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Medical Encyclopedia: CEA

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Alternative names

Carcinoembryonic antigen

Definition

Carcinoembryonic antigen is a test that measures the amount of carcinoembryonic antigen (CEA) in blood.

How the test is performed

Blood is drawn from a vein, usually from the inside of the elbow or the back of the hand. The puncture site is cleaned with antiseptic. An elastic band is placed around the upper arm to apply pressure and cause the vein to swell with blood.

A needle is inserted into the vein, and the blood is collected in an air-tight vial or a syringe. During the procedure, the band is removed to restore circulation. Once the blood has been collected, the needle is removed, and the puncture site is covered to stop any bleeding.

In infants or young children:

The area is cleansed with antiseptic and punctured with a sharp needle or a lancet. The blood may be collected in a pipette (small glass tube), on a slide, onto a test strip, or into a small container. A bandage may be applied to the puncture site if there is any bleeding.

How to prepare for the test

Smokers may be asked to refrain from smoking for a short time before the test because smoking may increase CEA levels.

How the test will feel

When the needle is inserted to draw blood, some people feel moderate pain, while others feel only a prick or stinging sensation. Afterward, there may be some throbbing.

Why the test is performed

CEA is a protein that normally occurs in fetal gut tissue. After birth, detectable serum levels essentially disappear. However, CEA may increase in the presence of various disorders such as colon cancer.

This test may also be used to determine the responsiveness of cancer patients to treatment (to determine if cancer is spreading or going into remission).

Normal Values

The normal range is 0 to 2.5 mcg/L (less than 3 ng/mL). Normal value ranges may vary slightly among different laboratories.

Note: mcg/L = micrograms per liter; ng/mL = nanograms per milliliter

What abnormal results mean

Greater-than-normal levels may indicate:

- Colon cancer
- Breast cancer
- Lung cancer
- Pancreatic cancer
- Thyroid cancer
- Genitourinary carcinomas
- Inflammatory gastrointestinal diseases (for example, ulcerative colitis, diverticulitis, cholecystitis, pancreatitis)
- Cirrhosis
- Other liver disease
- Peptic ulcer
- Heavy smoking
- Pulmonary infections

What the risks are

- Excessive bleeding
- Fainting or feeling lightheaded
- Hematoma (blood accumulating under the skin)
- Infection (a slight risk any time the skin is broken)
- Multiple punctures to locate veins

Special considerations

This test is most useful to follow response to treatment in patients with known cancer. Abnormal levels can be found in patients without cancer. Veins and arteries vary in size from one patient to another and from one side of the body to the other. Obtaining a blood sample may be more difficult from some people than from others.

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