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## GPs' experiences and perceptions of early detection of liver disease:

a qualitative study in primary care

### Abstract

#### Background

The incidence of liver disease is increasing in the UK and primary care is a key setting where improvement in the detection and management of liver disease is required. Little is known about GPs' understanding and confidence in detecting liver disease.

#### Aim

To explore GPs' experiences of liver disease with a focus on early detection and interpretation of liver function tests (LFTs).

#### Design and setting

A qualitative study employing semi-structured interviews of a purposive sample of GPs from five UK primary care study sites.

#### Method

Telephone and face-to-face interviews of GPs were undertaken. Data were analysed thematically, using a constant comparative approach.

#### Results

From a total of 25 GP interviews ( $N=25$ ), four themes were identified from the data: test-requesting behaviour, confidence and challenges in diagnosing disease, access to specialist tests, and guidance and education. Participants' descriptions of how they request and interpret LFTs varied widely. Concern over missing diagnoses was a common reason for requesting blood tests; patients with mildly abnormal LFTs and those at risk of non-alcoholic fatty liver disease (NAFLD) were a particular cause of concern. GPs saw themselves as generalists, with a reluctance to take on specialist investigations. Guidelines promoted confidence for some clinicians, but others felt that liver disease was too complex to be amenable to simple instructions. Most felt that they did not have access to relevant, focused education on liver disease.

#### Conclusion

Liver disease is not perceived as a priority in primary care. If GPs are to take on a greater role in identification and management of liver disease, support is needed to promote awareness, knowledge, and confidence.

#### Keywords

early diagnosis; general practice; liver diseases; liver function tests; United Kingdom.

### INTRODUCTION

The incidence of liver disease is increasing faster in the UK than in any other European country.<sup>1,2</sup> Liver disease is already one of the leading causes of premature mortality in the UK, responsible for 61 000 years of working life lost each year.<sup>3</sup> These rises are linked to increases in alcohol consumption and obesity.<sup>4,5</sup> The Chief Medical Officer and an all-party parliamentary group on liver disease have identified early detection as a public health priority, citing evidence that this will reduce disease progression.<sup>6,7</sup> Despite detection and management of chronic diseases being a major part of the work of general practice, there have been calls for urgent improvement in primary care for patients with chronic liver disease.<sup>8</sup>

Early detection of liver disease is a challenge. Many patients have few symptoms until the condition is advanced, when intervention may be ineffective. Liver function tests (LFTs) are a panel of blood tests commonly requested in primary care. However, LFTs on their own are poor diagnostic tools. Recent guidance from the National Institute for Health and Care Excellence (NICE) advises against relying on routine blood tests to rule out disease such as non-alcoholic fatty liver disease (NAFLD) and cirrhosis from all causes.<sup>9,10</sup> Interpretation of LFT results is not straightforward,<sup>11,12</sup> with algorithms developed to support GPs,<sup>11,13</sup> and only very recent publication of national

guidelines to support the interpretation of abnormal liver blood tests.<sup>14</sup> A recent *Lancet* commission on liver disease has highlighted the need to improve expertise and facilities in primary care to strengthen detection.<sup>3</sup> Current evidence promotes the use of new investigations to detect the presence and severity of liver disease, such as serum tests for fibrosis and transient elastography.<sup>15,16</sup> However, these tests are not widely available, and GPs' understanding of their role in detection and management of liver disease in primary care is unknown. With multiple, competing priorities, it is not clear if GPs perceive early diagnosis of liver disease to be an important area for clinical education and service development.

This study explored GPs' experiences of identifying and managing all-cause liver disease, with a focus on early detection and the interpretation of LFTs.

### METHOD

#### Design and participants

Qualitative semi-structured interviews were conducted with GPs from five geographical areas in England (North West London; Wessex; North East and North Cumbria; Yorkshire and Humber; Thames Valley and South Midlands). Participants were recruited via Clinical Research Networks and local networks of GP practices, using email invitations. Purposive sampling in the five areas ensured that a variety of

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**Submitted:** 12 March 2018; **Editor's decision:** 4 April 2018; **final acceptance:** 31 May 2018.

©British Journal of General Practice

This is the full-length article (published online 25 Sep 2018) of an abridged version published in print. Cite this version as: **Br J Gen Pract 2018;** DOI: <https://doi.org/10.3399/bjgp18X699377>

### How this fits in

Liver disease is a major cause of premature mortality in the UK; primary care has been identified as an area where major improvement is required. This study explored GPs' understanding and experiences of identifying liver disease. Findings from this study add to growing evidence of a lack of confidence among GPs in this area and identify non-alcoholic fatty liver disease as a particular area of diagnostic and management concern. Further research should focus on the most effective way of providing support, guidance, and training for GPs in the identification and management of liver disease.

perspectives and varying levels of clinical experience and knowledge in general practice, hepatology, or gastroenterology were captured (March to August 2016).

A semi-structured interview schedule was developed by the research team to cover topics identified from published literature, including GPs' experiences of requesting and interpreting LFTs and the availability of guidelines and educational resources on detection of liver disease. The interview guide evolved throughout data collection to enable exploration of emerging topics. When the data were judged to be

sufficient and no longer developing in depth and complexity, recruitment ceased. Participants were interviewed face-to-face or on the telephone, and all interviews were audiorecorded and transcribed verbatim. The NVivo (version 10) software package was used to manage the data.

### Data analysis

The study design was informed by Glaser and Strauss's constant comparative approach.<sup>17</sup> Data collection and analysis ran concurrently throughout the study, analysis of early transcripts informed the interview schedule for later interviews, and early transcripts were revisited throughout the analysis process. Familiarisation with the data involved a detailed reading of the transcripts. This was followed by line-by-line and highlighting approaches for coding the data.<sup>18</sup> Field notes were used throughout analysis as part of the reflective process. To ensure the trustworthiness of the data, a proportion of the transcripts (20%) were coded independently by three researchers, before comparing and agreeing on themes. The wider research team, which included individuals with experience in general practice, hepatology, and alcohol and health behaviours, was involved in discussions around emerging themes.

### RESULTS

A total of 25 GPs (12 male and 13 female) took part in interviews; two were conducted face-to-face, and 23 by telephone. Interviews lasted 15–50 minutes. Participants' clinical experience ranged from 3 years of GP training to >25 years in general practice. Only four participants had undertaken any specialist training in hepatology or gastroenterology. Practice populations served by the GPs varied widely in size and characteristics, from urban practices with a high degree of substance misuse to rural practices with primarily older populations. Characteristics of the study participants are shown in Table 1.

Four themes were identified from the data: test-requesting behaviour, confidence and challenges in diagnosing disease, access to specialist tests, and guidance and education. In the following section, quotations are presented to illustrate the majority and any extreme views.

### Test-requesting behaviour

All of the interviewees reported that LFTs were part of routine practice in primary care. These were often ordered by other members of the primary care team as part of 'routine health checks' or to monitor

**Table 1. Characteristics of study participants, N = 25**

Variable	n
<b>Sex</b>	
Male	12
Female	13
<b>Experience as GP, years</b>	
<5	5
5–15	10
16–25	9
>25	1
<b>Gastroenterology experience or training</b>	
Yes	4
No	21
<b>Size of practice, number of registered patients</b>	
<5000	5
5000–10 000	9
10 001–15 000	9
>15 000	2
<b>NHS region in England</b>	
North West London	7
Wessex	8
North East and North Cumbria	5
Yorkshire and Humber	1
Thames Valley and South Midlands	4

long-term medication use, as well as by GPs for symptomatic patients. Some GPs saw abnormal LFTs as a way to encourage patients to modify their behaviour, and used them in high-risk patients as part of a lifestyle intervention:

*'You might do the LFTs just to sort of encourage people, because often, an abnormal result can make them feel that, actually, there is a problem and they need to do something about it.'* (GP 16, partner [P], qualified >20 years)

Several interviewees admitted to using LFTs as part of a 'defensive medicine' strategy to avoid missing a serious diagnosis with an undefined problem. As a result, there was a feeling that too many LFTs were being requested, creating unnecessary work for GPs. This increase in workload had prompted some GPs to become more cautious, though they acknowledged that their decisions about when to request LFTs were not necessarily based on evidence:

*'I try to have a reason to do it because I got the sense that you could find an abnormal test that's not significant. So, I deliberately think about why I need to do before I do them. So, I don't know of the evidence of when we should be doing them, so no, I don't do them in that way.'* (GP 13, P, >20 years)

A number of the interviewees indicated that their decision to request LFTs was influenced by their perception of the potential benefits of treatment. If a possible diagnosis of liver disease would not affect the patient's outcome, they felt that testing for it was futile:

*'I'm all for identifying people who have a condition that is going to have an impact on them, and trying to do something about that, but I don't know. Sometimes it feels, fatty liver for example is it ...? What is the evidence that you can make any difference to that? If somebody is obese and has a fatty liver is there anything specifically an issue about their liver, or actually is it just part of the whole thing that it needs lifestyle change.'* (GP 5, P, >20 years)

For some patients, participants suggested that efforts might be better focused on lifestyle intervention rather than testing for specific conditions.

### **Confidence and challenges in diagnosing disease**

Although interviewees reported that they

dealt with LFTs on a daily basis, this did not necessarily mean that they felt confident interpreting the results. Some of the GPs reflected that they were detecting fewer patients with liver disease than predicted by national statistics. This led to concerns that they were missing diagnoses:

*'I slightly worry, having done this [interview] that I'm missing some.'* (GP 15, P, >20 years)

However, others felt that they were competent at diagnosing liver disease and did not perceive it as an area where their practice needed improvement:

*'I don't think it's an area where GPs are frequently missing the diagnosis or delaying the diagnosis. I think, because it's so easy to get LFTs, and because most diseases, whether it's cancer, hepatitis, or alcoholic liver disease, they're pretty prevalent, you know, so we're used to dealing with them.'* (GP 2, P, >20 years)

Diagnosis and follow-up of patients with NAFLD were identified as a challenge. Concerns related to identifying disease in high-risk groups, and knowing when to refer and how often to follow-up. Some of the interviewees felt that they may be overlooking diagnoses of NAFLD in high-risk groups. Currently, there is no universally approved method of identifying patients with NAFLD in UK general practice and several of the participants felt this may be contributing to missed diagnoses:

*'I think we probably miss a lot of liver disease, which is non-alcoholic fatty liver disease, particularly in diabetics. We probably sit and wait on those patients more than we should be, and I think what we really should be doing is being a bit more proactive, and calculating a fibro score, and all the other things, so I think they're a group there where we could improve, as well.'* (GP 1, GP registrar [R])

A diagnosis of NAFLD may lead to a referral to secondary care. Participants suggested that often the outcome of such a referral was lifestyle advice, which they felt could have been offered in primary care, saving specialists' time for more complex issues. A more confident approach to such referrals was proposed:

*'We are sort of thinking, "God, what should we do? Let's let the liver specialists decide", even though they're just going, "It's a fatty liver, cut down his alcohol, control his*

cholesterol." You think, "OK, I could've done that really. That's what we were going to do." So, I think giving us more confidence in managing the simple things, and then the consultants can actually get on and do the difficult things.' (GP 11, P, 13 years)

GPs in this study commented that they were unaware of any structured approaches for following up patients with 'mild' NAFLD. This led to concerns that evolving disease may be underestimated. It was proposed that, in line with other chronic diseases, there should be a recall system within primary care for patients with NAFLD so that this patient group would receive more standardised care:

*'I guess, and this is what we're not doing at the moment that perhaps we should be with our fatty liver patients, you know, our patients who are diagnosed with fatty liver disease who aren't being — haven't needed referral up or being monitored by secondary care, whether we should have some in-house policy or way of monitoring them every so many years, just to see if there is any change in their blood testing. Rather than it just being a random thing, that it should be part of a sort of recall system. We haven't got that set up.'* (GP 16, P, >20 years)

Minimally deranged LFTs, predominantly transaminases, are a very common finding in primary care. However, an abnormal transaminase result does not always reflect the level of the underlying liver damage. Participants commented that interpreting minor abnormalities in LFTs and deciding on a suitable course of action was a challenge, and could be a source of anxiety:

*'It's quite easy to refer when you've got really abnormal LFTs and an abnormal ultrasound. It's the people that fall in the middle that are the most difficult so they're the people with the borderline raised LFTs, with maybe a little bit of fatty liver on an ultrasound but nothing else. They're the ones that are the most difficult. Do you just monitor? Do they still need referral? Are they at risk of future liver disease? I'd say they're the tricky ones actually.'* (GP 23, salaried [S], 2 years)

#### **Access to specialist tests**

Alongside the standard LFT panel, most of the GPs in this study were able to make direct requests for ultrasound scans and extra diagnostic blood tests, which are usually referred to as the 'liver screen'. A majority of participants expressed a view that the role of the GP is as a generalist, and

if extra investigations are required to make a diagnosis these should be requested by secondary care clinicians. Time pressures, alongside lack of specialist knowledge, were cited as reasons why further investigation was considered inappropriate in the primary care setting:

*'I think we'll have to accept our limitations as GPs, and if there is anything more complex that's coming up, they're better off seeing the specialist than having me guess at what the results show, so I'm quite happy with what we have available.'* (GP 7, P, 10 years)

The interviewees were prompted during the study to describe what 'any further tests' may entail. Some acknowledged that they were unaware of which additional tests may be available. A small number of the GPs interviewed suggested that additional investigations would be useful, in particular expanding the routine blood panel to include aspartate aminotransferase (AST) and direct access to elastography (fibrosan). However, it was recognised that any increased responsibility for requesting and interpreting results would need to be accompanied by education:

*'As I said, we need, which are in the US, ultrasound elastography, we don't have direct access to that, to the ultrasound elastography, so that is something which might be useful. But it's having access, and also, another thing is educating us to interpret the results.'* (GP 12, P, 16 years)

#### **Guidance and education**

There was no universal approach to the use of local or national guidelines to assist in the diagnosis of liver disease among the study participants. Some of the GPs were aware of local guidelines and used them regularly; others would search for help on national GP resource websites if needed. Several GPs were not aware of any specific local or national guidelines and a few admitted to knowing of guidelines, but choosing to employ their own systems devised from experience:

*'I mean, the guidelines say, if you've got an ALT more than three times the upper limit of normal, repeated on one or two more occasions, then that would be a criteria; but it's not particularly one that I use, I would tend to monitor those.'* (GP1, R)

When guidelines were used, they helped to increase GP confidence in their own diagnostic ability. These guidelines were

perceived to have had greater impact on clinicians' confidence where they were embedded in routine practice, with computer-based prompts or clear flowcharts:

*'It just follows off the pathway, it's quite a clear flowchart, if this happens, does that happen, or if the other happened, refer on, based on what their fatty liver disease score would be. So, again, that would be using national guidance, when to refer. So, quite clear.'* (GP 19, S, 2 years)

However, some interviewees suggested that interpretation of LFTs may not be as amenable to simple rules of interpretation, because of the variation in what an abnormal result may mean for the individual:

*'I don't know whether it's possible to say, "If it's up above this amount you need to do this or below this ..." ... you know the way diabetes has flowcharts, "If the HbA1c is above this you do and if it does this you do this." You follow those quite clearly, whereas liver function doesn't really have an equivalent, like iron monitoring for warfarin. So, for other things we do follow quite strict guidance, but for liver function we don't really follow it so strictly. I suppose it's because it's so dependent for each person.'* (GP 11, P, 13 years)

Most of the GPs interviewed expressed a desire for more education to help them effectively identify and manage liver disease. There was a consensus that liver disease was not currently promoted as a high-priority area for primary care. Some participants commented that tailored education around liver disease was limited:

*'We [GPs] pick and choose what we learn and therefore things that are easy, because they're throwing training at us, which they are for cardiology, for diabetes, and mental health, they're pouring that down our throats so we're jumping at all these things. But there's only a certain amount of days you have off to go on training and do things. Liver just hasn't been there at the front; therefore, I think people would've chosen it, but it hasn't really been available very much, so we've not done it. I think that probably is a problem.'* (GP 11, P, 13 years)

## DISCUSSION

### Summary

The present study suggests that liver disease is not perceived by GPs to be a particularly high priority, but it is an area where they lack confidence. Concerns were focused on

missing diagnoses and uncertainty about how to respond to patients with mildly abnormal LFTs or those at risk of NAFLD. A reluctance to take on additional specialist investigations appeared to be rooted in GPs' perception of their role as medical generalists. Overall, liver disease was seen as complex and not a suitable topic for simple guidelines.

### Strengths and limitations

This study describes GPs' perceptions of the diagnosis of liver disease, and the researchers believe it is novel in its scope. GPs were offered no financial incentives to participate, yet no difficulty was found in recruiting from any of the five geographical sites. Interviewees were self-selecting and were from practices known to local clinical research networks. However, the richness and breadth of the data imply that this was not a major limitation, with participants displaying a readiness to admit uncertainty or lack of confidence. The present study was conducted just before the publication of UK NICE guidelines on both NAFLD and cirrhosis.<sup>9,10</sup> These documents advocate a change to current practice. Participants may have been aware that guidelines were in development, but there was no time for them to have influenced experiences of diagnosing liver disease in primary care.

### Comparison with existing literature

The researchers' findings of GPs' reported test-requesting behaviour are consistent with those reported in the qualitative arm of a large study looking at testing strategies for liver disease in primary care.<sup>11</sup> However, that study was focused on test-ordering behaviour, and, unlike the present one, did not explore GPs' experiences of diagnosing liver disease in any detail. The use of tests to change patients' behaviours, the defensive nature of testing, and the feeling that tests were requested too often were common themes in the present study. The findings reported here support the recent *Lancet* report, which suggests that primary care clinicians require clear guidance on the use of LFTs and the need for specialist referral.<sup>3</sup>

A recent study in North America explored primary care physicians' awareness of, and current practice related to, NAFLD.<sup>19</sup> Knowledge of diagnostic tools and understanding of the difference between 'fatty liver' and more progressive disease were found to be poor, though this brief online survey was unable to explore the reasons behind the findings. Several GPs in the present study indicated that NAFLD was an area they found challenging, in

particular, knowing how best to assess risks and follow-up patients. Clinicians suggested that referral often resulted only in lifestyle advice, which they felt could be offered in primary care. Other work beyond the UK has also identified NAFLD as an area where enhancing knowledge in primary care practice may be helpful.<sup>20,21</sup>

Difficulties over interpretation of minimally deranged liver function tests may be due in part to the well-documented discordance between blood test abnormalities and extent of liver damage. In other conditions managed by GPs, the relationship between abnormal blood tests, clinical decision-making, and pathology is often clearer cut, for example, in chronic kidney disease. GPs also reported varying use of guidance when managing liver disease. In contrast to other chronic conditions,<sup>22</sup> much local and national guidance on liver disease is focused on aetiological factors such as alcohol.<sup>23</sup> The relevance to patients with liver disease of different aetiology may not be apparent, even when the recommended management pathway is still appropriate.

#### **Implications for research and practice**

Findings from this study suggest that liver disease should be a target for improved practice in primary care and that GPs would be receptive to greater support and the

promotion of a standardised approach to investigation and management. This will require adequate resourcing and a better understanding of precisely how to improve practice in this area. It is important to acknowledge that many determinants of the rise in chronic liver disease are social and political, and, for action by GPs to be effective, it will need to be part of a broader public health strategy. Work is underway,<sup>6,7,14</sup> but the development of up-to-date guidance, clinical tools, and educational initiatives is relatively recent.<sup>9,10,14</sup> Many GPs do not have access to recommended non-invasive tests, for example, transient elastography and blood biomarkers, and this will need to be addressed if the guidance is to be implemented.<sup>9,10</sup>

Early intervention can be effective for all the main causes of liver disease, including NAFLD,<sup>24</sup> alcoholic liver disease,<sup>25,26</sup> and viral hepatitis. The use of targeted brief interventions is supported by a growing body of evidence,<sup>27,28</sup> curative treatments have been developed for hepatitis C, and new antifibrotic medication will soon be widely available for all-cause liver fibrosis.<sup>29</sup> Crucially, all of these depend on awareness and early detection in primary care, and this is an area that urgently requires further research and development.

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#### **Funding**

This study was funded by the National Institute for Health Research (NIHR) School for Primary Care. The views expressed in this article are those of the authors and not necessarily those of the NIHR, the NHS, or the Department of Health.

#### **Ethical approval**

Ethical approval for the study was granted by Newcastle University (reference number: 151073).

#### **Provenance**

Freely submitted; externally peer reviewed.

#### **Competing interests**

The authors have declared no competing interests.

#### **Acknowledgements**

The authors extend their thanks to the GPs who generously gave their time to participate in this study.

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