

DISADVANTAGES

- Colonoscopy requires an orally administered bowel preparation.
- The exam takes about 30 minutes plus additional recovery time.
- Patients need to be escorted home and are advised not to go back to work the same day if sedation is given.
- Unlike home stool testing and sigmoidoscopy, no randomized trials of colonoscopy have shown benefit in decreasing CRC mortality. Observational studies show a benefit of ~50 percent decrease in mortality that is similar to randomized studies of sigmoidoscopy.
- Mortality from proximal colon cancer, as compared to left-sided colorectal cancer, may be affected to a lesser degree by the performance of screening colonoscopy.

Double-contrast Barium Enema

- The 'double contrast' refers to the use of positive and negative contrast agents to increase the sensitivity of the examination.
 - ✓ positive contrast: barium or barium-like agent, e.g. Gastrograffin
 - ✓ negative contrast: air or CO₂
- The double contrast study is sensitive to visualize mucosal irregularities.

Patient Preparation

- Preparation commonly includes restricted intake of dairy products and a liquid diet for 24 hours prior to the test, in addition to drinking large amounts of water or clear liquids 12-24 hours before the test.
- Patients may also be given laxatives, and asked to give themselves a cleansing enema.



- ▣ DCBE showing carcinoma confined to muscularis propria.

Contraindications

- Toxic megacolon
- Pseudomembranous colitis
- Imminent rectal biopsy within 7 days of procedure or within 7 days after the rectal biopsy.

Complications

- Perforation of the colon
- Water intoxication
- Barium granulomas (inflamed nodules)
- Allergic reaction.

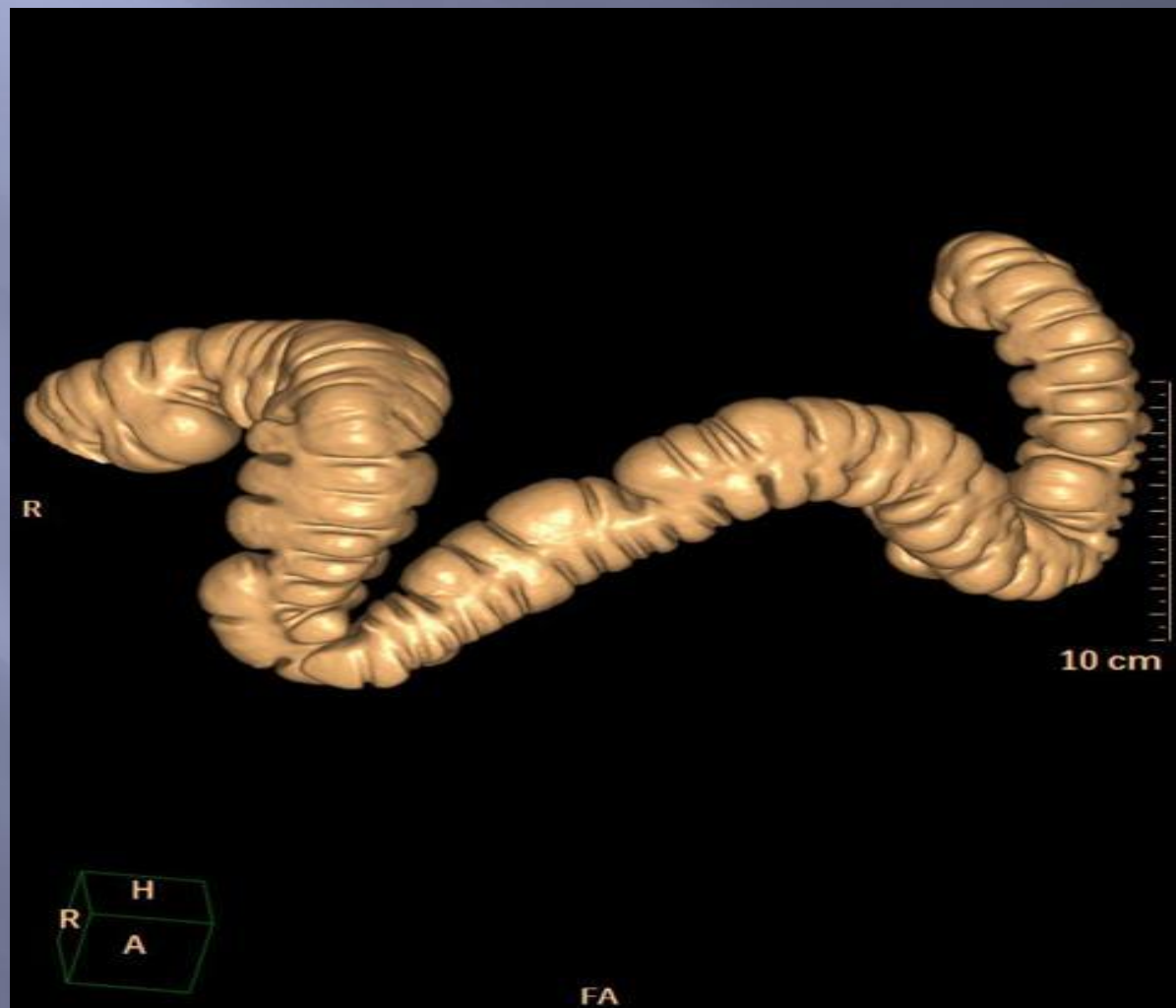
Advantages

- The entire colon can be visualized during double-contrast barium enema.
- The procedure permits visualization not only of the inner lining of the colon on x-ray, but also detects any abnormalities within the wall of the colon as well as in the abdomen.
- It helps to differentiate colorectal cancer from other conditions affecting the colon like diverticulitis.
- It is more cost-effective as compared to colonoscopy.
- Unlike procedures like flexible sigmoidoscopy and colonoscopy, there is minimal risk of perforation with this procedure.
- No need for conscious sedation
- Operator has a more accurate idea of how far up the bowel the barium had progressed
- Greater chance of viewing the caecum

Disadvantages

- The procedure exposes the person to radiation
- Bowel preparation with diet and laxatives is required prior to the procedure.
- If the test detects any abnormality, the individual has to undergo a colonoscopy to obtain a biopsy and/or excise the lesion. Thus, doing two procedures instead of one increase the cost and inconvenience of the individual. This may be avoided in case a colonoscopy is done as the first choice
- Severe allergic reactions could rarely occur in patients allergic to barium
- Cannot get tissue for diagnosis
- Cannot remove polyps
- False-positive results are possible.

CT Colonography (Virtual Colonoscopy)



EVIDENCE

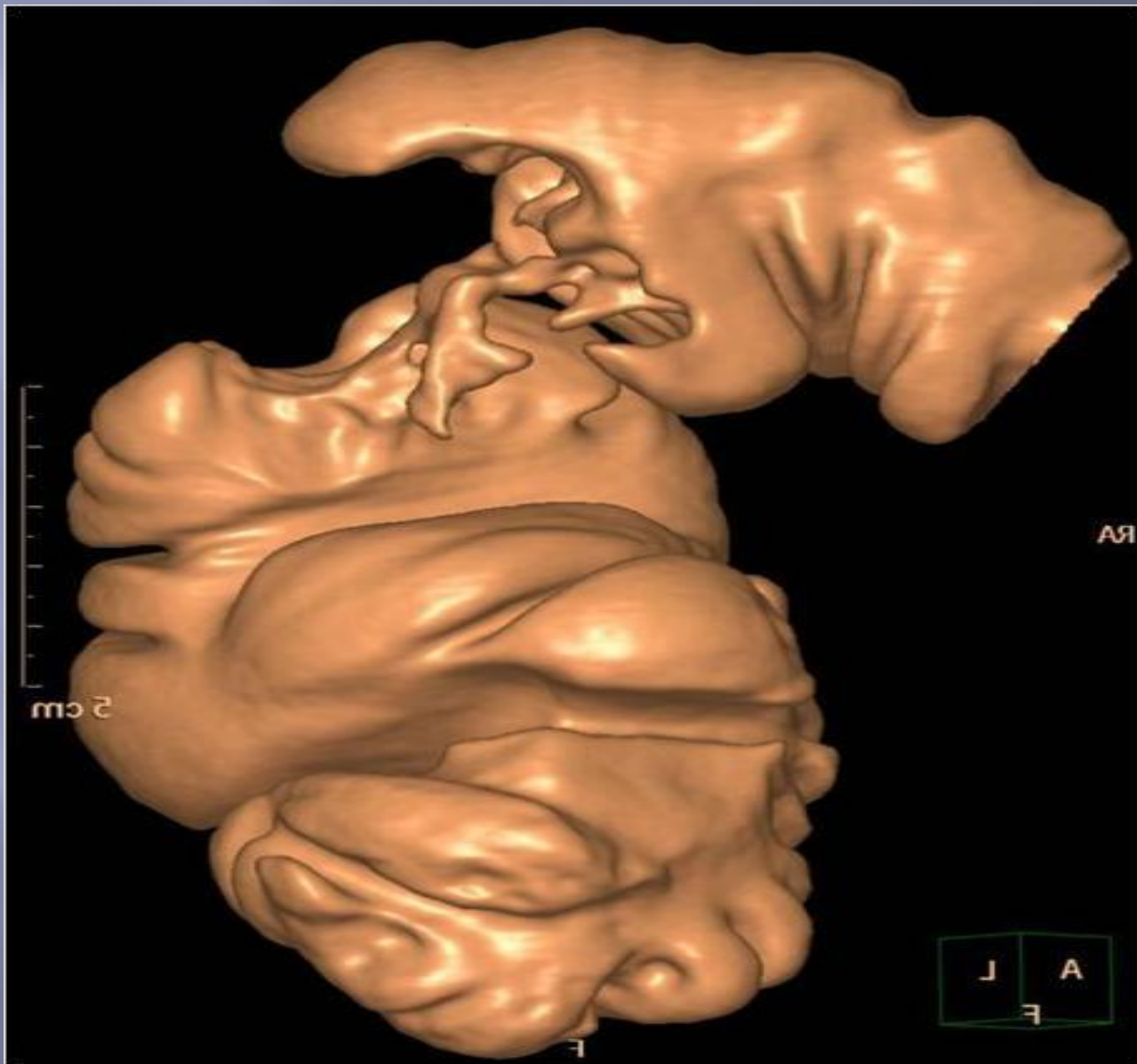
- In a study of asymptomatic adults, CT colonographic screening identified 90 percent of patients with colon cancer or adenomas 10mm or larger in diameter.
- Laxative-free colonography has been reported, but is not routinely available.
- CT colonography does not offer the ability to remove polyps and prevent cancer.
- CT colonography should not be a modality of choice for high-risk patients with polyp syndromes or inflammatory bowel disease given its inability to detect flat lesions with accuracy or to remove polyps.
- Recently MR colonography has also been shown to detect colon cancers and polyps with accuracy.

Technique

- Patient preparation
 - ✓ for optimal image quality, the colon should be clean and completely distended
 - ✓ residual stool and fluid may lead to a false negative or false positive diagnosis
 - ✓ residual stool may be "tagged" using oral contrast agents such as Gastrografin
- Bowel distension
 - ✓ optimal colonic distention is critical to technical success for proper intraluminal evaluation of the large bowel
 - ✓ distension can be achieved via a pressure-regulated device with carbon dioxide or room air
- Intravenous contrast
 - ✓ not necessary although it is used in some centres

Data acquisition and analysis

- CT scanning is ideally performed on a multi-detector computed tomography (MDCT) scanner in both supine and prone positions with a thin collimation
- Data interpretation with the use of two-dimensional (2D) and three-dimensional (3D) displays are mandatory for proper evaluation



- Virtual colonoscopy revealing Apple core with constriction of the hepatic flexure lumen.

Contraindications

- Acute inflammatory conditions such as acute diverticulitis, active stage of ulcerative colitis or Crohn's disease
- Recent abdominal or pelvic surgery
- CTC cannot be performed if a colostomy is present as there is no natural sphincter mechanism to retain the tube
- General CT contraindications such as pregnancy, claustrophobia, etc.

Advantages

- Minimally invasive procedure
- Takes less time (10–15 minute).
- Can visualise colon beyond the obstruction or narrowing
- Detection of some significant extra-colonic findings (mostly abdominal aortic aneurysms and renal cell carcinomas)
- Some patients find CT colonography to be more acceptable than standard colonoscopy.

DISADVANTAGES

- Residual faecal material can give rise to wrong interpretation
- Biopsy specimen cannot be taken at the time of the procedure
- It is a screening procedure, if there is any positive finding with virtual colonoscopy, conventional colonoscopy is required for confirmation of diagnosis
- Exposure to ionising radiation
- Variability in sensitivity based on technique and experience of the radiologists
- Requires bowel preparation similar to colonoscopy (at present)
- Requires a rectal tube to insufflate air into the colon, which can cause cramping
- Can miss small and flat adenomas.

Fecal Occult Blood Test (guaiac FOBT or fecal immunochemical test [FIT])

- The guaiac-based fecal occult blood test (gFOBT) uses the chemical guaiac to detect heme in the stool. At home, you use a stick or brush to obtain a small amount of stool. You return the test kit to the doctor or a lab, where the stool samples are checked for the presence of blood.
- The fecal immunochemical test (FIT) uses antibodies to detect blood in the stool.

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

6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			

Important: You must send in the test card as soon as the 3 flaps have been completed but no later than 10 days after collecting your first stool.

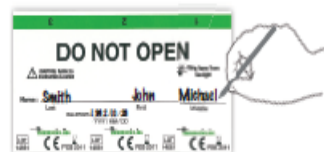


Avoid vitamin C supplements and citrus fruit and juices for three days before the test and during the stool sample collection period.



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

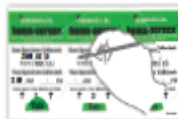
B. Filling out the Test Card



- Using a ballpoint pen, print your name and date of birth on the test card, as they appear on your health card.

- You will collect stool samples on three different days within a ten day period.
- The test card has three flaps – one for each day. Open only one flap at a time.
- Under each flap there are two small areas on which to smear your samples.

C. Doing the Test



- Write the date (yyyy/mm/dd) and time of your first sample collection on flap 1. Peel back flap 1 to apply the first sample.



- Flush the toilet to clear the bowl. Do not use toilets with bowl cleaners such as bluing agents.



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



- Use the applicator stick to collect a small sample of the stool. Apply a **very thin smear** to Area I. Use the same stick to collect and smear a second sample from a different location of the stool in Area II. Close and secure the flap.



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

- Place the test card in the foil-lined envelope and store at room temperature until your next bowel movement. Do not seal the envelope until you have finished all 3 days.
- Repeat steps 1-6 to collect and smear samples on two additional days under flaps 2 and 3 accordingly.

D. After the Test

Requisition Form



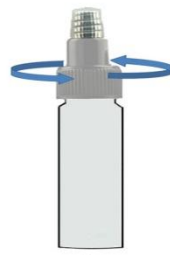
Test Card

Foil-Lined Envelope

- Place only the test card inside the foil-lined envelope and seal tightly.
- Place the foil-lined envelope and the completed requisition form from your health care provider in the envelope provided.
- Mail or drop off envelope at a community laboratory collection centre.



After an evacuation, wipe normally and retain a small amount of feces on toilet paper



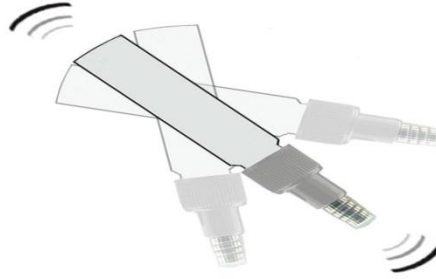
Unscrew cap from buffer tube
Do not empty liquid from tube.



Collect a small sample of feces onto the grooves of the wand



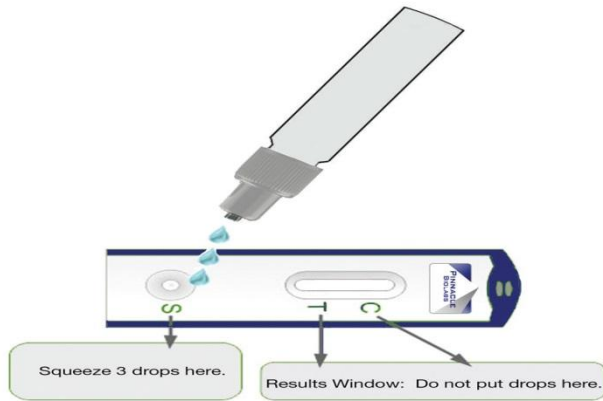
Return wand to tube



Shake tube for three (3) seconds



Unscrew smaller, clear cap



Apply 3 drops from buffer tube to sample well.



Negative



Positive



Positive



Invalid

Interpret results after five minutes. Do not read results after 10 minutes.

Steps of fecal immunochemical test





ST file photo

Fecal immunochemical test

EVIDENCE

- Annual fecal occult blood test (FOBT) is 24 percent sensitive for advanced adenomas or colorectal cancer.
- Annual fecal immunochemical tests (FITs) use antibodies to detect human hemoglobin, and are not affected by diet or medications.
- FIT significantly improves the sensitivity and specificity to 91 percent and 88 percent respectively for colorectal cancer detection. Change to FIT slightly increased colon cancer screening rates.
- The rate of positive results from FIT does not decrease after repeated colorectal cancer screening, but the positive predictive value of the FIT for advanced neoplasia and for colorectal cancer is significantly lower among second-round participants who tested negative in the first round.

ADVANTAGES

- Easy, safe, convenient
- FIT detects colon cancer and advanced adenomas with increased sensitivity compared with the FOBT.
- FOBT: heat stability is excellent and cost is less compared to other methods.

DISADVANTAGES

- The test does not detect some polyps and cancers.
- False-positive test results are possible (that is, the test may suggest an abnormality when none is present).
- Dietary restrictions are needed before guaiac FOBT.
- Additional procedures, such as colonoscopy, may be needed if the test result shows blood in the stool.
- FIT vary in sensitivity and specificity.
- Requirement for three day testing with FOBT is less convenient than the single day for FIT.

FIT-DNA test

- The FIT-DNA test (also referred to as the stool DNA test) combines the FIT with a test that detects altered DNA in the stool. For this test, you collect an entire bowel movement and send it to a lab to be checked for cancer cells.



Stool DNA test

Advantages

- No cleansing of the colon is necessary.
- No dietary restrictions are needed before the test.
- Samples can be collected at home.
- There is no risk of damage to the lining of the colon.
- No sedation is needed.

Disadvantages

- Cost may be higher than that of gFOBT or FIT.
- Test sensitivity for adenomas is low.
- False-positive test results are possible (that is, the test may suggest an abnormality when none is present).
- Additional procedures, such as colonoscopy, may be needed if the test result is positive for blood or abnormal DNA.

Effect of Screening Intervention on Reducing Mortality from Colorectal Cancer

Screening Intervention	Study Design	Internal Validity	Consistency	Magnitude of Effect	External Validity
Fecal Occult Blood Test (guaiac-based)	RCTs (randomized controlled trial)	Good	Good	15%-33%	Fair
Sigmoidoscopy	RCTs	Good	Good	About 25%; 50% for left colon	Fair
Digital Rectal Exam	Case-control studies	Fair	Good	No effect	Poor
Colonoscopy	Case-control studies; observational cohort studies that use historical/other controls; RCTs in progress	Poor	Poor	About 60%-70% for left colon; uncertain for right colon	Fair

Detection of Surrogate Outcomes at One Point in Time Compared With Reference Standard of Colonoscopy

Screening Intervention	Study Design	Internal Validity	Consistency	Magnitude of Effect on Surrogate Endpoints	External Validity
Barium Enema	Cross-sectional and descriptive studies	Fair	Poor	Barium enema detects about 30%–50% of cancers detected by colonoscopy	N/A
Colonoscopy	Cross-sectional and descriptive studies	Fair	Poor	About 3% of patients with no distal adenomas have advanced proximal neoplasia; patients with distal adenomas have a threefold increase in this rate	N/A
CTC	Cross-sectional and descriptive studies	Good	Good	Sensitivity of CTC may be similar to colonoscopy in certain centers	N/A
Stool DNA Mutation Tests	Cross-sectional study descriptive studies	Good	Unknown	Detects 92% of CRC and 42% of large adenomas (≥ 1 cm) at one application	Unknown
FIT	Cross-sectional descriptive studies	Good	Good	FIT detects about 70% of CRCs at one examination (and more with repeated use over time) and 25% of advanced	Good

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thank
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