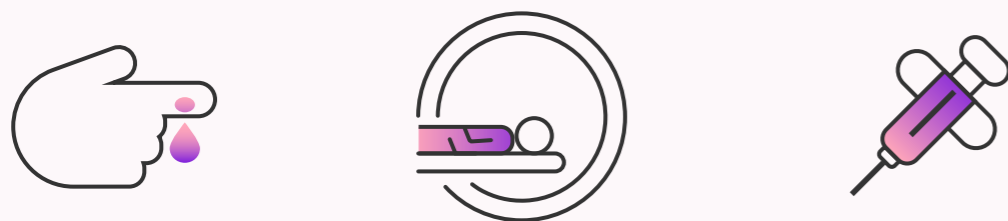# Biomarkers for Liver Disease

Imaging in NASH and NAFLD

Blood tests, MRI, and ultrasound are used to determine liver function.

- Currently liver biopsy is required to diagnose suspected NASH.

- There is growing support for the idea patients with NAFLD can be diagnosed and staged adequately using non-invasive strategies, and liver biopsy should be exclusive to subjects with diagnostic uncertainty.

Gaps in research and future directions

1 **Projected increase in global burden of liver disease from NAFLD has shown non-invasive detection and monitoring a major unmet need.**

New, widely applicable non-invasive diagnostics are urgently required and would eliminate need for a liver biopsy.

Differentiating benign steatosis from progressive NASH is a significant challenge.

2 **Defining the optimal combination of imaging and blood-based biomarkers is warranted in future study.**

Establishing cut-off points will help guide the management of patients.

Multicentre longitudinal study is required on the impacts of non-invasive imaging on histology and liver-related events, and to minimise reliance on biopsy.

Due to the lack of a simple, widely available biomarker for NASH, a pragmatic diagnostic and staging approach should be adopted.

Liver Biopsy

- Until recently, imaging biomarkers have only shown modest diagnostic accuracy for NASH.

- Histology by an expert is the gold standard for diagnosing NASH and staging liver disease in NAFLD.

- It is expensive, invasive, and associated with complications

- Cannot be applied to large scale screening programmes, and currently only used for high-risk groups.

Comparison to New Biomarkers

MRI-PDFF ▶ Shows promise as an emerging quantitative biomarker that accurately measures liver fat, and is more informative than liver biopsy following longitudinal changes

Multi-parametric MRI ▶ Shows promise assessing hepatic steatosis, inflammation, and fibrosis

▶ Helpful, sensitive, and accurate non-invasive method for identifying individuals with active and advanced stages of NAFLD

Key

NAFLD: non-alcoholic fatty liver disease; NASH: non-alcoholic steatohepatitis; MRI-PDFF: MRI-derived proton density fat fraction.

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