TEST

Chest CT

A chest CT uses X-rays to create detailed images inside your chest.

WHAT IT MEASURES
Detailed X-ray images of the lungs and other chest structures

SAMPLE
None

FASTING NEEDED?
Sometimes if contrast or sedation is planned

HOW LONG IT TAKES
Usually 10-30 minutes

RESULTS IN
Often 1-3 days; timing varies by imaging service

USED FOR
Screening, diagnosis, treatment planning, and monitoring

MAIN LIMITATION
Findings can be nonspecific and may need follow-up tests

Overview

A chest CT, or computed tomography scan, uses X-rays and computer processing to create detailed pictures of your chest. It shows more detail than a standard chest X-ray, including the lungs, breathing tubes, lymph nodes, ribs, chest wall, and space around the lungs. Images may also include parts of the heart, major blood vessels, upper abdomen, and thyroid gland.

A standard scan may be performed with or without contrast dye. Low-dose CT is commonly used for lung cancer screening. CT pulmonary angiography examines blood vessels for a possible clot, while high-resolution CT assesses lung tissue in detail. The best type depends on the medical question; contrast is not required for every chest CT.

Why the test is ordered

A chest CT may investigate an abnormal chest X-ray or symptoms such as an ongoing cough, unexplained shortness of breath, coughing up blood, or chest pain.

It may be used to look for:

Low-dose CT may be offered to people who meet lung cancer screening criteria. Screening tests people without symptoms and differs from diagnostic CT performed because of symptoms or another abnormal result.

- Infection, inflammation, scarring, or lung damage
- Lung nodules, masses, or enlarged lymph nodes
- Emphysema and other long-term lung conditions
- Fluid or air around a lung
- Injuries to the ribs, lungs, or chest wall
- Blood clots in lung arteries
- Changes after surgery, radiation therapy, or other treatment

Who should have the test

You may need a chest CT when detailed images are likely to answer a specific medical question or change your care. It is not a routine check for everyone.

In the United States, the US Preventive Services Task Force recommends yearly low-dose CT screening for adults aged 50 to 80 who have at least a 20 pack-year smoking history and currently smoke or stopped within the past 15 years. A pack-year means smoking an average of one pack daily for one year. Criteria vary elsewhere.

Tell the imaging team if you are or might be pregnant. CT may still be appropriate when its expected benefit outweighs the radiation risk, but it should be planned carefully. Also report previous reactions to CT contrast, significant kidney disease, and medicines that affect kidney function.

How to prepare

Follow your imaging service's instructions because preparation varies by scan type.

You can usually eat and drink normally before CT without contrast. Some facilities require fasting for several hours before contrast or sedation, although clear fluids may be allowed.

Tell the imaging team about:

You may need a kidney function blood test before receiving contrast, especially if you have kidney disease or another risk factor.

Wear comfortable clothing without metal around the chest. You may need to remove jewellery,

glasses, hearing aids, or clothing with metal fasteners. Bring previous chest images if the service cannot access them electronically.

- Pregnancy or possible pregnancy
- Previous reactions to CT contrast
- Kidney disease, diabetes, asthma, or thyroid problems
- Medicines and allergies
- Recent procedures involving contrast

What happens during the test

You will usually lie on your back with your arms above your head. The table moves through a large ring-shaped scanner that is open at both ends.

The radiographer operates the scanner from nearby and can hear and speak to you. You must stay still and may need to hold your breath for several seconds to prevent blurred images.

If contrast is needed, it is injected through a small tube in a vein. You may briefly feel warm, notice a metallic taste, or feel as though you are passing urine. These sensations usually fade quickly.

Scanning often takes only a few minutes, but positioning and contrast preparation make the full appointment longer.

Understanding your results

A radiologist reviews the images and prepares a report. The scan may be normal, explain your symptoms, or identify something needing comparison or follow-up. Incidental findings are changes discovered unexpectedly that may be unrelated to the reason for the scan.

A small lung nodule does not automatically mean cancer. Nodules can result from infection, inflammation, or scarring. Their size, appearance, growth, and your risk factors determine whether follow-up is needed.

Chest CT has no single numerical reference range. Interpretation depends on the scan method, clinical context, previous treatment, and comparison with older images.

What affects the results

Factors that can reduce image quality or complicate interpretation include:

The protocol also matters. Low-dose screening, lung-tissue, and blood-vessel scans use different settings and do not provide identical information.

- Breathing, coughing, or moving during image capture
- Not taking a full breath when instructed
- Metal, medical devices, or surgical hardware
- Poor contrast timing or flow
- Recent infection, surgery, radiation, or injury
- Temporary partial lung collapse from shallow breathing
- Old scars that resemble active disease
- Missing previous scans that could show stability

Accuracy and limitations

Chest CT shows small lung abnormalities in much greater detail than a chest X-ray, but accuracy varies with the condition, protocol, contrast timing, image quality, and interpretation.

Very small or early abnormalities may be missed. Motion can hide detail, while poorly timed contrast can reduce accuracy when looking for blood clots. CT may also produce false alarms because infection, inflammation, and scars can resemble cancer.

CT cannot always identify exactly what tissue is made of. A biopsy may be needed to confirm a diagnosis. Bronchoscopy may better examine breathing tubes, while MRI or ultrasound may suit some heart, blood-vessel, chest-wall, or fluid-related questions.

Screening can detect slow-growing cancers that would never have caused harm, and it does not prevent every lung cancer death.

Risks and complications

Chest CT uses ionising radiation. The dose depends on the scan type and body size; low-dose screening CT uses less than standard diagnostic CT. The expected benefit should be balanced against radiation exposure.

Contrast may cause temporary warmth, nausea, or a mild rash. Serious allergic-like reactions are uncommon but need immediate treatment. Contrast can also leak outside the vein, causing

pain and swelling.

Kidney injury after modern intravenous contrast is uncommon for most people but is a greater concern when kidney function is severely reduced or other significant risks are present.

What happens next

Your healthcare professional will review the report with your symptoms, history, and other results. Next steps may include no further action, treatment, comparison with older scans, or repeat imaging after a set interval.

An uncertain or suspicious finding may lead to another scan, breathing tests, bronchoscopy, or biopsy. Follow-up does not necessarily mean a serious condition has been found.

After contrast, contact the imaging service promptly if injection-site pain or swelling worsens. Seek emergency help for severe trouble breathing, swelling of the face or throat, fainting, or a rapidly worsening widespread reaction.

Do not wait for routine results if you develop severe chest pain, major breathing difficulty, blue or grey lips, confusion, or collapse. These symptoms require urgent medical assessment.

Common questions

Can I drink coffee before a chest CT?

Usually yes without contrast or sedation. If told to fast, ask whether black coffee counts as a clear fluid.

Does the time of day matter?

Usually not, unless the scan must coordinate with another procedure, medicine, or contrast examination.

Can I exercise beforehand?

Ordinary activity is generally fine. Avoid exercise that leaves you too breathless to lie still or hold your breath.

Can I drive home afterward?

Most people can drive after routine CT. Arrange transport if you receive sedation or are told not to drive because of a reaction or another procedure.

Will I feel claustrophobic?

The scanner is a short, open ring rather than a long tunnel, and the scan is usually brief.

Do I need contrast dye?

Not always. Contrast improves views of blood vessels, lymph nodes, and some masses, but many lung conditions and screening scans are assessed without it.

Sources

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