Congress Interview

Shafi Ahmed, a world-renowned surgeon, futurist, innovator, professor, and Nobel Peace Prize nominee, shares exclusive insights from the Global Innovation and New Technology (GIANT) Health Event 2024 on the future of healthcare. He dives into the world of virtual reality, holograms, and the medical metaverse, and highlights cutting-edge projects that inspire change and redefine what is possible in modern medicine.

Shafi Ahmed

Chief Executive Officer, Medical XR, London, UK

> "The outcomes focus on three shifts: transition from analogue to digital, from hospital to community care, and from treatment to prevention"

Q1 You mentioned that this is the 8th GIANT Health event, and that for the first time in 32 years as a practicing doctor you're hopeful that current reforms will lead to a change in healthcare. What sparked your optimism this year particularly, and how is that reflected in how the GIANT Health event has evolved over the past 8 years?

When evaluating the government's approach, their open admission that the NHS is in crisis is a significant step forward. Recognising that the system is fundamentally broken marks a shift from previous tendencies to downplay issues as minor challenges. Such honesty is crucial for meaningful progress. They acknowledged that our submissions around care, waiting lists, and outcomes won't be a quick turnaround, but instead a long-term plan. The outcomes focus on three shifts: transition from analogue to digital, from hospital to community care, and from treatment to prevention; these are aspirations that we've been talking about for a long time.

These are concepts that have been discussed extensively. Additionally, investment, innovation, and a new way of thinking are essential to driving the transformation.

People are now collaborating to define what change could look like, adjusting targets and improving access to care. On balance, there seems to be a genuine willingness to face the challenges of the shortage of the global workforce, the volume of patients on the waiting list, and the millions of patients awaiting elective surgeries. The approach feels more collective, with a focus on solving these problems together, which is why I find it particularly interesting. From a policy perspective, that's one side of the story. The other side is the progress in technology. We brought a lot of technological innovation into clinical practice during COVID-19; however, we then paused to reassess and reevaluate the state of healthcare. We went very fast, very rapidly, as a necessity, as a means to an end. But now we're saying: 'Let's just slow down.' We are exploring how advanced and exponential

technologies, such as AI, large language models, and others, can support infrastructure improvements, enhance automation, and boost efficiency. These tools also have the potential to reduce waste and improve the clinical experience and potentially outcomes for patients.

Q2
Virtual reality and augmented reality have been central to your work, for example with your company Medical XR, and from using Google Glass and Snapchat Spectacles (Snap Inc., Santa Monica, California, USA) for live operations. How do you see these technologies evolving, and what breakthroughs do you anticipate next?

In the last 10 years, what we've seen is the explosion of what I call 'exponential technologies'. It's as though we've established a new framework and language for innovation in healthcare. Technologies such as AI, deep machine learning, virtual reality, the metaverse, nanotechnology, wearables, sensors, and big data have been emerging for some time. While many of these technologies aren't entirely new, we're now seeing their practical applications and traction within the healthcare sector. Before, they were just words that often felt like science fiction. The most dramatic shift over the last two years has been in the adoption of large language models, and these tools have rapidly transformed perceptions and use cases for AI in healthcare. Not long ago, AI was seen as intimidating or unclear, something many were hesitant to engage with. Today, it has become a part of everyday workflows, with tools like ChatGPT (OpenAI, San Francisco, California, USA) being widely accessible and integrated into daily practices. What once seemed inaccessible has now become accessible, and that's the change.

> **These virtual worlds allow users to access lectures, learn anatomy, and undergo potential therapies**

Q3
You've been named the world's first Chief Medical Metaverse Officer for Aimedis (Steyl, Netherlands). What role do you see the metaverse playing in the future of healthcare, and how do you envision its impact on medical training?

In terms of the metaverse, Aimedis, where I am serving as the world's first Chief Medical Metaverse Officer, is a company that has been developing the world's first health metaverse built on Web3 technology. Currently, we operate within Web2, a centralised platform where data is captured but owned by other companies. People are talking about shifting to the next version of the web, the 3D internet called the Web3. So that's the next version where we're going to be. Aimedis is focusing on building this 3D internet, integrating blockchain, AI, NFTs, tokens, avatars, holograms, and deep machine learning into the metaverse. It's not just about virtual reality; it encompasses immersive, interactive experiences accessible through a web client or browser, avoiding the barriers posed by VR headsets, because how many people have a VR headset? So, that's what we are building.

EMJ
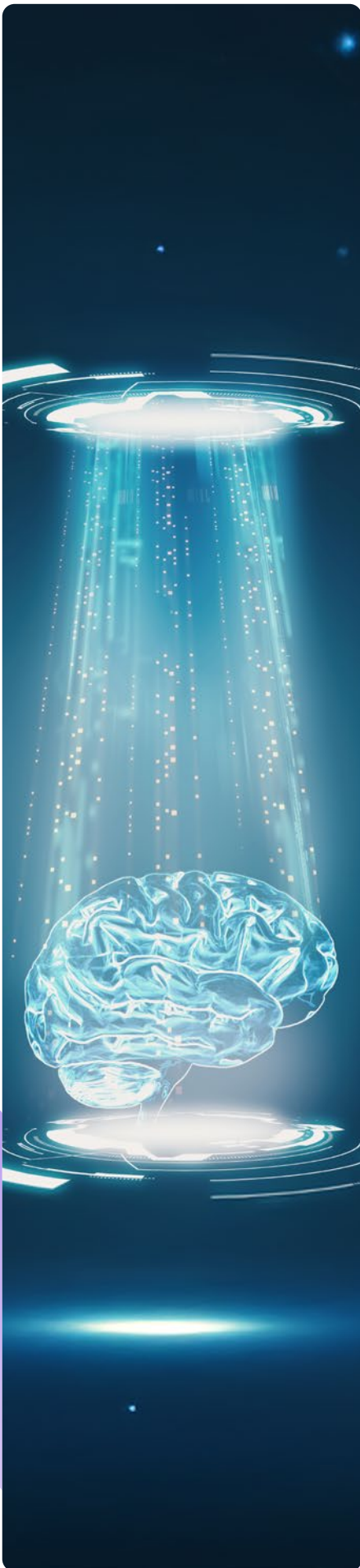
We launched the first worlds to the public a few months ago. We built Australia, the United Arab Emirates, Japan, and Switzerland, and we launched those worlds. These virtual worlds allow users to access lectures, learn anatomy, and undergo potential therapies, among other experiences. There's a whole new world that you could access healthcare and medical education. You can navigate this space through personal avatars, interacting with other people also as avatars or AI agents. The entire platform is powered by AI, creating an immersive, virtual environment. On the one side, we have face-to-face and physical contact, which is essential to healthcare. This is still vitally important and essential for patients. It's not going away. It's fundamental to who we are. For example, meeting a patient in clinics face to face is important, especially in situations like cancer diagnoses or breaking bad news, where empathy and personal connection are crucial. On the other hand, we now have these online platforms, telemedicine, the EPA, telephone calls, online Doctor services. The metaverse democratises healthcare by providing access anytime, anywhere. It offers experiences tailored to individual needs, balancing face-to-face interactions with online and virtual options. While face-to-face care is essential, expensive, and time-consuming, online and metaverse solutions offer more accessible alternatives. The next generation, Generation Z and Alpha, being digitally savvy, will benefit from these options, making healthcare more adaptable and increasing availability.

Globally, the healthcare workforce faces significant shortages. The NHS has 10% of vacancies, with 120,000 staff shortages and a waiting list of 7–8 million. We have got to think of ways to craft a healthcare system that's more accessible. Are these the ideas that we can use? We have to figure out where it sits, where each of those will give the right kind of support and access for patients. That is for us to figure it out.

Are you hoping to develop Metaverse worlds for specific patient populations?

We've already conducted a number of consultations in the metaverse as avatars, which we've published. While we believe patients aren't yet fully ready for these technologies, the barrier to adoption isn't the patients, it's often the clinicians and healthcare systems.

For example, when COVID-19 struck in 2020, we told our patients that we had to move to remote service, and we introduced remote appointments via telephone or telemedicine platforms. The patients didn't resist. They adapted immediately, asking how they could make it work and support us. Their willingness to embrace change was remarkable. This taught us that we've been underestimating our patients' ability to adapt. It meant to me that we underestimate our patients. Telemedicine has been around for 25 years, yet it wasn't widely implemented until COVID-19 forced the shift. The resistance didn't come from patients, it came from us as clinicians and healthcare systems. The needs change, so we are forced to adapt. Patients are ready as long as we've given the framework, as long as we support them through safety, governance, and communicating with them.

Q4 Yesterday, there was a lot of discussion about the 'future hospital'. You mentioned that you've visited 61 countries, and recently went to Rwanda. What have you learnt from healthcare systems worldwide that we should implement into our own hospital system?

I've been very fortunate to have visited many countries. What you learn is that each healthcare system has to manage a different population with different healthcare needs. Some regions, like parts of Africa, have more communicable diseases. Many will have less resources, less infrastructure, fewer doctors, etc. Therefore, each system has to be made or set up in consideration with their own constraints and healthcare needs. That's the first thing. When I was in Africa speaking to various hospitals or leaders, I advised them not to look at the West for solutions, as these systems are far from perfect. As I've mentioned before, many of these systems are struggling themselves. Let's look at the GDP; the UK spends 9.6% of its GDP on health, which is 160 billion pounds, for a population of around 70 million, while the USA spends almost 20% of their GDP, which is trillions of dollars.

Healthcare costs are rising every year, driven by an ageing population, the increasing prevalence of chronic diseases, and the introduction of new drugs and therapies. With the costs always going up, we can't possibly put more money into healthcare systems, we need to have smarter solutions. This means keeping people at home and keeping people empowered by their own data, with personalised, precision, and remote care. This means using the same resources in a smarter fashion, given the constraints of what we have in a healthcare location. So, countries with lower GDP can outmanoeuvre other healthcare systems by thinking differently. They don't need to replicate existing models like those in the UK or other developed nations. Of course, universal health coverage is amazing for the UK, and it's something which I'm very proud of. But do we do everything well? We don't. By being agile, flexible, and willing to disrupt traditional approaches, these countries can reimagine and reinvent their healthcare systems. They can explore innovative models of care like the shifts currently happening within the NHS, and adopt low-cost, high-tech solutions to make healthcare more accessible. Healthcare systems need to, and can, develop by not replicating our systems.

Q5 What would you say to someone from the general public who doesn't know much about AI and is concerned about the cost of these high-tech solutions?

We shouldn't be scared of technology, specifically AI. People often worry that AI might replace doctors, but that's not the case. Instead, think of AI as a tool that enhances the doctor's role, making them more efficient and effective, enabling them to spend more time with patients and, perhaps, making doctors more human. AI can take over repetitive, time-consuming tasks such as drafting clinic letters, managing bookings, and updating health records. These processes can run seamlessly in the background, allowing doctors to focus on direct patient care, which is ultimately what patients want. Safety and governance should remain firmly in place to ensure that AI is deployed responsibly and always in the best interest of the patient, improving both their experience and outcomes.

As for concerns about costs, it's true that healthcare is expensive. We have to make it more cost-effective. I think these technologies can drive innovation, not just in technology itself but in changing practices, outcomes, and experiences. The idea is that these kinds of technologies will help us. They will be more cost-effective, allow us to see more people, more patients can be treated, and would involve less wastage. For example, AI could reduce inefficiencies like missed appointments, which currently cost the NHS billions of pounds annually. By improving communication and streamlining processes, AI can prevent wasted resources and make systems more efficient. Ultimately, adopting smarter technologies can save money and allow health systems to allocate those savings toward critical areas such as cancer care or cutting-edge innovations. It's just being smart and repurposing the same budget in a way that helps more people.

> "Think of AI as a tool that enhances the doctor's role, making them more efficient and effective, enabling them to spend more time with patients"

 EMJ

Q6 Can you also share more about your humanitarian work, having been nominated for the Nobel Peace Prize for your work in many countries and war zones?

One of my main passions is global access, ensuring anyone has access to healthcare or education. That has driven me throughout my entire career. I worked in Gaza and the West Bank for 10 years building their cancer capacity for surgical training. I've been on many missions over the course of the last 10 years, and through a programme I established with Medical Aid for Palestinians we treated thousands of patients, performed surgeries, and delivered training across multiple hospitals. My work has focused on global education and training, leveraging innovative technologies like virtual reality, holograms, and avatar-based systems to overcome the physical and geopolitical barriers created by conflict. By connecting people and bridging these divides, we've made significant strides in accessibility.

One of my TED talks, 'Connecting a Billion Minds', encapsulates this philosophy: making healthcare and education accessible by sharing knowledge and experiences on a global scale. For example, by using tools like Google Glass (Mountain View, California, USA), virtual reality, and Snapchat, we've been able to teach one part of the world while simultaneously reaching tens of thousands in another. In Gaza, this approach not only improved healthcare capacity but also reimagined the model of care delivery, making it more accessible and effective. The impact of this work has been humbling. It's an honour to see how many people it has reached and to be recognised for it. My focus remains on continuing this mission, to rebuild and strengthen healthcare systems in these regions. That commitment is what drives me forward.

Q7 Can you tell us about any upcoming, exciting projects you're working on?

I'm particularly excited about my role with Quadrivia AI (London, UK), a company that launched just a few weeks ago. Ali Parsa, the Founder of Quadrivia AI, approached me about 6 months ago to chair the clinical board, and it's been an incredible journey. Quadrivia AI has developed a remarkably advanced AI solution that is designed to act as an AI agent and has the potential to revolutionise clinical pathways and the entire patient journey. It's the first customisable and controllable AI Agent for clinicians. Being at the forefront of AI, Ali Parsa's and his team are building solutions of how AI could be successful in improving the workforce shortage and enhancing the experience of patients and clinicians. It is very exciting.