

The Mecca of medical tourism

Establishing a model of the world's first truly global hospital, Thailand's Bumrungrad International Hospital has digitised many aspects of hospital work, saving lives, money and enhancing its ability to process health information.

By Zafar Anjum
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Take a quiz. Where is the world's electronically smartest hospital located?

You are dead wrong if your answer is America or Europe. The correct answer lies right in the heart of Asia. In Thailand.

The hospital is Bumrungrad International Hospital. And it has taken the meaning of 'medical tourism' to a totally new level—treating more than 1.2 million patients from 190 countries each year. The hospital's outpatient foyer can outshine a five-star hotel's lobby. There are separate floors to deal with patients arriving from Asia or the Middle East. An in-house travel agency offers visa extensions. And almost every process is digitised and connected with latest wireless technology. Welcome to the Mecca of medical tourism.

Innovative system

Bumrungrad, from its inception in 1980, wanted to be a world-class hospital. For the past 16 years, its administrators have been acquiring state-of-the-art technology and experts from all over the world. Eight years ago, it replaced its paper records with a 'homegrown, all-digital system'. The solution was developed by Bangkok-based Global Care Solutions (GCS), a company developing enterprise health solutions. The solution efficiently manages clinical workflow, billing, regulatory compliance and medical records.

It was a huge change from Bumrungrad's old way of doing things, using paper and film, that resulted in thick file folders in sprawling record rooms that had to be collected and updated by hand. Only one attending doctor could see them at any given time.

Since the hospital serves more than 400,000 foreign patients every year, it needed a solution that could manage scheduling demands, multiple languages and medical records.

The system did all that, and with such efficiency that the average waiting time to see a doctor, according to Bumrungrad's chief executive officer (CEO) Mack Banner, was only 17 minutes.

This system was so advanced that even hospitals in the US could not come up with anything like it, despite the involvement of companies such as Cerner, Siemens, and General Electric. According to a study published in the New England Journal of Medicine last month, only 1.5 per cent of US hospitals had a comprehensive electronic health record system. The Bumrungrad system impressed the global tech giant Microsoft so much that it decided to buy the system in October 2007. After the acquisition, GCS became a part of Microsoft's Health Solutions Group.

Product suite

Microsoft has worked closely with Bumrungrad since then to further build out the functionality and features of the GCS technology, now under the Amalga product suite, which was launched for sale in the Asia Pacific last year.

Microsoft's Amalga product suite, comprising of Microsoft Amalga, Microsoft Amalga Hospital Information System (HIS) and Microsoft Amalga RIS/PACS, is such a rage that it is also in use at the Asian Hospital and Medical Center, Philippines; Assunta Hospital, Petaling Jaya, Malaysia; and Franco Vietnamese Hospital, Ho Chi Minh City, Vietnam.

Bumrungrad has digitised as many aspects of hospital work as it can, enabling it to more than double the number of patients it can handle each day, increase safety and cut its patients' bills. "It's made a significant difference," said Chang Foo, the hospital's chief technology officer.

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The most obvious benefit has been in the number of patients Bumrungrad can handle safely in a day. In 1999, the hospital could handle up to 1,500 people per day, but now Bumrungrad sees 3,000 to 4,000 patients a day with no increase in administrative staff, beds or rooms.

Duplication eliminated

Bill payment, human resources, record keeping and inventory are now all done electronically, allowing the hospital's staff to get more work done. Doctors no longer wait around for patient records, such as X-ray or blood test results, to be delivered by hand. And wasteful duplication has been eliminated because doctors can see what tests have been done already and access results immediately.

Digitisation has also improved safety. Bumrungrad has an e-prescription system that helps to eliminate errors from illegible handwriting, and allergy alerts that warn doctors if they are prescribing medications that are unsuitable for a patient and can suggest alternatives based on the symptoms observed.

The adoption of electronic health records has been slow in many countries despite the apparent advantages. There are a number of reasons behind this sluggish pace of adoption. Privacy has been a major concern.

Cost is another major factor. Electronic health record systems can cost between US\$20 million and US\$200 million. Bumrungrad's tab was less expensive because it worked with Global Care Solutions to streamline its system, and as a private hospital operating in a relatively low-cost environment, it was able to set aside more funds for new technology.

But there is another hurdle, and one that Bumrungrad was fortunate enough not to face: the problem of legacy equipment. The hospital has benefited from the US experience. Some of the software developers at Global Care Solutions previously worked on hospital IT systems in the US and Europe, and were able to bring best practices to the effort.

The software maker was also able to troubleshoot issues specific to Bumrungrad by working with doctors and nurses.

Single software set

The result of a single software set for all Bumrungrad departments is a system able to communicate with itself throughout the hospital, and manipulate data in any way the hospital deems useful.

The hardware is also simplified to use equipment from one vendor, Dell.

Bumrungrad's entire system, including backup, includes two database servers, Dell 1950s, three application servers, also Dell 1950s, and Dell/EMC CX3-80 SANs for storage. Every PC, monitor and printer at the hospital is also from Dell, making it easy for the IT staff to take out and replace broken computers. Around 20 people work for the IT department at Bumrungrad, far fewer than at US hospitals of a similar size. In 2007, Bumrungrad began to go wireless. "The hospital looked for technologies that could help physicians and patient care staff access medical records remotely," says Foo.

"In addition, we also wanted to extend facilities to our patients whereby they could access the Internet and remain connected with their family, work and clinicians back in the home country from where they were referred to our hospital."

To take the hospital into its wireless phase, Foo says they evaluated the products, solutions and technologies offered by several vendors, including Cisco, Trapeze and Motorola.

Bumrungrad chose Motorola to start the implementation of a state-of-the-art wireless infrastructure project. "When we started our evaluation process, we also examined the products and solutions offered by Symbol," says Foo. "However, during the process, Motorola announced the acquisition of Symbol. This brought together the advantages which made the offering very compelling."

Mobility solution

Bumrungrad initially selected an enterprise mobility solution from Motorola that included wireless switching and more than 300 access points, enabling hospital staff to access real-time information and data messaging capabilities while on the hospital's 90,000 sqm campus. The network topology included the Motorola WS5100 wireless switch as the core backbone. Then the hospital upgraded the core switching platform to the Motorola RFS7000 Wireless Next Generation Switch, the industry's first radio frequency (RF) wireless switch.

"The RF planner tool offered helped us in assessing viability and determine our hardware requirement, as well as design accurately the RF environment to serve our needs," says Foo. "What they offered was also fully scalable, to help organically grow the environment based on our needs. The RFS 7000 switch offers a unified voice, data and RF management platform."

"The solutions enabled mobility of the nurses and the physicians and access to the patient records across the hospital whenever they needed it," says Foo. "Prescription verification and specimen verification at the bedside of the patient is one significant benefit. This not only helps improve proper identification right through the diagnostic testing process which a patient undergoes but also helps avoid medication errors. The nurses are able to maintain accuracy of medication as well as medication administration schedule."

Going wireless didn't mean the hospital had to compromise on security. "Being a hospital trusted by patients from about 190 countries, we were also very concerned about the security of our patient records," says Foo. "Motorola's AirDefense wireless security solutions addressed our wireless and wired network security concerns."

Moving on, the hospital is not resting on its past laurels. "We would like to look at VoIP and possibly also look at Motorola TEAM [total enterprise access and mobility] VoWLAN solution," says Foo. "Real time location service

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(RTLS) is also an area we would like to explore.”

Given Bumrungrad's past record, who can doubt that?

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