157P Building a global evidence map of low-dose CT lung cancer screening implementation: approach and data analysis opportunities

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1 • Background

Targeted screening via low-dose computed tomography (LDCT) facilitates earlier detection and could support better outcomes for people living with lung cancer. Lung cancer is often diagnosed at a late stage, when treatment options are limited and survival is poorest.[1,2] Among people who currently smoke or used to smoke heavily, LDCT screening could reduce lung cancer mortality by nearly **one quarter**.[3] The benefits of earlier detection considerably outweigh the risks of radiation exposure and overdiagnosis.[4-6]

Despite these benefits, only a handful of countries have implemented a nationwide organised LDCT lung cancer screening programme. With almost 40 years' worth of research and findings from existing screening programmes,[7-12] the argument to adopt this approach should be clear. But accessing this evidence was challenging; there was no single global repository on LDCT screening implementation.

To help address this need, the Lung Cancer Policy Network has produced a global interactive map of lung cancer screening implementation. The map, developed in close consultation with a multidisciplinary group of more than 50 experts in lung cancer, aims to visualise all ongoing and recently completed implementation studies, national or regional organised programmes, and clinical trials of LDCT screening around the world. While the map may serve as a valuable resource for those directly involved in implementation, it also offers policymakers insights on how to implement feasible, cost-effective, equitable and high-quality screening programmes within their populations.

2 • Methods

A structured search of peer-reviewed and grey literature identified a preliminary list of ongoing LDCT screening programmes and implementation studies completed since 2015.

The findings were used to develop a comprehensive research methodology and framework for data extraction across 70 variables of interest. Network members also provided guidance on the visualisation of the map contents. Where possible, a draft of each entry was sent to study/programme leads for validation.

What questions could the interactive map help to answer?

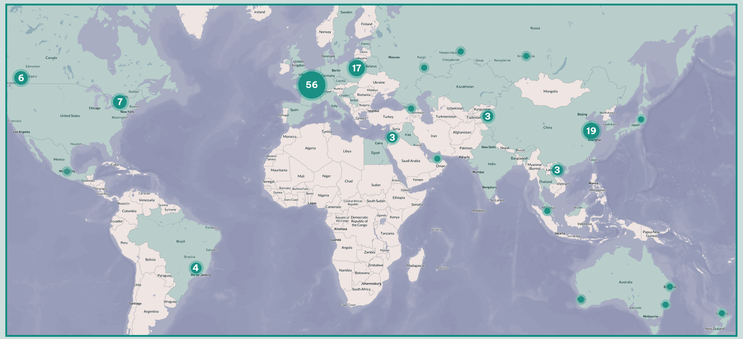
Country-level indicators, such as lung cancer incidence and mortality (GLOBOCAN 2020)[13] or the inclusion of early detection of lung cancer in national cancer control plans, are displayed on an accompanying 'heat map'. This heat map is designed to support policy discussions around the implementation of LDCT screening.

A select number of variables from the full database of variables of interest are visualised on the map as data dashboards. Filters enable analysis of how implementation has been achieved. For example, the map shows which countries or regions:

- Define inclusion criteria via risk modelling
- Apply targeted strategies for outreach (to minimise barriers to participation)
- Offer screening to people who have never smoked
- Embed smoking cessation interventions into the screening pathway
- Evaluate scans with computer-aided detection (CADe) tools
- Collect biospecimens for biomarker studies
- Have outcome data available (e.g. % of participants diagnosed with stage I/II lung cancer)

3 • Results

To date, **133** entries have been included from **38** countries. The first edition of the interactive map was made publicly available in September 2022.



Globally, it was found that as of November 2022:

- **25** countries were conducting implementation research
- **6** countries had formally committed to implementing LDCT screening
- **9** countries were rolling out either national or regionally organised screening programmes

Within Europe, this included **3** countries that have ongoing national screening programmes (Croatia, Czech Republic and Poland).

Table 1. Entries on the map identified as taking the following approaches to implementation

Filters (set as 'yes')	Countries	Entries	Proportion of total entries (N=133)
Define inclusion criteria via risk modelling	18	53	40%
Apply targeted outreach strategies to minimise barriers to participation	22	54	41%
Offer screening to people who have never smoked	11	26	20%
Embed smoking cessation interventions into the screening pathway	21	72	54%
Evaluate scans with computer-aided detection (CADe) tools	18	41	31%
Collect biospecimens for biomarker studies	20	52	39%
Outcomes data available	23	50	38%

4 • Conclusions

Findings from the initial research served as the basis for a report that showcased 15 case studies of real-world implementation from different countries.[14] Key overarching lessons learnt on how to optimise implementation of LDCT screening programmes were:

Lesson one
Tailor eligibility criteria for screening to reach those at highest risk of lung cancer

Lesson two
Develop targeted outreach to address potential barriers to participation in lung cancer screening

Lesson three
Amplify the impact of lung cancer screening by integrating it into other public health initiatives

Lesson four
Ensure the full integration of lung cancer screening into health systems

Download the report

The interactive map is, to our knowledge, the first global database of LDCT screening implementation. As the landscape for LDCT screening is rapidly evolving, the data set will be updated regularly to capture the latest progress in implementation. Ongoing research for the second edition of the map will expand the data set to start mapping implementation in the US. Earlier trials/studies (which ended before 2015) will also be included in future editions.

The Network welcomes study/programme teams to submit data on LDCT screening for inclusion on the interactive map.

Visit the interactive map

LUNG CANCER POLICY NETWORK

Disclaimer:
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For more information about the Network's interactive map, including how to contribute data, please get in touch: secretariat@lungcancerpolicynetwork.com
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References
1. Goldstraw P, Chansky K, Crowley J, *et al.* 2016. *J Thorac Onc* 11(1): 39–51
2. Heist RS, Engelman JA. 2012. *Cancer Cell* 21(3): 448.e2
3. Field JK, Vulkan D, Davies MPA, *et al.* 2021. *Lancet Reg Europe* 10(100179): 1–11
4. Pompe E, de Jong PA, Lynch DA, *et al.* 2017. *Eur Resp Journal* 49(4): 1–8
5. Sands J, Tammemägi MC, Counsul S, *et al.* 2021. *J Thorac Oncol* 16(1): 37–53
6. Rampinelli C, De Marco P, Origgi D, *et al.* 2017. *BMJ* 356(347): 1–6
7. Cheng YI, Davies MPA, Liu D, *et al.* 2019. *Precis Clin Med* 2(2): 13–44
8. Triphuridet N, Henschke C. 2019. *Lung Cancer: Targets Ther* 10: 107–24
9. Servais E. **https://www.ikcn.org/large-ldct-lung-cancer-screening-program-suggests-screening-benefits-far-outweigh-the-risks/**
10. Pinsky PF. 2018. *Transl Lung Cancer Res* 7(3): 234–42
11. Henschke CI, Yip R, Shaham D, *et al.* 2021. *J Thorac Imaging* 36(1): 6–23
12. Poon C, Hoderi A, Roediger A, *et al.* 2022. *Health Policy* 126(9): 879–88
13. Ferlay J, Ervik M, Lam F, *et al.* 2020. **https://gco.iarc.fr/today**
14. Lung Cancer Policy Network. 2022. *Lung cancer screening: learning from implementation.*