ERICSSON

NUH Singapore: Connected healthcare/hospitals

Customer:
NUH Singapore

Industry:
Healthcare

Use case:
Mixed reality/augmented reality (holomedicine)

5G is revolutionizing the healthcare industry by enabling advanced connectivity solutions, improving surgeries and care in hospitals, and extending the hospital care to homes.

As the leading hospital in the National University Health System (NUHS), the National University Hospital (NUH) in Singapore has adopted 5G as the advanced connectivity solution to develop innovative healthcare solutions to improve patient experience and proactively enhance healthcare availability, accessibility, and efficiency.

Problem statement

Enhance patient experience by adopting new technologies during advanced surgeries and patient care in hospitals.

Complex surgeries are very time-consuming and depend on a few highly skilled surgeons with specialist competence.

To apply new technology such as mixed reality/augmented reality (holomedicine), NUH evaluated different connectivity solutions in the hospitals (Wi-Fi, 4G, and 5G) to identify the most consistent high-speed, high-bandwidth, and low-latency connectivity solutions. This evaluation aims to facilitate surgeons in improving surgery accuracy and shortening surgery time by applying holographic and AR headsets. Validations have proven 5G to be the most suitable solution for holomedicine.

Nurses are in short supply and represent a bottleneck for care.

Target outcomes/validated outcomes

Increase quality and success rate for complex surgeries.

Trials on a 5G-powered robotic nurse have been ongoing since the end of 2024, with the ambition to reduce the time nurses spend on routine tasks executed daily for all patients, like monitoring conditions, and distributing medicine.

20–30% reduction
in surgical duration

5G is used to validate the precise positioning of where robots are to secure that patients get their medicine.

Validated outcomes after two (2) years in operation:

- 20–30% reduction in surgical duration (validated over two years)
- Robotic nursing assistants expected to take over ~30% of routine nursing tasks (validation ongoing)

Solution overview

Virtual private 5G solution leveraging Public 5G network coverage extended into an existing hospital, with small cells in surgery rooms with restricted access.

An experienced surgeon at the lead hospital is doubling as the national innovation lead—an approach ensuring that innovation initiatives are well-anchored in the challenges that matter the most.

To promote the best practices for 5G in healthcare and drive ecosystem readiness, an international initiative, Global Health Innovation Network (GHIN), has been launched by NUHS, Ericsson, Sahlgrenska, and AstraZeneca. 2024.[1]

Microsoft HoloLens supported surgeons during long and complex surgeries.

"MiSSi Robots" introduced at NUH for operational trials to take over part of nurses' routine tasks.[2]

Evolution: Continue to evolve the 5G solution at NUHS, considering new healthcare use cases such as seamless connectivity for healthcare staff, 5G advanced features, and planning of new hospitals.

Learn more at: https://www.ericsson.com/en/industries/healthcare-telehealth

Conclusion

Adopting 5G as the advanced connectivity solution in hospitals can create well-connected hospitals, proven to enhance patient experience and improve productivity for both doctors and nurses.

The virtual private 5G solution leverages the 5G public network coverage and capacity, enhanced with dedicated in-door coverage and capacity. It has proven to be efficient to both provide dedicated advanced connectivity solutions for the operating rooms and ensure advanced connectivity for patients and care givers wherever they are from operating rooms, other hospital premises, and to the patient's home when needed.

To accelerate the 5G adoption in healthcare and empower more hospitals with new and advanced digital solutions, continuous collaborations among hospitals, technology providers, and other players in the ecosystem are vital to accelerate the digitalization of healthcare and enhance healthcare quality, availability, and accessibility.

[1] Global Health Innovation Network with 5G in Singapore - Ericsson

[2] Robot nurses that monitor patients' condition, issue medicine to be piloted at NUH in 2025 | The Straits Times