



The Status of Lung Cancer Screening Implementation in Europe

European-Taiwan Cancer Screening Conference 2026

October 7, 2026

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Conflict of interest disclosure

☒ **I have no real or perceived conflicts of interest that relate to this presentation.**

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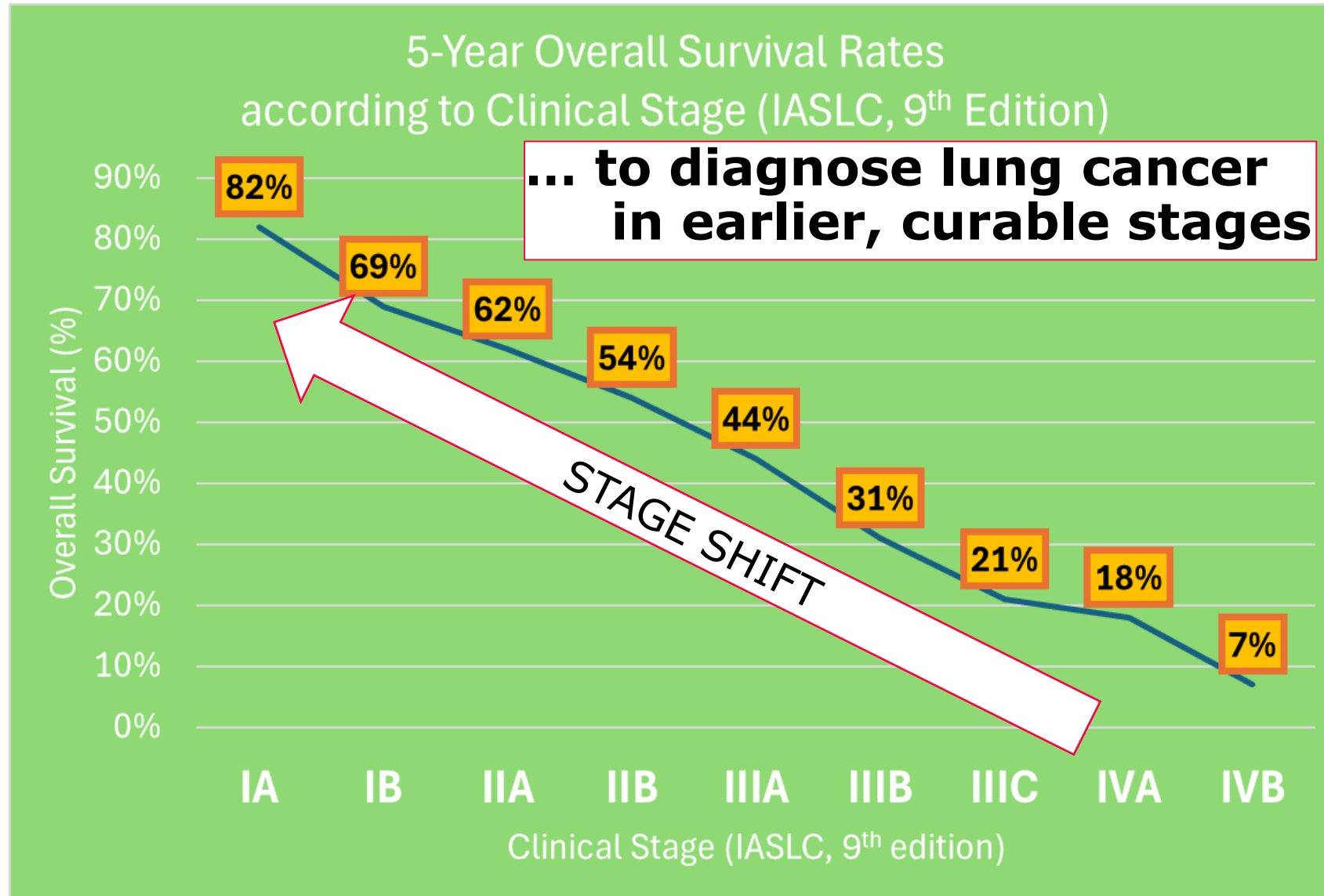
Affiliation / Financial interest	Commercial company
Grants/research support:	EU4Health, EU IMI, EU IHI (all institutional)
Honoraria or consultation fees:	Astra, Boehringer Ingelheim, Lilly, MSD, Pfizer, Roche (all institutional)
Participation in a company sponsored bureau: ----	-
Stock shareholder: ----	-
Spouse / partner: ----	-
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rationale & evidence-basis

—

low-dose CT lung cancer screening

the aim of LDCT screening for lung cancer ...



the evidence-basis of LDCT screening for lung cancer ...

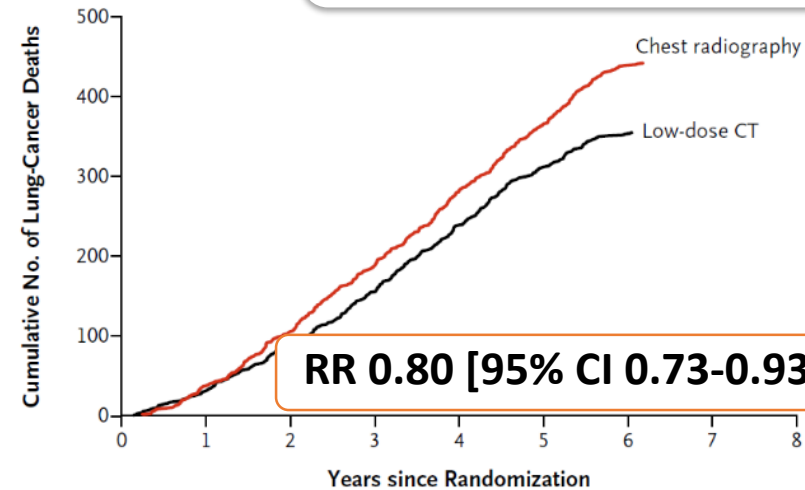
10 RCTs:
LDCT vs.
2 chest x-ray / 8 no screening

		Individuals	LDCT vs.
DANTE	I	2450	--
DEPISCAN	F	765	chest x-ray
DLCST	DK	4104	--
ITALUNG	I	3206	--
LSS	USA	3318	--
LUSI	D	4052	--
MILD	I	4099	--
NELSON	NL/B	15822	--
NLST	USA	53452	chest x-ray
UKLS	UK	4055	--

risk-based approach:
-9 RCTs: age plus smoking consumption
-UKLS: lung cancer risk model (LLP)

National Lung Screening Trial (USA) (52,344 participants)

B Death from Lung Cancer

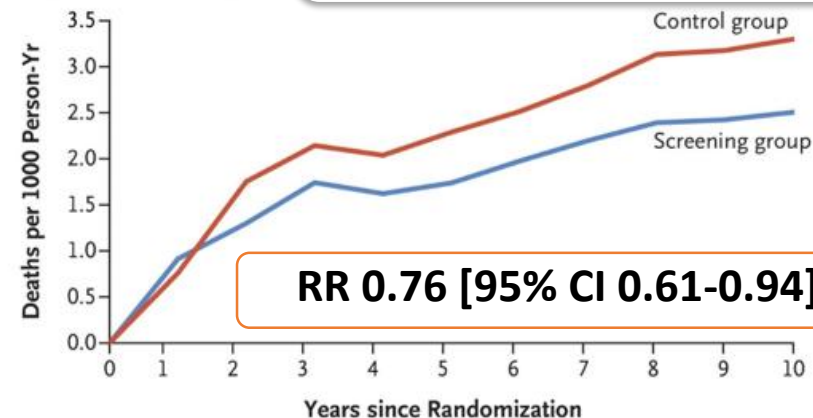


NLST Research Team
N Engl J Med
2011; 365: 395-409
2013; 368: 1980-1891

- significant reduction of lung cancer-related mortality
- more pronounced in women

NELSON (NL/B) (15,792 participants)

B Lung-Cancer Mortality

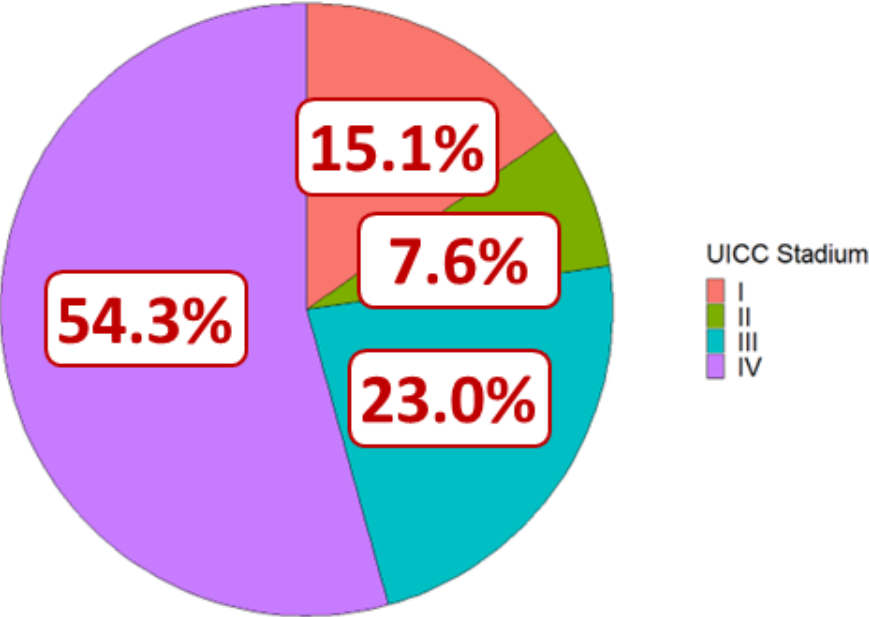


De Koning H et al.
NEJM 2020

real-world data of LDCT screening for lung cancer ...

Lung Cancer (Germany)

majority of patients diagnosed
with stage IV disease at time of diagnosis
(no LDCT LCS programme in Germany)



All (n = 263,589)

Stage distribution (all, males and females)
(N = 263,589 – 2000-2022)

Blum T et al. 2024



Lung Cancer (Taiwan)

Stage-shift resulting after national
LDCT-lung cancer screening implementation

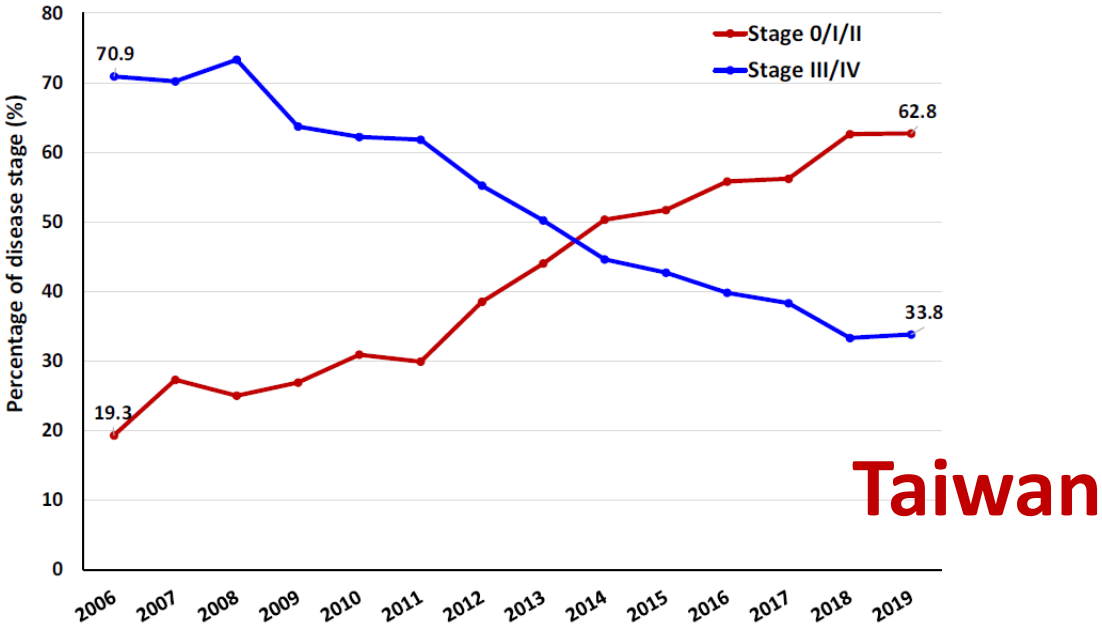


Figure 5. Change in localized (stage 0/I/II) and advanced (stage III/IV) lung cancer from 2006 to 2019 in NTUH. NTUH, National Taiwan University Hospital.

Yang CY et al. J Thor Oncol 2022; 18:47-56

state of play and needs



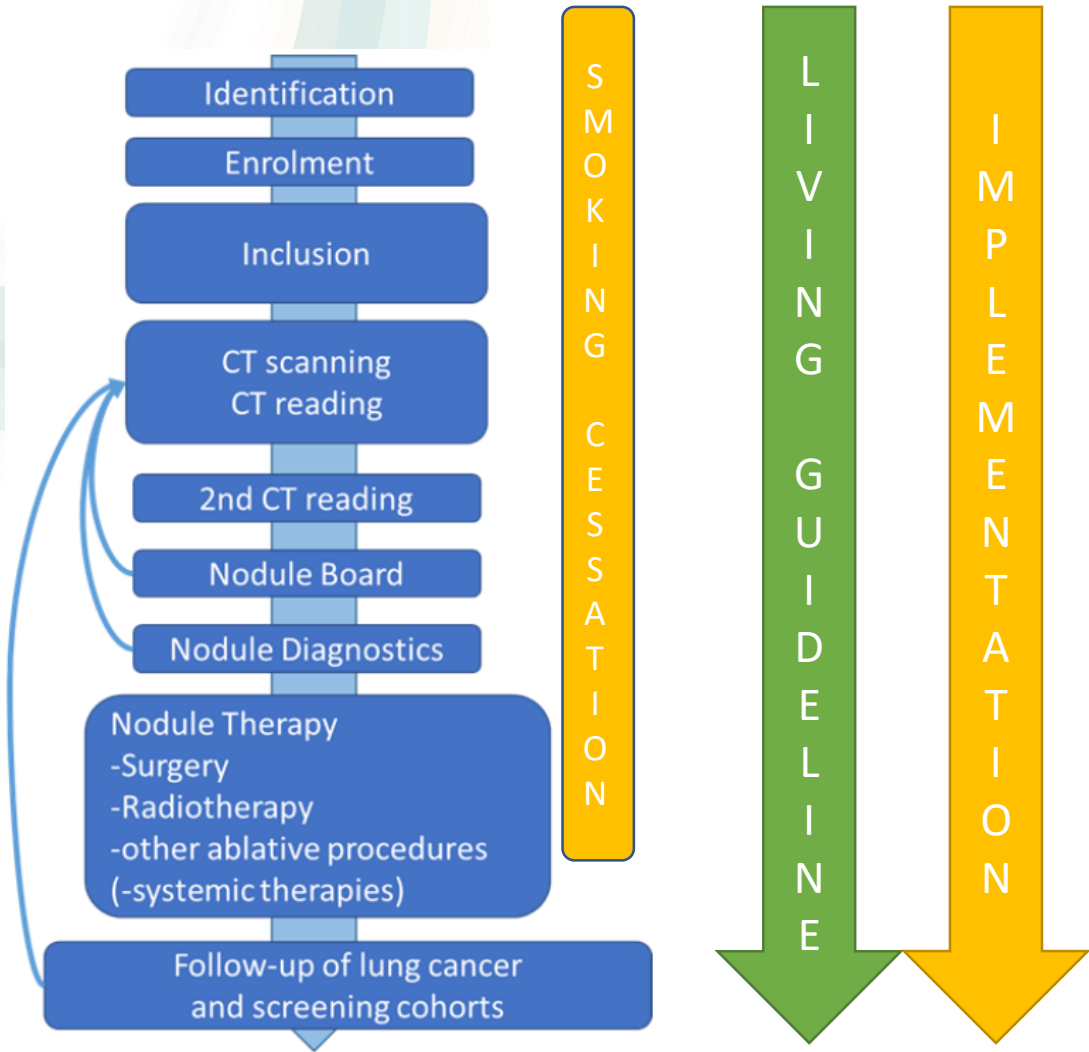
Lung Cancer Screening Implementation in Europe

EU4Health SOLACE: facilitating implementation of LDCT LCS within EU-countries

– unique collaborative network with ...

... all relevant medical societies
& patient organizations

... key opinion leaders
& academic institutes



- Level of access by SOLACE
- EU: status data
 - other EAA: status data
 - EU: status+trial/pilot data
 - EU: status data, Implementation plan project



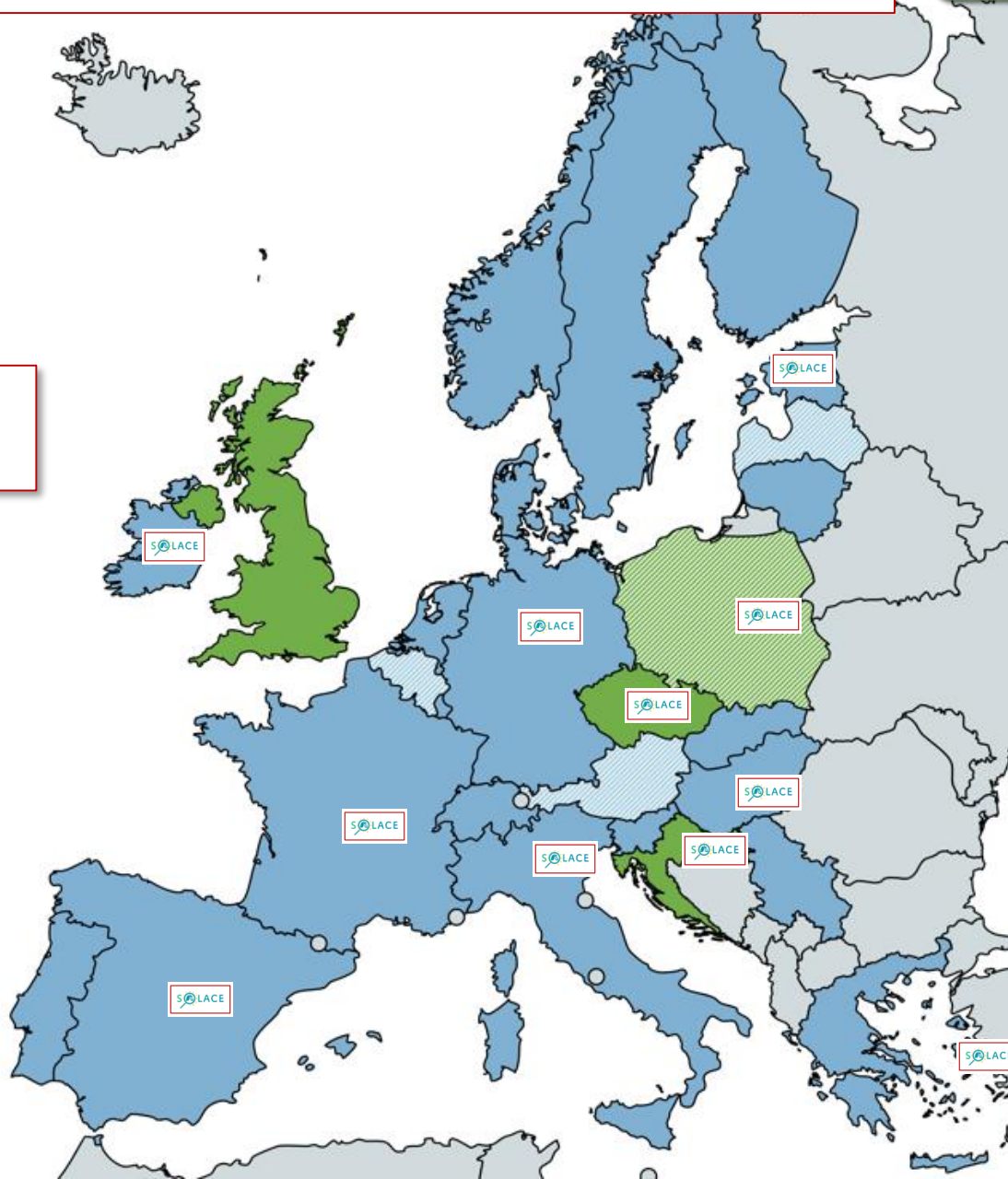
Status of National/Regional Lung Cancer Screening Implementation Pilots

SOLACE National Expert Teams
describing current practices and needs in
lung cancer screening in all EU MS



- National Lung Cancer Screening Programme on-going
- National Lung Cancer Screening Programme planned
- Lung Cancer Screening Pilot on-going
- Lung Cancer Screening Pilot planned

**Update from
July 2026**



- **National programmes in Croatia, Czech Republic and UK**
- **Poland to start national programme in 10/2026**
- **Germany reimbursed LCS since 04/2026 (no full programme)**
- **20 EU Member States and Norway have on-going LCS implementation pilots**
- **SOLACE has been running three implementation pilots in 11 countries**

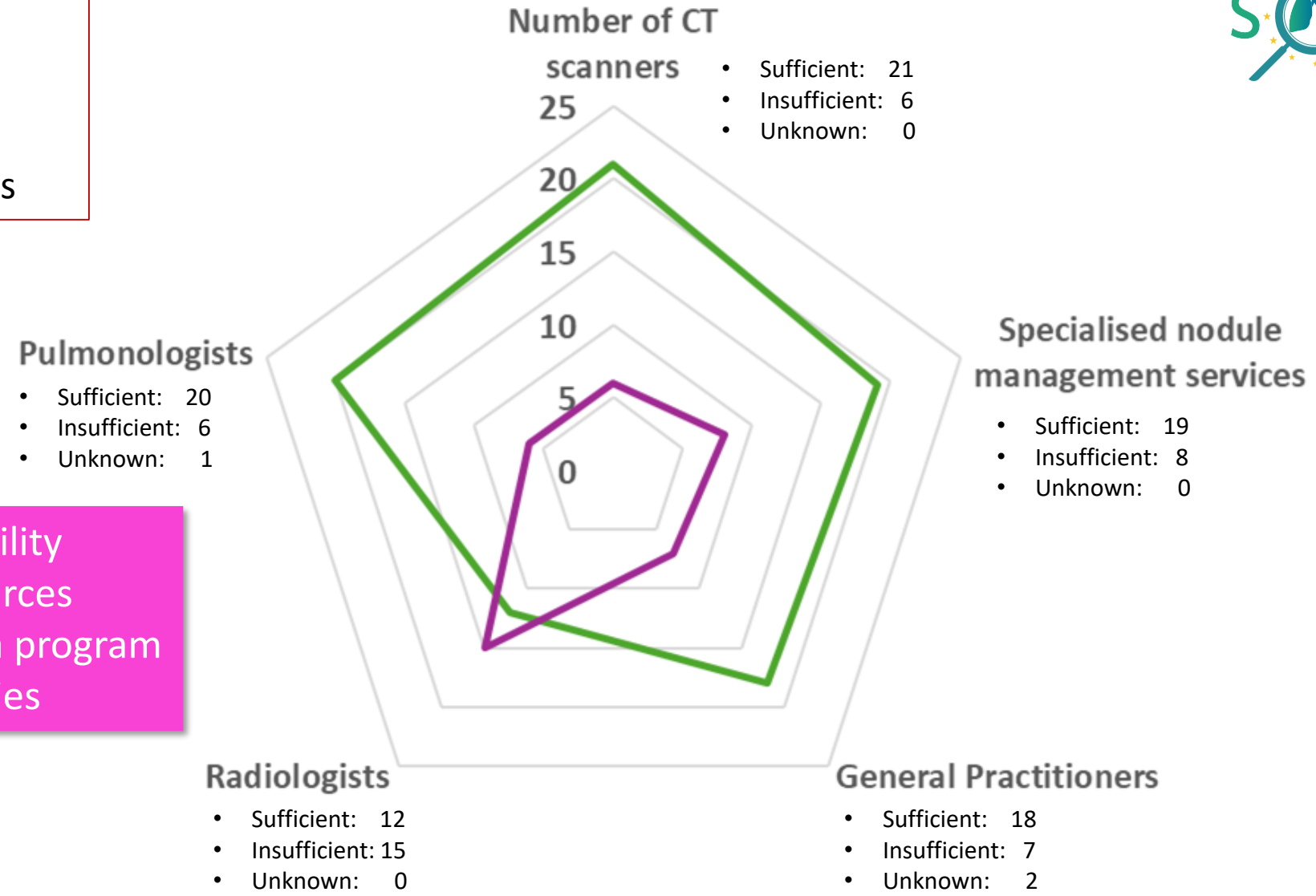
Blum TG et al.
SOLACE Baseline Semi-structured Interviews.
Unpublished data

Assessment of available *professional* resources to implement a National Lung Cancer Screening program within EU Member States



Varying availability of human resources needed for running a program across countries

— Sufficient — Insufficient





Design of the first national lung cancer screening program in the European Union – the Croatian model

The Croatian National Lung Cancer Screening Program was implemented in Oct 2020 in accordance with published scientific data and recommendations from European Position Statement on Lung Cancer Screening, adopting modified I-ELCAP guidelines, using LDCT, artificial intelligence, volumetric analysis of lung nodules while being completely digitalized.

Inclusion criteria: 50 to 75 years; 30 pack-year smoking history, active smokers or have quit smoking during the last 15 years

Exclusion criteria:

1. Presence of symptoms that indicate a possible malignant disease
2. Regular chest CT performed in the last 12 months
3. If the patient has been treated for lung cancer in the last 5 years
4. If the patient's general condition prevents the planned diagnostic procedures
5. Inability to give consent
6. Inability to lie flat, hold breath and claustrophobia

24
radiology
centers

Oct 2020 – Aug 2025:

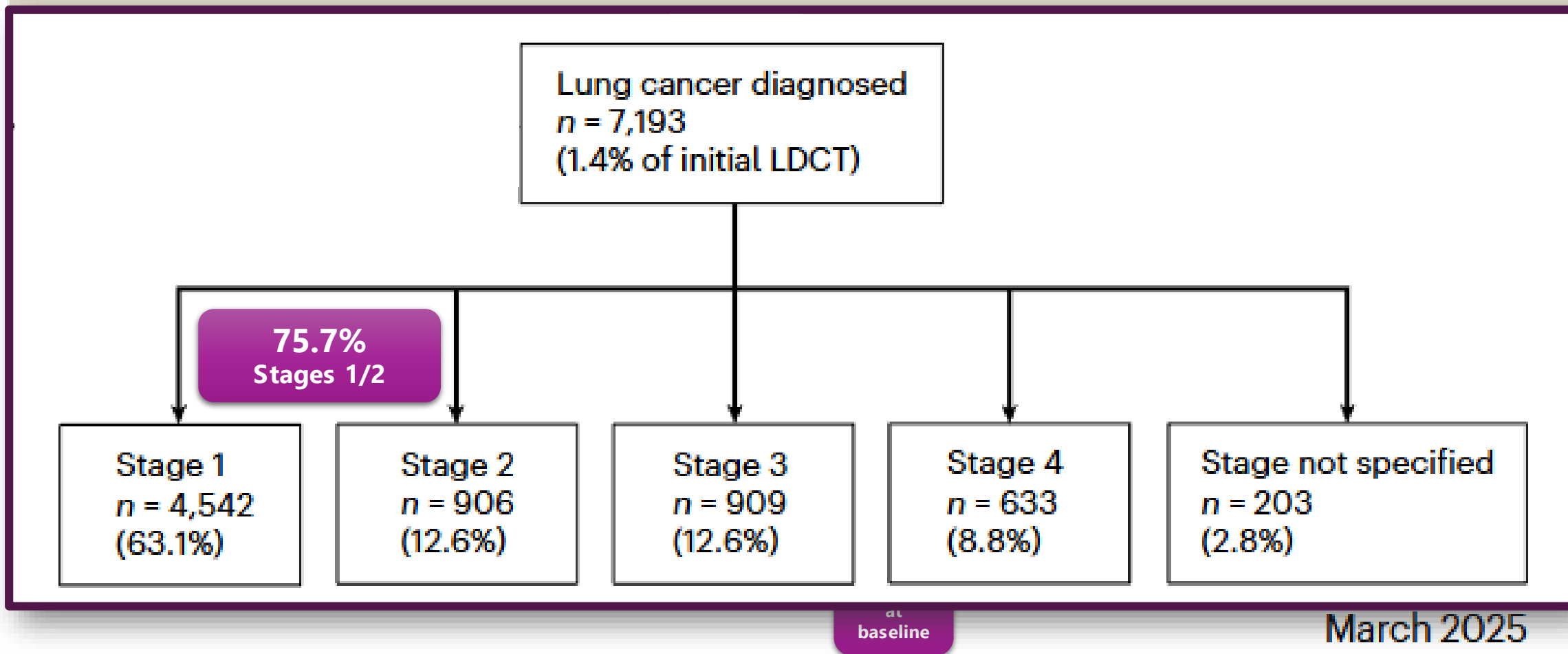
- > 50,000 participants
- > 70,000 LDCT-scans
- 54% males, 46% females
- average age of 62 years
- 4.5% had positive results
- 2% any cancers
(1.7% lung cancers)

This is the **first national lung cancer screening program in the EU** and completely integrated into the existing healthcare system with the placement of GPs in the central role.



UK (England)

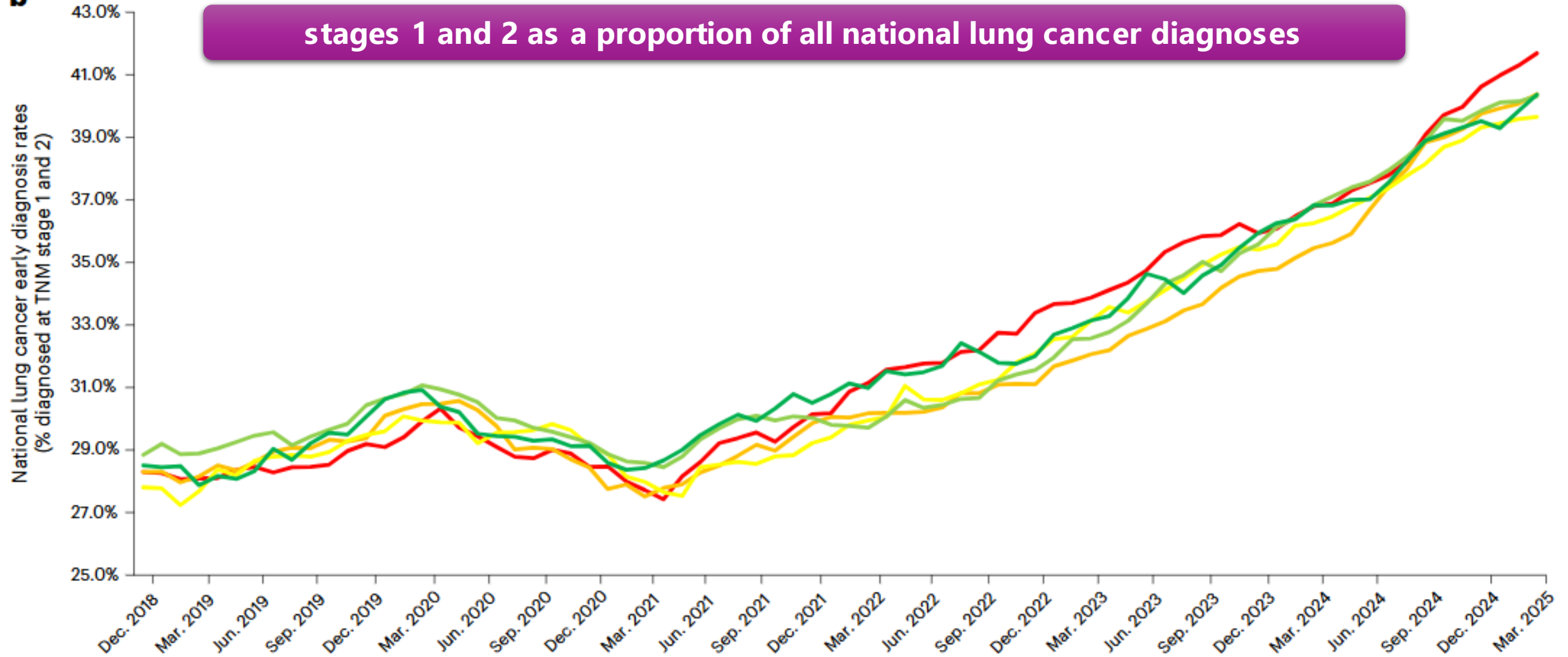
Whole-program data





UK (England)

b



guidelines and quality assurance

Lung Cancer Screening Implementation in Europe

Previous work by ERS & Partner Societies, ATS/ALA, I-ELCAP and Others to build upon



Developing a pan-European technical standard for a comprehensive high-quality lung cancer computed tomography screening programme: an ERS technical standard

David R. Baldwin^{1,2}, Emma L. O'Dowd², Ilona Tietzova³, Anna Kerpel-Fronius⁴, Marjolein A. Heuvelmans^{5,6}, Annemiek Snoeckx⁷, Haseem Ashraf^{8,9}, Hans-Ulrich Kauczor¹⁰, Blin Nagavci¹¹, Matthijs Oudkerk⁶, Paul Martin Putora^{12,13}, Witold Ryzman¹⁴, Giulia Veronesi^{15,16}, Andrea Borondy-Kitts¹⁷, Antoni Rosell Gratacos¹⁸, Jan van Meerbeeck¹⁹ and Torsten G. Blum²⁰

Eur Respir J . 2023; 2300128. doi: 10.1183/13993003.00128-202

ERS/ESTS/ESTRO/ESR/ESTI/EFOMP statement on management of incidental findings from low dose CT screening for lung cancer

Emma L. O'Dowd^{1,2}, Ilona Tietzova³, Emily Bartlett⁴, Anand Devaraj⁴, Jürgen Biederer^{5,6,7,8}, Marco Brambilla⁹, Alessandro Brunelli¹⁰, Joanna Chorostowska-Wynimko¹¹, Herbert Decaluwe¹², Dirk De Ruysscher¹³, Walter De Wever¹⁴, Matthew Donoghue¹⁵, Aurelie Fabre¹⁶, Mina Gaga¹⁷, Wouter van Geffen^{18,19}, Georgia Hardavella²⁰, Hans-Ulrich Kauczor^{5,6}, Anna Kerpel-Fronius²¹, Jan van Meerbeeck²², Blin Nagavci²³, Ursula Nestle²⁴, Nuria Novoa²⁵, Helmut Prosch²⁶, Mathias Prokop²⁷, Paul Martin Putora^{28,29}, Janette Rawlinson³⁰, Marie-Pierre Revel^{31,32}, Annemiek Snoeckx³³, Giulia Veronesi³⁴, Rozemarijn Vliegthart³⁵, Sabine Weckbach^{36,37}, Torsten G. Blum³⁸ and David R. Baldwin^{1,2}

Eur Respir J . 2023; 62(4):2300533. doi: 10.1183/13993003.00533-2023

Thomson CC et al. American Thoracic Society/American Lung Association Lung Cancer Screening Implementation Guide. Am J Respir Crit Care Med 2018 Nov 1;198(9):1120-1121. doi: 10.1164/rccm.201809-1699ED;

<https://www.lungcancerscreeningguide.org>

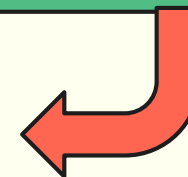
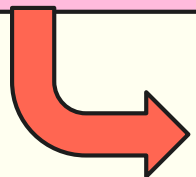
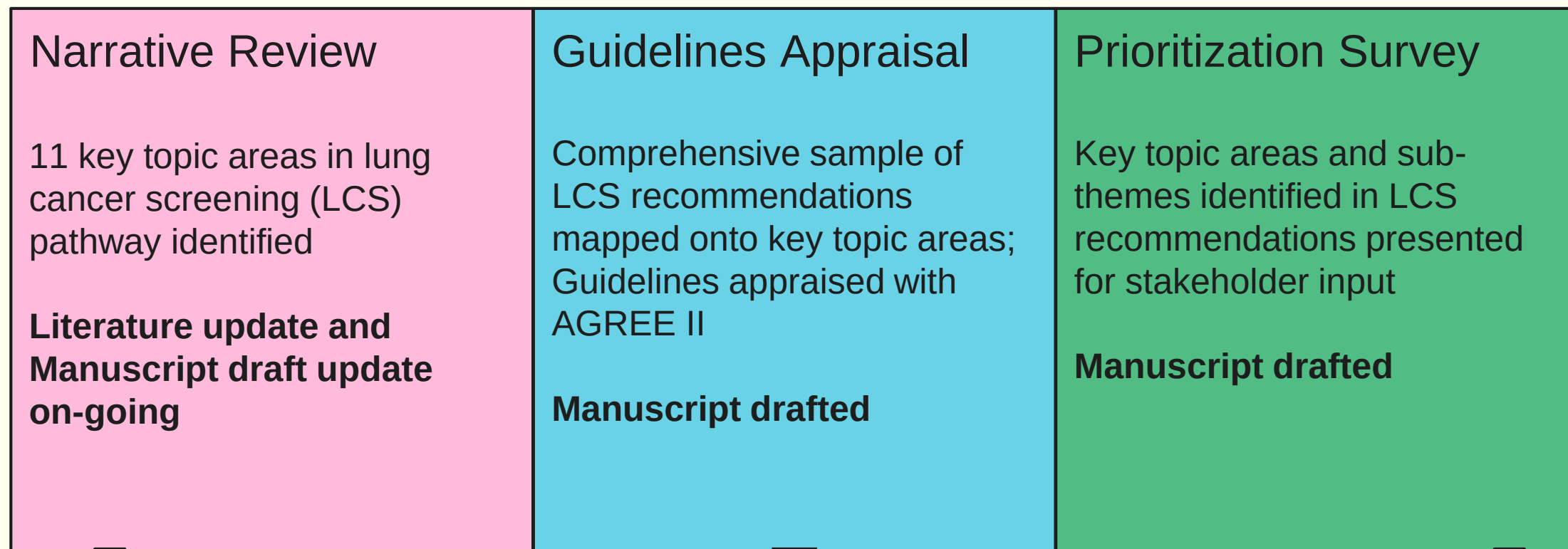
The International Early Lung Cancer Action Program.

<https://www.ielcap.org/>



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SOLACE Guideline, Quality assurance and Implementation Package (GIP)



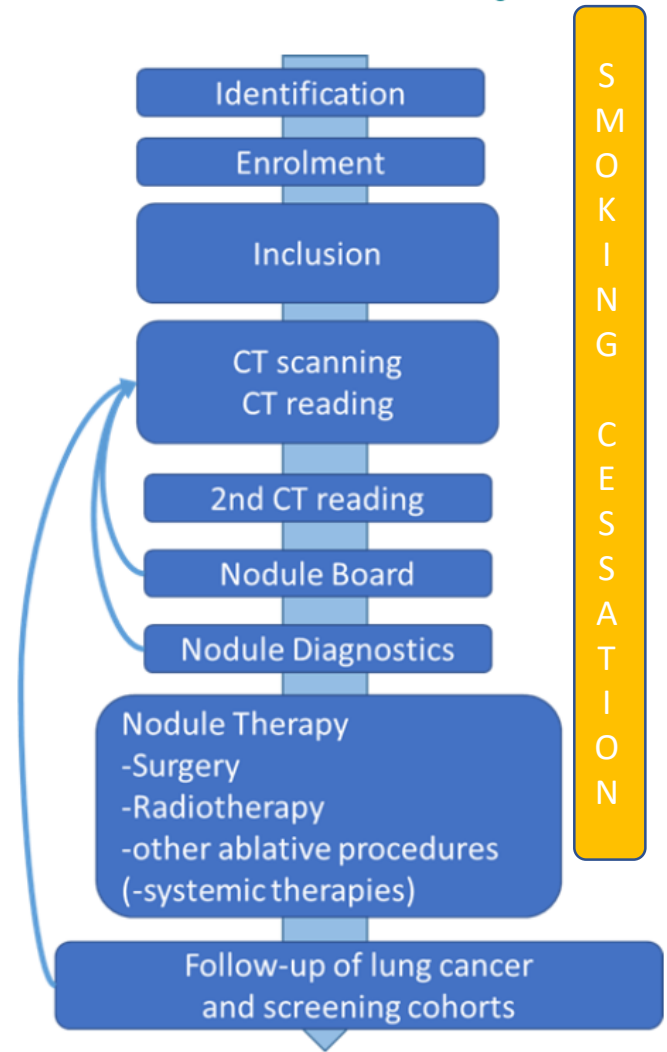
Key questions to address
SOLACE LCS Guideline Recommendations

SOLACE GIP – *list of module topics:*

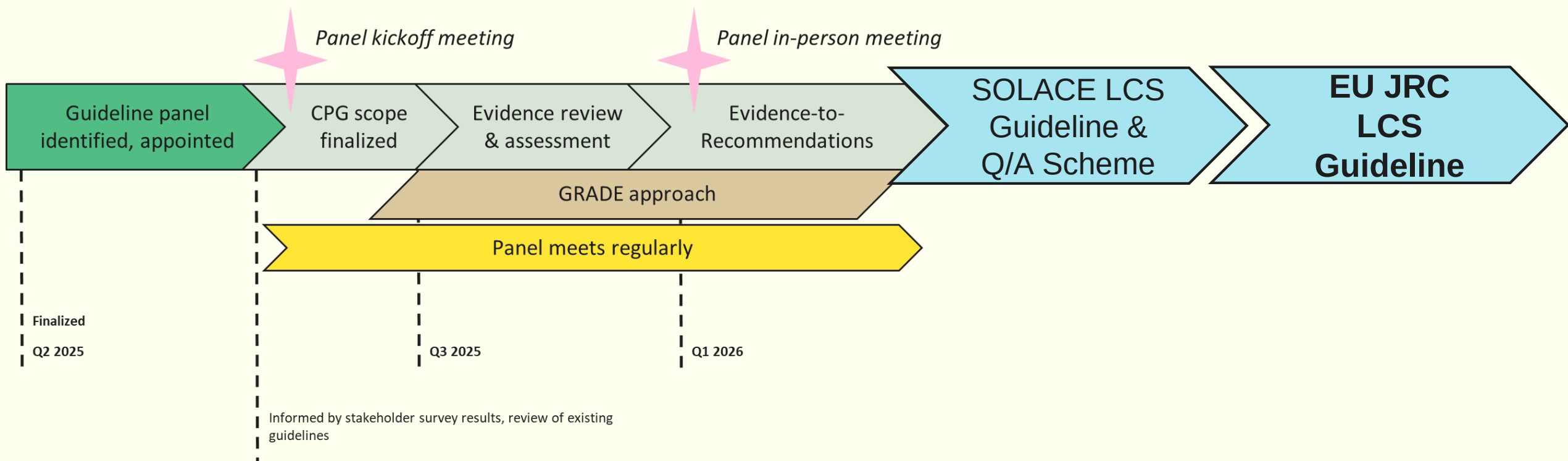


Module Topics

M1	LDCT LCS vs. no LDCT/conventional chest x-ray screening
M2	Structured LDCT LCS program and Quality assurance
M3	Eligibility criteria and risk models, liquid biopsies
M4	Identification and invitation
M5	Patient communication and shared decision making
M6	LDCT protocols requirements, radiation exposure LDCT reporting, software and artificial intelligence Structured LDCT reading and reporting
M7	Nodule management, multidisciplinary nodule board
M8	Surveillance, CT intervals
M9	Management of incidental findings
M10	Participant pathway, barriers/disparities and lung health check
M11	Smoking cessation counselling
M12	Cost estimations
M13	Education and training of healthcare personnel



GIP: Development of LCS Guideline & Quality Assurance Scheme



SOLACE Lung Cancer
Screening Guideline
following JRC standards

SOLACE LCS Quality Assurance
Scheme
following JRC standards



5-9 September | Barcelona, Spain

New joint guideline : translating evidence into decisions and **clinical pathways for positive screen-detected nodules**

Torsten Blum for the Task Force Panel

Institute of Clinical Research, Medical School Berlin

Lungenklinik Heckeshorn, Helios Klinikum Emil von Behring, Berlin

current LDCT Lung Cancer Screening algorithm

target population:
former/active smoker

high risk for lung
cancer
+age
+smoking habits
+/-risk model

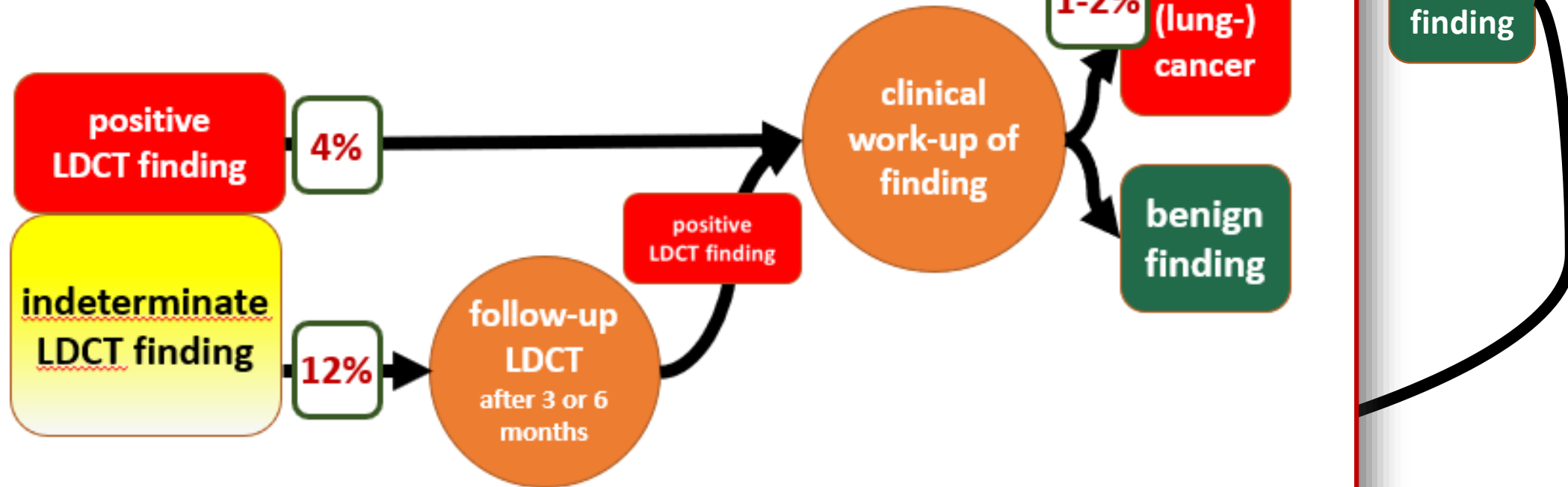
eligibility criteria
for LDCT
screening



EXIT
LDCT
Screening

Scope of our Guideline:

Management of the positive LDCT findings
in Lung Cancer Screening
(=nodules with high malignancy risk in LDCT)



Our Task Force Panel: Truly multidisciplinary, truly European!



Co-chairs:

Torsten Gerriet Blum (Germany)
Revel (France)

Literature searches

Valérie Durieux (Belgium)
Falko Krause (Germany)
Tabea Henschke (Germany)

Methodology

Valérie Labonté (Germany)
Ingrid Töws (Germany)
Saskia Bos (Belgium)
Steven Walker (United Kingdom)

Coordination, Project Management

Jelinke Wijnen (Belgium)

Patient Representation, ELF

Janette Rawlinson (United Kingdom)

Oke Dimas Asmara (Netherlands)
Clare Williams (United Kingdom)

Wouter H. van Geffen (Netherlands)

Marie-Pierre

Oncology

Thierry Berghmans (Belgium)

Pulmonology

David R. Baldwin (United Kingdom)
Maria Joana Catarata (Portugal)
Joanna Chorostowska-Wynimko (Poland)
Armin Frille (Germany)
Georgia Hardavella (Greece)
Marjolein A. Heuvelmans (Netherlands)

Emma O'Dowd (United Kingdom)
Aleš Rozman (Slovenia)
Ilona Tietzova (Czech Republic)

Nuclear Medicine

Fergus Gleeson (United Kingdom)

Radiology

Thomas Frauenfelder (Switzerland)
Hans-Ulrich Kauczor (Germany)
Mario Silva (Italy)

Radiology

Annemiek Snoeckx (Belgium)

Radiotherapy

Dirk de Ruyscher (Netherlands)

Corinne Faivre-Finn (United Kingdom)

Antonin Levy (France)

Thoracic Surgery

Alessandro Brunelli (United Kingdom)

Isabelle Opitz (Switzerland)
Maria Rodriguez (Spain)

Rolof Gijtenbeek (Netherlands)

Miles Harder

Project Design of our Task Force

7 PICO Questions:

1. PET/CT vs. no PET/CT
2. Pre-surgical biopsy vs. direct surgery
3. Navigational vs. standard bronchoscopy
4. Surgery vs. SBRT in stage IA NSCLC
5. Surgery vs. SBRT in unconfirmed nodules
6. SBRT vs. other thermal ablation in patients unfit for surgery
7. Watchful waiting vs. surgery in non-solid nodules

4 Narrative Questions:

1. Thresholds
2. Algorithms
3. Organisational standards
4. Biomarkers

Systematic
Literature
Search

Evidence Synthesis

GRADE Appraisal

Evidence-to-Decision
Frameworks
based on
direct
and
indirect evidence

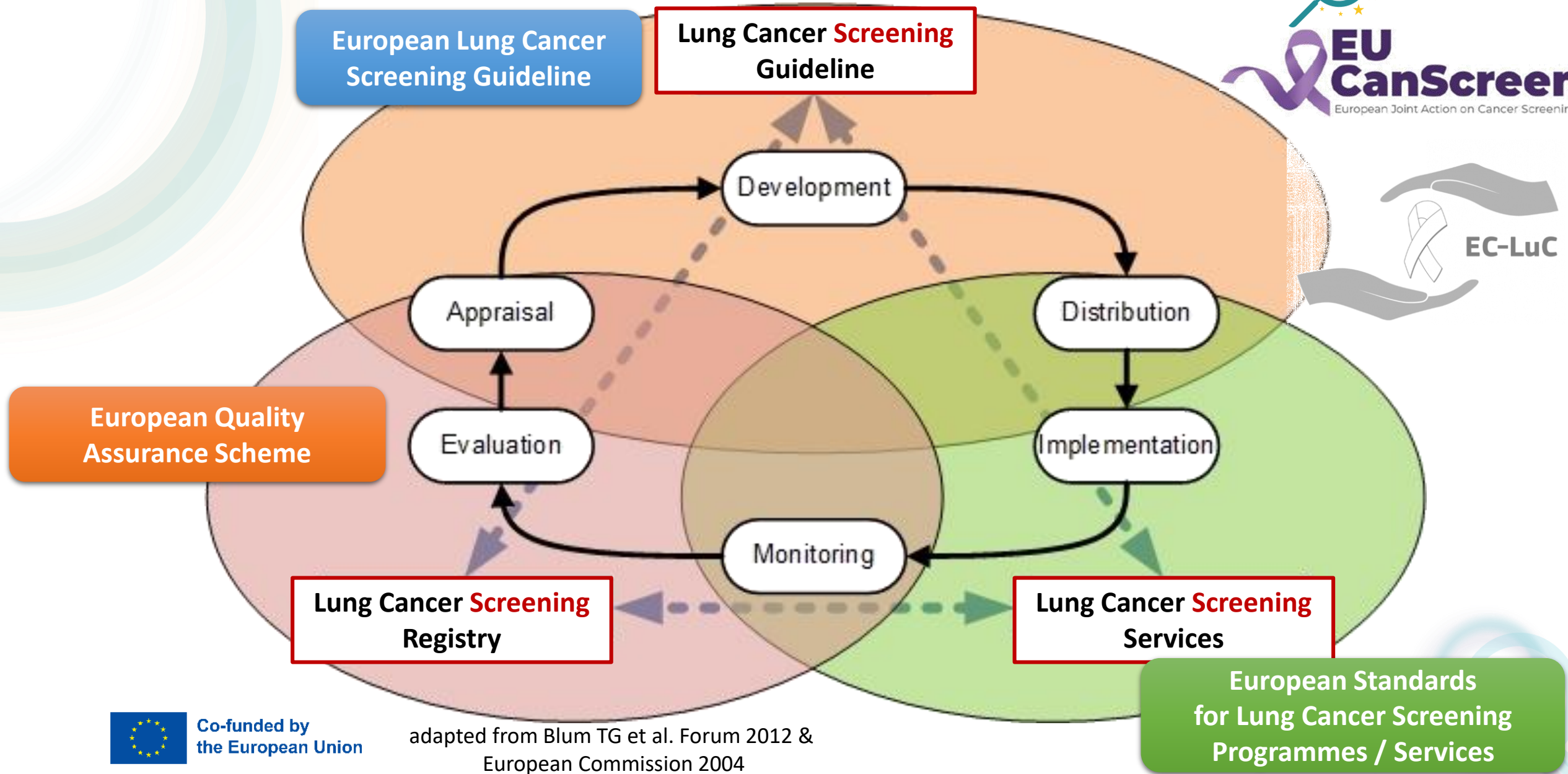
Evidence Synthesis

Recommendations

Summary

- **Positive nodule management is central to the safety, efficiency and benefit of LDCT screening.**
- **Evidence remains limited:** predominantly observational, heterogeneous and often indirect, with mostly very low certainty.
- **Morphology and growth drive risk assessment:** solid, part-solid and non-solid nodules require different pathways.
- **Diagnostics should be selective and MDT-based:** PET/CT and biopsy are useful in selected cases, while avoiding unnecessary invasive procedures.
- **Treatment follows surgical fitness:** surgery remains preferred for operable stage I disease; SBRT is the main non-surgical alternative.
- **Structured implementation is essential:** long-term surveillance for non-solid nodules, standardised pathways, quality assurance and further screening-specific research.

Towards an EU Lung Cancer **Screening** Guideline Cycle



Two-Level Quality Assurance Scheme in EU Cancer Screening

Healthcare perspective



Aggregated Data Collection &
Umbrella Data Analysis / Reporting



Cancer disease perspective



National Programmes (Croatia, Czech Republic in LCS) & National Pilots
(Prostate, Lung, Gastric)

- Data Collection & Curation
- Disease-Specific Data Analysis
- Feedback to Programmes / Sites



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About to start in October 2026 in fact tomorrow



European Commission Initiative on Lung Cancer



The objective of the European Commission Initiative on Lung Cancer (EC-LuC) is to develop evidence-based recommendations for cancer prevention, screening and diagnosis, and a voluntary European quality assurance scheme for lung cancer care services.

Based on the latest scientific evidence available, the EC-LuC seeks to offer clear and independent guidance on prevention, screening and care to healthcare providers and individuals.

.... the official EU on Lung Cancer Screening,
Lung Cancer Diagnostics and Quality Assurance



Co-funded by
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<https://cancer-screening-and-care.jrc.ec.europa.eu/en/ec-luc>

LCS in Germany from April 2026

or   !



**Gemeinsamer
Bundesausschuss**

Über den G-BA ▼

> Themen

Richtlinien

I

🏠 > Themen > Methodenbewertung > Erwachsene > Krebsfrüherkennung > Lungenkrebs-Screening

Lungenkrebs-Früherkennung für Raucher

But at this stage, it will be only a
LCS measure,

EU LCS guideline mandatory for
structured programme

... können ein Angebot auf
Lungenkrebs-Früherkennung geben. Den Beschluss zur Einführung der neuen Früh-
erkennunguntersuchung auf Lungenkrebs fasste der G-BA am 18. Juni 2025, er wird
in Kürze auf der Website veröffentlicht.

moving from pilots to programme, optimisation of lung cancer screening

Lung Cancer Screening Implementation in Europe

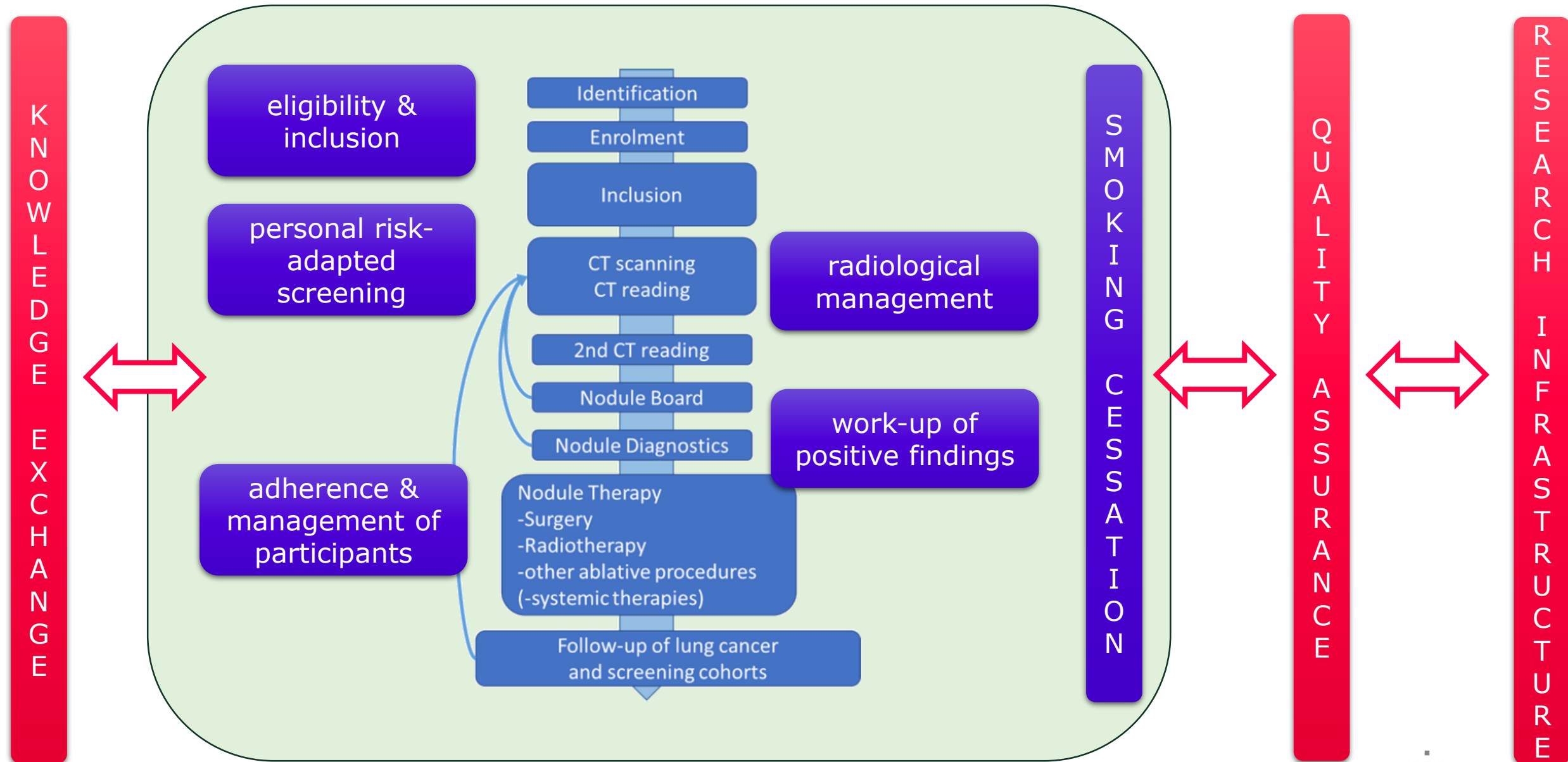
Moving from implementation pilots to national programmes

– Structure and organisation

“It makes a huge difference
if you run a LCS pilot
or
a fully structured national LCS programme”

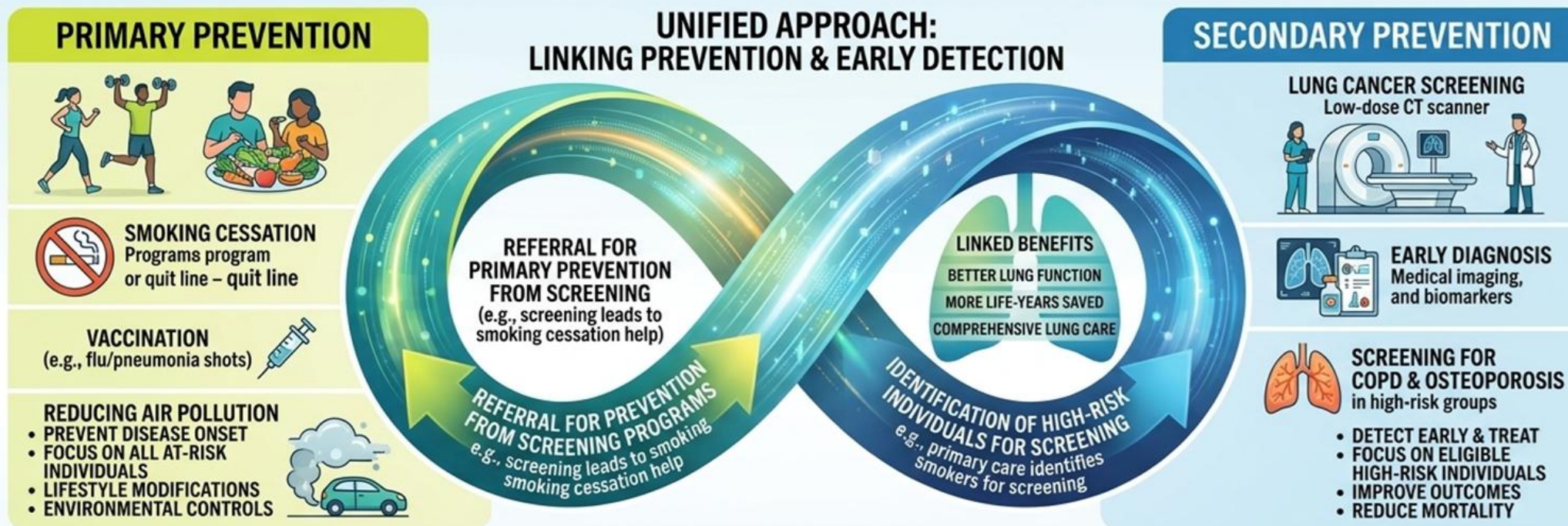
(David Baldwin)

Need: optimisation of lung cancer screening programmes



We need both – primary and secondary prevention!

PRIMARY AND SECONDARY PREVENTION: A POWERFUL ALLIANCE FOR LUNG HEALTH



KEY MESSAGE: NOT EITHER/OR, BUT BOTH



A SYNERGISTIC STRATEGY



INTEGRATED PATIENT-CENTRIC APPROACH



EFFICIENT USE OF HEALTH RESOURCES



GLOBAL HEALTH IMPACT & HEALTHIER COMMUNITIES

Comprehensive Section on Lung Cancer Screening:

- European Landscape and Current State of Play in Lung Cancer Screening
- Evidence-Based Cancer Screening Practices: Literature Review
- Key Components and Operational Elements of Lung Cancer Screening Programmes
 - Governance and organisation of national lung cancer screening programmes
 - Integration of primary and secondary prevention
 - Integrating Hard-to-reach and vulnerable groups to improve inequities
 - Training, accreditation, and quality assurance and auditing of screening centres
- Potential for optimization of lung cancer screening programmes
- Areas of further research
- Call for action for policy-decision makers
 - How to move from scientific evidence to implementation?
 - Scaling up from pilots to national organised screening programmes?

Lung Cancer Screening Implementation in Europe



We will collaborate



SOLACE +
– we will continue!

**Taiwan National
Lung Cancer Early Detection**

Program



Lung

Cancer



Screening





Thank you!

Torsten Blum

Please, let's get in touch:

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 **Helios**
Lungenklinik Heckeshorn

<https://eucanscreen.eu/>

 **MSB** Medical School Berlin
Hochschule für
Gesundheit und Medizin



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