

This article has been translated from the original release in Chinese for your convenience.

Information technology quietly changes the face of hospitals

Publication: Medicine Economic News

Reporter: Wei Yun

Using barcode technology to manage drugstore inventories and track down drugs... adopting RFID technology to prevent new-born babies from getting mixed up in hospitals... employing medical waste monitoring systems to manage medical waste... Such new weapons are quietly changing the management of modern hospitals and are allowing hospital managers to get the most out of the information age.

Improving management efficiency

In the workflows of hospital care, medical information management and drug management, modern methods of information management are being used, playing an important role in improving management efficiency in hospitals.

Take the application of barcode technology in medical waste management as an example. Medical waste management involves more than classification, transfer and transportation, a more important issue involves public health. Traditional manual disposal techniques not only present new sources of contamination, they make it impossible to track some types of medical waste, and provide no opportunity for statistical analysis on the quantity, weight or cost of medical waste and the department, region, time or personnel that the waste involves.

In 2006, Beijing Friendship Hospital implemented a medical waste management information system that used the hospital's existing PC terminals and barcode technology to identify all medical waste. All nursing stations are equipped with RFID devices to complete the transfer of waste between nurses and transportation staff. Medical waste transfer stations are equipped with PC terminals, electronic scales, barcode scanning guns, RFID devices and printers to complete the weighing and transfer of medical waste. To avoid cross contamination, non-contact identification technology is adopted. In addition, the system exchanges information with the death management system, the in-hospital contamination management system and the contagious disease management system.

One Saturday, the hospital received a rabies sufferer who had not yet been diagnosed as having the disease. When treating the patient, a nurse used a hypodermic needle to administer treatment, and disposed of it as if the patient did not have an infectious disease. The next Monday, the patient was diagnosed with rabies, and died soon after being transferred to a contagious disease hospital. Using the newly-installed medical waste management system, it was soon discovered that the sharp object medical waste in the ward still remained in the hospital, and so posed a significant infection risk to others in the hospital. Within a short amount of time, the syringe was disposed of properly.

Barcode technology can play an important role not only in medical waste management but in drug tracking and stock management, patient management and tracking, and consumables management. A major hospital in Hangzhou adopted barcode technology to manage its inspection department, while Beijing's Tiantan Hospital employed it to manage its valuable consumables. The hardware needed was just one Zebra printing device, while the backstage system uses the corresponding support from the hospital HIS.

In addition to barcode technology, RFID and medical and nursing mobile information systems have also been used in hospitals. In addition, special designs have been tailored to the unique demands of the healthcare industry. For example, wrist bands used for patient identification are a potential area of infection. With the anti-bacteria wrist bands developed by Zebra Technologies, hospitals can prevent infection using innovative technology that has a fully anti-bacterial effect that lasts for 12 days.

Major issues to be addressed

The application of these information technologies has brought great convenience to hospital management. However, hardware upgrade as well as software upgrade and compatibility pose a funding problem for some hospitals. Statistics from 488 hospitals show that 54.30 percent of hospitals list "lack of sufficient funds" as the primary obstacle to improved IT application. 28.81 percent of these surveyed have invested over RMB 5 million in information system building, while 52.46 percent have invested less than RMB 2 million. Among them, most hospitals invested between RMB 2 million and RMB 20 million in IT applications, while 4.92 percent made an investment of over RMB 20 million. Most smaller hospitals invested less than RMB 2 million in information system building. Some 16.63 percent of the hospitals actually invested less than RMB 500,000.

In addition, the imbalanced development of IT technologies constitutes another problem. Inputs into IT applications vary greatly between different regions and different hospitals. Incomplete statistics show that in terms of average IT investment per bed, hospitals with higher ratings made notably higher investment than hospitals with a lower rating. South-eastern regions of China saw relatively higher investment, with Shanghai, Zhejiang and Guangdong claiming the top three spots. However, investment in central and western China was particularly low. For example, investment per bed in Shanghai was 3.26 times higher than in Gansu.

China's *National Health IT Development Plan Outline for 2003-2010* suggests that hospitals should use 1-3 percent of their revenue annually for information system development. However, industry insiders point out that many hospitals cannot meet such standards. In the new healthcare reform plan, it is suggested that hospitals must speed up health information system building. This will encourage hospitals to gradually increase their investment into IT applications.

Talent is another problem hampering the development of hospital information technologies. Currently, most medical institutions in China lack technical personnel who are familiar with medical and information technology skills. Healthcare workers generally have a low grasp of IT knowledge and skills. A typical case involved Director Li Baoluo, of the Information Center of the Peking Union Medical College Hospital. After retiring, the hospital made public the vacant position. Few applied for the position and the hospital failed to select a suitable candidate. Shen Tao, Director of the Information Management Center of Peking University No.1 Hospital, looked at the case and concluded that various factors made it very difficult for hospitals to retain talent. These factors include the fact that universities in China do not have a medical IT specialization and lack IT talent training mechanisms, there is a shortage of talent with both hospital management and information system development skills, and the compensation that hospitals can offer is far below the compensation offered to system analysts in the IT industry.

However, in June 2006, the National Network and Information Technology Training and Certification Administration Center of the Ministry of Information Industry and the Hospital Management Institute of the Ministry of Health jointly set up a National Healthcare Information Technology Training and Certification Administration Center. The purpose was to nurture IT talent in the healthcare industry. Currently, most provinces in China have set up centers or teaching bases. These will greatly help training IT talent for hospitals, and more and more hospitals will adopt combined internal and external training for their doctors and solve the problem of talent shortages.

(Reporter: Wei Yun)