CUSTOMER NAME
- Alexandra Hospital

INDUSTRY
- Healthcare

BUSINESS CHALLENGE
- Usage of pagers and desk phone as the primary means between ward staff and hospital admissions desk resulted in lack of coordination
- Current communications system only allowed healthcare staff to ‘pull’ information on patients, instead of having information ‘pushed’ directly to them
- Slow response created long waiting times for patients

NETWORK SOLUTION
- Cisco Clinical Connection Suite, with Cisco IP Phones

SOLUTIONS PARTNER
- Fujitsu Asia as Systems Integrator, using GlobeStar Systems ConnexALL Bed Management software

BUSINESS VALUE
- Timely information flow reaches all necessary staff members
- Increased coordination between admissions, wards, orderlies, and nurses when preparing beds for patients
- Patient waiting times reduced by 30 percent

Historic hospital in Singapore modernises bed management with IP technology from Cisco Clinical Connection Suite, reducing patient waiting times and improving efficiency of care.

BUSINESS CHALLENGE

Alexandra Hospital was established in 1938, originally built to serve the British military just before World War II. Up to the 1970s, it remained one of the most modern hospitals in Singapore. Today, Alexandra Hospital has more than 500 medical and nursing staff, seeing more than 250,000 patients a year. In the year 2004 and 2005, patients ranked Alexandra Hospital the highest in the Ministry of Health’s Patient Satisfaction Survey.

As part of its continuing commitment to providing excellence in patient care, Alexandra Hospital operates on two fundamental pillars of practise: Learning & Research, and Teaching & Sharing.

In 2000, Alexandra Hospital underwent a major restructuring initiative to create a hospital with highly efficient, service oriented patient care. “We benchmarked ourselves against examples of other successful medical facilities from around the world, most notably the Mayo Clinic in the US. In addition, we looked outside the medical industry as well, borrowing from organisations such as “Just-in-time” practices from manufacturing, and service practices from retail and banking,” said Dr. Paul Wang, Director, Projects Operations, Alexandra Hospital. “We wanted to alter patients’ perception of the hospital as a historical site that offered budget healthcare services.”

The goal was to create a “Hassle-Free Hospital” that could provide efficient and competent patient care within, and indeed even beyond the hospital wards. “To achieve true end-to-end healthcare and not just ‘illness’ care, you can’t wait for a patient to step through your door. Pre and post-illness management are equally important. We organise health talks, forums, and hold various projects with community partners to empower people to manage their health,” added Dr. Wang.
As Mr. Liak Teng Lit, Chief Executive Officer of Alexandra Hospital puts it, “Technology is a great enabler in this aspect. It gives us the ability to streamline our processes and enhance patient services, while at the same time keeping costs affordable for our patients. With technology, we can extend our care even beyond the wards, and deliver critical information to health-care workers which will enable faster diagnoses and more effective treatment.”

The adoption of technology can help healthcare institutions to reduce costs, add value through more efficient information processing, and address the issue of manpower shortage in this labour-intensive sector.

The hospital is also preparing to move to its new premises in the North of Singapore in 2009. With dual roles of restructuring and building a new hospital, Alexandra Hospital found itself in a position to be able to try out new and innovative technologies and practices, which they could then deploy in the new hospital.

At the outset, the hospital wanted to address the limitations of their existing communications infrastructure, in particular bed management. When a new patient arrives at the hospital to be warded, the admissions desk begins a phone-call intensive process to find available (or soon-to-be available) beds. Updates to patient care arrangements could not be communicated to nurses and orderly staff on-the-fly.

To achieve their objectives, the hospital realised that they had to begin by first creating an advanced, robust, and efficient technical infrastructure from which other medical applications could run on. As Dr. Wang explains, “We wanted to avoid introducing more and more isolated systems that would meet our immediate needs, but ignoring the bigger picture of creating an integrated healthcare environment. That’s where the Cisco Clinical Connection Suite comes in. Running on a Cisco Medical-Grade Network, it was the first step needed to ensure that current and future systems would work well together to meet all our requirements.”

“We wanted to avoid introducing more and more isolated systems that would meet our immediate needs, but ignoring the bigger picture of creating an integrated healthcare environment. That’s where the Cisco Clinical Connection Suite comes in. Running on a Cisco Medical-Grade Network, it was the first step needed to ensure that current and future systems would work well together to meet all our requirements.”

- Dr. Paul Wang, Director, Projects Operations, Alexandra Hospital

**NETWORK SOLUTION**

Alexandra Hospital were impressed by the benefits of Cisco’s Clinical Connection Suite (CCS), an advanced set of clinical solutions that directs, locates, and prioritises information for clinicians and patients. Comprising four solution components, CCS uses a converged IP network to deliver wireless connectivity, collaborative care, and integrated patient monitoring, allowing medical staff to deliver quality care efficiently.

“What we liked best about the Cisco CCS was that it wasn’t limited to simply setting up advanced equipment. Their vision of Connected Health aligned well with our belief that integrated healthcare involves connecting with other locations, such as pharmacies, research institutes, and even the patient’s homes as well. We chose Cisco because we were confident that their solution roadmap was applicable to our needs, now and in the future,” said Dr. Wang.

To address the immediate priorities, Alexandra Hospital obtained the services of Fujitsu Asia to implement the first phase of the Cisco CCS, a bed management unit (BMU), powered by GlobeStar System’s ConnexALL software with Cisco IP Telephony.

“We decided to pilot this system in Ward 13 of our hospital. The reason is because Ward 13 has a high number of beds (About 30 in total). Plus, it is also a surgical ward, so patient turnaround is much higher here,” said Dr. Wang.

The GlobeStar ConnexALL software, provided an up-to-date display of occupied and available hospital beds, as well as the current status of each one. From this display, staff could tell from a glance whether the bed was booked, ready, or being prepared. They could also tell whether the patient in that bed was soon-to-be discharged, had already vacated, or was being transferred. The system facilitates the coordination between the various departments, such as housekeeping and bed management, automatically matching empty beds to new patients. By providing staff members with Cisco 7961 desktop IP Phones, and Cisco 7920 wireless IP handsets connected via a Cisco wireless network infrastructure, the phone and pager systems were effectively combined into one.
The implementation began in September 2005, and was rolled out in February 2006. In that time, hospital nurses and operations staff interacted closely with consultants from GlobeStar Systems, Fujitsu Asia, and Cisco Systems to create a best-practise workflow for bed management. Once these were clearly defined, a team from GlobeStar Systems made the necessary customisations to the ConnexALL software, while Fujitsu Asia designed the Cisco IP Telephony and network infrastructure (both wired and wireless). Through a combination of custom-built and standard ConnexALL applications and databases, GlobeStar Systems and Fujitsu turned the initial high-level workflow concepts into a fully functional and robustly tested workflow solution.

BUSINESS VALUE

The new Bed Management Unit at Alexandra Hospital have provided immediate benefits to both patients and staff. “Without using Cisco’s application, the hospital’s patients currently wait about 20 to 60 minutes depending on the level of occupancy”, said Alexandra Hospital’s Chief Operating Officer Mrs. Chew Kwee Tiang. “On the whole, waiting times for patients have been cut by 30 percent.”

Scheduled tasks can now be communicated to all devices, wirelessly. All nurses are updated on any changes on-the-fly, and can be kept informed wherever they are in the hospital. “The system will also be able to reduce the time nurses spend on coordination activities with respect to assigning beds to new patients.” said Dr. Wang.

The bed management system enables a doctor to admit a patient and have the information automatically sent to service staff such as the nurses, housekeepers and porters via their handheld devices. The service staff can then prepare the bed for the patient in advance. In the same way, the discharge of a patient will also trigger off a workflow to prepare the bed being readied for the next patient. This greatly reduces the manual coordination effort required amongst the healthcare staff. For example, when a patient is admitted, the admissions clerk can refer to the system, and automatically assign the patient to a bed, without having to call the ward directly to check. When a patient is discharged from a ward, the ward clerk can alert housekeeping. A clean, icon based UI provides easy operability and configurability. Extensive management reporting, using data collected in the background, gives an overview on the response efficiency, and allows Alexandra hospital identify bottlenecks and potential issues early.

“The introduction of the new system was initially met with some resistance from staff members. Now that they have had some time to familiarise themselves with it, it has become indispensable. Nurses are able to concentrate more of their time to patient care, instead of handling time consuming bed assignment tasks,” said Dr. Wang.

“With this system, patients no longer have to wait for a fixed time to check-in or check-out, like a hotel. Instead, the moment a bed becomes available, they can occupy it, just like tables at a restaurant,” he added.

The added benefits of the new system have introduced a new, but welcome side effect. The patient admissions department have found it much quicker to look for vacant beds in Ward 13, rather than call other wards by phone. “They’ve found it much easier to simply refer to the ConnexALL display, and send patients straight to Ward 13. The staff members there have become quite busy over the last few weeks,” said Dr. Wang with a smile.

“The new system reduces a lot of hassles for us so we can concentrate on patients,” said Nursing Officer Ms. Shirley Heng. “We do not have to worry about whether the other departments have received our messages and whether beds have been cleaned,” she added. Patients from the A&E department, such as Mr. Celladurai, were pleased that the admission process was “very fast”.

“Without using Cisco’s application, the hospital’s patients currently wait about 20 to 60 minutes depending on the level of occupancy. On the whole, waiting times for patients have been cut by 30 percent.”

- Mrs. Chew Kwee Tiang, Chief Operating Officer, Alexandra Hospital.
NEXT STEPS

Alexandra Hospital has so far operated on a “taking small steps in rapid succession” approach, where it tests new technology and deploys it if suitable. It will, in the coming months, try out the other modules under the CCS, namely Nurse Call, Patient Monitoring, Location-Based Services, and Collaborative Care. Cisco and Fujitsu Asia have been working closely with the hospital staff to implement the CCS over the IP telephony and wireless network, and have invested about US$100,000 in the Alexandra Hospital project to date.

“The Nurse Call system is the next item on the list. Now that the Cisco Medical-Grade Network is up and running, we can expand the suite of applications to take advantage of it. In time, we can foresee that this open standard network will indeed converge all our applications together, and be able to develop new and exciting ones to improve the quality of service to our patients,” said Dr. Wang.

“We’ve been quite satisfied with the level of commitment and service shown to us by Cisco, Fujitsu Asia, and GlobeStar Systems. It’s been a unique learning experience for all of us, but one that will lead to exciting new developments for future patient care,” he added.

“GlobeStar Systems looks forward to being a part of Alexandra Hospital’s future communications strategy; equipping the hospital with integration software that will significantly reduce bed wait times and make quality healthcare more accessible and affordable to patients,” said Mr. Peter van den Berg, V.P., Sales, GlobeStar Systems.

FOR MORE INFORMATION

To find out more about Cisco Clinical Connection Suite, go to: www.cisco.com/web/strategy/healthcare/clinical.html
To find out more about GlobeStar Systems, go to: www.globestarsystems.com
To find out more about Fujitsu Asia, go to: www.fujitsu.com
To find out more about Alexandra Hospital, go to: www.alexhosp.com.sg