GSMA Healthcare Article

August 2026

Connected Intelligence Can Transform Healthcare

Pioneering hospitals are harnessing 5G SA, AI and mixed reality to deliver better treatment

Article | August 2026

Crucially, three digital technologies – artificial intelligence (AI), 5G standalone (SA) networks and mixed reality (MR) systems – are all maturing to a point where they can contribute to a radical improvement in patient outcomes. As well as supporting high resolution images, MR headsets and glasses are now light enough to be worn comfortably for extended periods, giving the wearer hands-free access to valuable information relayed from an AI system running in the cloud.

A 5G standalone network, for example, could reliably deliver real-time advice via audio and/or images to a pair of smart glasses worn by a clinician performing a difficult procedure. Using images captured by a camera in the glasses, an AI system could help a surgeon pinpoint where to make an incision.

Outside a hospital, 5G, AI and MR could work together to help first responders prioritise particular injuries or patients in the aftermath of an accident or a disaster. On a more routine level, AI can help with resource-intensive tasks, such as writing up patient notes or providing real-time translation during a consultation in which the clinician and the patient speak different languages.

Pilots being conducted by the National University Hospital System (NUHS) in Singapore are demonstrating the potential of advanced digital technologies to transform healthcare for the better. The NUHS is using a 5G network slice to provide hospital clinicians with guaranteed bandwidth and high performance connectivity. To ensure good indoor coverage, it has installed 19 5G radio units across 10 operating theatres and three in-patient wards. NUHS has also trained 40 staff in MR and holographic 3D imaging.

By March 2026, NUHS had conducted 180 MR-assisted surgeries, in which the clinicians received intra-operative guidance, reducing operating times by between 10% and 30% across a variety of procedures, according to a presentation by Dr. Yujia Gao, a consultant at NUHS.

Other pioneering hospitals are also seeing major benefits. After deploying a private 5G SA network across 18 buildings in conjunction with Bouygues Telecom Business, Bordeaux University Hospital digitised patient intake processes and care monitoring in emergency departments. It has since seen a 30% reduction in patient waiting times, a 15% increase in intake capacity, a 20% decrease in triage errors and a 25% improvement in patient satisfaction. The 5G SA network can also support remote consultations for ambulances and 3D modelling exercises for surgical operations and teaching.

Supporting remote monitoring, management and diagnostics

The impact of digital healthcare can extend well beyond the hospital walls. As populations age and the geopolitical situation becomes more unpredictable, more public funding is being directed towards social care and defence. As a result, cost-effective remote monitoring, management and diagnostics systems are going to have take on a much bigger role in the provision of healthcare.

With a cloud-native core, a 5G SA network can provide healthcare systems and their patients with a network slice that spans different geographical locations. That means a hospital can extend its customised 5G connectivity directly into a patient's home, where they can use connected equipment to perform ECGs (electrocardiograms) and take blood pressure readings, for example. The data can then be relayed directly back to the hospital within the secure confines of the 5G SA network.

In Singapore, the NUHS@Home service is using SingTel's public 5G SA network to monitor in-patients in their homes, freeing up more than 100 hospital beds for more critical purposes. The NUHS says it is seeing a $3.20 return for every $1 invested in remote monitoring.

Raising awareness of the potential of advanced connectivity through CHACCA

However, NUHS and Bordeaux University Hospital are very much the exception, rather than the rule. Many healthcare providers are unaware of how advanced connectivity can unlock the full potential of new digital technologies, such as AI and MR. Only 25% of the 50 hospitals surveyed[1] in the Asia-Pacific region in December 2025 were actually implementing 5G. That research suggests that, while hospitals may be positioned for exploration and pilots, implementation at scale is being constrained by gaps in advanced technical and operational know-how.

To raise awareness, exchange of knowledge and help hospitals scale 5G, the GSMA, the Global Health Connector and NUHS have established the Connected Health and Community Care Accelerator (CHACCA). CHACCA is bringing together healthcare providers, operators, technology companies and policymakers to share best practice, develop implementation frameworks and accelerate real-world deployments.

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Much of that exchange will happen face-to-face at M360 ASEAN 2026, organised by the GSMA, which is due to take place in Kuala Lumpur on 9-10 September. A closed-door healthcare roundtable will bring hospital leaders, operators, ministries and technology partners together to co-create, and accelerate the deployment and scaling of next-generation models of care - in hospital and community settings, with measurable operational and clinical outcomes, and with global relevance from day one. A summit session on the main agenda will then open the conversation to to the wider audience attending the event.

One of CHACCA's goals is to help hospitals supplement congested and flaky Wi-Fi networks with high performance 5G SA connectivity. As well as being very reliable, 5G SA networks running in licensed spectrum can be easier to manage and secure. For NUHS, moving from unlicensed Wi-Fi to licensed 5G was driven heavily by security and governance, as well as performance requirements.

At the same time, the advent of 5G RedCap (Reduced Capability) systems will lower the cost of integrating cellular connectivity directly into healthcare equipment. In future, many new medical devices and machines are likely to support 5G RedCap, as well as Wi-Fi, enabling them to be connected directly and securely to a hospital's central systems.

Supporting supervision and teaching

In addition to supporting time-sensitive healthcare services, the combination of 5G SA, AI and XR can be used for training clinicians both within hospitals and in educational institutions. For example, AI can turn a CT (computerised tomography) scan into a high-resolution 3D model that can be viewed through a MR headset. That 3D model could be used for training purposes or to run simulations in advance of a procedure or intervention.

[1] Survey conducted by the GSMA and Healthcare Information and Management Systems Society (HIMSS) across seven markets in the Asia-Pacific region.

In some cases, experienced clinicians could use these technologies to supervise junior doctors and nurses providing treatment in remote locations. Dr. Yujia Gao of NUHS has remotely supervised surgeons wearing MR glasses while performing operations in Ghana. The MR glasses relay live images to Singapore so that Dr. Yujia Gao can provide real-time advice.

Keeping track of vital assets and patients' progress

Advanced connectivity can also be used to support essential healthcare logistics. In Sweden, for example, the 5GMHI Region Stockholm project is exploring the use of 5G connected drones to deploy defibrillators, and to capture enhanced "first situation reports" for resource optimisation and planning healthcare interventions. In a similar vein, the project is also using 5G to relay video footage from ambulances to the hospital to assist with early assessment, early treatment, triage and preparation for medical care. The video signal is relayed via a dedicated network slice in the public 5G network to ensure it gets through.

Other compelling use cases include employing 5G to track medical equipment across complex hospital campuses and to monitor patient journeys to ensure they receive the right treatment at the right time. As in any organisation, a combination of 5G and AI can also be used to optimise the efficient use of resources.

Looking forward to connected intelligence

Over the next two to three years, NUHS plans to scale its 5G SA pilots to production-grade infrastructure. It intends to expand its 5G SA capabilities, including network slicing, deterministic latency and secure network APIs, across critical care areas, wards and ambulatory spaces.

As well as supporting XR-assisted surgery, remote consultation, robotics and IoT, NUHS plans to use 5G SA to accelerate its hospital-at-home and virtual wards services, and enable new applications, such as positioning, sensing and digital twins.

Meanwhile, Bordeaux University Hospital has identified 10 priority use cases for its 5G-based systems, which include the transport of biological samples between hospital sites or laboratories using drones, and patient monitoring in nursing homes using connected sensors, smart wristbands, MR devices and social robots

The breadth of these use cases points to a world in which networks do much more than just carry information. By building an AI fabric into both healthcare and daily life, the rollout of 5G SA and then 6G will bring the world another step closer towards true connected intelligence.

For healthcare systems, this future needs to come sooner, rather than later. Connected intelligence will be essential to deliver effective prevention and treatments as aging demographics and climate change put more pressure on a cash-strapped sector. In a fast-changing world, advanced connectivity can provide governments with the means to anticipate and mitigate the impact of drought, wildfires, food shortages, pandemics and other crises.

By helping to get healthcare systems on the front foot, connected intelligence will ease the intense pressure on medical staff. Organisations that begin building the necessary partnerships, capabilities and infrastructure today will be best positioned to deliver connected, intelligent and resilient healthcare systems tomorrow.

As well as engaging with technologists and engineers across the healthcare and telecoms sector, CHACCA welcomes the participation of hospital CEOs, CIOs, CMIOs, health ministries, healthcare commissioners and other key stakeholders. Join the Connected Health Accelerator, shaping what is next.
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