



NATIONAL UNIVERSITY HOSPITAL

SINGAPORE'S NATIONAL UNIVERSITY HOSPITAL REVAMPS ITS OPERATING THEATRE SYSTEM FOR BETTER PATIENT CARE

QUICK FACTS

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Dr. Kelvin Loh, Director, Corporate Planning & Development, National University Hospital.

Company

SAP has helped one of Singapore's leading hospitals, National University Hospital (NUH), optimise its management of operating theatres (OTs). With SAP NetWeaver, users now enjoy an automated process that saves time, reduces manual intervention and minimises errors.

Website

www.nuh.com.sg

Challenges and Opportunities

- Longer waiting times and inaccuracies in internal surgery scheduling process due to more error-prone and inflexible manual scheduling system
- Unsatisfactory data quality and data collection process affected effective utilisation of OTs
- Higher operating costs due to inefficient deployment of staff, equipment, operating rooms and beds
- Inability to track pre-operation procedures effectively impacted resource optimisation

SAP Solutions and Services

- Optimised Operating Theatre System (OOTS), a qualified “Powered by SAP NetWeaver” solution
- SAP NetWeaver XI
- SAP NetWeaver BI
- SAP NetWeaver Portal
- SAP NetWeaver Application Server

Why SAP

- SAP BI offers a comprehensive platform for deploying live and interactive analytics
- SAP XI provides near real-time information between OOTS and backend systems, eliminating scheduling errors and outdated patient information
- Flexible and scalable architecture supports NUH's current and future needs

Implementation Highlights

- Well organised implementation process which involved iterative finetuning of prototypes
- Breakthrough mathematical techniques used to optimise the deployment of OT resources
- Implementation took 11 months to complete
- Strong collaboration with business users and management to ensure project success

Key Benefits

- Better visibility of OT resources increases transparency and accountability
- More efficient utilisation of existing infrastructure and resources
- Reduced patient waiting time and improved patient care
- Minimised cancellation of surgical operations
- Real-time tracking of patient's movement in OTs
- Ability to identify hotspots and capitalise on new opportunities

Existing Environment

- OT scheduling silo and SAP system



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Out with the old, in with the new. This is the mantra that NUH, a leading tertiary hospital in Singapore, is adopting to achieve its goals to continue to offer excellent patient care as well as be a top clinical research centre in the region.

"We need slick patient care processes if we want to be the leading referral medical centre for complex illnesses in the region," says Dr. Kelvin Loh, Director, Corporate Planning & Development, National University Hospital (NUH).

As part of its continuing efforts to further its excellence as a medical institution, the hospital first streamlined its operations by addressing the limitations of a manual-based operating theatre (OT) scheduling system, among other initiatives. Not only was this system prone to human error, it was unable to effectively manage the complexities involved in scheduling for a surgery.

Scheduling for surgery requires an accurate overview of the availability of multiple resources like surgeons, anaesthetists, equipment and OTs. Patients' preferred timing has to be taken into consideration too.

"The old system couldn't give us a precise overview of the resources available. As a result, this affected staff's productivity and accuracy of scheduling," elaborates Dr. Loh. Sometimes, patients had to wait unnecessarily before they could receive their scheduled timeslots.

There was also potential for data inaccuracies that could result in the inefficient deployment of resources and scheduling errors like double-booking of resources.

To enhance patient care, it was essential to boost the system's ability to accurately manage and track the patient's process in pre-operation procedures like blood tests and magnetic resonance imaging (MRI) scans. Such procedures are critical pre-surgery and not having the capacity to track these procedures efficiently and effectively hindered NUH from optimising resources and minimising unnecessary overheads. Compounding this problem was also the lack of system integration with the hospital's main SAP-based information infrastructure.

"We needed a new system for scheduling surgical appointments. One that is capable of exchanging up-to-date information live across our organisation to eliminate errors, maximise resources and provide optimal patient care. We found a solution with FriarTuck in collaboration with SAP," says Dr. Loh.

Simplified OT Scheduling Process

Optimised Operating Theatre System (OOTS), a qualified "Powered by SAP NetWeaver" solution built by NUH's implementation partner, FriarTuck, was deployed. Not only was OOTS capable of addressing the limitations of the old system, it was also a good fit with the hospital's SAP-based IT backbone. And with the solution's integration and communication capabilities, FriarTuck was able to implement the solution faster as well.

Moreover, deploying a SAP NetWeaver Exchange Infrastructure (SAP NetWeaver XI) provides near real-time information exchange between OOTS and the SAP backend. This will eliminate scheduling errors and outdated patient data.

"The benefit of deploying on the SAP NetWeaver platform is that it offers NUH a flexible and scalable architecture to support current and future needs," explains Dr. Loh.

"What we like about OOTS, a qualified "Powered by SAP NetWeaver" solution, is that it is capable of managing the complexities of the surgery scheduling process. It is also able to help us optimise our resources as well as provide available timeslots based on resource availability and patients' requirements quickly and efficiently," adds Dr. Loh.

In addition, NUH has also deployed SAP Business Intelligence for conducting live and interactive analytics. This would allow doctors to generate detailed reports and statistics to monitor their own performances.



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Good Planning Delivers

A well-planned implementation did not disappoint. FriarTuck worked with NUH to identify all the problems before designing several models and prototypes for user testing. Several rounds of modifications followed so as to finetune the process flows and user interfaces. Breakthrough mathematical techniques were also used to optimise the deployment of operating theatre resources.

“FriarTuck had no preconceived notion of a solution for us, which was great. Their consultants spent a lot of time with the management and users to find the best fit for our system,” says Dr. Loh.

Although there was initial user resistance and staff had to go through technical training, FriarTuck successfully implemented the project on time and within a timeframe of 11 months.

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Exceeding Expectations

Since implementing OOTS and a SAP NetWeaver platform for its OT scheduling system, the productivity of the NUH scheduling team has improved as the new system has eliminated manual scheduling work. The amount of time and effort taken to schedule surgeries has also reduced significantly, ultimately improving patient satisfaction and care.

“In the past, it took greater coordination effort for staff to schedule a surgery. But with the new solution, that process has been reduced to just seconds,” says Dr. Loh. This is because with the new SAP system, staff are able to identify whether resources are available at a glance.

The new SAP system also ensures resources are maximised and cancellations minimised. It does this by prompting the user whenever a slot has been booked or when there are overlaps in timing. It also goes a step further by recommending available slots.

Patient care is further enhanced as surgeons now have a bird’s eye view of their patients’ history. Any pre-operation procedures that have not been conducted will be reflected in the system, giving doctors the chance to rectify the situation before operations take place.

Additionally, the reporting system powered by SAP NetWeaver BI helps give surgeons a statistical overview of the operations they have conducted. This provides insights into their performance as well as a springboard for comparing with their peers. The system also supports workload management, preventing surgeons from taking on too many appointments which can compromise patient care.

Also, by using SAP NetWeaver BI to analyse business-critical data and generate detailed reports like trends in operating times specific to certain types of surgery, NUH will be able to identify hotspots and capitalise on new opportunities.

NUH hopes to gain even more benefits from the new system by leveraging and enhancing it further. Says Dr. Loh, “We believe that we have yet to harness the full potential of the OOTS and the SAP NetWeaver platform.”

“As the healthcare industry is constantly evolving, we need solutions that are flexible. SAP NetWeaver’s open architecture provides such an opportunity.”



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