Digitising workflows: The role of AI and Automation and how they are transforming efficiency in healthcare

By Mark Hitchman, Managing Director at Canon Medical Systems UK

The case for digitising healthcare has never been more urgent. Hospitals are under pressure to deliver high-quality patient care, with demand increasing from an ageing population with complex healthcare needs.

As healthcare institutions continue to operate against a backdrop of staff shortages, limited access to diagnostic imaging equipment, and a spiralling backlog of appointments – the NHS patient waiting list stands at 7.5 million[1] – driving greater efficiency and accuracy has never been more crucial.

The reality, however, is that healthcare systems often involve archaic, non-digitised workflow processes that can introduce unnecessary delays to efficient operations. But times have changed and continue to do so. Compare the complexity and image quality of photography using an SLR camera ten years ago versus a smartphone today and you'll get a sense of what is happening in the healthcare industry today.

Data and digital technologies such as artificial intelligence (AI) and automation are revolutionising the medical field when it comes to optimising workflows – and this has become particularly evident in the case of medical imaging and diagnostics. Breakthroughs in imaging technology, including advances in image quality and noise reduction, for example, are driving more accurate and timely diagnoses and treatment planning for patients, whilst automated technologies are optimising the scanning process.

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Aquilion ONE / INSIGHT Edition features INSTINX, Canon Medical's holistic workflow solution designed to enhance every aspect of imaging.

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With the right tools, healthcare providers, and their diagnostics teams, can significantly reduce time-consuming tasks, minimise errors, enhance overall operational efficiency and, in doing so, improve the patient experience. In addition to increasing patient throughput- and reducing the backlog of appointments – this allows more time to focus on care, keeping up with evolving healthcare needs via ongoing training, and facilitating better treatment outcomes.

How AI is improving accuracy

2025 kick-started with the launch of the UK Government's AI Opportunities Action Plan[2] which outlined the steps needed for effective AI implementation within the public sector, with healthcare cited as a key industry set to benefit from its transformational impact. Since then, subsequent announcements including the formation of the Healthcare Artificial Intelligence Solutions Framework[3] which will focus on the application of AI in different specialities,including radiology and diagnostic imaging, continue to shine a light on the technology and its role in the future of healthcare.

While these announcements highlight the future potential of AI and its capabilities in this field, innovative health technologies, powered by AI and natural language processing (NLP), are already starting to transform the industry by providing new ways to improve the accuracy, speed, and efficiency of clinical decision-making. For example, today, an increasing number of hospitals are opting for medical imaging systems (such as CT and MRI scanners) equipped with Deep Learning Reconstruction AI algorithms. These technologies enable operators to easily differentiate 'noise' from true signal, by effectively cleaning noise and artefacts out of the image during reconstruction. Doing so reduces errors by minimising distortions and enhancing detail, all at a lower radiation dose. By providing superior clarity from the very first scan, the need for repeat scans is also minimised which, in addition to saving time and resources for the healthcare provider, also ensures a faster and safer scan for patients.

AI is also being leveraged in new ways to help navigate workforce shortages, by managing unpredictable capacity demands, backlog management, and replacing repetitive tasks. AI in the future, with support and workflow improvements, will be able to effectively support radiologists in their role, providing timely diagnosis whilst also improving patient care. But AI isn't the only technology transforming clinical workflows today...

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Building efficiency through automation

Whilst the spotlight is on AI for its anticipated role in the future of healthcare, the impact of automation should not be underestimated. Today, workflow automation solutions can enhance every aspect of medical imaging – from patient positioning, through to patient scanning and reporting.

With the right systems, in diagnostics for example, automation allows the scanning process to become more intuitive and seamless for radiographers, whilst being more comfortable and safer for patients. Automatic scan planning using Anatomical Landmark Detection (ALD) technology can accurately identify the anatomical structures required to perform fully automatic scan planning for all routine exams. Solutions such as these can reduce time per scan, allowing clinicians more time to focus on patient care. We have witnessed this with our own solutions delivering a 40% reduction in workflow steps. As well as being beneficial to patients, this ease of use contributes significantly to increased patient throughput and overall scanning productivity, leading to greater worker satisfaction, time savings and the flexible allocation of staff to manage demand.

Automation can also assist with first review triage, workload prioritisation and flagging scans that require urgent attention. This can help speed up treatment decision-making, whilst vastly improving productivity. In emergency departments, AI-assisted diagnostic tools can be particularly effective for optimising treatment outcomes for A&E cases when speed and accuracy are crucial. Tools are also available today that can swiftly and automatically categorise diagnostic brain images following a CT scan to detect signs of ischemic and haemorrhagic stroke in as little as 30 seconds compared to the usual 30-minute scan to manual-reporting timeframe.

Embrace the power of optimisation

Optimising workflows through digital technologies such as AI and automation stands as a cornerstone in delivering efficient, patient-centred care within the intricate landscape of modern healthcare. It necessitates a deep comprehension of clinical workflow components, an adept recognition of their accompanying challenges, and the strategic implementation of solutions. Through these efforts, the healthcare industry stands to gain various benefits, including heightened patient satisfaction, streamlined operational efficiency, minimised errors, and significant cost savings.

This becomes even more important as the UK government starts to expand the network of Community Diagnostic Centres (CDCs) and surgical hubs to tackle the current backlog of appointments in England[4]. Whilst these centres provide greater diagnostic capacity, closer to the community, the workforce shortage and equipping these hubs remains a pressing challenge that must be addressed. The digitisation of workflows, which will make diagnostic equipment more intuitive and simpler to use, will play a major part in supporting this, by enabling existing staff to carry out their roles more efficiently and productively, whilst allowing flexibility around the reallocation of staff. Such advances can also make careers in radiography and diagnostics more attractive, as machines grow to become more intelligent, and workloads more manageable.

It is imperative, however, to recognise that clinical workflow optimisation is not a static endeavour, but rather a continuous journey. Embracing the ever-evolving trends and innovations, while overcoming associated barriers, is paramount for attaining and maintaining an optimal workflow, ensuring a healthier future for both healthcare providers and patients alike. //

References

1   *PM sets out plan to tackle hospital backlog - BBC News. https://www.bbc.co.uk/ news/articles/ckgxqnr8yw4o*
2   *AI Opportunities Action Plan: government response - GOV.UK. https://www.gov. uk/government/publications/ai-opportunities-action-plan-government -response/ai-opportunities-action-plan-government-response*
3   *Future framework agreement: Healthcare Artificial Intelligence Solutions - SBS.NHS.UK. https://www.sbs.nhs.uk/news/healthcare-artificial-intelligence- solutions/#:~:text=Our%2520new%2520framework%2520agreement%2520 will,illness%2520and%2520optimise%2520clinical%2520workflow.&text= It%2520can%2520help%2520with%2520a,%25E2%2580%258B*
4   *Government unveils plan to reduce NHS waiting-list backlog - BBC News. https://www.bbc.co.uk/news/articles/ckgxqnr8yw4o*