



**COUNCIL FOR
SCIENCE AND
TECHNOLOGY**

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Sent by email only

3 June 2021

Dear Prime Minister

HARNESSING TECHNOLOGY FOR THE LONG-TERM SUSTAINABILITY OF THE UK'S HEALTHCARE SYSTEM

The UK's National Health Service has a history of world-leading innovation, from delivering the first baby born through in vitro fertilisation in 1978 to launching the first COVID-19 mass vaccination programme in 2020. However, it faces increasing challenges including widening health inequalities and growing demand from an ageing population with multiple long-term conditions. Siloed structures and workforce shortages also limit its ability to respond to increasing demand, while barriers to information flows affect the quality and integration of care. The current system is not sustainable and a continued drive for efficiency and cost reductions could further reduce resilience to emerging crises and increase inequalities. As the Government's White Paper on health and social care acknowledges – a change in approach is needed.

The COVID-19 pandemic has exacerbated the challenges above. However, it has also accelerated the adoption of digital tools and shown the system's capacity to change. We are experiencing a period of astounding growth in our understanding of biological and digital sciences. These two revolutions are playing out in every sector, but no place more so than in medicine, which stands at the direct intersection of the two areas.

Now is the time for a reshaping our approach to innovation in the health system, in line with the Government ambition of improving integration of care and levelling up the health of local areas across the UK. We offer advice to harness this momentum and unleash the power of technology to support better outcomes for patients, the workforce and the nation. Technologies are part of a suite of tools needed to tackle the challenges outlined above and we offer these proposals as a contribution to wider measures needed to address inequalities and improve the nation's health.

Integrated application of technologies presents the opportunity to rebalance health systems towards prevention and early intervention, and to empower people to take

greater control of their health. Successful integration of existing healthcare technologies could enable health system leaders to reengineer the model of health and care delivery. This is vital to relieve demands on frontline services and secure a sustainable future for our NHS. Done well, this will also free up time for more meaningful personal interaction between patients and healthcare professionals.

System-wide adoption of technology can enable transformative change that will benefit the health and wellbeing of our nation and promote economic growth. Two areas of opportunity that, with the right approach, should be within our reach are:

- Supporting a step-change to improve and maintain population health, centred around new ways of engaging and supporting individuals and communities, enabled by data and evidence.
- Re-engineering the health system to support integrated 'pathways' for prevention, treatment and care to provide better outcomes for individuals.

To meet these aspirations, we have three recommendations:

- The Government should establish at least two Demonstrator regions to test the system-wide application and integration of healthcare technologies. Demonstrators will encompass the entire health system in a representative population of varied demographics. They will trial new interoperable systems, integrated technologies and redesigned pathways. They should run for 5–10 years to enable iteration and constructive evaluation.
- To complement this, a 'National Centre for Health System Improvement' should be set up to work with the Demonstrators to advise, design and evaluate system changes, and build the capacity and skills needed for local, regional and wholesale system transformation centred on people's needs.
- Finally, the Government should work with NICE, regulators and the research community to promote the development of an evidence base to underpin effective use of digital health technologies to explore how digital solutions lead to better outcomes in care and system efficiency.

The long-term success of the integrated care system approach depends on the flow of information between different parts of the NHS, and with partner organisations, to help deliver care and promote public health. Health data is people's personal information – accessibility, security, control and trust will be key. Health data is also about populations – access to data at scale is essential to enable healthcare planning to reduce inequalities and improve access for those at greatest risk. The NHS Data Strategy will need to address the challenge of improving the digital infrastructure and flow of data across these interfaces, while providing these assurances and protecting privacy. This could be a key enabler for the uptake of technologies.

Health innovation can contribute to our economy and global reputation. Accelerating the adoption of health innovations will ensure that the UK remains a place to design, develop and deploy innovations for the world. It will also strengthen international collaboration and partnerships that contribute to global health security.

The attached paper offers further detail on opportunities for harnessing technology for the long-term sustainability of the UK's health system. We would be pleased to discuss these recommendations with you or your Ministerial colleagues.

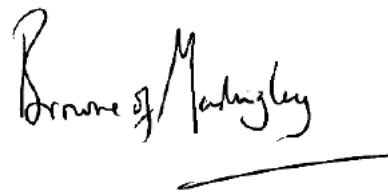
We are grateful to Professor Sir Robert Lechler (Emeritus Senior Vice-President in Health, King's College London) for leading this project with support from Suranga Chandratillake (General Partner, Balderton Capital); Professor Paul Newman (BP Professor of Information Engineering, University of Oxford) Professor Dame Muffy Calder (Vice-Principal and Head of College of Science and Engineering, University of Glasgow); Professor Brooke Rogers (Professor of Behavioural Science and Security, King's College London); Professor Sir Jim McDonald (President, Royal Academy of Engineering); Professor Philip Bond (Professor of Creativity and Innovation at the University of Manchester and Visiting Professor in Engineering Mathematics at the University of Bristol); Professor Dame Carol Propper (Professor of Economics, Imperial College London) and Professor David Delpy (Emeritus Professor of Medical Photonics, University College London). We are also grateful to Professor John Clarkson (Professor of Engineering Design, Cambridge, and Healthcare Systems, Delft), representatives of the Academic Health Science Networks and to the policy teams and fellows at the Royal Academy of Engineering, Academy of Medical Sciences and National Engineering Policy Centre who helped inform our thinking.

We are copying this letter to the Chancellor of the Exchequer, the Secretary of State for Health and Social Care, Lord Bethell of Romford (Minister for Innovation), the Cabinet Secretary and the Permanent Secretaries of HM Treasury, the Department for Health and Social Care and the Department for Business, Energy and Industrial Strategy, the Chief Medical Officer, the Chief Executive of the NHS and the CEO of NHSX.

Yours sincerely,



Sir Patrick Vallance
Co-Chair



Lord John Browne
Co-Chair