AI Chest X-ray Triage in A&E: Identifying Missed Critical Findings

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Introduction

AI chest X-ray (CXR) triage tools have the potential to improve A&E workflow by identifying critical abnormalities and prioritising patients in busy settings. However, our A&E department has expressed concern as to whether availability of AI findings will result in inappropriate management.

We implemented an AI CXR triage tool in shadow mode for A&E patients, whereby AI outputs were only available to the radiology department. This study documents our 3-month experience (Nov 2024–Feb 2025).

The AI Model

The AI system categorised CXRs into four priority levels:

Priority	Findings
P1A - Critical	Pneumothorax (PTx), pneumoperitoneum (PPx), TB
P1B - Urgent	Nodule, mass, hilar enlargement
P2 - Non urgent	Consolidation, pleural effusion, fibrosis
P3 – Normal	No significant findings

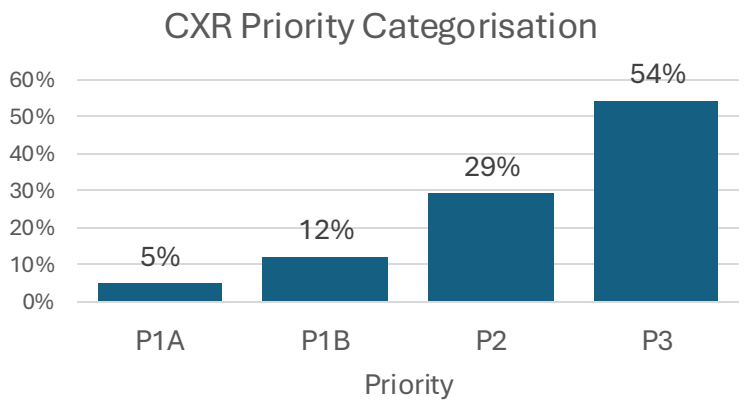
Methods

A single thoracic radiologist with over 20 years of experience proactively reported all P1A chest Xrays performed through the ED department.

Electronic patient notes were reviewed at the time to assess possible clinical impact. If critical findings were not documented in notes at time of reporting, clinical teams were subsequently informed.

Results

Of the 5136 CXRs processed, 244 (5%) were categorised as P1A priority, of which 10 (4%) were not recognised by the clinical team at time of reporting.



Results Cont.

P1A	Details	Delay (hrs)
PTx	Spontaneous - 51mm	36
	Spontaneous - 79mm	12
	Traumatic - 7mm	6
PPx	Suspected CAP - 66mm	2
	Suspected CAP - 26mm	1
TB	5 cases, suspected CAP, no respiratory precautions	4 - 38

50% of CXRs with unrecognised P1A findings were performed out-of-hours. There were no serious incidents.

Conclusion

AI triage can immediately identify critical and time-sensitive findings on CXRs. These could be of use directly to the A&E department but given the low frequency of P1A radiographs (3 per day), we have decided it is more expedient to adopt 24/7 proactive radiology reporting of critical findings to support emergency services, especially outside of regular hours.