TEST

Barium enema

A barium enema uses X-rays and liquid contrast to examine the large bowel.

WHAT IT MEASURES
Shape, lining, and flow through the large bowel

SAMPLE
None; X-ray imaging with rectal barium contrast

FASTING NEEDED?
Sometimes; bowel preparation usually includes temporary fasting

HOW LONG IT TAKES
Usually 30 to 60 minutes

RESULTS IN
Usually days; reporting time varies by imaging laboratory

USED FOR
Diagnosing structural problems in the large bowel

MAIN LIMITATION
Can miss small polyps and cannot take biopsies

Overview

A barium enema is an X-ray examination of the large bowel, also called the colon. It is sometimes called a lower gastrointestinal, or lower GI, series.

Barium sulfate is a thick, pale liquid that shows clearly on X-rays. It is passed into your bowel through a small tube placed in your rectum. A radiologist then takes images while the barium moves through the colon.

Some examinations also add air to expand the colon and improve the view of its lining. This is called a double-contrast barium enema.

Barium enemas are now used less often because colonoscopy and CT colonography usually provide more detailed information. However, the test can still be useful in selected situations.

Why the test is ordered

A barium enema may be ordered to examine the shape and lining of your large bowel. It can show areas where the bowel is narrowed, widened, blocked, displaced, or irregular.

It may help investigate:

In children, a contrast enema may be used to investigate conditions affecting the bowel's structure or movement. Some pediatric enemas use air or a water-soluble contrast liquid rather than barium.

The test can suggest a cause for symptoms, but an abnormal image does not always provide a final diagnosis. A colonoscopy or another test may still be needed.

- Persistent changes in bowel habits
- Bleeding from the rectum
- Ongoing abdominal pain or swelling
- Possible narrowing or blockage
- Diverticular disease, where small pouches form in the bowel wall
- Polyps or masses
- The structure of the bowel after surgery

Who should have the test

You may be offered a barium enema when your healthcare team needs images of the colon and colonoscopy is incomplete, unsuitable, or unavailable. The choice depends on your symptoms, previous tests, health, and the question the imaging team needs to answer.

A barium enema is generally not the preferred test for routine bowel cancer screening. Colonoscopy and CT colonography are better able to detect some small or flat growths.

Tell the imaging service if you could be pregnant. The test uses X-rays, so the team may recommend postponing it or using a different examination.

Also tell them if you recently had a bowel biopsy, polyp removal, operation, severe bowel inflammation, or a suspected hole in the bowel. When a leak is possible, barium may be unsuitable and a water-soluble contrast liquid may be used instead.

How to prepare

Your colon needs to be as empty as possible. Stool can hide the bowel lining or look like a growth on an X-ray.

Preparation often includes a clear-liquid diet, laxatives, and a period without food. Some services also ask you to use an enema at home. Follow the instructions from your imaging

service exactly because preparation schedules differ.

Tell the service about all prescription medicines, over-the-counter products, iron supplements, and herbal remedies you take. Do not stop regular medicine unless you have been given specific instructions.

Ask for individual advice if you have diabetes, kidney or heart disease, difficulty swallowing, or limits on how much fluid you can drink. Bowel-cleansing medicines and reduced food intake may require changes to your usual plan.

Contact the service before the appointment if you cannot complete the preparation or if the laxative has little effect. The test may need to be rearranged rather than produce unclear images.

What happens during the test

You will usually change into a gown and remove objects that could appear on the X-ray. The radiographer may take an initial image before giving the contrast.

You lie on an X-ray table while a lubricated tube is gently inserted into your rectum. A small balloon may be inflated to help keep the tube in place. Barium then flows through the tube into your colon.

You may feel fullness, pressure, cramping, or an urge to open your bowels. You will be asked to turn into different positions so the barium coats the bowel. The table may also tilt.

During a double-contrast examination, air is added after some barium has drained away. The radiologist watches the bowel using fluoroscopy, which produces moving X-ray images, and records still images.

Most people do not need sedation. After the images are taken, the tube is removed and you can use a nearby toilet. An additional X-ray may be taken after you empty your bowel.

Understanding your results

A radiologist examines the images and sends a report to the healthcare professional who requested the test.

The report may describe whether the colon filled fully and whether its shape and lining appeared smooth. It may identify a narrowed area, an outpouching, an unusual contour, or a "filling defect," meaning something prevented barium from coating part of the bowel.

An abnormal finding does not by itself confirm cancer or another particular condition. Stool,

bowel spasm, scar tissue, inflammation, and non-cancerous polyps can produce changes that require further investigation.

There is no universal numeric reference range for a barium enema. Interpretation depends on the quality of the images, your age, symptoms, previous surgery, medicines, pregnancy status, and other test results. Sex and kidney function usually have little direct effect on the images, although they may influence preparation or the choice of test.

What affects the results

Barium enema results are affected mainly by bowel preparation and how completely the colon can be examined.

Important factors include:

Eating or drinking outside the preparation instructions can also reduce image quality. This does not mean anything is wrong with the imaging equipment; it may simply make the examination less reliable.

- Stool left in the colon: It can hide an abnormal area or resemble a polyp
- Remaining fluid: It may dilute the barium and prevent an even coating
- Incomplete filling: A blockage, pain, leakage around the tube, or difficulty retaining barium may leave part of the colon unseen
- Bowel spasm: Temporary tightening can resemble a fixed narrowing
- Limited movement: Difficulty turning may prevent barium from reaching or coating every area
- Previous bowel surgery: This changes the bowel's shape and requires careful interpretation
- Constipating medicines: Opioids like oxycodone or morphine , iron, and some other medicines may make bowel cleansing less effective
- Recent contrast imaging: Barium remaining from another examination can interfere with the view

Accuracy and limitations

A well-prepared double-contrast examination can show major narrowing, larger growths, and changes in the colon's outline. It is less reliable for small or flat polyps and subtle changes in

the bowel lining.

The test can miss an abnormality when stool remains, the colon does not fill completely, or overlapping bowel loops hide an area. It can also suggest a problem when the apparent finding is actually stool, spasm, or normal anatomy.

Unlike colonoscopy, a barium enema cannot take a tissue sample or remove a polyp. If an area looks abnormal, colonoscopy is often needed to examine it directly and obtain a biopsy.

CT colonography may provide a more detailed view when colonoscopy is incomplete or unsuitable. If a bowel leak or perforation is suspected, a water-soluble contrast study is usually safer than barium.

Risks and complications

Cramping and temporary discomfort are common during the examination. Your stools may look pale or white for a few days, and barium can cause constipation. Drinking fluids afterward may help unless you have been told to limit fluids.

A small amount of rectal irritation or spotting can occur. Serious complications, such as a tear in the bowel or hardened barium becoming stuck, are uncommon.

Seek urgent medical advice after the test if you develop worsening abdominal pain, marked swelling, repeated vomiting, fever, or cannot pass stool or gas. Heavy rectal bleeding, fainting, severe breathing difficulty, or rapidly worsening symptoms need emergency care.

The examination uses ionizing radiation. The imaging team uses the lowest amount needed to obtain useful images.

What happens next

You can usually go home shortly after the test and return to normal activities. Follow the service's advice about eating, drinking, and restarting medicines.

The radiologist's report is sent to the healthcare professional who requested the test. Routine follow-up may be an appointment, telephone call, letter, or electronic message.

If the images are normal but your symptoms continue, another investigation may still be appropriate. If the test shows an unclear or abnormal area, you may be offered colonoscopy, CT colonography, another scan, or a biopsy. The next step depends on what was seen and why the examination was requested.

Common questions

Can I drink coffee before a barium enema?

Only if your preparation instructions allow it. Black coffee may count as a clear liquid in some services, but milk, cream, and non-dairy whiteners usually do not. Follow the instructions you were given.

Does the time of day matter?

The time itself does not usually affect the images. It does affect when you must take laxatives and stop eating, so use the schedule supplied for your appointment time.

Can I exercise beforehand?

Light activity does not usually alter the result. Strenuous exercise is best avoided during bowel preparation because diarrhea and reduced food intake can leave you dehydrated or light-headed.

Does a barium enema hurt?

The tube and bowel expansion can feel uncomfortable. Cramping, pressure, and an urge to open your bowels are common, but the examination should not cause severe pain. Tell the radiographer if pain is significant.

Can I drive home afterward?

Most people can drive because sedation is not normally used. Arrange help if you feel weak from the preparation or if your imaging service gives different instructions.

How long will my stools stay white?

Pale stools can continue for a few days while the barium leaves your body. Contact your healthcare service if constipation persists or is accompanied by increasing pain, swelling, or vomiting.

Sources

- American College of Radiology and Radiological Society of North America. Lower GI Tract X-ray - Barium Enema
- National Health Service. Barium enema
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- American College of Radiology. ACR Appropriateness Criteria: Colorectal Cancer Screening
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