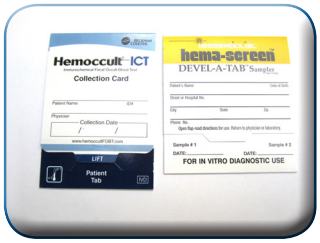
Fecal Immunochemical Test (FIT)

The FIT is a newer test that detects human hemoglobin in the stool. The test reacts to the protein component of the human hemoglobin and is more sensitive than guaiac-based tests that react to the heme component of the hemoglobin molecule for advanced adenomatous polyps and colon cancer.

Types of FIT

- **Manual Liquid-Based**
  Test results are read as either negative/positive
  Clinical Laboratory Improvement Amendments (CLIA)-waived
  Examples: Quidel QuickVue iFOB, Polymedco
- **Automated Liquid-Based**
  Test results are read Hb in ng/ml or as negative/positive
  Not CLIA-waived
  Examples: OC-Auto Micro 80, Polymedco

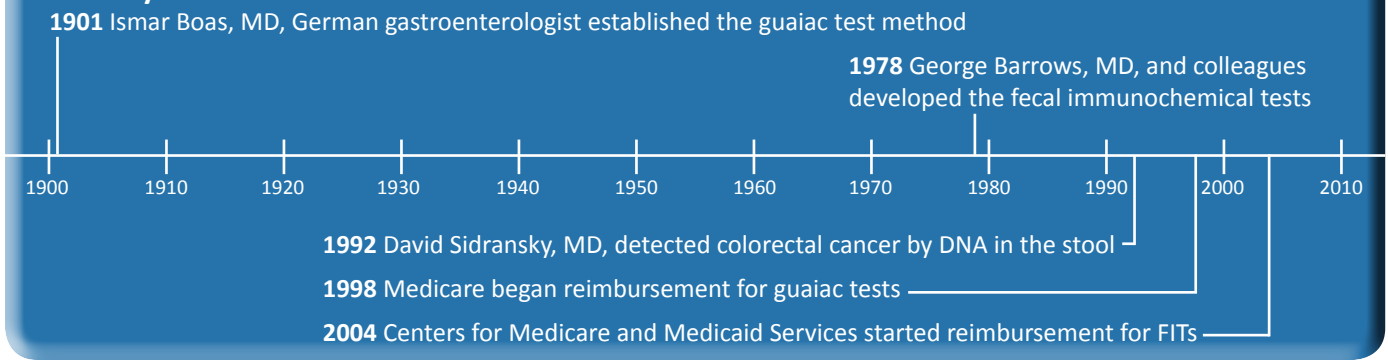


- **Manual Dry-Slide**
  Test results are read as either negative/positive
  CLIA-waived
  Examples: Beckman Coulter Hemoccult ICT, Immunostics Heme-Screen Specific

"The Perfect FIT"

- Detects globin rather than heme in hemoglobin, and therefore is highly specific for occult lower gastrointestinal (GI) bleeding as globin is largely degraded by upper GI enzymes
- No dietary or medication restrictions are required for stool collection
- Automated FIT has shown better performance characteristics than guaiac tests completed using three stool samples*
  *Guaiac (Beckman Coulter Hemoccult II) sensitivity and specificity for detecting advanced adenomas (14%/92%), cancer (31%/92%), and advanced colorectal neoplasm (17%/93%)
  *FIT (OC-Sensor) sensitivity and specificity for detecting advanced adenomas (34%/91%), cancer (85%/90%), and advanced colorectal neoplasm (44%/92%)[1]

A History of Fecal Occult Blood Test



Iowa Department of Public Health
Iowa Get Screened Program
515-242-6516
jeanna.jones@idph.iowa.gov

IDPH Iowa Department of Public Health
Iowa Cancer Consortium
University of Iowa Carver College of Medicine
University of Iowa Health Care
Department of Family Medicine

More Information about FIT

Problems with Transporting FIT through the Mail

- Hemoglobin is not stable in stool samples
- Hemoglobin in stool samples stored in a liquid-based buffer degrades over time at a mean daily hemoglobin decrease of 29 ng Hg/ml[2]
- Prolonged delays in mailing or testing the sample result in more false-negative tests
- Mailed dry-slide stool samples have better stability of hemoglobin compared with liquid-based tests

Achieving the Best FIT Results

- The greater the number of stool samples provided, the higher the sensitivity for cancer or advanced colorectal neoplasia[3,4,5] (Two consecutive stool samples are recommended)
- Patients should return or mail the stool sample on the day of collection
- The stool sample should be tested on the day of receipt

Important Points About Fecal Occult Blood Testing (FIT or Guaiac)

- FIT will not detect a polyp or tumor that is not bleeding
- Negative results may mean polyps are not bleeding
- Fecal occult blood tests should be completed annually
- Combining four randomized controlled trials, annual or biennial colorectal cancer (CRC) screening with fecal occult blood tests (FIT or guaiac), results indicated a significant reduction in colorectal cancer mortality of 16% by using the screening[6]
- Digital rectal exams should not be used to obtain stool for CRC screening
  - > Trauma of exam could cause bleeding
  - > For guaiac tests, sensitivities for detecting advanced neoplasia in 284 patients was 4.9% for digital rectal exam and 24% for a six-sample guaiac FOBT[7]
  - > For FIT, positive predictive value for CRC and large adenomatous polyps was 20% using a digital rectal exam and 27% in routine screening[8]
- A positive FIT indicates a need for a complete colonoscopy

References

[1]Park D, Ryu S, Kim Y, et al., Comparison of guaiac-based and qualitative immunochemical fecal occult blood testing in a population at average risk undergoing colorectal cancer screening. Am J Gastroenterol 2010;105:2017-2025.

[2]van Rossum LGM, van Rijn AF, van Oijen MGH, et al. False negative fecal occult blood tests due to delayed sample return in colorectal cancer screening. In. J. Cancer 2009;125:746-750.

[3]Yamamoto M, Nakama H. Cost-effectiveness analysis of immunochemical occult blood screening for colorectal cancer among three fecal sampling methods. Hepato-Gastroenterology 2000;47:396-399.

[4]Levi Z, Rozen P, Hazazi R, et al. A quantitative immunochemical fecal occult blood test for colorectal neoplasia. Annals of Internal Medicine 2007;146:244-255.

[5]Park D, Ryu S, Kim YK, et al. Comparison of guaiac-based and quantitative immunochemical fecal occult blood testing in a population at average risk undergoing colorectal cancer screening. Am J Gastroenterol 2010;105:2017-2025.

[6]Hewitson P, Glaziou P, Watson E, et al. Cochrane systematic review of colorectal cancer screening using the fecal occult blood test (Hemoccult): An update. Am J Gastroenterology 2008;103:1541-1549.

[7]Collins JF, Lieberman DA, Durbin TE, et al. Accuracy of screening for fecal occult blood on a single stool sample obtained by digital rectal examination: A comparison with recommended sampling practice. Ann Intern Med 2005;142:81-85.

[8]Nakama H, Zhang B. Does stool collection method affect outcomes in immunochemical fecal occult blood testing? Dis Colon Rectum 2001;44:871-875.

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Collecting Stool Samples: A Resource for Patients

Collecting the Stool Sample

- Place a lined waste basket near your toilet
- Wash your hands
- Urinate before defecating. Then, flush the toilet to avoid getting urine on the stool sample
- Place rice paper on top of the water or seal the rice paper to the toilet to prevent contact with the water
- Rice paper may get wet
- Collect the specimen from the portion of the stool that is not in the water
- Use the probe or spatula to obtain the stool, but don't overfill the probe or spatula
- Avoid overfilling the vial or card
- Discard spatula in waste basket
- Flush rice paper to discard

Do NOT Collect the Stool Sample When

- Menstruating
- Bleeding hemorrhoids are present
- Blood is visible in the toilet
- You have bleeding cuts on your hand
- Toilet freshener is present in the toilet
- Rust or salt water are present in the toilet

When Collecting with Probe for a Vial

- Collect from at least five different areas of the stool sample

When Collecting with Spatula for a Card

- Collect from distinct areas as directed
- Mail or return sample to the office on the day of collection

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