PHILIPS

capsule

Case study

St. Luke's International Hospital deploying Japan's first Capsule system

The observations of the hospital staff

Information Systems Management Office
Kikumi Inoue

Clinical Engineering Department, Clinical Engineering Operating Room
Tatsunori Watanabe

Information System Center/ System Department
Kosuke Morishita

Introduction and role in platform deployment

Information System Representative (Morishita): My name is Kosuke Morishita, a member of the System Department of the Information System Center. The Information System Department is in charge of connectivity between devices and the electronic chart system (hereinafter referred to as electronic charts), and their role is to monitor whether they are operating correctly.

Clinical Engineer (Watanabe): My name is Tatsunori Watanabe, Assistant Manager responsible for the Clinical Engineering Operating Room in the Clinical Engineering Department. I am in charge of looking at how to reflect the data monitored from devices in the Medical Device Information Platform. I am responsible for verifying device optimization and looking at what connections can actually be made.

Nurse Manager (Inoue): My name is Kimiko Inoue, and I have joint responsibilities as both Nurse Manager and in the System Department. As a nurse, I look into how best to automatically record data from masters including the electronic chart master. My role is to then share the results with the Information System representative and Clinical Engineering physician, and consider and discuss new operations with local staff.

About St. Luke's International Hospital

St. Luke's International Hospital was established in 1901 by US Anglican missionary doctors. This hospital, which currently offers 520 beds, is the largest hospital in the central Tokyo area, and is operated as an affiliated facility to St. Luke's International University. St. Luke's International Hospital is a top class hospital in Japan, and in a 2020 Newsweek ranking of world hospitals, it was ranked first in Japan (16th in the world).

St. Luke's International Hospital is the first hospital in Japan to deploy Capsule.

The hospital uses a large number of devices from both Japan and suppliers. As there have been many different types of medical devices (hereafter "devices") over the years, and there were many different requirements by doctors with different backgrounds, special support was required to provide highly versatile connectivity between devices and hospital information systems. We asked the people involved to speak honestly about the deployment of this process, issues involved, and the outlook for it moving forward.

Integrated devices

Physiological monitors, mechanical ventilators, anesthetic machines, IABP balloon catheters, and medical gas supply systems, in time will be connected to the electronic chart system.

Device types	Number of models	Number of devices
Anesthetic machine	5	15
Mechanical ventilator	5	46
Physiological monitor	15	96

Circumstances leading to the deployment of MDIP

Morishita: Although the deployment started January, 2020, we started our investigation into the deployment in 2015. At that time, we were looking into updating the information system as a whole, so were considering a solution for connecting devices, but to realize this it was necessary to deploy a system for severe conditions (department system). Our hospital did not originally have a system for severe conditions and there were many obstacles regarding introducing this from scratch. Fortunately, at that time, we were introduced to the Capsule MDIP and so we looked into the possibility of deploying Japan's first Capsule System. Currently it is fully deployed in our three Radiology Department rooms, and is also in the trial phase for our ICU (Intensive Care Unit) and ICCU (Intensive Coronary Care Unit).

Issues tackled before deploying the Capsule system

Inoue: When using a physiological information monitor, it is necessary to confirm the numbers visually and record these in electronic charts. It is necessary to record these on time, but if something occurs in the field, recording work gets put on the back burner. In the end, as this recording work needs to be done, this is one cause of overwork. For example, as it is necessary to take records while assisting with procedures, this does not always proceed in an efficient manner. As, in reality, this involves "taking notes and entering them later," there were strong calls from the field to reduce the burden of this recording work by linking it directly to this process.

Watanabe: Although we originally had an automatic recording system in the Operating Room, this system was restricted to use in the Operating Room, so when patients were admitted, information was recorded to electronic charts and then input into the Operating Room system at the time of operation. Later, when the patients returned to their rooms, it would need to be entered again into the electronic charts, so there was the issue that nurses in the general wards were unable to understand all of the information related to the surgery. We believe that the deployment of Capsule MDIP, by enabling all of the various information to be visible, will resolve this type of issue.

Devices considered a priority for connecting to the platform

Inoue: Staff in the field wanted information from the physiological information monitor to be directly connected. It was necessary to pay close attention during busy times to avoid errors or careless mistakes, and information was often recorded in handwritten form. For example, in the Radiology Department, until information was linked via the platform, notes were taken by the head nurse (primary nurse), and when this nurse moved on to the next procedure, a different nurse would enter the information into the system. With this system of proxy input, it was necessary for the nurse manager to confirm later whether the input information was correct or not. In the end, two people are required to perform the recording work, and this is often done after the final examinations and procedures for that day have been completed. It is also necessary to pass on information about hospitalized patients, but there was definitely a problem in the sense that the records are not available for everyone to see.

Watanabe: The Capsule MDIP has not yet been deployed in the Operating Room. Currently, there are many external output devices attached to the physiological information monitor. However, as the monitor ages and will need to be replaced, only external output devices compatible with the new device will be able to be operated together, so this is another problem that needs to be resolved. With Capsule, it will be possible to integrate monitors with virtually any other device. From a device operation perspective as well, the deployment is expected to be very smooth.

Physiological monitor, mechanical ventilator first deployed in the Radiology Department

Morishita: We wanted to start as small as possible and planned to deploy first in the ICU. However, the impact of COVID-19, which required clinicians to visit their patients more frequently than normal, changed our plans. So, our first deployment was in the Radiology Department, where we were able to maintain normal levels of bedside care, despite the pandemic. After starting operation in December 2020, it has taken approximately 3 months or so to stabilize.

Field improvements as a result of implementation in the Radiology Department

Inoue: As we wanted to expand device integration beyond the Radiology Department to other departments, such as the ICU, we were motivated to quickly stabilize the operations in the field, and where the Department could use the system by themselves. Now once the system was deployed, we [IT] became able to investigate data irregularities with the Department Clinicians, and find the causes. That was an unexpected and extremely valuable outcome, which we now formalized into a standard process.

To that end, we are creating an operating manual, mainly through input from the Radiology Department staff. Looking at the question of how to roll out this system to other staff, we are starting operations by sharing information with field staff, and having them supplement areas where information is lacking.

Cost aspects of deploying the platform

Morishita: Cost will be an issue for hospitals who have already deployed an automatic coordinated system and wish to change to a different (medical device) manufacturer. However, we were starting from a point where there was no such system, so, viewed in the long-term, the running costs are not very significant. I think that one excellent point is that, as it is possible to connect devices from a variety of manufacturers without locking in on one vendor, we are able to easily implement and coordinate various devices required in the field without relying on one manufacturer.

Watanabe: In the medical field, it is a problem to be tied to a single manufacturer. That is because there are requests from doctors, saying, "I want to do this treatment, so I want this device," or "I want something that can be in this mode." I think that with the platform, it is much easier to respond flexibly in such situations.

"Care for patients" is improved

Watanabe: As accurate data is recorded, it means that care is reinforced and the analysis of parameters that did not exist before is possible. Before the platform implementation, we took parameter information from patients when something happened. But now we have data before something happens, and we can verify this as well. Further, through continuous research, if we are able to take better vital signs, then I think general quality of care will improve.

Morishita: Currently, we are only sending data, such as patient vital signs to electronic charts, but we learned that we can acquire a certain amount of data from devices, such as running time and alarm information. Moving forward, from a business perspective as well, we feel that the acquired data can be utilized when selecting new equipment.

Points with which to evaluate the system

Watanabe: Current devices generally each have their own individual data. Clearly, linking data is much simpler thanks to the platform, and this is extremely beneficial to us. Until now, I was always asked "can I connect this device or not?" by the doctors. In many cases, doctors would push back with arguments such as: "it will be possible in the future, but not yet." The devices necessary to link the information are too expensive," and "unexpected things may happen if we link the information." With the platform, we can respond flexibly to such requests.

MKT0417, DCN2021-289 Rev 0.0 Published 2021-Sep

For more information, contact us

North America
+1 800-260-9537
support@capsuletech.com

International Offices
+33 1 84 17 12 50
international@capsuletech.com

CapsuleTech.com