

digitalhealth

**REWired**  
BIRMINGHAM 12-13 MARCH 2024

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# Prof Erika Denton

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Interim Medical Director  
for Transformation, NHS  
England



AI,  
DATA AND  
ANALYTICS  
STAGE

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# AI and Machine Learning

Rewired  
Birmingham 2024

**Professor Erika Denton**  
Interim National Medical Director for Transformation  
NHS England

**HEALTHIER PLANET**  
**HEALTHIER PEOPLE**

*“AI can be defined as the use of digital technology to create systems capable of performing tasks commonly thought to require intelligence.”*

*Office for Artificial Intelligence and Government Digital Service ([Guide for using AI in the public sector](#), 2019)*

# AI has huge potential in health and care, and great progress has already been made through the NHS AI Lab

AI driven-technologies can **change the way we work** by helping people to **do more** and **do it better**:



**Natural Language Processing** to help read unstructured doctors notes, or do notes automatically



**Computer Vision** to support diagnosis and triage of diseases using image based diagnostic scans e.g. X-rays or CT Scans



**Classification** to identify patients most at risk from specific conditions to enable earlier intervention



**Forecasting** to make best use of capacity and resources to improve system efficiencies



**Safe**



**Effective**



**Ethical**

The NHS AI Lab was set up in 2020 with the mission of **accelerating the deployment of AI based on robust evidence, ensuring that AI works for all, and creating the right conditions** for the development and deployment of AI.

# NHS AI Lab Programmes

**AI Award**

AI Diagnostic Fund

AI Regulation

AI Ethics

AIDP

Set up to accelerate the testing and evaluation of **AI technologies** that meet the aims set in the **NHS Long Term Plan**:

**£113m** of funding until 2024/25

**86** total projects

**40%** of acute trusts in England

ACCELERATED  
ACCESS  
COLLABORATIVE

**NIHR** | National Institute for Health Research



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- Brainomix helps to interpret acute stroke CT scans, make choices about treatment plans and share information between hospitals in real-time
- It can reduce 'door-in door-out' time by more than 60 minutes (almost half the normal time) and nearly triple the number of people achieving functional independence after a stroke

**Technology such as Brainomix is now deployed in all stroke units**



*"This technology is just amazing. I was able to sit up and text my family later that day and was back at home and able to walk around two days after having a stroke"*

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- **£21m ring-fenced fund** for NHS trusts to procure AI diagnostic imaging technologies and began deployment ahead of Winter 2023
- Targeted at key clinical areas, particularly CXR and CT.
- **The fund received bids from networks representing 95% of acute trusts in NHS England and enabled deployment in 64 acute trusts**



Press release

## **£21 million to roll out artificial intelligence across the NHS**

The new technology will help diagnose patients more quickly for conditions such as cancers, strokes and heart conditions.

From: [Department of Health and Social Care](#), [The Rt Hon Steve Barclay MP](#), and [Chloe Smith MP](#)

Published 23 June 2023

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- The AI and Digital Regulations Service is a joint initiative by NICE, CQC, MHRA and HRA, funded by the NHS AI Lab.
- Aiming to make the regulatory pathways clear for developers and adopters
- The service aims to give innovators and health and care providers developing AI technologies a one stop shop for **support, information and guidance on regulation and evaluation.**



### Regulations for developers

Developers, also known as manufacturers, take technologies from an idea into a market-ready product.

[Developers' guidance](#)

### Regulations for adopters

Adopters can buy, deploy or use the technology in a health or social care setting.

[Adopters' guidance](#)





# NHS AI Lab Programmes

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- The NHS AI Lab is supporting MHRA to develop a new 'regulatory sandbox', the AI-Airlock, that will provide a regulator-monitored virtual area for developers to generate robust evidence for their advanced technologies.
- AI-Airlock will facilitate the safe introduction of advanced AI technologies, including ML, within NHS settings, allowing for rigorous evaluation and continuous monitoring.
- AI-Airlock will bring together expertise from innovators, regulatory organisations including Approved Bodies, Government, the NHS and academia. The AI-Airlock project will commence in April 2024



# NHS AI Lab Programmes

AI Award

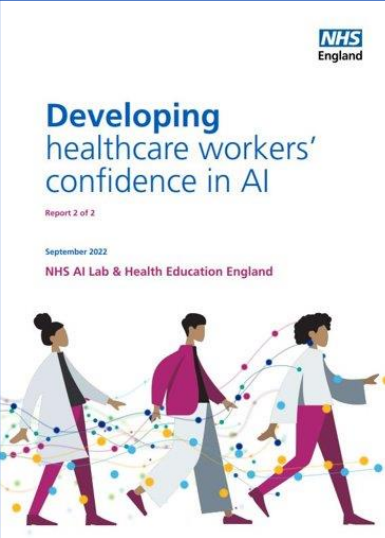
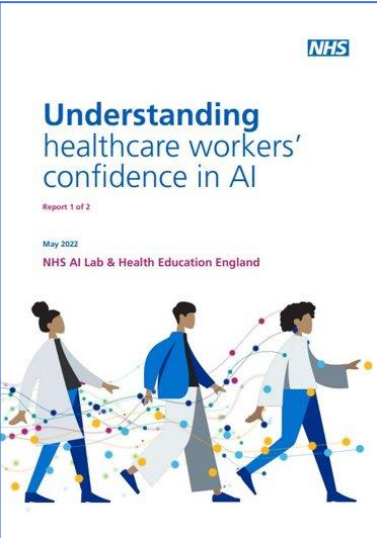
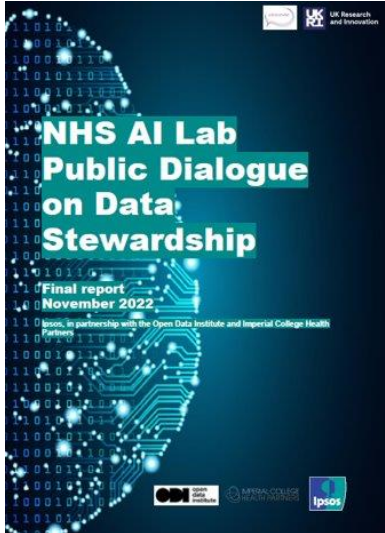
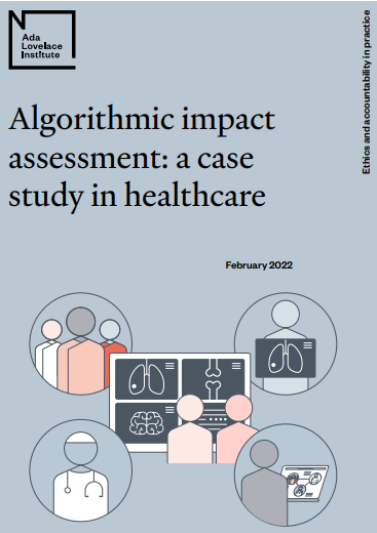
AI Diagnostic Fund

AI Regulation

**AI Ethics**

AIDP

- The NHS AI Lab launched the AI Ethics Initiative to invest in research that could strengthen the ethical adoption of AI in health and care and address concerns over their use.
- The Lab partnered with world-leading organisations in this space to deliver **eight research projects** by September 2024.
- The projects focus on three impact areas:
  - A. AI and health equity
  - B. Transparency and participation in accessing data for AI
  - C. Building AI confidence and trustworthiness



# NHS AI Lab Programmes

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- A key project by the University Hospitals Birmingham NHS Foundation Trust involved the publication of standards for datasets underpinning AI.
- These were developed through an international consensus process, and provide guidance on transparency around 'who' is represented in the data, 'how' people are represented, and how data is used when developing AI technologies for healthcare.
- The aim is to promote transparency of bias in health datasets to mitigate the risk of health inequalities from AI.

STANDING  
Together 

**Recommendations for  
diversity, inclusivity, and  
generalisability in  
artificial intelligence  
health technologies and  
health datasets.**

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<https://www.datadiversity.org>

# NHS AI Lab Programmes

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AIDP

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.

- Testing a new, simplified approach to deploying AI tools
- Running until March 2025 and spanning two imaging networks, covering 15% of patients in England.



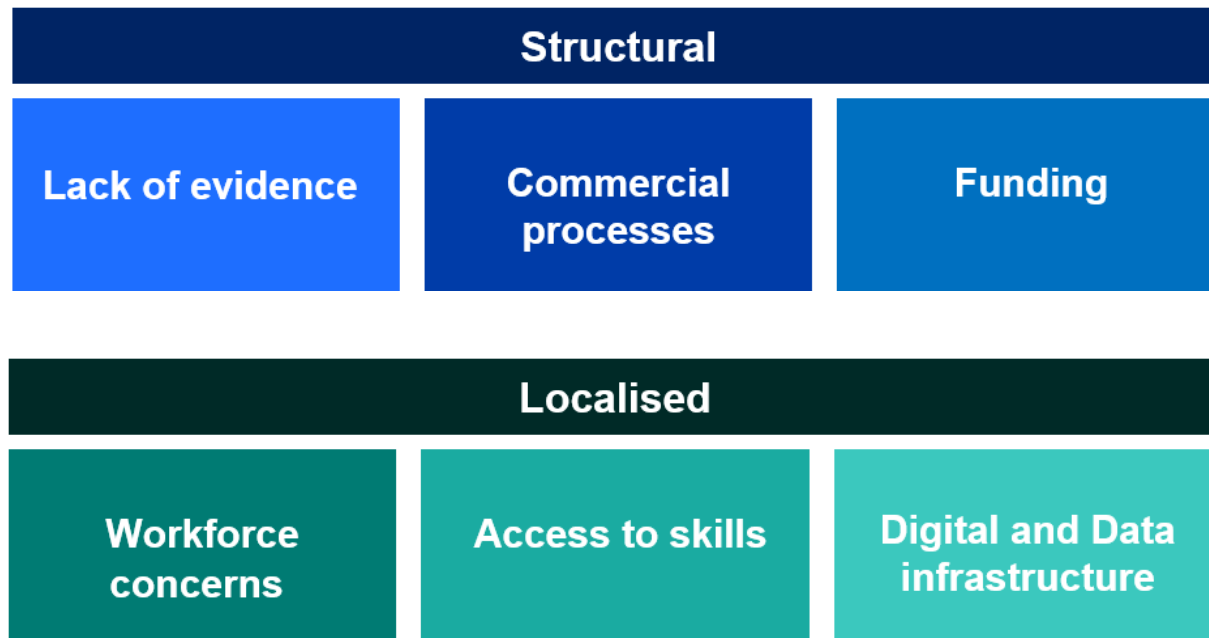
AI Vendor 1



AI Vendor 2



# Despite good progress, there are barriers to AI deployment which remain



- Most AI adoption to date has been limited to a relatively small number of trusts and most deployments are research projects rather than frontline healthcare delivery
- There are several areas where further work is needed to enable innovation and further the deployment of AI deployment, including clarifying evidence thresholds and procurement routes, addressing skills gaps in key areas and continuing to build the digital infrastructure needed