Funding boost for artificial intelligence in NHS to speed up diagnosis of deadly diseases

- Extra £50 million investment in diagnostic centres of excellence which will develop artificial intelligence to diagnose disease
- Centres will boost diagnostic capabilities, improve outcomes for millions of patients, and free up NHS staff time
- Funding will support our long-term response to COVID-19 as part of government commitment to detect three-quarters of cancers at an early stage by 2028

Patients will benefit from major improvements in technology to speed up the diagnosis of deadly diseases like cancer thanks to further investment in the use of artificial intelligence across the NHS.

A £50 million funding boost will scale up the work of existing Digital Pathology and Imaging Artificial Intelligence Centres of Excellence, which were launched in 2018 to develop cutting-edge digital tools to improve the diagnosis of disease.

The 3 centres set to receive a share of the funding, based in Coventry, Leeds and London, will deliver digital upgrades to pathology and imaging services across an additional 38 NHS trusts, benefiting 26.5 million patients across England.

Pathology and imaging services, including radiology, play a crucial role in the diagnosis of diseases and the funding will lead to faster and more accurate diagnosis and more personalised treatments for patients, freeing up clinicians' time and ultimately saving lives.

Health and Social Care Secretary Matt Hancock said:

> Technology is a force for good in our fight against the deadliest diseases – it can transform and save lives through faster diagnosis, free up clinicians to spend time with their patients and make every pound in the NHS go further.
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> I am determined we do all we can to save lives by spotting cancer sooner. Bringing the benefits of artificial intelligence to the frontline of our health service with this funding is another step in that mission. We can support doctors to improve the care we provide and make Britain a world-leader in this field.
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> The NHS is open and I urge anyone who suspects they have symptoms to book an appointment with their GP as soon as possible to benefit from our excellent diagnostics and treatments.

Today the government has also provided an update on the number of cancer diagnostic machines replaced in England since September 2019, when £200 million was announced to help replace MRI machines, CT scanners and breast screening equipment, as part of the government's commitment to ensure 55,000 more people survive cancer each year.

69 scanners have now been installed and are in use, 10 more are being installed and 75 have been ordered or are ready to be installed.

The new funding is part of the government's commitment to saving thousands more lives each year and detecting three-quarters of all cancers at an early stage by 2028.

Cancer diagnosis and treatment has been an absolute priority throughout the pandemic and continues to be so. Nightingale hospitals have been turned into mass screening centres and hospitals have successfully and quickly cared for patients urgently referred by their GP, with over 92% of urgent cancer referrals being investigated within 2 weeks, and 85,000 people starting treatment for cancer since the beginning of the coronavirus pandemic.

In June, 45,000 more people came forward for a cancer check and the public are urged if they are concerned about possible symptoms to contact their GP and get a check-up.

National Pathology Imaging Co-operative Director and Consultant Pathologist at Leeds Teaching Hospitals NHS Trust Darren Treanor said:

> This investment will allow us to use digital pathology to diagnose cancer at 21 NHS trusts in the north, serving a population of 6 million people. We will also build a national network spanning another 25 hospitals in England, allowing doctors to get expert second opinions in rare cancers, such as childhood tumours, more rapidly. This funding puts the NHS in a strong position to be a global leader in the use of artificial intelligence in the diagnosis of disease.
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> The knowledge PathLAKE will unlock, both in the short and long-term future, will completely transform cancer care in the NHS while embedding a world-leading life-sciences and technology sector across our health system.

Professor Kiran Patel, Chief Medical Officer and Interim Chief Executive Officer for University Hospitals Coventry and Warwickshire (UHCW) NHS Trust, said:

> We are delighted to receive and lead this funding. This represents a major capital investment into the NHS which will massively expand the digitisation of cellular pathology services, driving diagnostic evaluation to new heights and increasing access to a vast amount of image information for research.

> As a trust we're excited to be playing such a major part in helping the UK to take a leading role in the development and delivery of these new technologies to improve patient outcomes and enhance our understanding and utilisation of clinical information.

Professor Reza Razavi, London Medical Imaging and AI Centre for Value-Based Healthcare Director, said:

> The additional funding will enable the London Medical Imaging and AI Centre for Value-Based Healthcare to continue its mission to spearhead innovations that will have significant impact on our patients and the wider NHS.
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> Artificial intelligence technology provides significant opportunities to improve diagnostics and therapies as well as reduce administrative costs. With machine learning, we can use existing data to help clinicians better predict when disease will occur, diagnosing and treating it earlier, and personalising treatments, which will be less resource intensive and provides better health outcomes for our patients.

The centres benefiting from the funding are:

- London Medical Imaging and Artificial Intelligence Centre for Value-Based Healthcare, which will use artificial intelligence in medical imaging and related clinical data for faster and earlier diagnosis and automating expensive and time-consuming manual reporting
- the National Pathology Imaging Collaborative (NPIC) located in Leeds, which will boost the city's reputation in digital pathology research further by creating a world-leading centre linking up 9 industry partners, 8 universities and 9 NHS trusts
- based in Coventry, the Pathology Image Data Lake for Analytics, Knowledge and Education (PathLAKE) will use NHS pathology data to drive economic growth in health-related AI

Alongside the clinical improvements, this investment supports the UK's long-term response to COVID-19, contributing to the government's aim of building a British diagnostics industry at scale. The funding will support the UK's artificial intelligence and technology industries, by allowing the centres to partner with new and innovative British small and medium-sized enterprises (SMEs), boosting our economic recovery from coronavirus.

As part of the delivery of the government's Data to Early Diagnosis and Precision Medicine Challenge, in 2018, the Department for Business, Energy and Industrial Strategy (BEIS) invested £50 million through UK Research and Innovation (UKRI) to establish 5 digital pathology and imaging AI Centres of Excellence.

The centres – located in Leeds, Oxford, Coventry, Glasgow and London – were originally selected by an Innovate UK competition run on behalf of UKRI

which, to date, has leveraged over £41.5 million in industry investment. Working with their partners, the centres modernise NHS pathology and imaging services and develop new, innovative ways of using AI to speed up diagnosis of diseases.