

## **Introduction:**

intelligent Liver Function Testing (iLFT) was formally introduced to NHS Tayside primary care in 2018 in response to increasing rates of chronic liver disease (CLD) coupled with recognition that a significant proportion of abnormal liver function tests (LFTs) were inadequately investigated.

Here we outline outcomes from iLFT after five years of routine use and describe how iLFT requesting patterns evolved over this period.

## **Methods:**

The iLFT laboratory platform utilises an automated algorithm, combining requestor-entered clinical data with basic LFT results, to reflex fibrosis assessment and aetiological testing. This data is combined to produce a recommended management outcome, returned to the primary care clinician along with test results.

## **Results:**

*iLFT results:* 26,459 iLFTs were performed from August 2018 to August 2023. 16,112 (60.9%) cascaded to a full aetiology screen, 1,967 (7.4%) to a partial aetiology screen and 8,380 (31.7%) required no further testing. 20,895 outcomes were generated from cascaded iLFT. Isolated abnormal ALT without fibrosis (n=4,962, 23.7% of all outcomes) was most frequent, the majority of which were likely metabolic dysfunction-associated steatotic liver disease (MASLD) on review. For iLFT with aetiology-specific outcomes, the majority were probable alcohol related liver disease (n=3,134; 15.0%) and MASLD (n=2,477; 11.9%). iLFT also identified 657 MetALD, 529 alpha-1 antitrypsin phenotypes associated with CLD, 470 possible haemochromatosis, 230 possible autoimmune conditions, 87 active hepatitis C infections and 19 active hepatitis B infections. Biochemical evidence of significant fibrosis was seen in 20.0% of all requests. 69.9% of outcomes recommended that patients could be safely managed in primary care.

*iLFT usage:* Over the initial 18 months iLFT requesting rose rapidly, with a 75% cascade rate reflecting use as a second-line test after initial abnormal LFTs (Figure 1). Over the last 12 months iLFT requesting has stabilised at around 860 requests/month with a lower cascade rate (48%), suggesting wider use as a first-line test for suspected CLD.

## **Conclusions:**

iLFT has become integral to the screening and diagnosis of CLD in NHS Tayside over the last five years, identifying both common and less common liver disease aetiology. iLFT usage appears to have reached a steady state in which it is more widely used as an initial test. Future work looks to refine the algorithm to increase the number of positive aetiological diagnoses and facilitate Scotland-wide implementation of the platform.

## **Figures and Tables**

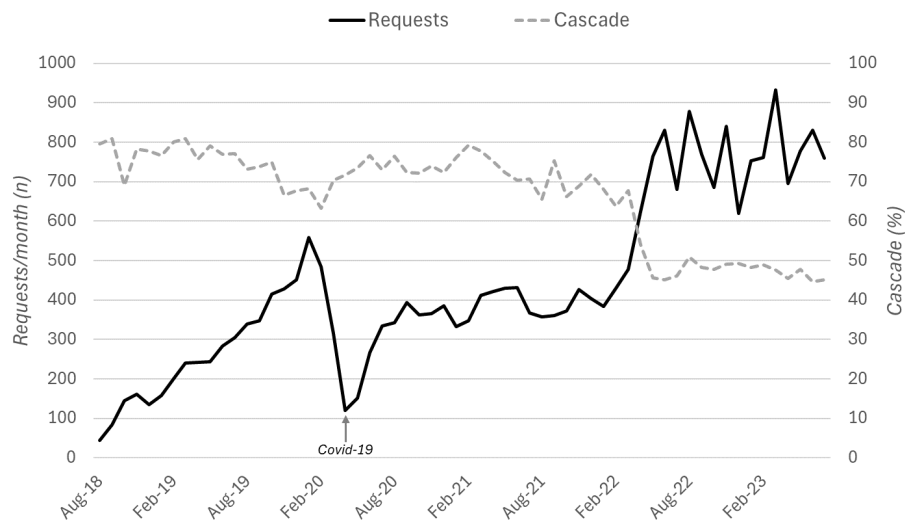


Figure 1: iLFT requests and cascade rate from 2018-2023