NHS England Board meeting

Paper Title: Technology & innovation in the NHS

Agenda item: 6 (Public session)

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Paper type: For information

Organisation Objective:

NHS Mandate from Government	☐	Statutory item	☐
NHS Long Term Plan	☒	Governance	☐
NHS People Plan	☐		

Executive summary:

This paper provides an overview of the opportunities that innovations in technology present to the NHS, and where we might look to focus in the coming years to transform people's experience of health and care in England.

This paper builds on the Board Paper shared in February on the progress made in each of the key work areas of the Transformation Directorate.

The health technology landscape is ever-changing. This paper sets out some of the exciting big-ticket items that could present the greatest opportunities for the NHS in the future.

Action required:

To note the information provided in the report.

Background

1. Throughout its 75-year history, the NHS has consistently developed and adopted new technology to deliver more effective and more efficient care for patients, in many cases leading the world in doing so. This work to identify the opportunities that innovation in technology could potentially present, and how nationally we might look to support adoption at scale of these innovations across the system, continues to this day.

2. The NHS is already working to deliver on its strategy for technology in health and care over the next 3 years, to *"Digitise, Connect and Transform"* care
   a. **Digitise**: Put in place the foundations nationally that enable wholesale transformation of the health & care system.
   b. **Connect**: Use the foundations to ensure that information can be shared across the health and care system safely and effectively.
   c. **Transform**: Use the platform of a digitised and connected technological infrastructure to transform people and clinicians' experience of care.

3. Much of the work done to date in the Transformation Directorate focuses on the **digitise** and **connect** parts of the strategy; specifying and implementing the ***enabling*** foundational technological infrastructure required across the health and care system. This will enable it to function more safely, effectively and sustainably.

4. When the foundations are in place and connected effectively, we can begin to exploit the innovations in technology that will enable us to **transform** the health and care system. Some of these innovations will impact the technological foundation and change ways of working and delivery of care for everyone, while others will be innovations in specific care pathways that will change the way particular conditions are screened, diagnosed, treated and managed.

5. Good progress has been made in digitising the health and care system; the opportunity now is to maintain that momentum and to harness the constantly evolving technology landscape to enable a health and social care system that will be faster, more effective and deliver more personalised care to people in England. This paper aims to set out some of the key opportunities.

Key areas of opportunity

Digitise – foundational technical infrastructure everywhere

6. The vision is a digitised health and care system, with digitally recorded information that flows seamlessly and safely, ensuring that people and staff have access to information they need to effectively manage and improve health and wellbeing. People understand more about their care and are able to take an active role in it. Frontline clinical staff can deliver care more efficiently, effectively and safely, reducing variations, and improving quality and outcomes.

7. The national team works to create guidance, set standards, mandate, provide funding for and work with ICSs to ensure there is a consistent baseline of digital maturity everywhere, as set out in What Good Looks Like.

8. **Electronic patient records** (EPRs), **digital social care records** (DSCRs) and **shared care records** (ShCRs) are the cornerstones of free-flowing patient information throughout the health and social care system.
    a. 88% of NHS trusts currently have EPRs in place and we are on track to meet our target of 90% coverage by December 2023. All ICSs have ShCRs in place. We have increased adoption of DSCRs to at least 52% of adult social care settings.

    b. Initial research findings suggest that implementation an of EPR could enable trusts to realise significant reduction in costs for inpatient and outpatient care, including reduced length of stay for non-elective care.

Key opportunities

9. Enabling people to have more choice, better engage with and manage their

health by accelerating the roll out and adoption of **Patient Engagement Portals (PEP)**. These will better connect people to their care providers, enabling them to more easily manage appointments, information and clinic letters, and mean that they are no longer reliant on paper-based communications. There are currently 72 acute non-specialist trusts live with PEPs, 28 of these are integrated to the NHS App via Wayfinder. The ambition is to have up to 80% of acute non-specialist trusts live with a PEP and Wayfinder by September 2023.

10. Improve inpatient flow through hospitals by implementing **Electronic Bed and capacity Management Systems (EBCMS)** in combination with care coordination centres (CCC). These could give a Trust and cross-ICS view, that allow for real time management of a patient's journey through the hospital. This will enable staff to use this data to reduce variations in clinical and operational management processes and improve patient and system flow, enabling improved flow from ED to inpatient beds & on to discharge resulting in; more efficient use of capacity; fewer four-hour breaches; releasing nursing time to care; improved patient experience; and better operational decision.

11. EBCMS will help trusts and ICSs to better understand where there is availability in the system, relieve pressure and reduce elective waiting times. Our work includes quantitative analysis to understand the potential benefits in key areas of performance (such as length of stay and A&E waits) of having an EBMS.

Connect – interoperability of the foundational technical infrastructure

12. The vision is a system where all the information the health and social care system holds about a person is seamlessly connected and easy to navigate. Where clinicians and care givers in any care setting have a complete picture of a person's health history, and where data can effectively be used to help manage the health of the population.

13. Many of the systems we use to connect information together in this way are national assets, that we make available to the system to use in order that all parts of it can 'talk' to each other. These include the **Patient demographics service (PDS)** which, in conjunction with **NHS Spine,** ensures that clinicians across the country have access to accurate and up to date patient information, and can connect patients' health records together.

Key opportunities

14. More efficient running of NHS trusts, through the use of a **Federated Data Platform (FDP),** which means that every hospital trust and integrated care system (ICS) will have their own platform that can connect and collaborate with other data platforms, making it easier for health and care organisations to work together to achieve better improvements in care and outcomes for patients than they could each achieve individually.
    a. Local trials have enabled trusts to remove up to **16%** of their waiting list through error identification. A discharge pilot helped one trust reduce the number of patients staying 21 days or more to 12% over

twelve months. The national average is 20%.

b. We are actively working on this and have now entered into the procurement process.

15. Connect the existing 14 Shared care records so that clinical information is available and can be accessed by clinicians nationwide.

16. Continue to improve GP practice phone line capacity through widespread adoption of **Voice over IP (VOIP)** technology, enabling better ability to manage inbound calls.

Transform – cross-cutting transformative technology

17. The vision is for the national, connected infrastructure to be used to drive step changes in the ways in which people receive and experience health and care, in order to enable us to move towards a more preventative, personalised model of care.

18. The Transformation Directorate has made key strides in this space, with the development of the **NHS App** and NHS.uk as the major digital 'front doors' to the NHS; enabling people to take control of their health and care. **The Data for Research & Development** programme has committed to making data for research purposes safely available through an interoperable network of Secure Data Environments by March 2025 to enable more rapid healthtech innovation.

Key opportunities

19. To make the **NHS App** the first port of call for people interacting with the NHS, should they prefer digital channels. This will leverage the progress already made with widespread adoption to enable everyone in England to receive all their NHS communications through it; to give everyone access to their health information in an easy to digest format and to ensure that people have choice about how and where they receive care.

20. To further enable people to be cared for at home where appropriate, through supporting wider adoption of **virtual wards**; enabling remote monitoring of patients in their own homes or care homes, resulting in better outcomes for people and reduced pressure on the system.

21. To transform the way in which **Data for Research and Development** is made available, through networks of secure data environments. This will enable innovative research to be undertaken and enable more rapid and efficient healthtech innovation and supporting the life sciences sector.

22. To change the way in which health conditions are prevented, treated and managed through the use of **Digital Therapeutics (DTX).** We are in the early stages of working on transformation and delivery of DTX for mental health and MSK, while also developing a policy framework to shape regulation, access and adoption of DTX in the NHS. The framework will make clear which DTX the NHS should commission and pay for, including regulatory approvals, evidence standards and the role of NICE in appraising and recommending products.

23. To explore the potential to deliver a step-change in the way in which clinical notes are recorded through the use of **Ambient Documentation,** significantly reducing the amount of time clinicians spend entering notes into a system and increasing the time available to spend with patients.

Transform – pathway-specific transformative technology

24. In addition to the system-wide opportunities for transformation set out above, there are huge opportunities for technology to improve the way specific care pathways work, and the ways in which conditions are screened, diagnosed, treated and managed. These will need to be clinician-led and incorporated into the ways in which models of care are designed and implemented.

25. The Innovation, Research and Life Sciences team, alongside the Accelerated Access Collaborative in the Transformation Directorate, work to identify and scale adoption of ground-breaking new treatments and diagnostics which present opportunities to transform health and care.

Key opportunities

26. **Shortening patient pathways in audiology through using remote digital ontology technology**. An all-in-one hearing assessment tool has been built that can be used by community audiology clinics, sharing the images and information remotely with ENT surgeons, to enable them to assess hearing problems remotely.
    a. UCLH placed the device in a GP practice and had the pathway run by community audiologists. The results here showed **75% of patients** had their pathways shortened by one hospital visit and **65% avoided any hospital attendances**. There was a 98% patients satisfaction score.

27. **Shortening time to discharge and avoidance of face-to-face appointments for patients with skin lesions** through AI assessment of suspicious lesions. 39% of dermatology patients at Chelsea & Westminster NHS Foundation Trust were eligible for discharge after AI assessment, and 71% of patients avoided additional face to face appointments after straight to biopsy decisions facilitated by AI through for recognition of malignancy tech.

28. **Remote diagnosis and monitoring of heart conditions** through the use of **Digital Stethoscopes**[1] in combination with a smartphone app that enable people to check their heart rhythm at home, without needing any additional medical equipment. The technology measures and records the patient's heart rhythm and detects possible arrhythmias.

29. **Improving outcomes for stroke patients**, tripling the number of people recovering and able to perform daily activities from 16 to 48%, through use of

[1] Innovative digital technology helps to save lives in Staffordshire: https://www.england.nhs.uk/midlands/2022/10/20/innovative-digital-technology-helps-to-protects-lives-in-staffordshire/

Brainomix AI technology that can reduce the time between presenting with a stroke and treatment by 60 minutes.

30. Chest X-Rays are the most common type of diagnostic scan, with over 600,000 scans completed each month in England, and are a key step in the identification of lung cancer. There are already several AI tools that are starting to demonstrate real-world value. For example, AI-enabled reporting performance at Musgrove Park Hospital has reduced the time from Chest X-Ray to CT scan from 7 days to 2.8 days.

Our approach to supporting digital transformation across the health and care system and measuring impact

31. The Transformation Directorate has a number of different approaches to supporting the wholesale transformation of the health and care system; these include setting frameworks, standards and guidance, identifying and signposting, funding and mandating. We work with AHSNs, innovation fellowships and many other national and local organisations to do this. A combination of approaches is required in order to ensure that we are making the best of ICS abilities to procure technology that best meets the needs of their populations while also working towards a consistent experience of health and care nationally.

32. One of the key ways we can ensure that this is done is through the feedback loop provided through data collected via clinical audits and registries. This enables us to ensure we can compare services against national standards and understand where there is variation that needs to be addressed.