BMJ Open Respiratory Research

Feasibility and acceptability of a community pharmacy referral service for suspected lung cancer symptoms

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To cite: Holland-Hart D, McCutchan GM, Quinn-Scoggins HD, *et al*. Feasibility and acceptability of a community pharmacy referral service for suspected lung cancer symptoms. *BMJ Open Resp Res* 2021;**8**:e000772. doi:10.1136/bmjresp-2020-000772

► Additional supplemental material is published online only. To view, please visit the journal online (http://dx.doi.org/10.1136/bmjresp-2020-000772).

Received 9 September 2020
Accepted 11 July 2021

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ABSTRACT

Background Lung cancer survival rates in the UK are among the lowest in Europe, principally due to late-stage diagnosis. Alternative routes to earlier diagnosis of lung cancer are needed in socioeconomically deprived communities that are disproportionately affected by poor lung cancer outcomes. We assessed the feasibility and acceptability of a community-based pharmacy referral service to encourage earlier symptomatic referral for chest X-rays.

Methods Seventeen community pharmacies located in a deprived area of Wales participated between March 2019 and March 2020. Stakeholder interviews were conducted with four patients, seven pharmacy professionals and one general practitioner. Four focus groups were conducted, including one with healthcare professionals (n=6) and three with members of the public who were current and former smokers (n=13). Quantitative data regarding patient characteristics and clinical outcomes were collected from hospital records and patient referral questionnaires completed by pharmacists and analysed using descriptive statistics. Qualitative data sets were analysed thematically and triangulated.

Results Twelve patients used the pharmacy referral service, all of whom were male. Average length of the pharmacy consultation was 13 min, with a mean 3 days to accessing chest X-rays in secondary care. Patients experienced a mean 46-day wait for results, with no lung cancer detected. Participants found the service to be acceptable and considered the pharmacy element to be broadly feasible. Perceived barriers included low awareness of the service and concerns about the role and capacity of pharmacists to deliver the service. Facilitators included perceived approachability and accessibility of pharmacists. A well-publicised, multifaceted awareness campaign was recommended.

Conclusions A community pharmacy referral service for lung symptoms was considered an acceptable alternative pathway to symptomatic diagnosis of lung cancer in deprived communities. Wider implementation of the service would require workforce capacity and training to be addressed to ensure optimum utilisation and promotion of the service.

Key messages

- Is a community pharmacy referral service for lung cancer symptoms feasible and acceptable in socioeconomically deprived areas?
- The pharmacy-based referral service for lung cancer symptoms was considered acceptable but would require further improvements to be feasible for wider implementation.
- We conducted in-depth qualitative analysis to understand the barriers and facilitators to pharmacy referral for lung cancer symptoms in socioeconomically deprived areas.

INTRODUCTION

Globally, lung cancer is the leading cause of cancer mortality, principally due to later stage disease at diagnosis.[1] UK lung cancer survival rates are among the worst in Europe,[2–4] with higher mortality in more socioeconomically deprived areas.[5 6] The 1-year survival rate is 38% across England and Wales, with 17% of patients with lung cancer receiving surgery for curative treatment.[7 8] Lung cancer incidence rates across the UK are up to three times higher in the most deprived compared with the least deprived areas[9–12] and are linked to higher levels of smoking prevalence in these communities.[13 14]

At diagnosis, over 90% of patients with lung cancer are symptomatic[15] with an average 6 months duration between symptom discovery and the initial appointment with their general practitioner (GP).[16] Reasons for late presentation include low awareness and misattribution of lung symptoms to ageing, smoking habit or pre-existing comorbid conditions such as chronic obstructive pulmonary disease (COPD).[17–21] Psychosocial factors such as stigma, fear and fatalism regarding lung cancer may also deter patients from seeking medical help, particularly in lower socioeconomic groups and among smokers.[22–24]

Pharmacists are increasingly providing earlier and easier access to diagnostic and management services for chronic diseases.[25–27]

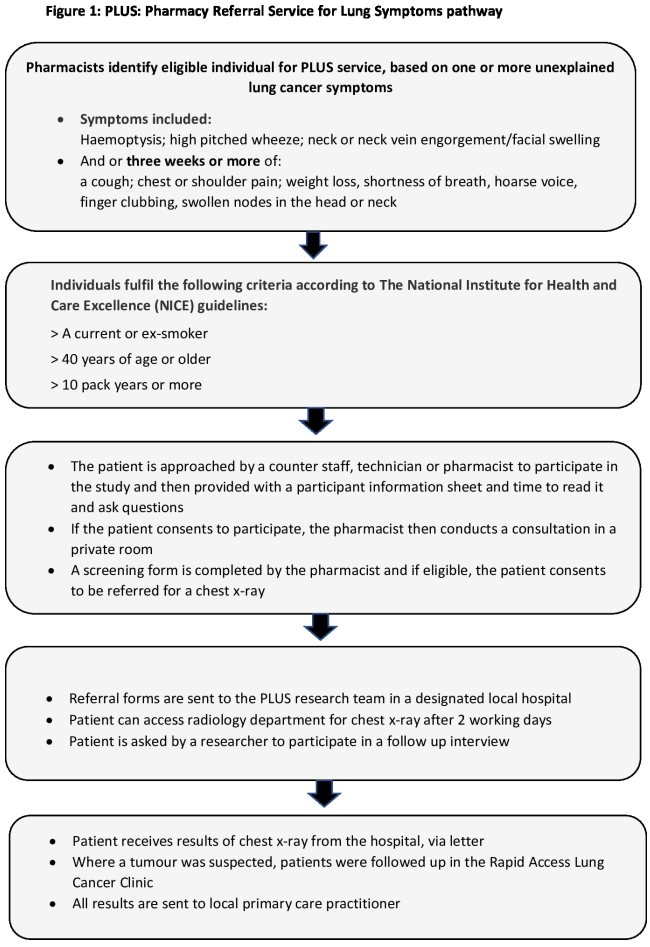

Figure 1 PLUS pharmacy referral service for lung symptoms pathway.

Small-scale pilot studies in areas of high socioeconomic deprivation in Doncaster[28] and London[29] have developed and tested alternative routes to earlier symptomatic diagnosis of lung cancer through pharmacy-based interventions. These studies demonstrated that pharmacies could provide targeted referral services for patients with lung symptoms for chest X-rays. However, no cases of lung cancer were found in either study largely due to low numbers of participants. There was also limited evidence that these services could successfully provide a viable alternative to primary care for patients accessing chest X-rays. Reported barriers to using these services included a lack of awareness of the legitimacy of the service and difficulty identifying patients meeting the referral criteria. Further evidence is required to understand the barriers and facilitators to implement a community-based pharmacy lung referral service in socioeconomically deprived areas.

METHODS

Design

Pharmacy referral for lung cancer symptoms was a mixed-methods feasibility study, which involved data collection with patients who used the service, members of the public (MoP), community pharmacists, pharmacy staff, GPs and secondary care healthcare professionals. This study aimed to test the feasibility of community pharmacies in the rapid symptomatic diagnosis of lung cancer in socioeconomically deprived areas and explore the potential for a future RCT. It also aimed to capture preferences regarding potential awareness campaigns to promote the service. This study was built on the work of previous campaigns and studies but with additional focus on factors influencing the implementation, utilisation and promotion of the service. This study followed the Medical Research Council framework for developing and evaluating complex interventions.[30]

Study setting and recruitment

The study was conducted in Hywel Dda University Health Board in a postindustrial area of Wales. Hywel Dda is organised into seven primary care clusters that bring together local services involved in health and care across a geographical area. One cluster comprising 17 community pharmacies was chosen due to its high levels of socioeconomic deprivation relating to lung cancer incidence and outcomes[31] and its location close to a hospital.

Pharmacy referral service pathway

The pharmacy referral service pathway (figure 1) entailed community pharmacists assessing patients with lung cancer symptoms and following The National Institute for Health and Care Excellence (NICE) guidelines to refer eligible patients to hospital for a rapid chest X-ray. This service was provided between May 2019 and March 2020. In response to pharmacists' preferences during service pathway development, pharmacists were not involved in follow-up appointments or in receiving or providing patients' results.

Pharmacists and GPs completed two initial group-based evening training sessions in April 2019, which detailed the processes and paperwork required for the study. Hospital clinicians and research staff took part in group training and one-to-one training was delivered as required. The protocol followed hospital processes as closely as possible, so that minimum training was required. A campaign advertising the pharmacy referral service and the study was launched in May 2019. Information about the service was provided on the Health Board's website and accompanied by community posters and promotional materials placed in participating pharmacies. Due to limited use of the service, the poster was redesigned in January 2020 based on initial findings from the focus groups, which aimed to inform future campaigns. One-to-one refresher training for pharmacists and counter staff was delivered by research team members and pharmacy area managers (SR, SB, AE and KW) between December 2019 and March 2020. This focused on explaining paperwork for the referral process and approaching potentially eligible patients for the service. In March 2020, recruitment was suspended due to the COVID-19 pandemic.

Table 1 Characteristics of patients referred through the pharmacy referral service (n=12)

Variable	Number of patients
Gender	
Male	12
Female	0
Age (years)	
40–49	1
50–59	4
60–69	4
70–70	1
80+	2
Smoking status	
Smoker	7
Ex-smoker	4
Never smoked	1
Smoking pack years	
0	1
1–10	3
11–20	1
21–30	0
31–40	1
41–49	2
50+	1
Missing	3
Symptoms discussed during consultation	
Cough	11
Chest or shoulder pain	7
Breathing difficulties	5
Hoarse voice	4
Haemoptysis	3
Chest infections	3
Finger clubbing	2
Swollen nodes	1
Weight loss	1
Neck vein engorgement/facial swelling	1
COPD/asthma history	
No	10
Yes	1
Missing	1
Smoking cessation advice offered	
None	8
Referred to All Wales Stop Smoking Service or local service	2
Not applicable (never smoker)	1
Missing	1

COPD, chronic obstructive pulmonary disease.

Participant recruitment

All community pharmacies (n=17) in a cluster were approached by the pharmacy area manager. All 17 pharmacies agreed to participate in the study, of which only five pharmacies went on to refer patients to the service. Pharmacies received £35 per patient referral. While GPs were notified of patients' referrals and X-ray results, they were not involved in this referral pathway and therefore did not receive payments for this service. Patients who were referred through the service, pharmacists, other pharmacy staff and GPs were approached to participate in interviews. After reading the participant information sheet (available on request), pharmacists consented patients to the main study and to be contacted for the interviews. Patients were contacted by telephone to participate in interviews and where no answer was received, followed up by letter. Interviews took place at the participant's home or via telephone. In one interview, a partner accompanying the patient was also consented. Patient interviewees received a £20 shopping voucher. Pharmacies were provided with £80 per interview and a GP was provided with £90 to cover their time during interviews.

One focus group with six healthcare professionals including secondary care nurses, pharmacists, pharmacy staff and a GP and three focus groups with MoP (including one with two current smokers, one with three former smokers and one with eight current and former smokers) were conducted. MoP who were aged over 40, current or former smokers and living within the remit of the Health Board, were approached to participate in focus groups through a population research online platform (HealthWise Wales https://www.healthwisewales.gov.wales),[32] community poster campaign, face-to-face recruitment at community venues and Health Board contacts. Vouchers worth £25 and travel expenses were offered to public participants. All healthcare professionals and pharmacy staff participating in the study were recruited through Health Board contacts and offered payments to compensate for their time, in line with their hourly rates.

Public and patient involvement

Two patient representatives were involved in the design of the study through regular steering group meetings. Each step of the study development including reviewing topic guides, implementation, evaluation and interpretation of the results incorporated patient views and experiences.

Data collection

Qualitative data

Semistructured interviews were conducted with patients, pharmacy staff and healthcare professionals. The topic guides were developed and informed by previous studies[33 34] and then tested and reviewed by the study team in partnership with patient representatives. Topics included acceptability and feasibility of the pharmacy service and recommendations for encouraging symptomatic presentation to the pharmacy. Focus groups were conducted with MoP and healthcare professionals.

Table 2 Pathway referral data

Question	Number of patients
Length of consultation with pharmacist (min)	
1–5	2
6–10	4
11–15	3
16–20	2
21–25	1
Patient previously spoken to a healthcare professional about their symptoms	
No	8
Yes	4
Patients who declined referral during consultation	
No	12
Attended chest X-ray	
No	1
Yes	11
Days between date referred and date of chest X-ray	
0–1	3
2–3	3
4–5	2
6–7	2
8–9	1
Days to reporting chest X-ray results in secondary care	
1	3
2	1
3	2
4	2
5	2
6	0
7	1
Results	
Clear chest X-ray	9
Clear chest X-ray referred to Ear Nose and Throat (ENT) clinic	1
Did not attend	1
Diagnosed with pulmonary fibrosis	1
Patient did not receive results	0
Days between chest X-ray and results letter to patient	
0–20	4
21–40	1
41–60	2
61–89	2
90+	2
Not applicable (did not attend chest X-ray)	1

These involved discussions of initial perceptions of a pharmacy referral service and suggestions for future promotional campaigns. Topic guides are available (online supplemental files 1–4). Audio-recordings were transcribed verbatim for analysis. A Consolidated criteria for reporting qualitative research (COREQ) checklist is available (online supplemental file 5).

Quantitative data

Screening and referral questionnaires were completed by pharmacists during patient consultations. Data collected comprised demographic and clinical information including age, gender, symptoms, smoking status and pack years, history of COPD or asthma, whether the patient had previously spoken to health professional about their symptoms, length of consultation, whether the patient declined referral during consultation and whether smoking cessation advice was offered. Data regarding the number and outcome of chest X-rays and time to patients receiving the results were derived from patient's hospital records. These data were used to describe patient characteristics and pathway variables.

Analysis

Questionnaires were analysed descriptively. Qualitative data were analysed using inductive thematic analysis.[35 36] At least 20% of the interviews and focus groups were dual coded, with coding frameworks reviewed by the researchers (DH-H, GMMC, KB) for consensus.[37 38]

A process of triangulation was carried out between two researchers (DH-H and GMMC) drawing on the Farmer *et al*[39] triangulation framework. This process involved independently sorting the findings from each of the data sources, then using convergence coding to identify themes from each data source. The degree of convergence, partial agreement/complimentary data and dissonance were then assessed across the data sets. Convergence of the main themes was agreed between the researchers.

RESULTS

Participant characteristics

As shown in table 1, 12 patients were referred through the pharmacy referral service. All patients were male, with a mean age of 64 years (range 45–85). Most reported coughing, chest or shoulder pain. Seven out of the 12 patients were current smokers, with a mean 31 pack years (range 0–87.5), and one patient had never smoked. Smoking cessation advice was offered to two smokers. One patient had a comorbid lung condition.

Table 2 illustrates that the average length of the pharmacy consultation was 13 min (range 1–25 min). Four patients had previously spoken to another healthcare professional about their symptoms before using the pharmacy referral service. For 11 patients who attended chest X-ray, the mean time to reporting chest X-ray results in secondary care was 3 days (range 1–7). There were no cases of lung cancer detected, but a rare lung condition (pulmonary fibrosis) was diagnosed in one patient. The mean waiting time between the pharmacy consultation

and chest x-ray was 3 days (range 0–9). There was a mean 46-day wait (range 0–96) for 10 patients who received their chest X-ray results.

Qualitative findings

Four focus groups were conducted, one with healthcare professionals (n=6) (HCP FG) and three with MoP (n=13, of whom four were female and nine were male). The public focus group included one group of smokers (FG1 MoP), one group of former smokers (FG2 MoP) and one combined group of current smokers and former smokers (FG3 MoP).

Seven pharmacy professionals were interviewed, including four pharmacists and one pharmacy technician. Pharmacist (1) and counter staff (1) were from non-participating pharmacies, one GP and four patients were interviewed. Ten patients initially consented to the qualitative element; of these, three patients subsequently declined to participate, two were not contactable and four were interviewed. Two patients stated a lack of time for declining interview participation, and another stated that, as a non-smoker, they had been incorrectly referred.

Three main themes were established from the data—*acceptability, feasibility and campaign promotion*. Subthemes included barriers to implementing the service and facilitators to the service. These were identified based on initial analysis of the three separate data sets (patient interviews, interviews with health professionals and focus groups). Data saturation was achieved for themes relating to acceptability of the service and campaign promotion, as no new ideas were emerging. Due to the low number of patients who used the service, data saturation was not achieved for themes relating to the feasibility of the service.

Acceptability

The service was perceived as an acceptable initiative among patients, pharmacists and healthcare professionals and focus group participants.

> I think it's a brilliant idea. (FG1 MoP)
> Absolutely fantastic. (GP interview)
> I think it is a good idea… it's a good way of getting to the people who don't tend to go to the GP as often. (Pharmacist interview, 1)

It was felt that the service could enable earlier referrals and diagnosis compared with using the GP.

> The referral from the pharmacy was a lot quicker. (Patient interview, 4)
> It enables earlier detection… it takes out all the waiting times in GPs and referral letters. And it just gets that initial stage started for treatment, potentially started, much quicker. (Pharmacist interview, 2)

Most patients were already familiar with their pharmacist and good rapport enabled them to feel comfortable with discussing their symptoms with them.

> PAR2: I've got a very good rapport with my pharmacist and I know for a fact I could go in at any time, and anybody locally can do the same. (FG3 MoP)
> [The Pharmacist] really knew about my health, … because, I go there regular. (Patient interview, 3)

Pharmacy staff found it acceptable to approach patients, discuss symptoms and deliver the service, as it was perceived to be an extension to their usual service.

> If someone came in to buy a cough mixture, we would always check through with them to see what sort of cough it was, how long the cough seemed and check any other symptoms, that would be part of the normal process. (Pharmacy staff, interview 1)
> I think people do generally come in and have a chat and kind of give us an idea of their symptoms. (Pharmacist interview, 1)

Most patients became aware of the service due to the discussions with pharmacy staff or signposting from other healthcare services.

> Well, I knew nothing at all about the service, until the pharmacist talked to me. (Patient interview, 3)
> I think one of the ladies told me from the surgery. (Patient interview, 1)

Feasibility

Satisfaction with the implementation of the pharmacy service was reported; patients usually received their X-ray within a week. However, several patients experienced confusion on their arrival at the hospital due to some clinical staff being unaware of pharmacy referrals. Pharmacists and patients were occasionally confused regarding the timing of the X-rays. Patients had expressed uncertainties regarding how and when they would receive their results and overall felt that they waited too long for the results.

> The initial service, fabulous but you cannot call it aftercare because I have not had the aftercare… the [Pharmacist] was extremely helpful. I found the whole fast track system exceptionally efficient… I went in to the [Name of hospital] and I was in there less than ten minutes, x-rayed and out… I said 'I had to come for a chest x-ray', they were a bit vague because I think it is a new service but they did track somebody down that knew what it was all about very quickly. (Patient interview, 4)
> Partner: They said that you should have waited really a few days, and they didn't know really that you were coming, and that was our fault though. (Patient interview, 3)

Capacity to deliver the service due to workload pressures and communication challenges between different healthcare professionals were raised as concerns. However, pharmacy staff felt there was capacity in their

role, providing adequate funding and training were available.

> There's going to be an increased workload with people having more chest x-rays. I don't know if anyone has spoken to radiology? (HCP FG)
> As long as it was funded in a way that allowed us to employ extra staff or had the time to see the patients. (Pharmacy staff interview, 1)
> Would there be communication between the pharmacists and doctors, or the pharmacists and the hospitals? (FG3, MoP)
> The communication needs to be clear, and everybody needs to be involved, at every step. (GP interview)

Pharmacists contrasted their initial group-based training with the more intensive refresher training that was delivered one-to-one in the pharmacies. Clear, accessible, face to face training was perceived to be essential to implement the pathway effectively.

> Paperwork was quite complicated… I had about five follow-up calls telling me I'd done something wrong or I'd sent it to the wrong place or someone hadn't received it. (Pharmacist interview, 5)
> When the second training took place, coming to pharmacy was a lot better. Explaining of the paperwork was better, paperwork in file was pulled together and signposted. (Pharmacist interview, 2)

Barriers to implementing the service

Patients and public participants expressed initial concerns regarding the authority of pharmacists to deliver the service, as some assumed that they would not be appropriately qualified and that referral for chest X-rays was limited to the remit of GPs. However, most felt comfortable with the idea, once it was explained that pharmacists received appropriate training. Participants suggested methods to promote their credibility, such as displaying training certification. Pharmacists also recognised that they would not automatically be considered authorised to deliver the service.

> I think in the back of my mind, I was more likely to have gone to see a doctor, or probably I wouldn't have gone to see the pharmacist, because I wouldn't have thought of them being able to recommend me to go and get an x-rays… I suppose having some kind of certificate that sort of states this pharmacist is able to refer. (Patient interview, 2)
> [Patients] don't always associate pharmacy as somewhere that you can maybe help with X-rays. (Pharmacist, interview, 5)

Participants suggested that the remit of the service could be expanded to include younger people, non-smokers and to offer a comprehensive lung health check for lung cancer and non-cancer respiratory conditions, as it was felt that lung diseases in general could be detected earlier.

> If this is covering all respiratory, right and not just 'damn nuisance' smokers but any respiratory problems. (Patient interview, 4)
> There were one or two who were under 40… There was a couple, then, who had the symptoms, of chest complaint, coughing but…hadn't smoked in the past… A lot of lung cancer is missed because people don't smoke… could be a secondary cancer. (Pharmacist interview, 4)

Facilitators to the service

The fast-track nature of the service was perceived as being the most beneficial element. The service was considered to offer easy access with no appointment required, and an expedited pathway for patients who were less able to access GP appointments or secondary care services.

> You go for an x-ray and you'll be fast tracked', well we went that day for an x-ray, and we were fast tracked, we were no time. (Patient interview, 3)
> It just streamlines the whole process and it means they can… get checked out and get an x-ray done, fairly soon-ish, so usually 48–72 hours, after seeing us. (Pharmacist interview, 2)

Obtaining access to the service outside of normal working or GP hours was perceived as useful, especially for people with jobs or responsibilities with non-standard hours. It was recognised that this was particularly important for people from lower socioeconomic backgrounds.

> I thought well that is good, I can make that, as there is no fixed time… Especially with my profession, cause the worst part is … you can never predict what the motorway is going to be like or the delays when you are doing deliveries. (Patient interview, 4)
> Patients of the more lower socioeconomic scale, the patients who do manual working jobs…and things like that… they can have the attitude… they don't want to see a doctor and they just want to be patched up quickly and on the way to go back to work. (Pharmacy professional interview, 1)

The physical accessibility offered by community pharmacies was thought to be well suited to geographically dispersed populations and people without access to private transport.

> It's a very rural area with a very small population and getting people to go to their GP is very difficult… I'm seeing people constantly that are stage four… you don't get a lot of symptoms necessarily with lung cancer. (HCP FG)
> It would suit a lot of elderly people if they know about it… They might have a pharmacy that is quite close that does it, but they might have to catch a bus, two buses to see their GP. (Patient interview, 4)

It was perceived that the service would benefit the overall healthcare system by reducing the burden on GPs

and saving money, providing that the service was fully communicated with all healthcare providers.

> So, it may save the NHS money then in the long run and help more patients get the treatment they need quicker…, potentially, maybe get cured of lung cancer. (Pharmacist interview, 2)
> GP's are keen to share their workload… GPs should be informed of x-rays results, clearly stating if further actions are needed. (GP interview)

Campaign promotion

Participants thought that the poster campaign to promote the service could be more visible and widespread within the community. A lack of awareness of the service was considered a significant barrier to its use.

> I think it could be put out there more to the public like you know, advertise it more. Because a lot of people don't know. (Patient interview, 1)
> It needs a bit more of a push… to make people aware of it. (Pharmacy staff, interview 2)

A targeted and multifaceted campaign aimed at engaging different groups throughout the community was advocated. This included focusing on patients who already received prescriptions for lung symptoms or other illnesses.

> PAR9: I think you need to have a band for different target groups. Some people will look at posters and then other people will get a message from the nurse or something or pharmacist and will check that. (FG3 MoP)
> We could mark prescriptions… with…a sticker to say that they're a potential candidate. (Pharmacist, interview 5)

Health services and community venues were felt to be the most valuable places to promote the service. Among the suggestions were promotional days and using health services' answering machine messages.

> PAR1: Have like a day where they all wear a badge and they speak to everyone about it, in all the pharmacies. (FG1 MoP)
> Answering machine messages can be used to promote service. (Pharmacist interview, 4)

Campaign messages needed to be simple and clear, emphasising the fast-track nature of the service.

> If I had a letter that didn't say fast tracked, I would have probably contacted my doctor and asked him about it. (Patient 3)
> Jump the queue' 'save time', no appointment. (Pharmacist interview, 4)

There were differing views regarding the inclusion of the wording *lung cancer*, as some felt it would deter them from using the service. Participants felt that positive and non-judgemental messaging highlighting early diagnosis could help to modify negative beliefs about cancer.

> PAR1: The cancer may be put people off… Don't put the fear of God into everybody just say I'm approachable… we are willing to listen, we will hear you, we can refer you… A non-judgemental attitude is very important. (FG1 MoP)
> Early diagnosis, means better prognosis. (GP, interview)

Posters were generally considered to be an important method to promote the service. Against a backdrop of multiple health campaigns in pharmacies, posters would need to stand out through using distinctive messaging and images.

> PAR2: You could have a member of the public having like a conversation with a pharmacist. (FG3 MoP)
> It's about getting just the right kind of poster… anything with pictures or like an x-rays of … a set of lungs, that would stand out to them. (Pharmacist, interview, 2)

Participants had varying perspectives regarding the most appropriate method of advertising. However, using pharmacy bags for prescriptions was popular and the training of pharmacy delivery drivers was considered useful to engage those unlikely to attend pharmacies.

> PAR1: If you put a piece of paper in, it's going to be discarded with the bag. It would be better if it was printed on the bag. (FG1 MoP)
> Train drivers up to provide information to patients when delivering prescriptions. They can explain the service face to face, as they don't see anyone, so the driver is their main point of contact. (Pharmacist interview, 4)

DISCUSSION

Main findings

Our study assessed the acceptability and feasibility of a community-based pharmacy referral service designed to support prompt symptomatic diagnosis of lung cancer in socioeconomically deprived communities. Participants considered the pharmacy referral service to be acceptable and the pharmacy element to be potentially feasible. A joined-up and standardised approach to training and service delivery for pharmacists, counter staff and technicians, primary and secondary care providers would be needed prior to considering the development of an RCT and wider implementation, in particular, to ensure that patients receive chest X-ray results without delay. Perceived barriers to uptake included insufficient service awareness and concerns about the credentials of pharmacists to deliver the service. Facilitators included the familiarity and ease of access of pharmacists relative to other healthcare practitioners, particularly within deprived and rural populations. However, low numbers of patient referrals observed in the feasibility study emphasise the

need for improvements to service promotion and integration with secondary care provision.

Strengths and limitations

The main strength of the study was that in-depth views and perceptions were drawn from multiple stakeholders and data were triangulated to determine convergent themes. Proactive recruitment methods for the focus groups were successfully implemented to engage people from deprived communities. Although the purpose of the study was to inform (rather than evaluate) the delivery and content of a campaign to raise awareness of the pharmacy lung referral service, the initial community-based campaign had limited reach and may have contributed to the low number of patients referred, in addition to delayed roll out of the pathway. Subsequently, the breadth of views expressed in patient interviews and data concerning the feasibility of the service were limited. Opportunistic recruitment of patients, MoP and healthcare professionals may also have increased the likelihood that study participants were favourably disposed towards the concept of pharmacy referral for lung symptoms. Data regarding the number of patients who were approached by pharmacy staff but did not participate in the lung referral service were not available and would be important in assessing service uptake.

Comparison with the existing literature

Consistent with earlier pharmacy referral pilots, there is limited evidence that pharmacy referral services are a viable alternative to primary care for patients accessing chest X-rays for lung cancer symptoms. No cases of lung cancer were detected in the current study, although the potential to diagnose other clinically significant lung conditions when testing for lung cancer was demonstrated despite the small number of patients referred.[40–42]

Uptake of the community pharmacy referral service was hindered by lack of awareness and limited promotion. Consistent with other studies, we found that targeted, multifaceted[43 44] approaches using community-focused strategies to promote the pharmacy referral service[45 46] were preferred. Information to raise awareness of cancer symptoms[47] alongside clear, positive messages[48] emphasising the benefits of earlier diagnosis[49] and the fast-track nature of the service were considered important.[50]

Pharmacy staff proactively engaged customers from socioeconomically deprived communities and pharmacies were considered particularly accessible to the target populations, especially within rural settings, and well suited to delivering this service and other health interventions.[51] Despite this, some public participants queried the credentials of pharmacists to discuss lung symptoms and refer for diagnostic testing, similarly to previous unpublished findings.[52] Further work could be undertaken to promote the authority of pharmacists to provide these services to the public.[53]

Implications

Although the pharmacy referral service was perceived to be acceptable, changes prior to the development of an RCT and potential wider implementation would be required. These could include embedding a more robust tracking service in secondary care to expedite provision of results to patients, and standardised training for the service providers. Where service level barriers are addressed, a well-publicised multifaceted awareness campaign could be developed and evaluated in parallel.

The broader context of the role of community pharmacy services in meeting the changing healthcare needs of the population should also be considered.[54] While current NICE guidance recommends referral for chest X-ray for patients with lung cancer symptoms, approximately 25% of early stage lung cancers may be missed through false-negative results.[55] Recent evidence highlights the effectiveness of low-dose CT (LDCT) lung screening in reducing lung cancer mortality among high-risk groups (aged 55–80 with a significant and recent smoking history).[56 57] Future research could consider the potential role of community pharmacy in referring high-risk patients into LDCT screening delivered via targeted lung health check pilots,[58] with broader eligibility criteria should LDCT lung screening become routinely implemented in the UK.

CONCLUSION

This study demonstrated that a pharmacy lung referral service is acceptable but would require improvements to workforce training and promotion before being considered feasible for wider implementation. Future studies could explore the clinical and cost-effectiveness of pharmacy lung referral services.

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Acknowledgements We thank HealthWise Wales, Swansea Trials Unit, the Rapid Access Cancer Service, study participants and community organisations that helped to recruit participants.

Contributors GC and RG—joint principal investigators responsible for overall study design and oversight of study progress. KB and GMM designed and oversaw the qualitative evaluation. DH-H, HDQ-S, LH, GMM—collected and analysed qualitative data. SB, SR and RG—coordinated pharmacists and collected and reported quantitative data. SS—contributed to study development and contacts for primary care. MA—contributed to study design, development, implementation and interpretation of results. AE and KW—contacted and coordinated pharmacies and supported promotional campaigns. DH-H—drafted the manuscript. All authors contributed to revisions of the manuscript and approved the final version.

Funding The PLUS studies were funded by the Welsh Government through Health and Care Research Wales, RfPPB grant. Dr Grace McCutchan is funded by the Wales Cancer Research Centre. Harriet Quinn-Scoggins is funded by PRIME Centre Wales. The PRIME Centre Wales and the Wales Cancer Research Centre are funded by the Welsh Government through Health and Care Research Wales. Sponser: Hywel Dda University Health Board and registered on ISRCTN, registration number: 16086080.

Competing interests None declared.

Patient consent for publication Not required.

Ethics approval PLUS 1: (IRAS 231842), North of Scotland REC 2 (18/NS/0073). PLUS 2: (IRAS 239155), East Midlands - Derby Research Ethics Committee (18/EM/0416).

Provenance and peer review Not commissioned; externally peer reviewed.

Data availability statement Data are available upon reasonable request. De-identified participant data are held by the Research and Development Department, Hywel Dda University Health Board (HDd.Research-Development@wales.nhs.uk). Data and additional information requests will be reviewed case by case by the CI and research team.

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