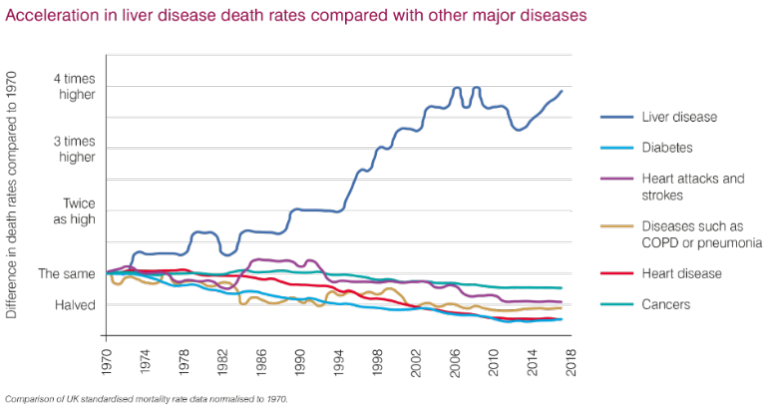
Patient and financial case for the introduction of a pathway for the early detection of liver disease

This briefing sets out the population health and financial case for Integrated Care Boards and Health Boards to implement full pathways for the early detection of liver disease.

The UK is facing rising liver disease mortality and morbidity. Over the last 10 years alone, hospital admissions due to liver disease have increased by almost 47%[i]. Data from the Office for Health Improvement and Disparities in July 2023, shows a 22% increase in liver disease hospital admissions in England over the year ending March 2022. A rise to over 82,000 admissions per annum, which is a 47% increase on 10 years ago[ii]. Over 10,000 people were admitted to hospital due to chronic liver disease in Scotland in 2020/21 with admission rates 5 times higher in the most deprived areas[iii].

Liver disease mortality rates have increased by 400% in recent decades in stark contrast to other major killer diseases, such as cardiovascular disease and breast, lung and prostate cancers, where mortality rates have remained stable or decreased.



Over 70% of liver disease patients die in hospital[iv]. In 2010, liver disease accounted for 141,600 potential years of life lost[v]. Liver disease one of the leading causes of death in those under the age of 75.

Over 17,000 people die of liver disease and liver cancer each year. Liver disease and liver cancer together caused 2.5% of deaths in England in 2020[vi].

Across the UK, premature deaths from liver disease are 4 times higher in the most deprived areas compared with the most affluent. Chronic liver disease death rates are almost 6 times higher in the most deprived areas in Scotland, driven by health inequalities (2021)[vii].

There has been a 12-fold increase in the number of hospital admissions attributed to MASLD (metabolic associated dysfunctional steatotic liver disease, previously non-alcohol related fatty liver disease) since 1998, with around 18,000 admissions in 2010.

Introducing a full pathway for the early detection of liver disease across Integrated Care Boards or Health Boards will (1) improve the early diagnosis of liver disease and patient outcomes and quality of life, and (2) reduce downstream costs to NHS services.

Full pathway for the early detection of liver disease

A full pathway for the early detection of liver disease would include:

1. Primary care liver detection and management pathways to be put in place across the region.
2. A best practice assessment of liver fibrosis rather than relying only on Liver Function tests.
3. Proactive case-finding of individuals who may be at high-risk of liver disease, including;
    a. The use of NHS Health Checks in those aged over 40 to be routinely used to find those at risk.
    b. Automated processes in GP surgeries to identify at-risk patients and to manage appropriate follow up.
4. Processes and metrics to monitor the breadth of adoption and efficacy of the pathways.

The following studies highlight how pathways for the early detection of liver disease improve patient outcome and cost-effectiveness.

Case Study: intelligent Liver Function Tests (iLFTs)

NHS Tayside Health Board introduced an intelligent Liver Function Testing pathway (iLFT) using an automated algorithm-based system to further investigate abnormal liver function test results on initial blood samples for primary care.

490 eligible patients with abnormal LFTs, were recruited to the control group and 64 were recruited to the intervention group. The primary diagnostic outcome was based on the general practitioner diagnosis, which agreed with the iLFT diagnosis in 67% of cases. In the iLFT group, the diagnosis of liver disease was increased by 43%.

Additionally, there were significant increases in the rates of GP visits after diagnosis and the number of referrals to secondary care in the iLFT group. iLFT was cost-effective with a low initial incremental cost-effectiveness ratio of £284 per correct diagnosis, and a saving to the NHS of £3,216 per patient lifetime[viii].

Scarred Liver Project - University of Nottingham and Nottingham University Hospitals NHS trust

The Scarred Liver Project initially piloted the community diagnostic pathway in 5 GP practices across the East Midlands, through 3 separate deployments in catchment area of approximately 25,000 patients. The first deployment (Nottingham) set out to determine the feasibility of this approach whilst further iterations (Nottingham and Leicester) tested the pathway within different socio-economic and geographical areas.

In the first year, 968 patients were referred, with 222 (22.9%) patients stratified to be at risk of advanced fibrosis. This pathway eliminates the reliance on LFTs, and therefore patients are not missed simply due to a false reassurance of 'normal' liver enzymes; 21% of patients had a normal ALT at referral. However, the need to attend for a further appointment, particularly in patients who feel they are healthy, requires a degree of motivation. An economic evaluation has demonstrated that compared with standard clinical practice the pathway has an 85% probability of cost-effectiveness at the UK willingness to pay threshold of £20 000 per quality adjusted life year.

The use of non-invasive liver scans in primary and community care is correlated to improved outcomes due to lifestyle modifications. Results indicated that FibroScan triggers a recognition about the need to change lifestyle behaviour, with 32% of patients losing 5% of their weight and 29% reducing their alcohol consumption by 10%. In a community pilot, 65% of harmful and dependent drinkers reduced their drinking after learning they were developing liver fibrosis[ix].

Scarred Liver Project – key findings

A population of 25,018 adults were analysed; 3688 patients were identified to be at risk:

- 20% of patients attending Fibroscan clinics had signs of significant liver disease.
- Attendance rates for scans were 95% in community versus 60% in hospital.

The economic evaluation has demonstrated that this pathway is cost effective compared to current standard of care and is within the NICE threshold of £20,000 per quality-adjusted life-year (QALY).

For a patient diagnosed with MASLD the pathway costs £2,138 per QALY gained and for ALD it costs £6,537 per QALY gained[x].

Mid-Hampshire clinical commissioning group - FibroScan 1 year pilot project

The pilot project was carried out at 18 general practitioner surgeries to assess patients in high-risk groups (ie, those with diabetes, a high body-mass index, and high-risk alcohol drinking).

Mid-Hampshire clinical commissioning group was the first to make a FibroScan available for GPs to use in primary care. This allows better detection of the high-risk category referred to hospital, and costs £24 per community FibroScan.

The pilot study estimated that prevention of progression to cirrhosis and ultimately transplantation represents a saving of at least £12,000 per patient, with an ICU bed priced at £1,328 per day and a general hospital bed at £195 per day at least[xi].

The Mid-Hampshire pilot of 1115 scans in 2019 cost £26 760, equivalent to 20 ICU days.

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[i] https://www.gov.uk/government/statistics/liver-disease-profiles-july-2023-update/liver-disease-profiles-july-2023-update

[ii] Liver disease profiles, July 2023 update - GOV.UK (www.gov.uk)

[iii] https://www.scotpho.org.uk/health-wellbeing-and-disease/chronic-liver-disease/data/secondary-care/

[iv] https://ukhsa.blog.gov.uk/2014/09/29/liver-disease-a-preventable-killer-of-young-adults/

[v] Annual Report of the Chief Medical Officer, Surveillance Volume, 2012 (publishing.service.gov.uk)

[vi] https://www.gov.uk/government/publications/liver-disease-applying-all-our-health/liver-disease-applying-all-our-health

[vii] Liver disease mortality - Liver disease mortality - Publications - Public Health Scotland (last accessed June 2023).

[viii] https://discovery.dundee.ac.uk/en/publications/intelligent-liver-function-testing-ilft-a-trial-of-automated-diag

[ix] https://www.nice.org.uk/sharedlearning/the-scarred-liver-project

[x] Early diagnosis of chronic liver disease | The King's Fund (kingsfund.org.uk)

[xi] New dimensions for hospital services and early detection of disease: a Review from the Lancet Commission into liver disease in the UK (nih.gov)