The Topol Review

Preparing the healthcare workforce to deliver the digital future

The role of knowledge specialists

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THE NHS CONSTITUTION
the NHS belongs to us all

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The Topol Review

The questions:

1. How are technological developments likely to change the roles and functions of clinical staff in all professions over the next two decades?
2. What are the implications of these changes for the skills required?
3. What does this mean for the selection, curricula, education, training and development of current and future NHS staff?

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. **ii) 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. **iii) The gift of time**

Themes

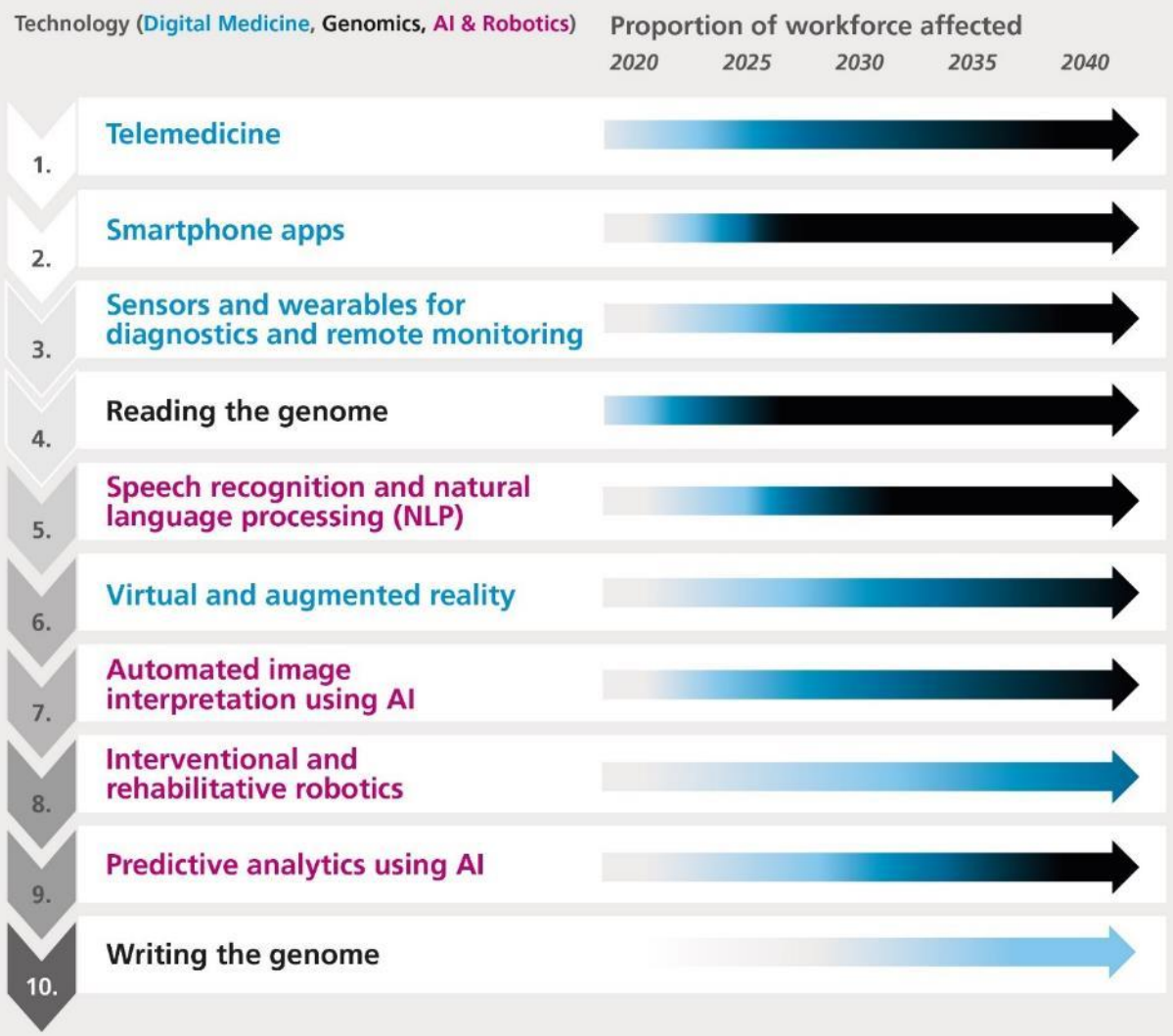
Genomics

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%

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Large and increasing demand on traditional and outdated fracture clinics services.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).[123] If these clinics were introduced nationally, they could potentially deliver very large savings for the NHS.

Annually, there are approximately

7.6 million

trauma and orthopaedic outpatient appointments[124]

At least

50%

of fracture clinic appointments could be virtual[93,125]

Virtual fracture clinic appointments reduce the total number of appointments needed by

15%[126]

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

Education and training needs

"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

Persona: Eddie the Bioinformatician

2013, aged 21:

- Zoology undergraduate
- Recently learned how to analyse genetic sequences of insects
- Interested in genomics and decides to pursue training as a bioinformatician
- Accepted for the postgraduate NHS clinical scientist training programme in clinical bioinformatics

2019, aged 27:

- Now a clinical scientist working as a bioinformatician in Genomic Laboratory Hub
- Excited by potential of emerging technologies and detection of molecular disease markers
- Part time on the genetic analysis from the 100,000 Genomes Project.

Eddie in 2029, aged 37:

- Eddie is now a consultant bioinformatician specialising in haematological cancers.
- Clinical responsibilities include analysing genomic data from live tumour cells for new variants that may require a change in medication or more targeted treatment.
- Lead member of a research group developing new personalised treatments for rare haematological cancers
- Also spends time teaching patient groups and primary care physicians in the community, and curating new educational resources for patients, clinicians and healthcare scientists
- He has recently applied for the role of NHS Regional Dean for Genomic Education.

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)

Digital medicine / AI and robotics

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.

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Organisational development

Health System

- assign board-level responsibility for the safe and effective adoption of digital healthcare technologies at scale (OD4)
- NHS boards should take responsibility for knowledge management to enable staff to learn from experience: both successes and failures (OD5)
- strengthen systems to disseminate lessons from early adoption and share examples (OD6)

"An open and inclusive innovation culture, prioritising people, an agile workforce, leadership, governance and investment."

Organisational development: effective KM

Effective knowledge management is essential to enable the spread and adoption of innovation, with lessons from early adoption shared widely (OD6): an innovation culture is dependent on a learning culture.

The NHS must build a reputation as a learning organisation that values and enables the transfer of learning about successes and failures (OD5).

This can only happen with the creation of new senior knowledge management roles.

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Next steps

Next steps

The NHS Long Term Plan workforce implementation group has convened experts to work together on the most important workforce challenges facing the NHS, addressing the recommendations of The Topol Review.

- The technology skills and enablement group is chaired by Sir David Behan, Chair of HEE.
- Sir David has been leading work to map the Topol Review recommendations and other technology requirements from other ALBs
- A high level work plan is expected for 2019/20.

Next steps: 3 Lenses

CAPACITY

The skills required to navigate a data rich and digitally progressive health environment are much sought after.

We will need to increase capacity by attracting he best technologists, informaticians, data scientists to the NHS.

Planning
Recruitment
Retention

BUILDING THE RIGHT ENVIRONMENT

We must enable a culture, with our leaders at our forefront , which values technology that makes the lives easier for those who provide services and those who use services

Digital Journey
Culture Shift
Professional and Regulatory Landscape

CAPABILITY

For technology to be of maximum benefit to the NHS , the entire workforce will be offered the opportunity to develop a broad scope of digital and specialist technology literacy.

Capability assessment
Digital Skills Development
Knowledge Management

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.

Building digital and technological skills

Immediate 2019/20 actions	Actions to develop full People Plan	Other commitments
1. Develop a library of education, learning, knowledge and best practice resources to expand the digital skills in current workforce 2. Set out plans for an expanded NHS Digital Academy to develop digital leadership capability 3. Establish the Topol Programme for Digital Fellowships in Healthcare	1. Deliver intensive training for boards and senior leaders to build tech and data awareness and capability 2. Provide an accreditation/ credentialing framework for digital leaders at regional, system and local levels 3. Start to develop and integrate digital education and learning resources into academic and professional curricula 4. Undertake a technology skills audit to assess and plan for future digital roles and skills required 5. Develop flexible career pathways and establish early pathway initiatives for the future digital talent	1. Significantly increase flexible working through technology 2. Work with professional regulators to help them understand the implications of digital technology for our workforce

Three areas which are required:

1. Are all Boards aware of the potential that digital technology will have to transform the way that healthcare services will be provided?

2. Can we create a movement of clinicians who work using technology alongside their clinical skills?

3. 95% of all jobs in the economy are going to require some digital component over the next few years. How do we ensure that everyone who works in health and care has the appropriate awareness so that those technological changes can be embraced by all of us into the future?

“It really will be transformative that eventually… the patient will be truly at the centre.”

Eric Topol, MD

Visit https://topol.hee.nhs.uk/

Questions?

TAKE A STRETCH

Implications for library and knowledge specialists?

Knowledge for Healthcare

NHS bodies, their staff, learners, patients and the public use the right knowledge and evidence, at the right time, in the right place, enabling high quality decision-making, learning, research and innovation to achieve excellent healthcare and health improvement.

https://www.hee.nhs.uk/our-work/library-knowledge-services

Becoming business critical

“Healthcare library and knowledge services are a powerhouse for education, lifelong learning, research and evidence-based practice.

Our ambition is to extend this role so that healthcare knowledge services become **business-critical instruments** of informed decision-making and innovation.”

Professor Ian Cumming, OBE
Chief Executive, Health Education England

Organisational Knowledge Management

Applying and using evidence in decision making

Building know-how

Continuing to learn

Driving innovation

To improve efficiency, patient outcomes and encourage the spread and adoption of learning and best practice.

So pitfalls can be avoided and best practice can be replicated.

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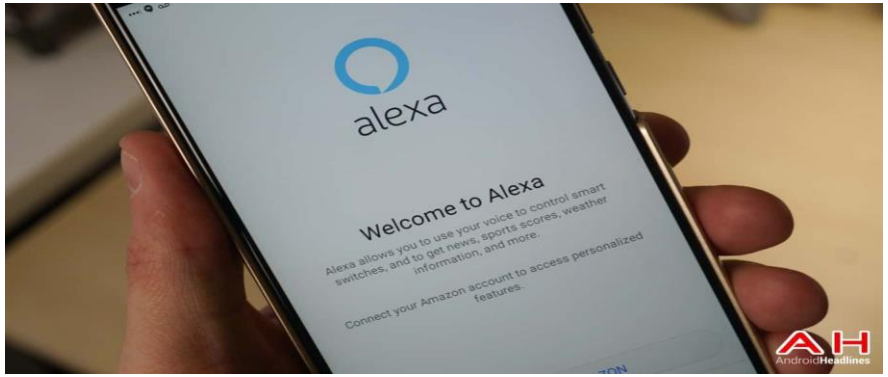
Digital, AI & Robotics: information and libraries



The rise of the Smart Phone and personal assistant

"I don't have to visit a library; I just ask and it tells me everything I need to know. I speak to it all day."

Are collections accessible by AI tools such as Alexa?
"We need openly accessible scholarly information" says Chris Bourg, Director Libraries MIT

Stanford | LIBRARIES

This library initiative looks at AI as “machine perception, machine learning, machine reasoning, and language recognition “

Programme to “identify and enact applications of that will help us make our rich collections of maps, photographs, manuscripts, data sets and other assets more easily discoverable, accessible, and analyzable for scholars.”

Responses from Professional bodies

Libraries embrace digital innovation

Highlight 4 in the report

LIBRARY OF THE FUTURE
CENTER FOR THE FUTURE OF LIBRARIES
AN INITIATIVE OF THE AMERICAN LIBRARY ASSOCIATION

Centre for the Future of Libraries focusing on emerging trends – ALA

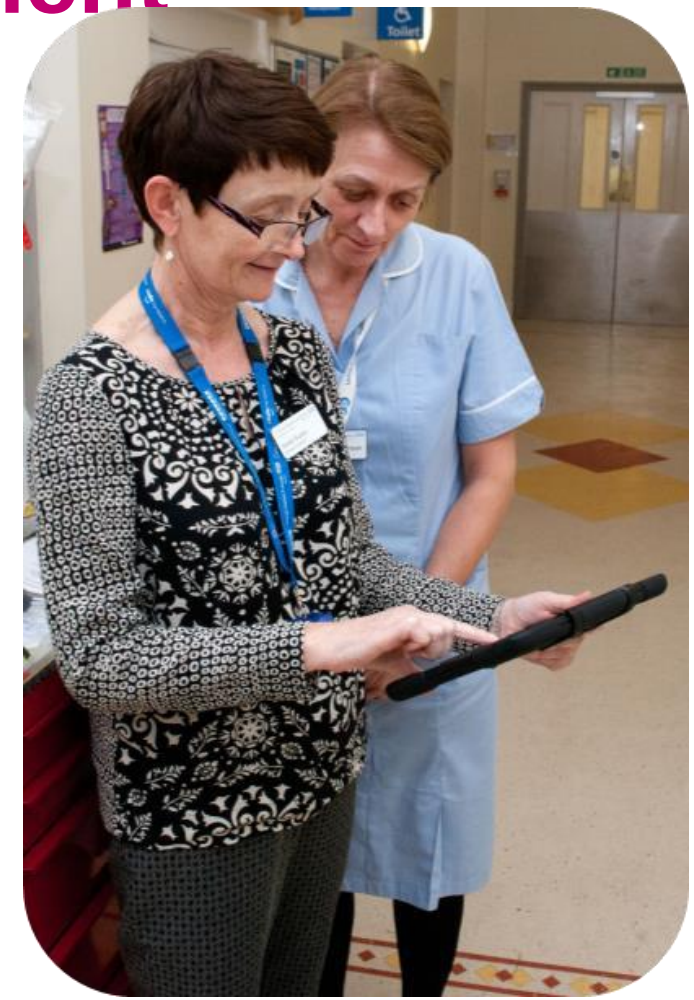
CILIP The library and information association

"CILIP-led review of the impact of AI, machine learning and robotics on the library and information workforce, drawing on the insights of the Topol Review"

Role enlargement and enhancement

Empower knowledge services staff to drive and deliver the vision of Knowledge for Healthcare by fostering innovation and service development, through role enlargement, role enhancement and role substitution

Page 39 Knowledge for Healthcare

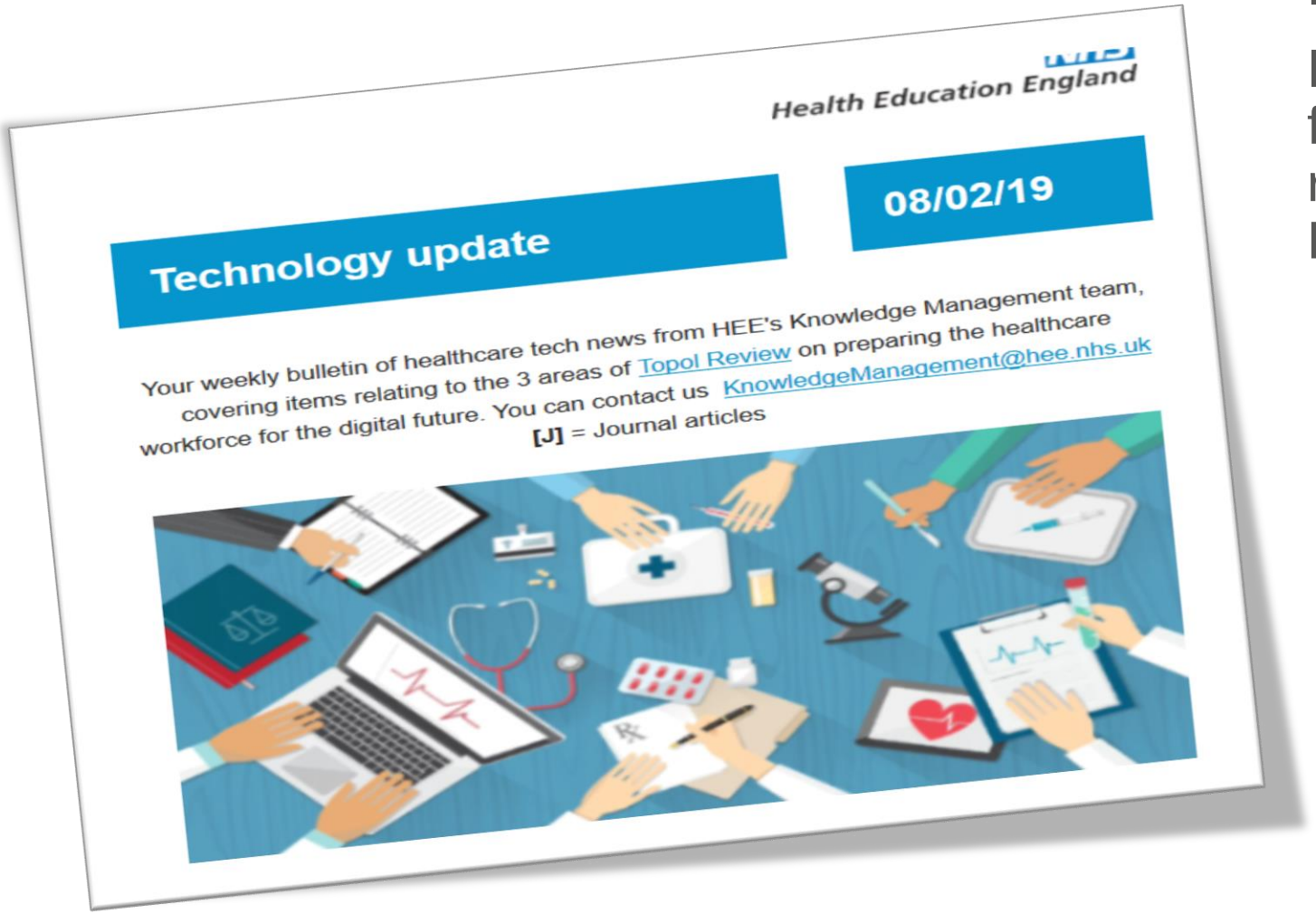


Group discussions

1. What will the roles of NHS Librarians and Knowledge Specialists be like in 2029?

2. What do you need to do now to prepare for this?

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 http://eepurl.com/gc6k6r to sign-up or email

KnowledgeManagement@hee.nhs.uk

Monthly Technology Update – libraries

Keeping you up-to-date

Includes evidence and news updates from the previous month relating to emerging technologies in libraries

Sign-up by email to:

KnowledgeManagement@hee.nhs.uk

Or please go to

https://nhs.us12.list-manage.com/subscribe?u=7734b9153778c17c3579695f6&id=d4adc2d967

Thank you for your time

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