

# BMJ Open Healthcare practitioners' experiences of an intervention to detect and treat patients with liver disease (the LOCATE intervention): a qualitative process evaluation

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## ABSTRACT

**Objectives** The local care and treatment of liver disease (LOCATE) intervention embedded specialist liver nurses in general practitioner (GP) practices to improve the identification of progressive liver disease, enabling earlier intervention. This current process evaluation examines GP practice staffs' perceptions of the LOCATE intervention, in order to understand any potential barriers to successful implementation in clinical practice.

**Study design and setting** A qualitative process evaluation nested within the LOCATE feasibility trial, using semistructured interviews with practice staff from five GP surgeries in the UK.

**Participants** A purposive sample of 29 interviews with practice staff (GPs, nurses, practice managers).

**Data collection** Interview transcripts were subjected to thematic analysis.

**Findings** The intervention was found to be acceptable to practice staff and a number of barriers and facilitators to the success of the intervention were identified. However, interviews suggested that the intervention did not provide sufficient guidance for clinicians to be able to help patients make the behavioural changes needed to reduce risk factors associated with liver disease. The intervention did appear to improve clinician awareness and knowledge about liver disease, enabling GPs to feel more confident interpreting and managing liver function blood tests in order to identify the early signs of liver disease.

**Conclusions** This study enabled identification of potential barriers to implementation of specialist nurses in primary care to identify progressive liver disease and enable earlier intervention. The next steps are to improve the intervention to make it more feasible to implement in practice and more likely to help patients to make the behavioural changes required to prevent a major liver event.

**Trial registration number** 13/SC/0012; Post-results.

**Ethics** This study was reviewed and approved by NRES Committee South Central—Hampshire A, Bristol Research Ethics Committee Centre, level 3, block B, Whitefriars, Lewins Mead Bristol BS1 2NT.

## Strengths and limitations of this study

- This study is, to the best of our knowledge, the first to conduct a qualitative process analysis of practice staffs' experiences of having a liver clinic embedded within their practice.
- This study identified potential barriers to intervention success that enabled modifications to be made which would maximise the chances of the intervention being effective and successfully implemented in practice.
- The interviewer had an existing relationship with the participants through her role as trial manager which might have introduced some social desirability bias.

## BACKGROUND

Liver disease is currently the fifth most common cause of death in the UK and the third most common cause of premature mortality. Sixty-two thousand years of working life are lost to liver disease every year.<sup>1</sup> In England during 2014/2015, there were 57 147 hospital admissions with some form of liver disease.<sup>2</sup> The two most common causes of liver disease are alcohol and obesity, which suggests the illness is potentially preventable.<sup>3 4</sup> However, detection is difficult because liver disease progresses through fibrosis to cirrhosis, portal hypertension and hepatocellular carcinoma silently with no signs or symptoms until liver failure develops.<sup>5</sup> Around three-quarters of patients with cirrhosis remain undetected until they present as an emergency with the complication of advanced liver disease with only one-third of patients surviving in the long term.<sup>3 6 7</sup>

Within primary care, alanine transaminase (ALT) is still frequently used to exclude liver disease, for the monitoring of any adverse effects of drugs on the liver, or for the investigation of the generally unwell patient.<sup>5</sup> A

normal ALT does not, however, exclude severe underlying liver disease and we need to develop better and more up to date approaches to detect liver disease earlier.<sup>5</sup>

Local care and treatment of liver disease (LOCATE) was a large feasibility trial that embedded specialist liver health nurses into general practitioner (GP) practices. The primary objective was to evaluate whether using the combined results of liver elastography (fibrosan test) and liver fibrosis markers<sup>8</sup> would, when compared with usual care, improve the identification of progressive liver fibrosis enabling earlier intervention (eg, lifestyle advice or medical investigation). Of 910 patients on the LOCATE intervention, 5% were found to have probable cirrhosis of the liver. The intervention further identified that 40% of patients had some form of progressive liver disease (liver fibrosis or liver warning), twice as many as those identified at the control surgeries.<sup>9</sup> These patients would almost certainly have gone undetected had they not been identified by the LOCATE intervention, and some of them may as a result avoid a future emergency admission.

The LOCATE intervention's success in identifying previously undetected liver disease to enable earlier intervention could, if implemented into GP practices across the UK, potentially have a significant impact on reducing premature mortality caused by liver disease. It is, therefore, important to appraise the processes and procedures used by the intervention, to find out if they are acceptable and feasible to implement, or whether changes are necessary to maximise the intervention's chances of successful implementation in practice.

The current study presents a qualitative process evaluation<sup>10</sup> of the LOCATE intervention exploring practice staffs' experiences of having a liver clinic at their surgery. Our aim was to understand what primary care staff thought of the intervention. We were particularly interested in identifying any barriers or facilitators to successful implementation of the LOCATE intervention.

## METHODS

### Study design

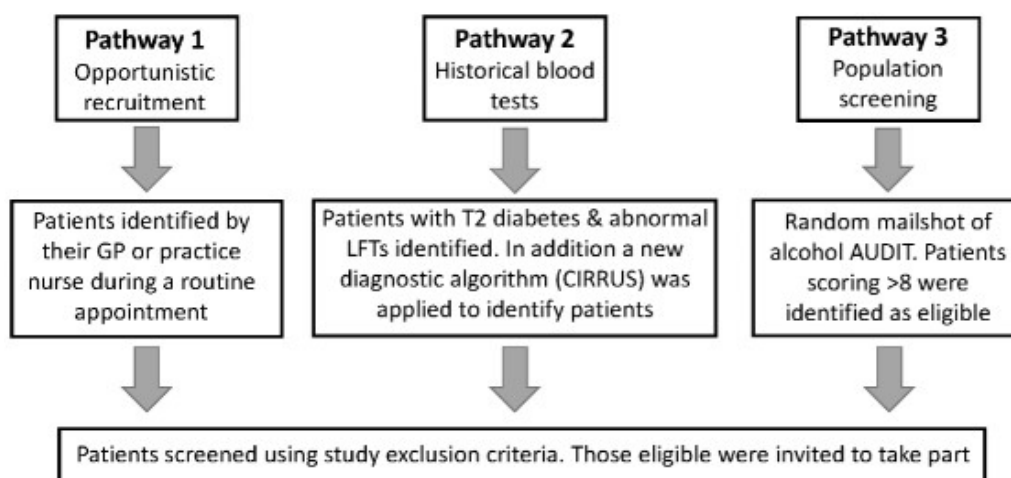
This was a qualitative process analysis that used semi-structured interviews to gain a rich understanding of GPs', nurses' and practice managers' experiences of the LOCATE intervention.

### LOCATE intervention

The intervention was set within bespoke community liver clinics, which aimed to identify patients with liver disease and then inform the patient and GPs of the diagnosis and recommended management plan. The LOCATE team used a number of methods to identify and recruit participants to the intervention, these are described in full elsewhere<sup>9</sup> and summarised in figure 1.

All of the clinical staff at the intervention surgeries received the same information about the study before recruitment to the trial started. Each practice received a one time only face-to-face presentation conducted by author NS on the rationale for the study and the nature of liver disease. In this time, NS described the aims of the trial, the intervention process itself, the benefits to the patient and GP practice, and answered any questions.

During the initial assessment with the liver nurse, the patient's drinking habits were noted using WHO's alcohol use disorders identification test (AUDIT).<sup>11</sup> Medical history was noted; blood pressure, body mass index and waist circumference were measured. Blood samples were taken for a full blood count and serum markers of liver fibrosis,<sup>8 9</sup> and liver stiffness was measured by transient elastography, using a portable FibroScan402 device,<sup>12</sup> a machine that offers a non-invasive procedure based on ultrasound technology. Each appointment lasted approximately 40–60 min. Notes and results from each patient seen by the liver nurse with abnormal results were reviewed in a combined virtual clinic by a consultant hepatologist and study research fellow (a practising GP), who made a provisional diagnosis and wrote to the



**Figure 1** The three methods used to identify participants to the LOCATE intervention. AUDIT, alcohol use disorders identification test; CIRRUS, Cirrhosis using standard tests; LFTs, Liver function tests; LOCATE, local care and treatment of liver disease.

Aetiology:	Liver fibrosis stage:			
	No fibrosis	Liver warning	Progressive fibrosis	Probable Cirrhosis
Alcohol				
NAFLD				
Viral Hepatitis				
Autoimmune				
Miscellaneous				

**Figure 2** Diagnostic matrix—combining the liver fibrosis stage with one or more aetiology. NAFLD, Non-alcohol related fatty liver disease.

patient's GP explaining the liver fibrosis stage and recommended management plan.

Patients with a diagnosis of 'no liver fibrosis' were sent a letter from the study to say that no further action was required. For patients whose diagnoses were either liver warning, progressive fibrosis or probable cirrhosis, two letters were written. The first letter was to the patient where they were strongly urged to contact the liver nurse to make a second appointment. During the second appointment, which was either conducted over the telephone or face to face, the liver nurse would discuss the patient's diagnosis, offer appropriate lifestyle changes and signpost the patient to additional informational resources. The second letter, a clinical letter, was sent to the patient's registered GP and included a liver stage diagnosis and management plan. Where significant liver disease was discovered the patient's GP was asked to arrange additional investigations. The results of these tests were then reviewed in the virtual clinic to reach a final diagnosis which combined the stage of liver fibrosis with one or more aetiology (see [figure 2](#)). A clinical letter was then sent to the patient's GP to explain the final diagnosis and provide a treatment plan, and if required a recommendation for hospital referral. At this point, the patient was 'discharged' from the intervention back into the care of their GP.

This was a pragmatic study, with the GPs managing patients according to their own clinical skills and preferences, but with specific personalised simple advice given for each patient.

### Participants

Ten GP surgeries in the south of England took part in the LOCATE trial, five were allocated to the intervention arm and had access to an in-house liver clinic, the five control surgeries continued to diagnose and manage liver disease as normal. Staff from the five intervention arm practices were interviewed in the current study. [Table 1](#) provides demographics for these surgeries.

From the five intervention arm GP surgeries, 39 practice staff were invited to take part in the process evaluation (GPs, n=25; nurses, n=7; practice managers/assistant managers, n=7). Staff were sent an invitation letter, information sheet and consent form. Twenty-nine staff consented and participated in face-to-face interviews (GPs, n=16; practice nurses, n=4; specialist liver nurses, n=3; practice managers/assistant managers, n=6); see [table 2](#) practice staff demographics. Staff who chose not to participate had either recently retired (n=3) or reported not having time (n=7).

### Data collection

The interviews were conducted at the end of the feasibility trial. Practice staff were interviewed in a consulting room at their GP surgery. The interviews were conducted by TR, the LOCATE trial coordinator (who has a BSc (Hons) in psychology and previous experience of qualitative interviewing and analysis). Five pilot interviews were conducted to test and refine the interview schedule. TR had a professional relationship with most of the practice staff interviewed through managing the trial. Practice staff who agreed to participate signed a consent form prior to the interview.

The interviews aimed to explore practice staffs' perceptions and experiences of the LOCATE intervention. Open questions were used to explore experiences of all intervention elements including the LOCATE intervention itself and communication with the hepatologist who provided diagnosis and management plan. Recruitment of patients to the intervention via GP referral was discussed with the clinicians. Prompts were used to encourage the practice staff to elaborate in greater detail. Negative as well as positive views of the intervention were purposively explored to help understand how the intervention might need to be refined to maximise chances of successful future implementation into practice.

**Table 1** Intervention surgery demographics

Surgery information		Ethnicity estimate of patients					General practitioner information			
Surgery	Deprivation rating	No of registered patients	Mixed, %	Asian, %	Black, %	Non-white ethnic groups, %	White, %	Total	Male	Female
1	3	23677	3.7	20.0	5.7	3.30	67.3	12	4	8
2	5	8702	1.9	1.7	1.0	Not given	Not given	6	1	5
3	2	10194	2.1	1.6	Not given	1.30	Not given	7	2	5
4	6	8111	1.8	6.8	1.6	Not given	Not given	6	2	4
5	6	17915	2.8	15.2	2.2	2.10	77.7	6	3	3

**Table 2** Demographics of practice staff interviewed

Occupation	Total
General practitioner	16
Female=11	
Male=5	
Nurse	7
Female=7	
Practice nurse =4	
Specialist liver nurse=3	
Practice manager/assistant manager	6
Female=5	
Male=1	
Sex	
Female	24
Male	5
Age, years	
25–34	2
35–44	10
45–54	7
55–65	9
Not given	1
Employment	
Full time	14
Part time	14
Not given	1
Total interviews	(n= 29)

### Analysis

All interviews were audio recorded and lasted between 11 and 34 min (median=25 min). No new information or themes emerged with the last few interviews implying that saturation had been achieved.<sup>13</sup> The recordings were transcribed verbatim and imported into NVivo V.11. The data were analysed using an inductive thematic analysis following Braun and Clarke's<sup>14</sup> six phases of thematic analysis. First, the researcher familiarised herself with the data. The interviews were coded and a coding manual was developed which was maintained and updated as new codes were identified. Constant comparison was used to continually check between the data and the coding (a procedure from grounded theory).<sup>15</sup> Responses from GPs, nurses and practice managers were compared but found not to differ across these participant groups. Codes that identified similar aspects of the data were organised into themes and were discussed and agreed with KB (experienced qualitative research and health psychologist). A trail was maintained throughout and deviant cases identified to ensure that minority views were not overlooked. The final themes and interpretations were discussed with all coauthors.

## Results

The main themes identified were: 'The impact of the LOCATE intervention', 'facilitators and barriers to implementing the LOCATE intervention into primary care' and 'facilitators and barriers to providing lifestyle advice and are summarised in table 3.

### Facilitators and barriers

#### To implementing the LOCATE intervention into primary care

A number of barriers and facilitators to implementing the LOCATE intervention into primary care were identified.

All the practice staff (managers, GPs and nurses) reported that having the LOCATE intervention available in primary care rather than secondary care was an advantage. It was noted that patients 'definitely attended more' (GP-7) as they did not have to travel any further than their local GP surgery and 'didn't have to go somewhere they didn't know.' (PM-1).

Most clinicians reported that lack of time was a barrier to recruiting patients to the LOCATE intervention within routine appointments. One GP noted that 'sometimes it's just remembering' (GP-14) to discuss liver disease with a patient.

All practice staff discussed receiving patient letters from the LOCATE trial. Most of the clinicians reported that they found the diagnosis provided within the letters helpful as this allowed them to add this to the patient's notes. One barrier reported by all GPs was that secondary care did not always make it clear in the letters whose responsibility it was to do further tests, and who would be interpreting the results and feeding them back to the patient.

A few of the GPs noted that they wanted direct instructions on how to manage their patients within the letters and preferred to read 'you need to' (GP-9) rather than 'please would you consider' (GP-9) which was regarded as too uncertain.

Most of the GPs reported that any important information in the patient letters should be in bold, with many clinicians noting the most important points to read in a clinical letter: 'working diagnosis' (LN-5); 'management plan' (GP-15) and 'action points.' (GP-6).

All the practice staff from the inner city surgery reported language difficulties as a barrier specific to engaging with their cohort of patients. To help with this the surgery offers a phone interpreter service, but if a family member is translating this presents the clinician with another barrier in that they are concerned about the accuracy of the translation.

'Yeah, I always get anxious when there's an interpreter. You're never sure what they're saying.' (LN-5).

### Facilitators and barriers

#### To providing lifestyle advice

As part of the management plan received from the hepatologist, clinicians were asked to provide lifestyle advice to patients who needed to change behaviour (eg, reduce drinking/weight).

All the clinicians reported that giving lifestyle advice was a large part of their role generally and most were 'pretty confident' (PN-4) and acknowledged that lifestyle advice 'has to be tailored to that patient.' (GP-14). However, they went on to note that they did not feel the lifestyle advice they were giving was effective, as they were not sure if patients would adopt the lifestyle changes they were being asked to make. When giving lifestyle advice most clinicians simply told patients what to do and rarely mentioned using other strategies or techniques to support behavioural change.

'I just say it's too much good living, too much booze, too much fat and the two together that's why you've got this liver problem, so you need to make yourself more basic, cut down on your drinking.' (GP-1).

A few of the clinicians acknowledged the difficulties they encountered with 'telling people how to live their lives.' (LN-1). One nurse noted that patients became uninterested when they were told to make changes, another nurse had accepted that there was nothing she could do and that she could not influence whether patients would actually action the lifestyle advice given. One GP reported that they were aware some of their patients might continually be told to lose weight which could be frustrating, as such this GP became unsure about whether to discuss losing weight with their patients.

'If they are very overweight I usually tell people but maybe they have been told by everybody because they are so obviously overweight and they get a bit fed up ... and you wonder is it going to be good to tell them or not?' (GP-3).

Deviant case analysis revealed that one GP had adopted more wide-ranging strategies to support patients in making behavioural changes that included discussion of the problem, goal setting and regular follow-up of progress. This was the only clinician interviewed who was confident they would be able to help patients make changes.

'You plan, do, study, act, lots of little changes, with lots of these you get this progressive change.' (GP-6).

Some GPs reported that receiving the patient's fibroscan result facilitated better consultations as they were able to use the reading to motivate patients towards behavioural change, by showing patients how their liver was functioning.

'I think having the results they're, having, you know, explaining about the liver and how that's a view to their sort of overall health and, you know, It's like a, it's almost like a sort of window of how things are for them.' (GP-4).

However, one GP noted that a low fibroscan reading (which indicates a healthy liver) could be interpreted as a green light for some patients to continue drinking heavily.

A couple of clinicians discussed forming judgements about whether patients were likely to engage based on previous behaviour. Patients who often did not attend appointments or failed to make changes to improve other health conditions were viewed as unlikely to do anything to help their liver health. Many clinicians viewed patients as either ready to engage, receptive to

**Table 3** Themes and codes

Theme	SubTheme	Codes
Facilitators and barriers	To implementing the LOCATE intervention into primary care	<p>Having a liver clinic in primary care was seen as an advantage as it was more accessible and familiar to patients than secondary care</p> <p>The lack of time to discuss liver disease during a routine appointment</p> <p>Fibroscan reading used as a teaching moment</p> <p>Patients were seen as disinterested or not ready to engage</p> <p>Clinicians having polarised views of patients</p> <p>Patient lack of understanding of health problems and behavioural change</p> <p>Patient letters with clear direct instructions: diagnosis, management plan and action points</p> <p>Confusion about responsibility in terms of where GP/patient/LOCATE Intervention begins and ends</p> <p>The cultural differences between GP and patient made it difficult for effective communication</p>
	To providing lifestyle advice	<p>Clinicians were confident providing lifestyle advice</p> <p>Clinicians felt the lifestyle advice they were giving was ineffective</p> <p>Clinicians using a paternalistic approach to delivering advice</p> <p>Clinician's perceptions of patients (eg, disinterested, fed up)</p> <p>Cultural differences</p> <p>Clinicians unsure about the specifics to use when delivering lifestyle advice</p>
The impact of the LOCATE intervention		<p>Raised the awareness of liver disease</p> <p>Educated clinicians on their understanding of liver disease</p> <p>Helped GPs to feel more confident interpreting and managing blood tests in relation to liver function</p> <p>Provided a new patient pathway for patients with suspected liver disease</p> <p>Equipped GPs with the ability to detect the early signs of liver disease</p> <p>Introduced the surgeries to the alcohol AUDIT to help identify hazardous and harmful drinkers</p>

AUDIT, alcohol use disorders identification test; GP, general practitioner; LOCATE, local care and treatment of liver disease.

advise and making changes or not ready to change and unreceptive to advise.

Most GPs reported that heavy drinkers were difficult to engage with, particularly those who were trying to hide their drinking (eg, those whose religion or social group forbade alcohol consumption).

Patient lack of understanding of health problems and behavioural change was commonly reported as a barrier to successful engagement. For example, one GP noted that some patients lacked awareness and intelligence and struggled to understand fairly simple concepts, and demonstrated a lack of confidence in being able to help patients, they thought it was unrealistic to think you can change people 'when they just won't change half the time.' (GP-12).

When delivering lifestyle advice most of the clinicians from the inner city surgery noted that the cultural difference within their cohort of patients made it difficult for the clinicians to communicate effectively.

'If you've got a very slightly overweight Asian population, and that, I think giving those people sensible life, exercise advice, I don't feel that works! ... that is not normal for their population.' (GP-8).

One GP reported as a clinician they had a general idea of what lifestyle advice they should be giving but felt they needed educating on the specifics 'to know exactly what I should be telling them.' (GP-1).

### The impact of the LOCATE intervention

Practice staff discussed the impact that the liver clinic had on patients and surgery staff.

Having the LOCATE intervention at the surgeries was reported by all practice staff as having 'raised awareness' (LN-1) of liver disease among staff and patients. One GP noted that they were now more aware of 'what to ignore and what to not ignore.' (GP-5), and one PM commented the intervention was 'definitely helpful, with our patients.' (PM-5).

Many of the GPs reported that the LOCATE intervention had 'updated (them) educationally in liver disease' (GP-7) and they were now a lot more confident managing abnormal LFTs. Some GPs noted that prior to LOCATE they were unsure of what to do about abnormal LFTs, and a few GPs admitted that they would not do anything. After the intervention had finished all the GPs that had discussed blood tests reported they had more clarity about what to do with abnormal blood results, with many noting that they now routinely check iron levels and screen for viral infections to rule out two common causes of liver disease that can easily be treated in primary care.

'I think probably the main thing is that before we were always unsure what to do with a slightly grumbling along abnormal LFT's, you know, and I think they'd just be watched and monitored and that was it really.' (GP-11).

One GP reported that the awareness and education on liver disease that the LOCATE intervention brought had 'sparked a revolution' (GP-5) at their practice and they are now confidently running their own liver clinic, having adopted most of the LOCATE procedures.

One GP noted that because of LOCATE they now take early liver problems seriously, acknowledging that in the past they only identified patients who were already cirrhotic, whereas now they try to identify early liver disease and prevent progression. Another GP likened a liver diagnosis as a 'wake-up call, like heart attacks and strokes,' (GP-2) and thus represented a teachable moment where liver diagnosis could be used as a launch pad to discussing lifestyle changes and risk factors with patients while the patient might be more motivated to implement changes.

Deviant case analysis revealed that one GP had a contradictory opinion to all other clinicians interviewed, reporting that they would need to be convinced of a liver clinic's usefulness in general practice. This GP regarded liver disease as very rare, even though the LOCATE feasibility trial showed that approximately 45% of 910 patients had liver fibrosis.<sup>9</sup> This GP was not involved with the set-up of LOCATE and missed the training session, which might explain his view being different from the other staff interviewed. This GP reported that:

'As a GP you have some patients with liver disease, but it's difficult, they're not, my perception of it is that they're not massive... Most practices you've got the odd person who is an alcoholic and they've got cirrhosis, chronic liver failure, or people on methotrexate who watch their liver function.' (GP-1).

Most of the practice staff reported that since LOCATE they had become more aware of how many alcohol units drinks contain and had implemented the use of the Alcohol AUDIT to identify patients who are drinking at hazardous and harmful levels who might be at risk of liver disease.

'AUDIT C we've added to our registration form.' (PM-3).

### DISCUSSION

This study explored practice staffs' perceptions and experiences of the LOCATE intervention. The findings indicated that the LOCATE intervention was acceptable to the staff interviewed and had a positive impact on staff experiences in some areas, in particular staff valued the improved awareness, knowledge and education that came with the LOCATE intervention. All GPs noted this new knowledge had improved their confidence in being able to better manage patients with abnormal LFTs, helping them identify the early signs of liver disease. The findings also highlighted a number of barriers to the success of the LOCATE intervention, these included lack of time, unclear clinical letters and lack of confidence in how to motivate patients to make lifestyle changes. Identification of these barriers highlighted areas where the intervention should be modified to improve its chances of being effective and implementing successfully in practice. [Table 4](#) provides an overview of the intervention modifications, we plan to make in response to each of the barriers highlighted within healthcare staff's accounts.

The LOCATE feasibility trial results indicated that it is possible to successfully identify many patients with varying

**Table 4** The barriers and solutions to implementing the local care and treatment of liver disease (LOCATE) intervention

Barriers	Solutions
Staff changes occurred during the LOCATE intervention and staff who had not attended the initial training session did not understand the rationale for the study or its procedures.	Make training about the LOCATE intervention accessible at any time by providing manualised or digital training.
There was often a lack of time for opportunistic recruitment to the LOCATE intervention during a routine general practitioner (GP) appointment.	Alternative recruitment strategies (eg, by letter, phone call or text) which do not require GP time would be more feasible.
Many clinicians lacked confidence in enabling behavioural change with their patients, with some feeling that patients will not change their behaviour.	The next LOCATE intervention will include training for the clinicians on how to provide brief behavioural change interventions for lifestyle changes such as weight loss or alcohol reduction. <sup>20 25</sup> Practitioners will be shown examples from the evidence base to demonstrate that brief interventions can help patients to change behaviour, in order to maximise practitioner confidence.
Practice staff at the inner city surgery found it difficult to engage with patients who did not speak English.	The next LOCATE intervention will be updated to include how to successfully engage patients (English and non-English speaking). This will include examples from the evidence base.
When using a family member to translate for non-English speaking patients there was a concern about the accuracy of the translation.	Ensure that all participating GP surgeries in the next LOCATE intervention have access to an established and reliable interpreter service <sup>26</sup> which should be used.
Some GPs found the letters from the LOCATE intervention confusing as they were often lengthy, containing complex information and requests for action were sometimes written in non-directive language which left GPs unclear on exactly what they needed to do and who was responsible for organising further investigations.	Initial training needs to provide more detail about GPs role and responsibilities within this intervention. Letters to GPs from the intervention should be standardised with clear action points for GPs listed to delineate next steps.
The lifestyle support practitioners reported providing was mainly advice based and did not include key behavioural change techniques or strategies that could have better supported behavioural change.	The intervention training will be updated to include structured brief interventions that clinicians can deliver to patients wanting to make lifestyle changes. <sup>27 28</sup>

stages of liver disease with a simple procedure, indeed the intervention identified twice as many patients with progressive liver fibrosis when compared with usual care at a substantially lower cost than a specialist liver clinic.<sup>9</sup> However, this qualitative process evaluation found that there were a number of barriers to helping those patients who had been identified as having liver disease. Most of these barriers require minor changes to the intervention process, for example, some of the GPs were confused about who would be organising patients' additional tests or further investigations, which can be easily addressed in training materials and clearer communication. A more substantial barrier was ensuring that patients received sufficient support to make the behavioural changes needed to prevent a major liver event once liver disease was identified. This qualitative process evaluation highlighted that in its current form the intervention did not provide clinicians with enough support with this—the majority of clinicians reported simply telling patients how they needed to change and rarely engaged with other strategies which could support behavioural change. This style of delivering advice to patients offers very little support and patient interaction, and is known to be disliked by patients.<sup>16 17</sup> Clinicians appeared to be aware of the insufficiency of this strategy since they frequently discussed a lack of confidence that

patients would actually change their behaviour. This lack of confidence in supporting behavioural change is not unusual within primary care.<sup>18 19</sup> The next iteration of the LOCATE intervention will address this by showing clinicians how to provide effective brief interventions for lifestyle changes using techniques identified as important within a review of reviews,<sup>20</sup> such as discussing patient's thoughts on alcohol and diet, and/or agreeing realistic goals.

The shifting of specialist services from hospital to community setting is not a new idea,<sup>21</sup> and was emphasised in a UK government White Paper on improving community health and care services.<sup>22</sup> In line with other studies,<sup>23</sup> we found there are benefits to offering specialist healthcare services within the community, such as ease of access for patients and being seen in a familiar setting. We also found that our intervention helped GPs feel more confident interpreting and managing liver function blood tests, an area of medicine that a recent study showed GPs feel a lack of confidence.<sup>24</sup>

### Strengths and limitations

This qualitative process analysis allowed us to explore and understand how well the LOCATE intervention worked, and identify important barriers to implementation which allowed modifications to improve the intervention. The



staff interviewed provided a good level of detail on the points raised. The interviewer was known to the practice staff which may have led to socially desirable answers, however, this seems less likely to have been the case as practice staff were happy to provide negative views and highlight areas of their own practice which were suboptimal (eg, not providing much support with lifestyle change). The sample was large and reached saturation and the analysis included several methods to enhance rigour (eg, audit trail, constant comparison, deviant case analysis, discussion and agreement of themes with an expert in qualitative methods).

## CONCLUSION

This qualitative process evaluation highlighted a number of barriers and facilitators to the successful implementation of the LOCATE intervention. The intervention appeared to have a positive impact on clinicians' understanding, detection and management of patients with early signs of liver disease, but highlighted that practitioners required more training in how to best support patients in making the behavioural changes which would halt or reverse their liver disease. This study enabled modifications to the LOCATE intervention which we hope to soon evaluate in a fully powered trial.

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**Contributors** The LOCATE conception and original protocol were written by NS and MM. The substantial amendment to carry out the research was written by TR. Data collection, analysis and interpretation were conducted by TR. KB provided qualitative supervision throughout, discussing and agreeing the themes and codes. TR and KB drafted the article, clinical revision was provided by KB, MM and NS. TR approved the final version.

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**Data sharing statement** Immediately following publication the study protocol, informed consent form and audit trail for codes and themes will be available, but may not be reused, on request from: [t.reinson@soton.ac.uk](mailto:t.reinson@soton.ac.uk). There is no end date to requesting this information.

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