

## 5G's healthcare implications to watch for

06 August 2021 | Opinion | By Ayesha Siddiqui

**From remote diagnosis, remote surgery, real-time monitoring to expanded telehealth etc. 5G represents a host of opportunities for healthcare. Let's look at the possibilities of this technology for healthcare and how it can help bring a paradigm shift in the sector.**

Fifth-generation (5G) has gained much importance, development and investment in recent years. This technology has the potential to transform all the components of healthcare, which is especially important as the COVID-19 pandemic has put unparalleled stress on healthcare systems around the world.

Network providers and healthcare institutions are figuring out how best to incorporate this technology into the ecosystem. A new private 5G network from AT&T is helping to revolutionise the way patients and researchers connect at the Lawrence J. Ellison Institute for Transformative Medicine of USC, USA. The on-site 5G network is providing ultra-fast connectivity for patient-centred cancer research, treatment, and wellness education. The Ellison Institute is among the first medical facilities in the USA using 5G to help advance cancer research.

South Korea's KT Corporation and the Samsung Medical Center (SMC) are working to build a smart hospital. They have jointly developed an innovative, 5G-powered medical service as an initial step to establishing a 5G smart hospital.

Sharing his thoughts, Joe Drygas, AT&T VP of Healthcare Industry Solutions, USA said, "5G has the potential to offer massive connection power, fast speeds and low latency that can help transform how healthcare is delivered. Think remote robotic surgery and quick downloads and transference of massive data files of medical imagery. 5G not only has the capacity to impact the Internet of Medical Things, but it also will help enable medical innovations using augmented reality, virtual reality, artificial intelligence, remote medical learning, remote patient monitoring, and more. Healthcare providers will be able to build an entire ecosystem that creates highly responsive, effective, patient-centric experiences".

Upgraded Telehealth

The most obvious application of 5G is in telehealth, especially in the context of the COVID-19 pandemic.

5G can take it a step further by providing sensors and virtual reality for teleconferencing, and enabling healthcare workers to remotely monitor vital signs during calls.

Additionally, because 5G can transmit sizable data packages, testing patients with conditions for changes in their heartbeat, blood sugar and blood pressure multiple times a day using cloud-linked scanners is also possible. These advances, in turn, would unlock more insights into the day-to-day health of patients according to a report by PricewaterhouseCoopers (PwC), UK.

### Real-time monitoring

Health monitoring through connected medical devices can generate real-time data about patients that providers can use to improve health outcomes. At scale, analytics applied to these massive volumes of patient data could lead to new or improved treatments. Through 5G collaborations with King's College in London, Ericsson has shown how lowlatency and ultra-reliable communication enable new use cases based on sight, hearing and touch with real-time video feed sent without the time needed to compress and encode.

### Remote Diagnostics

To improve diagnostic capabilities, 5G can increase access to essential data and expedite the process of identifying and treating certain conditions. In January 2020, when the COVID-19 outbreak started, West China Hospital and Chengdu Public Health Clinic Center of Sichuan University utilised 5G to remote diagnosis of new coronavirus pneumonia.

Ericsson, University Hospital Birmingham NHS Foundation Trust (UHB) and King's College London also collaborated on the 5G Connected Ambulance. The ambulance provides an innovative new way to connect patients, ambulance workers and remote medical experts in real-time. Through a live 5G network in Birmingham, healthcare workers have performed the UK's first remote diagnostic procedure over 5G. The demonstration showcases how 5G technology can enable clinicians and paramedics to collaborate haptically, even when they are miles apart.

This revolutionary use of 5G has the potential to transform how future healthcare is delivered, enabling crucial efficiencies and reducing the need for some patients to visit hospitals.

### Clinical Trials

Clinical trials greatly depend on a constant flow of data detailing patients' responses to the therapies under investigation. 5G infrastructure and connectivity may now provide drug manufacturers with the incentive and opportunity to place IoTconnected monitoring devices in the participants' homes during clinical trials.

'This would reduce administrative overhead and processing costs, in turn bringing down the price of each trial and enabling pharma companies to trial more drugs each year. And the availability of the data in real-time might shorten the cycle time of a trial from, say, eight months to six, meaning the company can get the drugs to market faster or more quickly halt trials that aren't working,' as per a PwC report.

### Remote Surgery

'5G can meet data-intense , millisecond-latency requirements necessary for telesurgery, allowing doctors to remotely operate responsive, highprecision surgical robots,' highlighted a report from Booz Allen, USA, a consulting firm with expertise in analytics, digital, engineering, and cyber solutions.

This may sound a bit far-stretched but pilot projects are already underway. Huawei and China Unicom Fujian Branch, Fujian Medical University Mengchao Hepatobiliary Hospital, Suzhou Kangduo Robot Co., Ltd. implemented the world's first 5G

surgery animal experiment in Fujian China Unicom Southeast Research Institute. The operation end of the operation was placed in the China Southeast

Research Institute, and the operation signal was transmitted in real-time through 5G technology to perform remote hepatic lobectomy for the experimental animals of Mengchao Hepatobiliary Hospital 50 km away. The entire procedure takes about 60 minutes and the operation delay is extremely low. The surgical wounds were neat, and there was no trace of blood in the whole process. The vital signs of the experimental animals were stable after surgery.

## Challenges

The biggest hurdle in the widespread applications of 5G is privacy. Especially in light of the recent hacking incidents related to healthcare such as WannaCry in 2017 which affected hospitals throughout the world or the major cyber attack on one of Singapore's largest group of healthcare institutions, SingHealth's database containing patient personal particulars and outpatient dispensed medicines in July 2018. These instances brought to light the privacy challenges and vulnerabilities of these smart technologies. The privacy concerns also cast a dark shadow over the adoption of 5G for this sector.

For it to succeed, the entire infrastructure, from hospitals to equipment, etc., need to be 5G enabled which would increase the cost and may hinder its adoption further.

And of course, it is important to have appropriate policies to regulate internet-based diagnosis and treatment, to better leverage its full potential. China has already started to draft standards on hospitals' internet construction based on 5G. This is an exciting time for 5G players and healthcare firms as the opportunities to thrive are abundant, delivering better outcomes, faster and with a global reach.

Ayesha Siddiqui

([ayesha.siddiqui@mmactiv.com](mailto:ayesha.siddiqui@mmactiv.com))