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Symbol Technologies Helps Unplug the Wires at Monash Medical Centre

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The Monash Medical Centre in Victoria, Australia is a major teaching, research and referral hospital. It is affiliated with Monash University and provides specialist care to around 700,000 people in the state's South East and employs more than 9,000 staff.

Monash Medical Centre was created as part of a broader plan to enhance services to meet the healthcare needs of the future. The hospital cares for people of all ages and treats most illnesses – no other hospital in Victoria provides the same range and depth of service.

The Centre for Health Services Operations Management (CHSOM) is part of the Faculty of IT and Faculty of Medicine Nursing and Health Sciences at Monash University. Its mission is to enhance the clinical research, teaching and training of health professionals. The centre aims to facilitate better healthcare outcomes by improving quality of service and reducing costs to ensure more efficient use of health care resources.

Clipboards and paper-based patient records appear passé

Hospitals typically have a high volume of information that needs to be communicated efficiently and accurately. For example, nurses need to know what medicine to administer to patients and at what times.

Dr Liza Heslop, director of CHSOM, says that health workers spend a significant amount of time and effort seeking information to make the next key decision about a patient's treatment.

Patient information is usually recorded manually on a chart, which is kept at the end of the patient's bed. This manual process is error-prone, and could result in inaccurate patient care, such as administering the wrong medication.

Other patient information, like test results and x-rays, are essential before a doctor can prescribe a course of treatment or next steps in the patient's health care. The results are normally available in hard copy and are either sent to the doctor via internal mail or given to the patient to pass to the doctor. These methods are time consuming and there is a risk of test results being lost.

"A clinical ward typically has a high proportion of mobile workers, which means it's not always easy to get information to them quickly and accurately," said Dr Heslop. "There is evidence that doctors and nurses make more efficient decisions about their patients if relevant information is delivered to them more promptly. If incoming messages are missed, it can mean delays in patient care."

Wireless mobility trial – the mWard

After some initial research, CHSOM decided to trial wireless communication devices for mobile health workers to see how they could help improve information flow in hospitals.

"Some healthcare quality studies have shown that adverse events in hospitals are related to information management. By speeding up the flow of information and increasing accuracy, we can eliminate the errors, delays and double handling that can occur when information is not readily available," said Dr Heslop. "We believe that, by giving doctors, nurses and other caregivers access to correct, up-to-the-minute information wirelessly, hospitals can work more efficiently and virtually eliminate potential mistakes like administering the wrong treatment to patients."

In May 2003 CHSOM launched a research project called mWard to measure the business impact and technology suitability of wireless and mobility applications in health care.

The mWard project involves a wireless ward at Monash Medical Centre. Ward staff use handheld devices and mobile equipment to deliver patient care in the neurology, neurosurgery and stroke areas at Monash Medical Centre. The project's aims included:

1. Demonstrate the benefit to the workflow of doctors and nurses (and ultimately patient care) from wireless communications
2. Establish appropriate wireless infrastructure
3. Improve the use of existing applications and decision support systems
4. Enhance exchange of point-of-care information.

Rugged, reliable mobile devices

CHSOM worked with Monash Medical Centre, NEC and Symbol Technologies' value added distributor, Warp Systems, to facilitate the mWard trial.

mWard uses the Symbol Technologies PPT 8846 rugged, slim, PDA-format handheld device to enable doctors and nurses to obtain pathology, patient history reports and input new information at the patient's bedside. The doctor or nurse carries the mobile device with them at all times so that information can reach them no matter where they are in the hospital.

"The aim of introducing new communication technologies into the hospital is to give health professionals immediate access to patient information regardless of physical location. For this to work, the device needs to be completely reliable and able to withstand the sometimes harsh hospital environment," said Dr Heslop. "Most consumer-grade PDAs are too delicate for this kind of environment. The Symbol devices are tough enough to withstand multiple drops to concrete floors, extreme temperature variances and are water- and dust-resistant. They include both wireless and barcode scanning functionality, so they'll be able to scale to suit our needs as the solution evolves."

In addition to the Symbol handhelds, doctors on the mWard will be using tablet PCs provided by NEC to receive and display large format reports like x-rays, also at the patient's bedside.

"One of the key elements in our search for a solution was to make it as easy to use and as secure as possible," said Dr Heslop. "Doctors and nurses need to be able to use the most appropriate device to accomplish the task at hand, rather than be constrained by what the technology allows."

A secure, wireless voice and data network

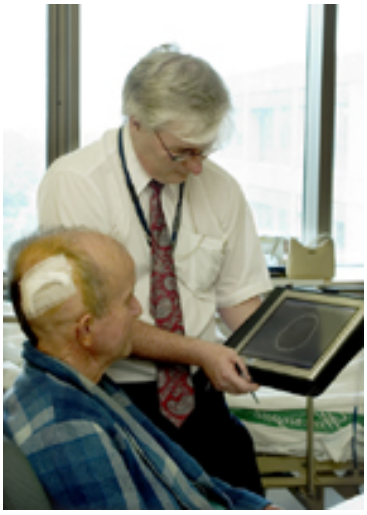
Symbol Technologies has also provided mWard with a wireless switch, making Monash Medical Centre unique: it is the first Australian healthcare site to run a converged data and voice infrastructure securely using a switched wireless network. The Symbol Technologies WS 2000 wireless switch ensures the network prioritises mission-critical data like phone calls. It also enables each device to have a level of security that is appropriate to both the device and its function, without limiting its performance.

The wireless switched network supports multiple virtual wireless local area networks (WLANs), each of which can be used for a different purpose, such as voice and data applications. This means that the quality of service for each application can be guaranteed, which is essential for a hospital environment. Applications can be prioritised according to the organisation's needs, so that certain test results, for example, are delivered urgently, so that doctors can review them and take appropriate action immediately.

In non-switched wireless networks, separate infrastructures are required for different functions, like voice calls, paging and data transfer. Because the switched wireless network supports all applications on one infrastructure, there is more flexibility to use converged devices. This means lower costs for the organisation and a simplified work environment for doctors and nurses who can now carry one converged device rather than a PDA, wireless phone and pager (for example).

"Hospitals have always recognised the importance of portable devices such as pagers," said Dr Heslop. "But even for wireless devices, the equipment for transmitting and receiving data would usually only function with one type of device – and often that device was supplied by a single manufacturer. So hospitals would have to install and maintain a new infrastructure for each different device. Consequently it was difficult to change the portable device being used. This inflexibility made it costly and impractical for hospitals to adopt wireless solutions broadly.

"The Symbol Technologies WS 2000 wireless switch eliminates these costs by enabling the hospital to have a single wireless infrastructure that supports a whole range of devices," she said.



Vying for access

Before Monash Medical Centre decided to trial a wireless solution, the ward had just two wired PCs. Staff would have to wait their turn to access these PCs for email and information gathering. Similarly, telephones were deskbound, so locating a doctor or nurse involved paging them, then having them find a desk phone so they could return the call.

Test results were delivered to the ward in hard copy and doctors and nurses would not receive them until they returned to a central point. This could result in delays in patient treatment.

More efficiency, better patient care and value-added services

The mWard trial has successfully demonstrated the benefits that can be realised with a range of mobile devices supported by a single wireless infrastructure. The main benefit is an improvement in patient care.

Dr Heslop said, "This technology will allow the hospital to run more efficiently, enabling us to treat more patients and provide a better level of care. Instead of spending hours waiting to access information, hospital staff will be able to treat and discharge patients quickly and accurately. By making a more comprehensive array of information more readily accessible where it is most needed, we can improve patients' hospital experiences dramatically."

The technology also has enormous potential for the future. Hospitals such as the Monash Medical Centre could use it to provide value-added services for patients, such as wireless phones and wireless hotspots for use while in the hospital.

Wireless technology also creates opportunities for the hospital to run its network more effectively. For example, hospital tenants such as pathology labs typically use and pay for a portion of a hospital's infrastructure. A switched wireless network allows the hospital to identify where the traffic flow comes from and allocate the costs accurately, saving on infrastructure costs.

Summary

In Summary: mWard	
Organisation:	Monash Medical Centre
Market:	Healthcare
Challenge:	Patient information recorded manually, being error-prone and could result in inaccurate patient care
Solution:	The mWard project is a trial of wireless technology in a ward at the Monash Medical Centre consisting of a wireless network & mobile devices to record patient care
Solution Partners:	Warp Systems www.warp.com.au

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