

# Promising new blood test is first of its kind to detect liver scarring

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Newcastle scientists and medics have developed a new type of genetic

blood test that diagnoses scarring in the liver - even before someone may feel ill.

It is the first time an epigenetic signature in blood has been discovered which is diagnostic of the severity of fibrosis for people with Non-alcoholic Fatty Liver Disease (NAFLD).

NAFLD, caused by being overweight or having diabetes, affects one in three people in the UK and may progress to cirrhosis and [liver](#) failure, requiring a transplant.

## Scientific breakthrough

Publishing in the academic journal *Gut*, the Newcastle team describe the proof of principle research in which they measure specific epigenetic markers to stratify NAFLD patients into mild or severe liver scarring, known as fibrosis.

Dr Quentin Anstee, Clinical Senior Lecturer at Newcastle University, Consultant Hepatologist within the Newcastle Hospitals and joint senior author explained what it could mean for patients: "This scientific breakthrough has great promise because the majority of patients show no symptoms.

"Routine blood tests can't detect scarring of the liver and even more advanced non-invasive tests can really only detect scarring at a late stage when it is nearing cirrhosis. We currently have to rely on [liver biopsy](#) to measure fibrosis at its early stages - by examining a piece of the liver under the microscope.

"We know that the presence of even mild fibrosis of the liver predicts a worse long-term outcome for patients with NAFLD and so it's important to be able to detect liver scarring at an early stage."

## Providing a scale of damage

In this first stage of research the team developed the blood analysis in 26 patients with NAFLD. The test detects chemical changes on tiny amounts of "cell-free" DNA that are released into the blood when [liver cells](#) are injured. Changes in DNA methylation at genes like PPAR $\gamma$  that controls scar formation are then used to stratify patients by fibrosis severity.

Senior author Dr Jelena Mann of Newcastle University's Institute for Cellular Medicine added: "This is the first time that a DNA methylation 'signature' from the blood has been shown to match the severity of a [liver disease](#).

"It opens up the possibility of an improved blood test for [liver fibrosis](#) in the future."

Dr Timothy Hardy is a hepatology registrar within Newcastle Hospitals and a Medical Research Council-funded clinical research training fellow at the University. He conducted the research as part of his PhD project and said: "We are now working on confirming these findings in a larger group of patients.

"If we are able to accurately tell the extent of a person's [liver damage](#) with a [blood test](#), and even track the scarring as it gets better or worse, it could provide reassurance for patients, save NHS resources and avoid patients having to undergo a liver biopsy."

This research is part of Newcastle University's response to the challenges and opportunities presented by an ageing population. Newcastle University is a world leader in the field at its Campus for Ageing and Vitality, the location for a new £40m National Centre for Ageing Science and Innovation (NASI). This research was supported by the

National Institute for Health Research (NIHR) Biomedical Research Centre.

The research was made possible through Newcastle Academic Health Partners, a collaboration involving Newcastle Upon Tyne Hospitals NHS Foundation Trust, Northumberland, Tyne and Wear NHS Foundation Trust and Newcastle University. This partnership harnesses world-class expertise to ensure [patients](#) benefit sooner from new treatments, diagnostics and prevention strategies.

**More information:** Timothy Hardy et al. Plasma DNA methylation: a potential biomarker for stratification of liver fibrosis in non-alcoholic fatty liver disease, *Gut*. DOI: [10.1136/gutjnl-2016-311526](https://doi.org/10.1136/gutjnl-2016-311526)

Provided by Newcastle University

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