The Topol Review

Preparing the healthcare workforce to deliver the digital future

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With thanks to
Sue Lacey Bryant

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Dr Eric Topol – pronounced Toe-pol

Credentials

• American cardiologist, geneticist, and digital medicine researcher
• Founder and Director of the Scripps Research Translational
• Professor of Genomics
• *The Patient Will See You Now*, published in 2015, explores how smartphones, big data, and technology are combining to democratize health care
The Topol Review explores how to prepare the healthcare workforce, through education and training, to deliver the digital future makes recommendations that will enable NHS staff to make the most of innovative technologies such as genomics, digital medicine, artificial intelligence and robotics to improve services. These recommendations support the aims of the NHS Long-Term Plan and the workforce implementation plan, helping to ensure a sustainable NHS
The Topol Review

The Review has been predicated on the following pre-suppositions:

1. Patients are at the centre of new technologies
2. Improve the accuracy of diagnoses and treatments, the efficiency of care, and workflow
3. Patients empowered to take greater charge of their care using digital tools
4. ‘Gift of time’ in the patient-clinician relationship
5. Education and training of the clinician workforce and the public
The Topol Review: 3 Principles

1. **Citizens, patients and carers**

2. **Evidence:** The adoption of digital healthcare technologies should be grounded in compelling real world evidence of clinical efficacy and cost-effectiveness, followed by practical knowledge transfer throughout the NHS.

   The workforce needs expertise, standards and guidance to evaluate technology applications.

   A fit-for-purpose, legal and ethical governance framework that patients, public and staff can trust is required.

3. **The gift of time**

   

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#TopolReview  www.hee.nhs.uk/our-work/topol-review
# Themes

- Genomics
- Artificial intelligence and robotics
- Digital medicine
- Organisational development
Top technologies

Arrow heat map represents the perceived magnitude of impact on current models of care and, by inference, on the proportion of workforce affected.

- <20%
- 50%
- 80%
- >=80%

Technology (Digital Medicine, Genomics, AI & Robotics)  Proportion of workforce affected  2020  2025  2030  2035  2040
1. Telemedicine
2. Smartphone apps
3. Sensors and wearables for diagnostics and remote monitoring
4. Reading the genome
5. Speech recognition and natural language processing (NLP)
6. Virtual and augmented reality
7. Automated image interpretation using AI
8. Interventional and rehabilitative robotics
9. Predictive analytics using AI
10. Writing the genome
How sci-fi is all this?

- Smartphone apps
- A.I. - Siri, Alexa and the like
- Robots on the streets
- Robots in the NHS
- Virtual reality with patients
- Virtual reality with staff
LKS are good at embracing technology....
LKS Live 2019: a small change can make a big difference

A learning and knowledge exchange event for all healthcare library staff in the South West, Thames Valley and Wessex

Tuesday 1st October - BRISTOL 10am-4pm

Venue - We the Curious, Millenium Square, Anchor Road, Harbourside, Bristol BS1 5DB. Sat Nav Reference: BS1 5LL

(The venue is on the harbourside in central Bristol, and is the hands-on science centre which used to be called Explore@Bristol. When you spot a huge shiny silver ball, which contains the planetarium, you have arrived.)

Link to venue information: https://www.wethecurious.org/visit-us/getting-here

10.10am Morning Keynote Small steps for literacies; giant leap for health - Ruth Carlyle, Head of Library & Knowledge Services

How easy is it for people to access, appraise and apply health information? In this keynote, Ruth Carlyle will help you to appreciate the roles of information literacy and digital literacy in health. The session includes: new analysis of health literacy & recommendations.

2-3pm Workshop One

A. Virtual reality in healthcare: a hands-on experience - Oli East

Virtual reality is rapidly becoming a ‘thing’ in healthcare, and this workshop will help you find out what it’s like to have vision impairment, be a new anatomy, or check out new wellbeing apps (we highly recommend that you use our online group).

B. Library and machine learning – Noureddine Kessous

We will be examining what AI (artificial intelligence) and machine learning can do for clinical librarians and other roles. What is AI? What is its role in providing a service?
Use case: Telemedicine – Virtual fracture clinics

Case: Fracture clinics at Brighton & Sussex University Hospital

Large and increasing demand on traditional and outdated fracture clinics services. New patients are not seeing the right consultant for their injury.

Solution

Introduced a virtual fracture clinic for acute fracture and soft tissue injuries. This includes a telephone consultation (combining an orthopaedic review and specialist therapist input) and self-management through use of online resources.

Outcome

The virtual fracture clinic model is able to monitor and meet adherence to fracture clinic guidelines. In 2017, over 50% of the 8,000+ new patient fracture clinic appointments were via the virtual fracture clinic and discharged after receiving virtual care. This represents a saving for the CCG of over £700,000.
7.3.1 Telemedicine (Example 1 in Figure 1 – Chapter 3): Brighton and Sussex University Hospital Trust Virtual Fracture Clinics

Virtual fracture clinics, as described in Chapter 3, have been shown to be effective, improving several key clinical performance parameters and potentially providing substantial cost-savings for local Clinical Commissioning Groups (CCGs). If these clinics were introduced nationally, they could potentially deliver very large savings for the NHS.

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<th>Annually, there are approximately</th>
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<td>7.6 million trauma and orthopaedic outpatient appointments</td>
<td>50% of fracture clinic appointments could be virtual</td>
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Virtual fracture clinic appointments reduce the total number of appointments needed by 15%.

If scaled up, this would equate to a time saving approximating 570,000 15-minute outpatient appointments.

Equivalent annually to approximately 142,000 hours of outpatient clinic time.

80 healthcare professionals’ time back for clinical care.
Weekly Technology Update

Keeping you up-to-date
Includes evidence and news updates from the previous week on the three review topics – Artificial Intelligence, Digital Medicine and Genomics

Please go to https://nhs.us12.list-manage.com/subscribe?u=7734b9153778c17c3579695f6&id=3d7f8786f4 to sign-up or email KnowledgeManagement@hee.nhs.uk
“Today, we need to prepare students for jobs that have not yet been created, to use technologies that have not yet been invented, and to solve problems that we do not yet know will arise”

Andreas Schleicher
Director for Education and Skills, OECD
Recommendations
Digital medicine

The citizen and the patient
• NHS online content should be a vital trusted source of health information and resourced appropriately (DM1)
• expand research and development programmes, working with patients to co-create digital technologies (DM2)

Healthcare professionals
• invest in existing workforce to develop specialist digital skills, including the assessment and commissioning of digital technologies (DM3)

Health system
• develop and commission courses to increase the number of specialists in the evaluation and regulation of digital technologies (DM5)
The NHS should create or increase the numbers of clinician, scientist, technologist and knowledge specialist posts with dedicated, accredited time, with the opportunity of working in partnership with academia and/or the health tech industry to design, implement and use digital, AI and robotics technologies. (DM4/AIR5)
Meeting the needs of the current workforce

The current workforce delivering care will need to know for whom, where, when and how digital technologies are able to improve the care pathway and health outcomes. They will also need to be fully cognisant of information and clinical governance issues, and be aware of any ethical implications.

The strategy should include prioritising time and space to learn, and appropriate forms of CPD, using a combination of face-to-face training, e-learning and virtual/augmented reality.
Next steps
Technology skills and enablement

• Our workforce will be supported and enabled by the latest technology and access insights from real-world data.

• Our leaders must create a culture where digitally supported care is the norm, where interventions are evaluated using real-world data and evidence.

• We will need to attract the best technologists, informaticians and data scientists by making the NHS a destination employer for people with these skills.

• Our approach will be tailored to the needs of the individual with a balance between generic and more specialist capabilities.
“It really will be transformative that eventually… the patient will be truly at the centre.”

Eric Topol, MD
Visit https://topol.hee.nhs.uk/

Thoughts, Observations, Questions?