TEST

CT scan

A CT scan uses X-rays and computer processing to create detailed images inside your body.

WHAT IT MEASURES
Cross-sectional images of organs, bones, blood vessels, and other tissues

SAMPLE
None; imaging with X-rays

FASTING NEEDED?
Sometimes, before contrast, sedation, or certain abdominal scans

HOW LONG IT TAKES
Usually 10 to 30 minutes

RESULTS IN
Often same day; timing varies by imaging service

USED FOR
Diagnosis, screening, procedure guidance, and monitoring

MAIN LIMITATION
Radiation exposure and findings that may need further testing

Overview

A computed tomography, or CT, scan uses multiple X-ray images to create detailed cross-sectional "slices" of your body. These can be combined into three-dimensional images.

CT can show bones, organs, blood vessels, lungs, and other tissues. It often provides more detail than a standard X-ray.

Some scans use a contrast agent to make structures easier to see. Contrast may be injected into a vein, swallowed, or given through the rectum.

CT uses ionising radiation, which can damage cells at high or repeated doses. It should be used when the expected medical benefit outweighs the small radiation risk.

Why the test is ordered

A CT scan may investigate symptoms, assess an injury, guide treatment, or monitor a condition. Common uses include:

CT may reveal an incidental finding unrelated to the reason for the scan. Many are harmless, but some require comparison with older images or further testing.

- Checking for internal injury or bleeding after trauma
- Investigating chest, abdominal, pelvic, or head symptoms
- Assessing possible blood clots, stroke, infection, or kidney stones
- Examining complex fractures
- Finding or monitoring tumours
- Planning surgery or radiotherapy
- Guiding a biopsy, drainage procedure, or injection
- Screening selected people, such as through low-dose lung CT programmes

Who should have the test

CT may be suitable when detailed images are needed quickly or another test has not answered the clinical question. It is especially useful in emergencies.

Children can have CT when medically justified. Imaging teams use the lowest radiation dose that can provide useful images.

Tell the imaging service if you are pregnant, might be pregnant, or are breastfeeding. CT may still be appropriate, particularly in an emergency, but ultrasound or MRI can sometimes provide the necessary information without ionising radiation.

Routine whole-body CT screening can expose you to radiation and identify uncertain findings without necessarily improving your health. It is different from a targeted screening programme.

How to prepare

Follow your imaging service's instructions. Many CT scans need no special preparation.

You may be asked not to eat for several hours before contrast, sedation, or certain abdominal scans. Clear fluids may still be allowed. Rules about coffee vary, so check your appointment information.

Tell the imaging team beforehand if you:

Do not stop prescribed medicines unless specifically told to do so. You may need a recent

kidney function blood test before intravenous contrast, especially if you have risk factors for kidney problems.

Wear comfortable clothing. Remove jewellery and other metal objects if asked because they can obscure the images.

- Have previously reacted to CT contrast
- Have kidney disease, reduced kidney function, or dialysis
- Have diabetes or take metformin
- Have asthma or significant allergies
- Are pregnant or might be pregnant
- Cannot lie flat or hold your breath
- Need help because of pain, anxiety, or claustrophobia

What happens during the test

You may change into a gown. A radiographer will explain the scan and position you on a padded table.

The table moves through a short, ring-shaped scanner open at both ends. You must remain still and may need to hold your breath briefly.

If intravenous contrast is required, a small tube called a cannula is placed into a vein. The injection may cause temporary warmth, a metallic taste, or the sensation of passing urine. These feelings usually disappear within a minute or two.

The radiographer operates the scanner from an adjoining room but can see, hear, and speak with you. Imaging often takes only a few minutes, although preparation and contrast can lengthen the appointment.

Understanding your results

A radiologist reviews the images and prepares a report describing the important findings.

There is no single normal range for CT. Interpretation depends on the body part, scan technique, contrast timing, medical history, previous treatment, and reason for the scan. Comparing older images can help.

The report may recommend another scan, ultrasound, MRI, blood test, or biopsy. This does not automatically mean something serious was found; another test may identify a finding more

clearly.

A normal result is reassuring for conditions the scan was designed to detect, but it cannot exclude every cause of symptoms.

What affects the results

Movement or breathing can blur images. Metal from jewellery, dental fillings, implants, or clothing can create streaks that hide nearby tissues.

Poor intravenous access, circulation problems, or movement may affect contrast timing. Body size can affect image detail and the radiation dose needed. Recent barium contrast may obscure abdominal structures.

Previous surgery, radiotherapy, infection, or scarring can resemble active disease. Older scans and treatment details help distinguish expected changes from new findings.

Medical conditions and medicines may affect whether contrast or sedation is suitable. Pregnancy can influence the preferred imaging method and scan settings.

Accuracy and limitations

CT is useful for many injuries, lung changes, kidney stones, internal bleeding, and bone abnormalities, but accuracy varies by condition and body part.

Small or early abnormalities may be missed. Movement, limited contrast enhancement, or scanning at the wrong stage of an illness can also hide a finding.

CT may show harmless changes that resemble disease, leading to repeat imaging or invasive tests. This is more likely when CT is used without a clear clinical question.

Another test may be better in some situations. MRI often provides more detail for the brain, spinal cord, joints, and some soft tissues. Ultrasound is useful for pregnancy, gallstones, and many pelvic or abdominal questions. A biopsy may be required when imaging cannot identify what tissue is made of.

Risks and complications

CT exposes you to ionising radiation. The dose depends on the body area and scan settings. The long-term risk from one medically necessary scan is generally small, but previous exposure is considered when planning further imaging.

Most people have no problems with contrast. Mild reactions include nausea, itching, hives, or a rash. Severe allergic-like reactions are uncommon but can affect breathing or blood pressure. Staff are equipped to treat them immediately.

Intravenous contrast can occasionally leak into tissue around the vein, usually causing temporary swelling or discomfort. Contrast-related kidney injury is mainly a concern in people with severe kidney impairment or acute kidney injury.

A cannula may cause bruising, and some people feel faint during needle placement.

What happens next

You can usually return to normal activities immediately. If you received sedation, follow the recovery instructions and arrange for someone to take you home if required.

After intravenous contrast, follow the service's advice about fluids. Extra fluid may not be appropriate if you have heart or kidney-related fluid restrictions.

The report is sent to the healthcare professional who requested the scan, who will explain the results and any next steps.

Seek urgent medical advice if increasing pain, marked swelling, numbness, skin colour change, or blistering develops around the injection site. Call emergency services for breathing difficulty, swelling of the face or throat, collapse, or another severe reaction after leaving the department.

A mild delayed rash can occur hours or days after contrast. Contact the imaging service or your usual healthcare service if it is spreading or persistent.

Common questions

Can I drink coffee before a CT scan?

Often, but not always. If fasting is required, coffee with milk may count as food, and some services allow only water or clear fluids. Follow your specific instructions.

Does the time of day matter?

Usually not. Timing may matter when coordinating medicines, fasting, dialysis, another procedure, or a particular phase of contrast movement.

Can I exercise beforehand?

Normal activity is usually fine unless it worsens your symptoms or your instructions say

otherwise. Specialised heart CT may require restrictions on vigorous exercise, caffeine, or certain medicines.

Can I drive after the scan?

Usually, after a routine CT. Do not drive if you received sedation or the imaging team advises against it because of a reaction or medicine.

Will I feel claustrophobic?

The scanner is a short, wide ring open at both ends. Most people tolerate it better than an MRI scanner. Tell the team beforehand if you are concerned.

How often can I have a CT scan?

There is no fixed lifetime limit. Each scan should have a clear reason, taking previous radiation exposure, alternatives, and the information needed into account.

Sources

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