

Implementation, use, and perceived impact of artificial intelligence tools for chest diagnostics: qualitative analysis of 10 NHS organisations in England

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CONTEXT

Background

- AI for chest diagnostics may support
 - Faster, more accurate diagnoses
 - Reduced pressure, reduced healthcare costs
- Limited evidence on implementation – experiences, effectiveness, costs
- June 2023: AIDF - NHS England programme to pilot AI in chest imaging
 - Networks of hospitals bid to be pilot sites; different models/approaches proposed
 - AI only used as a support** – treatment decisions always made by clinicians
- NIHR RSET commissioned to independently evaluate implementation of AIDF**
- Research questions:**
 - How were AI tools implemented and used?
 - How did staff and patients experience and view AI tool use?
 - What were the perceived impacts of AI tool use?

Methods & data

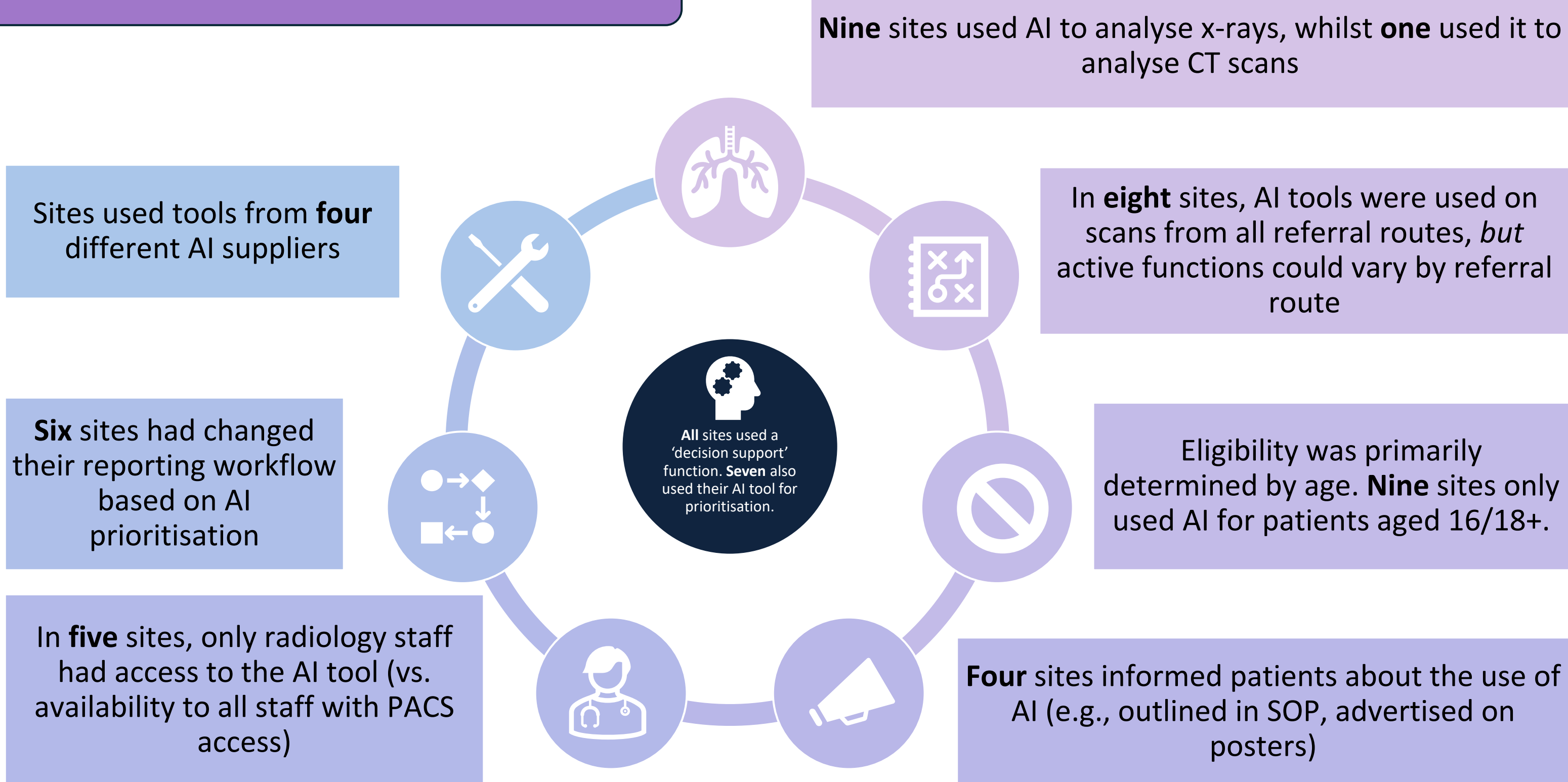
- Part of larger mixed-method rapid evaluation (incl quantitative & health economic)
- Interviews, non-participant observations, documentary analysis (Jun 2025-Jan 2026)
- 5 researchers collected and analysed data, working with wider team, clinicians, & PPIE
- RAP sheets for formative feedback; in-depth coding guided by Major System Change framework (Fulop et al, 2016)

Activity/data	Count
Trusts sampled	3 in depth; 7 light touch (1 withdrew)
National interviews (incl AI suppliers)	8
Staff interviews	38 (incl 9 follow-ups)
Patient and carer interviews	10
Non-participant observations	6
Documents	98

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RESULTS

AI tool implementation & usage



FACILITATORS

- Engagement between suppliers & trusts – open communication and feedback loops
- Regular meetings & clear communication about processes & timelines
- Clinical leadership & dedicated project management
- Sharing learning across trusts/networks
- Clear and effective training
- Openness to innovation
- Integrating AI and prioritisation into existing systems: planning/groundwork pre-implementation (e.g. shadow mode/ testing phase)
- Regular network meetings – community of practice for shared learning

BARRIERS

- Gaps in leadership to manage AI implementation (need balance of clinical and technical knowledge)
- Complex clinical governance & safety processes
- Managing AI implementation alongside clinical roles
- Varied engagement with AI training
- Staff felt they had insufficient knowledge
- Lack of national guidance, e.g. from MHRA, RCR & NHSE
- Integrating secondary capture and AI tool into PACS
- Integrating prioritisation into PACS, collecting comprehensive data to evaluate impact
- Varying AI literacy and resource/capacity across trusts

Staff and patient experience

- **Staff** had positive experiences of AI, regardless of how implemented
 - felt AI could benefit less experienced reporters
- Despite **patients** wanting to be told about use of AI, few aware of AI use in their care
- **Patients** positive overall about use of AI, due to
 - trust in NHS generally & trust in NHS staff using the AI tools
 - hope that abnormal cases could be processed more quickly
- **Staff & patient concerns:** technical performance, overcalling of abnormal scans, overreliance of staff, governance, & accountability
- **Future use:** staff & patients felt AI use would & should continue but wanted
 - ongoing monitoring
 - further evidence of effectiveness

Perceived impact

Confidence/ overreliance



- Little impact of AI tools on personal reading accuracy
- But reassurance from AI meant fewer checks with colleagues were required
- Conversely, some staff concerned that colleagues might over-rely on AI outputs

Patient outcomes



- Too early to state impact on patient outcomes - lack of data
- Noted even small improvements may have clinically significant effects on patients.
- However, poor aspects of tool performance (e.g. NG tube placement) were noted as posing risks to clinical outcomes.
- Some sites evaluating AI-reported false negatives (NB all scans still checked by humans)

Equality, diversity and inclusion



- Few concerns raised: broad view that AI processing of scans not affected by demographics
- However, staff noted limited local data/capacity to evaluate this

MEANING

Implications

- Implementation**
- AI has potential to be implemented at scale, but requires
 - Resources, time, & collaboration between NHS staff & AI suppliers
 - Early/ongoing stakeholder engagement (incl staff, AI suppliers, patients)
 - Need to ensure that AI tools address challenges faced by services
 - Mandatory training may build staff confidence & appropriate AI tool usage
- Staff and patient views** generally positive, but wanted
- more evidence of AI effectiveness
 - ongoing monitoring of AI performance
 - Especially if autonomous AI reporting to be introduced
 - Patients would value being informed of AI use, e.g. posters, leaflets, appointments

Strengths & limitations

Strengths:

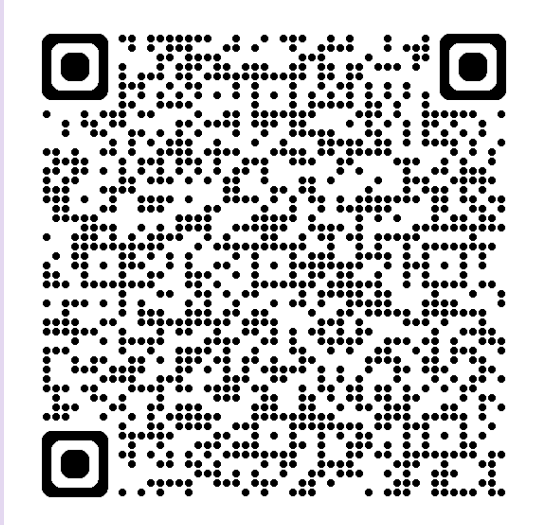
- One of the first real world evaluations of AI tools for diagnostics in the UK
- Covered range of approaches to AI use/implementation
- In-depth data on implementation, staff & patient experience, & perceived effectiveness

Limitations:

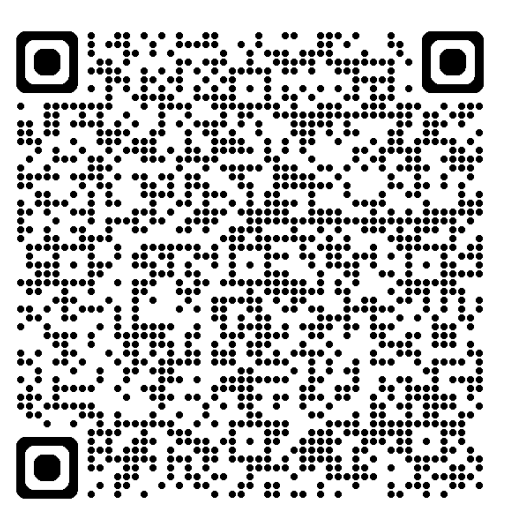
- Only conducted in 10 NHS Trusts: findings may not be generalised to all trusts
- Only interviewed ten patients with limited diversity: findings an indication of patient views
- More observations of different activities/settings would strengthen analysis of AI use & oversight
- Unable to evaluate long-term perceived impacts

FIND OUT MORE

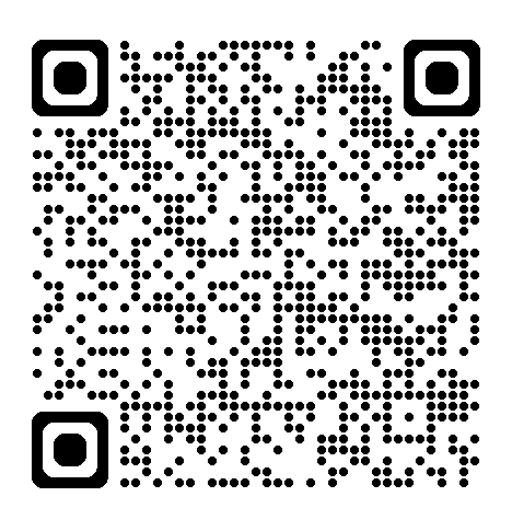
Project findings slide set



Project webpage



RSET webpage



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