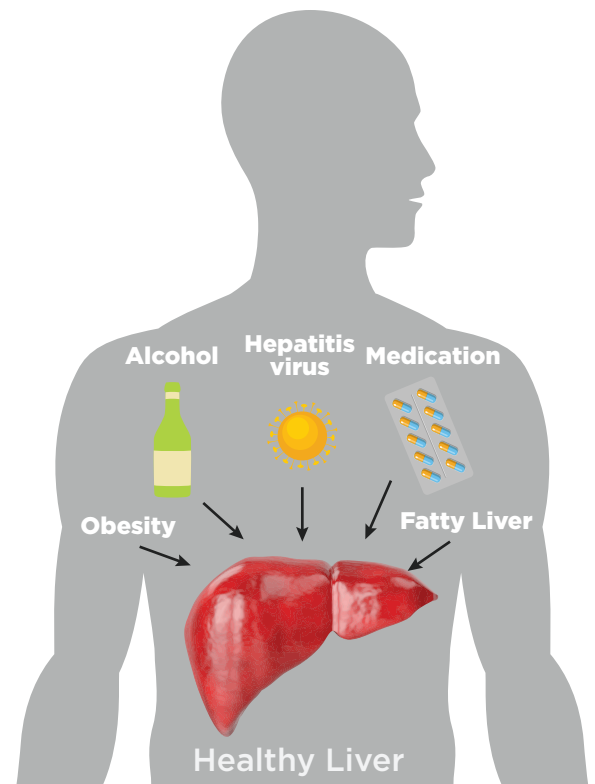


## What does the liver do?

The liver is the largest solid organ in the body, located on the right side of your abdomen, just under your ribs, that constantly regenerates throughout your lifetime. It carries out hundreds of functions to keep you alive and healthy<sup>1</sup>, including:

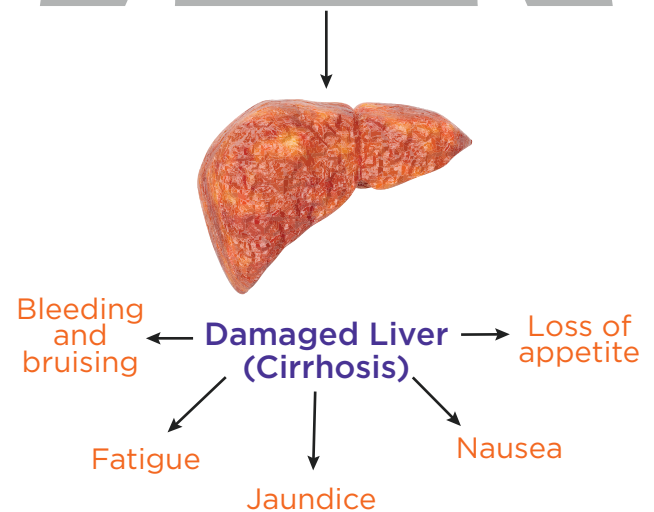
- Processes digested foods into useful substances for the body
- Breaks down and clears toxins, alcohol, drugs, and other harmful substances
- Helps control the amount of sugar, fats, and amino acids in your blood
- Makes important enzymes and proteins, such as those involved in blood clotting and tissue repair
- Produces bile for the breakdown of fats
- Manufactures, breaks down, and regulates hormones



## What is liver cirrhosis?

Liver cirrhosis occurs when there is long-term continuous damage to the liver, resulting in the formation of scar tissue which replaces the healthy tissue. This leads to the formation of bumps (nodules) that replace the smooth liver tissue and impairs the normal liver function<sup>2</sup>.

Cirrhosis has several causes. Most notably, long-term heavy alcohol consumption and hepatitis B and C infections can damage the liver, but cirrhosis can also be caused by autoimmune hepatitis, liver inflammation, obesity, bile duct problems, inherited conditions, type 2 diabetes, and long-term use of certain medicines<sup>2</sup>.



## How common is liver cirrhosis?

Every year, liver cirrhosis is associated with more than 4,000 deaths in the UK, and 700 people requiring a liver transplant to survive<sup>3</sup>. That is more than 10 deaths a day. There has been a four-fold increase in death from liver disease over the last 50 years<sup>4</sup>. In 2019, liver cirrhosis was associated with 2.4% of global deaths<sup>5</sup>.

## The importance of early detection

It is difficult to tell if you have early stage liver cirrhosis because it is often asymptomatic. However, the British Liver Trust indicates that 90% of liver disease can be prevented via early detection<sup>6</sup>, highlighting its immense importance.

Although there is currently no cure that reverses the damage, interventions to address the cause of cirrhosis can slow down or prevent further damage. These include anti-viral medicines to treat hepatitis, limiting alcohol consumption, weight loss programmes and leading a healthy lifestyle<sup>2</sup>.

### Your doctor may recommend a screening for liver disease if you:

- Are overweight (BMI >25 Kg/m<sup>2</sup>)
- Suffer from type 2 diabetes
- Suffer from metabolic dysfunction-associated steatotic liver disease
- Suffer from, or have a history of viral hepatitis B, C, or D
- Drink more than 14 units of alcohol a week or suffer from long-term alcohol abuse
- Regularly consume processed foods/takeaway, or sugary drinks
- Exercise less than 2.5 hours a week

## How does the LIBRA<sup>®</sup> test work?

The LIBRA<sup>®</sup> test measures the amount of a chemical called limonene in your breath. Limonene is a compound that is present in citrus fruit.

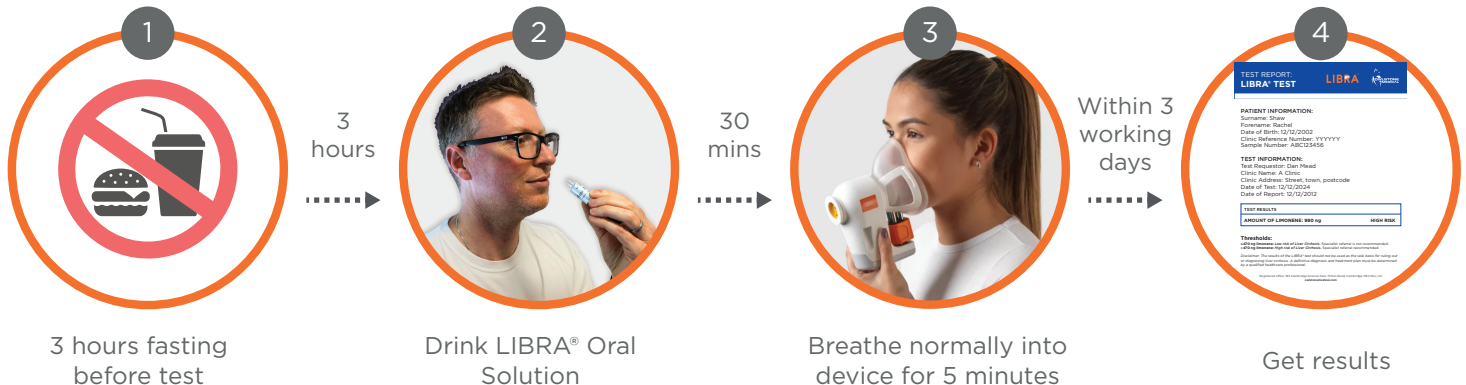
As a part of the test, you will be given limonene to drink. In people with liver cirrhosis, **liver function is impaired** which results in **higher levels of limonene in breath** compared to people without cirrhosis.

The clinician will use the results of the test in conjunction with your medical history and other tests to decide whether you need further testing to diagnose cirrhosis.

### Benefits of LIBRA<sup>®</sup> test

- Non-invasive, painless
- Limonene is a safe, naturally occurring substance in our diet
- Highly accurate at ruling out cirrhosis
- Total test time: less than 1 hour

## LIBRA<sup>®</sup> Test Timeline



#### References:

1. About the liver [Internet]. British Liver Trust. [cited 2024 Jul 25]. Available from: <https://britishlivertrust.org.uk/information-and-support/liver-health-2/abouttheliver/>
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4. Liver disease in numbers – key facts and statistics [Internet]. British Liver Trust. [cited 2024 Jul 31]. Available from: <https://britishlivertrust.org.uk/information-and-support/statistics/>
5. Huang DQ, Terrault NA, Tacke F, Glud LL, Arrese M, Bugianesi E, et al. Global epidemiology of cirrhosis – aetiology, trends and predictions. Nat Rev Gastroenterol Hepatol. 2023 Jun;20(6):388–98. doi: 10.1038/s41575-023-00759-2
6. Mitchell N. British Liver Trust secured major debate on health inequalities in response to record high hospital admissions and deaths caused by liver disease [Internet]. British Liver Trust. 2024 [cited 2024 Jul 16]. Available from: <https://britishlivertrust.org.uk/british-liver-trust-secured-major-debate-on-health-inequalities-in-response-to-record-high-hospital-admissions-and-deaths-caused-by-liver-disease/>