Dr Indra Joshi

Director of AI at NHSX; Founding Ambassador of One HealthTech, London, UK

Q1 You have built an atypical medical career, holding roles that did not exist 10 years ago, such as the Director of AI at NHSX, UK. What led you to pursue a career in health technology and artificial intelligence (AI) in healthcare, and what elements of your medical training and experience have served you well in forging this path?

I have always been interested in technology and how it might be used to improve health and outcomes. Working in a busy emergency department and understanding who the different users of the health and care system were helped me a lot when I transitioned into a more policy-focussed role. Also being able to navigate the many acronyms in use was extremely helpful.

Q2 How do you think AI in healthcare should progress? Should clinicians take the lead, health policy strategists, or those with a background in technology and data?

For healthcare in AI to progress, it's important that all of these professionals come together. Different sectors working in isolation can disrupt the life cycle of AI technologies; developers and policymakers need to understand clinicians' needs and clinicians need to understand the rationale behind technologies and regulation. Having a variety of people around the table gives a far better understanding of the challenges and opportunities. This reflects a major role of the NHS AI Lab[1] in convening a range of expertise in order to accelerate the safe and effective adoption of AI technologies.

Q3 As AI takes on a bigger role in healthcare in the coming years, should clinicians and patients have a better understanding of data, machine learning, and the processes and ethics of using AI?

Ensuring that those who will be impacted by the use of AI technologies have an understanding of the rationale for their use is central to building trust in their adoption in health and care settings. Part and parcel of safe and effective deployment of AI in healthcare is ensuring that clinicians and patients feel comfortable and well-informed. This raises the question of how we can best provide this education and who should oversee it. Following on from the Topol Review, HEE are working towards addressing some of the recommendations.

Q4 What obstacles are facing the growth of AI in healthcare? How can we combat these to improve patient care and health service delivery?

There are lots of challenges to contend with. Firstly, the rate of innovation is outpacing regulation and policy. This means we risk having a bottle neck where clinically useful tools are not being deployed in a timely manner. This is one of the areas the NHS AI Lab is focussing on, working alongside regulatory bodies to create a safe and supportive ecosystem. This ties into a second challenge: the need for joined up systems. Developers need to have a clear path to bring their products to market and deploy them in health and care settings. Our AI in Health and Care Award is one of the ways we are trying to guide innovators through this process. Thirdly, I think there is a wider agenda around trust and understanding when it comes to AI for health. Clear guidance and communication wherever possible will help people understand the benefits and risks of these technologies.

Your appointment to the role of Director of AI at NHSX came shortly before the coronavirus disease (COVID-19) pandemic. How have your priorities shifted this year to face the challenges of the pandemic? What impact do you think COVID-19 will have on the future of AI in healthcare?

COVID-19 has been a massive accelerator of innovation across health and care. Like everyone, we have adapted our work to support the pandemic response. NHSX set up the National COVID-19 Chest Imaging Database (NCCID), a centralised UK database containing chest X-ray, CT, and MRI images from hospital patients across the country to better develop technology to optimise care for hospitalised patients with severe infection. This has inspired us to look further into whether the NHS could benefit from having a national imaging platform to facilitate improved development and deployment of AI technologies. Looking to the future, I think COVID-19 has made us all very aware of our own health, there is an opportunity for AI to help us manage our own health more easily and feel empowered to do that.

Q5 As AI applications aid accuracy and speed in clinical management over the coming years, how do you think we can maintain the human connection of care in health?

The purpose of AI in health and care is not to replace health and care workers, but to support them so they have more time and energy to focus on those all-important human connections which we know are at the heart of providing excellent care. Used appropriately, AI technologies have huge potential to improve the personalisation and precision of healthcare. The NHS and social care workforce are our greatest assets: our job is to harness the power of technology to support them. In some instances, AI can reduce the burden on the workforce, and in others it can directly improve patient care. For example, the 'e-Stroke suit' by Brainomix, which was prized with funding in our first round of awards, not only uses AI to help interpret brain scans and get patients the best possible treatment but also allows doctors to share information across hospitals in real-time, avoiding all too common delays in the systems which can impact on patient care.

Q6 Your advocacy work for inclusion and representation in technology and AI extends beyond the NHS to your role as a founding ambassador for One Healthtech, what strategies do you think are needed to ensure better representation of people of different backgrounds in both the technology field and the data used to build AI systems for healthcare?

AI technologies need to be trained on large amounts of data that represent the whole population. Accessing this level of data is often a real challenge, which is one of the reasons why we're looking into the possibility of creating representative data platforms to help validate models. In terms of ensuring diversity within the technology workforce, people need to see themselves represented. This needs meaningful inclusivity of people from diverse backgrounds in senior leadership. We need to be scouting out the best talent, making it clear that we need a really diverse skill set and challenging any misconceptions about what it means to work in technology and AI. It's important to inspire the next generation to realise the exciting opportunities in health technology.

Q7 As AI and health technology explodes into more common clinical practice, what advice do you have, or further training or education do you recommend, for clinicians or medical students interested in this field?

There are lots of ways people who are interested in AI and health technology can build their knowledge and experience! Reading recent reports and blogs and listening to a range of the fantastic podcasts out there is a good place to start. There are some great postgraduate opportunities to study AI and health for those who want to pursue a specialist career. I would also encourage people to get involved with groups like One Healthtech and other communities for health innovation. The NHS AI Lab has some great resources on our website, and a new AI Virtual Hub to facilitate a growing community of practice.

References

1. The NHS AI Lab. NHSX. 2020. Accessed at: https://www.nhsx.nhs.uk/ai-lab/. 2020. Last accessed: November 2020.