Voice of Users

Safety increased through prevention of medical errors. TOUGHBOOK CF-H1 in service as mobile X-ray RIS terminal

Fuji City looks out upon the majesty of nearby Mount Fuji. The General Hospital here looks after the health of the 260,000 people who live locally. At Fuji City General Hospital, the TOUGHBOOK CF-H1 was selected as the terminal for the mobile X-ray RIS (Radiology Information System) that is used for imaging at the bedside. One of its decisive advantages is the amount of information that can be displayed on the screen of the CF-H1, another is the ability to use the built-in barcode reader to acquire patient identity and register image records securely with it. The new system both helps prevent medical errors and is easily able to accommodate urgent requests for X-rays.

Supporting the health of local citizens, the central hospital for Fuji City

Fuji City is situated between Mount Fuji and Suruga Bay. Fuji City General Hospital serves the city and supports life and health of the people living there. Since May 2009, when an electronic medical record system was introduced, the hospital has been promoting the concept of team care. Diagnostic imaging has come to play an increasingly important role in early disease detection and treatment policy decisions.

Working out of the hospital's Radiology, Radiological Technologist Ms. Mayumi Tamura commented: "In times long past, most people assumed that X-ray technicians would be men. Recently, because due consideration has been given to women undergoing procedures such as mammography, female technicians like me have come to play an increasing role."

On the way to radiological technologist in the wards, a mobile X-ray equipment leaving the Radiology Center

Freshly updated records, even at the bedside: This gives the CF-H1 a decisive advantage over PDA terminals

Before, when mobile radiography was done in the wards, the patients said their names, which were checked against nameplates on the beds. The name and date of birth was orally confirmed by the patients themselves. Even so, occasionally the names, for example, of seriously ill patients, were not always entered correctly. It is also impossible to deny that sometimes images were taken of parts of the body other than those specified in the order.

"When we looked into the feasibility of RIS for mobile radiography, the highest priority was given to minimizing patient misrecognition and radiographic error." (Diagnosis and Treatment Engineering Department, Radiology, Senior Radiological Technologist Mr. Tomokazu Nabeshima)

The patient's identity is registered by reading the wristband barcode.

Initially, because of the portability, PDA terminals were considered as prime candidates for bedside use in this system.
However, each of them were disqualified due to some problems.

Nabeshima explained, "While PDAs are certainly compact and easy to carry around, to update the data they hold, we would have to place them in a cradle in the Radiology. So, if while out on a round, the condition of a patient were to suddenly change, or if a doctor were to issue an urgent order, we wouldn't receive the update. The system lacked real-time capabilities."

If an order came in by telephone, the radiological technologist would have to return to confirm the requested order. If data access were so centralized, not only would it be impossible to achieve the goal of error prevention, there would also be problems in promptly responding to patient needs.

At this juncture, in November 2008, Mr. Nabeshima attended a medical informatics conference. Here, on display immediately after its product announcement, he came across a prototype of the TOUGHBOOK CF-H1:
"I thought, 'We could use this!' The wards were going to set up with a wireless LAN for the electronic medical record system. That meant, if we used the CF-H1 as the terminal, we could consult real-time information and update it, too. And it had a touch panel that enabled easy fingertip operation even while wearing gloves."

Consequently, using the mobile X-ray equipment they already had, just by adding the CF-H1, it was possible to hold down the cost of introducing a system that proved able to greatly improve medical safety.

Mr. Tomokazu Nabeshima, Senior Radiological Technologist of Diagnosis and Treatment Engineering Department, Radiology. "PDA-based systems just cannot provide the kind of real-time data updating that the CF-H1 provides."

A large screen and a built-in barcode reader: Single unit covers all needs

Ms. Mayumi Tamura, Radiological Technologist of Diagnosis and Treatment Engineering Department, Radiology. "It's lighter than it looks. The light weight makes the CF-H1 easy for women to use."

As the X-ray film cassette is extracted using the left hand, the barcode is read by the CF-H1 held in the right hand.

The hospital started using RIS terminals for the mobile radiography in September 2009. Using the CF-H1 at the bedside, the radiological technologist can access the server and see a list showing the status of the all the images ordered by doctors. For each order, as well as the day of examination, patient name, age, and sex, it is possible to view other details including the ward name, the room number, the part of body for imaging, the disease name, and the purpose of examination.

Ms. Tamura says, "Only the CF-H1 with its large panel can display all this information on a single screen."

She also found it easy to use the built-in barcode reader to register patient identity from the patient wristband: "When I first saw it, I wondered about how heavy it must be. Then, when I actually used it, I found that even a woman like me could easily hold it one hand."

To register the image being taken, the CF-H1 is similarly used for reading the barcode on the edge of the X-ray film cassette. In the past, the radiological technologist had to print out the X-ray request form and stick each one to the cassette and later peel it off. Now the image can be securely registered in the patient record and all that bothersome work is no longer necessary.

Ms. Tamura says, "The RIS screens are just like the ones we use for our ordinary work. As soon as the mobile system was introduced, we already knew how to operate it."

As part of comprehensive procedures to prevent nosocomial infections, the Radiology practices stringent hygiene, including the wearing of gloves during patient examinations. When images are taken, the X-ray equipment is disinfected and everything, including the cassette and even the CF-H1, is wiped with alcohol. The ability of the CF-H1 to withstand disinfectants is another outstanding feature.

A standardization proposal has been made: The CF-H1 is set to be used in more places in the hospital

The information system in the hospital is a multi-vendor system comprising a combination of excellent products supplied by different vendors. Responsible for system supplier, Carestream Health Japan Co., Ltd. HCIS Implementation Group RIS Team Project Manager Mr. Norikazu Kawakami emphasized, "The most important thing in such systems is standardization."

Mr. Kawakami added, "Currently, PACS (Picture Archiving and Communication System) is implemented with an RIS using an IHE-J standard interface (HL7). I think that the major reason that our Carestream Health system was adopted was in consideration of how its standardization features fitted in with the HIS (Hospital Information System)."

Mr. Kawakami observed that while, up to now, PDAs have been proposed for the terminals for mobile X-ray RIS, the CF-H1 has a strongly decisive advantage because it is a computer which operates using a standard Microsoft® Windows® Operating System.

He added, "Having a terminal that is operated in the same way as an ordinary computer, and using software that is already familiar to the technicians, for the hospital, that's a great advantage. It was very easy for us draw up a proposal and, for the hospital, there was no need for retraining. I'm confident that the new system will be accepted easily all round."

Mr. Kawakami also mentioned other winning features of the CF-H1: "It can stand getting shocked. You can swap in a fresh battery while it's plugged in. You can go on using it continuously until the end of the day. It was great to be able to propose an application that fitted in so well with the work flow."

"You could say that the design of this healthcare terminal was done paying careful attention to the needs of the medical setting."

Playing a role in places all over the hospital: The hidden potential of the CF-H1

All information can be consulted in the wards. Because all information can also be entered at the bedside, there is no need to return to the Radiology Center to fill in and process records.

The hospital is considering a proposal to use the CF-H1 as a portable terminal for viewing images.

Mr. Kawakami thinks the CF-H1 has plenty of potential: "It's currently in use as a terminal for mobile X-ray equipment, but it's also promising for use in labs, where it meets space and workflow needs. There seems to be plenty of places where a tablet computer would come in handy. Then there are other situations where the usability of the CF-H1 could be fully exploited, such as in the nursing support system or a menu ordering system for hospital food. I think there are plenty of places in the hospital for the CF-H1."

The CF-H1 is able to be used in different places in the hospital and it can also support various types of system. You can assure that it will contribute to enhance medical treatment to become much safer and to improve the experience of patients.

Customers : Fuji City General Hospital	
Address : 50 Takashima-cho, Fuji City, Shizuoka Prefecture	
System supplier : Carestream Health Japan Co., Ltd.	Exterior view of Fuji City General Hospital