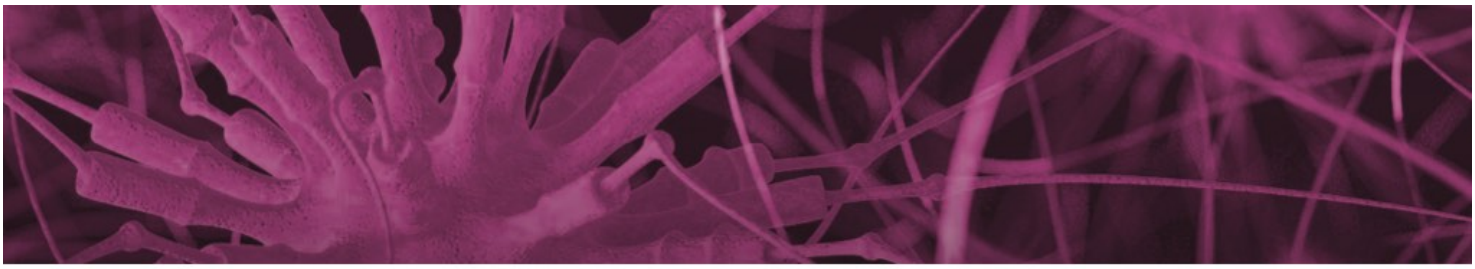

SEKISUI DIAGNOSTICS

CHOOSING THE MOST ACCURATE AND COST-EFFECTIVE METHOD OF CRC SCREENING

An individual's lifetime risk for developing colorectal cancer (CRC) is roughly 1 in 20. This translates to a predicted 95,270 new cases of CRC in the United States in 2016, according to the American Cancer Society. Among all cancers, it is the second leading cause of death among both men and women, accounting for an estimated 49,100 deaths this year.[1]

Unfortunately, most cases of CRC develop slowly over time and have few, if any, symptoms in its early stages. But, like most cancers, early detection of the onset of the disease has a significant impact on patients' survival rates. Staging describes the severity of a person's cancer based on the size and/or extent (reach) of the original (primary) tumor and whether or not cancer has spread in the body. Patients diagnosed with Stage-1 CRC have a 5-year survival rate of 92%, which drops significantly to 11% for patients who receive first diagnosis at Stage-4.[2] Screening has been shown to be a vital contributor to decreased mortality of CRC.

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Guidelines on colorectal screening have been issued by several organizations. These guidelines recommend routine screening for colorectal cancer and adenomatous polyps in asymptomatic adults starting at age 50. These guidelines vary with regard to frequency of screening, the age at which screening can be discontinued, as well as

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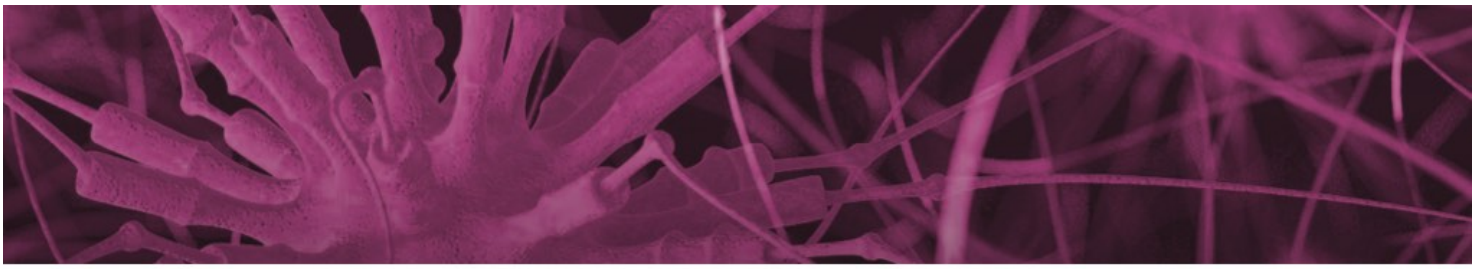
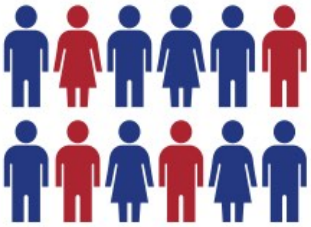


SEKISUI DIAGNOSTICS



1 in 3 ADULTS

AGE 50+ IS NOT BEING SCREENED FOR COLORECTAL CANCER[7]

the preferred screening method. Other factors such as family history, obesity, and smoking have been shown to increase the risk of developing the disease. And while men are at higher risk for developing CRC, it is recommended that women should also begin screening at 50.

When it comes to preventative diagnostics for CRC, the most frequent method for screening patients is colonoscopy.[3] However, this method is not widely available in all clinical settings. Even when colonoscopy screening is available, a number of patients decline the procedure due to bowel preparation and the invasive nature of the test. For this reason, it is important for doctors to have at their disposal alternate methods of CRC detection, including those that detect the presence of fecal occult blood (FOB) in a patient's stool.

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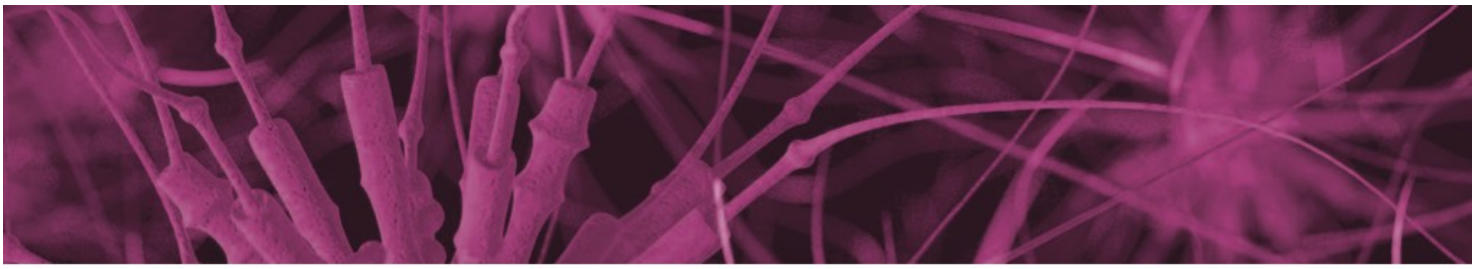
High-sensitivity immunochemical tests, such as the Fecal Immunochemical (FIT) or Immunochemical Fecal Occult Blood (iFOBT), are an accurate method of early cancer detection. These tests detect human hemoglobin in a patient's stool. When provided annually to average-risk patients with appropriate follow-up, this test can provide similar reductions in incidence and mortality compared to colonoscopy.[4] Physicians in primary care settings are realizing that if they offer patients a highly sensitive stool test, coupled with the colonoscopy procedure, they are maximizing the incidence of patient compliance for CRC screening.

Diagnostic Choices

Clinicians searching for the proper diagnostic methods for CRC need to consider three key factors: testing accuracy to ensure the patient receives the correct diagnosis; patient compliance and time to deliver results, so the patient and physician receive a diagnosis in a timely manner; and cost, to ensure the diagnostic is cost-effective and affordable. There are different methods for the detection of CRC. Among the most common diagnostic methods are:

Colonoscopy. Colonoscopy is a very accurate method used to screen for CRC as it can detect precancerous polyps within the colon and remove them while the procedure is being conducted. However, a colonoscopy requires



the time of both a physician and an assistant, while also requiring patient bowel preparation with sedation and specialized equipment, making it an expensive and very invasive procedure.

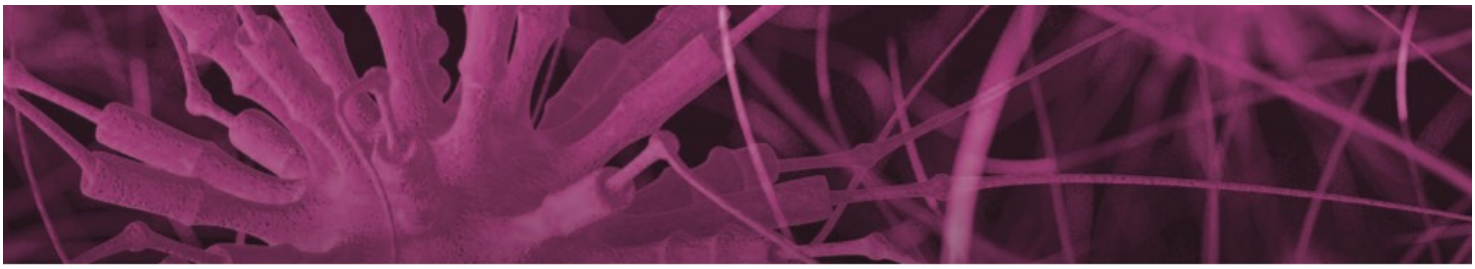
Guaiac fecal occult blood test (gFOBT). The guaiac test for fecal occult blood has been used by physicians for a number of years as a non-invasive test. These tests require multiple stool samples following 7 days of dietary and drug restrictions. Patients who are non-compliant with this pre-test regimen are at risk for returning an erroneous result which could lead to further and more expensive diagnostic procedures. Additionally, due to the need for multiple stool samples along with dietary and drug restrictions, patients are less likely to comply with this screening option. The guaiac test also carries the risk of false positive results, as the assay is non-specific for human hemoglobin, reducing the sensitivities of the test. For this reason, as well as the potential for errors in the collection and processing of samples; many organizations have recommended abandoning the low sensitive gFOBT as a method for CRC detection.

Fecal immunochemical test (FIT). Where the gFOBT often returns false positives based on the presence of non-specific hemoglobin in a patient's stool, FIT/iFOB is both sensitive and specific because it only returns a positive in the presence of human hemoglobin. Patient compliance will be much higher due to collection of one stool sample and no dietary or drug restrictions prior to collection for the test. Two random controlled trials comparing FIT/iFOB with gFOBT found 10% to 12% higher compliance rate utilizing the FIT/iFOB test. The combination of superior test performance and improved patient compliance resulted in a doubling of the detection of advanced colon lesions. For this reason, the American College of Gastroenterology (ACG) now recommends the use of FIT/iFOB instead of gFOBT as the preferred detection test for fecal occult blood.[5]

Where the gFOBT often returns false positives based on the presence of non-specific hemoglobin in a patient's stool, FIT/iFOB is both sensitive and specific in that it only returns a positive for the presence of human hemoglobin.

	IMMUNOCHEMICAL (FIT/iFOB)	GUAIAC (gFOBT)	COLONOSCOPY
Specific to Human Hemoglobin	YES	NO	NO
Non-Invasive	YES	YES	NO
Low Cost	YES	YES	NO
Bowel Preparation	NO	YES*	YES
Better Patient Compliance	YES	NO	NO
High Risk	NO	NO	YES
High Degree of Expertise Required	NO	NO	YES
How Often**	1 per year	1 per year	Every 10 years

**Dietary/Drug Restrictions*
***Average-Risk Patients*



The public health benefits of FIT/iFOB are significant. A study comparing several CRC detection methods, gFOBT and FIT/iFOB, fecal DNA, flexible sigmoidoscopy or computed tomographic colonography, and colonoscopy, showed the FIT/iFOB to be the most effective and least costly among all the methods. Over the lifetime of 100,000 average-risk people, a recent study showed annual FIT/iFOB testing would reduce the cancer incidence from 4,857 to 1,782 and also the number of CRC deaths from 1,393 to 457. The study concluded that "CRC screening with FIT/iFOB reduces the risk of CRC and CRC-related deaths, and lowers health care costs in comparison to no screening and to other existing screening strategies. Health policy decision makers should consider prioritizing funding for CRC screening using FIT/iFOB."[6]

FIT a logical choice for regular CRC screening

FIT/iFOB testing hits all key factors in choosing an appropriate CRC diagnostic. FIT/iFOB provides the physician and the patient a fast, simple, more compliant cancer screening option that is highly accurate and specific to human hemoglobin and is a cost effective choice.

"CRC screening with FIT reduces the risk of CRC and CRC-related deaths, and lowers health care costs in comparison to no screening and to other existing screening strategies. Health policy decision makers should consider prioritizing funding for CRC screening using FIT/iFOB."[6]

References

1. http://www.cancer.org/cancer/colonandrectumcancer/detailedguide/colorectal-cancer-key-statistics
2. http://www.cancer.org/cancer/colonandrectumcancer/detailedguide/colorectal-cancer-survival-rates
3. Rex, Douglas K., M.D., Johnson, David A., M.D., and Joseph C. Anderson, M.D. et. al. American College of Gastroenterology Guidelines for Colorectal Cancer Screening 2008, Am J Gastroenterol, February 2009; 104:739-50.
4. Zauber AG, Lansdorp-Vogelaar I, Knudsen AB, Wilschut J, van Ballegooijen M, Kuntz KM. Evaluating Test Strategies for Colorectal Cancer Screening: A Decision Analysis for the U.S. Preventive Services Task Force. Ann Intern Med. 2008;149:659-669.
5. Rex, Douglas K., M.D., Johnson, David A., M.D., and Joseph C. Anderson, M.D. et. al. American College of Gastroenterology Guidelines for Colorectal Cancer Screening 2008, Am J Gastroenterol, February 2009; 104:739-50.
6. Heitman, Steven J,. Hilsden, Robert J., Au, Flor et al. Colorectal Cancer Screening for Average–Risk North Americans: An Economic Evaluation. Plosmedicine.org, Nov. 2010: 7(11)
7. http://www.cdc.gov/vitalsigns/colorectalcancerscreening/

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