



The Topol Review: Interim report

Briefing – August 2018

Background

In 2017, Jeremy Hunt, the then Secretary of State for Health commissioned [The Topol Review](#) as a key part of NHS workforce development. The Topol Review is chaired by the American cardiologist, geneticist, and digital medicine researcher Dr Eric Topol, and led by Health Education England (HEE). The [interim report](#) was published in June 2018.

Topol Review

The review aims to explore how the NHS and its staff can use new and developing technologies to improve services and ensure the future viability of the NHS. Key issues include how technological change will alter roles within the health service; which new skills current and future staff will need to acquire in order to meet the challenges of new technologies; and how the selection, curricula, education and training of the current and future workforces will alter. Central to the review is the patient and the utilisation of technological innovation to improve clinical outcomes. The review will focus on genomics, digital medicine, and artificial intelligence (AI) and robotics.

This review takes place amidst a backdrop of staff shortages in the NHS. Whilst the workforce has grown, it has not kept up with rising demand, which has been exacerbated by a growing and ageing population. HEE has forecast that if the Government fails to reduce demand and increase productivity, then the health service will require at least 190,000 more staff by 2027. The final report will consider whether incorporating new technologies will alter future workforce need.

The education and training of the current and future workforce will be crucial in enabling staff to make use of new technology advancements. Schools and universities will be key to ensuring the future workforce has the digital literacy and patient engagement skills required. HEE has already launched a Genomic Education Programme, helped by a £20 million investment by the Department of Health and Social Care. The NHS Digital Academy has also been established to develop a new generation of digital leaders.

Ethics will also be highly pertinent to the review. Technological developments may create significant healthcare benefits. However, this will rely on the ability to collect, store, and share health data via processes that some may consider intrusive. There is also an issue about equity of access to new technologies and information asymmetries, with those in higher socio-economic groups being able to benefit more from these advances than other people.

Genomics

Genomics and genetic diagnostics have the potential to radically reshape healthcare, particularly through the development of preventative strategies. This may include profiling patients' genomes to predict future

health outcomes and targeting drugs more efficiently, based on the optimum dosage. The implementation of genomic medicine has been led by NHS England and Genomics England, especially through the [100,000 Genomes Project](#). Additionally, the HEE Genomics Education Programme has been responsible for preparing the NHS workforce to deliver genomic medicine.

The normalisation of genomic medicine will be crucial for ensuring that the public accept and benefit from the use of genetic information within the health system. Regulation will need to be updated to ensure that the privacy of this sensitive data is protected. Future regulatory developments will also need to be incorporated into healthcare education. The review recommends that undergraduate and postgraduate curricula for all healthcare professionals should include genomic content.

Genomics will likely become mainstream across the health service. It is hoped that genomic medicine will enable the system to redeploy resources and increase its efficiency. Staff will have to re-orientate their communication and support skills to enable patients to understand any implications of genetic diagnoses for their families. New roles, including clinical bioinformaticians and genetic diabetes nurses, will be created.

Digital medicine

Digital medicine describes 'digital technologies and products that directly impact medical diagnosis, prevention, monitoring and treatment'.¹ Examples include wearables that track vital signs, telemedicine and bionanotechnology. The [NHS Apps Library](#) was launched in 2017 and provides digital tools for patients with a range of conditions.

The public has benefited greatly from access to health information via new technology in recent years. 89% of the UK population used the internet in the last three months. 24% of people have access to online health services and there was an increase from 22% to 31% between 2016 and 2018 in those using wearables to monitor their health and wellbeing. However, there are still concerns about access, particularly for older people or those from economically disadvantaged households. The interim report advocates investment in national digital literacy campaigns to educate the public. For those without direct access, digital health facilities should be made accessible in schools, public libraries and GP surgeries.

The 2016 [Wachter Review](#) emphasised the importance of digital leadership within the NHS. The first NHS Chief Clinical Information Officer was appointed in 2016. It is likely that healthcare professionals will increasingly adopt digital health technologies in their practice. For example, online consultations and remote patient management are likely to become much more widespread. Issues of data protection and quality along with wider ethical issues will become increasing concerns of the workforce.

AI and robotics

¹ [Topol Review: Preparing the healthcare workforce to deliver the digital future: Interim Report June 2018 – A call for evidence](#), 2018, p24

Advancements in AI focus on machine learning, which is a mode of learning that ‘allows computer systems to learn directly from examples, data and experience’.² Machine learning can now perform better than humans in some areas. Algorithms will be developed to enable machines rather than humans to undertake some administrative and clinical tasks, which could improve productivity. More widely, the system will want AI to make use of NHS datasets to generate information about the causes of ill-health and to provide effective evidence-based treatments.

AI may also be used to nudge individuals into better habits, such as via the development of virtual health coaches. Current advancements in robotics include types of minimally invasive surgery, robotic radiotherapy and 3D printed bionic arms for amputees. The work of healthcare professionals will be recast by AI technologies, as it is thought that some professionals spend up to 70% of time undertaking administrative work. In the future this will be done by AI technology. It is hoped that AI will enable staff to have more time to focus on patients. The NHS will have to employ AI specialists to navigate the changes that this new technology will bring about and also ensure that staff are upskilled to undertake new roles where existing posts become redundant.

Next steps

The Topol Review has published a [call for evidence](#) to help shape its final report. The deadline for submissions is Wednesday 29 August. The final report will be submitted to the Secretary of State for Health and Social Care in December 2018, with further engagement across the sector due to start in 2019.

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² Ibid. p.28