A Scottish Perspective

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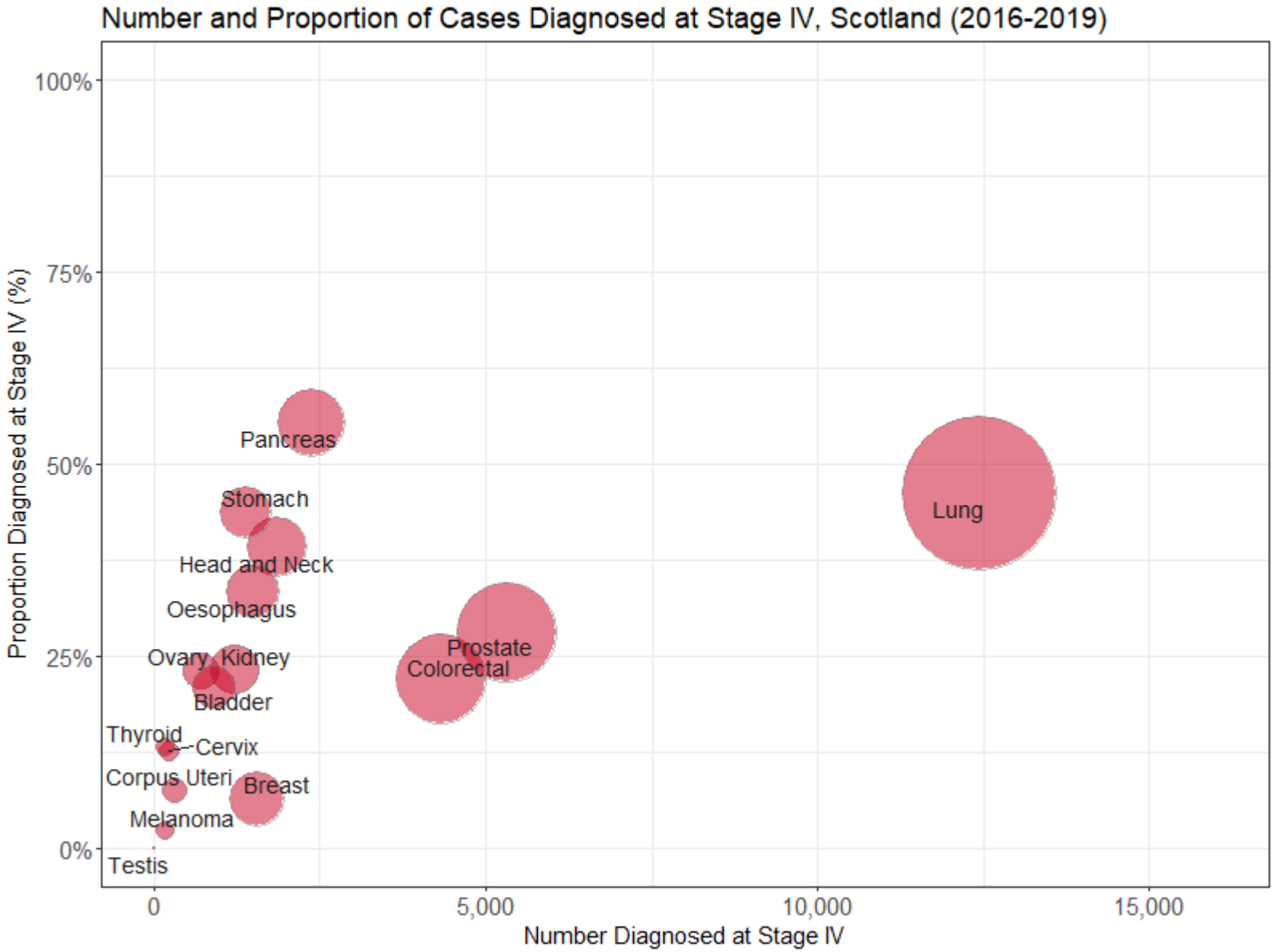
Why lung?

- **Most common cancer** in Scotland (16% of all cancers 2019), with lung cancer deaths a major component of all cancer deaths in Scotland [1];
- **2021** - There were 4,940 people diagnosed with Lung Cancer in Scotland. This is an increase on the 4,555 diagnosed in 2020 but a decrease from 5,136 in 2019 (PHS data)
- **Low 5 year+ survival** - only around 12.5% of males and 18.6% of females are still alive at five years after diagnosis [2];
- **In 2018-9; 9,810 lung cancers-** 54% NSCLC; 11% SCLC; 34% clinical diagnosis. Median OS (months) 13.8 NSCLC; 7.5 SCLC; 4.2 Clinical. *ISD analysis*
- **Inequality gap** - lung cancer disproportionately affects people living in more deprived areas (29.9% of those diagnosed in 19/20 were from most deprived areas vs 12% from least deprived) [5];
- **Lung cancer is a national priority** reflected in a standalone chapter in National Cancer Plan [6] with national optimal cancer pathway commitment in overall NHS Recovery Plan [7] and Programme for Government [8].

* [1] PHS, Cancer Incidence in Scotland; [2] PHS, Five Year Summary of Mortality [4]: Source: PHS pathology dashboard; [5] PHS, Detect Cancer Early (DCE) Staging Data 2019/20; [6] Recovery and redesign: cancer services - action plan - gov.scot (www.gov.scot) [7] NHS recovery plan - gov.scot (www.gov.scot) [8] A Fairer, Greener Scotland: Programme for Government 2021-22 - gov.scot (www.gov.scot)

Why lung?



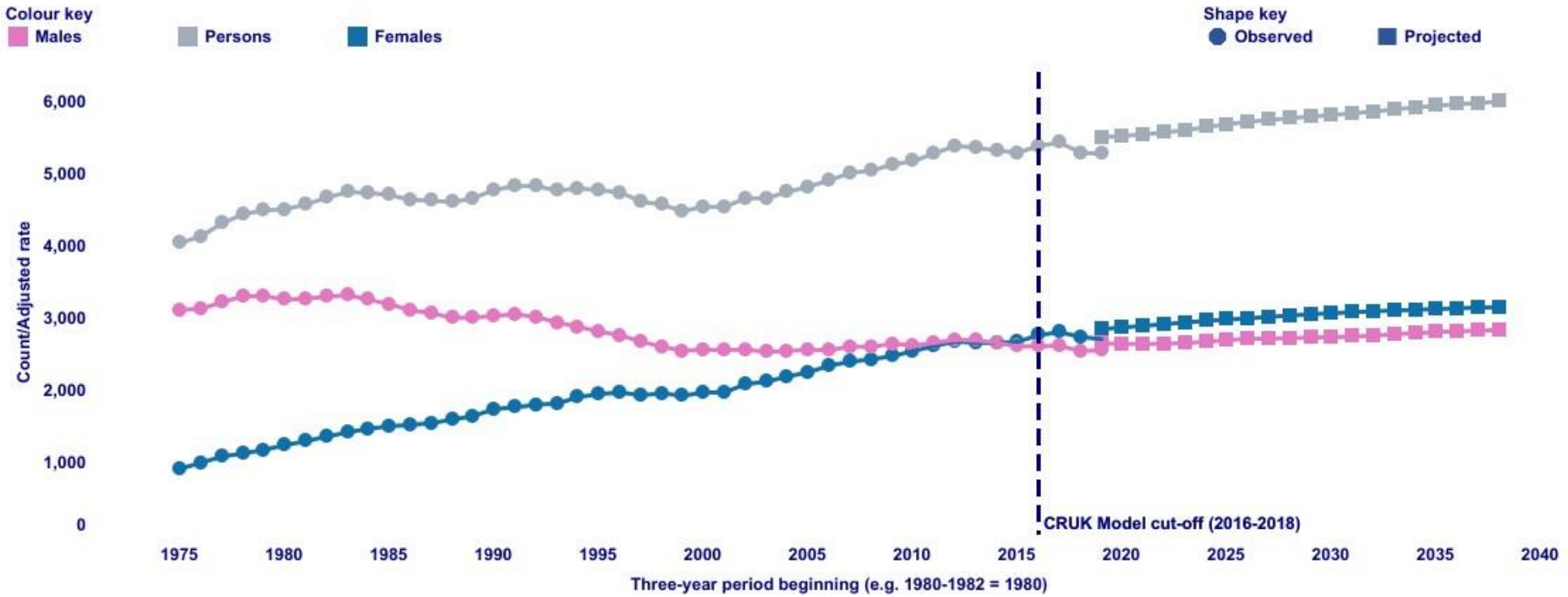
- Visual demonstrates the **high volume** of lung cancer diagnoses and **large proportion** of which are at a **late stage.**
- **Biologically the most aggressive solid cancer**

Cancer Research UK - Cancer Incidence Projections for Scotland

Select counts or rates
Count

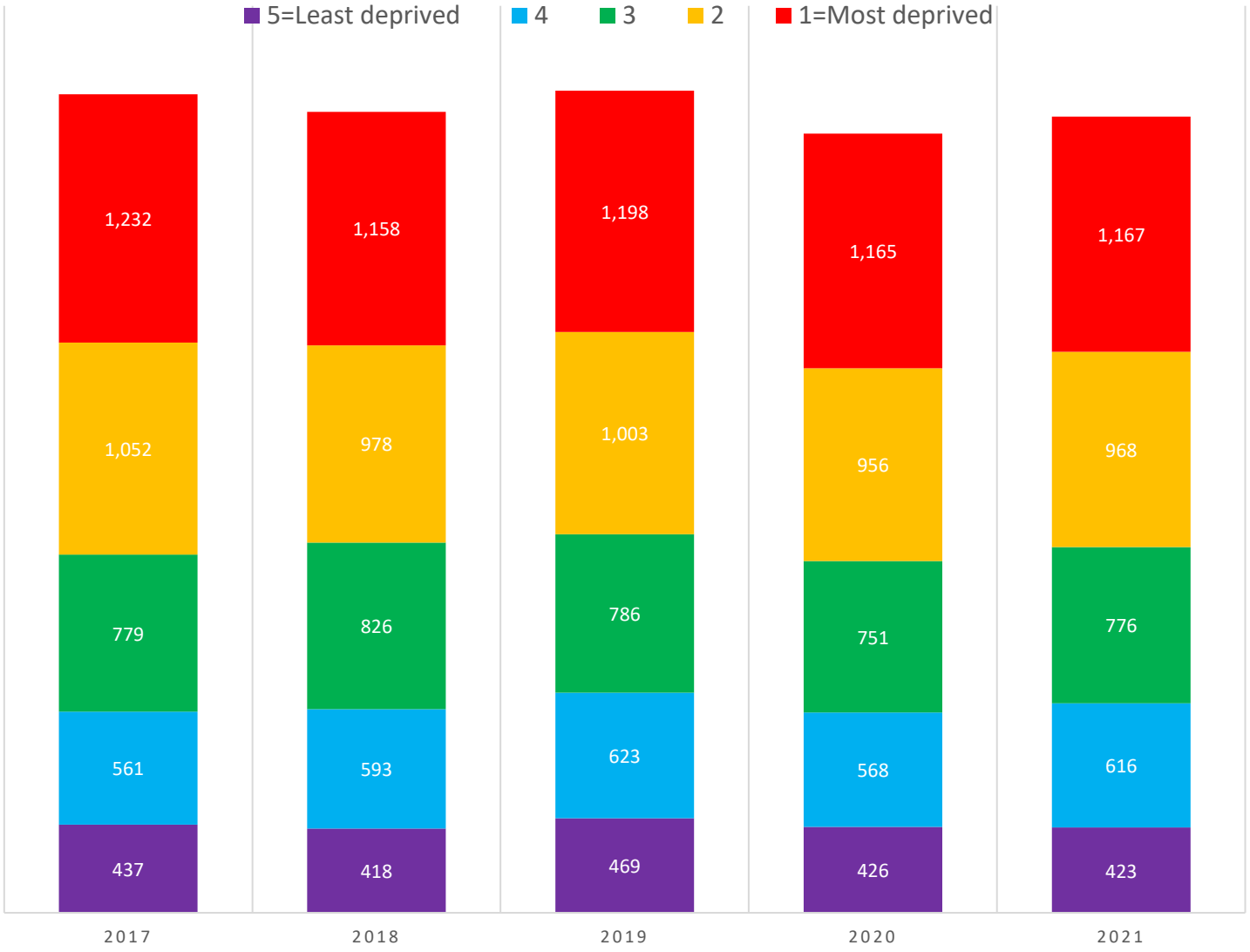
Select cancer type
Lung Cancer (C33-C34)

Select sex
All



Notes:
1. CRUK only include data up to the three-year period 2016-2018 in their models due to the pandemic causing such a sharp fall in cancer registrations in 2020. This was also to account for registry 'creep' i.e. late cancer registrations for 2019 that would be added in future years. 2018 data was deemed to be more stable than later years. This point in time is marked with a broken reference line. PHS have included data beyond this period up to the most recently published period to allow comparison of the observed rates vs the projected rates.
2. In 2019 the Scottish Cancer Registry changed how incidence date is recorded. More information on this is available at the following URL: https://www.isdscotland.org/Health-Topics/Cancer/Scottish-Cancer-Registry/Cancer-Metadata. This change meant there was a reduction in 2019 registrations compared with 2018 that was then compounded by the reduction in 2020 registrations caused by COVID-19 pandemic. Therefore, any comparisons made that contain these years in the 3-year average should be treated with caution. As time goes on comparisons between observed and projected rates/counts will not require the same amount of caution.
3. Data for cervical cancer incidence for females and thyroid cancer incidence for males were not suitable for projections.
4. Number of projected cases for persons may not equal the sum of cases in females and males due to rounding.
5. Cancer registration is a dynamic process: the data presented here may differ from other published data relating to the same period depending on when data were extracted.

Lung cancer deaths and deprivation



Source –Public Health Scotland Dashboard accessed Oct 23

What has changed nationally?

01

Launch of Scottish Optimal Lung Cancer Timed Pathway - Dec 2022

02

Launch of national lung cancer guideline (TMG) - Sep 23

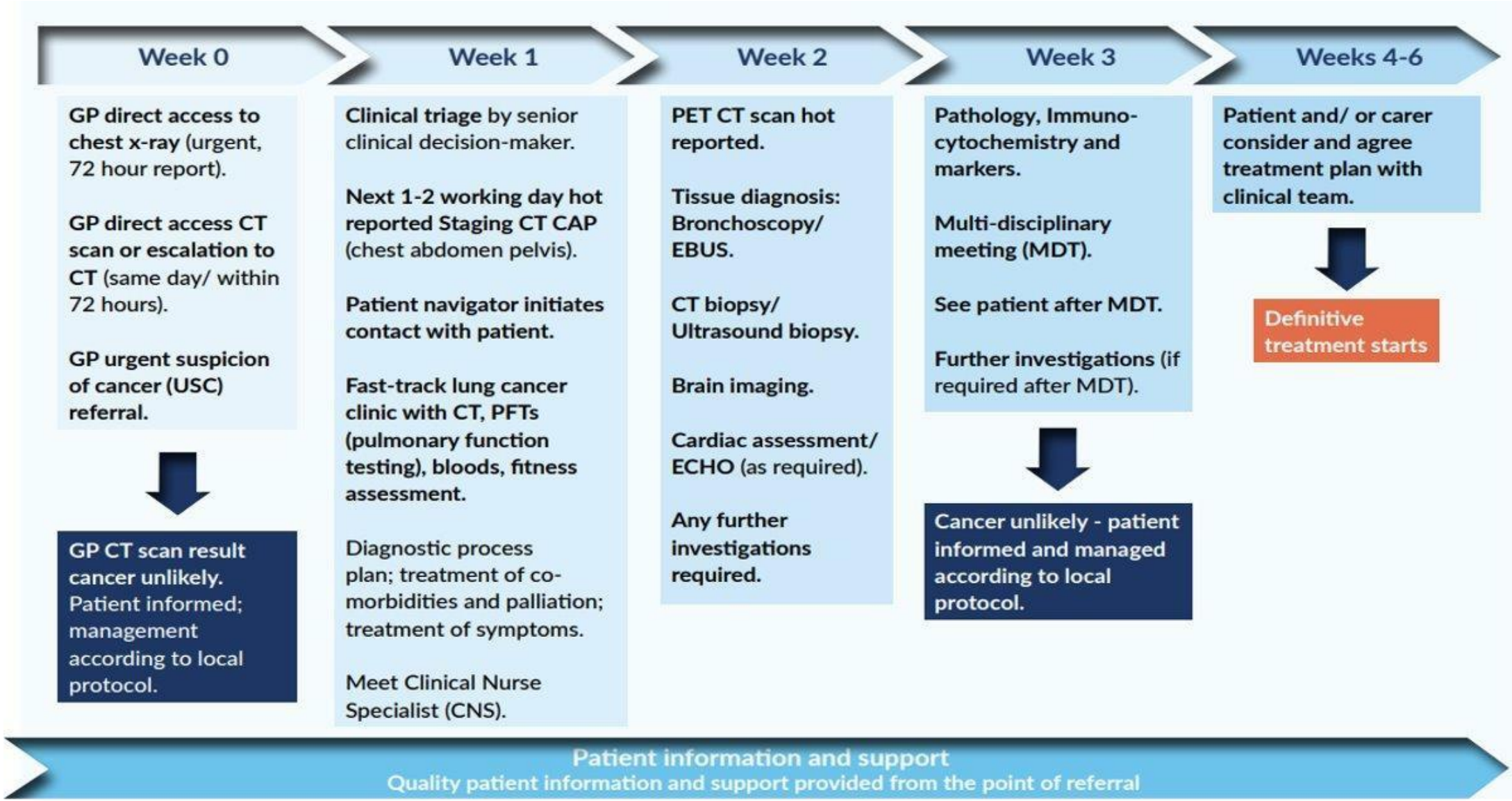
03

CSO funded pilot in lung cancer screening (LUNGSCOT)

04

Established Scottish Expert Advisory Group for lung cancer screening with SG – Aug 23

NHS Scotland Lung Cancer Diagnostic Pathway



A focus on lung cancer – SG commitment:-

'At the time of publication, lung cancer is the single biggest cause of cancer mortality in Scotland and will require the focus applied to it in the National Cancer Plan 2020 to continue, with vigour in the long term.

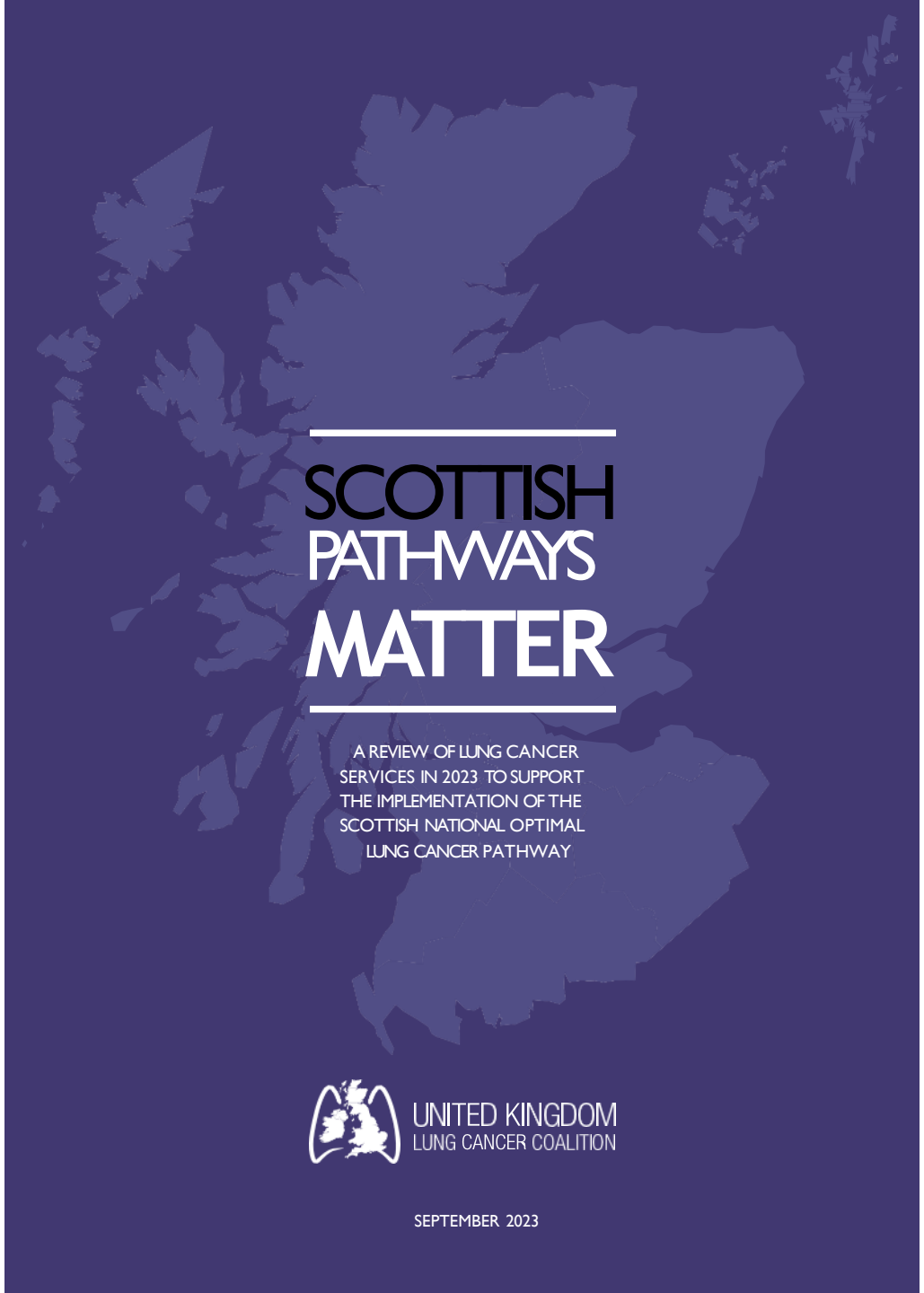
Improved survival will require leadership, prioritisation, resourcing and strong action.

The required actions will be set out in each plan accompanying this strategy and include preventative measures such as smoking cessation services and robust tobacco control; earlier and faster diagnosis, including targeted screening and delivering Scotland's optimal diagnostic pathways; access to specialist treatment; and ongoing research, investment in innovation, and further data and intelligence gathering.'*

- **SG released £3m of nonrecurring funding Dec 2022 for SOLCP implementation**
- SG commitment June 2023: '***27.Support implementation of Scotland's new optimal lung cancer diagnostic pathway.'****
- ***Unadjusted waiting times: 39% of lung cancer patients are waiting more than 62-day target (USC to treatment)***
- ***And 9.2% wait more than the 31-day target from decision to treat to treatment***

Cancer Action Plan for Scotland 2023-2026 (www.gov.scot)*

Public Health Scotland (2023). Cancer waiting times January-March 2023:unadjusted waits. https://publichealthscotland.scot/media/20337/2023-06-27-cwt-table-6-unadjusted-waits.xlsx Accessed August 2023



How do we move forward? What do we need?

UKLCC report, Launched 1st Nov 2023

MSD funded but no editorial or other input

Questionnaires to every lung cancer MDM

17 semistructured interviews with individuals

11 out of 14 health boards

Report compiled by EVOKE health

Key recommendations

- **Getting more people into the NHS lung cancer pathway at an earlier stage, before their cancer spreads:**
  - Diagnose lung cancer earlier by implementing targeted lung cancer screening in Scotland following the UK National Screening Committee recommendation and approval in England earlier this year.
- **Everyone suspected of having lung cancer must move through the pathway quickly, so that they receive treatment before their disease advances:**
  - Every patient to have access to an offer of a CT scan within 72 hours of an abnormal chest x-ray.
  - Increase imaging and in particular PET infrastructure and capacity in Scotland.
  - Reduce the time for full rapid pathology and molecular testing of good quality samples.
  - Increase co-ordination and support for patients on the pathway - using cancer trackers, single points of contact (SPOC), lung cancer nurse specialists (LCNS), prehab, and bundles of investigations

Table 1: Summary of targets, challenges and opportunities in the Scottish lung cancer pathway

Pathway step	Current turnaround time target	New pathway turnaround ambition	Survey / interview findings on turnaround times	Barriers	Solutions
CT following referral / chest X-ray	No specific target outside 62-day wait	Within 1 week	Rural Health Boards meet new target / others can wait more than 2 weeks	• High demand from other departments (eg A&E) • Radiology workforce shortage • Lack of prioritisation / protected lung cancer patient slots	• Adequate pre-scheduled CT slots for lung cancer • Increased / improved radiology training • Outsourced CT reporting • Adoption of AI for lung CT scan analysis • Radiology cancer navigator
PET-CT	Request to reporting within 10 days	Within 1 week	Request to acquisition average of 13 days (range 9-17 days) Acquisition to report average 12 days (range 4-15 days)	• Capacity and infrastructure • Radiology workforce shortage • Lack of prioritisation / protected lung cancer patient slots	• Adequate pre-scheduled PET-CT slots for lung cancer • Investment in infrastructure
EBUS	No specific target outside 62-day wait	Within 1 week	Request to procedure completion average of 8 days (range: 5 to 14 days)	• Lack of physical space for EBUS clinic • Not enough equipment • Quality of sampling leading procedure repetition • Coordination between local delivery and regional/centralised procedures	• Increased specialism in EBUS (less people conducting procedure) / procedure centralisation
CT-guided biopsy	No specific target outside 62-day wait	Within 1 week	Request to procedure completion average of 10 days (range 4-21 days)	• Radiology capacity shortages (outlined above) • Mixed expertise in delivering procedure	• Improvement to radiology capacity • Procedure centralisation

Table 1: Summary of targets, challenges and opportunities in the Scottish lung cancer pathway

Pathway step	Current turnaround time target	New pathway turnaround ambition	Survey / interview findings on turnaround times	Barriers	Solutions
Tissue diagnosis	No specific target outside 62-day wait	< 1 week	5 days (range 2-9 days) from receipt of sample to report	• Pathology workforce shortages • Lack of lung-specific expertise • Intersite transport of material	• Single-site clinic with on-site lung specialist pathology • Increased pathology workforce
Tests to guide treatment: Immunohistochemistry (IHC) plus genomics	IHC: no specific target Genomics: 14 days	Within 1 week for both	Time from initiation of test to results for both IHC and genomics, ranging from 14 to 25 days	• Reflex testing • Laboratory capacity (workforce and space) • Lung-specific pathology expertise • Twice-weekly batch testing of genetic markers	• Improved communication and coordination between pathology and genetics • Splitting samples • Improved training and recruitment • Increased laboratory space
Decision to treat to first treatment	31 days	14 days	2-6 weeks	• Workforce: shortage of LCNSs, nurses more generally, oncologists, oncology pharmacists • Surgical theatre capacity • Radiotherapy capacity • Physical space for clinics / chemotherapy chairs	• Coordination between MDTs within a Cancer Network • Increased and improved training and recruitment • Radiotherapy targets • Creative solutions eg chemotherapy at home / in mobile units

Scottish Cancer Network

Achieving Consensus on Clinical Management of Lung Cancer in a Once for Scotland Approach.

Dr. Noelle O'Rourke
National Clinical Lead

Why do we need consensus ?

Once for Scotland Approach

December 2020 Cabinet Secretary for Health and Sport announced the National Cancer Plan : Recovery and Redesign ‘Once for Scotland’ approach to improve equity of access to cancer care

Scottish Cancer Network

NHS National Service Scotland commissioned by SG 2021 to establish Scottish Cancer Network to progress consensus across Scotland.

Pre 2021 State

Cancer CMGs are developed and updated within regional cancer network boundaries, with some hosting ad hoc national development of CMGs for rarer cancers. There is no formal process to manage variation between CMGs, to assess implementation or to ensure timely updates.

Need for change

Development of CMPs is needed to ensure equity of care across Scotland, but also to provide useful and up to date recommendation for clinicians.

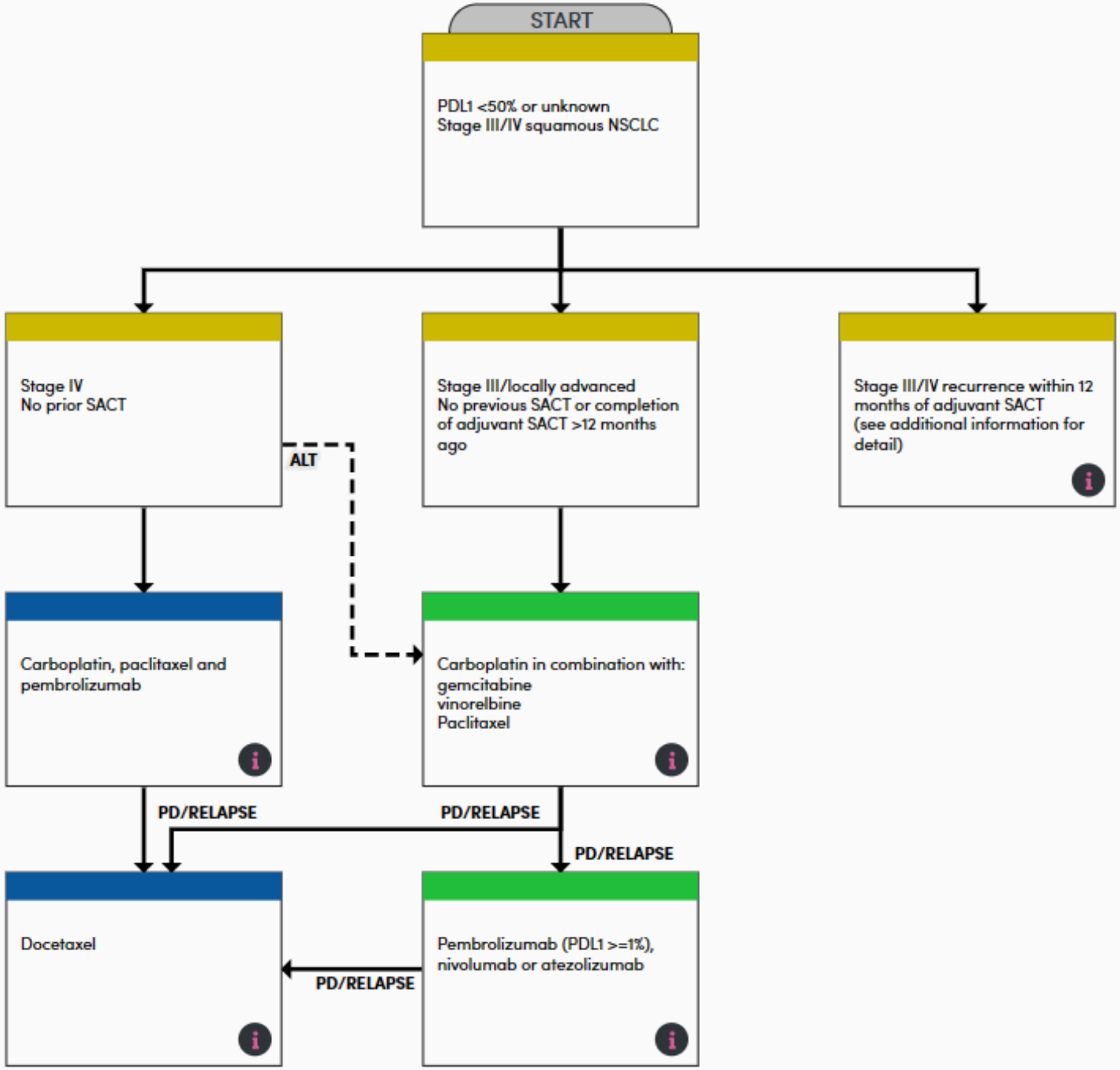
- **Lung Cancer**

- Prehabilitation
- Diagnostics and staging
- Pathology
- Surgery
- Radiotherapy
- Systemic Anti-Cancer Therapy (SACT)

- **Right Decisions for Health and Care**

Scottish Cancer Clinical Management Pathways

Protected content - 7509 | Right Decisions (scot.nhs.uk)
rightdecisions.scot.nhs.uk/scottish-cancer-clinical-management-pathways/lung-cancer


START
PDL1 <50% or unknown
Stage III/IV squamous NSCLC
Stage IV
No prior SACT
ALT
Stage III/locally advanced
No previous SACT or completion of adjuvant SACT >12 months ago
Stage III/IV recurrence within 12 months of adjuvant SACT
(see additional information for detail)
Carboplatin, paclitaxel and pembrolizumab
Carboplatin in combination with:
gemcitabine
vinorelbine
Paclitaxel
PD/RELAPSE
PD/RELAPSE
PD/RELAPSE
Docetaxel
Pembrolizumab (PDL1 >=1%), nivolumab or atezolizumab
PD/RELAPSE

Challenges for a national TMG

Clinical governance

Molecular targets and genomics funding

Measuring progress; audit

Patient facing materials

Pilot lung screening in Scotland: intervention development and interim findings (LUNGSCOT)

Scottish Government update

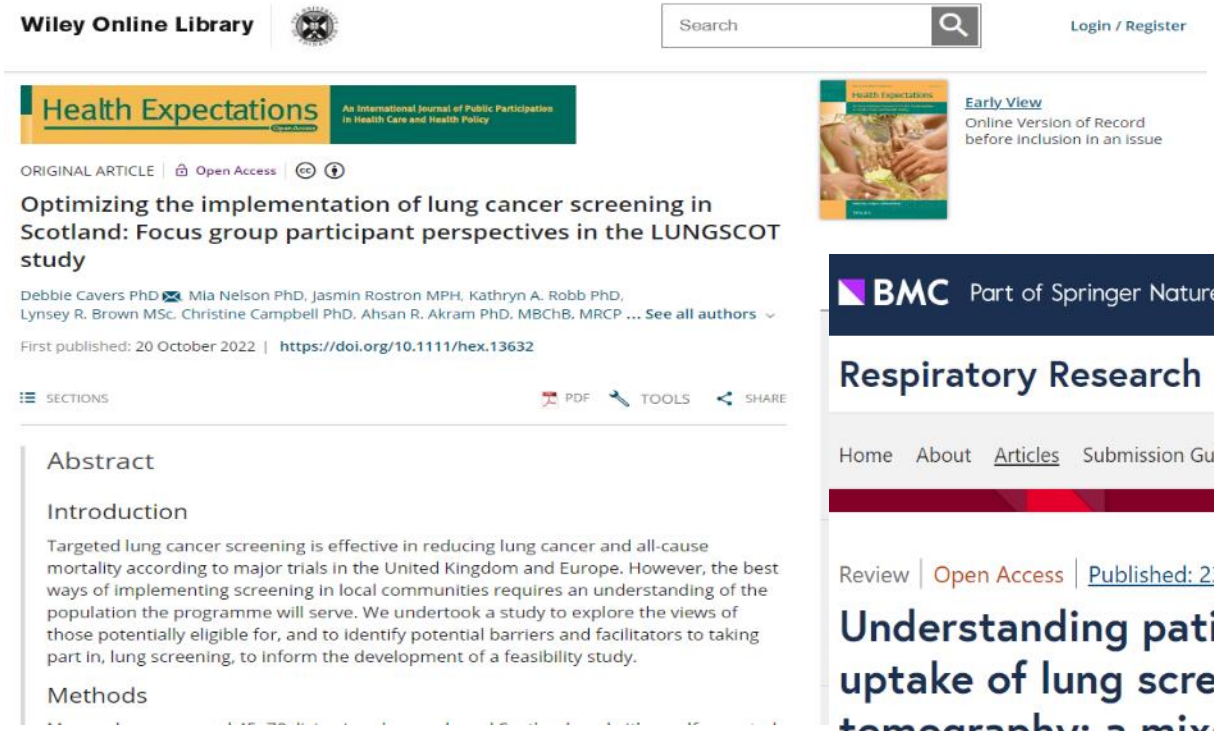
17th May 2023 11am-12pm

Debbie.Cavers@ed.ac.uk

Better health, better futures

THE UNIVERSITY of EDINBURGH | usher institute

Preparatory work to inform the pilot



- Focus group study
- Scoping review
- Stakeholder event
- Document review

Focus group methods and findings n=25

- Men and women aged 45–70, living in urban and rural Scotland, and either self-reported people who smoke or who recently quit, were invited to take part in the study via research agency Taylor McKenzie
- 11 men and 14 women took part in three virtual focus groups exploring their views on lung screening.
- All current smokers or recent quitters
- All from lower SE classes (C2, D, E)
- Focus group transcripts were transcribed and analysed using thematic analysis, assisted by QSR NVivo.
- On the whole they were in favour of lung cancer screening
- 3 themes emerged (1) Knowledge, awareness and acceptability of lung screening, (2) Barriers and facilitators to screening and (3) Promoting screening and implementation ideas

Knowledge and awareness of lung cancer screening

LARGELY UNAWARE! ‘No, I always thought that was something that happened if you develop, you know, or if they suspect you develop then you would have a check, otherwise nothing pre-emptive....’

BUT LIKED THE IDEA ONCE IT WAS EXPLAINED ‘I think the screening is a good idea to catch things earlier or to see if somebody's got the disease or whatever that they didn't know they had’

BUT WERE WORRIED ABOUT BEING JUDGED (SMOKING) ‘There's other causes of lung cancer, it's not just smoking’

AND WORRIED SMOKING CESSATION WOULD BE PUSHED ON THEM ‘I think you have to have that balance...For people to[not] think, ‘oh, we're going there and we're going to have that shoved down our throat ‘

Barriers and facilitators to screening - personal

On an individual level, there were a number of cognitive, psychological and emotional factors influencing screening intentions.

Fear in particular .. 'Maybe you don't want to know, maybe you don't want to have cancer so it's better, you know, just to kind of blunder on and not find out'

Fatalism….'I'm fit and I'm healthy. If I go and get it and it comes back it's chronic or it's terminal, fine, it's only terminal for as long as I'm going to last' 'At the end of the day, I've smoked since I was 15, so what damage is done is done.. '

Stigma and judgement…' I feel as if, oh well, it's your own fault, you caused it. I did cause it, but I was encouraged to cause it' 'No, but you could get members of the public being quite judgemental because I smoke'

Mistrust of healthcare professionals and services..' I wouldn't trust my GP in that case to recommend, you know? Maybe he's biased, he's thinking, okay, that guy's smoking so he's just wasting time and money anyway so I won't recommend him'

Practical and system barriers

- Time off work.. ‘If you got a letter in saying, oh, you've got to go at ten o'clock in the morning and it's hardly worth going to work before that because you have to travel or whatever, so you might end up losing four hours' pay, you know what I mean?’
- Rural Scotland (16% of lung cancer).. ‘We're lucky in [place] that we've got a hospital and but there are lots of places that {don’t} and there are a lot of old people that can't get to it.’
- Delays and waiting for test results were a source of worry for people and there was a common reported perception of the NHS as an under-resourced and over-stretched service

Promoting screening and implementation; ideas from the focus groups

Managing fears and expectations

Be positive about the message 'publicise how successful these are and really go for it and say, right, this is the next step in the screening and it's going to be a lung screening'

Avoid the word cancer…' seeing the word 'health check' you would get more people to go. The word cancer and people just say, well I don't want to know'.

Improve accessibility ..

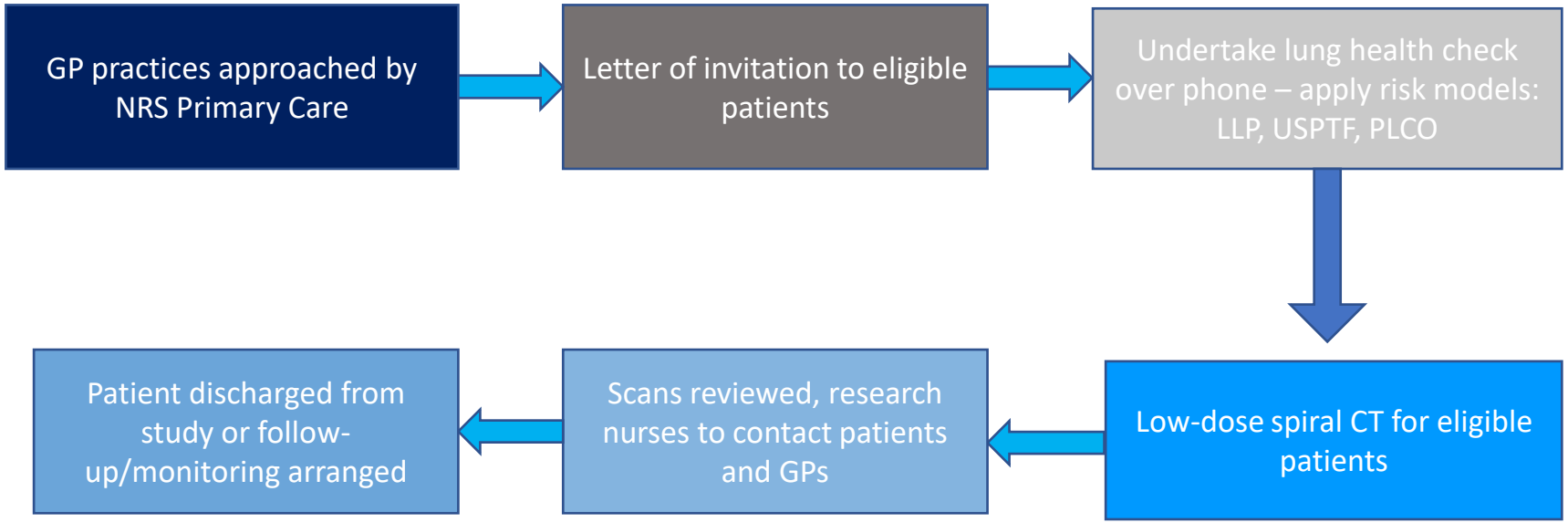
' This is where the mobile vans come in, you know? They can drive to these remote areas, especially in Scotland, when they go further north'

'I think your employer should get help if people need time off to go to these things, they should be encouraging and get paid for going to them'

And use every avenue possible to get the message across; Men's Sheds. School education. Community hubs

'…taking the fear out of it by having all different age groups talking about it...It's trying to get the message out there, people need to start screening themselves from an age where they're invited to do so, and not be fearful of it'

LUNGSCOT: Lung health check pathway



Lothian Recruitment May 23

- Total –948 invites sent to target group in 4 practices
- 222 responses (23.4%)

- Practice 1- 262 invited, 61 responses (23%)
- Practice 2 – 238 invited, 77 responses (32%).
- Practice 3 – 250 invited, 40 responses (16%)
- Practice 4 – 198 invited, 44 responses (22%)

- Practice 3
  - Lower response rate
  - High deprivation
  - Higher education in only 31% (compared to 59% and 61% in practices 1 and 2)

  - Invites sent over Xmas period

Descriptive findings to date

- Call to 213 to assess eligibility over the phone, excluding those who have had a recent CT scan (within 6 months)
- 106 females & 107 males
- Age range 55-73 years (mean 62.8, median 62 years)
- Years smoked range 10-60 years (mean 37.4, median 40 years)
- 44 people were assessed as low risk
- 24 lost to FU or DNA booked CT

Scan findings so far, n=103 (May 23 Lothian)

- Normal scan n=21; 20.4%
- Abnormal findings in n=82 scans; 79.6%
- CAD (total n=50; 48.5%)
  - Mild n=20
  - Moderate/severe n=12
  - Severe n=4
  - CAD unclassified n=14
- Emphysema n=22; 21.4%
- Nodules n=23; 22%
  - <6mm; n=14
  - 6-7.9mm; n=5
  - >8mm; n=2
  - Other (benign); n=2

- Other incidental findings n=30 (29.1%), including granulomas, scarring, pleural plaques, thoracic aneurism, hiatus hernia, gallbladder stones

Nested qualitative study

- Interviews with LungScot participants, LungScot non-responders and health care professionals to explore acceptability, cues to action, implementation issues and barriers to participation
- N=13 interviews with *participants* so far
- Application of Robb's*I-SAM model of screening behaviour, based on Michie behaviour change wheel
- *Robb KA. The integrated screening action model (I-SAM): A theory-based approach to inform intervention development. Prev Med Rep. 2021 May 31;23:101427. doi: 10.1016/j.pmedr.2021.101427. PMID: 34189020; PMCID: PMC8220376

Decision to act: response to offer of lung screening

- Widely acceptable and linked to narrative of screening awareness and early detection

"To be honest, I was elated. I thought, brilliant, someone's doing something."
(Agnes, age 63, high risk, existing COPD)

"Well I thought it was a very good initiative. […] And that was prompted by the poo test that's carried out every few years, you know, for…assistance with diagnosing bowel cancer so…I'm a great believer in that. Anything that can give you, you know, early diagnosis, I'm all for." (Moira, 57, emphysema, 2mm nodule)

Motivation: Reflective

Reflective motivation was often linked to perceived risk and an evaluation of benefits and harms that outweighs barriers restricting participation

"Obviously being an ex-smoker, there always is a worry about what damage has it actually done."
(John, high risk, aged 68)

"I think being a smoker and, again, my dad died of cancer."
(Arnold, high risk, 64)

Capability: Psychological

For many, participation was based on self-efficacy, fluency in health literacy and an orientation to the future (preserving health, preventing illness)

"I think most of the population, if there's a medical issue, I think most people want to address it." (Moira, 57, emphysema, 2mm nodule)

"I suppose, you know, we often talk, you know, amongst ourselves and our family and, you know, amongst friends about how fortunate we are to have a, sort of, a screening system. So […] I think we're always quite grateful to be able to do that."

(Jenny, 58, low risk)

Study expansion plans

With continued SG funding, we are able to continue for another 12 months beyond our CSO pilot.

We have recruited three new health boards in principle: Greater Glasgow and Clyde, Grampian and Highlands

We have added these sites to NHS ethics and secured R&D approvals

Study set up in process in these areas

Plan to carry out another 250 scans across the three health boards

National QPI audit

- **At Scotland level for 2021, the QPI targets were met for 18 of the 25 indicators.**

- **QPI 4 PET CT is recognised to have been very ambitious and was not expected to be fulfilled in the first years but represents our ambition to do better and get under 10 days.**

- **QPI 5 staging is expected to improve with new funding having been obtained to develop and deliver a simulator based national EBUS and bronchoscopy training program.**

- **Particular areas of strong service performance were seen in relation to Surgical resection rate, Systemic anti cancer therapy in NSCLC and Chemotherapy in SCLC.**

- **Some of the QPI targets have proved challenging to achieve over the three years; Pre-treatment diagnosis and Brain imaging**

QPI	Target	2019	2020	2021
QPI 1: Multidisciplinary Team (MDT) Meeting	95%	92.3	98.3	98.1
QPI 2(i): Pathological Diagnosis	80%		78.1	78.1
QPI 2(i): Pathological Diagnosis. Years 1:7	80%	68.2		
QPI 2(ii): Pathological Diagnosis NSCLC	90%	92.6	92.8	93.3
QPI 2(iii): Pathological Diagnosis molecular profiling	75%	87.3		
QPI 2(iii): Pathological Diagnosis stage III - IV non-squamous NSCLC	80%			94.3
QPI 2(iv): Pathological Diagnosis stage III - IV NSCLC	80%		91.0	94.2
QPI 4: PET CT in patients being treated with curative intent	95%			22.7
QPI 4: PET CT in patients being treated with curative intent. Years 1:7	95%	97.6		
QPI 5: Invasive investigation of intrathoracic nodal staging	80%			68.7
QPI 6(i): Surgical resection in non small cell lung cancer	20%	25.7	25.7	23.5
QPI 6(ii): Surgical resection in non small cell lung cancer, stage I - II NSCLC	60%	77.7	76.3	72.1
QPI 8: Radiotherapy in inoperable lung cancer	35%		47.5	44.7
QPI 8: Radiotherapy in inoperable lung cancer. Years 1:7	35%	37.9		
QPI 9: Chemoradiotherapy in locally advanced non small cell lung cancer	50%	56.9	52.5	53.0
QPI 10: Chemoradiotherapy in limited stage small cell lung cancer	70%			75.0
QPI 10: Chemoradiotherapy in limited stage small cell lung cancer. Years 1:8	70%	64.9	70.0	
QPI 11(i): Systemic anti cancer therapy in NSCLC	35%	40.8		41.0
QPI 11(ii): Systemic anti cancer therapy in NSCLC oncogenic driver mutation	80%			85.2
QPI 11(ii): Systemic anti cancer therapy in NSCLC stage IIIB or IV	60%	78.4		
QPI 11(iii): Systemic anti cancer therapy in NSCLC oncogene mutation negative	40%			43.4
QPI 12(i): Chemotherapy in small cell lung cancer	70%	79.2	73.9	78.2
QPI 12(ii): Chemotherapy in small cell lung cancer. Palliative	50%	73.9	68.5	75.5
QPI 13(i): 30 day mortality - Biological Therapy NSCLC	<10%	6.6		
QPI 13(i): 30 day mortality - Biological Therapy SCLC	<15%	0.0		
QPI 13(i): 30 day mortality - Chemoradiotherapy	<5%		3.2	2.0
QPI 13(i): 30 day mortality - Radical Radiotherapy	<5%	1.3	0.9	1.5
QPI 13(ii): 90 day mortality - Chemoradiotherapy	<5%		7.1	6.8
QPI 13(ii): 90 day mortality - Radical Radiotherapy	<5%	6.0	3.3	3.2
QPI 14: Stereotactic Ablative Radiotherapy (SABR) in inoperable stage I lung cancer	35%	37.4	41.1	37.7
QPI 15(i): Pre-treatment diagnosis - Surgery	75%	59.0	62.5	70.6
QPI 15(ii): Pre-treatment diagnosis - Radical Radiotherapy	75%	66.1	51.6	55.9
QPI 15(iii): Pre-treatment diagnosis - Chemoradiotherapy	75%	99.1		
QPI 16: Brain Imaging	95%		79.6	87.7
QPI 16: Brain Imaging. Years 5:7	95%	66.8		

Lung Cancer Quality Performance Indicators - Patients diagnosed between January 2019 to December 2021 - Lung Cancer Quality Performance Indicators - Publications - Public Health Scotland

Trials

- There is LOTS going on!
- A great deal of support
- National referral system

Open Studies

RADIOTHERAPY

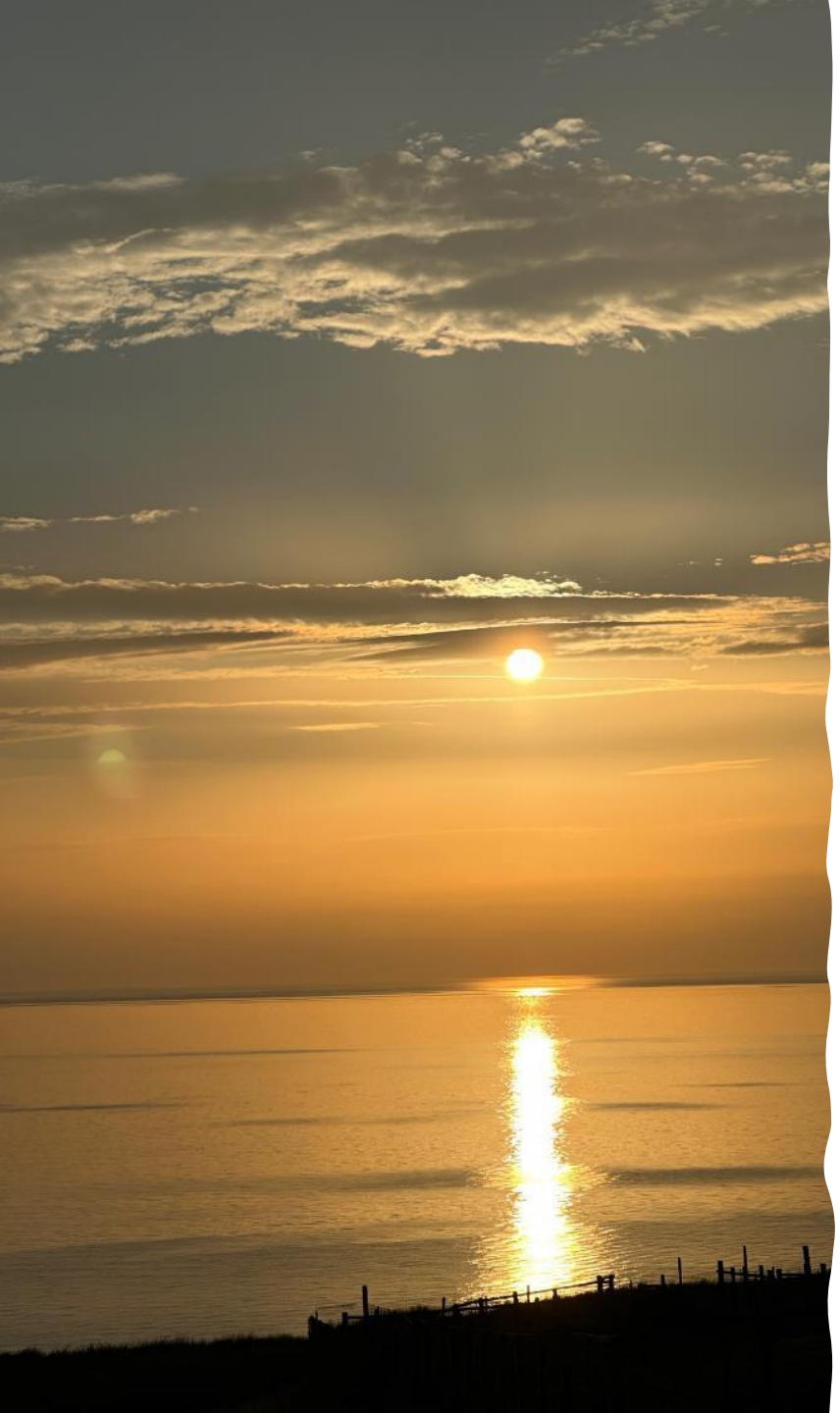
Radical	Oligometastatic	Palliative / Supportive Care
CONCORDE sequential cXRT or radical XRT alone	COMET 3 metachronous	CARES (Cannabinoid trial)
PACIFIC 9 (adj durv)	COMET 10 (4-10 meta)	MITRE (microbiome)

SACT

NSCLC 1st line	SCLC first line	2nd line NSCLC
AVANZAR chemoIO—poused	IMFORTE (SCLC) chemoio	COSTAR—post chemoio
PALOMA2 EGFR —poused		
REFINE	BIONTECH 411 (TLR vac-	
MITRE (pembro)	cine) with chemoio	

TKI

EGFR exon 19/21	EGFR exon 20	Other
1st line PALOMA 2— Ami+ laz-	PALOMA 2—first line Ami	
ertinib—paused	with chemo—paused	NUVALENT Ros1 and Alk in set up



My huge (Scottish) thanks!

- All the committed and passionate staff working in lung cancer in Scotland
- Scottish Lung Cancer Network leads Joris van der Horst (WOSCAN) and Richard Stretton (NCA)
- Scottish Centre for Sustainable Delivery and Scottish Cancer Network including Noelle O'Rourke, Phil Hodkinson, Diane Primrose, Nicola Barnstaple, Rae Thomson
- All those involved in the Lung Cancer National TMG led by John MacLay
- SG commitment in particular the Less Survivable Cancers cross party group
- LUNGSCOT trial group led by David Weller and Debbie Cavers
- Lorraine Dallas from Roy Castle Foundation
- UKLCC support particularly Mick Peake, David Baldwin and Robert Rintoul
- All the patients and families who give me inspiration, every day