ARE WE READY FOR AI? WHY INNOVATION IN TECH NEEDS TO BE MATCHED BY INVESTMENT IN PEOPLE

By: Jan-Philipp Beck

Summary: Artificial Intelligence (AI) promises to deliver transformative impact on health care settings over the next decade. But the health sector faces significant organisational challenges in keeping pace with this fast-moving technology. This article explores some of the very human factors in the implementation of AI and the role of policy in translating improved data into improved care.

Keywords: Artificial Intelligence, Digital Literacy, Health Care Professionals

Introduction

AI is perhaps the most divisive issue in health care today. To some, it heralds a shimmering, data-driven future – one in which decisions are made with ever-increasing confidence, and health care is made ever more accessible. For others, AI highlights deep-seated concerns about the erosion of traditional roles, its implications for data storage, and clinical accountability. These understandable anxieties are rooted in a complex mix of ethics, public trust or simply a very human fear of being out of a job. Ultimately, however, these concerns add up to a simple practical question: is health care ready for AI?

In many networks, as in EIT Health, we see the breakneck pace of innovation in AI first-hand (see Box 1). But what about the human half of the equation? What changes will need to be made to our systems, operations and infrastructure to keep pace? After all, this technology is entirely dependent on human expertise if it is to realise its potential in health care. We may be witnessing exponential growth in AI, but let’s not forget that human intelligence is also a major growth area; in the context of an ageing population and ever greater demands on health care systems, McKinsey expects to see continued, sustained growth in health care employment.

This growing group of professionals will not be made up of AI ‘users’. Instead, these people will be gatekeepers, evaluating emerging technology, making sense of its findings and translating them into real-world benefits for patients. A new, data-literate clinician will not emerge overnight, however. We need investment in people and processes to match investment in the technology itself. This technology will require significant changes to the way
people are organised, trained and perhaps even the way they identify themselves as professionals.

**A culture playing catch-up?**

We have witnessed a sea change in digital technology in recent years. Advances in cloud computing, processing power and increasingly sophisticated algorithms have accelerated human decision-making in health care. And yet, just as data legislation in the wider world lags behind its use in social media, there is a danger that we in health care will remain on the back foot. A major concern from the health care community is that the regulatory environment – particularly in terms of information governance – is simply not yet ready for these advances.

Dr Ahmad is optimistic about overcoming some of the infrastructural barriers to adoption. “The conventional wisdom is that our hospitals are burdened with legacy systems, and that our resource-constrained public health care will lag behind other industries, but I disagree,” he explains. “I see that both frontline practitioners and national policymakers are now seeing innovation as a necessity rather than a luxury. If the top and bottom are on board, it may take a little longer for management structures to roll out aspects like data sharing agreements, payment structures for AI related services and open, interoperable systems – but things are changing.”

He believes the pitch to concerned professionals should hinge on Dr Eric Topol’s assertion that automation gives doctors back the ‘gift of time’, and in an evidenced common-sense presentation of the benefits of these technologies. The rate-limiting step, however, sits beyond any individual clinician or setting, Dr Ahmad believes. “If Europe wishes to continue to keep up in this race, we need to come to an agreement on sharing data at scale, safely but quickly,” he says. “It’s time to turn the policy and plans into pilots and partnerships on the ground.”

**An intelligent approach to training**

The overwhelming consensus is that only significant and holistic training will adequately prepare clinicians (and by extension the environments in which they work) for these technologies.

Earlier this year, the Academy of Medical Royal Colleges in the United Kingdom published The Artificial Intelligence in Healthcare paper, commissioned by NHS Digital. Amongst its seven recommendations for politicians, policymakers and service providers was a suggestion about how the clinicians of the future are trained. The Academy debunked claims that the presence of AI in retinal scans and targeted radiotherapy would reduce the need for medical specialists. Chair of the academy, Professor Carrie MacEwan, remarked that – if anything – the opposite is true, and that AI makes the case “for training more doctors in data science as well as medicine”.

As the director of policy at the European Medical Students’ Association (EMSA), Lina Mosch sees a clear appetite for exactly this kind of training in the clinicians of tomorrow. A recent EMSA survey found that more than half of medical students consider their eHealth literacy either ‘very poor’, ‘poor’ or ‘acceptable’. Moreover, 85% would like to see more eHealth content in the medical curriculum. “We identified a huge gap, or lag between the lack of awareness of these technologies and the willingness of future health care professionals to be key players in the digitalisation of health care,” Ms Mosch explains. “And it’s also a generational question – health care professional organisations on a European level are not really dealing with this topic in-depth. But without a holistic approach, it’s not possible to cope with the disruptive potential of AI.” She notes that only two European medical associations have published policies on digital health or education. It’s a gap that not only stands in contrast to students’ appetite for greater knowledge, but also to a broader structural need for a reshaping of clinical roles.

Health care professionals will likely become more patient-centric and relationship-focused as AI absorbs more of the routine work. What’s more, clinicians will need to operate as gatekeepers able to bring critical thinking to bear on emerging technology throughout a lengthy career – just as they do with new medicines today. This new job description requires no small degree of training – training that sits above the practical operation of the technology (which would be vulnerable to obsolescence as technology changes). EMSA believes this

---

2 Ahmad, Umar Naeem. Telephone interview on behalf of EIT Health, August 2019.

3 Founder and Director of the Scripps Research Translational Institute.

4 Mosch, Lina. Telephone interview on behalf of EIT Health, August 2019.
Box 1: AI is already transforming infrastructure and outcomes

Advanced diagnostics platforms are already shaping the patient pathway in therapy areas such as oncology. Products are being developed to address the infrastructural problem of bottlenecks in diagnosis.

For prostate cancer diagnosis specifically, a shortage of uropathologists and insufficient use of available data led to the development of a platform that combines big data, AI and cloud-based tech to achieve a number of advances: i) faster, better and more cost-efficient image analysis of prostate biopsies; and ii) new analytical tools for precision medicine, leading to faster treatment and accelerated drug implementation.

This platform is being trialed in hospitals, but these technologies can also facilitate larger structural shifts, such as the much longed-for move to more patients receiving home care.

The benefits of psychological and physical rehabilitation in the home setting are self-evident, yet we know provision is patchy in many countries. Another new platform aims to pick up where the clinician leaves off and operates as an AI companion to mitigate against feelings of loneliness in people living with chronic disease.

Training should include the fundamentals of data analytics, ethical considerations and communications skills.

The inherent difficulty, of course, lies in the competing interests over curricula, as Ms Mosch identifies: “The speed of digital transformation in industry and start-ups is very quick – while in health care there are a lot of steps to take and lots of opinions. Old professions want to keep their subjects in an already-packed programme.”

The solution – at least according to EMSA – is to develop a framework for implementation comprised of different stakeholders, with medical faculties directly involved in its drafting to avoid it being seen as a ‘top-down’ approach. Furthermore, this kind of initiative will only achieve so much at a national level. Cross-border, European-level collaboration is required to ensure we’re learning from our collective successes and failures.

Groundswell of efforts whose cumulative effect will be transformative over the coming decade.

Policy will be made in an environment of enormous possibility – but getting there will require significant time and effort. It’s a tall order – and one we need to get started on right now.

Conclusion

EIT Health’s great hope for the coordinated approach identified by EMSA and others must be to create a generation of health care professionals who are not simply ‘comfortable using AI’. We need professionals who are far more than end users. They must be actively involved in the design of AI-enabled technologies, along with the ethics that surround them.

Quite rightly, they also need to be satisfied that data is rigorously regulated, and excited by the opportunities afforded by the ‘gift of time’ in building stronger relationships with patients. Part of this time will be spent ensuring that patients themselves are comfortable and confident with this new technology.

Clinicians will also need to be critical evaluators of this new technology as it emerges, ready to adopt the innovations that will have a lasting impact on patient outcomes.

Clearly, no single innovation will bring about major structural shifts towards increased self-care or home care. But these types of innovations are examples of a

References


Downey A. Artificial intelligence won’t solve all healthcare problems, new report warns. Digitalhealth, 5 February 2019. Available at: https://www.digitalhealth.net/2019/02/artificial-intelligence-wont-solve-healthcare-problems/

