TEST

Liver scan

A liver scan uses ultrasound to create images of the liver and nearby structures.

WHAT IT MEASURES
Liver size, texture, blood flow, and visible abnormalities

SAMPLE
None; images taken through the skin

FASTING NEEDED?
Sometimes, usually several hours for an abdominal ultrasound

HOW LONG IT TAKES
Usually 15 to 30 minutes

RESULTS IN
Usually days; timing varies by radiology department

USED FOR
Diagnosis, surveillance, and monitoring

MAIN LIMITATION
Small or hidden abnormalities may not be visible

Overview

"Liver scan" usually means an ultrasound scan of the liver. Ultrasound uses high-frequency sound waves to make pictures of organs inside your body. It does not use X-rays or other ionizing radiation.

The scan may examine your liver's size, shape, texture, blood vessels, and bile ducts. It often includes the gallbladder, kidneys, pancreas, spleen, and the main blood vessel in the abdomen.

Some appointments also include elastography, sometimes called a liver stiffness scan. This estimates how stiff the liver is. Increased stiffness can be linked with scarring, called fibrosis, but other conditions can also raise the result.

CT, MRI, and nuclear medicine scans can also examine the liver. If your appointment letter names one of these, its preparation, risks, and purpose will differ from the ultrasound described here.

Why the test is ordered

A liver ultrasound can help investigate symptoms, abnormal blood test results, or a finding from another examination. It may be used to look for:

The scan can also monitor a known liver condition or provide surveillance for people at increased risk of liver cancer. Surveillance means repeating a test at planned intervals to look for changes before symptoms develop.

Ultrasound findings usually need to be considered alongside your symptoms, medical history, blood tests, and sometimes another scan.

- Fat accumulation in the liver
- Changes associated with advanced liver scarring
- Cysts, lumps, or other areas that look different
- Enlarged or blocked bile ducts
- Gallstones or inflammation around the gallbladder
- Changes in liver blood flow
- Fluid collecting in the abdomen

Who should have the test

You may be offered a liver scan if liver blood tests are persistently abnormal, you have symptoms that could come from the liver or gallbladder, or another test has shown a possible abnormality.

It may also be used when you have a known condition that can affect the liver, such as chronic viral hepatitis, fatty liver disease, or cirrhosis. Cirrhosis means severe, long-term liver scarring.

Whether ultrasound is the right first test depends on the clinical question. CT or MRI may be more suitable when detailed images are needed or when an ultrasound finding needs closer examination.

How to prepare

Follow the instructions in your appointment letter. For an abdominal ultrasound, you may be asked not to eat for several hours beforehand. This reduces bowel gas and helps the gallbladder remain full, which can make nearby structures easier to see.

You can usually drink clear fluids, but local instructions differ. Ask the imaging department whether you should take your usual medicines. Do not stop prescribed medicine unless you

have been specifically told to do so.

If you have diabetes, are pregnant, or cannot safely go without food, contact the department before the appointment. Staff can give instructions suited to your circumstances.

Wear loose clothing that allows access to your upper abdomen. You may be asked to remove jewellery or change into a gown.

What happens during the test

You will usually lie on your back on an examination couch. A sonographer or radiologist will place clear gel on your abdomen and move a handheld device, called a transducer, across your skin.

You may be asked to turn onto one side, raise an arm, or hold your breath briefly. These positions help create clearer views between the ribs.

The pressure may feel uncomfortable over a tender area, but the scan should not usually be painful. Tell the person performing it if you need them to stop or use less pressure.

If Doppler ultrasound is used, the machine examines blood flow through liver vessels. You may hear pulsing sounds. If elastography is included, you may feel gentle taps or vibrations against your skin.

Understanding your results

A radiologist or another qualified professional reviews the images and writes a report. The report may describe liver size, texture, blood flow, bile ducts, and any visible areas that differ from the surrounding tissue.

A "bright" or "echogenic" liver can be associated with fat accumulation, but ultrasound alone cannot always show the cause or measure inflammation. A coarse or irregular appearance may suggest scarring, but a normal-looking liver does not rule out early fibrosis.

A focal lesion is an area that looks different from the rest of the liver. Many lesions, including simple cysts, are not cancer. Ultrasound may not be able to identify a lesion with certainty, so CT, MRI, follow-up ultrasound, or occasionally a biopsy may be recommended.

Elastography results are often reported as a liver stiffness measurement. Cut-offs are not universal. Interpretation varies by device, laboratory or imaging service, age, sex, pregnancy status, liver condition, medicines, and the wider clinical context.

What affects the results

Several factors can make the liver difficult to see even when the equipment is working correctly. These include bowel gas, a larger body size, movement, and being unable to hold your breath. Parts of the liver behind the ribs may also be harder to examine.

Eating before the scan can contract the gallbladder and increase bowel activity. This mainly affects examination of the gallbladder and nearby structures rather than the liver itself.

The experience of the person performing the scan, the equipment used, and the available viewing angles influence image quality. Widespread liver fat or advanced scarring can make small abnormalities harder to distinguish.

Elastography has additional influences. A recent meal, strenuous exercise, active liver inflammation, blocked bile flow, or congestion from heart problems can temporarily increase liver stiffness without representing permanent fibrosis.

Kidney function, most medicines, and a recent blood transfusion do not directly distort an ordinary ultrasound image. However, medicines and medical conditions can cause genuine changes in the liver over time. Pregnancy can alter organ position and blood flow, so it forms part of the interpretation.

Accuracy and limitations

Ultrasound can reliably show many structural changes, but it does not find every liver problem. Small lesions, early scarring, mild inflammation, or abnormalities hidden by ribs, bowel gas, or body tissue may be missed. A normal scan therefore does not exclude all liver disease.

Ultrasound can also find harmless changes that look uncertain. This does not mean cancer is present, but it may lead to another scan to establish what the area is.

CT and MRI usually provide more detailed views and may be better for characterizing a liver lesion. Blood tests are better for measuring liver enzymes and aspects of liver function. Elastography is more useful than ordinary ultrasound for estimating fibrosis, although it can still give a misleadingly high or low result.

A biopsy examines a small tissue sample and may answer questions that imaging cannot. It is invasive, so it is generally considered only when the result is expected to affect care.

Risks and complications

Standard liver ultrasound has no known harmful effects at the sound levels used for medical imaging. It does not expose you to ionizing radiation.

The gel may feel cold, and pressure from the transducer can be uncomfortable. If contrast-enhanced ultrasound or another type of scan is planned, you should receive separate information about the contrast medicine and its risks.

What happens next

The person performing the scan may not be able to discuss the result immediately. A report is usually sent to the healthcare professional who requested the test. Timing differs between radiology departments.

A normal result may be followed by routine review of your symptoms and blood tests. An unclear or abnormal result may lead to repeat ultrasound, elastography, CT, MRI, specialist review, or occasionally biopsy. Some findings only need planned monitoring.

Contact the service that arranged the scan if you have not received the result within the timeframe you were given.

Do not wait for a routine scan result if you develop new yellowing of the skin or eyes, dark urine with pale stools, or rapidly increasing abdominal swelling. Seek urgent medical advice.

Call emergency services for vomiting blood, black tar-like stools, severe abdominal pain with fever, collapse, or new severe confusion or drowsiness.

Common questions

Can I drink coffee before a liver scan?

If you have been told to fast, coffee may not be allowed, especially with milk or sugar. Even black coffee can affect the gallbladder. Follow your appointment instructions or ask the imaging department.

Can I drink water beforehand?

Clear water is often allowed and may help you take essential medicines. Your letter takes priority because some abdominal scans have specific instructions.

Does the time of day matter?

Ordinary ultrasound images are not usually affected by the time of day. Morning appointments may make fasting easier. Elastography can be affected by recent food, so the timing since your last meal matters more than the clock time.

Can I exercise before the scan?

Gentle activity is unlikely to affect ordinary ultrasound. Avoid strenuous exercise before elastography if the department advises this, because recent exertion can temporarily increase liver stiffness.

Can I take my usual medicines?

Usually, yes. Take them with a small amount of water if permitted. Ask in advance if a medicine must be taken with food or if you use insulin or other medicines that can lower blood sugar.

Will the scan show whether I have liver cancer?

Ultrasound can find some suspicious areas, but it cannot always determine what they are and may miss small lesions. CT, MRI, follow-up imaging, or biopsy may be needed to confirm the cause.

Sources

- Abdominal Ultrasound - Radiological Society of North America and American College of Radiology
- Ultrasound Imaging - US Food and Drug Administration
- ACR Appropriateness Criteria: Liver Lesion-Initial Characterization - American College of Radiology
- AIUM Practice Parameter for the Performance of an Ultrasound Examination of the Abdomen and/or Retroperitoneum - American Institute of Ultrasound in Medicine
- EASL Clinical Practice Guidelines on Non-Invasive Tests for Evaluation of Liver Disease Severity and Prognosis - European Association for the Study of the Liver, Journal of Hepatology , 2021
- Diagnosis of Cirrhosis - National Institute of Diabetes and Digestive and Kidney Diseases