of this project.

Throughout the course of the capstone program, I was able to improve technical knowledge that will be necessary for my future, such as analytic and assessment skills, communication skills, and financial planning skills. To begin the project, I completed a literature review and program budget that were used to inform the methodology for the educational workshops. To assess the outcomes of the project, I utilized Excel to evaluate the quantitative data, and survey software to evaluate the qualitative data. Additionally, the writing of the case presentations, questionnaires and evaluations, and the project proposal and final report improved my written communication skills.

There was much that I gained personally as well throughout this project. Something that is important to me is improvement of my oral communication and public speaking skills. During this project, I led face-to-face meetings and conference calls, served as the primary contact for our speaker and planning committee members, and participated in the debrief discussions during the workshops as an observer of the SPAL cases. Additionally, this project helped increase my confidence because I received significant positive feedback from (1) my preceptor regarding my leadership of the program, (2) a CRC expert, that was also our speaker, regarding the content of

the case scenarios, and (3) the participants regarding the structure of the workshop and their take-aways from the program.

Overall, the program went very well; however, there were also a few set-backs along the way. First, a prominent student activity was added to the schedule for the same day that our first activity was scheduled. Therefore, we had trouble with recruitment of participants and decided to reschedule the activity. It is difficult to work around the schedules of many student programs, and rescheduling the activity was not easy. Next, the speaker did not show up for the May 6 activity, claiming he had accidentally overslept, which caused us to have to improvise. My preceptor willingly stepped up and put on a quality presentation that received numerous positive comments and sparked some very good dialogue between participants. Finally, while working on my results section, I realized that I'm not as familiar with the mathematical components of statistics as I once was. In the past, I have been able to rely on statistical software or other professional assistance, so it was challenging to re-familiarize myself with these concepts. However, I figured it out step-by-step and was able to execute the calculations to support the outcomes of the project.

These set-backs were frustrating and overwhelming as I was working through the project; however, they have made me more resilient and are important aspects of working in public health. Regardless if it was positive or negative, I approached all scenarios ethically and professionally. Through all the successes and trials of this project, I have come out more competent and am confident in my ability to succeed in public health. I was able to design a successful project that advanced a local CRC public health program, and I gained invaluable personal experience that is highly relevant to a future in the field of public health.