# Post-Market Surveillance of AI-Powered Chest X-ray Triage in North East London

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## Introduction

Between 2017 and 2022, the number of chest radiographs (CXRs) performed at Royal London and St Barts Hospitals doubled.

This led to a backlog of over 36,000 radiographs resulting in delays in reporting clinically actionable studies.

With funding from NHS England's AI Deployment Fund, we launched a 2-year pilot of a commercially available CXR AI triage system.

Here, we present post-deployment data collected from the first 4.5 months.

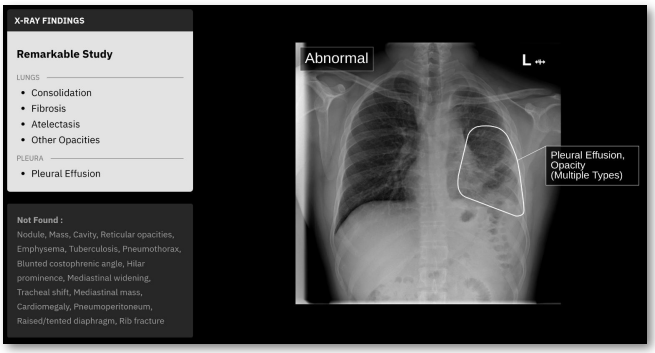
## The AI Model

The AI system identifies abnormalities at the point of acquisition and performs two functions:

1. Assigns a priority to each radiograph depending on the abnormality detected (see below).

| Priority | Findings |
|---|---|
| P1A – Critical | TB, cavity, pneumothorax, pneumoperitoneum |
| P1B – Urgent | Nodule, mass, hilar enlargement, etc. |
| P2 – Non-urgent | Consolidation, pleural effusion, fibrosis, etc. |
| P3 – Normal | No significant findings |

2. Highlights abnormal area as a secondary capture.




The decision was made to limit full deployment to the GP setting, while keeping A&E in shadow mode for the following reasons:

1. Suboptimal assessment of lines and tubes.
2. High rate of false positive high-priority (P1) findings.
3. Governance issues in A&E, where untrained staff struggled to understand how to interpret AI findings.

## Methods

A single-click button installed into PACS allowed for easy tagging and monitoring of false negative studies.

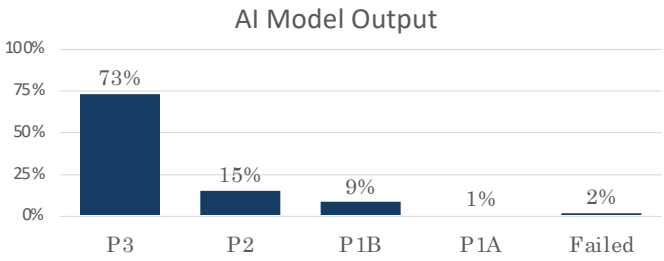

A single thoracic radiologist with >20 years of experience prospectively collected false negative studies over the study period.

Data on AI system output was collected between 9/10/2024 and 25/2/2025.

## Results

A single thoracic radiologist with over 20 years of experience reported 56% (2,556/4,542) of all GP chest radiographs performed.

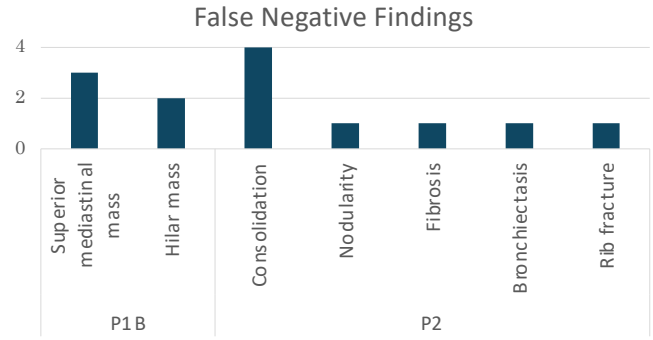
The AI system triaged these 2,556 radiographs into the following categories: P3 (1875), P2 (389), P1B (220), P1A (23) and failed to analyse (49).




Of the 1,875 studies triaged as P3 (normal) by the AI system, there were 15 false negatives, resulting in a negative predictive value of 99.2%.

Among the 15 false negatives, five would otherwise be classified as P1B, and eight as P2. Of the five P1B radiographs with suspected malignancy, two were confirmed as cancers.

For the four cases with consolidation, three were obscured by the heart (retrocardiac) or diaphragm (retrophrenic).




## Conclusion

In the narrow context of GP chest radiographs, where there is a high true negative rate (73%), the AI triage system deployed demonstrates excellent negative predictive value (99.2%) compared with a single experienced thoracic radiologist.

However, users should be aware that the system missed two confirmed cancers that were not radiologically obscure and should review possible AI blind spots in the superior mediastinum, as well as behind the heart and diaphragm.

This early experience is encouraging in the use of the triage tool to mitigate backlog risk in this specific context. Further assessment of its safety in other contexts are required.

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