

Case Study: Solutions for Public Health

Working with decision makers to improve health outcomes

Solutions for Public Health (SPH) is a specialist public health team within Health and Care Transformation, the consultancy arm of NHS Arden & GEM. SPH's multidisciplinary team of public health, clinical, research and analytical experts work with decision-makers across the public, voluntary and community sectors to improve health and reduce health inequalities.

In 2022, we completed a report for the UK National Screening Committee (UK NSC) exploring the clinical effectiveness and acceptability of targeted screening for lung cancer for individuals at increased risk. This involved an external review of evidence from a range of international trials against specified appraisal criteria.

Following the publication of the evidence review, the UK NSC recommended that the four UK nations move towards the implementation of targeted lung cancer screening with integrated smoking cessation provision. The Targeted Lung Health Checks Programme being piloted by NHS England was identified as a feasible and effective starting point for the implementation of targeted lung cancer screening in England.

In 2024, NHS England announced that the Targeted Lung Health Checks Programme has diagnosed thousands of people with early stage lung cancer while it is still treatable.

The challenge

Lung cancer is one of the most common types of cancer in the UK and worldwide. Rates of early diagnosis are low because early symptoms are vague and can often be attributed to other minor conditions.

Around 48,000 people are diagnosed with lung cancer and about 35,000 people die from the disease every year in the UK. People diagnosed with lung cancer at stage 1 through screening have an average five-year survival rate of over 90%. This contrasts with a five-year survival rate of only 4% for those diagnosed at stage 4.



The Targeted Lung Health Check Programme offers lung cancer screening to people who have a history of smoking, are aged 55 to 74, and are at a high risk of having or developing lung cancer.

Our approach

The SPH team has considerable experience in systematically identifying, appraising and synthesising evidence of clinical and cost-effectiveness for healthcare treatments, interventions and potential screening programmes. Our reviewers are trained in critical appraisal techniques and can accurately interpret the evidence of clinical and cost-effectiveness from different study designs.

Since 2005, SPH has completed more than 500 health technology evidence reviews for local and national organisations, including more than 60 evidence reviews and evidence maps for the UK NSC. Our reviews inform local, regional and national commissioning policy.

Work on this project began early in 2021, when we wrote a proposal outlining our experience and approach to conducting the evidence review. Following the award of the contract, we worked with the UK NSC team to agree the evidence questions they wanted to ask and the scope of the review. This considered the effectiveness and acceptability of screening programmes in detecting lung cancer.

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The review also considered contextual questions around the natural history of lung cancer, the accuracy of risk assessment algorithms and the cost effectiveness of screening programmes.

We asked the Bodleian Library at the University of Oxford to conduct an evidence search based on these questions. We assessed around 1,000 abstracts of published studies identified by the evidence search, considering whether they met the criteria for inclusion in the evidence review. We ordered and reviewed the full text of 70 papers to select the studies that addressed the evidence questions.

Next, we drafted the evidence review, assessing and critically appraising the evidence identified against the UK NSC criteria about the harms, benefits and acceptability of a screening programme.

The evidence review report:

- Discussed the risk factors for developing lung cancer, lung cancer incidence and mortality rates in different population groups
- Assessed a range of risk algorithms that have been used to identify the people to be invited for lung cancer screening
- Considered the cost effectiveness of screening for lung cancer using low dose computed tomography
- Critically appraised evidence from nine randomised controlled trials considering the clinical effectiveness of lung cancer screening programmes and their ability to identify people at an earlier stage of lung cancer when treatment is more effective
- Summarised evidence around the acceptability of a lung cancer screening programme to the public, patients and health professionals in the UK.

The evidence review underwent internal quality assurance by the SPH team before it was finalised in partnership with the UK NSC team.

Outcomes

The evidence review concluded that there was sufficient evidence that screening is effective in reducing mortality and morbidity and that UK studies had reported a reasonable level of acceptance of the screening test. A three-month national public consultation attracted 321 responses, many from individuals who have been diagnosed with lung cancer or who have experienced the disease through family members or friends. All feedback was reviewed, and any necessary amendments were made.

The final evidence review was considered by the UK NSC alongside a separate economic evaluation by Exeter University. This resulted in [targeted screening for lung cancer being recommended](#) for people aged 55 to 74 identified as being at high risk of lung cancer.

From evidence to practice

Targeted lung cancer screening has now been implemented in England. Eligible people are being screened and health outcomes have improved – [thousands of people have been identified with early stage lung cancer](#) while it is still treatable. Without screening, these cases may not have been identified until a later date when it was too late for curative treatment.

Lord Darzi's 2023 report on the state of the NHS in England praised the impact the programme has already made and recommended these improvements are celebrated and lessons applied to other areas.

Our role in this project is now complete. However, SPH continues to provide high quality evidence reviews to NHS England and to the Department of Health and Social Care to inform which treatments or screening programmes are recommended for certain conditions based on the evidence available.

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