Improving Compliance with Fecal Occult Blood Tests, a Colorectal Cancer Screening Tool

An educational and awareness intervention pilot study in an indigent low-income population served at a community health center in Nashville, TN

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Introduction

In 2012, the rate colorectal cancer (CRC) screening at the Matthew Walker Comprehensive Health Center (MWCHC) was 31% according to their most recent Uniform Data System (UDS) Report (1). That was lower than the national average rate of 64.8% and lower than the average rate for those 0-138% of the poverty line (49.8%) in 2010 according to the U.S. Department of Health and Human Services (2). This pilot study focused on improving the rate of CRC screening at MWCHC with specific focus on Fecal Occult Blood Tests (FOBT). After twenty interviews with patients and providers, several barriers to recommending and completing CRC screenings were identified from both patient and provider perspectives, all of which are outlined in Appendix A. The barriers that were the most potentially modifiable were chosen for intervention in the pilot study. A table that pairs the chosen barriers with its corresponding intervention can be found in Appendix B.

With no other interventions targeted at CRC screenings taking place at the clinic, it should be reasonable to use a comparison between this year's screening rate with the previous year's in order to determine the effectiveness of the interventions in improving CRC screening rates. The pilot study is currently on-going at the clinic site, and final screening rate data is pending until the end of the year, but initial findings have been positive.

Background

Colorectal cancer (CRC) is the second leading cancer killer in the U.S. among cancers that affect men and women. CRC affects men and women of all racial and ethnic groups, and is most often found in people aged 50 years or older. Tennessee has one of the highest death rates from CRC in the U.S. (17.1-

21.5%) according to a 2009 report from the CDC. However, the state average screening rate in 2010 was 59.3-63.5% which is on the lower end compared to other states (3). The screening rate at MWCHC in 2012 was even lower than the state average at 31% (1). According the CDC, if everybody aged 50 or older had regular screening tests, as many as 60% of deaths from CRC could be prevented (3).

Screening tests can find precancerous polyps (abnormal growths) in the colon or rectum so that they can be removed before they turn into cancer. Screening tests can also find CRC early, when treatment works best. The current guidelines for CRC screening according to the U.S. Preventive Services Task Force recommends screening using high-sensitivity fecal occult blood testing (FOBT) once a year, sigmoidoscopy every five years with FOBT every three years, or colonoscopy beginning at age 50 years and continuing until age 75 years. Those with a family history of colorectal polyps or CRC, inflammatory bowel disease, or other predispositions to CRC may need to be screened earlier than 50 or more often than other people (3).

At community health centers that serve a primarily low-income and uninsured population it is more common for healthcare providers to offer a FOBT, which is a less expensive and non-invasive alternative to a colonoscopy. However, FOBT screening has a low sensitivity for detecting early CRC and large adenomas compared to colonoscopy. But regardless of the low sensitivity of FOBT, annual FOBT decreases mortality due to CRC by 16% and CRC incidence by 20% (4). Fecal occult blood testing is based on the fact that blood vessels that form at the surface of larger colorectal polyps are easily damaged by feces, and the small amount of blood that probably cannot be seen (occult) can be detected by a chemical test. The test is performed by the patient over the course of up to two weeks. The patient collects two samples from a single bowel movement and smears the samples on two small squares within a foldable card. Two additional sample collections are then taken on different days within the two week period. Finally, the three FOBT cards are returned to the doctor or the lab where a chemical test is performed to detect blood. If the test is positive then a colonoscopy is necessary to verify the presence of polyps or CRC (5).

Even though research suggests that early detection of CRC may be the key to long-term survival, CRC screening is underutilized (6). This contrast between the potential benefit of CRC screening and its underutilization is sharpened in low socioeconomic populations (7). Many attempts have been made to

increase CRC screening through health education interventions, but few interventions have shown to significantly increase CRC screening rates (8). A randomized controlled trial using a videotaped intervention to increase compliance with FOBT screening showed a greater intention to complete an FOBT after viewing the video. They also showed a positive relationship between the intention to complete an FOBT with self-efficacy and CRC knowledge. However, even though there was a small increase in actual FOBT compliance, it was not a significant increase (9). More trials must be done to identify effective strategies to significantly increase FOBT compliance.

In a study on the psychosocial and medical predictors of CRC screening, physician recommendation of FOBT was the strongest predictor of FOBT compliance (10). Another study found that only 36.5% of the patients interviewed reported believing that their physician wanted them to perform an FOBT. In the same study, more than half of the participants could not name a CRC screening test, and the researchers found that there were common misconceptions about perceived susceptibility to CRC, the asymptomatic nature of the disease, screening recommendations, and the accuracy of screening tests (11).

The problem of low CRC screening rates especially among minority and low-socioeconomic groups is clearly a nationwide issue. However, it is difficult to generalize results from other studies in different areas since not many studies use minority and low-socioeconomic groups in their study population. A more community-specific approach seems necessary to produce effective and lasting changes in low-income and minority populations. Therefore, this study focused on the factors involved in FOBT screening compliance specifically at MWCHC in order to develop a strategy to improve compliance. Potentially, the strategy developed here, if successful, may be used as a model for other clinics that serve low socioeconomic communities.

Methods

Determining the barriers impeding FOBT compliance: A sample of 10 patients and 10 healthcare providers were interviewed over three weeks at MWCHC. Inclusion criteria were patients who were adults age 50 or older, which is the recommended age span for CRC screening, and providers who work in the adult suite with patients age 50 or older. The patient interviews consisted of the following four questions:

1. Have you ever had a colon cancer screening (a colonoscopy or a stool blood test [FOBT])?

2. Do you know the recommendations for colon cancer screening?
3. Do you know that the screening test is covered by Medicare and other insurances?
4. What, if anything, keeps you from completing the screening?

The provider interviews consisted of only one question: In your opinion, what are some obstacles to completing colon cancer screenings? All interview responses were recorded and compared to find similarities for potential targets for intervention. The analysis of responses can be found in Appendix B.

One of the goals of the project was to construct a diagram that displayed the total number of patients age 50 or older that were seen at MWCHC, the number of patient visits where it would be reasonable to recommend an FOBT screening, the number of patients who were actually given the FOBT materials, and the number of patients who successfully completed and returned the FOBT materials on time. However, lack of familiarity with the electronic medical records system even among the IT department on staff at the clinic prevented the creation of the necessary reports to collect the data. A mock-up version of the diagram is included in Appendix C as an example for potential expansions of this study.

Development and implementation of intervention: The patient instructions sheet for FOBT screening was developed based on an existing instruction sheet created by the Ontario Ministry of Health and Long-Term Care available at: http://health.gov.on.ca/en/public/programs/coloncancercheck/fobt.aspx. The instructions sheet was adapted to better fit the expectations of the providers at MWCHC and to accommodate the average reading level of the patient population. Both English and Spanish versions were created. The Spanish version was proofread and edited by two staff members who are native Spanish-speakers. The result can be found in Appendix D. The instructions sheets were folded and placed in biohazard bags along with the necessary materials to complete the FOBT (3 FOBT cards and 3 applicator sticks). The biohazard bags can be used to store and return the FOBT cards once completed. All of the providers were informed on the new instructions sheet and the location of the prepared kits that contained all of the FOBT materials. Electronic copies of both versions of the FOBT instructions sheet were stored on the computers' desktops for re-printing to replenish as needed. Each provider signed a form that confirmed their understanding of and participation in the study.

Also, provider reminders to recommend FOBT screenings for patients 50 or older were laminated and affixed to each computer screen in the adult medicine suite. The reminders can be found in Appendix E. Finally, FOBT screening awareness flyers were spread throughout the clinic in the waiting rooms, in the restrooms, and in the exam rooms in order to increase awareness and knowledge about CRC screening, specifically FOBT screening. The flyer was also made in English and Spanish. The result can be found in Appendix F.

Evaluation of implementation: Primarily, the intervention will be evaluated based on the difference in screening rates between 2012 (before intervention) and 2013 (after intervention) according to the annual UDS reports. Though desired, it was not possible to obtain running reports on FOBT completion from the electronic medical records system for a shorter period of time.

The FOBT instructions sheet was independently evaluated for its readability and reception among the patient population through 10 patient test-reads. Patients age 50 or older visiting the clinic between July 24 and July 26 were recruited for the test-read. Each patient was introduced to the researcher who explained the purpose and potential benefits of the study. Then they were asked to read through the instructions on their own and complete a three-question survey evaluating the instructions. Two patients without their reading glasses were read the instructions aloud by the researcher. The three survey questions included the following:

1. Were the instructions that were given with the test cards easy to understand? *¿Fueron las instrucciones que se dieron con las tarjetas de prueba fácil de entender?*

   No Somewhat Yes

   No Así así Sí

2. Would the instructions help you perform and complete the stool sample test? *¿Las instrucciones que le ayudan a realizar y completar la prueba de muestra de heces?*

   No Somewhat Yes

   No Así así Sí

3. Please describe below and on the back how we can improve the instructions. *Por favor, incluya a continuación y en la parte de atrás cómo podemos mejorar las instrucciones.*

The results of the survey can be found in Appendix G.

Results

The results of the initial assessment for obstacles to completing FOBT screenings can be found in Appendix B. Half of the patients interviewed (5 out of 5) had been screened for CRC, but only 2 of those 5 had completed an FOBT screening. The other 3 had a colonoscopy. Seven out of ten patients interviewed did not know the recommendations for CRC screening. Four out of the five patients who had done a screening knew that they were covered by their insurance, but all five who had not done a screening plus one who had did not know if it was covered. Most of the obstacles to completing FOBT screenings were described by the providers since many of the patients had never completed an FOBT screening. The most commonly mentioned obstacle (7 out of 10 providers) was the lack of patient understanding to complete the FOBT screening. The second most commonly mentioned obstacle (5 out of 10 providers) was lack of physician reminders to recommend CRC screenings. These obstacles were focused on in the development of the interventions, which can be found in Appendix A.

The final result of compliance change is still pending until the completion of the end of year UDS report. However, preliminary results regarding the FOBT instructions sheet were collected through the test-read surveys. All ten patients indicated on the survey that the instructions were easy to understand and that the instructions would help them perform and complete the FOBT screening. Nine surveys were completed in English to evaluate the English version of the instructions. One survey was completed in Spanish to evaluate the Spanish version of the instructions in addition to the two native Spanish-speaking staff members who edited and proofread the Spanish version. Only one comment was made: “I really appreciated how everything was in everyday terminology and not too many medical terms. It was very understandable.”

Discussion

Even though it is unknown whether the interventions that were made will actually improve CRC screening rate, it seems that the FOBT instructions have been well-received by patients and staff. According to the results of the test-read survey, the instructions seem to be at the appropriate reading level for the patient population, and the patients feel that the instructions are helpful. From the initial assessment for obstacles, some of the obstacles that were suggested by the providers (transportation, aversion to the test, forgetting to do the test before the next appointment) were excluded from intervention

due to time and resources. Also, it was interesting that a majority of providers noted lack of patient understanding as a primary obstacle, but after interviewing the patients, both of the patients who had done an FOBT screening stated they had no problem following the steps to complete the screening. However, since the number of patients interviewed who had actually done an FOBT was small, it cannot be used to generalize.

The most common obstacle mentioned (7 out of 10 providers) was the lack of patient understanding to complete the FOBT screening. After further investigation of why patients did not know how to complete the screening accurately, it was discovered that the patients are only given verbal instructions before they leave the clinic on how to complete the screening. This is why it was evident that written instructions were needed, so the patient could take it with them and refer to it when they are actually performing the collection process for the screening.

The second most common obstacle (5 out of 10 providers) was lack of physician reminders to recommend CRC screenings. An effort was made to install pop-up reminders in patient charts who were due for a CRC screening, and IT is currently working on creating the pop-up reminders. In the meantime, small, laminated quarter sheet reminders were taped to the sides of the computer screens in the adult suite of the clinic as an extra reminder for the doctors. According to one physician, when a patient comes in with multiple comorbidities and a long list of medications, preventive screenings are rarely on the forefront of his mind. The reminders have been well-received so far, and doctors have self-reported informally that they have given more FOBT screenings since the reminders were put up.

Based on the patient interviews, it became evident that most patients were uninformed about CRC screenings and the recommendations. This could be evidence that the providers are not offering CRC screening to enough of their patients, which would be even more of a reason to have the reminders on the computers and in the medical record system. Suggestions for obstacles to completing FOBT screening from patients were sparse since most of the patients who were interviewed had not been asked to complete a FOBT screening. One method to increase patient knowledge and awareness of FOBT screening was implemented in the educational flyers that can be found in Appendix F. Potentially, if the patients have more knowledge about the risks of CRC and the benefits of screening, they will be more likely to request a FOBT screening and take initiative to bring it up with the doctor.

There were several obstacles that were identified throughout the progress of this study. Many of which were beyond the scope of this project. However, it would still be worthwhile to explore the impact of interventions that target some other obstacles to CRC screening. For example, an obstacle that was discovered after the implementation of the intervention pertained to when the patients at the clinic are told to complete the FOBT screening. Many of the providers stated that they will often tell the patients to wait until three days before their next appointment to collect the samples for the screening so they won't have to worry about making another trip to the clinic. There are clearly pitfalls to this recommendation with the potential of the patient forgetting about the screening over the three to six months until their next appointment, and there are no reminder calls to collect the screening samples made to those patients before their next appointment. There is potential for an intervention that would either serve as a system to remind patients about the FOBT screening before their next visit, or could involve an alternative method to return the FOBT cards via mail. Although, after inquiring about mailing envelopes for the FOBT cards, it did not seem that either the clinic or the patient would be willing to pay for postage to mail them.

Recommendations

Given that there is evidence that the FOBT instructions are easy to understand and are believed to be helpful for collecting the screening samples, it is recommended to continue the use of the instructions. It is important for the providers to make sure they help the patient navigate the resources as opposed to just handing them the bag of materials. It is also important to make sure the exam rooms are stocked with the bags of materials including the instructions sheet that will need to be printed and copied as necessary. If CRC screening rate does increase significantly, the FOBT instructions and intervention strategy that was used in this pilot study should be expanded for use at other clinics with similar patient populations.

The most effective way to increase CRC screening rates would be to address all obstacles. That was not feasible within this study. The following obstacles were not addressed fully or at all in this study: difficulty in returning the FOBT samples, lack of patient desire to do the screening test, and lack of patient knowledge about CRC and screening. It is highly recommended that a system is put in place to help the patients return the FOBT samples in a convenient and timely manner. This was the largest obstacle that was not addressed in this study. Mailing the FOBT samples as an option should be reconsidered, or a

system to remind the patients no later than a week before their next appointment to collect the samples should be put in place. Also, there are many more opportunities at the clinic to increase patient awareness and knowledge about CRC and screening methods that were not taken advantage of in this study. Currently, the televisions in the waiting rooms are tuned to news or entertainment. It may be possible to run educational slides about CRC and screening as well as information about other preventable diseases and their screening tests on closed circuit throughout the waiting rooms in the clinic. It may also be helpful to make all of the screensavers on the computer reminders for the physicians to recommend the appropriate screening tests for their patients. Maybe even enrolling patients in educational seminars at the clinic to learn more about preventable diseases and their screening options would help educate the patients so they will be more likely to complete the screening tests. The educational seminars may even serve to decrease some of the aversion to colonoscopies and stool collection for FOBT.

A final recommendation comes from two patient interview conversations regarding this study. One patient, who really appreciated the instructions sheet and the educational aspect of it, suggested that more efforts should be done to inform the general public about their screening options for all preventable diseases. He gave the example of a PSA test for prostate cancer. He and his friends were unaware that a blood test was another form of screening for prostate cancer besides a digital rectal exam. This pilot study can be used as a model for other efforts to increase screening rates for any other preventable disease. It would be economical to combine the efforts in reminders, flyers, and educational material to include all relevant preventable diseases and their screening methods for men and women all in one place. Lastly, another suggestion from a patient was in regards to teaching patients how to perform a screening test. She said that it might be more helpful for some patients to actually have the screening process demonstrated for them in the office before they go home to do it themselves. This was a great suggestion for FOBT screening and other self-performed screenings for the doctors to take the time to demonstrate the screening process in addition to having written instructions available so it will be easier for the patient to remember how to do it on their own.

Conclusion

CRC and its screening measures are subject to change over time as new trials are completed and new screening methods are developed and supported. Therefore, it is imperative to be diligent in updating all educational materials about screening recommendations and to be open with patients about the ever-changing nature of screening recommendations to minimize confusion. For the time being, FOBT screening is recommended as a cheaper and non-invasive alternative to colonoscopies. Increasing the facility of completing FOBT screening for the patient, and increasing facility of recommending FOBT screenings for providers could dramatically increase the number of low-income and uninsured patients who are adequately screened for CRC. Since uninsured, low-income and primarily minority patients are at greater risk for CRC, cheaper and easier screening methods could save many lives.

In this study, three obstacles for FOBT screening completion were targeted, and a three-pronged intervention was developed and implemented. All three obstacles were not fully addressed in this study. However, recommendations to address each obstacle better are detailed above. There were also several obstacles that were not addressed at all in this study due to time and resource constraints. The obstacles that were not addressed along with recommendations to address them in future studies are detailed above. According to the test-read surveys about the FOBT instructions, there is evidence that supports the ease of use and helpfulness of the instructions. This should support the continual utilization of the FOBT instructions long-term. Though, ultimately, the three-pronged intervention as a whole will be evaluated by the change in CRC screening rate over the remainder of the year.

Overall, this study has produced many future directions and recommendations for potential improvements in FOBT screening at MWCHC even before the final results have been gathered. It is yet to be determined whether the three-pronged intervention that was used in this study is going to increase CRC screening rates, but it is evident that much more can still be done in this area to increase CRC screening rates as well as other screening rates at MWCHC as this pilot study has shown.

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Appendix A

Patient Interview Responses

		Yes	No
1. Have you ever had a colon cancer screening (a colonoscopy or a stool blood test)?		5*	5
2. Do you know the recommendations for colon cancer screening?		3	7
3. Do you know that the screening test is covered by Medicare and other insurances?		4	6
4. What, if anything, keeps you from completing the screening?		n	
	a. Nothing	2	
	b. I used to get them at Kroger, but they don't do it anymore.	1	
	c. "I'm too old, what's the point" (respondent was 80 years old)	1	
	d. N/A	6	

*Only 2 participants that answered "Yes" had done an FOBT screening. The other 3 had done a colonoscopy.

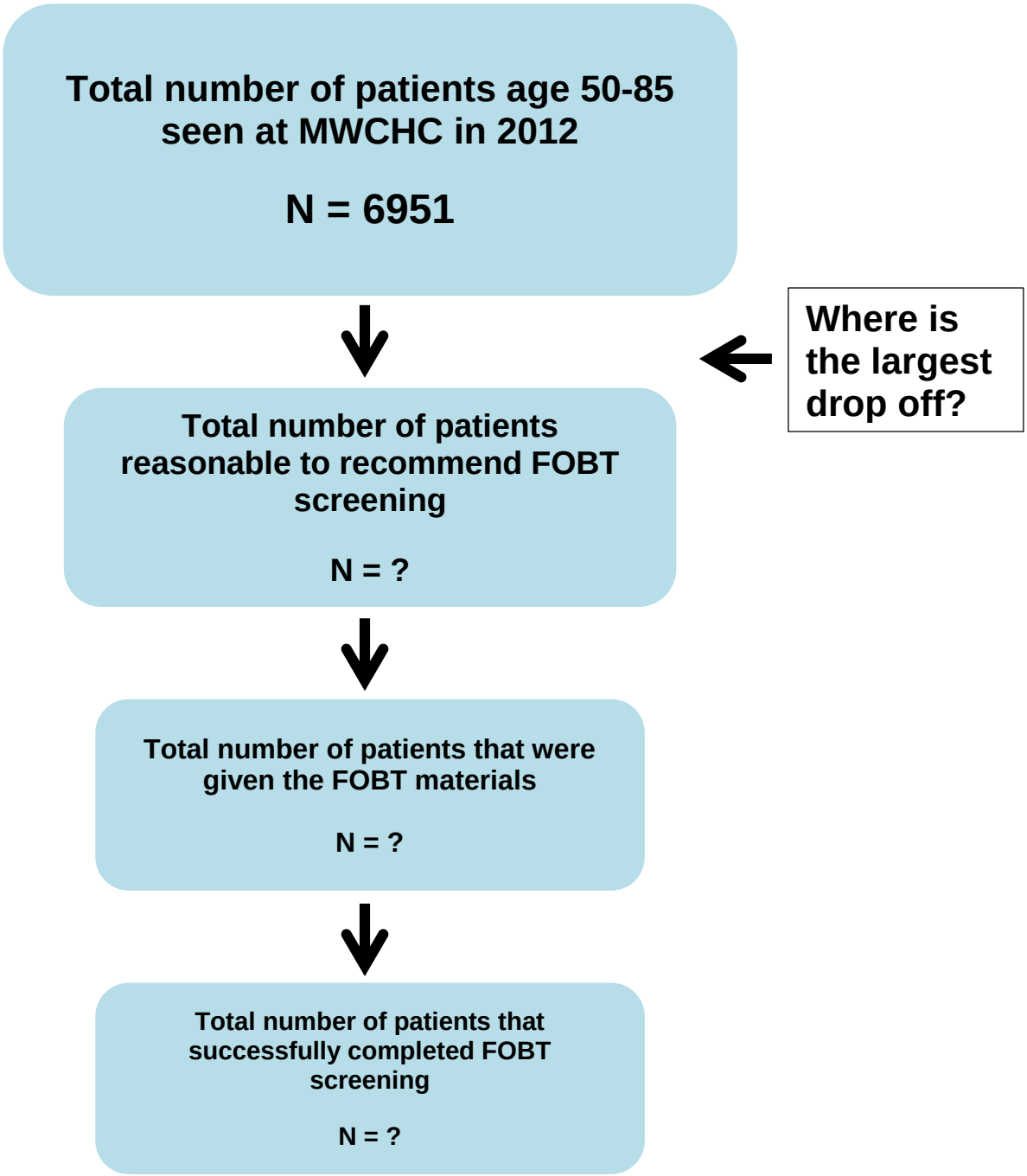
Provider Interview Responses

1. In your opinion, what are some obstacles to completing colon cancer screenings?		n
	a. Lack of patient knowledge to complete FOBT screenings	7
	b. Patient difficulty in returning the FOBT samples on time	4
	c. Patients don't feel that it's important	3
	d. Patients just don't want to do the test (colonoscopy or FOBT)	2
	e. Providers don't always think about recommending the FOBT screenings at every visit	5

Appendix B

Barrier		Intervention
1) Patient difficulty to successfully complete and return the screening test	→	**Development and distribution of a simple instruction sheet for the screening test**
2) Lack of physician reminders to recommend CRC screening when appropriate	→	**Strategic placement of reminder cards urging physicians to offer a CRC screening if necessary**
3) Lack of patient awareness of CRC screening recommendations and options	→	**Distribution of educational posters as part of a CRC screening awareness campaign**

Appendix C


Total number of patients age 50-85 seen at MWCHC in 2012
N = 6951
Where is the largest drop off?
Total number of patients reasonable to recommend FOBT screening
N = ?
Total number of patients that were given the FOBT materials
N = ?
Total number of patients that successfully completed FOBT screening
N = ?

Appendix D

FOBT (Fecal Occult Blood Test) Instructions

When caught early enough, colorectal cancer is **curable in 9 out of 10 people**. Since there are no visible signs or symptoms in the early stages, this simple and easy test could help save your life.

Please read these instructions fully.

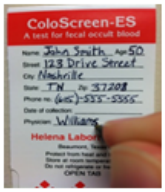
A. Before You Start

Important: You must return the test cards as soon as all 3 have been completed but no later than 10 days after collecting your first stool.

Avoid Vitamin C supplements and citrus fruit and juices for 2 days. Ask your doctor for anything else to avoid before collecting your samples.

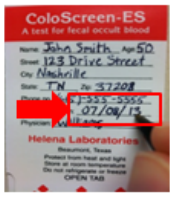
Otherwise, continue to eat your normal diet and take your regular prescribed medications.

B. Filling out the Test Card



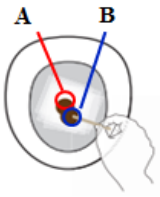
- **Using a pen, print your name, age, and contact information on all 3 test cards**
- **You will collect stool samples on 3 different days within a 10 day period**
- **Under each flap there are two small areas on which to smear your samples.**

C. Doing the Test



1. **Write the date of your first sample collection on one of the test cards. Open the tab and peel back the flap to apply the first sample.**

2. **To collect stool, use a clean, disposable container or place several layers of toilet paper in the toilet bowl to support the stool.**



3. **Use the applicator stick to collect a small sample of stool. Apply a very thin smear to Box A. Use the same stick to collect and smear a second sample from a different location of the stool in Box B. Close and secure the flap.**

4. **Wrap a piece of toilet paper around the applicator stick and discard. Flush the toilet. You are done with the first sample!**

5. **Place the test card in a safe, dry place at room temperature.**

6. **Repeat steps 1-5 to collect and smear samples on two additional days under the flaps of the second and third test cards.**

D. After the Test

Once all 3 samples have been collected, make sure to return all 3 test cards to the clinic before 10 days from your first sample!

If you would like to watch a video that demonstrates these instructions, visit:

https://www.youtube.com/watch?v=Wl8zaZiQXDg

Need help? Have questions?
Please call (615)-327-9400

Appendix D Continued

Instrucciones para la PSOH
(Prueba de sangre oculta en heces)
El cancer colorectal detectado a tiempo puede curarse en **9 de cada 10 personas**. Esta enfermedad no presenta signos ni síntomas visibles en las primeras etapas, por lo tanto, esta sencilla prueba puede ayudarlo a salvar su vida.
Lea las instrucciones con atención.

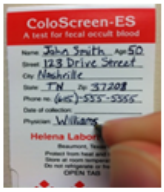
A. Antes de empezar

Importante: Debe devolver esta prueba ni bien finalice de completar las 3 tarjetas y antes de que se cumplan los 10 días de haber recolectado su primera muestra.

Evite consumir suplementos de vitamina C, jugos y frutas cítricos dos días antes de comenzar la prueba y durante el periodo de recolección de muestras.

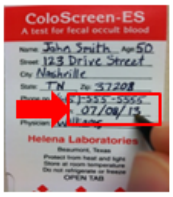
Por lo demás, continue con su dieta normal y no deje de tomar sus medicamentos habituales.

B.Cómo completar la tarjeta de prueba



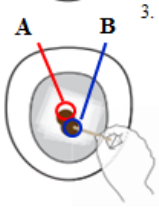
- **Utilice un bolígrafo para escribir su nombre y su edad en la tarjeta de prueba**
- **Recolecte las muestras de excreta en tres días diferentes, dentro de un period de 10 días**
- **Cuando levanter la tapa hay dos áreas pequeñas donde debe colocar sus muestras.**

C. Cómo realizer la prueba



1. Escriba la fecha de su primera recolección de muestras en la tapa primera. Abra la tapa para colocar la primera muestra.

2. Para recolectar la muestra, utilice un recipiente limpio y desechable, o bien, coloque varias capas de papel higiénico en el inodoro para que la sostengan.



3. Utilice el palillo aplicador para recolectar una pequeña muestra de la deposición. Aplique una capa muy fina en area A. Utilice el mismo palillo para recolectar otra pequeña muestra de un lugar distinto y aplicarla en el area B. Cierre la tapa y asegúrela.

4. Envuelva el palillo aplicador en papel higiénico y deséchelo. Hale la cadena del baño. ¡Ya ha completado su primera muestra!

5. **Coloque la prueba en un lugar seguro y seco a temperatura ambiental.**

6. **Repita los pasos 1 al 5 para recolectar muestras de los dos días restantes en las tarjetas 2 y 3, respectivamente.**

D. Al finalizar la prueba

Una vez que se han recogido las 3 muestras, asegúrese de devolver las 3 pruebas a la clínica antes de los 10 días a partir de su primera muestra!

Si desea ver un video que muestra estas instrucciones, visite:

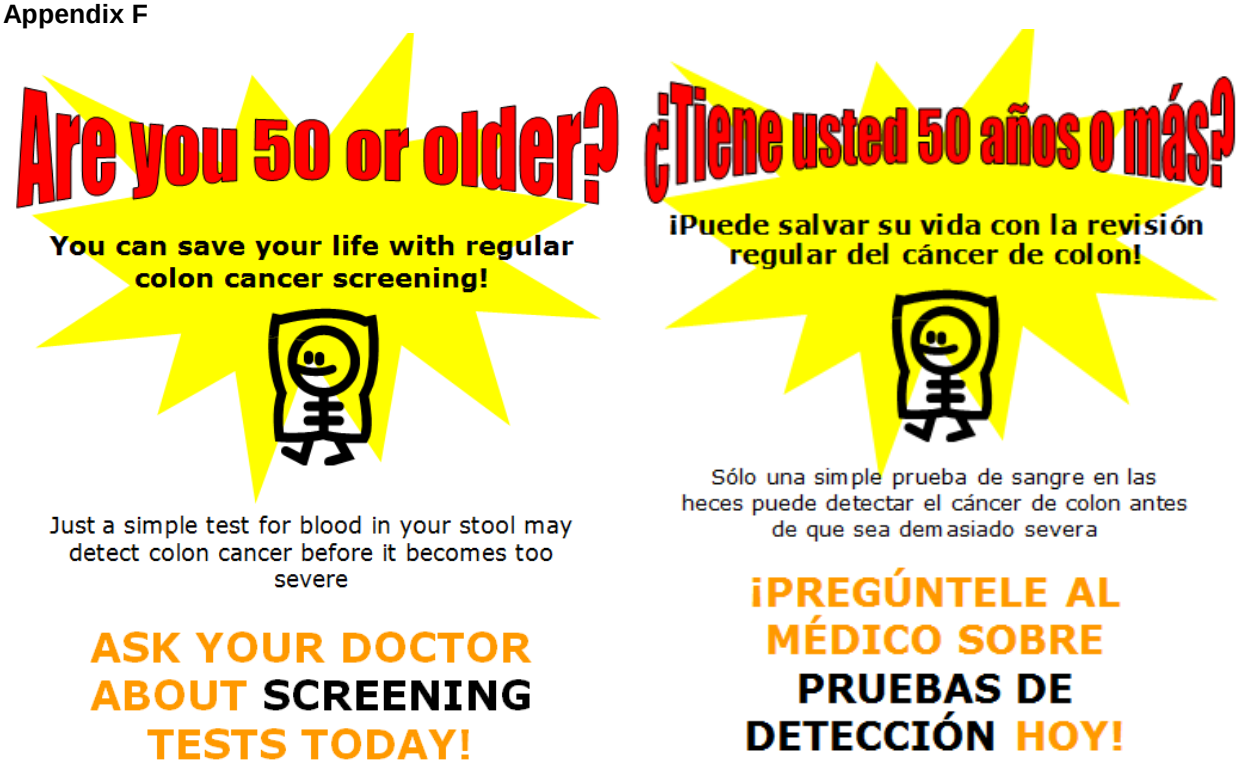
https://www.youtube.com/watch?v=Wl8zaZiQXDg

¿Necesitas ayuda? ¿Tiene alguna pregunta?
Por favor llame (615)-327-9400

Appendix E

Remember to offer an FOBT and other screening options to each patient age 50 or older

Appendix F



Appendix G

	No	Somewhat	Yes
1. Were the instructions that were given with the test cards easy to understand?	0	0	10
2. Did the instructions help you perform and complete the stool sample test?	0	0	10
3. Please describe below and on the back how we can improve the instructions.	See comment in results section		

* 9 surveys were completed in English to evaluate the English version of the instructions. 1 survey was completed in Spanish to evaluate the Spanish version of the instructions in addition to the 2 native Spanish-speaking staff members who edited and proofread the Spanish version.