Disease-related factors affecting timely lymphoma diagnosis:
a qualitative study exploring patient experiences

INTRODUCTION
Over a third of the 33 000 haematological malignancies diagnosed in the UK each year are lymphomas.1 These cancers comprise a heterogeneous group, with many distinct subtypes, which differ markedly in incidence, clinical pathways, and outcomes.2 For example, some subtypes are aggressive, progress rapidly, and are considered curable, such as diffuse large B-cell lymphoma and classical Hodgkin lymphoma; others are indolent, generally advance more gradually, and are incurable, including follicular lymphoma and marginal zone lymphoma; some may have both aggressive and indolent variants, for example, mantle cell lymphoma. Definitive diagnosis generally requires examination of lymph node, extranodal, and bone marrow tissue, along with a combination of specialist laboratory investigations, including morphological, cytogenetic, immunocytochemistry, and flow cytometry testing.

Early-stage diagnosis of cancer is important, as this is one means of improving patients’ survival3 and quality of life.4 Despite this, the time leading to identification of lymphoma may be protracted and associated with avoidable delay.5,6 Unfortunately, although UK policy-based interventions, including referral guidance for GPs,7 have resulted in improvements for some cancers.5,8,12,13 Theoretical models now exist to facilitate time to diagnosis research, and ensure consistency in definitions, methods, and reporting. The model of pathways to treatment is one example of this.14,15 This builds on earlier classification systems,16,17 and defines a linear series of intervals, events, and processes, with several cross-cutting factors (Figure 1). These include the ‘appraisal’ interval — detection of bodily abnormality and resultant consultation; and the ‘diagnostic’ interval — decision to consult a healthcare professional (HCP); the ‘diagnostic’ interval — decision to consult a HCP to first consultation; and the ‘diagnostic’ interval — decision to consult a HCP to first consultation; and the ‘diagnostic’ interval — decision to consult a HCP to first consultation; and the ‘diagnostic’ interval — decision to consult a HCP to first consultation; and the ‘diagnostic’ interval — decision to consult a HCP to first consultation; and the ‘diagnostic’ interval — decision to consult a HCP to first consultation; and the ‘diagnostic’ interval.
— first HCP consultation to diagnosis, including HCP appraisal, investigations, referrals, and appointments. Factors affecting time to diagnosis remain relatively under-explored however, and few studies have used qualitative methods to identify pertinent issues, including experiences after first help seeking, either for lymphomas or other cancers. The aim of the current study was to improve understanding of experiences in the time leading to lymphoma diagnosis by exploring the perspective of patients and family members and focusing on the impact of disease factors. To achieve this, a qualitative study was conducted, set within a large, ongoing patient cohort in the north of England, based on the intervals and events described in the model of pathways to treatment.

**METHOD**

The study was carried out in accordance with the consolidated criteria for reporting qualitative research (COREQ) and guidance on standards for reporting qualitative research findings.

**Context**

The study is nested within the Haematological Malignancy Research Network, an ongoing population-based patient cohort established to generate evidence on haematological malignancies for research purposes and to inform clinical practice. Approximately 2400 diagnoses annually, from a population of about 4 million in the Yorkshire and Humber region of the UK, are made by a single...
specialist laboratory and coded to the latest World Health Organization classification system. Core data are abstracted from medical records and patients are invited to complete a routine postal questionnaire soon after diagnosis about their symptoms and help seeking, including dates.

Participants
Potential participants were identified from patients returning the routine Haematological Malignancy Research Network (HMRN) postal questionnaire. Purposive sampling was used to ensure maximum variation in disease subtype, sex, age, and time to diagnosis. Patients were invited to ask a relative to take part in the interview if they wished, both to promote recall and share their own perceptions.

Data collection
Potential participants were posted a study pack containing an introductory letter, information leaflet, response form, and prepaid return envelope. Those wishing to participate contacted the study team directly (via post or phone), and an interview was arranged. Two experienced qualitative researchers conducted the interviews, both of whom have significant experience in health services research, one of whom was a former registered nurse, with two decades of academic experience with haematology patients, their relatives, and clinicians. Neither researcher was known to participants.

All patients were assured of data confidentiality and gave written consent to take part in the study. Interviews were conducted face-to-face, largely within patients’ homes (although two took place at the hospital), and within a year of diagnosis. Several early pilot interviews were conducted, followed by an intensive period of fieldwork between November 2015 and May 2016. Data collection was semi-structured and guided by a schedule, which was informed by experience from within the research team and based on the appraisal, help-seeking, and diagnostic intervals, as defined in Walter et al’s model of pathways to treatment. 

Data analysis
Recordings were transcribed verbatim, field notes were used to confirm accuracy, and transcripts were checked and anonymised before import into the data management software, ATLAS-ti (version 6.2.11). The methodological orientation was qualitative description, a pragmatic approach producing minimally theorised findings with practical applications. Analysis was iterative, running alongside and informing data collection, which was discontinued

| Diagnosis (patient identification) | Patients (relatives), n | Females, n | Males, n | Age, years Median (range) | Duration of appraisal and help-seeking interval, months | Duration of diagnostic interval, months |
|-----------------------------------|------------------------|------------|----------|--------------------------|-----------------------------------|--------------------------------------|
| Non-Hodgkin lymphoma              |                        |            |          |                          |                                    |                                      |
| Diffuse large B-cell              | 12 (7)                 | 5          | 7        | 64 (48–81)               | 1 (0.5–13)                        | 2.5 (1–14)                           |
| Follicular                        | 9 (2)                  | 4          | 5        | 63 (39–84)               | 1 (0.5–12)                        | 3 (1.5–15)                           |
| Marginal zone                     | 6 (1)                  | 4          | 2        | 62 (57–76)               | 1 (0.5–10)                        | 12 (3–25)                            |
| Mantle cell                       | 3 (3)                  | 2          | 1        | 71 (70–75)               | 1 (1–4)                           | 2 (2–10)                             |
| Hodgkin lymphoma                  | 5 (2)                  | 2          | 3        | 36 (23–56)               | 0.5 (0.5–2)                       | 5 (3–24)                             |
| Total                             | 35 (15)                | 17         | 18       | 63 (23–84)               | 1 (0.5–13)                        | 4 (1–24)                             |

*All were spouses and/or partners of the interviewee with lymphoma. *First symptom to first help seeking. *Estimate based on information provided by patients in the routine Haematological Malignancy Research Network (HMRN) questionnaire about symptoms and help seeking. *First help seeking to diagnosis. P = participant.
Once saturation was achieved. After data familiarisation through reading/re-reading transcripts, several rounds of coding were undertaken, with constant comparison driving the refinement of codes. Memoing and mapping techniques were used to explore patterns, including similarities and differences between individuals, and relationships between codes. The wider research team had access to the data, analytical process, and pathway maps that, along with codes and emerging themes, were regularly discussed and refined until consensus was reached.

RESULTS
Of 58 individuals contacted, 35 responded and were interviewed (Table 1). Thirty patients had non-Hodgkin lymphoma (indolent and aggressive subtypes) and five had Hodgkin lymphoma; 18 were male; and median age at interview was 63 years (range 23–84 years). Fifteen spouses and/or partners agreed to take part in the interview, alongside the patient. Based on the routine HMRN postal questionnaire, in which patients document their symptoms and help-seeking activities, time from first symptom to diagnosis was found to vary markedly, the collective appraisal and help-seeking intervals having a median duration of 1 month (range 0.5–13 months), and the diagnostic interval 4 months (range 1–24 months). Accounts suggested that a combination of disease-related factors impacted on the behaviour of patients, their relatives, and HCPs (GPs and nurses) in primary care. Three significant themes emerged: the occurrence of lymphoma (rare), its manifestation (varied), and investigation (often inconclusive) (Figure 2). These issues impacted on the assessment, interpretation, and response to symptoms across the appraisal, help-seeking, and diagnostic intervals, with recurrent activities (for example, patient appraisal before and after first help seeking) preventing unilinear progression through each stage of the model of pathways to treatment before diagnosis. Each theme is described with verbatim quotes.

Occurrence
Interviewees perceived lymphoma as a relatively rare disease (in contrast with other cancers they were aware of, such as breast cancer), typically affecting older adults.

Table 1. Summary of interviewee perceptions about disease-related factors and their impact on time to lymphoma diagnosis. HCP = healthcare provider.

| Key factors | Interviewee perceptions | Potential impact on knowledge/behaviour | Impact on time to diagnosis |
|-------------|-------------------------|----------------------------------------|-----------------------------|
| Occurrence  | • lymphoma is a rare disease  
• that they lacked knowledge of lymphoma  
• did not realise it was cancer  
• unaware of symptoms  
• HCPs were unfamiliar with lymphoma  
• lack of exposure  
• unaware of symptoms  
• unaware it affects younger adults | • in the appraisal interval: lymphoma is not considered as an explanation for symptoms by patients  
• in the diagnostic interval: lymphoma is not considered as an explanation for symptoms by HCPs, especially in younger adults | in the appraisal interval:  
• patients ‘normalise’ symptoms, considering them due to lifestyle, life stage, or comorbidities  
• patients decide symptoms do not warrant help seeking, or that only certain symptoms are worth reporting  
• in the appraisal and diagnostic intervals:  
• patients and HCPs do not recognise symptoms as serious, or potentially due to cancer  
• patients and HCPs do not connect multiple symptoms  
• in the help-seeking and diagnostic intervals:  
• patients must seek help multiple times to initiate HCP re-appraisal, investigation, and referral  |
| Manifestation | • symptoms/health changes may be:  
• variable (affecting different bodily sites/systems)  
• isolated or numerous  
• specific or vague  
• intermittent or constant  
• associated with feeling well or unwell  
• painless or painful  
• similar to those of common, benign, non-clinical conditions  
• onset/progression may be:  
• rapid or indolent  
• acute/obvious or subtle/vague and non-specific | in the appraisal interval:  
• patients ‘normalise’ symptoms, considering them due to lifestyle, life stage, or comorbidities  
• patients decide symptoms do not warrant help seeking, or that only certain symptoms are worth reporting  
• in the appraisal and diagnostic intervals:  
• patients and HCPs do not recognise symptoms as serious, or potentially due to cancer  
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• patients and HCPs do not connect multiple symptoms  
• in the help-seeking and diagnostic intervals:  
• patients must seek help multiple times to initiate HCP re-appraisal, investigation, and referral |
| Investigation | • variation in access, timing, and sequencing of tests  
• normal test results common (especially blood tests) until disease is advanced  
• HCPs unfamiliar with significance of test results | in the help-seeking and diagnostic intervals:  
• patients may need to encourage the initiation of investigations  
• patients may experience delay in waiting for test results and further tests  
• patients and HCPs may be reassured by ‘normal’ results  
• ‘normal’ results may deter patients from further help seeking | in the help-seeking and diagnostic intervals:  
• patients may need to encourage the initiation of investigations  
• patients may experience delay in waiting for test results and further tests  
• patients and HCPs may be reassured by ‘normal’ results  
• ‘normal’ results may deter patients from further help seeking |
Box 2. Pre-diagnostic symptoms considered due to lymphoma, and their initial interpretation, as described by interviewees

**General feelings of ill health**
- ‘can’t put finger on it’, ‘couldn’t do anything’, ‘generally looked ill’, ‘generally unwell’, ‘grotty’, ‘immunity whacked’, ‘just didn’t feel right’, ‘just felt rotten’, ‘lousy’, ‘something wrong’, ‘thinking “this isn’t right”; ‘under par’, ‘not feeling well’, ‘not quite right’, ‘one thing after another’, ‘rough’, ‘something wasn’t right’, ‘terrible’, ‘under the weather’, ‘unwell’, ‘vaguely ill’.

**Specific symptoms**

- **Bleeding**: bruising, nosebleeds (‘pumping out’), vaginal bleeding.
- **Cognitive**: confusion, loss of concentration, memory loss, mistakes at work.
- **Eating/drinking**: appetite loss, heartburn, indigestion, nausea, reacting to alcohol/food, unable to eat, unable to keep food/water down, weight loss.
- **Faint/dizzy**: blacking out, dizziness, lightheaded, near collapse, passing out, ‘weird turn’.
- **Gastrointestinal**: bloated, bulges/change in shape of stomach, constipation, diarrhoea/loose stool, feeling like something lodged in stomach, flatulence, jaundice, pancreatitis, passing ‘white mass’, ‘pulsing’ of stomach, stomach upset.
- **Genitourinary**: hot flushes, ‘really cold’, running a temperature, sweats (‘day’, ‘night’, ‘horrendous’, ‘hot’).
- **Head**: ‘exhaustion’, ‘worn out’, ‘honestly could drop’.
- **Mobility**: difficulty walking, falls, tripping.
- **Swellings/lumps**: groin, neck, armpit, abdomen/stomach, mouth, jawline, over leg/thigh/foot (‘ballooning’).
- **Temperature/sweats**: high temperature, hot flushes, ‘really cold’, running a temperature, sweats (‘day’, ‘night’, ‘horrendous’, ‘hot’).
- **Visual disturbances**: ‘black spots’ in front of eyes.

**Impact (general)**
- ‘depleted’, ‘flattened’, ‘reserves disappearing’, ‘no reserve’, ‘running on empty’, ‘sleeping more’ (‘a lot’, ‘12 hours’), ‘shattered’, ‘desperate’, ‘extreme’, ‘immense’, ‘prolonged’, ‘really’, ‘very’.
- ‘unable to do as much at gym’, ‘losing fitness’, ‘deteriorating fitness’.
- ‘I’d heard of non-Hodgkin’s lymphoma. I didn’t know quite what it meant.’ (Patient [P1])

Some said that at diagnosis, they had not initially known that lymphoma was a form of cancer. Awareness of Hodgkin lymphoma was somewhat greater, with several interviewees identifying this as life threatening. However, previous knowledge of symptoms was consistently low. Some, often younger, patients reported finding references to lymphoma when using the internet to facilitate symptom appraisal and the decision to seek help.

Several interviewees also perceived HCPs as having limited exposure to, and familiarity with, lymphoma:

‘Because it’s quite rare, a doctor … might only see one case in their existence.’ (P7)

A few suggested HCPs were ill equipped to recognise symptoms:

‘The diagnosis was definitely late, no doubt about that … there’s not enough known about the early symptoms.’ (P24)

This was said to prolong the diagnostic interval by holding up investigation and/or referral. Gaps in HCPs’ knowledge seemed most problematic where symptoms were subtle and gradual in onset. Accounts suggest that HCPs acted quickly and decisively when patients were acutely ill, for example, arranging emergency admission.

**An improbable disease.** Except for well-known common cancers associated with older age and sex, interviewees rarely perceived themselves as at risk of cancer as they appraised their symptoms:

‘I had this stupid notion that if I, if I ate properly and looked after myself, I’d never go down with anything like that.’ (P4)

They drew attention to prior health, healthy lifestyles, and lack of a family history:

‘Cancer isn’t something that runs in our family.’ (P31)

Where internet searches returned references to lymphoma, this could therefore seem an unlikely explanation for symptoms:

‘I went on the internet and read up. Well, when I started reading about cancer I just

reported encountering anyone with lymphoma before diagnosis, and several had never heard of it. Those who had, often described their knowledge as limited:
switched it off, because I thought, "No, no, that's not right"." [P5]

Some interviewees suggested that perceptions of lymphoma as rare also inclined HCPs to judge it unlikely, and discount it as an explanation for symptoms during the diagnostic interval. One interviewee surmised age was also significant, with lymphoma dismissed because of their (relative) youth:

'I think the GPs knew the symptoms of, of lymphoma. I just don’t think they were willing to, er, consider them, because of my age.' [P6]

**Manifestation**

Accounts revealed marked differences in symptom type and combinations, speed of onset, progression, and intensity. Again, these characteristics affected the duration of the appraisal interval, the decision to seek help, and the length of the diagnostic interval.

**Highly variable.** Interviewees described a wide range of symptoms they had come to associate with onset of their lymphoma [Box 2]. A few participants reported isolated changes, aside from which they felt well. In such instances, help seeking was often delayed, even where the symptom was widely associated with cancer, such as lumps or unexplained bleeding. The absence of pain seemed to provide reassurance:

'For some strange reason I’d always assumed there would be pain.' [P2]

Sometimes medical attention arose from help seeking for other concerns. One interviewee described consulting their GP about a groin swelling:

'She said it was a hernia, but she were more concerned about these [other] lumps, which I couldn’t understand ... I wasn’t [sic] having any problems with them.' [P19]

If multiple symptoms were experienced, patients and relatives said they were often slow to connect these or appraise them collectively. Some suggested HCPs were similarly late in doing this:

'The ... GPs ... never pieced it together. Whilst we [patient and relative] were looking at the symptoms individually, they [HCPs] were too.' [P14]

**Something or nothing?** Some patients, typically with a seemingly aggressive disease, described rapid symptom development, with marked changes in their health. Severe and disruptive symptoms encouraged early help seeking and — unless the sole symptom was pain — usually led to prompt investigation or referral to secondary care. However, many more described subtle symptoms, emerging insidiously or intermittently. These were often overlooked or, if appraised, judged unremarkable:

'On reflection, I had, possibly some sweating ... these things are sort of so slow and imperceptible that you don’t always ... think much of it at the time.' [P13]

Non-specific feelings of being generally unwell were also often described [Box 2]:

'Vaguely off.' [P4]

'Just didn’t feel right.' [P18]

Interviewees perceived HCPs as being under strain and felt a responsibility to determine if symptoms were important before seeking help:

'You know, the NHS hasn’t got unlimited resources, infinite resources, and I don’t want to waste doctors’ time.' [P13]

As part of the appraisal process, they often consulted friends and family about their symptoms, and whether they should seek help from an HCP. Usually they were encouraged to see a doctor, but not always:

'I showed the lump to my friends and they said, “You’re just freaking out, it’s nothing, we can’t even see the lump”.' [P23]

Intermittent symptoms were sometimes misconstrued as resolved, which could interrupt and extend the diagnostic interval, for example, because of the cancellation of investigations.

**Plausible competing explanations.** Interviewees described how, as part of the appraisal process, they often initially identified alternative explanations for symptoms [Box 2]. This was also common among HCPs in the diagnostic interval. Expectations of age-related deterioration enabled patients to normalise many symptoms at this time, perceiving them as ‘change’, and not disease. Patients often attributed non-specific symptoms and localised pain to lifestyle, due to being busy and rushing around; to life stage, including
being menopausal; or other conditions, such as depression or diverticulitis. They did not always report such changes to HCPs:

’I wrongly assumed, at the time, that it [night sweats] was associated with this [other] problem ... With hindsight, perhaps, I should have mentioned it.’ [P30]

HCPs too were recalled as proposing a range of explanations for symptoms in the diagnostic interval, including non-physical causes:

[The GP] said, “Well what’s probably happening is your body, you know, now that your mum’s gone in the [nursing] home, your body is saying, ‘Pffh, that’s it, you know, just relax’ ... and this is why you’re sleeping so much.” [P31]

A few HCPs were described as attributing symptoms to psychological conditions including stress, anxiety, and depression — these examples mostly came from patients aged <40 years. Many HCPs initially diagnosed other physical but non-malignant conditions:

’The assumption [was] that it was, er, iron deficiency and the vitamin B12 ... they were, perhaps a little bit more complacent about the symptoms than they ought to have been.’ [P11]

These explanations often seemed plausible to patients, who had sometimes considered these explanations themselves, even in hindsight. Interviewees described their HCPs’ readiness to consider more serious explanations, including malignancy, as variable. Some HCPs were said to suspect cancer from the first help-seeking episode:

’Honest to God this is how it happened, he turned and looked at me, and he went, “cancer clinic for you”. He knew, straightaway.’ [P22]

Others, however, seem to have done so only after treatment failure excluded benign explanations:

’He realised that it can’t be that [polymyalgia] because the steroids should have altered it, and it ha’n’t [sic] done.’ [P16]

In many instances, patients re-appraised their symptoms after first help seeking and re-presented to their GP — sometimes on multiple occasions — before HCPs undertook re-appraisal, initiated investigations, and/or discussed referral.

Investigation

In the diagnostic interval, interviewees described undergoing blood tests, various imaging/scans, and one or more biopsies, and reflected on the timing, costs, and/or invasiveness of these, as well as the uncertainty of findings.

Variation in access. Participant accounts suggest considerable variation in when tests were undertaken, and at whose instigation. For example, some recalled having blood tests after first help seeking, and others only after several visits. One interviewee remarked:

’There seems to be a reservation ... about what bloods, you know, what bloods to take and what’s done with the [tests] — I suppose it’s money.’ [P24]

A few described efforts to negotiate investigations, which were not always successful:

[the doctor] said, “Well, if we sent everybody for an X-ray who was complaining of a pain or something, there’d be queues outside miles long”.’ [P21]

Access to MRI scans was portrayed as constrained, even where HCPs viewed this as appropriate. A related issue was that investigations were typically conducted in sequence, with the results of one determining the need for another. Some interviewees viewed staggering tests as sensible:

’There is no point putting somebody through surgery [for a biopsy] that they don’t need.’ [P19]

Others, however, were more critical:

’You went for a biopsy later on ... to find out what it was, what kind of cancer it was. But all these things, it drags on, and weeks go into months ... it’s agonising.’ [Relative of P20]

Results not always reliable or clear. Participants commented on the reliability of available tests and the certainty with which they could detect disease. Some interviewees described getting decisive evidence of abnormality, suggestive of lymphoma or another serious condition. Many, however, reported receiving ‘normal
or inconclusive results, in particular from blood tests and, to a lesser extent, imaging:

‘Nothing showed up in my blood, no abnormalities.’ [P18]

Accounts suggest patients often interpreted normal results as being given an ‘all clear’ and a disincentive to further appraisal and help seeking:

‘I think, looking back, that that scan was very reassuring … all blood tests were good, that radiologist said everything looked healthy … I felt quite reassured.’ [P26]

Others recalled inconclusive or ambiguous results, which could prove challenging for HCPs to interpret:

‘[the GP] looked at the [blood results] … and he says, “I can’t make head nor tail of this”.’ [P24]

A few interviewees inferred gaps in HCPs’ knowledge and understanding of how lymphoma might manifest in tests. They reported receiving a range of explanations for irregular bloods, such as infection, benign conditions, and contamination; and for enlarged lymph nodes, including infection and/or injury. Where the significance of results was unclear, tests were typically repeated, but not always promptly:

‘You waited 7 weeks for the [second] scan, which is too long. It had doubled, if not more, in size by that time.’ [Relative of P32]

DISCUSSION
Summary
This study aimed to improve understanding of disease-related factors affecting the time to diagnosis of lymphoma within the appraisal, help-seeking, and diagnostic intervals described in Walter et al’s model of pathways to treatment.14,15 The study is novel in that findings are derived from patients’ self-reported experiences, and it examines activities before and after first help seeking. Lymphoma occurrence was considered rare by interviewees, descriptions of its manifestation were varied, and patients often commented on the lack of specific investigations to clearly raise suspicion of cancer. These features resulted in a scenario whereby, with no, or very limited, knowledge, patients typically experienced the onset of subtle, non-specific symptoms or perceptions of ill health, which during appraisal were often attributed to benign, mundane conditions, and/or non-physical, lifestyle, and age-related factors. In the diagnostic interval, HCPs often faced an unfamiliar disease, with symptoms similar to those of other common, non-malignant conditions, for which investigations did not reliably show abnormality or suggest malignancy; until symptoms progressed, the case for further tests and/or hospital referral was often unclear.

Strengths and limitations
Using qualitative methods allowed engagement with the complexity of patients’ self-reported, pre-diagnostic experiences, something previously identified as an important challenge.32 This study included patients diagnosed with indolent and aggressive lymphoma subtypes, and covered a broad range of age groups, both sexes, and varying pre-diagnostic time intervals, including the period of time before and after first help seeking. The study sample and in-depth interview techniques yielded rich data that provide new insights into an important but under-researched area. To promote accurate recall, patients were mostly interviewed within a year of diagnosis, and reference to letters, calendars and diaries, and the involvement of family members, were encouraged.

Participant accounts were not corroborated by review of medical records or HCP perspectives, as this was not the objective of the study. Compliant with ethical approvals, transcripts and findings were not returned to interviewees for verification. Transcripts were checked alongside interview recordings for accuracy. Patients were included who had previously returned a routine postal questionnaire about their symptoms and help seeking, so did not capture the perspectives of those who either died soon after diagnosis, or who were not sent or did not return a questionnaire for other reasons, for example, if their health had deteriorated rapidly. Transferability, that is, consideration of findings in relation to their relevance for understanding similar issues and processes, is a key aspiration in qualitative research, rather than generalisability.33 Extrapolation should therefore take into account any study-specific contextual factors, such as different healthcare systems, universal healthcare coverage, and so on, which may limit transferability.34

Comparison with existing literature
Research into factors affecting time to lymphoma diagnosis specifically, and cancers more widely, has consistently identified patient tendencies to ascribe
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**Ethical approval**

The study had National Research Ethics Service approval from Yorkshire & The Humber — South Yorkshire Research Ethics Committee (REC 12/YH/0149); the HMRN has ethical approval from Leeds West Research Ethics Committee (REC 04/01205/69).

**Provenance**

Freely submitted; externally peer reviewed.

**Competing interests**

The authors have declared no competing interests.

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Routine explanations to their symptoms such as stress or the normal ageing process/life phase, rather than recognising these as serious. The results of the current study echo these findings; the broad range of symptoms described were often subtle, and did not always incorporate the common, or ‘red-flag’, characteristics listed on public-targeted lymphoma-specific websites, such as swollen lymph nodes, fatigue, weight loss, or sweats. Intermittent symptoms, interpreted by patients in the current study as potentially resolved, were also considered reassuring among patients with other malignancies, such as pancreatic cancer, as were negative investigation results, by patients and GPs. A recent systematic review of factors impacting on cancer diagnosis reported patient difficulties in assessing the significance of vague, non-specific symptoms, and perceptions that HCPs had not taken their concerns seriously, had not taken a thorough history, and had not asked relevant questions; patients were also anxious that they themselves did not overburden or waste doctors’ time. Studies exploring factors after first help seeking in primary care are perceived as limited, with respect to lymphoma and other less familiar cancers. Available evidence suggests ‘practitioner delay’ is influenced by the nature of symptoms and how these are interpreted, as well as use of appropriate diagnostic testing and follow-up. The current study confirms that the relevance of these findings extends to lymphoma. Concurring with Walter et al’s model, it also suggests patients’ interpretations and actions, such as re-appraisal and re-presentation for ongoing symptoms, remain significant after the first presentation, and that improved understanding of interactions between patients and HCPs is required.

**Implications for research and practice**

Although effective for some cancers, the characteristics of lymphoma may mean interventions such as education campaigns, aiming to facilitate appraisal and encourage help seeking and specialist referral, are ineffective. This is due to the myriad symptoms that may be experienced, which can vary with site of disease origin and spread, and could potentially affect nodal and extra-nodal sites, and different organs and locations in the body. The vague symptoms noted as a consequence of ineffective lymphatic and bone marrow functioning, such as non-specific and/or multiple infections, and anaemia-related fatigue, further limit the value of education campaigns, as do differences in the severity, resulting dysfunction, and pace of symptom progression, which are contingent on the lymphoma variant. For relatively rare conditions such as lymphoma, campaigns encouraging people to take note of changes in their body that persist and/or worsen, or diverge from what is ‘normal’ for them, may be a more effective approach to encouraging help seeking.

Most people consult a GP before cancer diagnosis, even if the malignancy is identified following emergency presentation. Consequently, for insidious and acute manifestations, GPs are faced with the complex task of differentiating benign symptoms from those that may indicate cancer. These decisions are made more difficult because the only high-risk factors indicative of lymphoma are unexplained lymphadenopathy (if present) in people aged ≥60 years, and an increase in consultation frequency to a doubling from normal in the year before diagnosis. Furthermore, the signs and symptoms of lymphoma cited in UK referral guidance, aiming to support GPs’ clinical evaluation and decision making, present only the most common symptoms, so are not ideal where clinical presentation deviates from this, a situation that the current study highlights as being common. The lack of investigations available to clearly identify or exclude lymphoma, as well as the propensity for normal inflammatory markers until late in the trajectory, contribute a further complication. Unsurprisingly, a study with UK GPs reported the early detection of malignancy as particularly burdensome, because of the challenges in identifying potential cancer symptoms, managing cancer anxiety among patients and their families, and making appropriate referrals.

Certain aspects of the diagnostic interval are modifiable by HCPs, however, and may address some of the challenges raised by patients in the current study. ‘Safety netting’ has been suggested as a means of managing diagnostic uncertainty, ensuring timely and appropriate follow-up, and avoiding emergency presentation, particularly where symptoms are non-specific or associated with ‘low’ cancer risk, but not ‘no’ cancer risk. Strategies encouraged include: effective and precise GP communication to the patient and/or family about potential signs of deterioration/complications, what to expect over time, where to access test results, when, how, and where to seek
further help for ongoing/worsening health issues, and documentation of issues such as uncertainty.\textsuperscript{38,53} This approach would facilitate appropriate patient re-appraisal of symptoms and provide reassurance that repeated help seeking was justified, and indeed may be required. In the diagnostic interval, it would provide HCPs with a useful summary of events, and highlight that uncertainty had been recognised. Furthermore, research into vague and/or non-site-specific symptoms, such as weight loss, has led to recommendations for ways in which such manifestations should be managed, including the development of ‘vague symptoms’ pathways.\textsuperscript{7,54} Unfortunately, evidence from HCPs is absent for lymphoma, yet research with this group is crucial if the barriers and facilitators to timely diagnosis are to be wholly understood and relevant remedial strategies identified.
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