Timely Diagnosis in Lung Cancer: Lessons from Implementing the NOLCP at Darent Valley Hospital

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BACKGROUND

- Lung cancer is the third most common diagnosed cancer in England, and accounts for the most deaths.
- The UK has low lung cancer survival when compared with Europe and the USA. Estimated five-year survival (2016-20) is amongst the lowest in Europe at 21%.
- For lung cancer patients in England diagnosed from 2016 to 2020, one-year age-standardised net survival was 45%.
- In 2020, only 29% of all staged lung cancers were diagnosed at an early stage (stages 1 and 2).
- Aim of the National Optimal Lung Cancer Pathway (NOCLP) is to reduce delay from CXR to CT and triage to less than 24 hours[1].

AIM

- We conducted two audits to evaluate our adherence to the NOLCP to identify areas for improvement.

METHODOLOGY

- We assessed
  1. Number of cases that ultimately lead to a new diagnosis of lung malignancy
  2. …of any malignancy
  3. Median time between each step leading up to the CT being reported
- The 1st audit included patients with CXR performed between 6/6/22 to 17/11/22 (6 months) that were flagged under the NOLCP. The re-audit included CXR studies from 03/04/23 to 26/03/24 (12 months).
- Date of each step in the pathway recorded. i.e. From CXR request to CXR report, CXR report to CT request/scan/report.
- Each case was manually screened for subsequent imaging investigations and MDT entries for outcomes.
- Diagnoses were recorded (e.g. Infection, lung malignancy etc) and assigned a category of malignant, indeterminate and benign.
- A total of 440 patients were included and investigation results reviewed.

Reference: 1. England, N. H. S. NHS England » Implementing a timed lung cancer diagnostic pathway. Nhs.uk. Retrieved from https://www.england.nhs.uk/long-read/implementing-a-timed-lung-cancer-diagnostic-pathway/

RESULTS and DISCUSSION

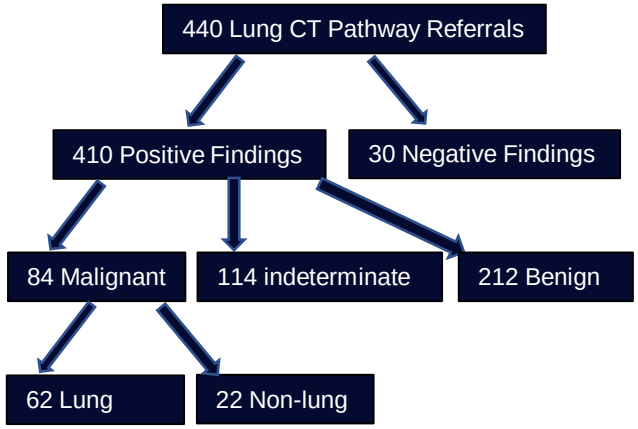

Figure 1. Number of patients referred under NOLCP in re-audit

- In the re-audit, 410/440 of flagged CXRs (93%) had positive CT findings (up from 84% in cycle 1). **Figure 1.**
- Malignancies were diagnosed in 84 patients (20%), including 62 (15%) lung cancers.
- In the 1st audit, 29.5% of all cases were classified as malignant compared to 20% in re-audit.
- There were 212 cases categorised as benign of which infection (55 cases, 26%), scarring and pleural abnormalities (40 cases, 18%) such as thickening and plaques were the most common.
- In the 1st audit, 43.9% of all cases were classified as benign compared to 52% in re-audit.
- The most common non-pulmonary malignancy (4 cases) was that of unknown primary with bone/lung metastases.

- We then examined the time intervals between each key imaging event. **Figure 2**.
- CXR event to CXR report time decreased from 2 days to 1 day.
- It is worth noting, our service is well supported by reporting radiographers who absorb the bulk of CXR reporting.
- CXR report to CT request and CT request to CT event timing were unchanged.

1st Audit:		Re-audit:	
(Days)	Median	(Days)	Median
CXR event to CXR report	2.00	CXR event to CXR report	1.00
CXR report to CT request	1.00	CXR report to CT request	1.00
CT request to CT event	2.00	CT request to CT event	2.00
CT event to CT report	1.00	CT event to CT report	3.00

Figure 2. Time between key imaging events to identify bottleneck in pathway

- However, there was significant increase in the CT event to CT report time from 1 day to 3 days, ***P <0.001.*** This is consistent with the known increase in cross-sectional imaging volume burdening our radiology department. This finding was escalated to our hospital management to request more resources to support reporting.
- Of all new lung cancer diagnosis, 75% were stage III or IV, consistent with this being a symptomatic patient cohort.

CONCLUSION

- Our pathway demonstrates efficiency in identifying malignancies, but the high proportion of late-stage diagnoses highlights the challenge of ensuring timely diagnosis for symptomatic patients.
- While CT reporting delays remain a bottleneck, CXR reporting is not a limiting factor for our department. Emerging CXR AI tools could aid hospitals struggling with CXR triaging. These findings underscore the need for targeted interventions to align with NOLCP goals and improve patient experiences and clinical outcomes.