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**Title**

What should the role of primary care be in lung cancer screening?

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**Competing interests**

SHB is a member of the lung screening standards development group for England (Office for Health Improvement & Disparities) and is the clinical lead for cancer for the Leeds office of the West Yorkshire Integrated Care Board. The views expressed in this editorial are those of the authors and do not necessarily reflect those of employers or affiliated organisations.

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## **What should the role of primary care be in lung cancer screening?**

Lung cancer is the leading cause of cancer mortality worldwide and is often diagnosed at advanced stages with a reduced likelihood of curative treatment and survival (1). Lung cancer disproportionately affects socioeconomically deprived groups with higher incidence and worse outcomes, partly due to high rates of smoking and occupational exposures (2).

The clinical effectiveness of lung cancer screening (LCS) with low-dose CT (LDCT) has been established with improved lung cancer outcomes. A recent meta-analysis reported a pooled relative reduction in lung cancer-specific mortality of 0.84 (95% CI 0.76 - 0.92) (3). Accordingly, in June 2022, the UK National Screening Committee recommended LCS for high-risk adults based on age and smoking history (4).

The proposed model of implementation is likely to be informed by the NHS England Targeted Lung Health Check (TLHC) model, which has generated essential evidence regarding the practicalities of delivering LCS (5). TLHCs identify high-risk cohorts based on age and smoking history, inviting them for triage risk-assessment. Patients exceeding the risk threshold are invited for an LDCT scan. Unlike breast, bowel and cervical cancer screening programmes that invite all patients within a particular age range, risk-stratification by age and smoking history present further challenges for LCS implementation.

We present important considerations regarding the potential role of General Practice in LCS. Expertise within primary care and the unique position of General Practice within communities could address these challenges to facilitate the successful implementation of a new LCS programme and support equitable and informed participation.

### ***Challenges for General Practice***

#### *Utilising Electronic Health Records (EHRs) to identify screening-eligible patients.*

LCS programmes will primarily rely on smoking data held in primary care EHRs to identify the high-risk population (aged 55-74 years, with a history of smoking within 20 years). However, smoking codes within EHRs were not intended for this purpose and vary widely in validity and completeness (6). Without improving the reliability of EHR smoking codes, the programme risks inadvertently excluding patients who may be eligible for LDCT screening, calling for strategies and tools to improve smoking data quality (7). General Practice will play a key role in facilitating equitable and inclusive access to LDCT screening by helping to build accurate smoking EHR data. Self-referral and inviting patients with a missing smoking code to triage risk-assessment could potentially supplement strategies to update EHRs, enhance accessibility, and minimise risks associated with patient identification.

#### *Achieving equitable and informed participation in lung screening.*

Participation in LCS is variable, with uptake rates of 6% among eligible US adults and 35-53% in the UK TLHCs. In the US, participation is impacted by multiple factors including inconsistent implementation, confusion around eligibility, variable insurance reimbursement, and the delayed endorsement of the American Academy of Family Physicians (8). Additionally, inequalities in LCS participation exist, with lower rates of participation among

individuals from low socioeconomic backgrounds with long-standing smoking histories, while emerging evidence signals ethnic and regional variation in participation (5).

Behavioural influences on LCS non-participation include low awareness of LCS, cancer fear and fatalism, smoking-related stigma, beliefs about eligibility for screening, experiences of poor lung cancer outcomes in social networks, and complex life circumstances (9).

Furthermore, participation may be adversely affected by the variable quality of information that is often used to support both informed decision-making and preparation for abnormal results.

Addressing issues of equitable participation will likely improve the overall cost-effectiveness and clinical effectiveness of the programme. Behavioural interventions including GP endorsement, pre-screening reminders, and personalised invitations have been shown to increase cancer screening uptake among low socioeconomic groups (10). Furthermore, careful consideration must be taken to prevent exacerbating existing inequalities in accessing LCS, given this remains a significant issue in other cancer screening programmes.

Traditionally, GPs have played a vital role in reducing barriers to screening participation and providing an accessible setting for person-centred care and education, therefore are in a unique position to support equitable and informed participation in LCS.

#### *Capacity within primary care to support lung screening.*

GP-led initiatives including practice letters, telephone reminders, and counselling appointments would place additional demands on already constrained capacity. For example, should administrative staff be allocated time to call patients and explain the programme? Should practices document and follow up on patients who have declined LCS invitations? Automated reports around eligibility and those who have not participated could facilitate some of this. Practices may need to be incentivised to undertake such work both in terms of staff engagement and backfill for administrative time. Finally, the role of General Practice in the follow-up of incidental findings is yet to be established. It is arguably inappropriate for the responsibility for surveillance to fall to General Practice, highlighting the need for coordination with secondary care services.

#### *Incidental findings and overdiagnosis.*

The potential for additional activity arising from abnormal LCS results, including incidental LDCT findings, must be considered. The National Lung Screening Trial (NLST) reported 33.8% of individuals had “significant” incidental findings which included non-pulmonary masses and many other radiological findings requiring further specialist review (11). Given the extensive understanding we have of the significant incidental findings that can be expected to arise from screening, it is imperative to establish effective pathways to facilitate referrals and prevent delaying patient care, missed diagnoses, and undue GP workload. However, uncertainties regarding the benefits of follow-up for incidental findings (e.g., emphysema, coronary artery calcification, interstitial disease, aortic disease, adrenal masses) should be acknowledged and will require adequate resourcing to support shared decision-making with patients. Finally, LCS raises the potential for overdiagnosis. Given a proportion of LDCT-detected cancers may never progress to symptomatic disease, informed decision-

making is essential. Discussing the numbers needed to screen and harm using decision support tools (Figure 1) may aid informed decision-making (12).

### ***The future of LCS and general practice***

With the expansion of the TLHC programme, lung cancer screening will soon be available to patients in the United Kingdom. GPs have a critical role in contributing to the programme's success by facilitating inclusive identification and invitation of high-risk patients and supporting equitable and informed participation. However, the implications for GPs must be reasonable, achievable, and explicitly acknowledged given the current workload crisis in primary care. Moreover, there must be effective communication with primary care and the programmes regarding results, scheduled screens, and participation. Screening promises to contribute to improvements in lung cancer outcomes, but to ensure those at greatest risk are reached, General Practice must be considered as an active partner. This will require envisaging a clear and positive role for General Practice in screening along with sincere engagement with the profession on the case for screening and acknowledgement of resulting workload implications.

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Figure 1

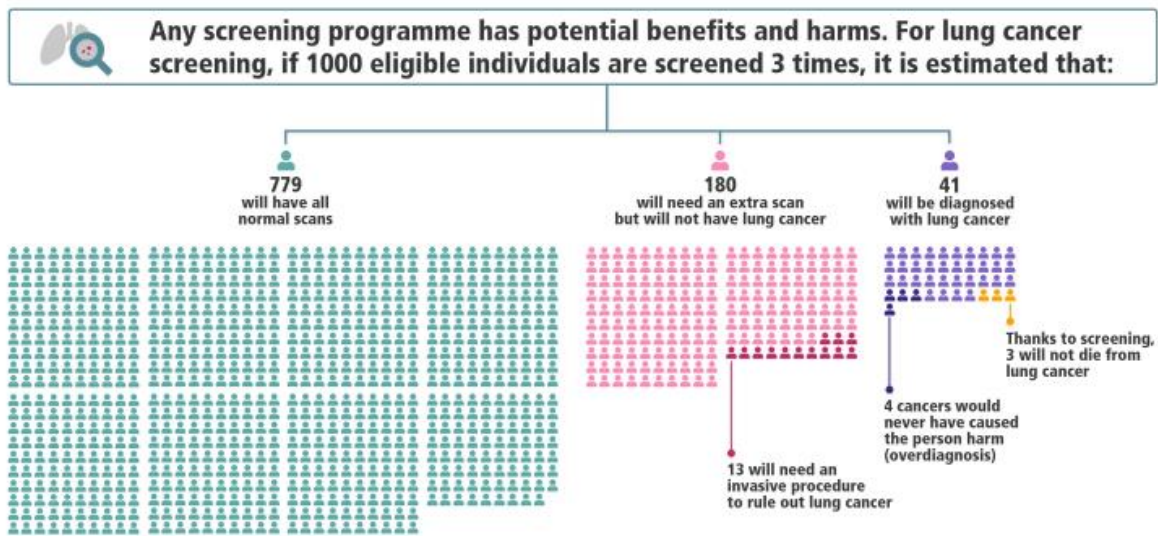


Figure 1: 1000-person tool for lung cancer screening, based on the National Lung Screening Trial (NLST). Numbers needed to treat and harm incorporating other trials are available (12). Reproduced with permission from the WHO International Agency for Research on Cancer.