

Lung Cancer Screening in Practice

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*Prescribing information is available at this meeting and can be accessed from the links at the end of this deck.
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Disclosures



Professor Richard Booton: I have received honoraria and hospitality from Siemens Healthineers and hospitality from Cobalt Medical Imaging. Additionally, I have received an honorarium for my participation in the 2024 Think Again Lung Summit from AstraZeneca.

I am also the National Clinical Director for InHealth Group TLHC Programme.

Session Agenda



Brief overview of lung cancer screening programmes available

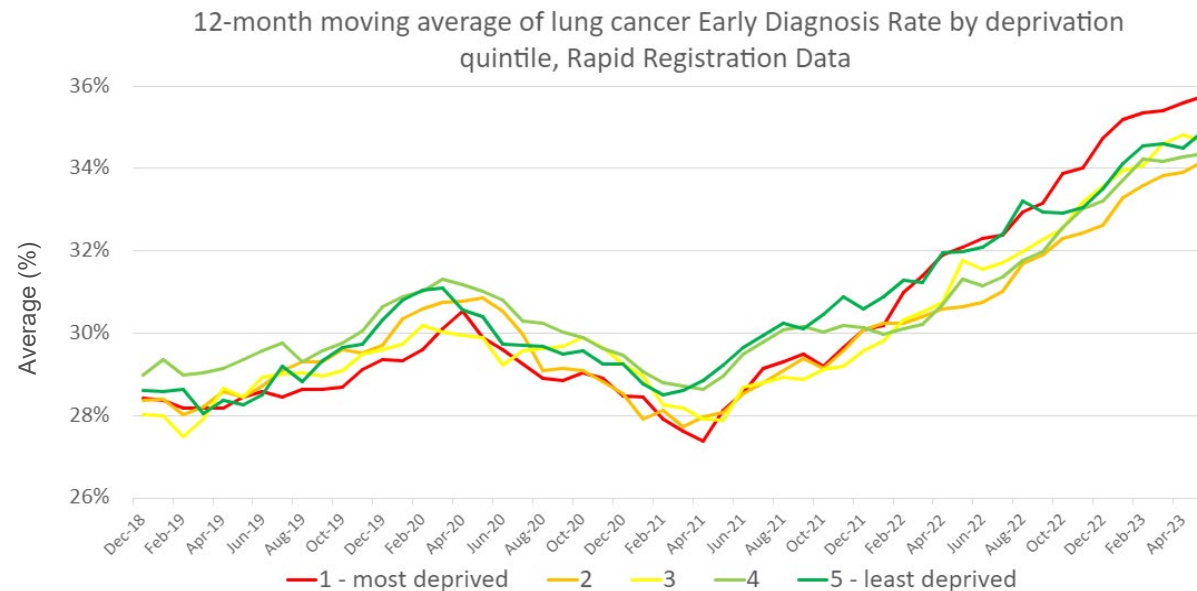
Optimising Screening Uptake

Impact of Screening on MDT & Treatment Decision Making

Targeted Lung Health Checks are transforming the early diagnosis of lung cancer, especially for the most disadvantaged



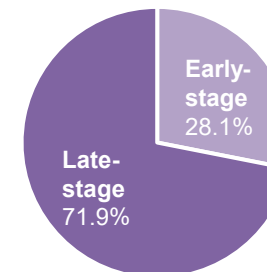
- More than one million people (1,052,083) have been invited for a lung cancer check, as part of the biggest programme to improve early lung cancer diagnosis in health service history
- The service is live in over 50 places and issuing 50,000 invitations a month – up from 1,500 pre-pandemic
- Over 2,700 cancers already diagnosed – three quarters at stage 1 or 2 (vs circa 30% historically)
- Most disadvantaged now the most likely group to have lung cancer diagnosed early



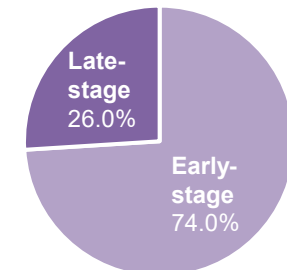
TLHC, targeted lung health check.

Stage of lung cancer diagnosed

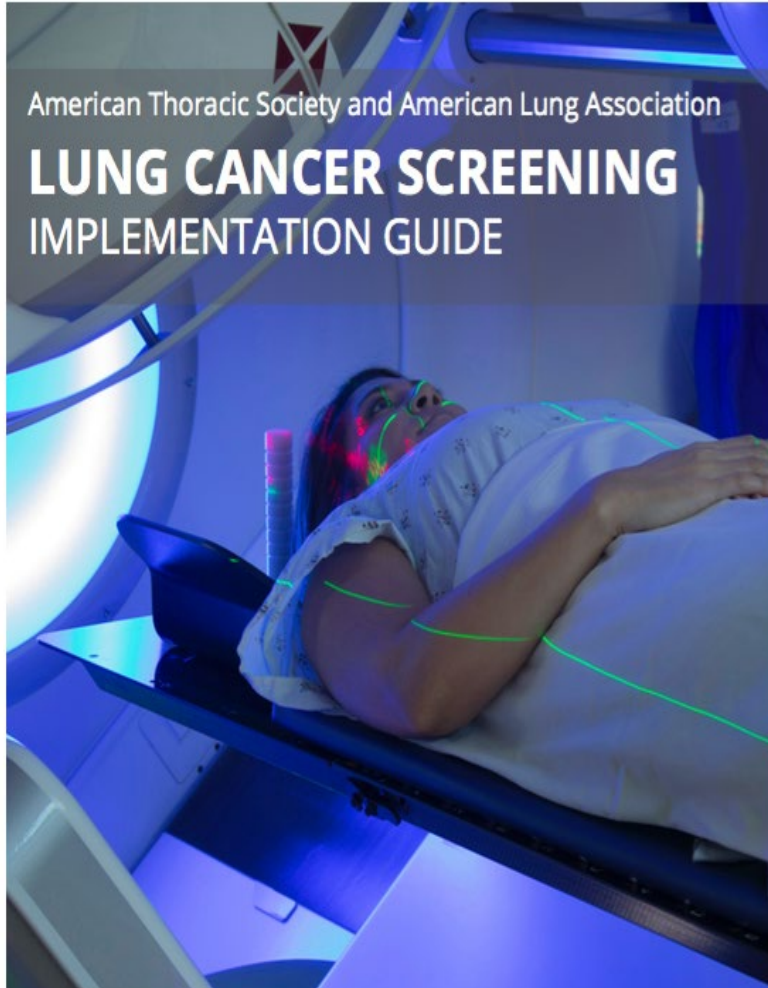
England



TLHCs



Designated centres minimise investment & maintain quality^{1,2}



The present guidelines for CT screening from Medicare, USPSTF, NCCN, ALS, AATS, ACS and IASLC state that screening should only be done in centers with multidisciplinary capabilities and organisation

Available capabilities should include:

- Pulmonology
- Thoracic pathology
- Thoracic radiology
- Thoracic surgery
- Pulmonary oncology

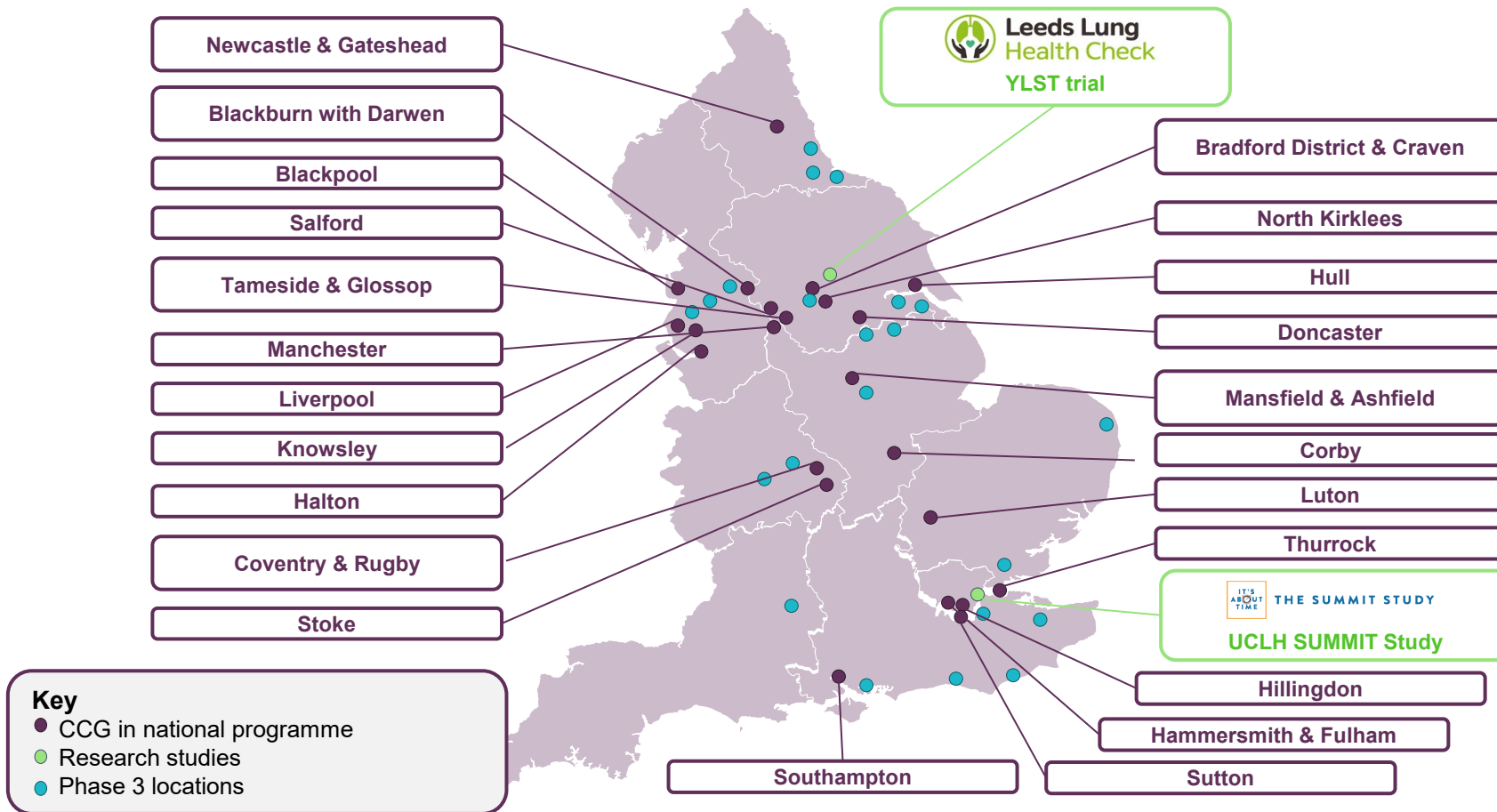
Includes:

- Radiology QA, lung volume volumetric software, expertise in CT biopsy particularly nodules <10mm
- Interventional pulmonology service (EBUS/ EUS and navigational bronchoscopy)
- Minimally invasive VATS surgical biopsy programme
- PET-CT for nodule evaluation & pre-operative staging
- Complex physiology
- Research capabilities

Adequate staffing & facilities prior to commencement of programme/ timeline

ACS, American Cancer Society; ALS, advanced life support; AATS, American Association for Thoracic Surgery; CT, computed tomography; EBUS, endobronchial ultrasound; EUS, endoscopic ultrasound; IASLC, International Association for the Study of Lung Cancer; NCCN, National Comprehensive Cancer Network; PET-CT, positron emission tomography-computed tomography; QA, quality assurance; USPSTF, United States Preventive Services Task Force; VATS, video-assisted thoracoscopic surgery.

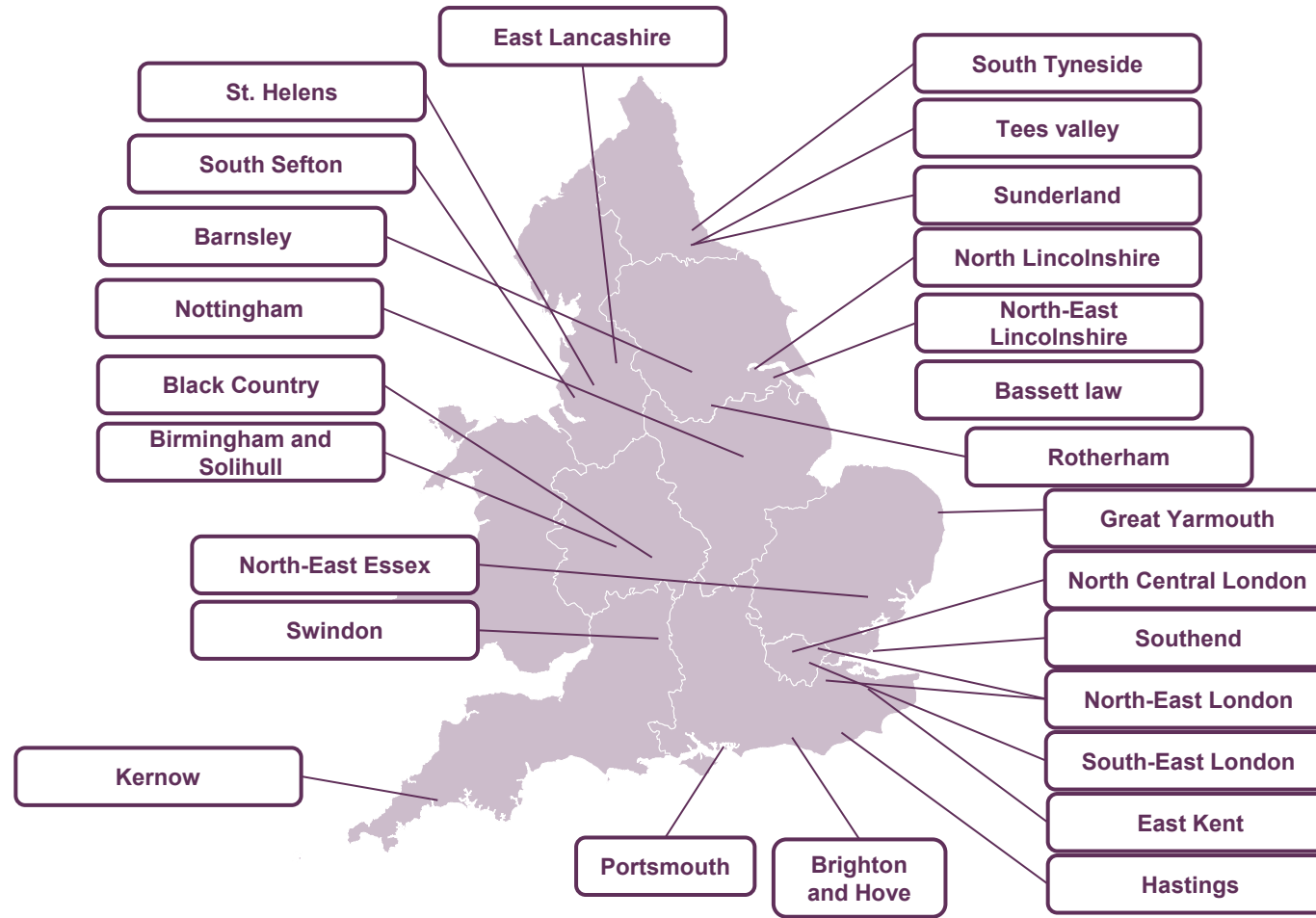
NHSE TLHC Programmes



CCG, clinical commissioning groups; NHS(E), National Health Service (in England); TLHC, targeted lung health check.

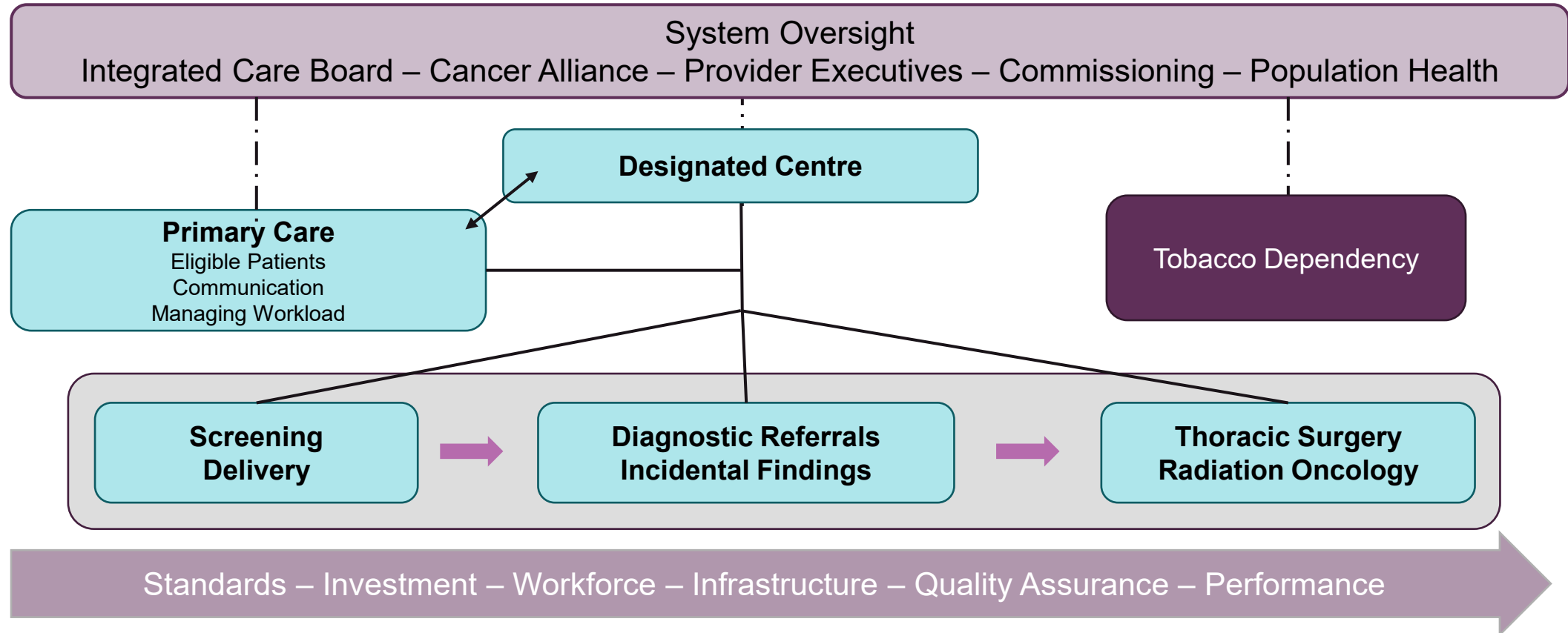
NHSE Additional Programmes

April 2023 onwards



NHSE, National Health Service in England.

Centralised model of care

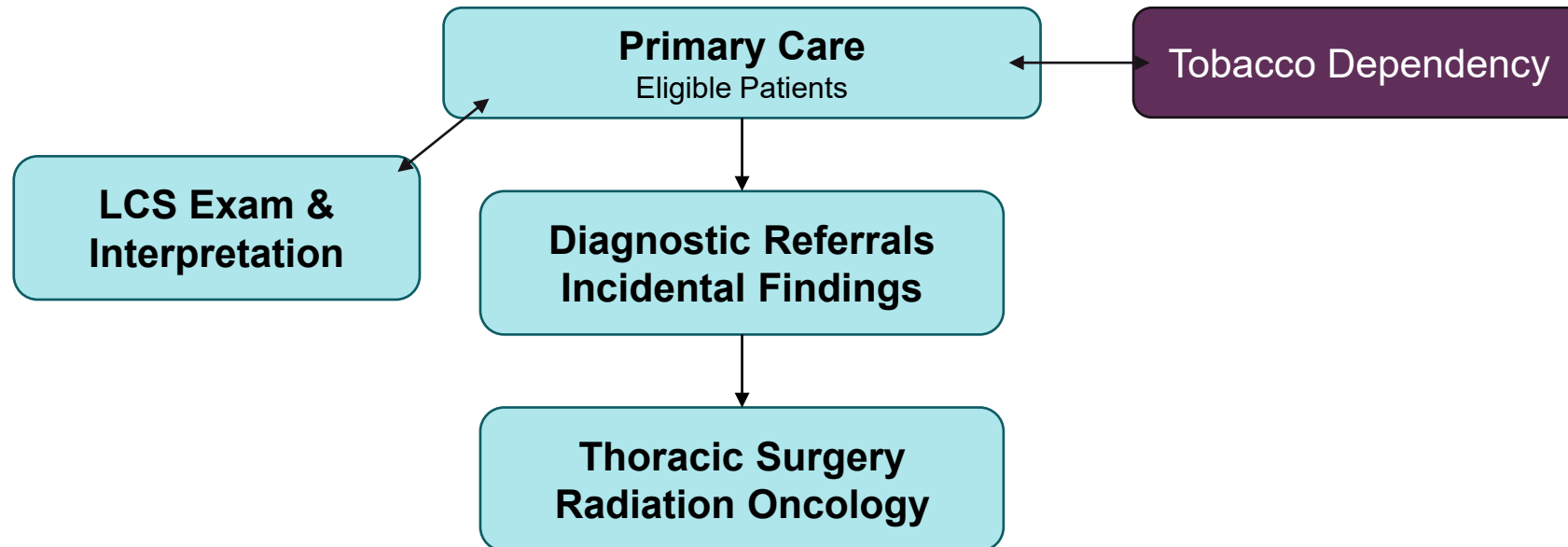


Actively recruits eligible patients, conducts education and shared decision-making visits, assists in smoking cessation, and schedules, orders, performs, and interprets all screening studies. The program also arranges consultations, schedules follow-up studies, and tracks all clinical and outcome data. The centralized LCS program communicates results and plans to the patient and referring provider.

LCS, lung cancer screening.

Decentralised model of care

System Oversight
Integrated Care Board – Cancer Alliance – Provider Executives – Commissioning – Population Health



A decentralised LCS program performs the LCS exam and interpretation and leaves the referring provider responsible for all other functions

LCS, lung cancer screening.

Lung Cancer Screening in Practice

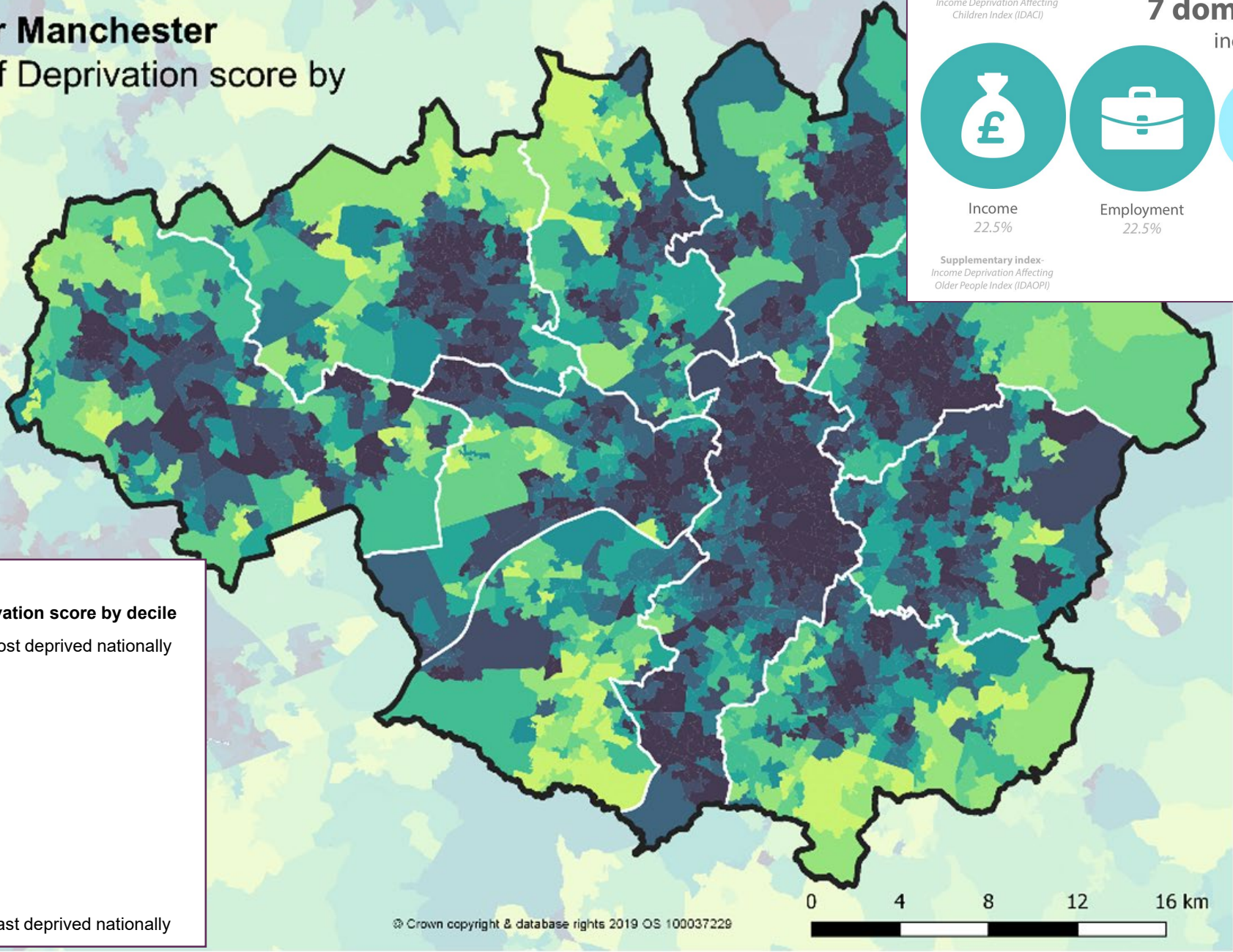
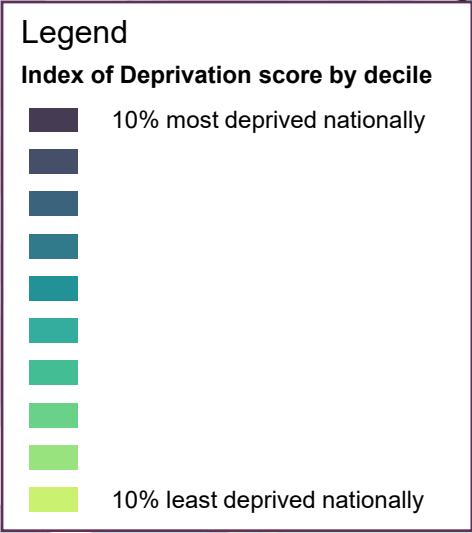
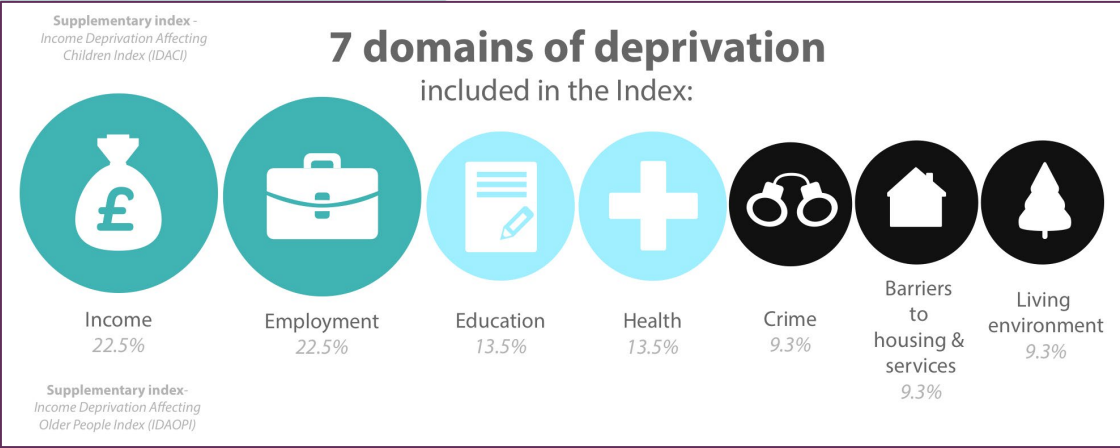
Optimising screening uptake

THINK
AGAIN

LUNG
SUMMIT

Greater Manchester

Index of Deprivation score by decile



Lung Cancer Incidence:

England
60/ 100,000

Greater Manchester
110/ 100,000

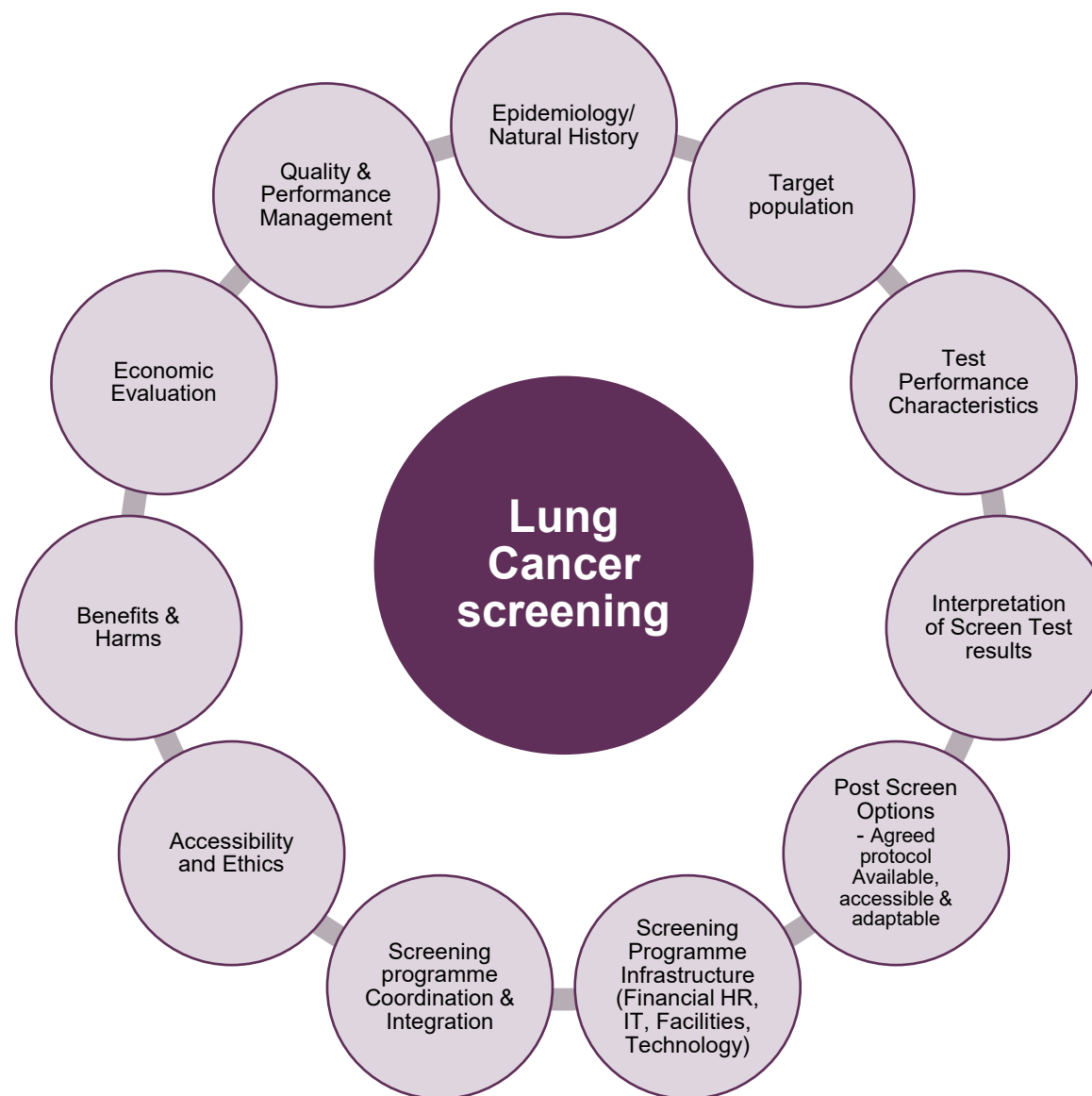
Smoking Prevalence,
Deprivation and Lung
Cancer tightly linked

PRINCIPLES AND PRACTICE OF SCREENING FOR DISEASE

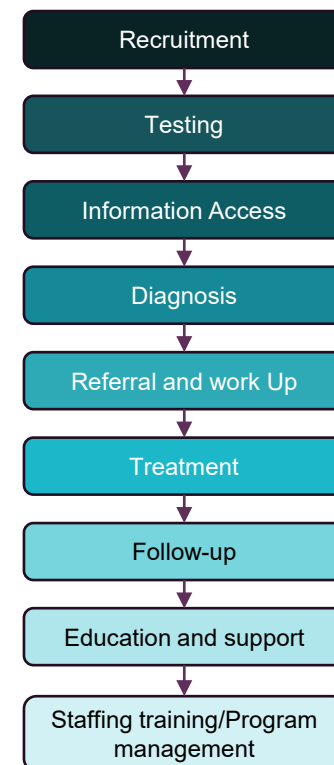
J. M. G. WILSON & G. JUNGNER



WORLD HEALTH ORGANIZATION
GENEVA



Timely Access to All Programme Components Required



HR, human resources; IT, information technology.

Designing a programme to overcome barriers

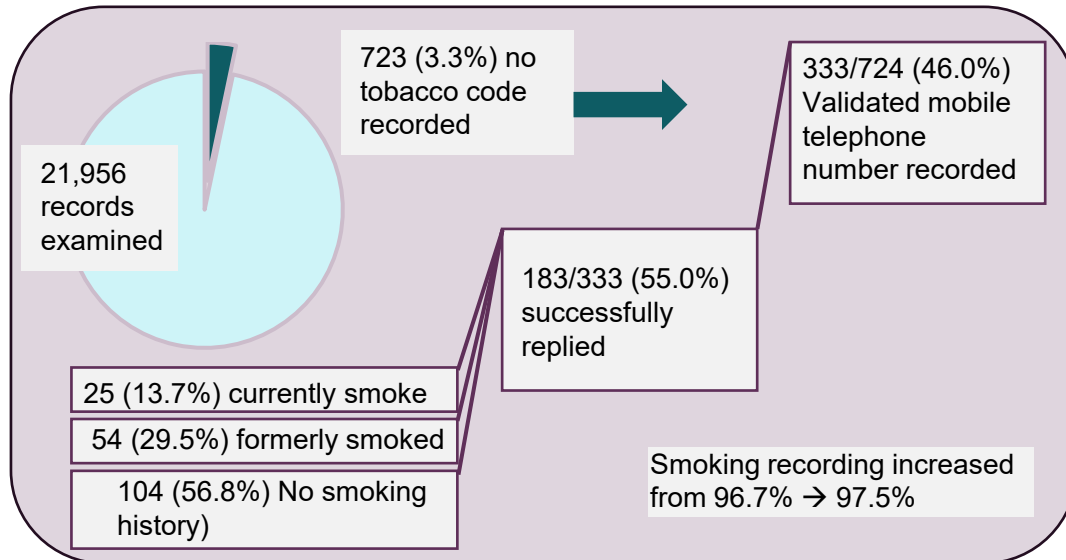
- **Identifying the 'At-Risk'**
- **Engaging the 'At-Risk'**
 - Awareness
 - Access (Distance/costs)
 - Perception, Fear, Stigma
- **Addressing Harms of Screening**
 - Radiation
 - False positives
 - Overdiagnosis
 - Benign resections
- **Impact of Screening**
 - Referrals
 - Diagnostic capacity
 - Treatment capacity
 - Incidental findings
- **Quality Assurance**
- **Clinical & Financial Sustainability**
- **Designing the Model**

Opportunities for increasing uptake^{1,2}



CT, computed tomography; GP, general practitioner; LLP, Liverpool Lung Project; PLCO, prostate, lung, colorectal, and ovarian (cancer screening trial); TLHC, targeted lung health check.

Selection by smoking^{1,2}



The population approach resulted in 1,732 ever smokers contacting the service who would not otherwise have received an invitation, as they were listed as never smokers in primary care². This resulted in:

- A 15.1% increase in Lung Health Checks performed (n=1,334)
- An 11.3% increase in people screened (n=507)
- A 12.5% increase in screen detected lung cancers (after two rounds of annual LDCT screening)

However, the number of initial letters posted was 36% higher (n=13,604) and the number of phone calls received from never smokers was 68% higher (n=3,621)².

Varying the search strategy for tobacco codes may have profound implications for the size of the population eligible for lung-screening invitation.

Search strategy ^a	Number of eligible patients for invitation within the 55-74+ ₃₆₄ age group for the sample of seven GP practices ^b	Estimated number of eligible patients within Wales for invitation within the 55-74+ ₃₆₄ age group	Estimated % of Welsh population ^c
BROAD	9111	396,130	53.9%
VOLUME	9090	395,217	53.7%
FOCUSSED	9095	395,435	53.8%
RECENT	5695	247,608	33.7%

^aPlease see Table Table11 for the full list of included tobacco codes. ^bTotal number of patients within the 55-74+₃₆₄ age range for the seven include practices, n = 16,916. ^cEstimates for the Welsh population based on the total number of the Welsh population within the 55-74+₃₆₄ age range, n = 735,478.

GP, general practitioner; LDCT, low-dose computed tomography.

Possible interventions to increase participation

CPSTF recommendations for multicomponent interventions to increase cancer screening updated from CPSTF 2017^{1–5}

Increase community demand	Increase community access	Increase provider delivery
• Group education • One-on-one education • Client reminders • Client incentives • Providing decision aids • Targeted awareness initiatives (mass medium, small media)	• Interventions to reduce client out-of-pocket costs • Reducing cultural barriers (eg, screening staff of the same sex, involvement of ethnic minority representatives) • Reducing psychological barriers (eg, low-burden targeted information material, GP letters, message framing) • Interventions to reduce structural barriers • Reducing administrative barriers • Providing appointment scheduling assistance • Using alternative screening sites • Using mobile screening in public spaces • Using alternative screening hours or flexible appointments • Providing transportation • Providing translation • Providing childcare	• Provider education • Provider reminders • Provider incentives • Provider assessment and feedback • Involvement of community health professionals in outreach (eg, pharmacists) • Involvement of non-medical staff (eg, navigators)

CPSTF, Community Preventive Services Task Force; GP, general practitioner.

1. Djuric O, et al. *BMJ Open*. 2023;13(10):e074140; 2. Giorgi Rossi P, et al. *Epidemiol Prev*. 2012;36(1 Suppl 1):1–104; 3. Jepson RG, et al. *J Med Ethics*. 2005;31:192–196; 4. Wait S, et al. *JTO Clin Res Rep*. 2022;3:100329; 5. CDC. Announcement: Community Preventive Services Task Force Recommendations for Multicomponent Interventions to Increase Breast, Cervical, and Colorectal Cancer Screening. Available at: <https://www.cdc.gov/mmwr/volumes/66/wr/mm6628a7.htm> (Accessed June 2024).

Potential eligible population identification

Not targeted (entire population) → Pharmacists → GP → Other professionals → Smoking cessation program → Mass media, Small media, Web

Not targeted → Targeted

Contact/invitation

Letter to all → GP → Pharmacist → Smoking cessation program → Other → Mass media, Small media, Web

Organised → Opportunistic

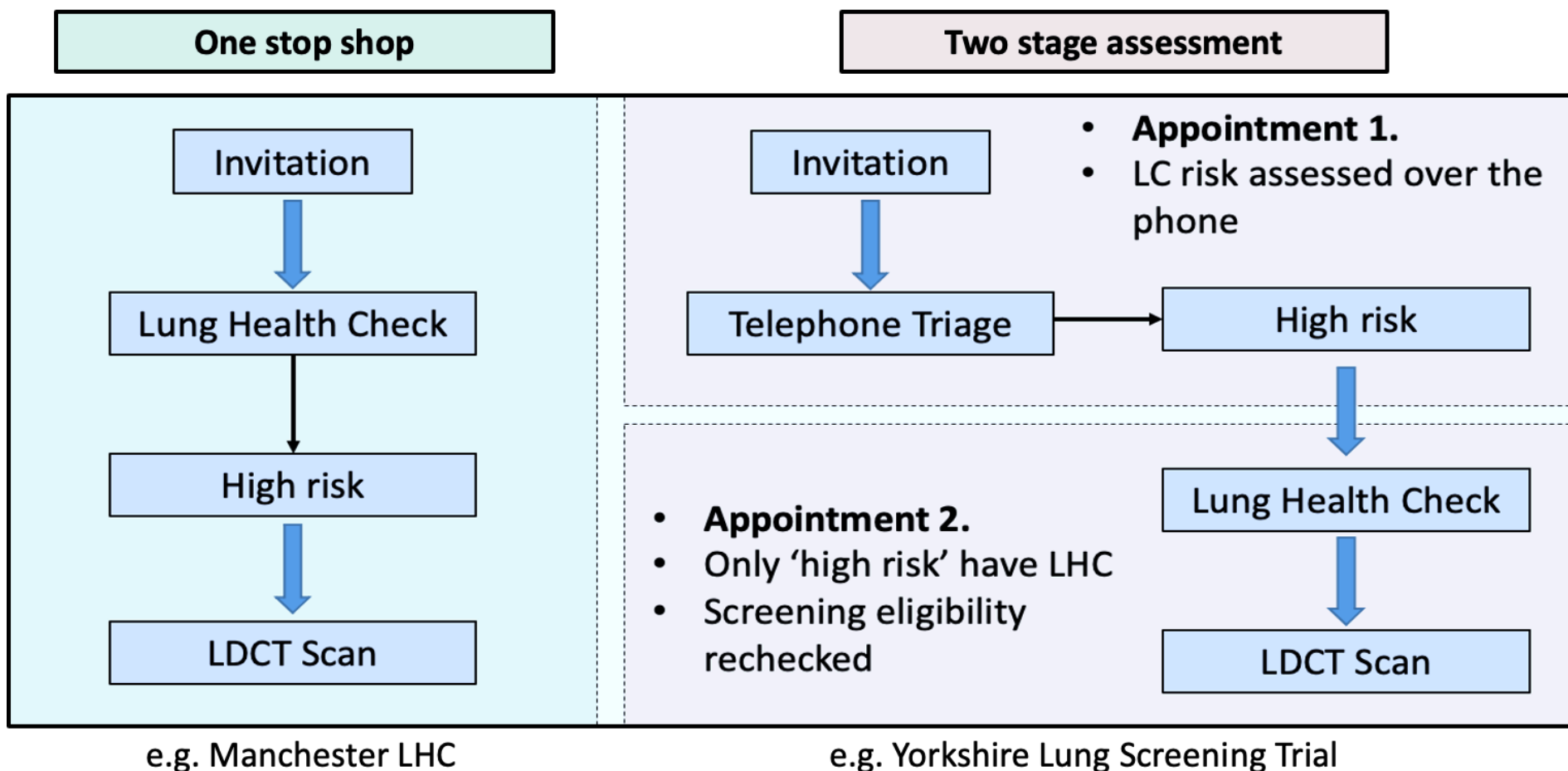
Risk assessment

Assessment by GP → Phone or web questionnaire → LDCT appointment

Distal → Proximal

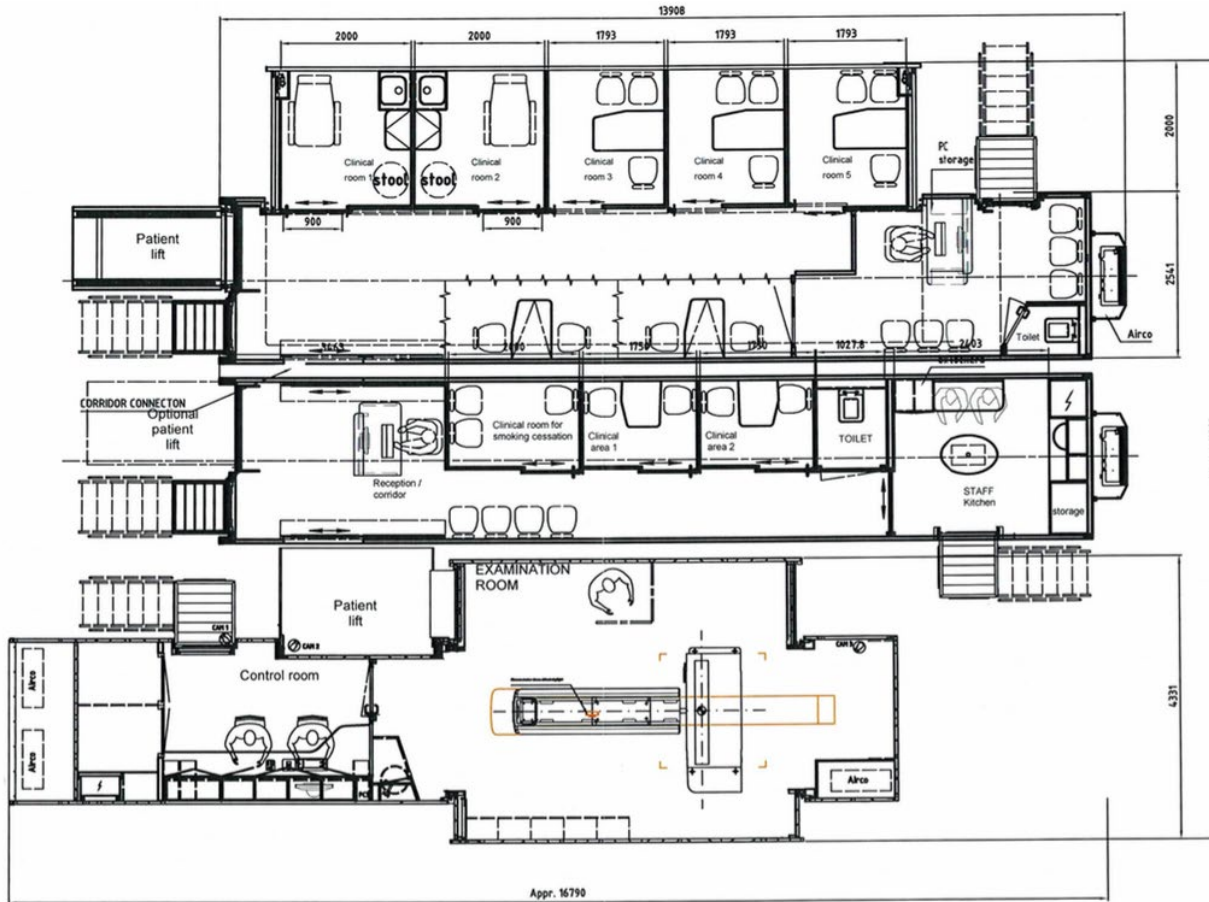
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1. Image provided courtesy of speaker; 2. Djuric O, et al. *BMJ Open*. 2023;13(10):e074140.



LC, lung cancer; LDCT, low-radiation dose CT.

Bespoke clinic & ULDCT unit



Mon – Sat 8am – 8pm

- Reception Area
- 3 lung Screening Rooms (24 patients per room per day)
- Tobacco Dependency Counsellors
- Research Rooms
- Patient Lifts/ Disabled Access
- Staff Room with toilets
- Security Package including CCTV
- Built in, hidden cabling
- Near patient operation of CT, facilitating patient interaction
- Ultralow Dose CT (~0.5mSv)

CCTV, closed circuit television; ULDCT, ultralow dose computed tomography.

Patient information needs

Views

- Fatalistic views
- Unaware of curative options
- Screening sensible & worthwhile
- Right to informed decision/ caution against too much information
- Harms poorly understood (overdiagnosis/ radiation)
- Unlikely to be deterred
- Strong concerns re-false negatives, false positives and indeterminate nodules



Multi-channel communication strategy



LA, local authority; NHS, national health service; VCSE, voluntary, community and social enterprise.

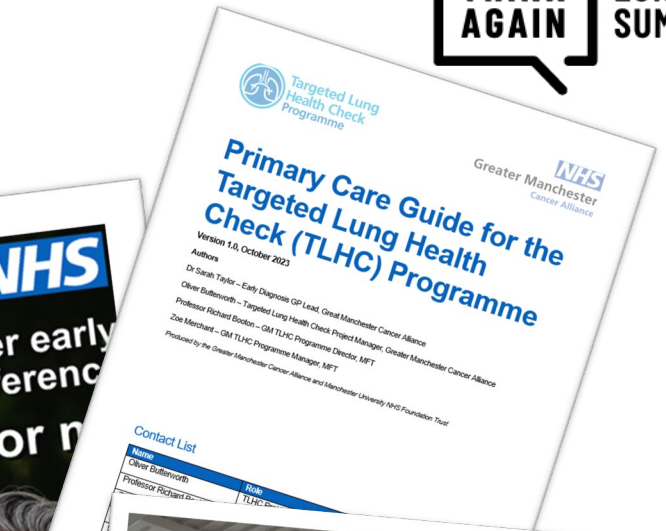
Locality engagement & mobilisation



Importance &
Benefit of
Working with
Locality
Teams

Management
of incidental
findings

Comms &
Engagement
Activity

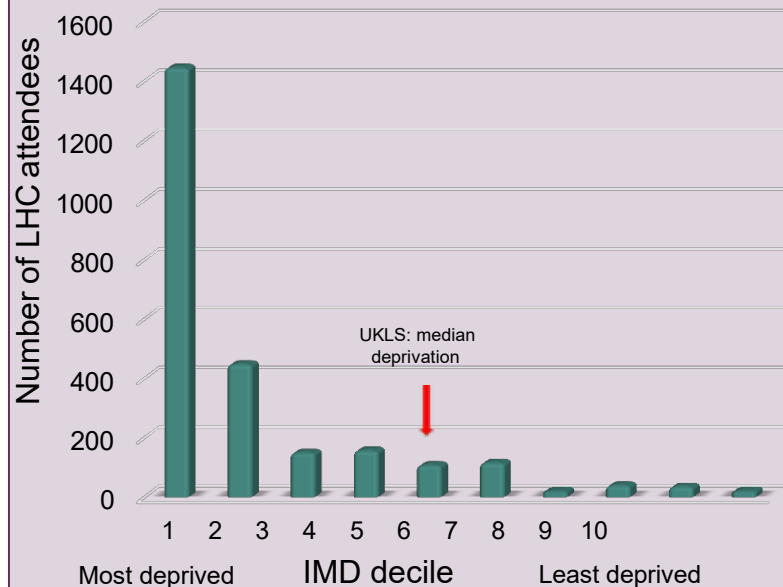


NHS, National Health Service; TLHC, Targeted Lung Health Check.

Community access = Hard to reach

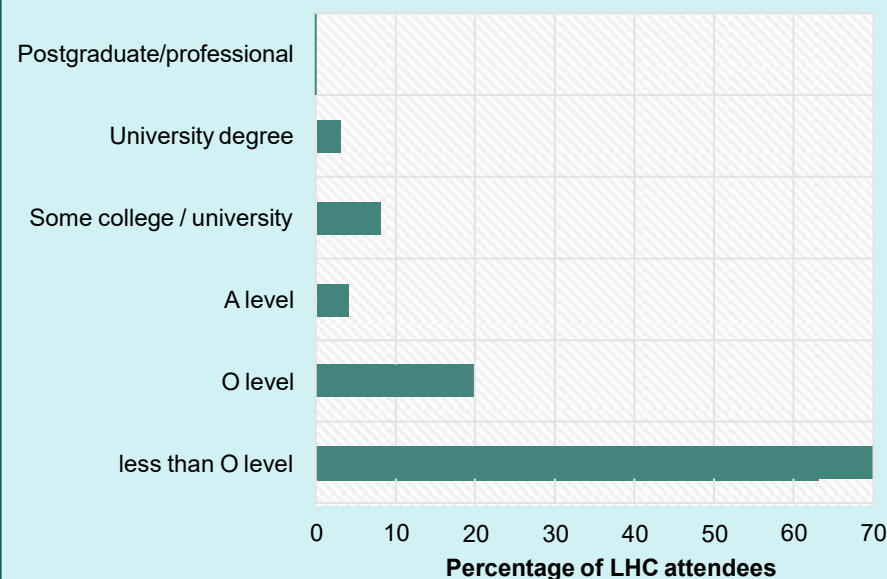
Deprivation (IMD):

Over half lowest decile (56%) 75% lowest quintile



Education:

82% left school by 16
62% without any 'O' levels



Additional Risk:

22% FH Lung Cancer
12% Personal Hx of cancer
24% Exposed to asbestos
35% Current smokers
22% Hx of COPD

(90% PS 0–1)
(90% MRC 1–2)

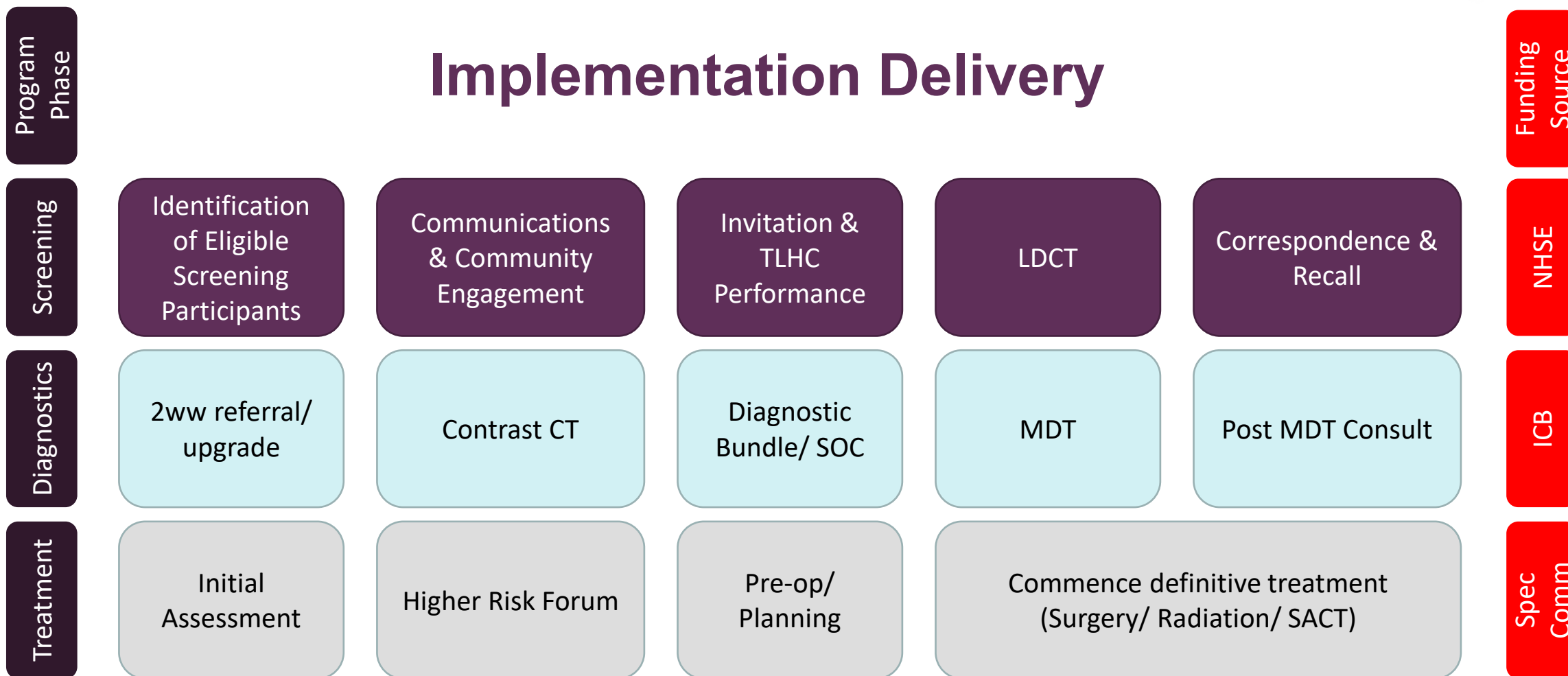
COPD, chronic obstructive pulmonary disease; FH, family history; Hx, history; IMD, index of multiple deprivation 2015; LHC, lung health check; MRC, medical research council; PS, performance status.

Lung Cancer Screening in Practice

Screening impact on the MDT

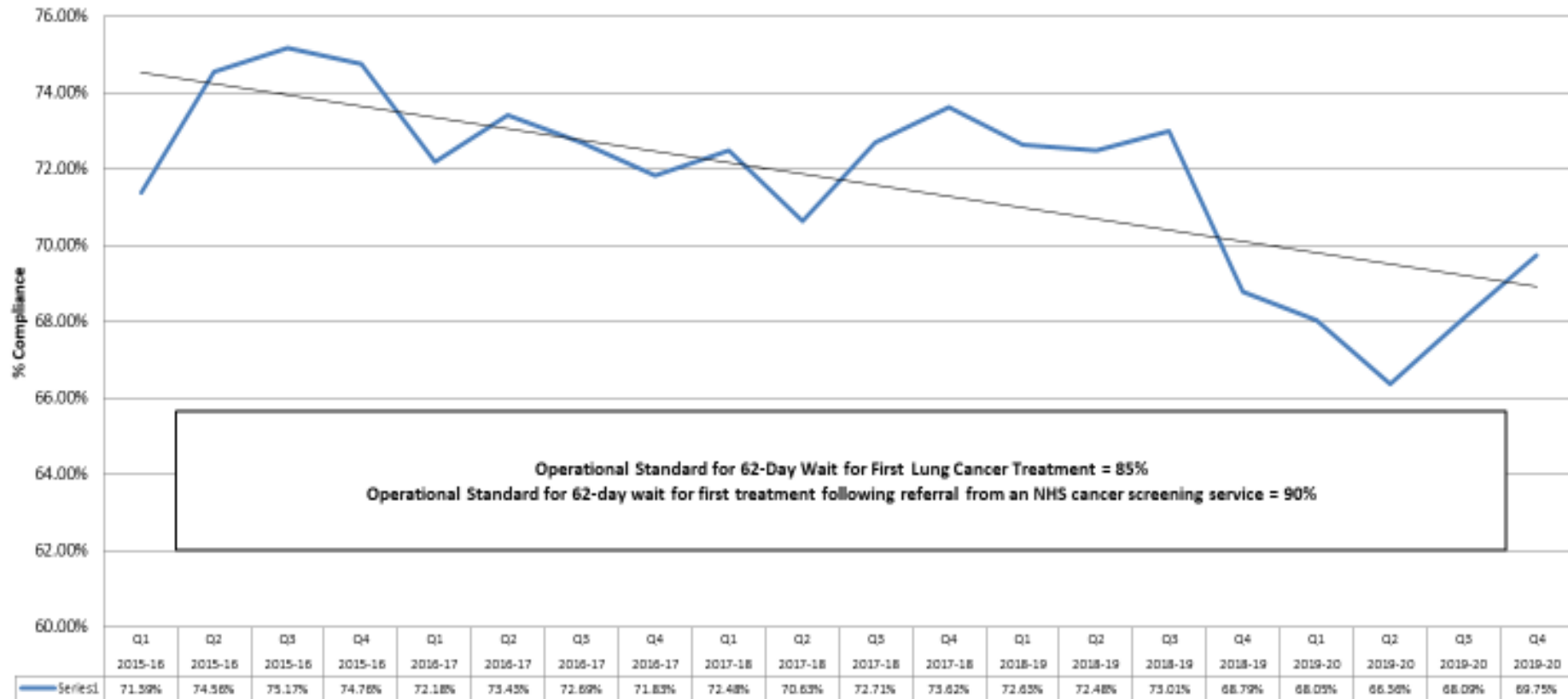
THINK
AGAIN

LUNG
SUMMIT

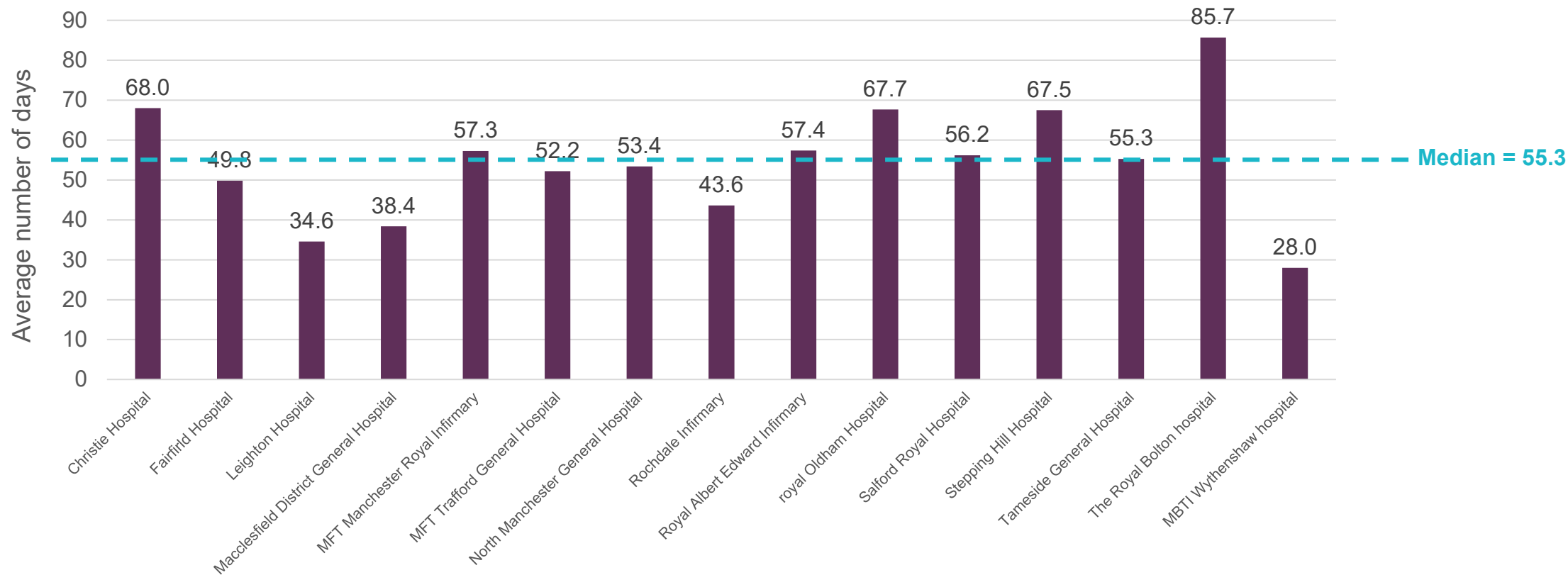


2ww, two-week wait; CT, computed tomography; ICB, integrated care board; LDCT, low-dose computed tomography; MDT, multidisciplinary team; NHSE, National Health Service in England; SACT, systemic anti-cancer therapy; SOC, standard of care; TLHC, targeted lung health check.

Provider based cancer waiting times by quarter 2015–2020



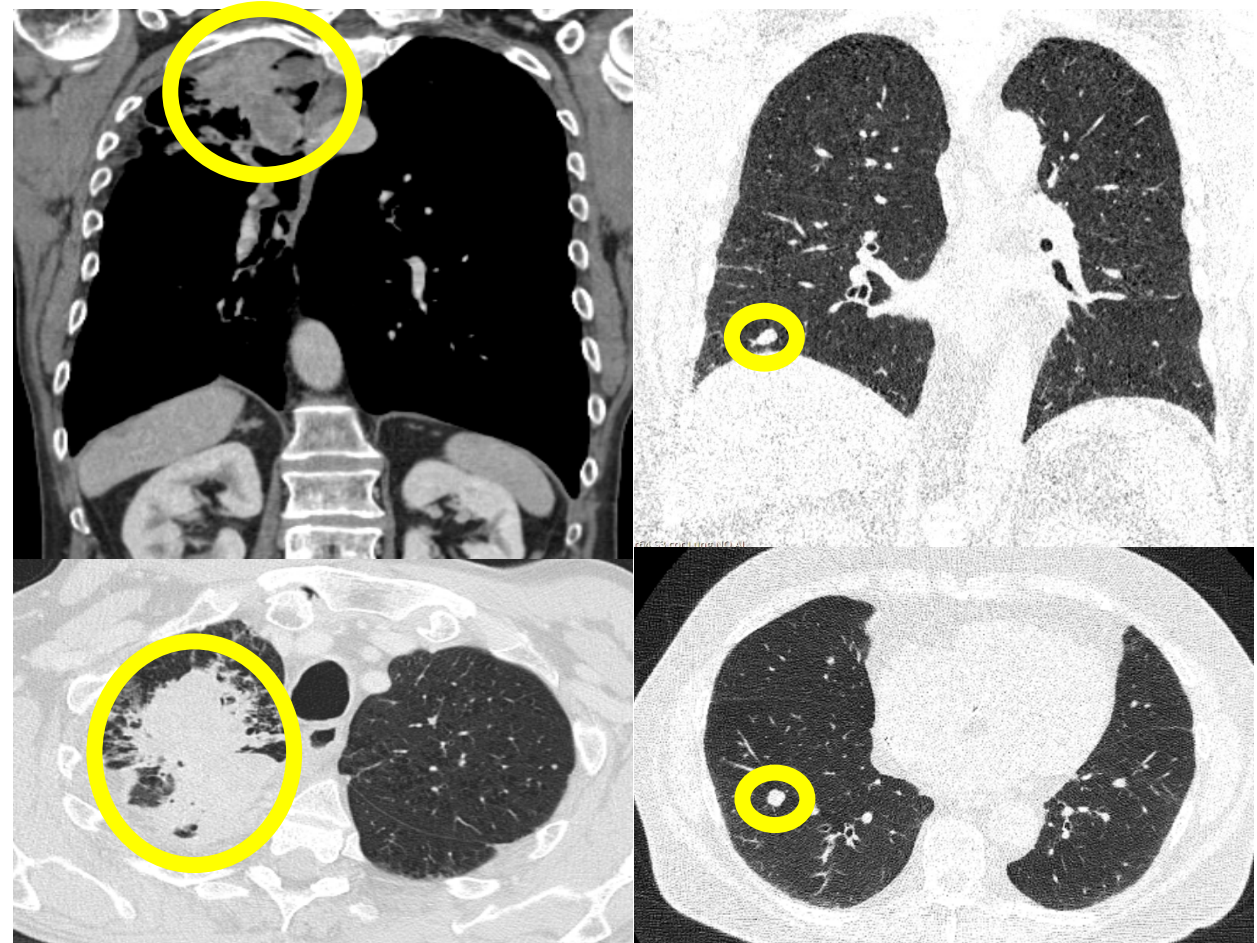
Thoracic CARP referrals into Wythenshawe Hospital by referring Hospital by average day wait to referral in April 2019–May 2020



CARP, communication and referral protocol.

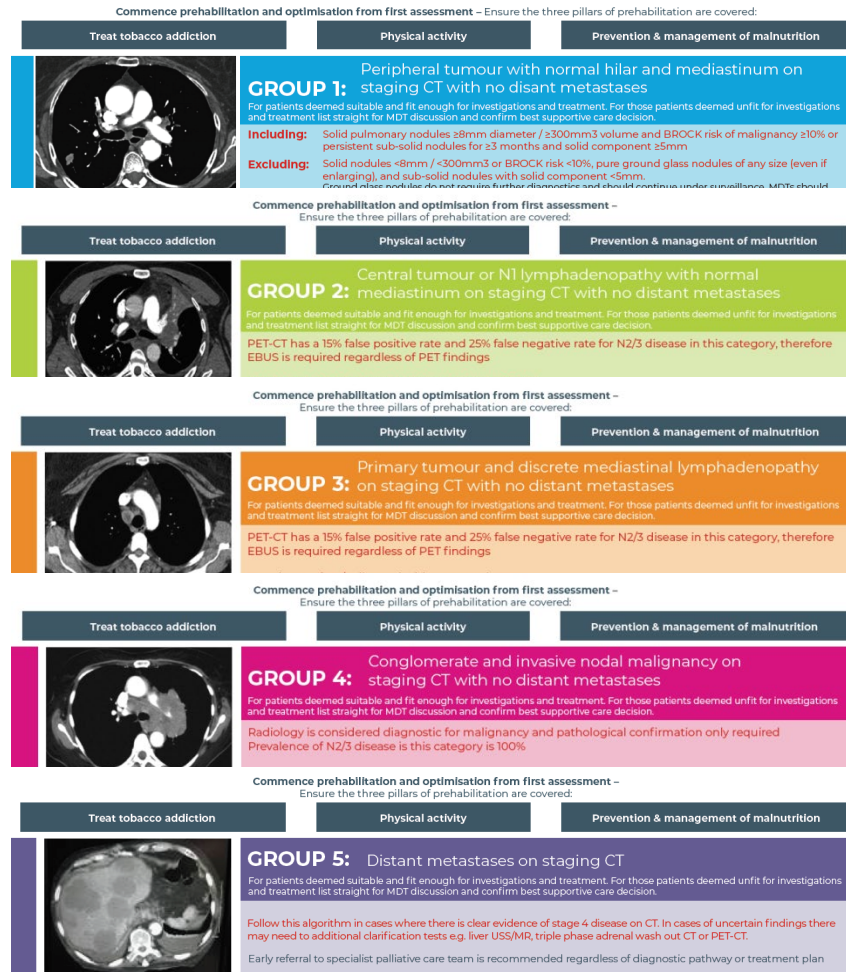
The challenge for lung screening and 62-day pathway

- 1. Volume of Referral**
Screening & effect of uptake
Symptomatic
- 2. Fully Managed Service,**
Mitigating impact on primary & secondary care
- 3. Changing Diagnostics**
Imaging, robotics, radiation protection, anaesthesia, multiple tumours
- 4. Faster Diagnostic Standard (14-day)**
Next day investigative bundles, available daily
Patient lounges
Facilitated travel
- 5. Changing surgery & a 14-day standard**
Imaging, lung sparing, MI-surgery inc robotics, theatre, repeatable
- 6. Additional Ablation Strategies**
Brachytherapy, PDT and microwave ablation
Imaging, anaesthesia, theatre



MI, myocardial infarction; PDT, photodynamic therapy.

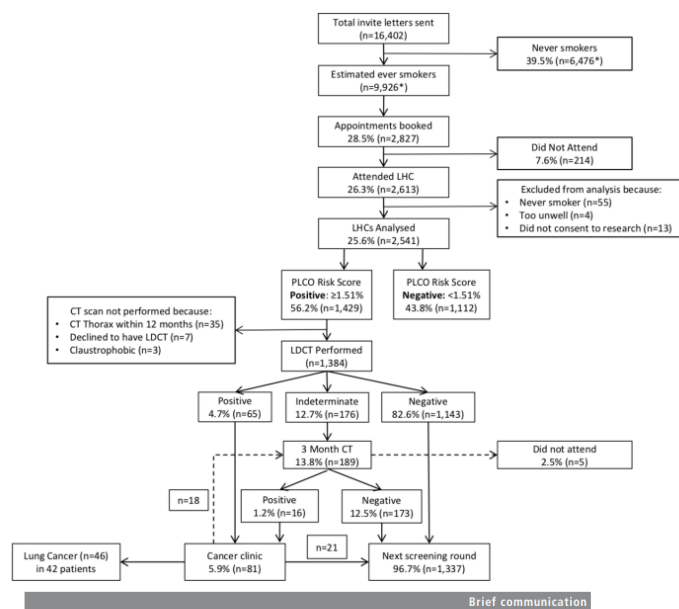
Diagnostic bundles & pathway complexity



	Symptomatic CT-Stage	Screen CT-stage
PET-CT PFTs/ISWT +/-Echo CTBx	34%	77%
PET-CT CT Brain PFTs/ISWT +/-Echo Staging EBUS-TBNA	12%	12%
PET-CT MR Brain Staging EBUS-TBNA PFTs/ISWT +/-Echo	12%	4%
PET-CT MR Brain Diagnostic EBUS-TBNA PFTs/ISWT +/-Echo	6%	0%
Diagnostic Biopsy	34%	8%

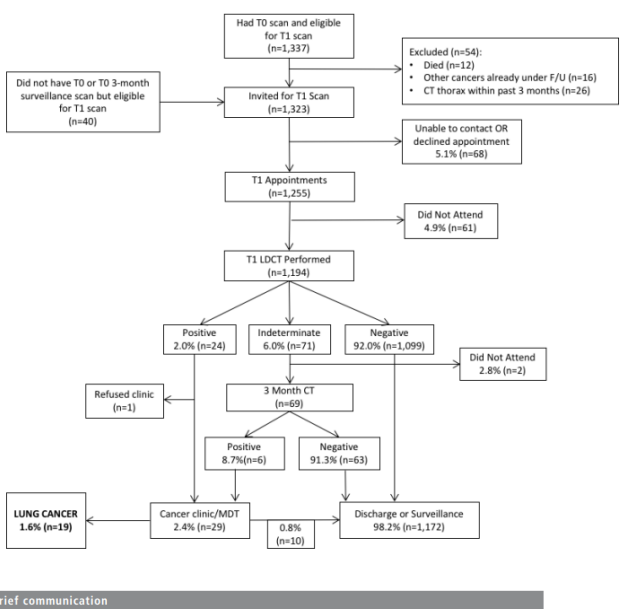
CT, computed tomography; CTBx, CT-guided biopsy; Echo, echocardiogram; EBUS-TBNA, endobronchial ultrasound-transbronchial needle aspiration; ISWT, incremental shuttle walk test; MR, magnetic resonance; PET-CT, positron emission tomography-computed tomography; PFTs, pulmonary function tests.

An approach to modelling



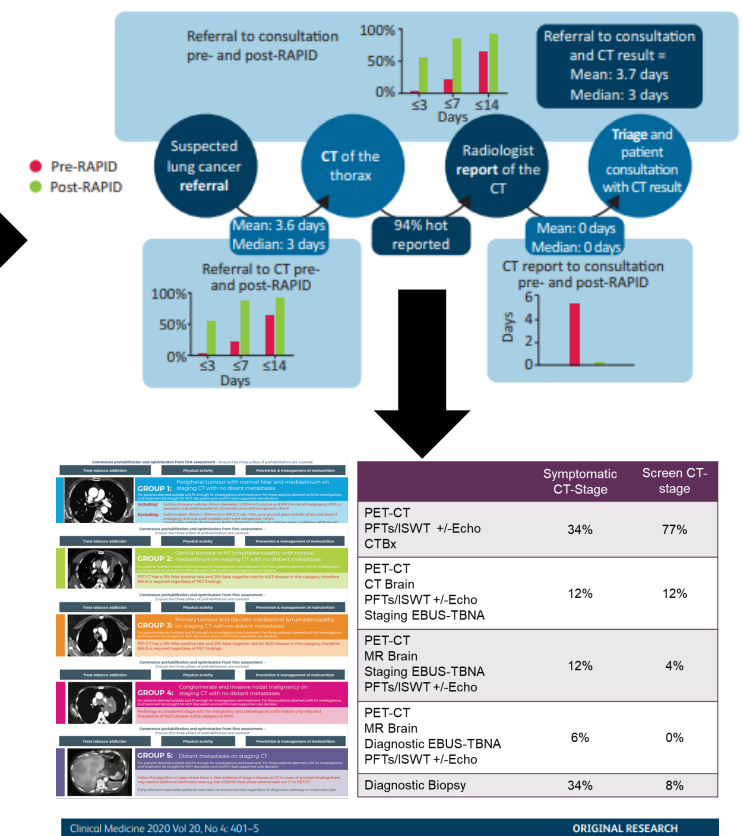
Implementing lung cancer screening: baseline results from a community-based 'Lung Health Check' pilot in deprived areas of Manchester

Phil A Crosbie,^{1,2} Haval Balata,¹ Matthew Evison,¹ Melanie Atack,³ Val Bayliss-Brideaux,³ Denis Colligan,^{3,4} Rebecca Duerden,¹ Josephine Eaglesfield,³ Timothy Edwards,³ Peter Elton,³ Julie Foster,⁶ Melanie Greaves,¹ Graham Hayler,³ Coral Higgins,⁴ John Howells,³ Klaus Irion,⁸ Devinda Karunaratne,⁸ Jodie Kelly,¹ Zoe King,² Sarah Manson,¹ Stuart Mellor,² Donna Miller,¹⁰ Amanda Myerscough,³ Tom Newton,⁹ Michelle O'Leary,¹ Rachel Pearson,^{3,4} Julie Pickford,⁶ Richard Sawyer,¹ Nick J Screation,¹² Anna Sharman,¹ Maggi Simmons,³ Elaine Smith,¹ Ben Taylor,¹³ Sarah Taylor,^{3,4} Anna Walsham,¹⁴ Angela Watts,¹ James Whittaker,¹⁵ Laura Yarnell,^{3,4} Anthony Threlfall,³ Phil V Barber,¹ Janet Tonge,^{3,4} Richard Booton¹



Second round results from the Manchester 'Lung Health Check' community-based targeted lung cancer screening pilot

Phil A Crosbie,^{1,2} Haval Balata,¹ Matthew Evison,¹ Melanie Atack,³ Val Bayliss-Brideaux,³ Denis Colligan,^{3,4} Rebecca Duerden,¹ Josephine Eaglesfield,³ Timothy Edwards,³ Peter Elton,³ Julie Foster,⁶ Melanie Greaves,¹ Graham Hayler,³ Coral Higgins,⁴ John Howells,³ Klaus Irion,⁸ Devinda Karunaratne,⁸ Jodie Kelly,¹ Zoe King,² Judith Lyons,¹ Sarah Manson,¹ Stuart Mellor,² Donna Miller,¹⁰ Amanda Myerscough,³ Tom Newton,⁹ Michelle O'Leary,¹ Rachel Pearson,^{3,4} Julie Pickford,⁶ Richard Sawyer,¹ Nick J Screation,¹² Anna Sharman,¹ Maggi Simmons,³ Elaine Smith,¹ Ben Taylor,¹³ Sarah Taylor,^{3,4} Anna Walsham,¹⁴ Angela Watts,¹ James Whittaker,¹⁵ Laura Yarnell,^{3,4} Anthony Threlfall,³ Phil V Barber,¹ Janet Tonge,^{3,4} Richard Booton¹



Implementation and outcomes of the RAPID programme: Addressing the front end of the lung cancer pathway in Manchester

Authors: Matthew Evison,^A Kath Hewitt,^B Judith Lyons,^A Phil Crosbie,^A Haval Balata,^A Caroline Gee,^C Rebecca Duerden,^D Melanie Greaves,^D Anna Sharman^D and Richard Booton^A

Updated & revised following mature follow up North Manchester 2019-2023, and Baseline Diagnostics Tameside & Glossop

CT, computed tomography; CTBx, CT-guided biopsy; Echo, echocardiogram; EBUS-TNBA, endobronchial ultrasound-transbronchial needle aspiration; F/U, follow-up; ISWT, incremental shuttle walk test; LDCT, low-dose computed tomography; LHC, left heart catheterization; MR, magnetic resonance; PET, positron emission tomography; PFTs, pulmonary function tests; PLCO, Prostate, Lung, Colorectal, and Ovarian (Cancer Screening Trial).

Lung Health Check model



	Inputs	Fast round screening	Re-inviting baseline non attenders First round screening off the year 1	Annual follow up	2 year follow up	Reinventing baseline attenders who were not at risk and therefore didn't have a CT in the first round 6 year low risk returns
Whole population approach (55-74)	Patients in age range 55-74	585,054				
Based on local public health information	Ever smokers	44%				
	Years roll-out (1-4)	4				
Face roll out over 1-4 years depending on population size and local circumstances	Expected booking appointment		50.0%	N/A	N/A	90.0%
	DNA rate		-7.6%	N/A	N/A	-7.6%
	Never smokers		-0.3%	N/A	N/A	-0.3%
	Too unwell		-0.02%	N/A	N/A	0.0%
	Lung Health Checks performed			N/A	N/A	
Community based mobile CTs (daily capacity 45-65)	Eligible for low dose CT scan		51.5%	Model	N/A	15.0%
	CT scans not performed		-1.6%	-1.6%	-1.6%	-1.6%
	Low dose CT scans performed					
Specialist nurse telephone consultation (for those undergoing CT)	Positive		2.6%	2.2%	2.2%	2.6%
	Intermediate scan 3 months		9.6%	4.9%	4.9%	9.6%
	Intermediate scan 12 months		8.8%	93.0%	9.9%	8.8%
	Negative		79.0%	0.0%	82.2%	79.0%

Assumptions based on activity in Manchester to date

Specialist nurse led LHC (daily capacity 72-90)

PLCO M2012 only (CT conversion 52%)

Assumptions based on activity in Manchester today

CT, computed tomography; LHS, Lung Health Study; PLCO M2012, Prostate, Lung, Colorectal, and Ovarian Cancer Screening Trial Modification 2012.

Patient outflows following LHC



	Inputs	Fast round screening	First round screening off the year 1	Annual follow up	2 year follow up	Six year low risk returns
2 week wait clinic following screening	Cancer detected	62.7%	62.7%	52.7%	52.7%	62.7%
	Cancer not diagnosed return to annual scan	17.7%	17.7%	22.4%	22.4%	17.7%
	Cancer not diagnose return to 3 month scan	19.6%	19.6%	24.9%	24.9%	19.6%
3 Month scan	Positive	8.5%	8.5%	9.7%	9.7%	8.5%
	Return to annual scan	87.6%	87.6%	86.4%	86.4%	87.6%
	DNA	3.9%	3.9%	3.9%	3.9%	3.9%
2 week wait clinic following 3-month scan	Cancer detected	62.7%	62.7%	52.7%	52.7%	62.7%
	Cancer not diagnosed return to annual scan	37.3%	37.3%	47.3%	47.3%	37.3%
	Cancer not diagnose return to 3 month	0.0%	0.0%	0.0%	0.0%	0.0%
Diagnosis stage	Stage I	64.6%	64.6%	68.8%	68.8%	64.6%
	Stage II	10.4%	10.4%	12.5%	12.5%	10.4%
	Stage III	14.6%	14.6%	10.4%	10.4%	14.6%
	Stage IV	10.4%	10.4%	8.3%	8.3%	10.4%
Radical treatment	Surgery	44.8%	44.8%	58.3%	58.3%	44.8%
	SABR	22.9%	22.9%	12.5%	12.5%	22.9%
	ChemoRad	8.3%	8.3%	6.3%	6.3%	8.3%
	Adj chemo	3.1%	3.1%	6.3%	6.3%	3.1%
	Rad XRT – Stage III patients	11.5%	11.5%	12.5%	12.5%	11.5%
Palliative treatment	Palliative SACT – Stage IV patients	7.3%	7.3%	6.3%	6.3%	7.3%
	Palliative XRT – Stage IV patients	0.0%	0.0%	0.0%	0.0%	0.0%
	BSC	5.2%	5.2%	2.1%	2.1%	5.2%

Adj chemo, adjuvant chemotherapy; BSC, best supportive care; ChemoRad, chemotherapy radiation therapy; LHC, left heart catheterization; SABR, stereotactic ablative radiotherapy; XRT, radiation therapy.

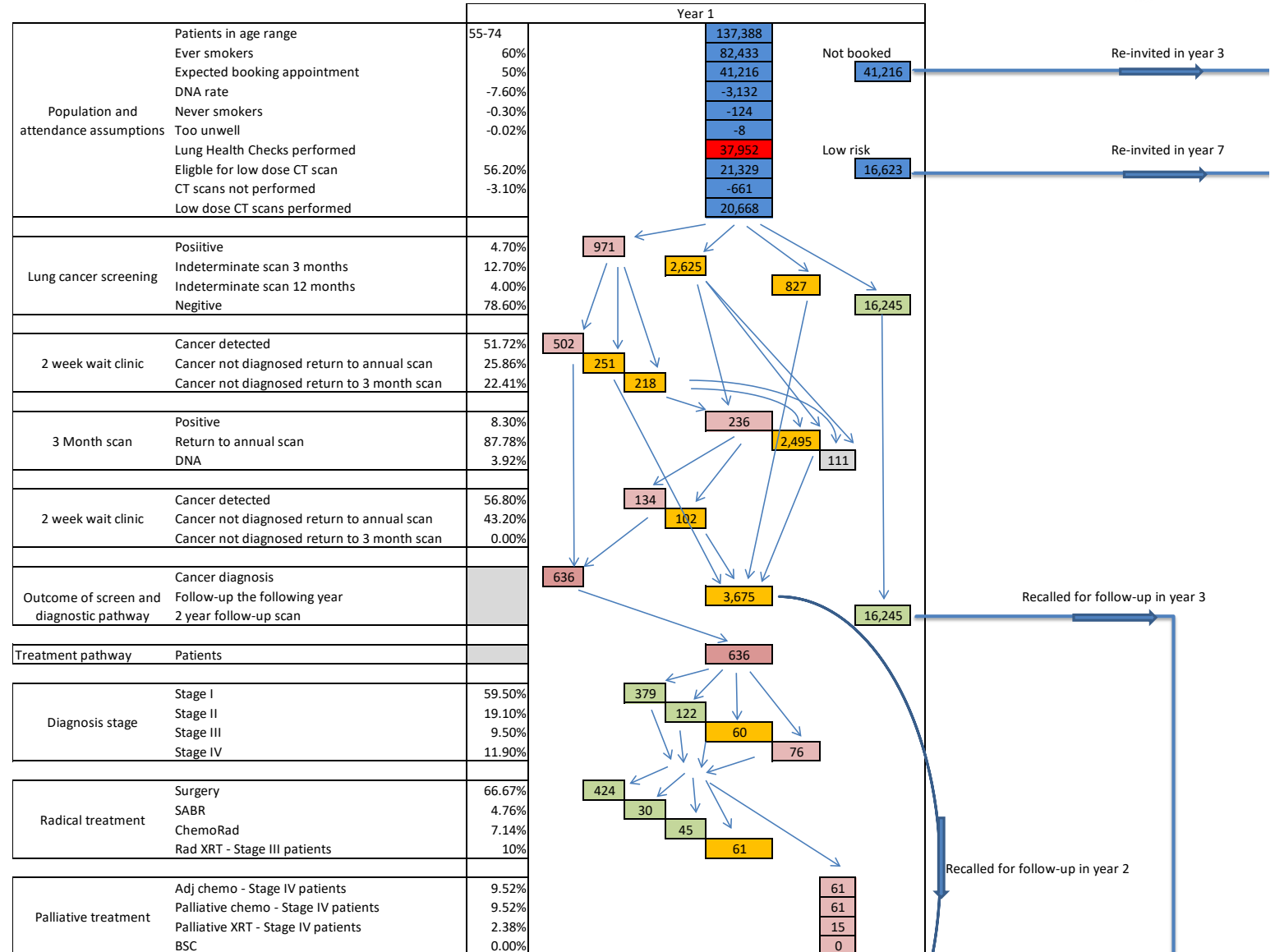
Screening and treatment pathway model

The diagram represents the patient pathways for the first year of a screening programme.

The numbers are for indicative purposes only, the assumptions are based on the Manchester experience to date.

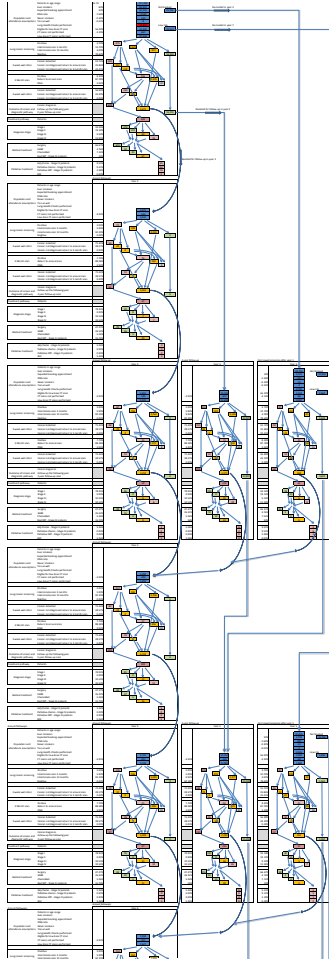
This is a multi year model with outputs from year one flowing into future years.

Adj chemo, adjuvant chemotherapy; BSC, best supportive care; CT, computed tomography; XRT, radiation therapy.

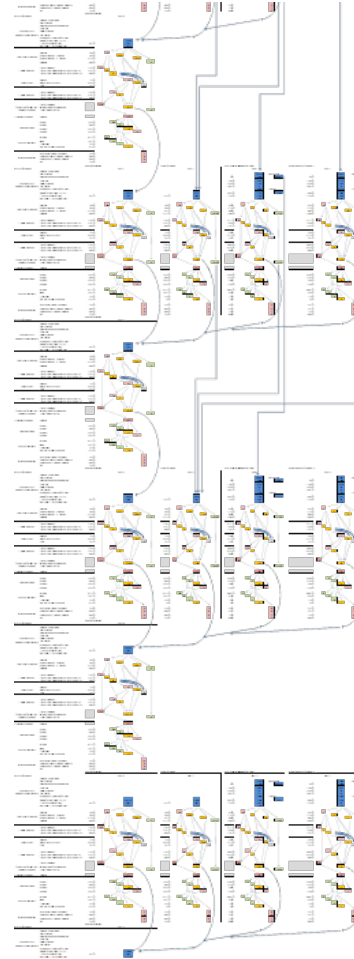


Modelled over 16 years it looks like this

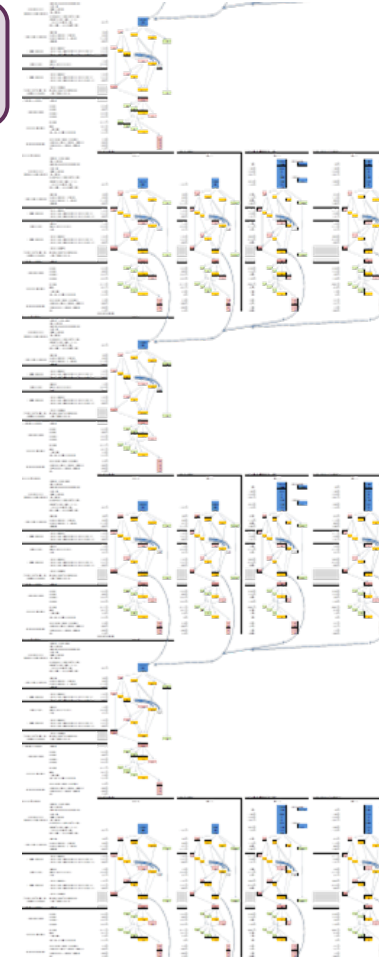
Years 1–5



Years 6–11



Years 12–16



Cancer alliances in England – annual activity at year 4



	Pop Age 55-74	Ever Smoking	Conversion of LHC to CT scan (%)	Positive Scans leading to 2ww Referral (%)	2ww referrals converting to lung cancer (%)
West Yorks & Harrogate	549,551	41%	37%	3%	0.89%
West Midlands	1,322,191	43%	41%	2%	1.27%
Wessex	652,834	46%	41%	4%	2.11%
Thames Valley	507,863	38%	42%	2%	1.26%
Surrey & Sussex	732,925	43%	37%	3%	0.76%
South Yorkshire & Bassetlaw	346,018	41%	45%	1%	1.60%
South East London	298,063	43%	38%	0%	0.45%
Somerset, Wiltshire, Avon and Gloucs	686,640	46%	27%	2%	0.54%
Peninsula	491,906	46%	46%	1%	1.01%
North West/ South West London	640,085	38%	41%	2%	1.69%
North East & Cumbria	798,033	49%	44%	3%	0.76%
North Central/ North east London	537,709	38%	29%	3%	0.51%
Lancashire & South Cumbria	423,587	44%	44%	2%	1.31%
Kent & Medway	437,249	43%	35%	2%	2.34%
Humber, Coast & vale	355,571	41%	54%	2%	1.86%
Greater Manchester	585,054	44%	48%	5%	2.61%
East of England South	792,228	43%	50%	1%	1.03%
East of England North	729,685	43%	50%	1%	1.03%
East Midlands	1,106,546	46%	36%	3%	1.14%
Cheshire & Merseyside	609,630	44%	57%	2%	1.02%
TOTAL	12,603,368	43%			

TLHCs	LDCTs	2WW	Cancer	Surgery
28,527	26,117	833	352	185
71,983	72,047	1,994	1,073	555
38,021	38,139	1,293	699	352
24,434	25,036	684	372	192
39,902	36,450	1,094	472	249
17,962	19,441	437	314	160
16,227	14,937	281	171	92
39,990	26,546	707	319	170
28,649	31,904	701	439	229
30,796	30,564	800	506	258
49,509	53,931	1,691	700	369
25,870	18,559	547	222	119
23,597	25,314	691	381	197
23,805	19,962	503	383	192
18,458	24,128	657	416	211
32,592	38,254	1,405	779	388
43,131	52,319	1,211	725	378
39,726	48,189	1,116	668	348
64,446	56,828	1,620	818	425
33,962	47,328	1,272	658	343
691,588	705,994	19,536	10,466	5,412

2ww, two-week wait; CT, computed tomography; LDCT, low-dose computed tomography; LHC, lung health check; Pop, population; TLHCs, targeted lung health check.

Capacity and staffing assumptions and modeling

Daily mobile unit capacity	LHCs	85 - Patients per 12 hrs day
	LDCTs	60 - Patients per 12 hrs day
	TOTAL mobile screening unit days required	
Diagnostic pathway assumptions for all 2 week wait appointments	RAPID Triage OPC	100%
	Lung Cancer Clinic	100%
	Contrast Enhanced CT	100%
	PET-CT	83%
	PCBx	29%
	EBUS-TBLB	13%
	EBUS-TBNA	25%
	MR Brain	7%
	Spiro/ DLCO	92%
	Echo	18%
	ISWT	92%
	CPEX	9%
	MDT	100%
	FU Lung Cancer Clinic	100%
Radiologist WTE-care	Screening CTs	24 Scans/ Activity per PA (DCC)
	Survivorship CTs	10 Scans/ Activity per PA (DCC)
	Staging CTs	10 Scans/ Activity per PA (DCC)
	Biopsies	2 Scans/ Activity per PA (DCC)
	MRI Brain	14 Scans/ Activity per PA (DCC)
	MDTs (2hrs prep and 20hrs MDT for Mmax 20 patients)	12 Max patient per MDT

CPEX, cardiopulmonary exercise testing; CT, computed tomography; DLCO, diffusing capacity of the lung for carbon monoxide; Echo, echocardiogram; EBUS, endobronchial ultrasound; FU lung cancer clinic, follow-up lung cancer clinic; ISWT, incremental shuttle walk test; LDCTs, low-dose computed tomography scans; LHCs, left heart catheterizations; MDT, multidisciplinary team; MR, magnetic resonance; OPC, outpatient clinic; PCBx, percutaneous biopsy; PET, positron emission tomography; Spiro, spirometry; TBNA, transbronchial needle aspiration; TBLB, transbronchial lung biopsy; WTE, whole-time equivalent.

Workforce Estimates (based on annual activity at year 4)



	Consultant Chest Physician WTE	Consultant thoracic surgeons WTE	Radiologist WTEs	Pathology WTEs	Clinical oncologist WTEs	Medical Oncologist WTEs
West Yorks & Harrogate	1.8	3.6	3.4	1.1	2.1	2.1
West Midlands	5.4	10.7	9.1	2.8	6.3	6.3
Wessex	3.5	6.8	5.0	1.8	4.1	4.1
Thames Valley	1.9	3.7	3.1	1.0	2.2	2.2
Surrey & Sussex	2.4	4.8	4.6	1.4	2.8	2.8
South Yorkshire & Bassetlaw	1.6	3.1	2.4	0.7	1.8	1.8
South East London	0.9	1.8	1.8	0.4	1.0	1.0
Somerset, Wiltshire, Avon and Gloucs	1.6	3.3	3.3	0.9	1.9	1.9
Peninsula	2.2	4.4	3.9	1.1	2.6	2.6
North West/ South West London	2.5	5.0	3.8	1.2	3.0	3.0
North East & Cumbria	3.5	7.1	6.9	2.1	4.1	4.1
North Central/ North east London	1.1	2.3	2.3	0.7	1.3	1.3
Lancashire & South Cumbria	1.9	3.8	3.2	1.0	2.2	2.2
Kent & Medway	1.9	3.7	2.5	0.8	2.3	2.3
Humber, Coast & vale	2.1	4.1	3.1	1.0	2.4	2.4
Greater Manchester	3.9	7.5	5.2	2.0	4.6	4.6
East of England South	3.6	7.3	6.4	1.8	4.3	4.3
East of England North	3.3	6.7	5.9	1.7	3.9	3.9
East Midlands	4.1	8.2	7.2	2.2	4.8	4.8
Cheshire & Merseyside	3.3	6.6	5.9	1.8	3.9	3.9
TOTAL	52.3	104.1	88.9	27.6	61.6	61.6

WTE, whole-time equivalent.

Infrastructure Estimates (based on annual activity at year 4)



National infrastructure estimates based on activity assumptions and estimates of annual capacity of scanners and theatres.

	Days mobile screening in community setting	CT scanner	MR Scanner	Theatre	PET Scanner
West Yorks & Harrogate	649	0.4	0.0	0.4	0.2
West Midlands	1,706	1.0	0.0	1.1	0.4
Wessex	903	0.6	0.0	0.7	0.3
Thames Valley	586	0.3	0.0	0.4	0.1
Surrey & Sussex	906	0.5	0.0	0.5	0.2
South Yorkshire & Bassetlaw	442	0.2	0.0	0.3	0.1
South East London	368	0.1	0.0	0.2	0.1
Somerset, Wiltshire, Avon and Gloucs	788	0.3	0.0	0.3	0.1
Peninsula	716	0.3	0.0	0.5	0.1
North West/ South West London	726	0.4	0.0	0.5	0.2
North East & Cumbria	1,229	0.8	0.0	0.7	0.3
North Central/ North east London	527	0.3	0.0	0.2	0.1
Lancashire & South Cumbria	579	0.3	0.0	0.4	0.1
Kent & Medway	516	0.3	0.0	0.4	0.1
Humber, Coast & vale	504	0.3	0.0	0.4	0.1
Greater Manchester	840	0.7	0.0	0.8	0.3
East of England South	1,130	0.6	0.0	0.8	0.2
East of England North	1,041	0.5	0.0	0.7	0.2
East Midlands	1,437	0.8	0.0	0.8	0.3
Cheshire & Merseyside	964	0.6	0.0	0.7	0.3
TOTAL	16,556	9.4	0.3	10.8	4.0

CT, computed tomography; MR, magnetic resonance; PET, positron emission tomography.

Summary

Risk-stratified lung cancer screening has arrived

- Uptake of screening is good
- Complex landscape
- Much to do to optimise and standardise across the UK, tailoring to age, gender, ethnicity and deprivation

Impact on MDT is significant, and increasing uptake exacerbates impact

- Forward planning is challenging financially but achievable
- Workforce, infrastructure and capital spending limits are major concerns

MDT, multidisciplinary team.

Thank you

Prescribing information is available at this meeting, and at the following links:
[IMFINZI▼ \(durvalumab\) GB](#) , [IMFINZI NI](#) , [TAGRISSO \(osimertinib\) GB](#) , [TAGRISSO NI](#)



Lung Cancer Screening in Practice

Q&A

Professor Richard Booton

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