TEST

Secretin stimulation test

A secretin stimulation test measures how blood gastrin changes after secretin is given through a vein.

WHAT IT MEASURES
Rise in blood gastrin after intravenous secretin

SAMPLE
Blood

FASTING NEEDED?
Yes, usually overnight under the testing centre's instructions

HOW LONG IT TAKES
About one to two hours

RESULTS IN
Several days, with timing varying by laboratory

USED FOR
Diagnosing a gastrinoma when fasting gastrin results are unclear

MAIN LIMITATION
Acid-suppressing medicines and low stomach acid can mislead results

Overview

Secretin is a hormone normally released by the small intestine. It tells the pancreas to release fluid containing bicarbonate, which helps neutralise stomach acid.

A secretin stimulation test uses a manufactured form of this hormone. For the test described here, secretin is injected into a vein and several blood samples are taken. The laboratory measures gastrin, a hormone that tells the stomach to produce acid.

Most normal gastrin-producing cells reduce or only slightly change their gastrin release after secretin. A gastrinoma may respond with an unusual rise. A gastrinoma is a tumour that releases gastrin and can cause Zollinger-Ellison syndrome.

Another procedure is sometimes called a secretin stimulation test or secretin pancreatic function test. It collects digestive fluid from the small intestine, often during an endoscopy, to assess pancreatic function. That is a different procedure with different preparation and risks. Check which version your appointment is for.

Why the test is ordered

The blood test may help investigate a fasting gastrin level that is higher than expected. It is mainly used when the first blood tests and stomach-acid findings do not provide a clear answer.

A clinician may consider the test when there is concern about a gastrinoma because of findings such as difficult-to-control acid-related ulcers, severe acid reflux, or long-lasting diarrhoea. It may also be considered in someone with multiple endocrine neoplasia type 1, or MEN1, when other findings suggest excess gastrin.

Many conditions and medicines can raise fasting gastrin without a gastrinoma. The secretin response can provide more information, but it cannot be interpreted on its own.

Who should have the test

This is a specialist diagnostic test rather than a routine screening test. It is generally used for people who already have abnormal or uncertain findings, particularly an elevated fasting gastrin result.

It is not usually the first test for common heartburn, indigestion, abdominal pain, or diarrhoea. Those symptoms have many possible causes.

Tell the testing team if you:

This information helps the team plan and interpret the test. It does not automatically mean that you cannot have it.

- Take proton pump inhibitors like omeprazole or lansoprazole , H2 blockers, or antacids
- Have previously had stomach or upper intestinal surgery
- Have kidney disease, pernicious anaemia, or atrophic gastritis
- Are pregnant, could be pregnant, or are breastfeeding
- Have had an allergic reaction during a previous hormone stimulation test

How to prepare

You will usually need to fast overnight. Follow the exact instructions from your testing centre because the required fasting time and rules about water can differ.

Do not stop acid-suppressing medicine without a specialist plan. Proton pump inhibitors can

substantially increase gastrin, but abruptly stopping them may cause a strong return of acid production. This can be especially unsafe when a gastrinoma is being considered. The team may continue the medicine, change it temporarily, or arrange supervised testing.

Provide a complete list of prescription medicines, non-prescription medicines, vitamins, and supplements. Ask whether you should take your usual morning medicines with water.

Unless your centre says otherwise, avoid food, coffee, tea, chewing gum, and smoking during the fasting period. Wear clothing that allows easy access to your arm and bring something to occupy you between blood samples.

What happens during the test

A healthcare professional places a small intravenous tube, called a cannula, into a vein in your arm. One or more blood samples are taken before secretin is given to establish your baseline gastrin level.

Secretin is then injected through the cannula. Further blood samples are collected at specific times, commonly over about 30 minutes. Precise timing matters because the test looks at how quickly and how much gastrin changes.

Your pulse, blood pressure, or symptoms may be checked during the appointment. The cannula is removed after the final sample, and you can usually leave following a short observation period.

The full visit often takes one to two hours, although local protocols differ.

Understanding your results

The report usually includes your baseline gastrin level and the change after secretin. A clear rise above the laboratory's decision point may support the presence of a gastrinoma. A small change or no rise makes a gastrinoma less likely, but does not always rule one out.

Many centres use a rise of at least 120 picograms per millilitre as a supportive result. This value comes from specialist research and should not be treated as a universal cut-off. Assays, sampling schedules, and local protocols differ.

An elevated baseline gastrin result is not enough by itself to identify a gastrinoma. Acid-suppressing medicines, reduced stomach-acid production, kidney disease, and previous stomach surgery can also raise gastrin.

Results and reference values vary by laboratory, age, sex, pregnancy status, medicines, kidney

function, and clinical context. Interpretation may also use measurements of stomach acidity, previous gastrin results, imaging, and your medical history.

What affects the results

This test is especially vulnerable to conditions that alter stomach acid or gastrin before secretin is given.

Proton pump inhibitors, including omeprazole and similar medicines, reduce stomach acid. The body may respond by making more gastrin. H2 blockers and antacids can also affect the clinical picture, although their effects and timing differ.

Atrophic gastritis and pernicious anaemia can greatly reduce acid production. In this setting, gastrin may be high even without a gastrinoma, and an apparently positive secretin response can occasionally occur.

Other factors include:

Ordinary activity is not known to have the same major effect as medicines or low stomach acid. However, strenuous exercise immediately before testing could alter stress responses or make blood collection more difficult, so follow the centre's instructions.

A recent blood transfusion is not generally a major source of error for gastrin testing.

- Eating before the test, which can stimulate digestive hormones
- Kidney impairment, which may contribute to higher gastrin levels
- Previous stomach surgery, which changes normal acid regulation
- Incorrectly timed samples after the injection
- Delayed processing or unsuitable handling of blood samples
- Differences between gastrin laboratory methods
- Some supplements, including biotin, if they interfere with the laboratory's assay

Accuracy and limitations

In a large specialist study, a gastrin increase of at least 120 picograms per millilitre identified about 94% of people with Zollinger-Ellison syndrome and correctly classified the comparison group in that study. Performance may be lower in everyday practice because patients, laboratory methods, medicines, and causes of high gastrin are more varied.

A false-negative result means the test does not show the expected rise even though a

gastrinoma is present. This may happen because of biological variation, sampling problems, or differences in the tumour's response.

A false-positive result means gastrin rises even though there is no gastrinoma. Markedly reduced or absent stomach acid is an important cause. This can occur with atrophic gastritis or prolonged acid suppression.

The test does not show where a tumour is located or whether it has spread. Imaging such as endoscopic ultrasound, CT, MRI, or specialised receptor imaging may be better for location, but imaging alone does not replace biochemical testing.

Risks and complications

The cannula or blood draws may cause a small bruise, soreness, or brief bleeding. Some people feel faint during blood collection.

Secretin can cause short-lived flushing, warmth, nausea, abdominal discomfort, headache, or changes in heart rate. Tell the team promptly if symptoms are uncomfortable or persistent.

A severe allergic reaction is uncommon but needs emergency treatment. During the appointment, immediately report trouble breathing, swelling of the face or throat, widespread hives, or feeling as though you may collapse. After leaving, seek emergency help for these symptoms.

What happens next

Your result is usually reviewed alongside fasting gastrin, stomach-acid findings, medicines, and symptoms. A result that does not fit the rest of the evidence may be repeated under more controlled conditions or checked using another method.

If the result supports excess gastrin production, further testing may be arranged to confirm the cause and locate its source. This can include blood tests for related hormones, genetic assessment in selected circumstances, or imaging.

A normal or uncertain result may lead to routine specialist follow-up rather than urgent treatment. Contact the testing service routinely if you have not received results within the timeframe they provided.

Seek urgent medical advice for ongoing vomiting, black stools, vomiting blood, or severe worsening abdominal pain. These symptoms are not expected effects of the blood test and need separate assessment.

Common questions

Can I drink coffee before the test?

Usually not. Coffee can stimulate the digestive system and may break the required fast. Plain water may be allowed, but follow your testing centre's instructions.

Can I take omeprazole or another acid medicine?

Only as specifically instructed. These medicines can raise gastrin, but stopping them without supervision may cause substantial acid production. Do not change them on your own.

Does the time of day matter?

The exact clock time is less important than completing the required fast and collecting every sample at the planned interval. Tests are often scheduled in the morning to make fasting easier.

Can I exercise beforehand?

Light normal activity is unlikely to have a major effect. Avoid strenuous exercise immediately beforehand unless the testing centre says it is acceptable.

Can I drive home afterward?

Most people can drive after the blood-test version if they feel well. Wait until any dizziness, flushing, or nausea has passed. If your test includes sedation or endoscopy, you will need separate transport arrangements.

How soon can I eat afterward?

You can usually eat once the final sample has been taken and the team confirms that the test is complete. Bring a snack if the centre allows it.

Sources

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