TEST

CEA blood test

A CEA blood test measures a protein used mainly to monitor certain cancers.

WHAT IT MEASURES
Carcinoembryonic antigen, a protein released by some cells

SAMPLE
Blood

FASTING NEEDED?
No, unless another scheduled test requires it

HOW LONG IT TAKES
Usually 5 to 10 minutes

RESULTS IN
Usually 1 to 3 days; laboratory timing differs

USED FOR
Mainly monitoring cancer treatment and possible recurrence

MAIN LIMITATION
Many cancers and noncancerous conditions can change CEA

Overview

Carcinoembryonic antigen, or CEA, is a protein found at low levels in many healthy adults. Some cancers release larger amounts into the blood.

The CEA blood test is used mainly to monitor people who already have a cancer known to produce CEA. It is most often associated with colorectal cancer, which affects the colon or rectum, but may be used for selected people with other cancers.

CEA is a tumour marker , meaning its level can sometimes provide information about cancer activity. However, smoking and several noncancerous conditions can also raise it. CEA should not be used by itself to screen for cancer or confirm a diagnosis.

Why the test is ordered

Your care team may order CEA before cancer treatment to establish a starting level. Later results can then be compared with this baseline.

During treatment, a series of tests may show whether CEA is falling, stable, or rising. A falling

level can be consistent with treatment working, but imaging, examination findings, symptoms, and your overall health remain important.

After treatment, CEA may be checked at planned follow-up visits. A sustained increase can lead to further tests for possible recurrence, meaning cancer that has returned. One unusual result is usually repeated or assessed alongside other findings before conclusions are made.

CEA may also help monitor advanced cancer. It cannot show exactly where a tumour is or prove that an abnormality is cancer.

Who should have the test

CEA testing is mainly for people with a diagnosed cancer when the result may help guide monitoring. It can be especially useful if CEA was raised before treatment.

The test is less useful if your cancer never produced much CEA. In that situation, a normal result after treatment may provide limited information.

CEA is not recommended as a general screening test for people without a cancer diagnosis. It misses many cancers, particularly early cancers, and can be raised when no cancer is present.

The testing schedule depends on the cancer type and stage, previous results, treatment plan, symptoms, and local follow-up practice.

How to prepare

You usually do not need to fast. You can normally eat, drink water, and take your usual medicines before the blood draw.

If CEA is being collected with tests that require fasting, follow the instructions for those tests. Tell the laboratory or care team about prescription medicines, over-the-counter products, vitamins, and supplements.

High-dose biotin supplements can interfere with some laboratory methods. Biotin is often sold for hair, skin, or nail health and may be included in multivitamins. Do not stop prescribed biotin without medical advice; ask whether your test requires any change.

Tell the person interpreting the result if you smoke or recently stopped, as smoking can affect the expected CEA level.

What happens during the test

A healthcare professional places a small needle into a vein, usually inside your elbow or on the back of your hand. Blood is collected into a tube.

You may feel a brief scratch or sting. The needle is removed, and pressure is applied to the area. The appointment usually takes only a few minutes.

No contrast dye, injection of CEA, or recovery period is needed.

Understanding your results

CEA is usually reported as a concentration, often in nanograms per millilitre. Use the reference information on your report because ranges and methods vary between laboratories. Interpretation can also be affected by smoking and clinical context.

The trend over time is often more useful than one number:

A raised result does not prove that cancer is present, growing, or returning. It must be interpreted with previous measurements, scans, symptoms, examination findings, and treatment history.

- A falling level during treatment may support other evidence that treatment is working
- A stable level may be reassuring in some circumstances
- A rising level may lead to a repeat test, examination, or imaging
- A normal level does not rule out active or returning cancer

What affects the results

Smoking is an important influence. Current smokers can have higher CEA levels, and the level may take time to change after stopping.

Liver disease can raise CEA because the liver helps process and clear it from the blood. Reduced kidney function and noncancerous inflammation involving the bowel, pancreas, liver, or lungs can also increase it.

Cancer treatment can complicate the trend. CEA may sometimes rise temporarily soon after treatment as damaged tumour cells release their contents. The timing and pattern matter more than one result.

Different laboratories may use different testing systems, producing small variations. When practical, serial monitoring is easier to interpret when the same laboratory and method are used.

Antibodies in your blood or biotin supplements can occasionally interfere with laboratory methods, causing a falsely high or low result. Pregnancy, age, medicines, and other health conditions may also need to be considered when a result is unexpected.

Food, coffee, ordinary daily activity, recent exercise, and a recent blood transfusion do not usually have a meaningful direct effect on CEA.

Accuracy and limitations

CEA is not accurate enough to screen the general population for cancer. Many early cancers produce little or no CEA, so the result can be normal even when cancer is present. Performance varies with cancer type, stage, tumour biology, and the cutoff used.

CEA can also be raised when no cancer is present because of smoking, liver problems, inflammation, or laboratory interference. An isolated high result is not a diagnosis.

Some cancers never produce CEA. Imaging, examination, or another cancer-specific marker may then provide more useful monitoring.

CEA cannot identify where an abnormality is located. Imaging is generally better for finding a mass or spread. Colonoscopy examines the inside of the colon, and a biopsy-removing a small tissue sample-is usually needed to confirm whether an abnormal area is cancer.

Risks and complications

The risks are those of a routine blood draw. You may have a small bruise, brief soreness, or feel light-headed.

Bleeding usually stops with pressure. Infection and significant injury are uncommon.

What happens next

Your result may be discussed at a clinic visit, by telephone, or through an online health record. If it is unexpected, your care team may repeat the test before arranging other investigations.

A rising result may lead to a review of recent illness, smoking, medicines, treatment timing, and liver or kidney function. Imaging, colonoscopy, or another test may be considered, depending on why CEA was ordered.

The CEA number itself is rarely an emergency. Contact your care team promptly about new or worsening symptoms they have asked you to report rather than waiting for the next blood test.

Seek urgent medical help for heavy bleeding, black stools with fainting, severe difficulty breathing, or another rapidly worsening symptom. After the blood draw, seek urgent advice if the puncture site continues bleeding despite firm pressure or develops rapidly increasing swelling.

Common questions

Can I drink coffee before a CEA blood test?

Usually, yes. CEA does not normally require fasting, although another test collected at the same appointment might. Follow the instructions for the whole set of tests.

Does the time of day matter?

CEA can generally be collected at any time. For monitoring, similar timing and the same laboratory may make small changes easier to interpret.

Can I exercise beforehand?

Ordinary exercise is not known to meaningfully change CEA. Strenuous exercise may affect other blood tests collected at the same time.

Does a high CEA result mean I have cancer?

No. Smoking, inflammation, liver disease, reduced kidney function, and laboratory interference can raise CEA. Further assessment is needed.

Can smoking affect my result?

Yes. Tell your care team if you smoke or recently stopped so they can interpret the result appropriately.

Why has my CEA test been repeated?

Repeating the test helps show whether a change is persistent or temporary. A series of results is usually more informative than one measurement.

Sources

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