5G Connected Medical Centres

NYU Langone Health   **Jacobs**

Industries are preparing themselves for the introduction of 5G technology, and healthcare should not be left behind.
Ensuring preparation for 5G implementation and associated use cases should be a fundamental part of any health facility's roadmap.
This example describes how the New York University Langone Health (NYULH) medical centre has embraced 5G.

1 Situation

NYU Langone Health (NYULH) utilises connectivity to support many of its day-to day-activities, from supporting surgeons in operating theatres to monitoring patients. As the Centre has migrated from 3G to 4G connectivity in the past, it has seen that signal propagation and interference has become problematic. Keen to remain at the forefront of medical care, NYULH wanted to implement a future-proofed 5G network to allow them to seamlessly integrate cutting-edge medical technologies into their care services as and when they become commercially available.

1-5ms of latency with 5G

5G enhanced monitoring can reduce patient ventilator assistance by up to **18 days**

2 Task & Action

Healthcare facilities must consider infrastructure which can evolve over time, supporting next generation deployments. NYULH partnered with Jacobs to deliver and operate a 20-building, indoor 5G network, providing the advanced connectivity NYULH requires to support future technologies supporting patient monitoring, VR pain management and physiotherapy, innovative algorithms and educational opportunities.

3 5G-Enabled Use Cases & Results

While not yet implemented, the 5G network at NYULH is expected to support the following use-cases in the future:

Patient monitoring: 5G-enabled patient beds can wirelessly track patient vital signs and movements. Thermal screening can be done without contact, improving monitoring and staff safety. 5G allows for low latency, mass connectivity without cabling, improving physical safety and experience. 5G-enhanced monitoring studies show patient ventilator assistance can be reduced by up to 18 days.

VR pain management and physiotherapy: VR headsets can provide relief during stressful procedures or recoveries. 5G supports these devices without removing bandwidth from other critical data processing tasks. In physiotherapy, patients can use VR headsets to practice balance, movement and repetitions, reducing staff involvement and increasing therapy effectiveness and patient enjoyment.

Innovative algorithms: 5G can enable algorithms which recognise patterns in images. These have proven useful in radiology, for the early detection of heart failure and in cancer research to classify tumour types and growth rates.

Educational opportunities: Facilities with 5G coverage are expected to enhance medical training. NYULH has created many 5G-optimised spaces, including an Innovation Lab, auditorium and AR/VR facilities, promoting training, education and gamification.

4 Why 5G?

The 5G-enabled network has allowed for superior coverage and throughput across NYULH, featuring a reduction in latency from 40ms+ to between 1-5ms. The 5G network will be able to accommodate a density of connected devices in the future that would not have been possible with 3G, 4G or Wi-Fi connectivity.

5 Wider Applicability

Health facilities can be a connectivity anchor within local communities. For example, NYULH is sharing its 5G connectivity capabilities with the local Sunset Park community, helping to reduce the digital divide and facilitating remote learning opportunities in neighbourhoods.