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AI in Leeds Teaching Hospitals

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Today's presentation

The Leeds Teaching Hospitals NHS Trust

- Leeds, our wider landscape and digital priorities
- Current AI work at Leeds:
  - Breast Screening
  - Pathology
  - Radiology
  - 3D visualisation in Neurosurgery
  - 3D printing in Maxillofacial
  - FIND-AF
  - Generative AI
- Digital plans for our new Hospitals
- Risks and issues to consider
- 2035 and beyond

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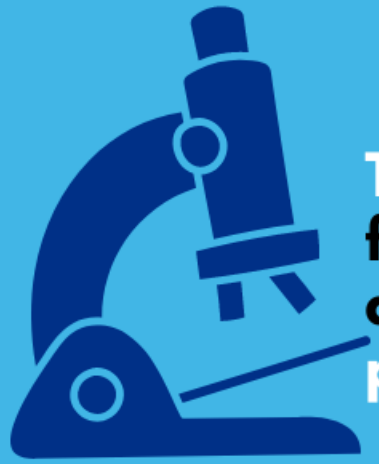
Treating around
1.6 million
patients every year

7
Hospitals across 5 sites

Around
10,000
babies born every year



Top recruiter for clinical trials and UK first procedures

Almost
22,000
members of staff

Spending around
£1.9
billion every year

Our digital priorities at Leeds

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- Realising the benefits of digital technologies:
  - Improved patient experience
  - Improved patient safety
  - Easier access to data for research and quality improvements
- Transforming services through the integration of digital technology – **clinically led**
- Integrating new ways of working – such as AI - into our existing infrastructure is essential
- Fantastic opportunities for a true Digital Hospital

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Current work – Breast Screening

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- Dr Nisha Sharma, Consultant Radiologist at LTHT, is using AI to support the film reading process for breast screening
- The UK has a three-yearly national breast screening programme - double reading is the gold standard
- This approach is labour intensive and difficult to achieve due to the ongoing workforce crisis
- AI helps maximise efficiency to ensure ongoing delivery of a high-quality service

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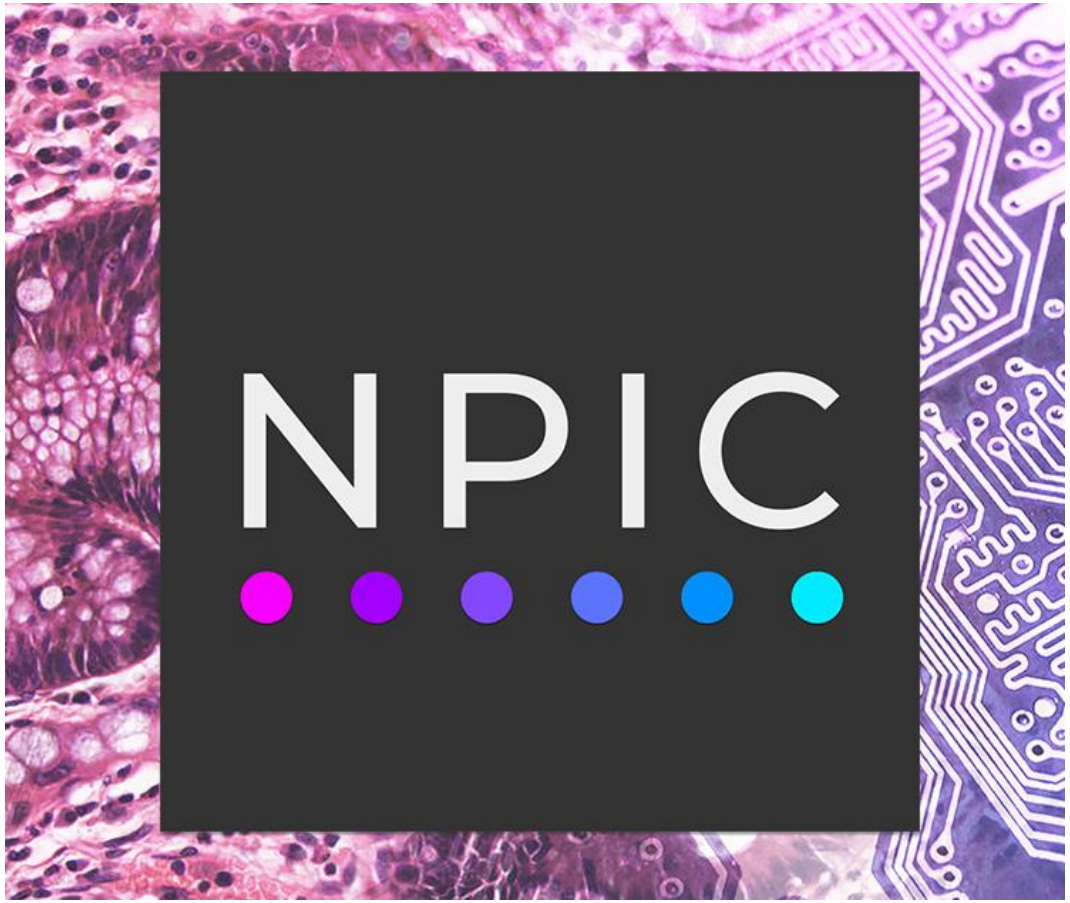
Current work – Pathology

- The National Pathology Imaging Co-operative (NPIC) helps the NHS use digital pathology
- Fast diagnostic consensus digitally
- Efficient, remote and collaborative ways of working
- Leeds Teaching Hospitals is at the forefront of this work, and additional funding has supported expansion across hospitals in West Yorkshire
- Huge potential to support this work with artificial intelligence, revolutionising cancer diagnosis



Current work – Radiology

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- Leeds Teaching Hospitals has an AI platform partnership with Newton's Tree
- This is in place in Clinical Radiology, where AI can deliver many benefits:
  - Analyse medical images
  - Support diagnostics and treatment prescription
- Currently being configured for testing, and intended to scale up our use of AI safely
- Setting an AI integration benchmark and developing a scalable model for other NHS Trusts

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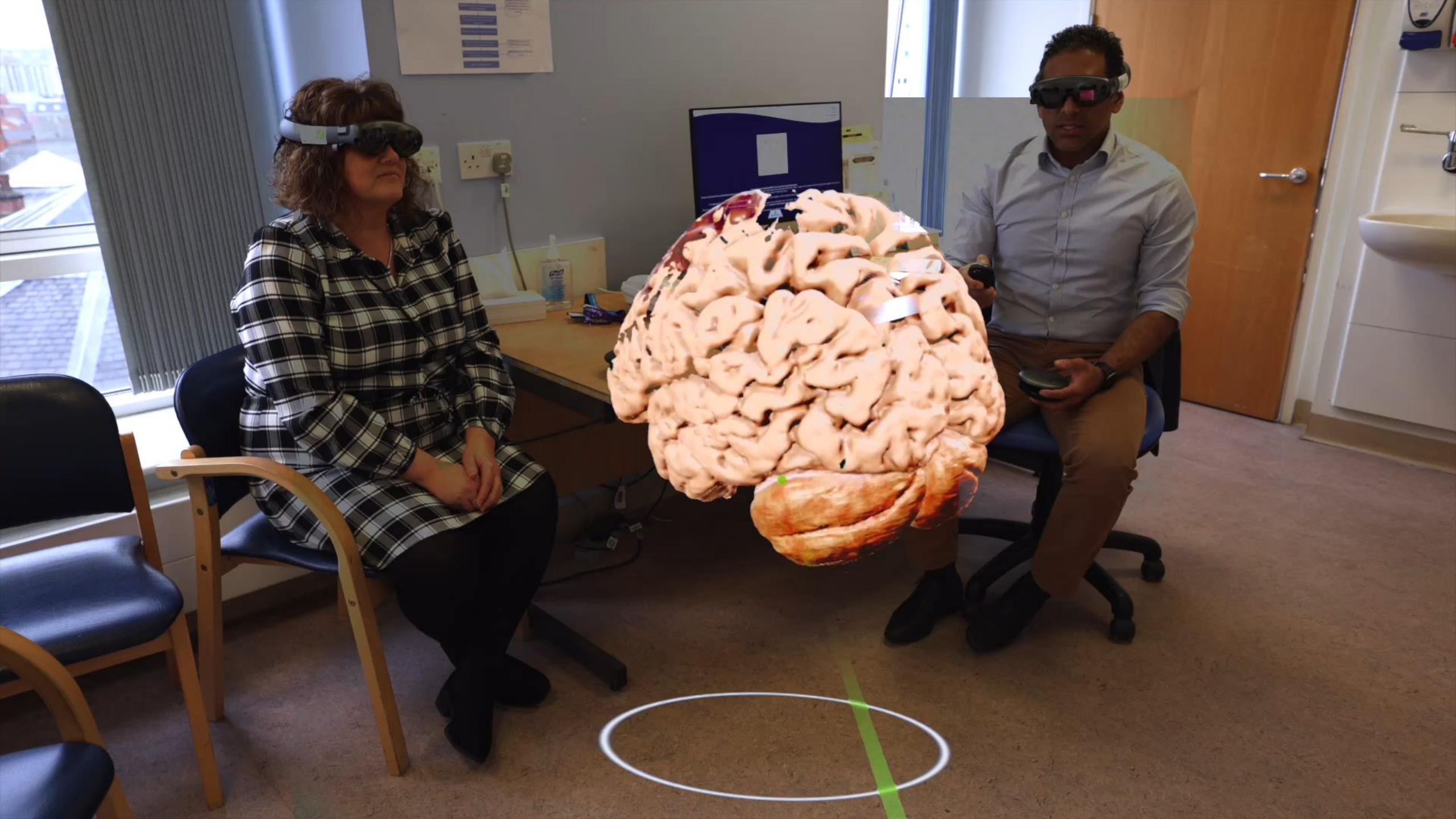

Current work – Maxillofacial

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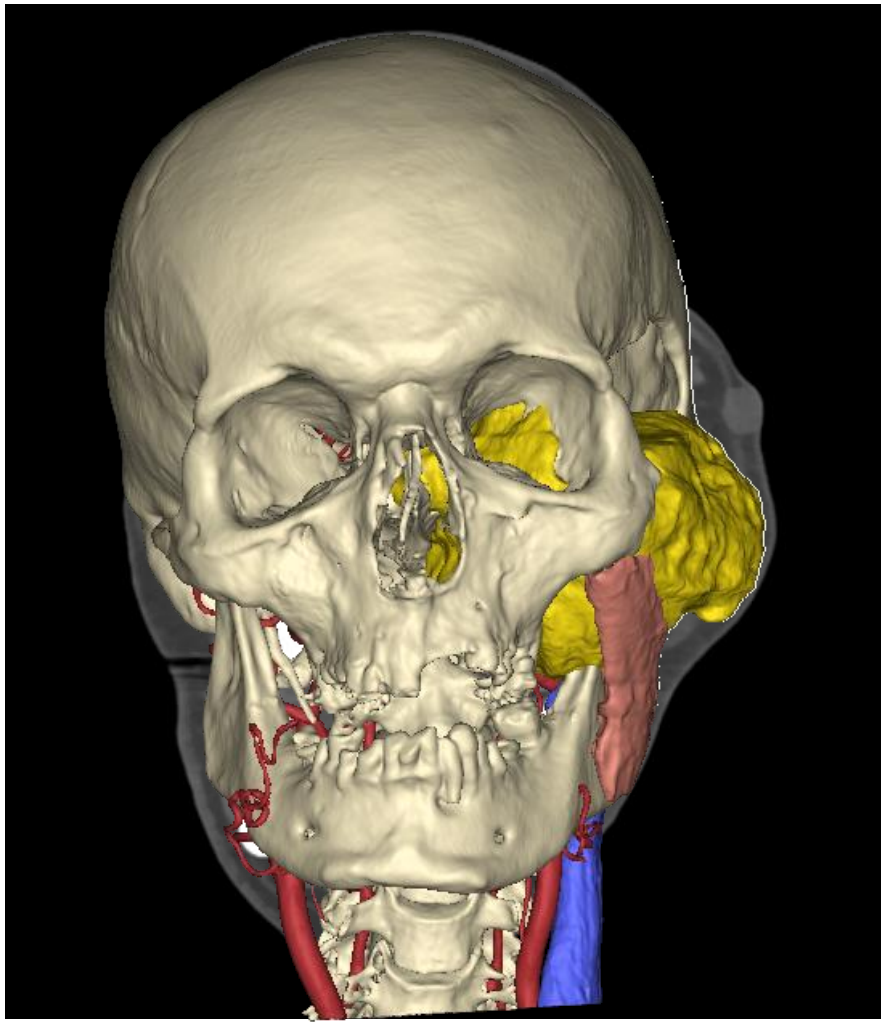
- Virtual planning and 3D printing of bone replacements
- Improved preoperative planning and visualisation
- Enhanced surgical precision and efficiency
- Improved patient outcomes
- Improved patient experience



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Current work – Hidden Heart Conditions

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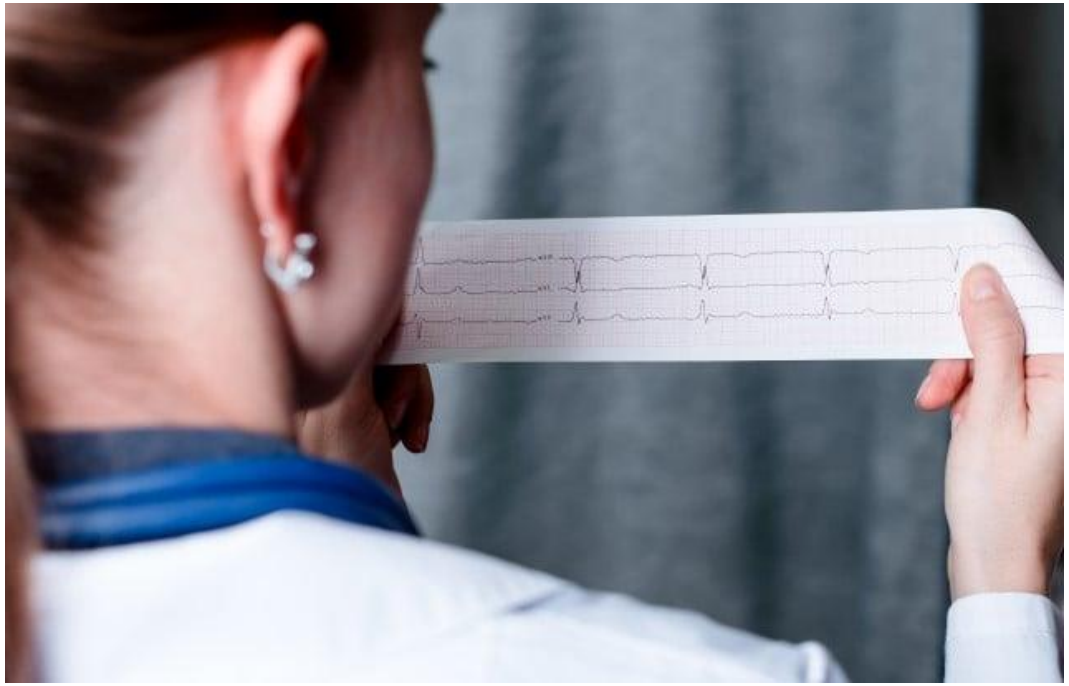
- FIND-AF
- An algorithm developed by machine learning in collaboration with Leeds University.
- Identifies “red flags” in patients GP records that are predicative of developing atrial fibrillation within 6 months
- Follow up then offered to identified patients



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Current work – Generative AI

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- Assessing the use of generative AI using job descriptions
- Working with KPMG to analyse role profiles across our Maternity team
- Assessment of several areas to help automate and support tasks and return time to care for patients
- Potential to perform routine tasks across many different roles, transforming the way we work in the future

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Digital plans - our new hospitals

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- State of the art Asset Management
- Digital systems to support patient experience
- AI-supported sustainability
- Smart improvements to clinical outcomes
- Digitally supported patient environment
- Industry-leading clinical communications and monitoring

Hospitals of the Future
Part of Building the Leeds Way

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Looking ahead - challenges

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- **By 2040, 1 in 5 people are expected to be living with a major illness**
- Health inequality is still common, and there are high levels of deprivation across some areas in Leeds
- **In 2040, more of our patients will be 'digital natives'**
- A clear expectation that healthcare will be digitally enabled
- We will use technology to support effective, safe and sustainable patient care

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Technology in 2035 and beyond

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- Integrated AI-assisted decision support in our electronic health record
- Ambient voice note taking
- Using AI to streamline triage for unplanned care
- Algorithms and AI to support diagnostics
- Single patient room monitoring
- Using AI to support our future workforce

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What do we need to think about?

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- Several risks associated with AI and other technologies – important to address from the outset
- Bias and discrimination
- Lack of transparency
- Privacy violations
- Security risks
- Ethical dilemmas
- And others...

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Questions and discussion

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