North Central London
Cancer Alliance

Population Health Management in Cancer

NCL/NWL PHM Workshop
Pre-read Pack

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1. Introduction to the NCL Cancer Alliance

Our mission, strategic aims and objectives

North Central London Cancer Alliance

Mission statement

Our mission is to continuously improve cancer outcomes for the whole of our population through a high performing, innovative and sustainable cancer system that delivers the best patient and staff experience

Strategic Aims

2023-2028

- SA1. Improve survival, focusing on early diagnosis, and prevention
- SA2. Deliver the highest standards of patient experience and improve quality of life
- SA3. Support the operational delivery of high performing, innovative and sustainable cancer diagnostic and treatment services
- SA4. Reduce health inequalities across our whole population
- SA5. Ensure we have the right workforce in place and that we deliver the highest standards of staff experience
- SA6. Foster innovative approaches and practice in cancer diagnosis, care and treatment

Strategic Objectives

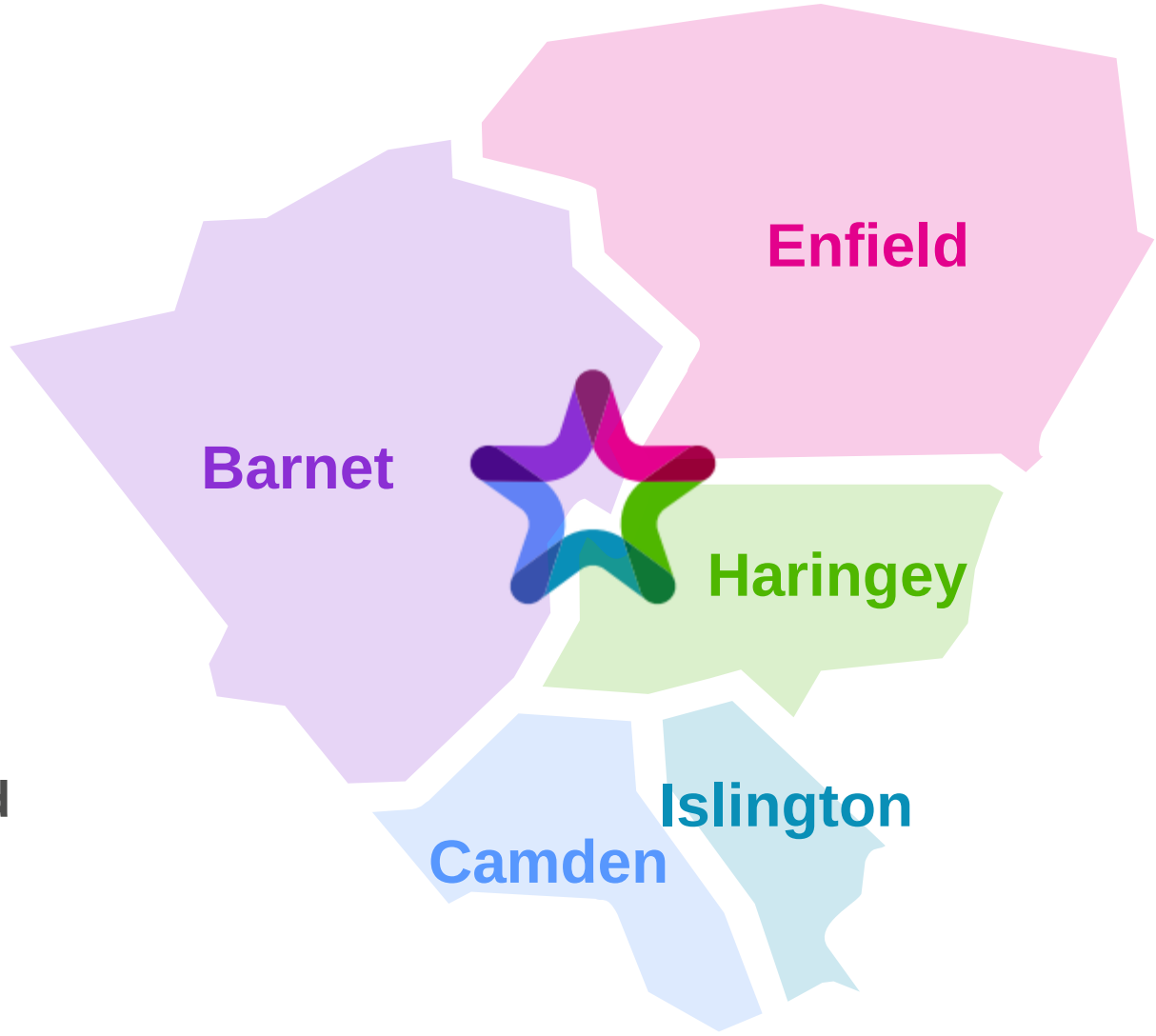
2023-2028

- SO1a. Consistently improve five year survival, in line with the 2028 NHS Long Term Plan ambition
- SO1b. Detect 75% of cancers at Stage I or II by 2028
- SO1c. Reduce smoking rates, rates of alcohol consumption and the number of people who have excess weight in NCL.
- SO2a. Continually improve our performance in the CPES to be in the top quartile nationally by 2028
- SO2b. Consistently improve quality of life for all cancer patients
- SO3a. Deliver and sustain compliance with the 62 day standard by 2028,and 28 day standard by March 2026, with continuous improvement up to then
- SO3b. Reduce variation in clinical practice across the whole pathway
- SO4a. Continually reduce inequalities across the whole cancer pathway until services are on par across our population
- SO5a. Deliver year on year improvement in our staff satisfaction survey and retention
- SO6a. Identify, support and evaluate a suite of clinical innovations with the aim of contributing to improved outcomes

Who do we serve?

North Central London Cancer Alliance

- **Residents** of North Central London – i.e. Barnet, Enfield, Haringey, Islington and Camden
- **Patients** of our cancer services delivered in North Central London
- Patients **nationally and globally** that benefit from our research
- Our **workforce**



How do we deliver our mission?

By working together in partnership across institutions and industries

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2. NCLCA's PHM Priorities

NCLCA PHM Priorities

North Central London Cancer Alliance

1. Cancer Population Health Management Tool
2. Cancer Population Risk Stratification Approach
3. Cancer Prevention (HPV, Smoking, Obesity, Alcohol)
4. Physical Activity approach
5. “Left Shift” of services from acute to community

We will be exploring Priority 1 & 2 further in this pack

3. Cancer Population Health Management Tool

A Holistic Cancer Population Health Management Tool

North Central London Cancer Alliance

NCL ICB has been developing new data products – London Secure Data Environment “SDE” opportunities

NCLCA is taking the lead on developing a comprehensive cancer PHM tool on this opportunity. We have begun setting the case for change and stakeholder engagement for this product.

Why?

- Potential to improve direct care, service planning, performance assurance, and equity monitoring.

Lessons learnt so far – key enablers?

- Local ownership, flexible design, and alignment with end-user workflows.
- Integrating with existing and in development dashboards

BUT key questions remain - these centre around wider stakeholder use, key use cases, impact (outcomes both system and patient ones) and sustainability

Cancer PHM Tool - Use Case 1:

NHS North Central London Cancer Alliance

Prevention & Early Detection

Screening coverage

- Identify high-risk groups (e.g. learning disabilities, severe mental illness, deprived communities)

Primary cancer surveillance

- Improve monitoring of pre-cancerous conditions and genetic predispositions (e.g. Lynch syndrome, BRCA)

HPV vaccination

- Support catch-up programmes
- Improve dataflows from vaccination hubs into primary care systems

Cancer PHM Tool - Use Case 2:

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North Central London
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Diagnosis & Treatment

Reduce delays in the primary care interval before referral/diagnosis	**Monitor performance** against diagnostic standards (28-day pathways)	**Analyse variation** in stage at diagnosis and diagnostic routes	Benchmarking across providers

Cancer PHM Tool - Use Case 3:

NHS
North Central London
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Living with and beyond Cancer

Track long-term **quality of life outcomes** – e.g. Mental Health, Employment, Service usage	Monitor **late effects** of cancer/treatment	Support **recurrence surveillance**	**Rehabilitation and prehabilitation**

Cancer PHM Tool - Use Case 4:

North Central London Cancer Alliance

Service Planning and Commissioning

Forecast **demand** and activity.	**Benchmark** services and outcomes.	Identify **inequalities** and prioritise resources (e.g. rarer cancers).

Discussion: Use cases

- How relevant are these scenarios to you?
- What would you prioritise from the 4 areas?
- What is missing?
- Additional concerns? E.g. Data quality and missingness

Indicators

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Category	Indicators
Risk factor prevalence	• Smoking rates (target age groups)
	• Obesity prevalence
	• Alcohol intake
	• Cancer family history
	• Hereditary mutations
	• HPV vaccination rates (where relevant)
	• Exposure to environmental pollutants
	• Physical activity (measure? Clinical code? Proxys?)
	• Genomic uptake
Cancer screening coverage	• Proportion of eligible population attending breast, bowel, cervical, and lung screening
	• Did not attend, recall, or declined screening invitation
Diagnostic interval	• Median time from first presentation (GP/primary care) to diagnosis
	• Suspected cancer referrals
	• Direct access tests (OGD, CT, etc).
	• Route to diagnosis
	• Stage of diagnosis

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Follow-up engagement	• Holistic Needs Assessment
	• End of Treatment Summary
	• Cancer Care Review
	• Cancer Care Support discussed
	• Cancer Treatments coded
	• Anxiety and Depression screening
	• Weight management & dietary advice
	• Prehabilitation (standard measure? Where?)
	• Rehabilitation (standard measure? Where?)
	• Social prescribing (GP ref data?)
	• Late effects (Standard recognised list of late effects?)
	Survival – 1 and 5 year
	QOL

Equity and social context indicators	• Deprivation
	• Ethnicity
	• Main religion/belief
	• Age
	• Employment status
	• Occupation
	• Language needed
	• Has a carer
	• Is a carer
	• Reasonable adjustments
	• Digital exclusion
	• Sexual orientation
	• Disability
	• Homelessness
	• Substance misuse
	Pregnancy/Maternity

What will it look like?

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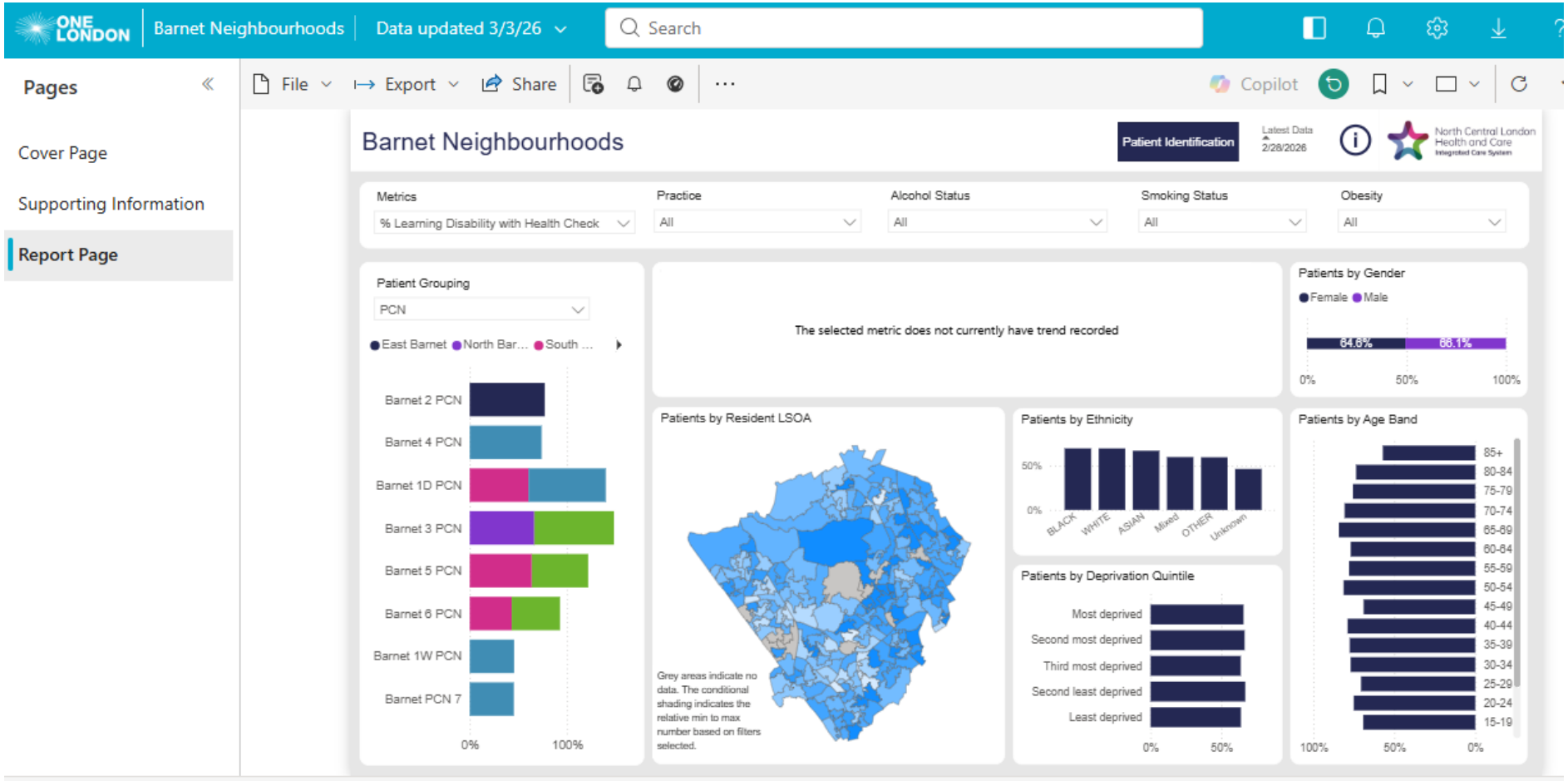
Screenshot exemplifies how the future tool will look – current indicators would capture the agreed cancer indicators.



Barnet Neighbourhoods

Patient Identification

Latest Data
2/28/2026

North Central London Health and Care
Integrated Care System

Metrics
% Learning Disability with Health Check

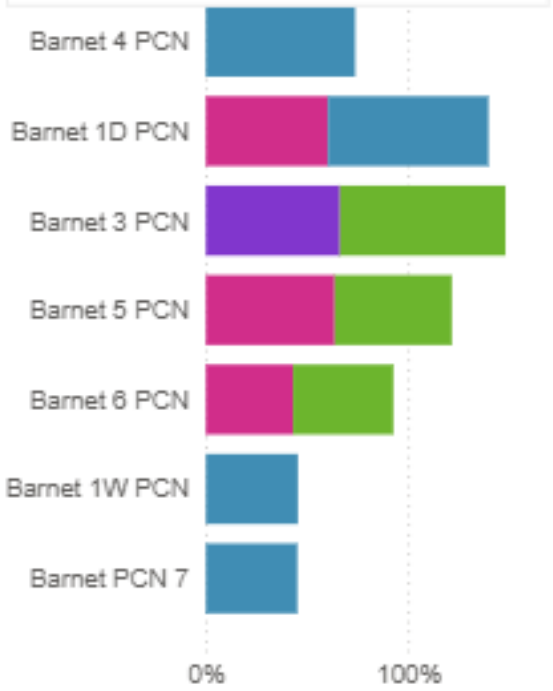
- 0-5 Hospital Admissions for Dental Carr...
- Carer
- Emergency Admissions due to Falls in ...
- HIU GP Patient
- % Alcohol Risk Patients Offerred Cessa...
- % Hypertensive Patients Treated to Tar...
- % Learning Disability with Health Check
- % Obesity with Weight Management Re...

Practice
All

Alcohol Status
All

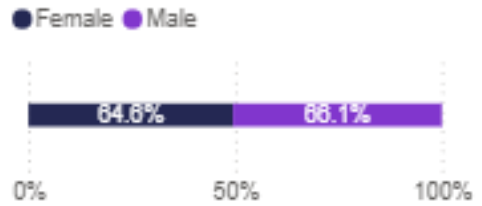
Smoking Status
All

Obesity
All

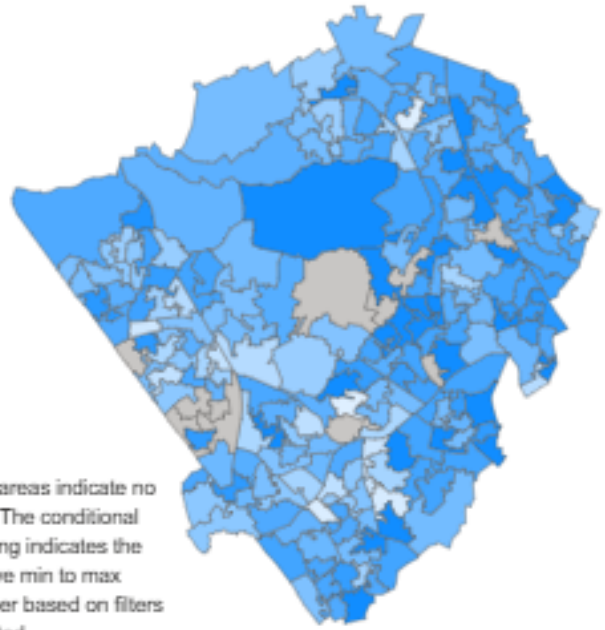


The selected metric does not currently have trend recorded

Patients by Gender



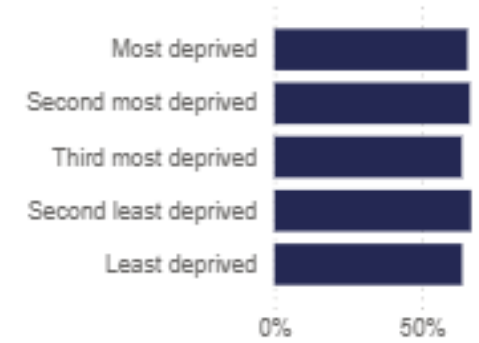
Patients by Resident LSOA



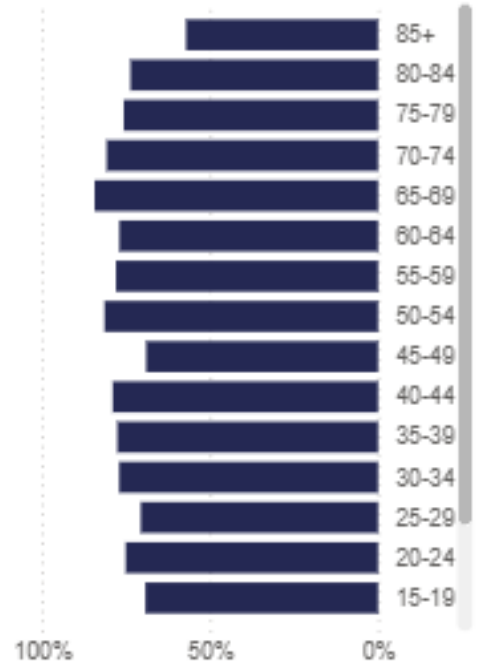
Grey areas indicate no data. The conditional shading indicates the relative min to max number based on filters selected.

Patients by Ethnicity

Patients by Deprivation Quintile



Patients by Age Band



Discussion: PHM Tools – Development and Implementation

- Do you use PHM tools right now?
- What are your experiences?
- What support would you need from us/system?
- Would you join us in joint service evaluations of use cases?
- Join NCL Cancer Alliance PHM tool steering group?

Contact information: afsana.bhuiya1@nhs.net

4. Cancer Population Risk Stratification

Different stages of risk stratification

Risk stratification can be used at multiple points in the 'early detection pathway' to improve effectiveness of different approaches

North Central London Cancer Alliance

NO — SYMPTOMATIC — YES

System approach

Prevention | Awareness | Screening | Case finding | Decision Support | Referral optimisation

Risk stratification

Use multivariable data to estimate an individual's probability of developing or harbouring cancer within a defined timeframe, supporting targeted screening and case-finding, CDS or referral tirage.

Population-level risk stratification to inform prevention and screening	Pre or early symptomatic and "At-Risk" Primary Care case finding	Symptomatic (early/late) Presentation and Clinical Decision Support (CDS)	Triage and Referral Pathway Optimisation
Identify individuals at elevated risk before they develop symptoms, enabling targeted prevention, awareness raising, screening, surveillance, or early review.	Detect subtle clinical or laboratory signals before a GP suspects cancer — enabling proactive recall, testing, or monitoring.	Support GPs or frontline clinicians at the point of presentation to interpret combinations of symptoms, test results, and risk factors in real time	Prioritise patients already referred with suspected cancer for the right test, at the right time, based on risk and urgency.

Mechanism and definition

Health Promotion/Prevention	Patient awareness of symptoms	Screening Programmes	Opportunistic Screening	Case finding	Diagnostic decision support	Referral pathway optimisation	Safety-netting & surveillance
Reduce population-level risk by modifying behaviours associated with cancer (e.g. smoking, obesity, alcohol, inactivity	Increase public recognition of early cancer symptoms and encourage timely help-seeking	Simple tests across an apparently healthy population in order to identify individuals who have risk factors or early stages of disease	Individuals are able to access a screening test, without the presence of a formal register	Targeting resources at individuals or groups who are suspected to be at risk for a particular disease. It involves actively searching systematically for at risk people	Assist clinicians to interpret presenting symptoms and tests	Prioritise and route referred patients efficiently	Ensure patients with ongoing risk are re-evaluated

Examples

		Case Study 1	Case Study 2	Case Study 3			Case Study 4
Use risk algorithms to inform prescribing of weight loss injections	Use of NHS App to help patients recognise possible cancer symptoms earlier	Combine data sets to inform targeted approach to lung cancer screening	Pharmacy data combined with patient data to inform risk of OG cancer	Primary care health record mining to inform higher risk of pancreatic cancer	Decision Support Tools: C the signs, QCancer, Ardens, NICE RAT tools	Effective use of image capture for skin lesions and patient data to inform skin cancer referrals	Ovarian Cancer surveillance algorithm (ROCA) to inform optimal point for risk reducing surgery

Data attributes for stages of risk stratification

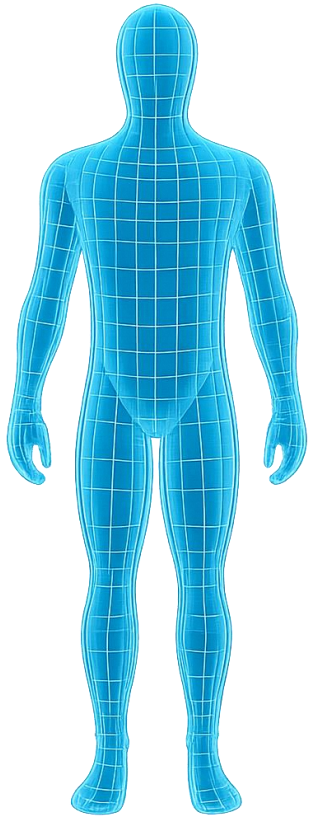
North Central London Cancer Alliance

	Population-Level Risk Stratification	Pre or early Symptomatic and "At-Risk" Primary Care case finding	Symptomatic (early/late) Presentation and Clinical Decision Support (CDS)	Triage and Referral Pathway Optimisation
Purpose	Identify individuals at elevated risk before they develop symptoms, enabling targeted prevention, awareness raising, screening, surveillance, or early review.	Detect subtle clinical or laboratory signals before a GP suspects cancer — enabling proactive recall, testing, or monitoring. Note – Symptomatic patients who do not access care would be part of this group	Support GPs or frontline clinicians at the point of presentation to interpret combinations of symptoms, test results, and risk factors in real time — improving decisions about investigation and referral.	Prioritise patients already referred with suspected cancer for the right test, at the right time, based on risk and urgency.
Operationalises at what level/provider	ICB level Public health – population health management (e.g. pharmacies)	GP at scale – federation / Neighbourhoods	Direct care – point of clinical care. GPs, Nurses, HCPs.	On SCR pathways, CDC, outpatient pathway
Themes of data attributes	Demographics (age, sex, ethnicity) Social determinants (deprivation index, housing, employment) Behavioural factors (smoking, alcohol, BMI) Family history and known genetic predispositions Longitudinal lifestyle or preventive care data	Routine blood tests (e.g., declining haemoglobin, rising inflammatory markers) Weight trajectory and BMI trends Recurrent but non-specific symptom codes (fatigue, anaemia, dyspepsia) Repeated consultations or healthcare contacts for vague complaints Prescription patterns (e.g., repeated PPIs, iron supplements, antiemetics)	Presenting symptoms (weight loss, rectal bleeding, dysphagia, fatigue) Examination findings (mass, lymphadenopathy, jaundice) Near-patient test results or recent bloods Prior risk score or population-level flags	Structured referral information (symptoms, FIT result, bloods) Imaging or endoscopy findings from initial work-up Known genetic predispositions
Example	A population-level algorithm which is used by ICB population health or a trust commissioned service - flags women aged 45–65 with multiple risk attributes (obesity, smoking, family history) for a targeted early screening pilot for colorectal or ovarian cancer.	A federation population health service clinic applies the model to detects subtle decline in haemoglobin and rising platelets across multiple practices, flagging a patient cohort for review or FIT testing, before overt GI symptoms occur.	Patient presents to GP with mild weight loss and iron-deficiency anaemia, the CDS tool is activated and calculates a composite early cancer risk score, recommending urgent referral under the 2WW pathway.	Among patients referred for suspected colorectal cancer, a triage model combines FIT score, blood results, and demographic risk to prioritise those most likely to benefit from expedited colonoscopy.

Future cancer risk profiling approach

NHS North Central London Cancer Alliance

Personalised Risk Profiling



Genomics

Whole Genome Sequencing (WGS) to create a Polygenic Risk Score (PRS)

Biomarkers

Using the biological signals from blood, saliva, urine and even tear drops to indicate the early presence of cancer

Data

Using data from a range of sources such as health records, demographic data and lifestyle data to inform cancer risk

The aim: to develop intelligent algorithms which connect different datasets across genomics, biomarkers and other health/demographic data to inform cancer risk stratification. Some examples already in development and use, as per following case studies

Intelligent algorithms

Flow of underling data to drive algorithms

NHS North Central London Cancer Alliance

Genomics

Genomic datasets (either WGS or otherwise through Genetic testing service)

Biomarkers

Using the biological signals from blood, saliva, urine and even tear drops to indicate the early presence of cancer

Health Data

Using patient health data from a range of sources such as primary / secondary care

Demographics

Using demographic data from a range of sources including lifestyle data to inform cancer risk

Data platform

In London we would recommend using the **Secure Data Environment (SDE)** as this contains primary care data – however it does not yet include genomic data

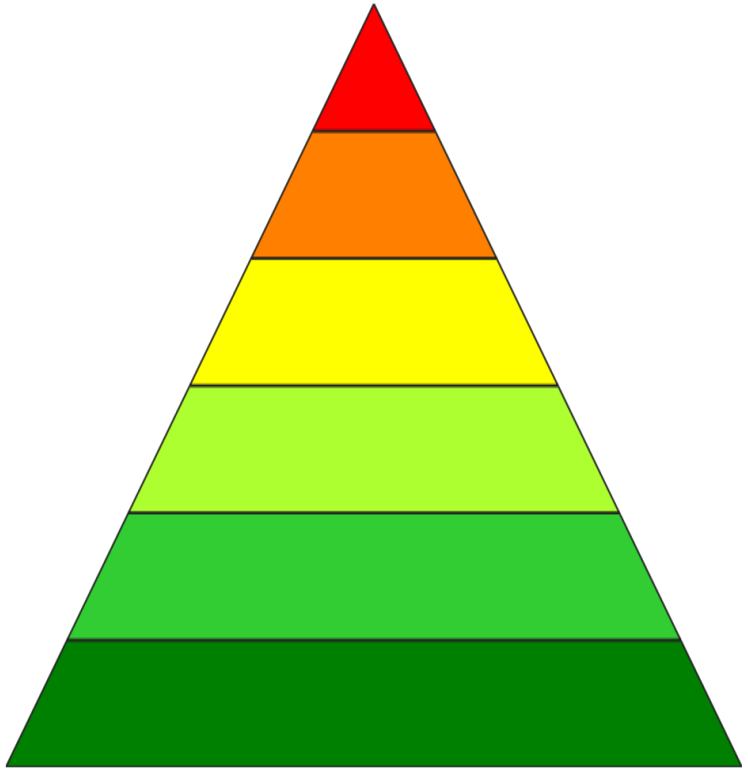
Intelligent algorithms

- Pharmacies
- GPs
- Neighbour-hoods
- Hospitals / CDCs

The Cancer Pathway of the future

NHS North Central London Cancer Alliance

Personalised Risk Mitigation



Prevention

Risk reducing treatments

- Surgery
- Drugs / vaccinations
- Gene-based

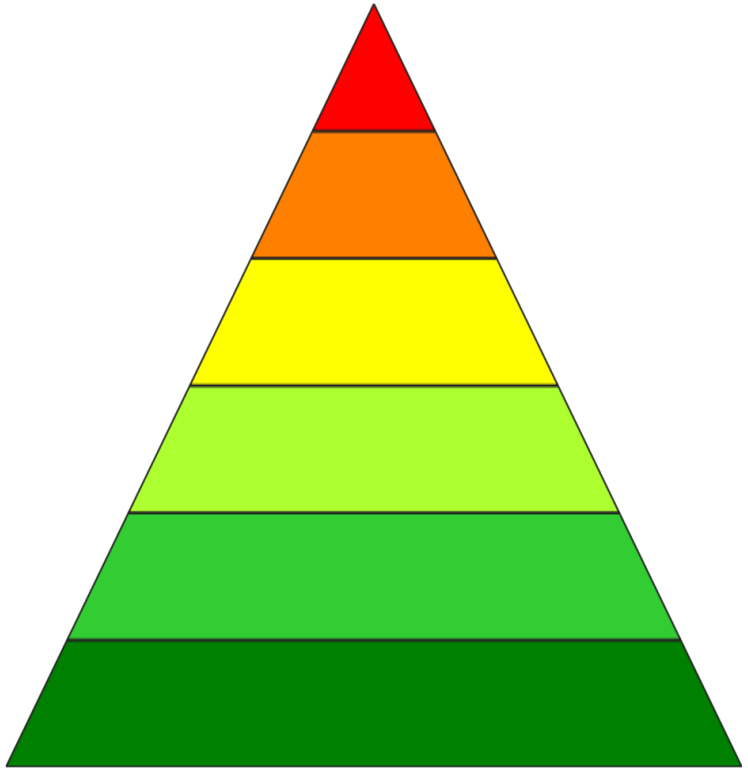
Lifestyle Support

- Weight loss injections
- Targeted anti-smoking / alcohol reduction
- AI lifestyle coaching

The Cancer Pathway of the future

NHS North Central London Cancer Alliance

Personalised Risk Mitigation



Early diagnosis

Targeted Surveillance

Dynamic intervals

Biomarker monitoring

GP Support

AI driven decision support tools

Diagnostics

Self sampling at home

Neighbourhoods

Questions

North Central London Cancer Alliance

- Where do you think Cancer Risk Stratification could be most effective?
- What role would providers (primary/secondary care) and the ICB play in supporting the Cancer Alliance in delivering this change?
- What are the key factors to consider in rolling our risk stratification pathways?

Please e-mail anna.baranski@nhs.net with any further thoughts

5. Risk Stratification Case Studies

Case study 1: Lung cancer screening

NHS North Central London Cancer Alliance

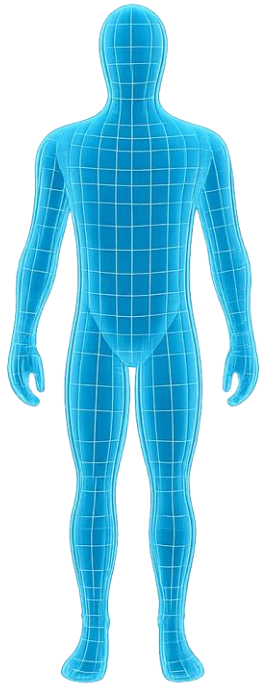
The problem

- Lung cancer is the leading cause of cancer death in England, with around 35,000 deaths each year, largely due to late diagnosis.
- Early detection is transformative: lung cancer diagnosed at stage I–II has significantly better survival and is often curable.
- Targeted Lung Health Checks (TLHC) work: North Central London was the first system in England to achieve 100% rollout, with ~75% of screen-detected lung cancers diagnosed at stage I or II.
- However, the current screening model is expensive, relying on age and smoking history to determine eligibility.
- Under current criteria, only ~1% of people screened are diagnosed with lung cancer, creating high cost and pressure on imaging and workforce capacity.
- Future screening must be more targeted, using broader risk factors and data-driven risk stratification to focus resources on those at highest risk.

Case study 1: Lung cancer screening

NHS North Central London Cancer Alliance

The solution: Personalised Risk Profiling



Data

Use of 31 data points from linked data sets (such as London SDE) to inform lung cancer risk / screening invitees

- **Demographics**: Age, sex, ethnicity
- **Smoking history**: Pack-years, duration, intensity, time since quitting
- **Medical history**: COPD, asthma, prior cancers, pulmonary fibrosis, finger clubbing
- **Alcohol Related Damage Score** - Alcohol impact measure
- **Family history**: Lung cancer in first-degree relatives
- **Occupational/environmental exposure**: Asbestos, radon
- **Lifestyle Risk Score -** Composite risk measure
- **Socioeconomic status**: Deprivation index
- **BMI/weight loss**: Low BMI or recent unexplained weight loss
- **Respiratory symptoms**: Persistent cough, haemoptysis, breathlessness
- **Proteomics**: Serum/plasma biomarkers
- **Medications:** First line ACE inhibitors

Gradient Boosting Ensemble Algorithm By Quantum Analytica

In a study using retrospective data the tool identified 40%+ more lung cancer cases from the same size screening pool compared to current screening criteria.

In future this could be further improved through adding genetic data and outputs from biomarkers (blood tests).

Case study 2: Oesophageal Cancer

NHS North Central London Cancer Alliance

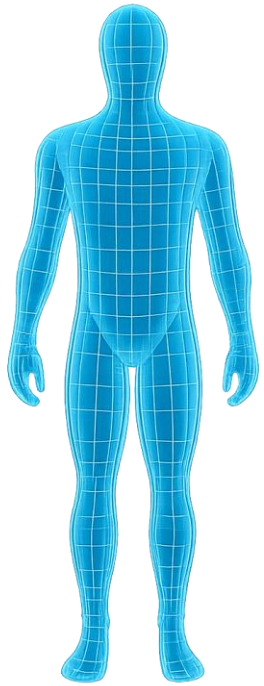
The problem

- Approximately 80% of oesophageal cancer patients are diagnosed too late to treat effectively, but when caught early, survival rates improve significantly.
- People with long-term chronic acid reflux, referred to as gastro-oesophageal reflux disease (GORD), are at higher risk of experiencing cell changes in the food pipe that can lead to cancer and precancerous conditions such as Barrett's Oesophagus.
- Of the estimated 9 million plus people in the UK with GORD, over 6 million are not presenting to their GP, preferring instead to purchase over-the-counter heartburn medication from supermarkets and pharmacies.
- Therefore there is a gap in primary care records to identify risk factors related to this disease.
- The Cyted Capsule Sponge is a novel, evidenced based technique for detecting Barrett's Oesophagus, dysplasia and cancer, avoiding the need for Endoscopy in vulnerable groups and can be easily administered in community settings.

Case study 2: Oesophageal Cancer

NHS North Central London Cancer Alliance

The solution: Personalised Risk Profiling



Biomarkers

The capsule sponge test collects oesophageal cells, which are analysed for molecular biomarkers such as TFF3 to detect Barrett's oesophagus and assess cancer risk.

Data

Patient demographics such as age put together with spending habits in pharmacies (e.g. Boots advantage card data to show repeated purchases of heartburn medication) or over the counter advice from pharmacist

'COMPASS' risk algorithm

Case study 3: Pancreatic cancer

NHS North Central London Cancer Alliance

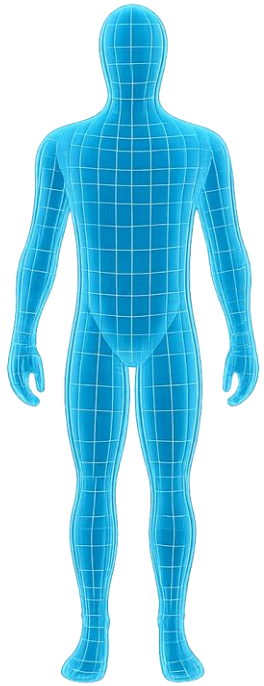
The problem

- Pancreatic cancer is the 10th most common cancer in England and only 7.3% of people live 5 years or more beyond the date of their diagnosis.
- Currently around 77% of staged pancreatic cancers are diagnosed at late stage (3 or 4).
- One early indicator of pancreatic cancer is new onset diabetes (NOD) coupled with weight loss.
- The NICE guideline on the symptoms and signs that warrant investigation and referral for suspected cancer includes a recommendation for primary care to refer people aged 60 years and over with NOD and weight loss.

Case study 3: Pancreatic Cancer

North Central London Cancer Alliance

The solution: Personalised Risk Profiling



Biomarkers

Blood test to test for CA19-9 (Cancer Tumour associated protein – biomarker) which is elevated in many people with pancreatic cancer

Data

Combine patient demographics/health record data such as:

- Age (age 60+)
- New onset diabetes
- Weight loss

With patients meeting these characteristics referred to secondary care on a suspected cancer pathway

Pancreatic case finding algorithm

Case study 4: Ovarian cancer

NHS North Central London Cancer Alliance

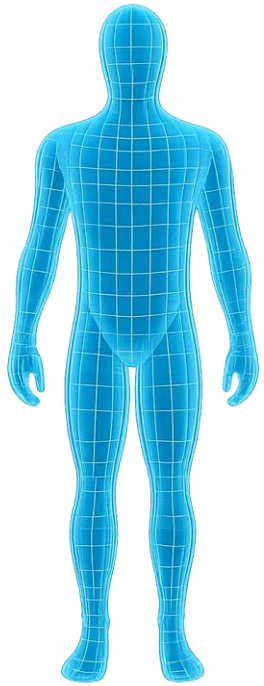
The problem

- In the UK, there are approximately 6,600 new cases of ovarian cancer diagnosed annually. Of them, up to 20% may be the result of a familial predisposition, due to the inheritance of gene mutations in certain genes, particularly BRCA1 and BRCA2.
- Women with a germline pathogenic BRCA1 or BRCA2 variant have significantly increased lifetime risk of developing ovarian cancer (OC)
    - Up to 65% risk for BRCA1 and 37% risk for BRCA2
    - Symptoms typically present at late stage (3c and above) with poor prognosis
    - Around 25% diagnosed via emergency presentation
- Only way to reliably prevent OC is risk-reducing surgery - bilateral salpingo-oophorectomy (RRSO) - removal of the both ovaries and fallopian tubes - which in premenopausal women will induce infertility, early menopause and potentially require long-term Hormone Replacement Therapy (HRT).
- Between 20–40% of BRCA carriers delay or decline surgery, leaving them unmonitored and at risk of late-stage OC diagnoses. These women face a significantly increased lifetime risk of developing OC.
- Many women prefer to delay RRSO until they have completed their family or until they reach natural menopause
- Effective surveillance is needed until a woman has undergone RRSO

Case study 4: Ovarian cancer

NHS North Central London Cancer Alliance

The solution: Personalised Risk Profiling



Genomics

Germline pathogenic **BRCA1** or **BRCA2**

Biomarkers

Regular blood test to test for CA125 (Cancer Antigen 125)

Data

Patient demographics such as age to inform risk algorithm

Risk of Ovarian Cancer Algorithm (ROCA)

First patients undergoing ROCA in the UCLH Familial Cancer Clinic via funding from NCL CA in June 2025. The blood test will be repeated three times a year to assess risk and bring forward risk reducing surgery if risk is too high.

Case study 4: Ovarian cancer

North Central London Cancer Alliance

Impact

The ALDO study showed that surveillance with ROCA Test can **approximately halve the proportion of ovarian cancer patients diagnosed with advanced (stage 3b and above)**.

A meta-analysis of all the ROCA-based BRCA-carrier surveillance trials is shown below (see figure below, extracted from the ALDO paper).

Analysis found that over 90% of patients who were diagnosed with ovarian cancer but were not on surveillance (blue column) were diagnosed at stage 3b (metastatic tumours up to 2cm diameter outside of the pelvis) or higher. In contrast, only around half the patients on surveillance were diagnosed at these advanced stages (green column)

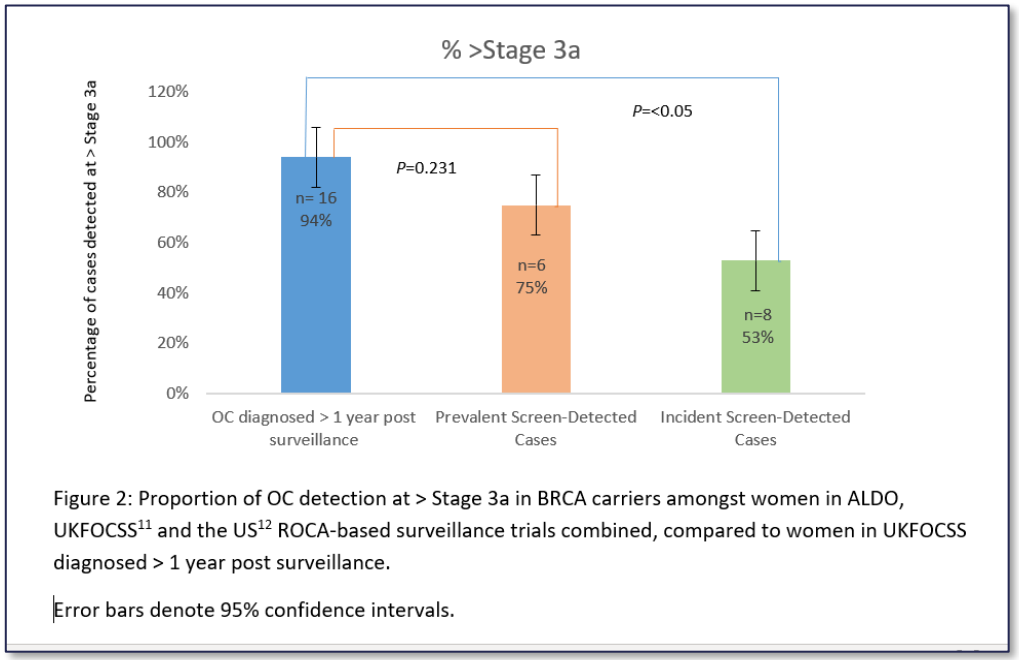


Figure 2: Proportion of OC detection at > Stage 3a in BRCA carriers amongst women in ALDO, UKFOCSS[11] and the US[12] ROCA-based surveillance trials combined, compared to women in UKFOCSS diagnosed > 1 year post surveillance.

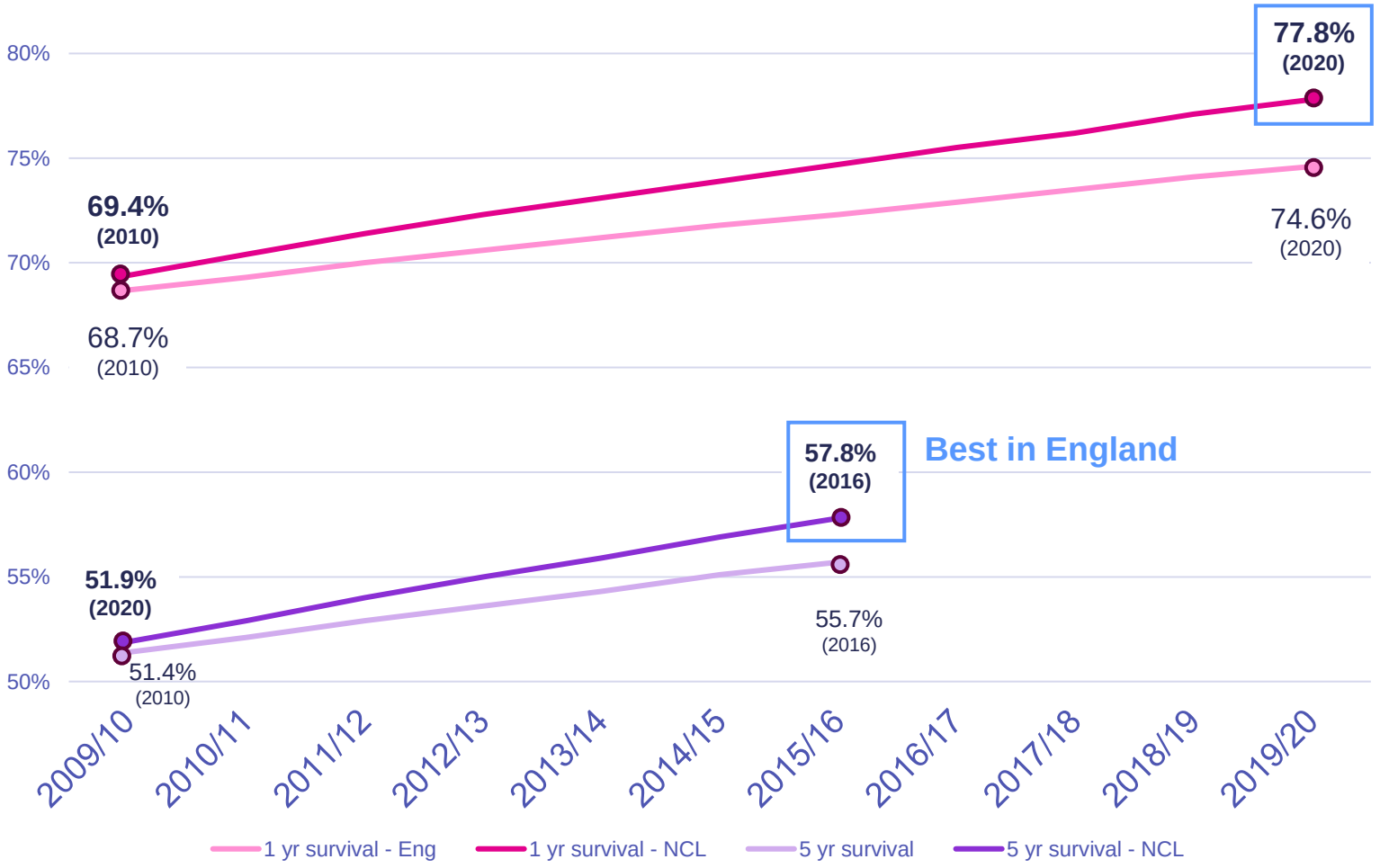
Error bars denote 95% confidence intervals.

6. NCL Cancer Context
Outcomes & Performance

What has happened to our Cancer Outcomes?

Cancer Context 2010 to 2025

NHS North Central London Cancer Alliance



One year survival

8.4%

improvement in 10 years

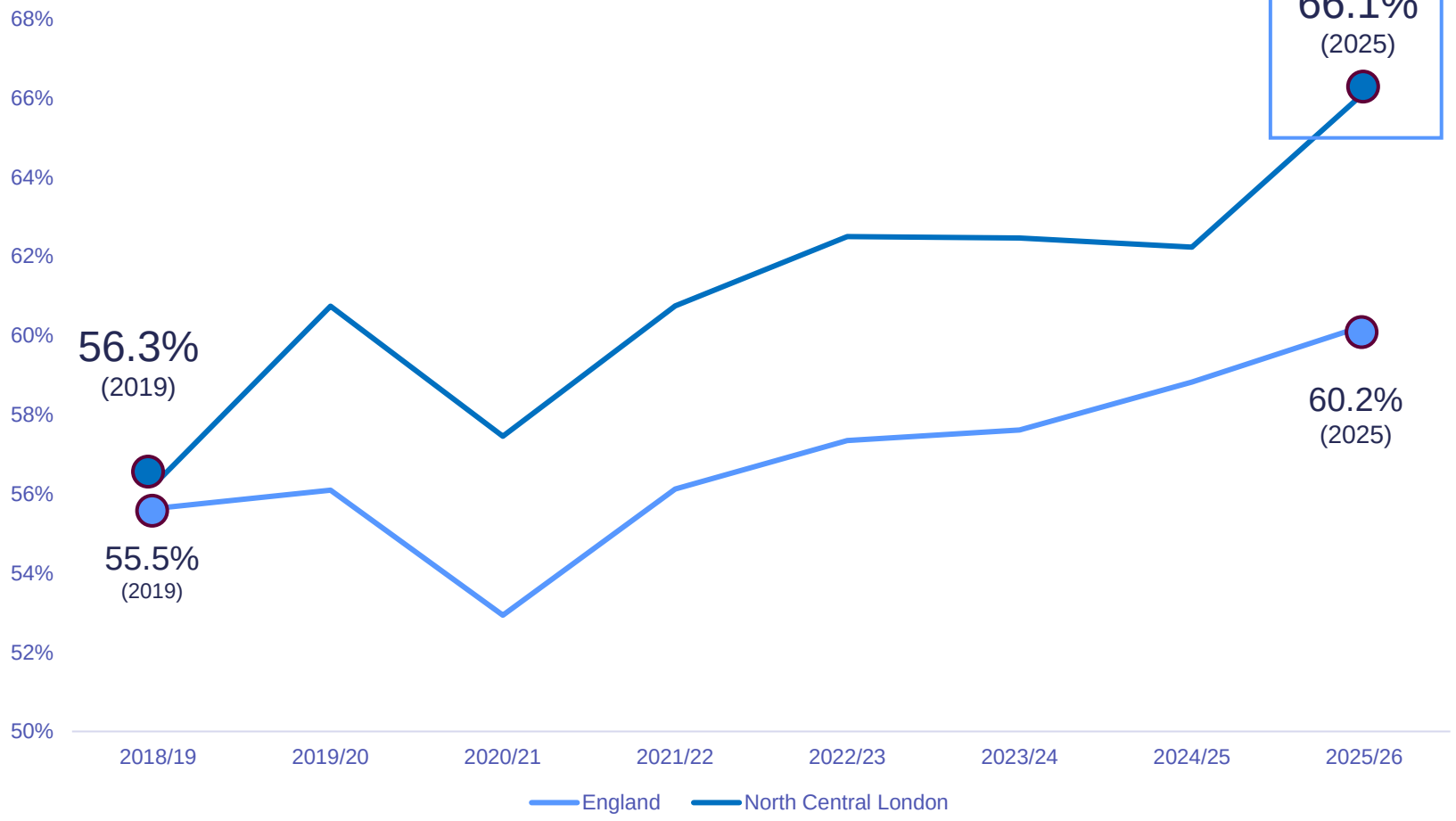
Five year survival

5.9%

improvement in 6 years

Cancer Context 2010 to 2025

NHS North Central London Cancer Alliance



Early diagnosis

9.8%

improvement in 7 years

(ENG 4.7% improvement)

Cancer Context 2010 to 2025

North Central London Cancer Alliance

What has driven this improvement?

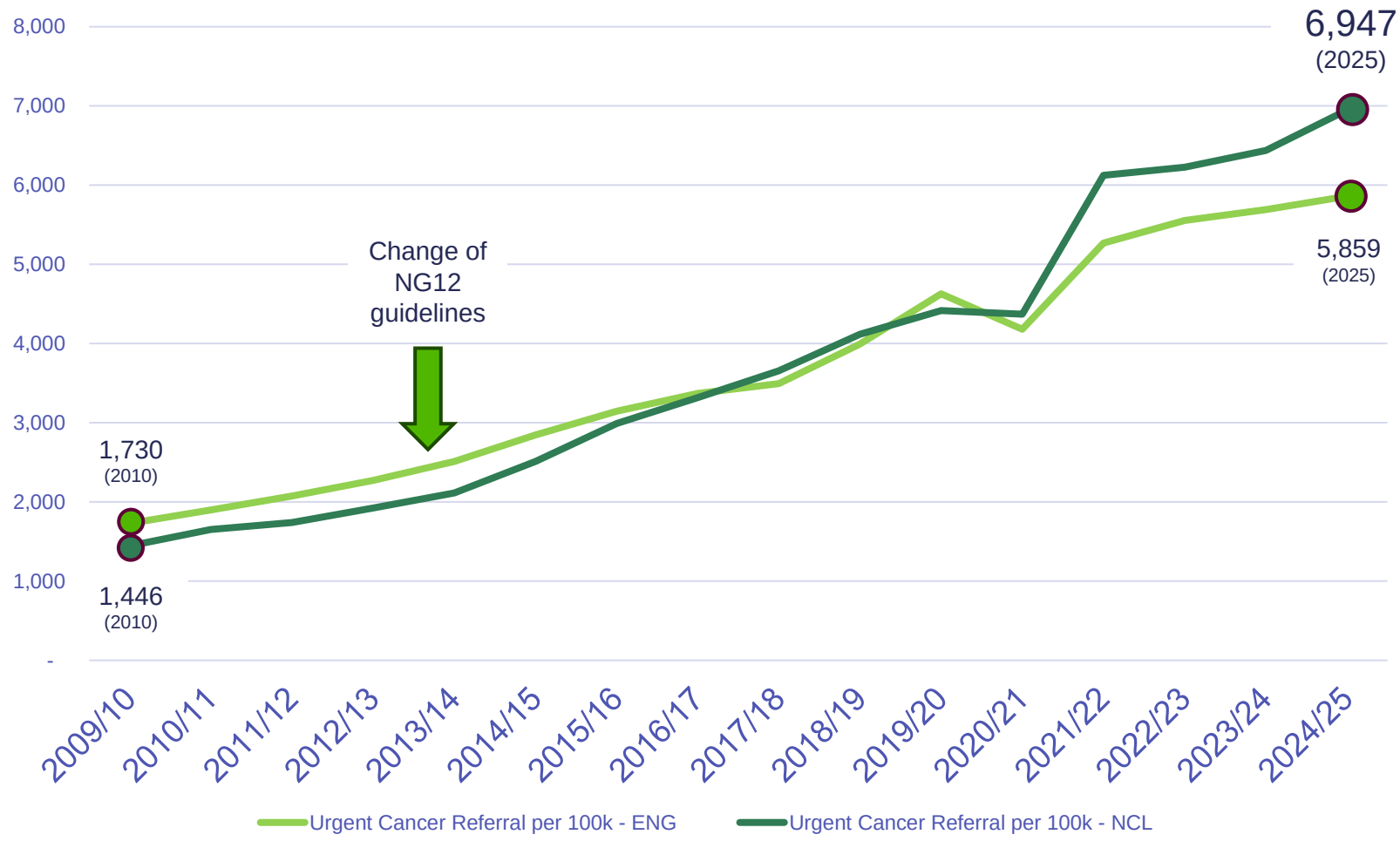
Cancer Context 2010 to 2025

North Central London Cancer Alliance

1. We have widened the net

Cancer Context 2010 to 2025

NHS North Central London Cancer Alliance



Cancer referrals from Primary Care per 100k population

Source: NDRS (2009-19)

eRS (2019-25)

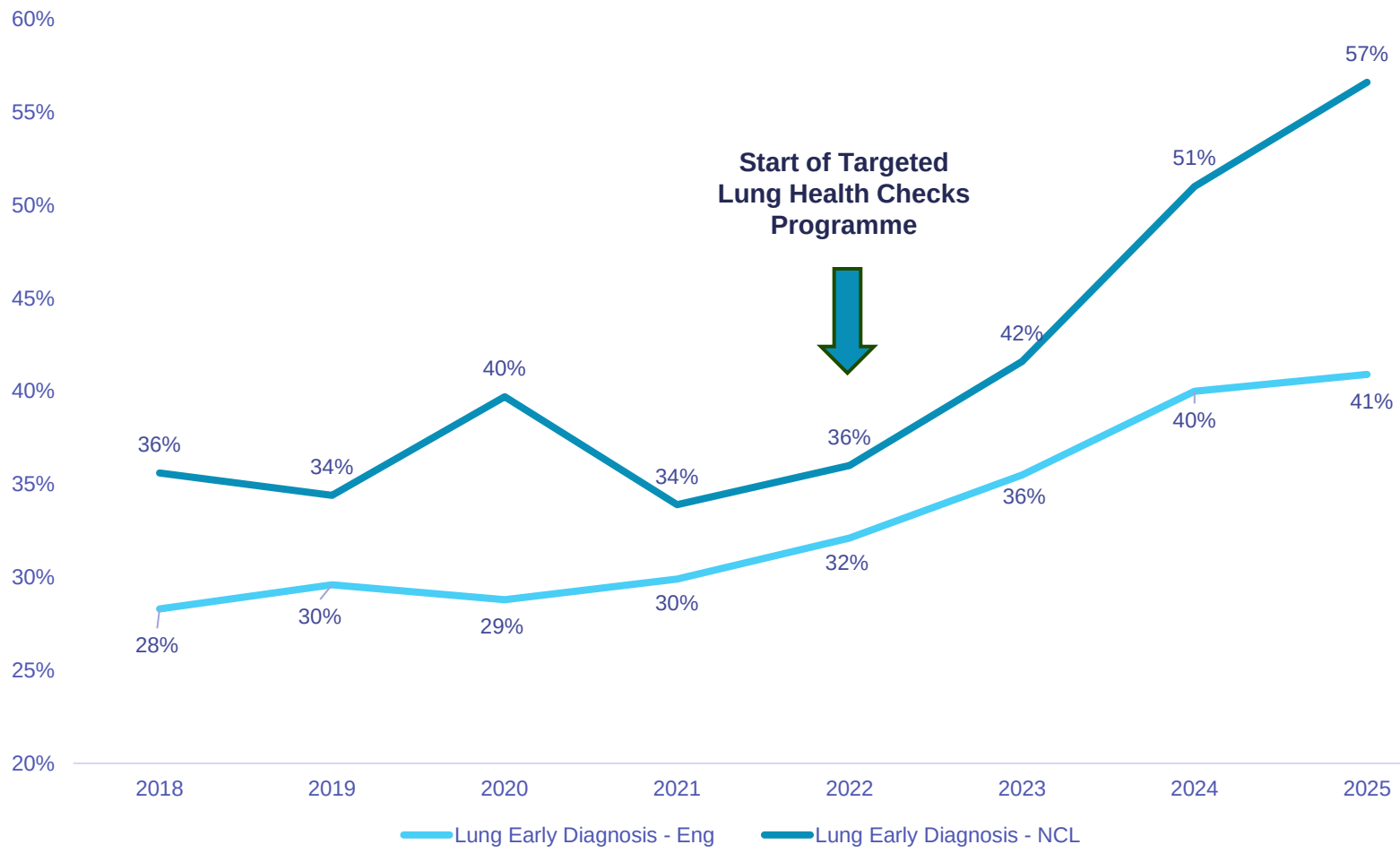
380%

increase in 16 years

2. We are good at delivering transformation

Cancer Context 2010 to 2025

NHS North Central London Cancer Alliance



NCL - 100% rollout

1st in England to achieve this

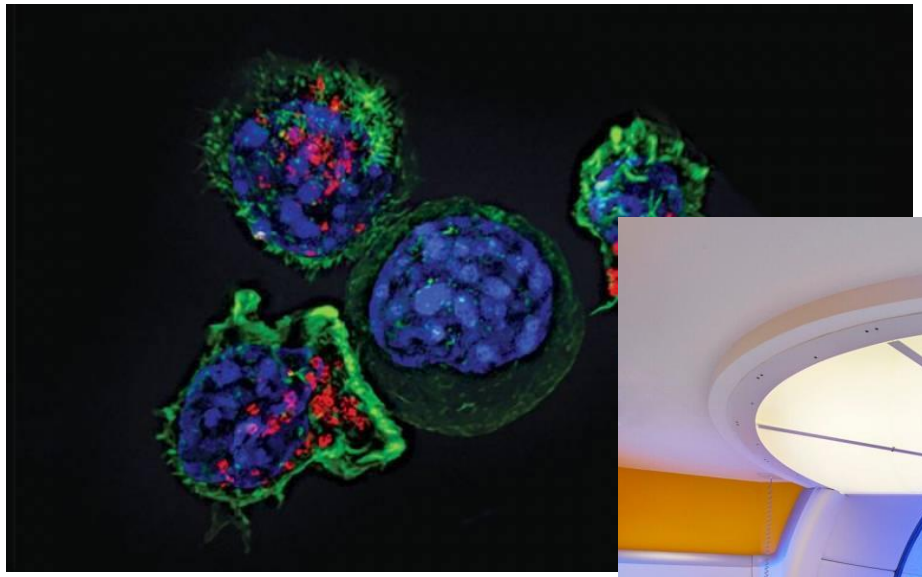
ENG - 50% rollout

In last 3 years via lung screening diagnosed more than 200 lung cancers with over 75% at early stage

3. We are pioneering and offer excellent treatment pathways

Cancer Context 2010 to 2025

NHS
North Central London
Cancer Alliance



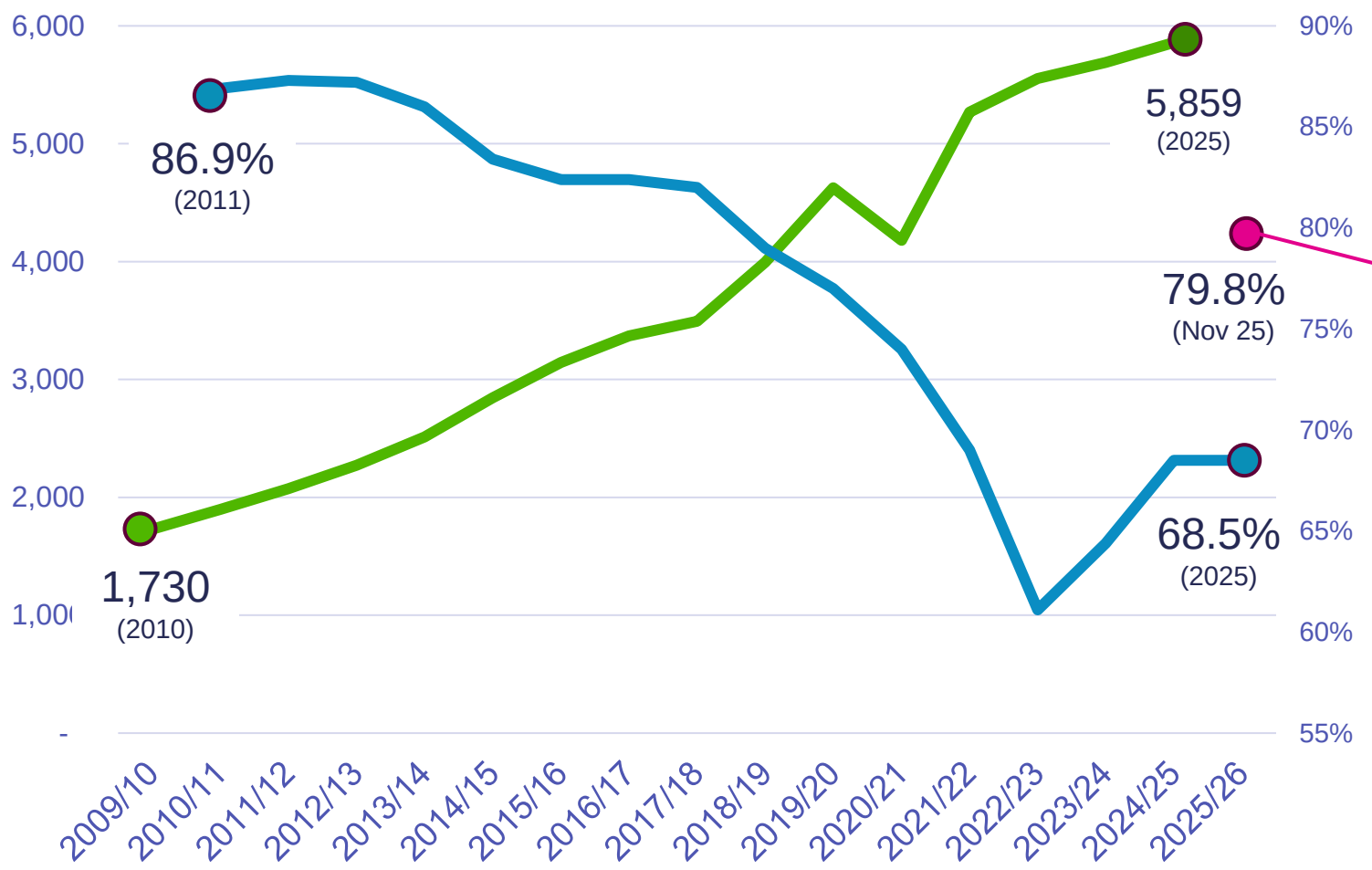
Cancer Context 2010 to 2025

North Central London Cancer Alliance

However there is a "but"….

Cancer Context 2010 to 2025

NHS North Central London Cancer Alliance



Cancer referrals from Primary Care per 100k population

NCL 62-day performance – November 2025

62-day (referral to first treatment) wait

18.4%

decrease in 15 years

NCLCA Cancer Context

North Central London Cancer Alliance

One/five year cancer survival is improving year on year

"Brute force" approach with massive increases in cancer referrals impacting performance on waiting times

Culturally we are open for new pathways even at expense of limited capacity

Need to consider how to be more refined in the coming years – with a PHM lens