

The role of health technology in preventing disease

The Health Tech Alliance explores the critical role that health technology plays in the prevention of ill health within the NHS

The NHS currently faces unprecedented challenges from increasing demand, budget constraints, and a growing prevalence of chronic diseases like diabetes, cardiovascular disease, chronic kidney disease, chronic obstructive pulmonary disease and hypertension. Preventative healthcare has emerged as a key strategy to alleviate these burdens and create value for the taxpayer. The scope for HealthTech, including digital health technologies and medical devices, to deliver preventative healthcare is significant, transforming how the NHS anticipates, detects, and manages potential health issues before they escalate.

Early detection and diagnosis

One of HealthTech's most significant contributions to preventive care is its ability to facilitate early and accurate detection and diagnosis. By catching potential issues early, these devices can help prevent complications from developing further down the line, many of which can lead to costly hospital admissions. We have seen innovative tracking devices developed by our members that aim to save lives by delivering intelligent, highly-personalised data to clinicians and patients at any time and remotely. Both the NHS and UK Government are firmly committed to reducing waiting times and freeing up access to essential resources, which are both roles that HealthTech can fulfil.

Remote monitoring and wearable devices

There are estimated to be 7.2 million people in the UK living with chronic kidney disease, which is more than 10% of the entire population. ⁽¹⁾ There are 4.4 million people in the UK living with diabetes, with more than 1.2 million people with undiagnosed type 2 diabetes. ⁽²⁾ Remote monitoring devices can critically help individuals

with chronic conditions like these manage their condition and proactively identify potential problems. Self-monitoring devices, like those developed by our members, such as wearables and home monitors, enable patients to track vital signs like heart rate, blood pressure, glucose levels, and arrhythmias. Implantable devices like pacemakers, defibrillators, and continuous glucose monitors provide real-time data and can alert patients and healthcare providers to potential issues, enabling prompt action before conditions become severe enough to necessitate a hospital stay. Remote monitoring also allows assessment of how well a treatment or a device is working and whether a condition is progressing and requires a preventative course of action. The result is that patients only occupy beds when necessary, freeing up resources for those in more urgent need. Consistent monitoring and early management of conditions can reduce the rate of hospital readmissions, which is a significant factor in bed availability.

Minimally invasive intervention

Implementing HealthTech devices both in the early detection and diagnosis stage and in the surgical stage results in less invasive treatments for patients. Medical devices and surgical robots can be implanted through minimally invasive procedures, allowing early diagnostics and measures to be taken before a potential disease progresses. This poses a smaller risk for the patient because intervention can take place at an earlier stage and reduce the physical and emotional burden of traditional procedures.

Robotic devices allow surgeons to perform complex procedures with enhanced precision, smaller incisions,



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and greater control, resulting in less trauma to the body, reduced recovery time and a minimised risk of complication. Amongst our members, there are robotic surgical systems that allow for minimally invasive surgical approaches. The da Vinci Surgical System, developed by one of our members, allows for a minimally invasive surgical approach to prostatectomies, cardiac valve repair, renal and gynaecologic surgical procedures. ⁽³⁾ Developed by another of our members, Versius is a small, modular and portable surgical robot that can fit into most operating rooms to maximise your clinical workflows and schedules. The device allows ports to be placed where necessary for each patient, allowing surgeons to maintain a laparoscopic approach. ⁽⁴⁾

Personalisation of treatment

Advancements in HealthTech are also paving the way for personalised medicine, where interventions are tailored to individual patient needs. Using genetic information, lifestyle data, and other personal health metrics, predictive analytics can identify individuals at high risk of developing certain conditions. For example, genetic testing can reveal predispositions to illnesses like cancer or heart disease, prompting the implementation of proactive monitoring and preventative measures. Storing patient data is crucial in preventing more costly conditions from forming.

Data analysis and risk prediction

As the NHS looks to adopt more efficient data collection systems, Artificial Intelligence and Machine Learning technologies will evolve preventative care by forecasting potential health issues and risks and recommending personalised interventions. This proactive approach can lead to better health outcomes by treating conditions

before they become severe, reducing the reliance on reactive care. Diagnostic efficiency will improve with more efficient data collection and predictive analytics.

Further integration of technology into healthcare has the potential to revolutionise the way we approach disease prevention and management, leading to better health outcomes and a higher quality of life for all. Not only can HealthTech aid prevention, but also make it quicker and easier to carry out remotely, freeing up invaluable clinicians' time and providing better care for patients. We see first-hand from our members the efficiencies and advances in patient outcomes that can be made using HealthTech devices, from detection and diagnosis to post-surgery monitoring and recovery. However, despite this, the current commissioning system within NHS England is not conducive to its rapid adoption, and it can take over a decade for a device to be adopted into the NHS. ⁽⁵⁾ For the UK to become a leader in preventive health technology, as it has in pharmaceuticals and biomedicine, it needs to be further scrutinised to realise the possibilities in the field for the UK globally and in addressing the challenges within our health system.

The Health Tech Alliance is a coalition of health technology companies and bodies from across the NHS and wider health system. It is chaired by Dame Barbara Hakin, the former Deputy Chief Executive of NHS England, who is working collaboratively to increase the adoption of health technology across the health and care system.

References

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Health Tech Alliance

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