Manchester Lung Screening Pilot:

'Targeted community based lung cancer screening'

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BRC Prevention Event 17/09/2018

Manchester Thoracic Oncology Centre

Nil disclosures to declare

Why Manchester?

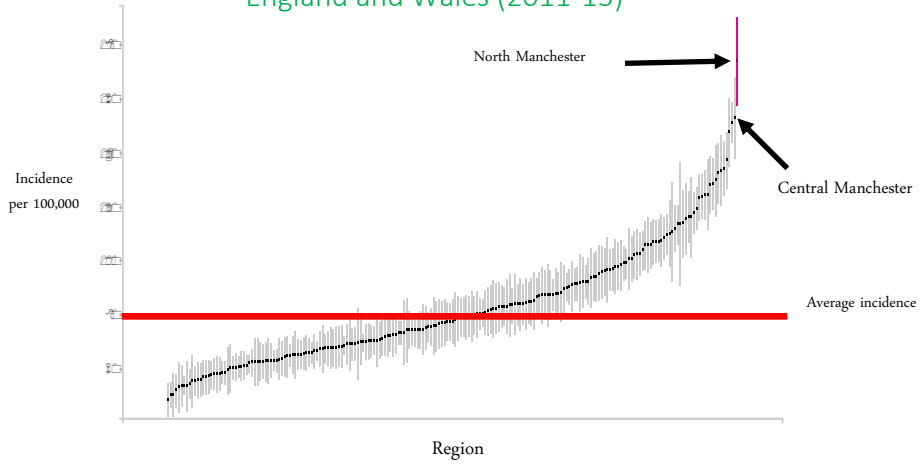
Rates of premature death: Manchester

defined as deaths under age 75 per 100,000 (2012-14)

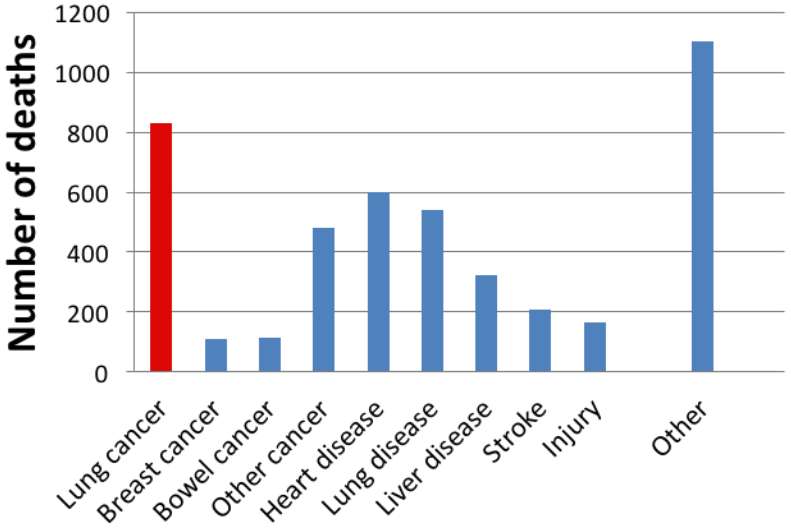
• Overall	150th out of 150 local authorities (LA)
• All Cancer	150th out of 150 LA
• Heart disease	150th out of 150 LA
• Stroke	150th out of 150 LA
• Lung disease	149th out of 149 LA
• Lung cancer	150th out of 150 LA

Lung Cancer in Manchester

Lung cancer incidence:
England and Wales (2011-13)



Causes of premature death: Manchester
(2011-13)



Public Health England

http://healthierlives.phe.org.uk/topic/mortality

Selected Background

- LDCT Screening:
  - NLST: 20% reduction in lung cancer deaths in the CT arm
  - Also 6.7% reduction in overall deaths

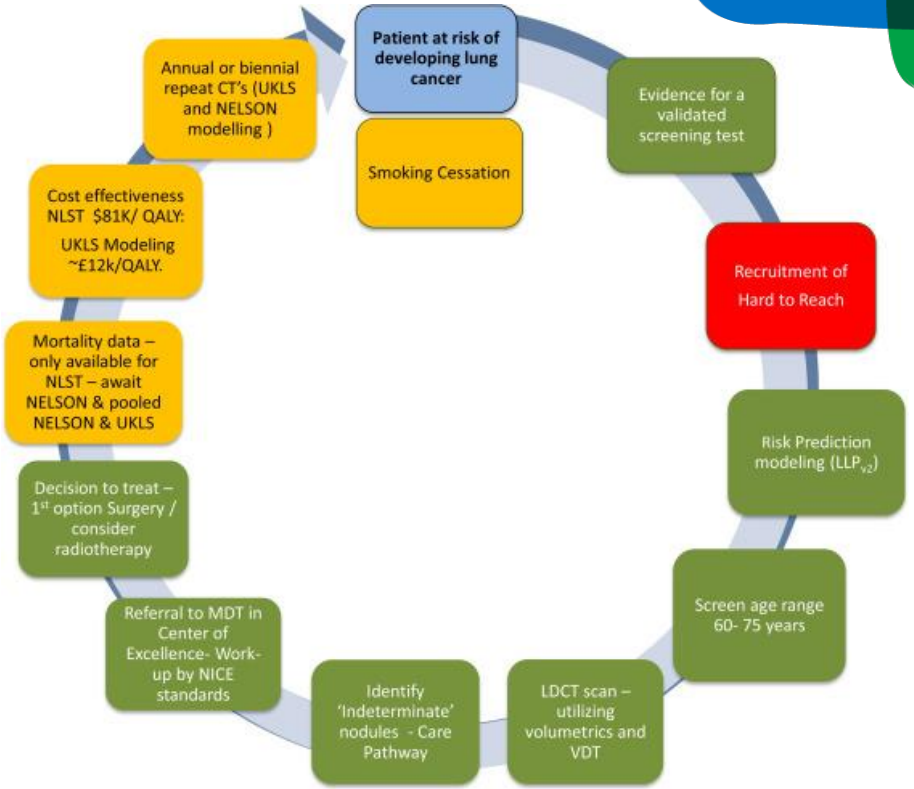
- Risk stratification:
  - $PLCO_{m2012}$ model is a validated risk score for lung cancer.
  - Max benefit at a score of $\geq$1.51%

- Nodule management much improved
  - Nelson's 2-step algorithms
  - Sensitivity 84.6%; Specificity 98.6%; NPP 99.8%
  - Size matters!!
    - <5mm: 0.6% risk of malignancy
    - 5-10mm + VDT 400-600 days: 4% risk of malignancy
    - 5-10mm + VDT <400 days: 9.9% risk of malignancy

- National Lung Screening Trial Research T. N Engl J Med 2011;365:395-409
- Tammemagi MC, et al. N Engl J Med 2013;368:728-36
- Horeweg N, van Rosmalen J, Heuvelmans MA, et al. Lancet Oncol 2014;15:1332-41

The ‘hard to reach’

- **Increased risk and less likely to participate in screening**
  - Age
  - Active smoking
  - Lower socio-economic background
- **Practical barriers**
  - Travel
  - Costs
  - Distance
- **Emotional barriers**
  - Fear of hospitals
  - Fear of doctors
  - Avoidance
  - Lack of understanding



- Ali N, et al. BMJ Open 2015;5:e008254
- Field JK, et al. Lung Cancer. 2016;91:29-35

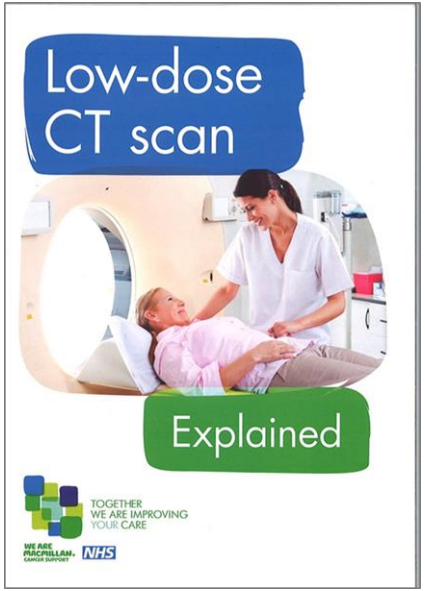
The Manchester Lung Screening Pilot – Key Design Features

- Community based
  - Supermarket car parks
- 'Lung Health Check'
  - Not cancer screening
- Targeted at those most at risk
  - Deprived areas
  - Scan only those with $PLCO_{m2012} \geq 1.51\%$
- Immediate access to mobile low dose CT scanner
- Use of 14 specialist thoracic radiologists
- Detailed 2-step nodule management algorithms
- 14 participating GP practices

- Inclusion criteria
  - Age 55-74
  - Ever smokers
  - Registered with participating GPs
- Exclusion Criteria
  - Diagnosis of lung cancer with 5 years
  - Palliative care register

Engagement Approach

- **Co-designed well researched participant info:**
  - GP invite letter
  - Lung Health Check and LDCT scan leaflets
- **Grass roots community engagement**
  - Community networks and events
  - Leafleting and Macmillan bus
  - Awareness sessions e.g. Breathe Easy groups
  - Bookmakers, Vape/E-Cig shops
  - Posters in community venues
- **GP Engagement**
  - Briefing sessions/ staff encouragement
  - Waiting room posters
  - Messages on prescriptions
  - Practice staff answering queries



Broader communication

Core Messages:

- "Sooner rather than later"
- Lung Health Check is "MOT for your lungs"
- Free
- Time and places limited
- Not normally available

- Local voices - Lord Mayor Film
- Press release, Local radio and TV
- Social media
- Patient stories

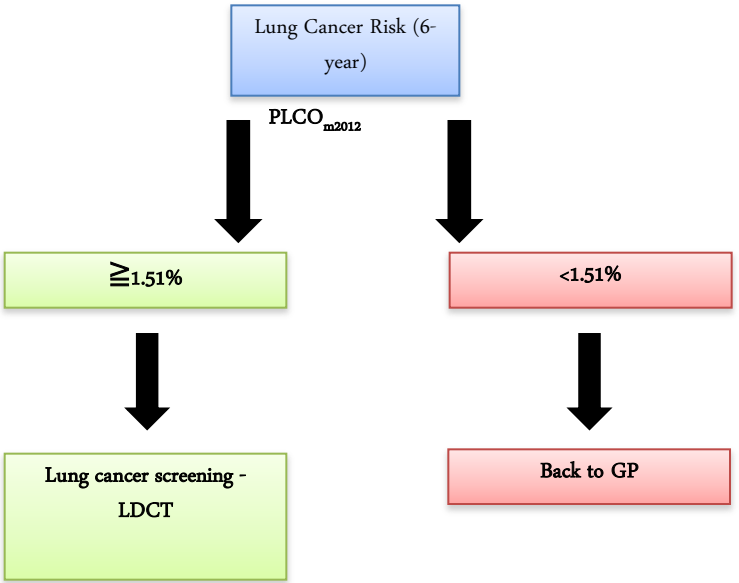
Mobile Support Unit & Mobile LDCT Scanner

Mobile Support Unit & Mo

Scanner

The Lung Health Check

- 20 minute appointment
- Experienced respiratory nurse
- History & symptoms
- Performance Status; MRC score
- Lung cancer risk score
    - $PLCO_{m2012}$
- Measurements
    - Spirometry
    - Height, Weight, BMI
- Non-judgemental stop smoking advice & signposting
- Consents
    - Research database (99.5%)
    - Data sharing



Results – attendance

- All appointments booked within few days
  - Demand > service capacity (~2,800 appointments)
- Low DNA rate

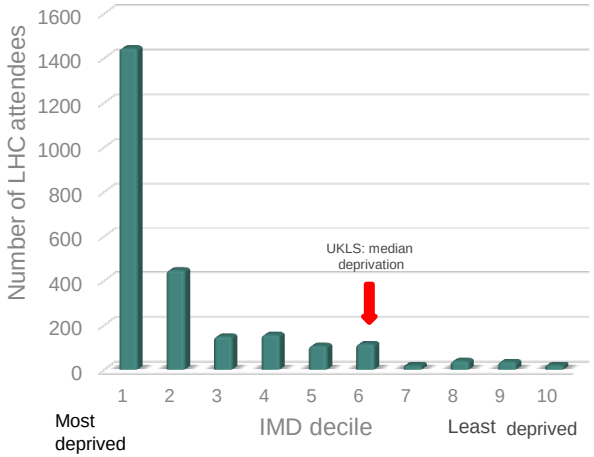
- 2,541 lung health checks carried out
  - 25.6% of invited eligible participants
- 1,384 LDCT scans (56%)

- Mean age 64 (SD 5.5)
- Male 49%:51% Female

Results - reaching the 'hard-to-reach'

Deprivation (IMD):

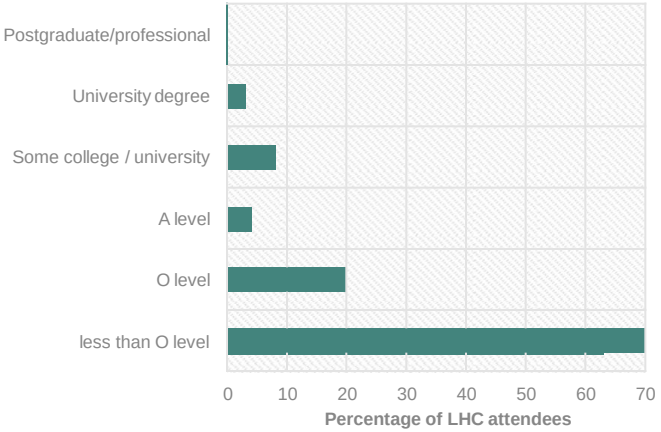
Over half lowest decile (56%) 75% lowest quintile



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

(53% in screened group)

22% Hx of COPD

(90% PS 0-1)

(90% MRC 1-2)

IMD = index of multiple deprivation 2015

Results – Lung cancer screening (T0)

- 1,384 LDCT scans performed
- Lung cancer diagnosis: 3% (n=42)
- 80% early stage (I+II)
- 64% Surgical resection
- 89% received treatment with curative intent
- False positives: 2.8% of population screened
  - No surgery for benign disease
- Interval imaging rate: 12.7%

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

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

Thorax published online February 13, 2018

Take Home Messages

- Taking lung cancer screening into the community can identify and affect those at most risk, the so-called 'hard-to-reach'

- Identify a significant number of early stage lung cancers amenable to curative treatment

- With the right approach we can reduce potential harms
  - false positives
  - unnecessary investigations
  - benign surgical rate

- Very positive participant feedback

News

BBC
@BB

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NHS England action to save lives by catching more cancers early

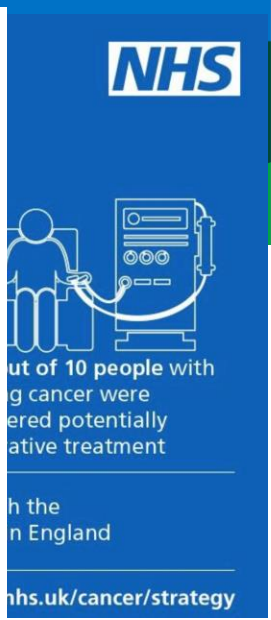
21 November 2017

Cancer | Innovation

NHS England Chief Executive, Simon Stevens, will today announce the scaling up of an innovative scheme that catches lung cancer early by scanning patients, along with new details of a more sensitive bowel cancer test that could save thousands of lives.

Speaking at the Economist War on Cancer event in London, he will highlight the success of the Manchester scanner scheme, where mobile scanners are detecting four out of five cases of lung cancer in the early stages when it is easier to treat. The mobile scanning trucks have picked up one cancer for every 33 patients scanned over the course of a year.

NHS England is now funding scanners in other areas as part of a national programme to diagnose cancer earlier, improve the care for those living with cancer and ensure each cancer patient gets the right care for them.



What is next…

- Community Lung Health Study:
  - Effect of community location
  - Effects on smoking habits
  - Effects on symptoms and general health
- CVD risk assessment; COPD diagnosis; ILD diagnosis

- **£4.2 million commissioning of a screening service across North Manchester**
  - Opportunity to validate the pilot findings
  - To start summer 2018
  - >10,000 LHCs
  - 5,000-6,000 LDCTs

What is next...

Policy Review

European position statement on lung cancer screening

Matthijs Oudkerk, Anand Devaraj, Rozemarijn Vliegenthart, Thomas Henzler, Helmut Prosch, Claus P Heussel, Gorka Bastarrika, Nicola Sverzellati, Mario Mascalchi, Stefan Delorme, David R Baldwin, Matthew E Callister, Nikolaus Becker, Marjolein A Heuvelmans, Witold Rzyman, Maurizio V Infante, Ugo Pastorino, Jesper H Pedersen, Eugenio Paci, Stephen W Duffy, Harry de Koning, John K Field

Lung cancer screening with low-dose CT can save lives. This European Union (EU) position statement presents the available evidence and the major issues that need to be addressed to ensure the successful implementation of low-dose CT lung cancer screening in Europe. This statement identified specific actions required by the European lung cancer screening community to adopt before the implementation of low-dose CT lung cancer screening. This position statement recommends the following actions: a risk stratification approach should be used for future lung cancer low-dose CT programmes; that individuals who enter screening programmes should be provided with information on the benefits and harms of screening, and smoking cessation should be offered to all current smokers; that management of detected solid nodules should use semi-automatically measured volume and volume-doubling time; that national quality assurance boards should be set up to oversee technical standards; that a lung nodule management pathway should be established and incorporated into clinical practice with a tailored screening approach; that non-calcified baseline lung nodules greater than 300 mm³ and new lung nodules greater than 200 mm³ should be managed in

Lancet Oncol 2017

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- **Patient Representative**
  Josephine Eaglesfield

- **Community Engagement**

Manchester Thoracic Oncology Centre

WE'VE CHANGED LIVES

WE ARE MACMILLAN. CANCER SUPPORT

Any questions?

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