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a digitalhealth event
27–28 July

#DHSS23

Deep dive: safely deploying AI in the NHS

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Chair: Masood Ahmed

CDIO
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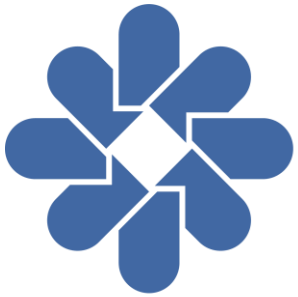

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Director AI, Imaging & Deployment
NHS Transformation Directorate

Deploying AI technologies at scale

1. **Targeted and evidence-based intervention to accelerate the deployment of the most promising AI technologies using a risk-based approach**: We will improve outcomes for clinicians and patients by facilitating wider deployment of safe, effective and ethical AI, enabling faster diagnosis, more effective triage, and better treatment for patients.

2. **Support and increase strategic AI alignment**: We will ensure that health and care requirements are well coordinated and understood by wider cross-government AI partners and stakeholders, in order to strengthen domestic and international strategic partnerships to deliver on wider economic ambitions to grow the UK's standing in AI.

3. **Generate necessary evidence and develop clear and robust pathways as well as practices to help remove barriers to adoption:** We will deliver AI Lab investments in flight and ensure they are sufficiently resourced to enable evidence generation and benefits realisation by the end of AI Lab life cycle.

Current Regulations for AI

- **We look to avoid AI 'exceptionalism,'** AI should be treated like other software unless there is a very good reason
- For example, AI as a Medical Device (AIaMD) is a **subset of Software as a Medical Device (SaMD)**
- There are no specific legislations governing the use of AI in the UK. Instead, **AI's use is regulated by an assortment of more general legislation**, such as the UK Medical Device Regulations 2002 or the Data Protection Act 2018, covering certain uses of AI.
- The key regulators are very engaged in AI regulation, and we work closely with them. In particular, **NICE, MHRA, CQC and HRA**.
- For example, MHRA announced plans for an extensive 'Change Programme' to drive regulatory changes to ensure medical devices are appropriately evidenced, as well as address wider issues of transparency of AI, and adaptivity.

Wider AI Regulation

- On 29 March 2023, DSIT published a White Paper entitled “A pro-innovation approach to AI regulation”. The White Paper **does not commit to adopting new legislation to regulate AI**. Instead, the UK would require existing regulators to take responsibility for the establishment, promotion, and oversight of responsible AI in their respective sectors.

- The White Paper does **put forward suggestions for centralised functions** including a cross sector regulatory sandbox and horizon scanning.

- We are in close contact with DSIT on how the White Paper can **add value to the current regulatory work in health and care**.

Past projects

Project Name	Description	Lead	Status
Streamlining Data Driven Research (SDDR)	To make it easier for researchers and developers of data driven technologies to identify what research consent processes they need to engage with and accelerate the end-to-end application process	HRA	Completed
Evidence Standards Framework	Provide refreshed evidence requirements to ensure commissioning decisions for the sourcing of AI technologies are robust and based on suitable evidence	NICE	Completed
Yellow Card	To enable the MHRA's Yellow Card System to better identify patterns and trends in reporting incidents to better inform safety regulations	MHRA	Completed
Synthetic Data	To develop and demonstrate the efficacy of artificial datasets as a tool which can support the training and validation of medically focused algorithmic technologies	MHRA	Completed

Current Projects

Project Name	Description	Lead	Status
AI and Digital Regulations Service	**A cross-regulatory advisory service supporting developers and adopters of AI and digital technologie**s. The service provides guidance across the regulatory, evaluation and data governance pathways. This will bring benefits to the entire health and social care landscape through safer and more effective use of technology.	NICE	Launched in June
Liability and accountability	NHS AI Lab commissioned NHS Resolution to write a report that sets out the current liability position for use of AI in clinical settings. The clinical settings include AI as the first reader, AI to triage patients, AI discounting diseases, and AI diagnosis and misdiagnosis.	NHS Resolution	Ongoing
Legal Framework	NHS AI Lab commissioned DHSC Legal to write a note that sets out the current legislation which may impact the use of AI in clinical settings. The report will cover the legislative landscape on the use of AI in clinical settings in England.	DHSC	Ongoing

AI and Digital Regulations Service

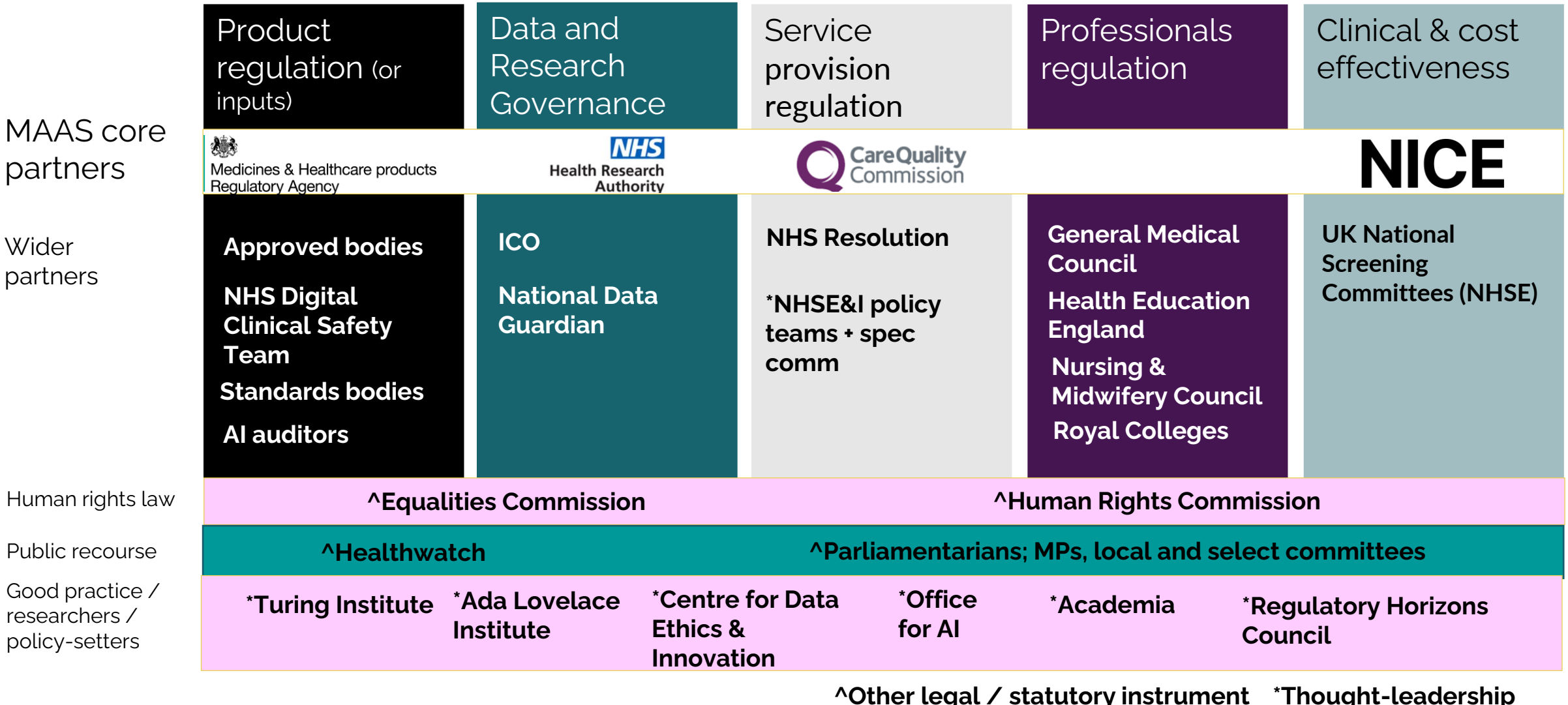
- It is a **multi-agency collaboration** between **four organisations** involved in regulating and evaluating health and social care technologies and ensuring they deliver value for money

- The online service maps out the **regulatory and health technology assessment pathway for AI and digital technologies**. Service users from the Beta have described the format as ‘friendly’ and ‘easy-to-use’. This helps developers and adopters understand and navigate the pathway more effectively. The service provides **guidance on each stage of the pathway**. All content is continually refreshed, keeping it up-to-date and aligned with new developments.

- The site also provides **access to existing support services where users can receive more bespoke advice**. This includes transactional services, such as **NICE Scientific Advice**, and free services, such as the **NHS Innovation Service**.

A cross-regulatory perspective

The breadth of on AI & digital tech in health and care necessitates a cross- regulatory approach



AI Diagnostic Fund

The NHS AI Lab and the NHSE Digital Diagnostics Capability (DDC) Programme will launch a **£21 million ring-fenced fund** for NHS trusts to procure AI diagnostic imaging technologies and begin deployment ahead of Winter 2023

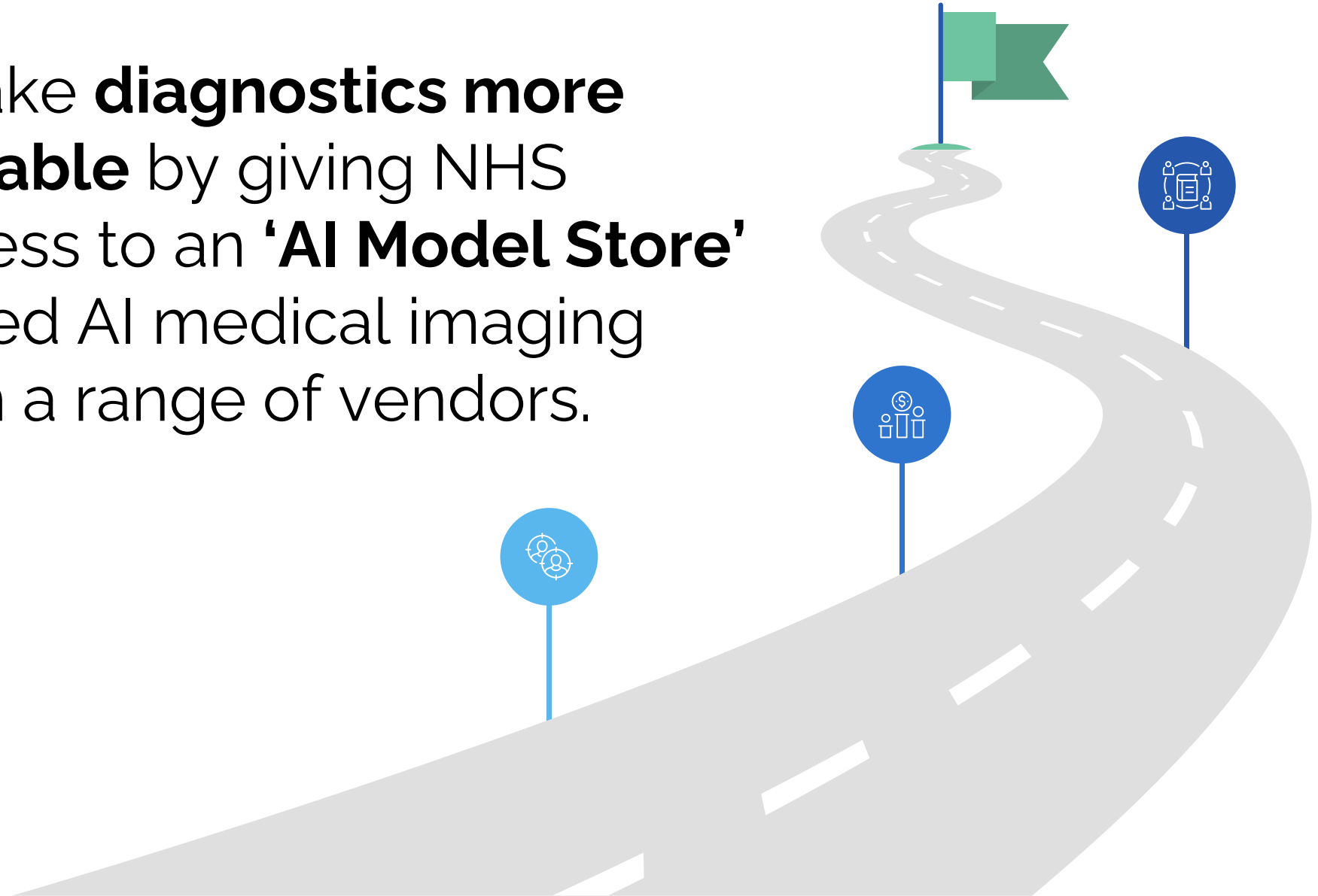
Chest X-Ray

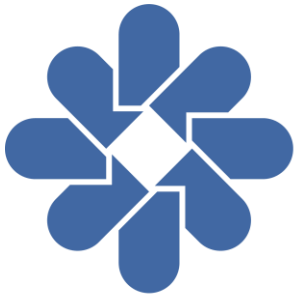
The most common type of diagnostic scan, with over 600,000 scans completed each month in England, and are a key step in the identification of lung cancer.

- There are a range of products in these categories that have received MHRA authorisation and are already beginning to be used for direct patient care in England.
- The benefits would depend on the tools deployed. E.g. Red Dot by Behold can reduce the time taken reduced the time from Chest X-Ray to CT scan from 7 days to 2.8 days for suspected lung cancer.
- Initial analysis indicates that a £21m fund could support between 40-50 trusts to deploy an AI product on a 2-year contract.

NHS AI Deployment Platform Pilot

Our vision is to make **diagnostics more efficient and scalable** by giving NHS organisations access to an **‘AI Model Store’** to choose approved AI medical imaging technologies from a range of vendors.





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AI in Clinical Practice

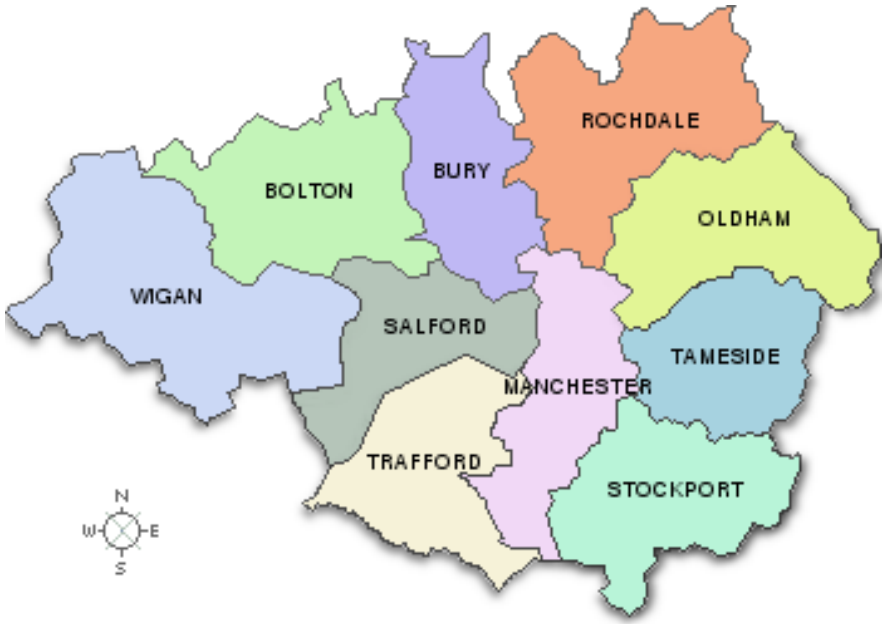
Greater Manchester PACS Integrated AI Chest X-Ray Pilot

NHS Greater Manchester Cancer Alliance

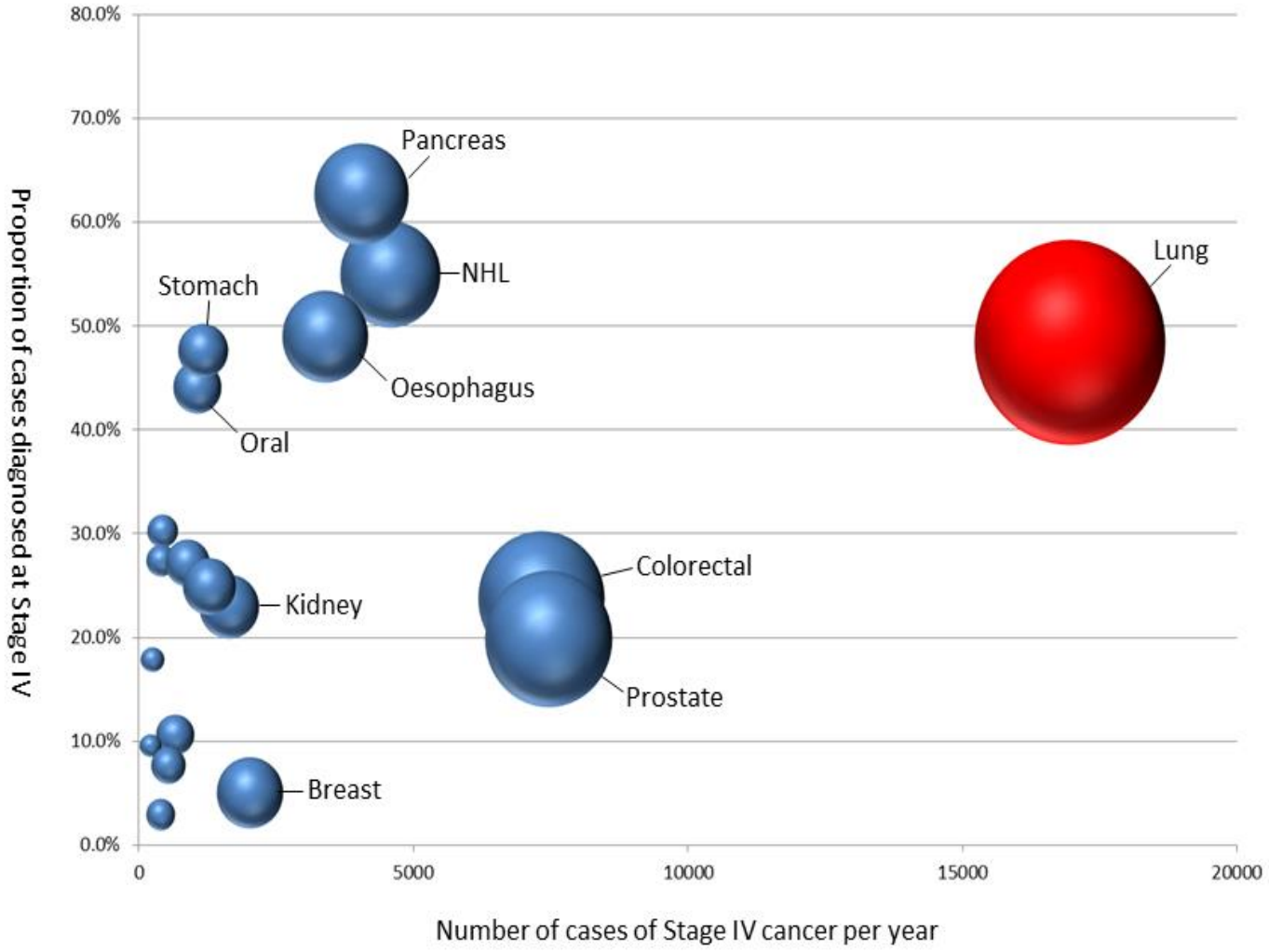
SECTRA

qure.ai

AstraZeneca



Proportion and number of cases of stage IV cancer by tumour type, England 2018



Missed detection of lung cancer on chest X-rays of patients being seen in primary care

Independent report by the
Healthcare Safety Investigation Branch NI-000836

October 2021

Safety recommendation R/2021/154:
HSIB recommends that NHSX, in collaboration with relevant stakeholders such as The Royal College of Radiologists and The Society and College of Radiographers, develops guidance to support independent benchmarking and validation of artificial intelligence algorithms for the identification of lung diseases such as cancer.

Greater Manchester CXR AI Evaluation

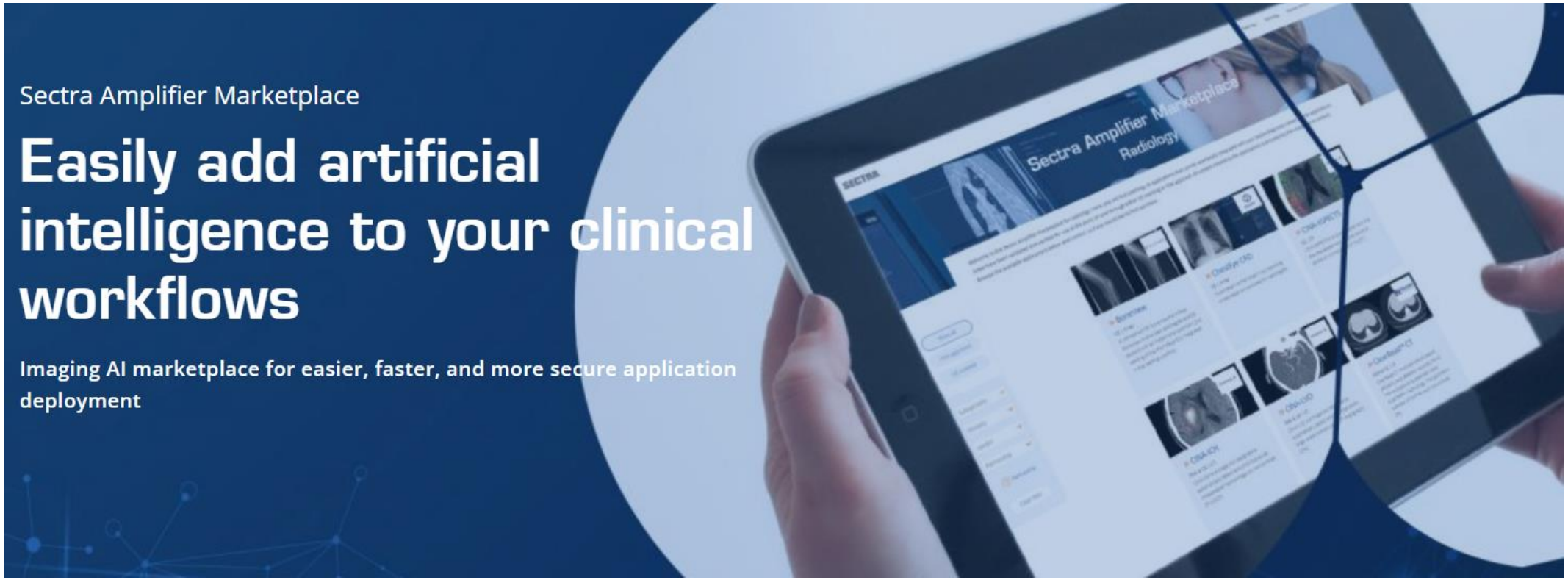
A. Use AI findings to **model** optimum use of AI
   - Prospective – 250,000 adult CXR
   - Retrospective - CXR in 3000 patient diagnosed with lung cancer

B. Present AI findings in PACS as **clinical decision support**
   - Does AI reduce missed lung cancer diagnosis?
   - Does AI decision support speed up reporting?

C. Use AI findings to **prioritise** patients on PACS worklists
   - Can we use AI to reduce the time to report CXR in patients with lung cancer?

A. Use AI findings to model optimum use of AI

1. Turn on ‘Shadow Mode’



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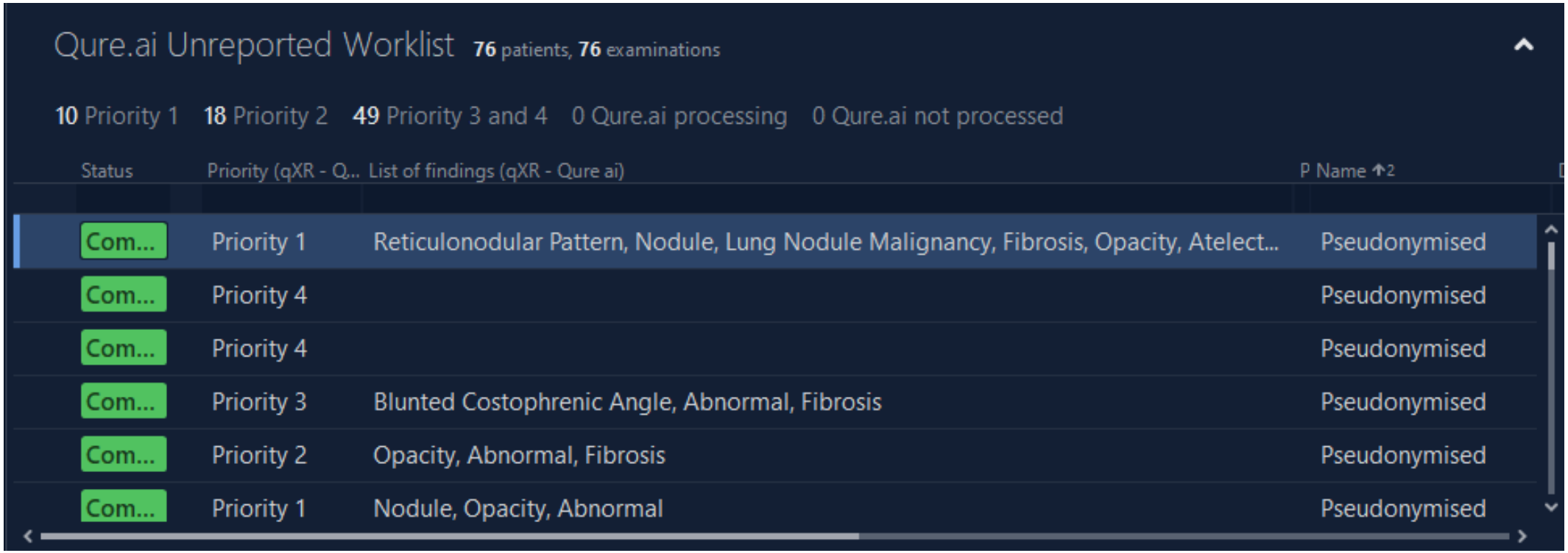
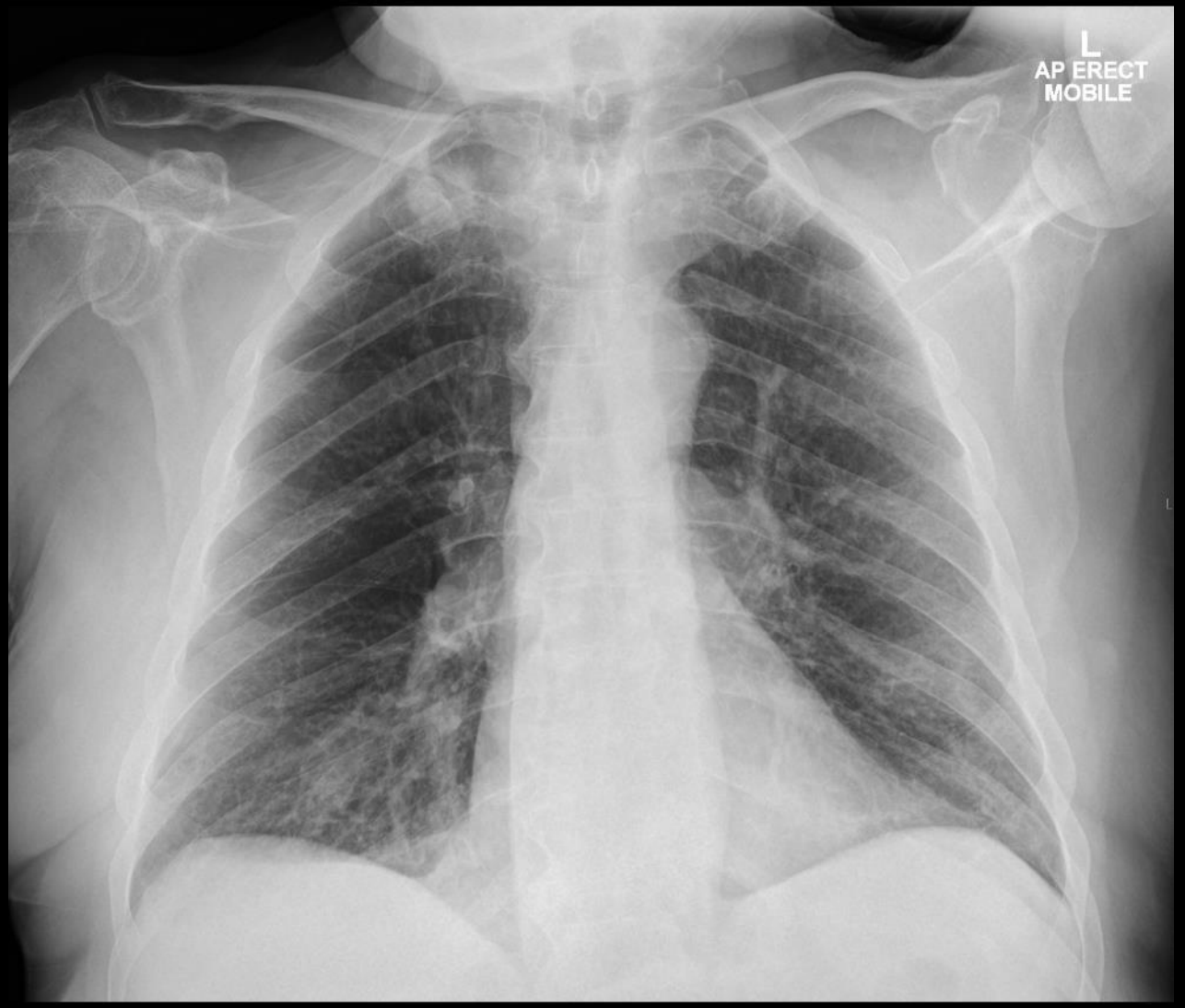


Integrating artificial intelligence with the radiology reporting workflows (RIS and PACS)

Clinical Radiology
The Royal College of Radiologists

1. Artificial intelligence must be integrated in reporting workflows seamlessly and in a way that does not add extra burden to radiologists.

B. Present AI findings in PACS as clinical decision support



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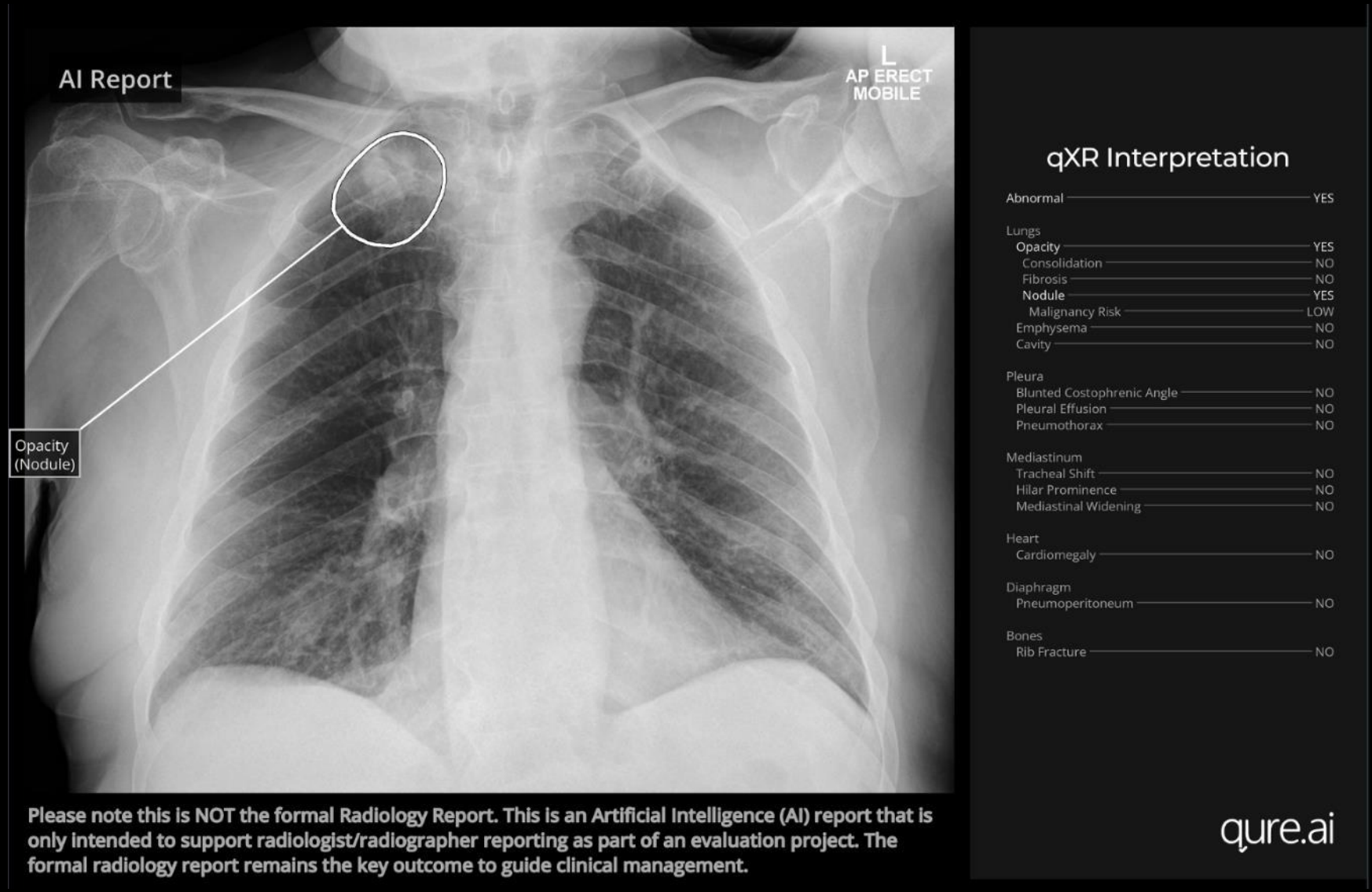
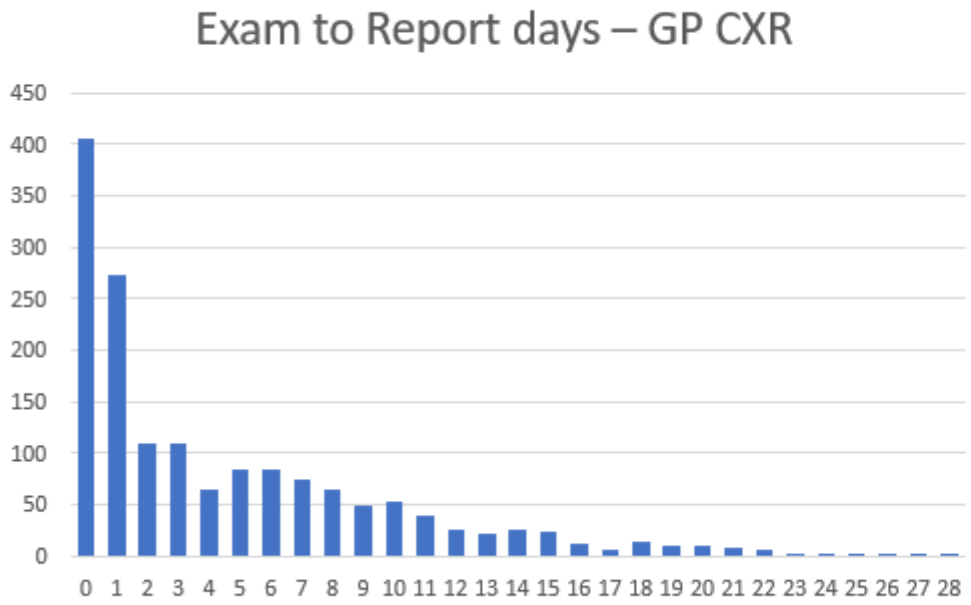


C. Use AI findings to **prioritise** patients on PACS worklists

GP CXR Referrals

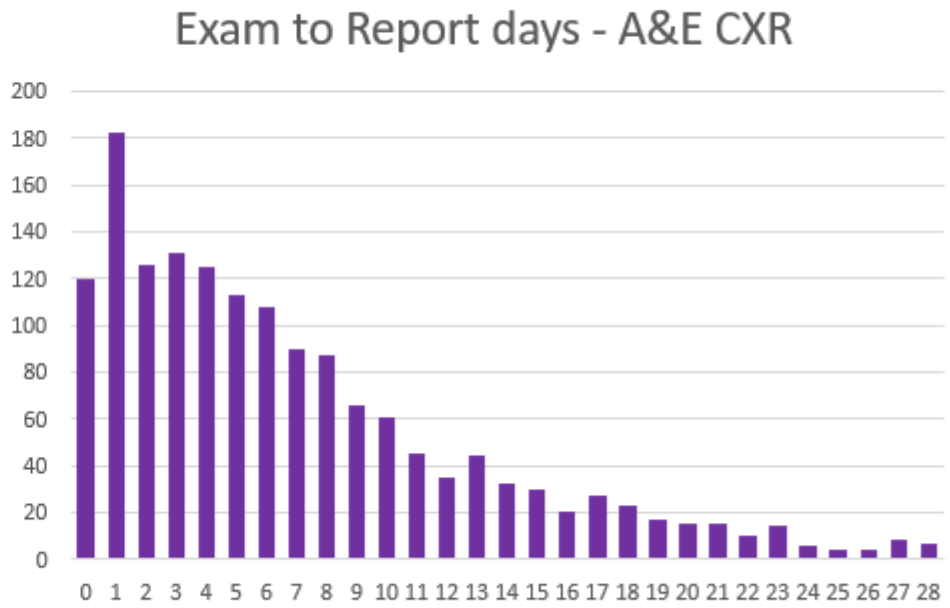
Prioritising 31% CXR by AI
will include 87% of cancers



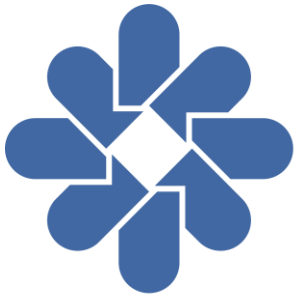
Potential Saving: 6114 days (6.4 days per CXR)

A&E CXR Referrals

Prioritising 52% CXR by AI
will include 88% of cancers



Potential Saving: 9443 days (7.5 days per CXR)



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Overcoming Barriers to AI Implementation in Imaging

Outcome of an RCR Expert Stakeholder Day

- Develop a single, national information governance set of policies, or policies framework.
- Convene regional/national expert teams to help deploy AI in trusts.
- Focus on a network-level approach to facilitate the rollout of AI.
- Make revenue funding for AI available to each region, for which trusts or local systems (such as imaging networks) can bid.
- A greater emphasis on providing guidance and education to support AI deployment.
- Gather more evidence on patient outcomes and the health economic impact of AI deployment.
- Speed up a cloud-first national strategy.

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