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Imagine flashing a plastic card to check into a hospital.

No need to sign your name six different times or wait for your insurance company to verify your coverage.

The so-called smart card would have all the necessary information in a computer chip.

Think of getting an X-ray and having a computer-enhanced image of the X-ray and an accompanying radiologist's report in your doctor's office a few minutes later.

Consider that during a lengthy hospital stay, you could get a bed that automatically weighs you or one that adjusts hundreds of different ways to prevent bedsores.

The "hospital of the future" is only a few years away. Nearly a third of the nation's largest hospitals, including several in the Tampa Bay area, already are using some of the technological advancements that would accommodate "smart cards," computer digitized X-rays, "smart beds" and other technologies. But even as they update and integrate their computer systems, some hospitals are looking askance at larger financial outlays for hi-tech gizmos that won't cut costs significantly or heal patients faster.

"With the condition some hospitals are in, they probably won't be developing any space-age stuff," said Emily Stehle, a spokeswoman for Tampa General Hospital.

But such hi-tech gizmos could save time and cut red tape for patients. The hospital also can track patient care better and improve its quality.

Only in the past five years or so has hospital technology developed to the point where computer systems within a hospital talk to each other. And nursing got its first change in about 50 years when bedside computers appeared in hospitals in the mid-1980s.

In two to three years, hospitals and doctors will be sharing medical information across computer networks. A part-time Florida resident would be able to have his complete medical records - X-rays and all - on a laser card he could carry. Laser cards store more information than smart cards and can be updated extensively.

The technology is here, but most hospitals are slow to use much of it, said Doug Rykman and J. Steve Rushing, partners of Andersen Consulting's health-care division. Chicago-based Andersen Consulting has developed a \$7-million prototype of a "hospital of the future" in a Dallas mart that showcases technological developments.

"This is all very new, evolving almost weekly," Rushing said. "Several (hospital supply) companies are using technologies that are proven in other industries."

For instance, a new system of storing thousands of medical records, charts and even X-rays on optical discs allows them to be viewed on a computer or through a "jukebox" system that reads them like compact discs. Individual medical records can be stored on laser cards that patients can carry with them.

Then there is the system of converting X-ray photos into digital pictures that are stored and enhanced in computers, accessible to doctors and nurses.

But the foundation of the hospital of the future is the integrated network of computer systems. Most hospitals have a patchwork of computer systems, performing separate functions and rarely working together, Rushing said.

"Hospitals for a long time had hoped that one vendor would be able to individually produce a single source for the (computer) solutions needed," Rushing said.

"The demands for information and technology were too large for one vendor. Hospitals in their desperation began acquiring stand-alone systems to solve particular problems in departments."

Since the mid-1980s, health-care suppliers turned their efforts toward developing computer systems with "open architecture," the ability to share and process information among different computer systems. Bayfront Medical Center in St. Petersburg and Tampa General Hospital are installing open systems architecture. The ongoing process is costly: Bayfront has spent \$4.5-million of an allotted \$6-million on it and Tampa General is spending \$7-million to \$8-million.

The system at Bayfront enables doctors' orders, lab reports, pharmacy and radiologist reports to be transmitted throughout the system - so a nurse can call them up on a computer at the nurses' station, said Lee Marley, Bayfront's vice president of information systems. Before, a nurse sometimes would have waited days for copies of such information to be delivered to

the patients' chart.

"The ease of use is light years ahead" of the old system, Marley said. "We've reduced the number of phone calls throughout our organization. The personnel requirements to get information to the right source has gone down."

But with increased access comes concern about patient privacy.

Some of the new computer systems grant access to patient files only if the computer recognizes the voice of the doctor or nurse or if they use a code or password. That way, the credit department will know whether you paid your bill, but not whether your operation was a success, Rushing said.

The voice-activated systems also allow doctors and nurses to enter information by speaking to the computer.

Nurses at Tampa General and St. Joseph's Hospital were the early users of a bedside computer monitoring system called Vitalnet. Its small, bedside terminals automatically take patients' blood pressure, temperature and pulse, recording them in a computer at the nurses' station. When vital signs change drastically, an alarm sounds to alert nurses.

Meanwhile, nurses take notes and fill out charts with the wave of a wand over bar-coded information. The system stores the information and can generate print-outs later, a step ahead of the current system in which nurses fill out charts by hand, sometimes copying things several times and recording them hours later. Misplaced charts are a consistent problem with hospitals.

"The important thing is it's legible," said Gary Houghtalin, a registered nurse at St. Joseph's.

Nurses typically spend 30 percent to 50 percent of their time documenting, said Dr. Maynard Ramsey III, vice president of science and technology at Critikon Inc., Vitalnet's manufacturer, based in Tampa. "Patient care at the bedside has stayed the same for the past 50 years," Ramsey said. "We hadn't applied technology to the nursing process."

So far Critikon has sold the system to 10 hospitals and expects 10 more to buy it this year. Tampa General and St. Joseph's have added units, which average \$4,000 each, and Bayfront plans to shop for a similar system within the year.

"Every client that has had the system in for six months or more has bought more," Ramsey said.

Tampa General reported favorable results in its first six months of testing. Nurses' communication with patients increased 40 percent, as did time spent on treatments and procedures; nurses spent 34 percent more time on patient hygiene; and they shaved 63 percent off the time for taking vital signs, Pamela S. Erb, Tampa General's vice president of patient services, wrote in a report.

Although computer monitoring won't relieve the chronic nursing shortage, it makes it easier to get the job done with fewer nurses, said Houghtalin of St. Joseph's.

"It makes a difficult situation easier," he said.

"The nurses spend less time at the nurses' station.

Now when you need a nurse, they're down the hall in patients' rooms. They're able to pay more attention to patients."

In a few years doctors will get more help from their colleagues when they can transmit medical information via telephone lines or delve into the hospital's computer memory base for a history of certain illnesses and treatments, Rushing said.

But smart cards may take longer to catch on, Rushing said. Few hospitals have embraced the concept of smart cards, mainly because it is expensive and it relies on patients to remember to bring the cards, he said. Nevertheless, Tampa General is planning a similar system to speed patient registration, Stehle said. And even fewer hospitals have begun computerizing X-rays even though the prices of that technology are plunging, Rushing said. A complete optical disc storage system that three years ago cost \$3-million today can be replicated in bits and pieces for \$80,000 to \$90,000, he said.

Hospitals in the Southeast are in better financial shape and have fewer regulatory restraints than most in the Northeast and so have embraced more of these advancements, said Dykman, who is based in Tampa. Nevertheless, even some bay area hospitals are shopping cautiously.

"When new toys come out it's very expensive," said Dick Barcia, Tampa General's director of radiology. "I don't believe that some new toys are going to be cost-effective right now."