

## Health news

### MEDICINE AND TECHNOLOGY: Robot makes the rounds

#### Oakwood's physicians can evaluate, interact with patients by remote control

November 15, 2004

BY KIM NORRIS - FREE PRESS BUSINESS WRITER

Rosie, as she is known around the emergency department, has been tooling the halls of **Oakwood Hospital and Medical Center** in Dearborn for six months.

The fifth-generation remote-presence vehicle developed by California-based **InTouch Health** is one of 10 such robots in operation in hospitals around the country and the only one in Michigan.

Unlike Rosie the robotic maid in the futuristic TV cartoon "The Jetsons," Oakwood's Rosie has no arms and its head is a 17-inch computer screen that transmits a human face in living color from a remote location.

Both Rosies have antennae sprouting from their heads. Oakwood Rosie doesn't wear a lace apron and cap, but her figure is not unlike the bulky Jetsons' maid. Rosie the remote-presence vehicle is not as nimble or self-sufficient as Jetson Rosie. The Oakwood robot needs someone to push elevator buttons and open doors and occasionally bumps into walls, but its function, like the Jetsons' robot, is to make life easier for humans.

The concept behind the remote-presence robots, which were designed by a physician, is to optimize one of the most precious resources a hospital has: its doctors. Rosie enables an Oakwood doctor in another part of the hospital or another part of the world to talk to patients in the emergency department even if the doctor isn't there in person.

"Patient-physician interaction is the fundamental building block of a hospital," said Tim Wright, vice president of strategic marketing of InTouch Health, which started manufacturing the robots in 2000. "All the decisions are made in that relationship. It all waits for that interaction. If a test result is ready at 8 a.m. but the doctor isn't coming in until 2, the patient waits, the nurses wait, the bed can't be used for anyone else."

Made of sheet metal and aluminum, the remote-presence robot is navigated by an operator using a joystick at a control station that could be located just about anywhere. The robot is equipped with sensors to avoid crashing into things and its head swivels 360 degrees. A camera and microphone are mounted above the computer screen, allowing the operator to see and hear. A similar camera and microphone at the control station transmit the operator's face and voice.

"The resolution is excellent," says cardiologist Samer Salka, one of two Oakwood doctors testing the robot. "I can look at X-rays and other tests. I can look at tumors. I can focus on a little pimple."

Salka navigates Rosie through the halls of Oakwood with minimal difficulty. A wrong turn here and there and an occasional bump into an object in the hall are quickly rectified. The robot's presence draws stares from patients and visitors, but staff members appear unfazed by the image of Salka's face beaming from a screen perched atop a moving robot.

Salka, who is sitting at a control station in another part of the hospital, maneuvers Rosie to the nursing station in the emergency observations unit to inquire about a patient.

"The patient came in at 6:15 last night," nurse practitioner Heidi Kalinowski says, looking the robot -- Salka -- in the eye. "His chief complaint is chest pains for a week. His EKG was normal. All his labs were normal."

Salka asks Kalinowski to show him a patient's EKG, which she holds in front of the screen. Salka studies it. Then, with a push of the button on the control station one floor up, he takes a photocopy that prints out at his desk.



SYLWIA KAPUSCINSKI/DFP

Victoria Tierney, 39, of Allen Park reacts as the InTouch Health robot rolls by in the hallway of the emergency department. The two-way system allows a doctor to see and hear patients from another part of Oakwood Hospital or another part of the world.

He rolls over to a bed where patient Ascension Hernandez has been resting since the previous evening.

The 30-year-old machine technician and father of three is unfazed at being asked questions by a face on a television screen. He looks at the screen and answers Salka's questions as if they were in the same room.

Salka asks a series of questions and tells a relieved Hernandez he probably won't have to stay much longer.

Later, Salka visits the patient in person. He listens to Hernandez's heart and asks a few more questions. Hernandez is discharged later in the day with a diagnosis of muscular-skeletal pain.

"It improves your availability, while at the same time it can save me a trip to the hospital" said Salka, who more typically uses the robot late at night from his home in Bloomfield Hills. "There are parts of patient care that are expedited."

Salka said he might decide a patient needs additional tests or a different test after talking to him or her remotely. If that same decision had to wait for the doctor to visit the patient in person, it could add hours or days to the patient's treatment and hospital stay.

"If you can make a decision at 10 p.m. instead of 10 a.m. the next day, you can save the patient a day in the hospital," Salka said.

InTouch Health's Wright said the whole point is to improve the efficiency of treating patients by making doctors' zealously guarded time more available to the patient.

"If you can have doctors interact with patients more frequently you can improve care and reduce the time the patient is in the hospital," Wright said.

InTouch asked a group of surgeons at **Sentara Health System** in Norfolk, Va., to perform a second round of patient visits using the robot in the afternoon instead of the one in-person, morning visit they typically performed.

The hospital found that, in 65 percent of the cases, doctors issued additional orders that progressed the patient's care in some way. In 19 percent of the cases, doctors gave discharge orders. Patients who otherwise would have spent at least one more night in the hospital were sent home sooner.

The study of 62 patients showed a reduction in stay of 0.29 day. That translated to more than \$1 million in annual savings to the hospital from one ward, the study showed.

## Care comes from home

The robot can be operated from any dedicated control station. Salka and his colleague, Thomas Siegel, chief of surgery, share the station at the hospital. And each has one in his home.

From his home, Salka has made calls on whether an emergency patient needed a catheterization immediately or could wait for a stress test the next day. He's made postoperative decisions without leaving his home, and he has left home when his remote interaction with a patient indicated the condition required immediate intervention.

Oakwood also is the only hospital to be using the remote-presence robot in its emergency department. In other hospitals they are used by surgeons in different medical departments.

At Emory University in Atlanta, attending physicians perform rounds with residency students 2,000 miles away in Idaho. Residents log on to lectures being given by doctors in Atlanta.

At **Johns Hopkins** in Baltimore, the first hospital to use the remote-presence robots a year ago, a group of urologists share a robot to perform rounds on their patients, particularly from their homes on weekends.

The full potential of the robots is beginning to be explored. In the future, a pediatric cardiologist at Detroit's **Children's Hospital of Michigan** could consult with an emergency department physician at Oakwood in the middle of the night. An oncologist at the University of Michigan could look at a tumor on a patient in Petoskey. Doctors in the United States could follow a surgery in China.

"I can see its use in satellite hospitals where specialists can't go every day," Salka said.

Oakwood's robots cost almost \$4,000 a month to rent. In addition, the single-screen control stations are purchased at a cost of \$3,500 each. InTouch sells a new, double-wide monitor for \$5,000 that allows a physician to gain access to medical records simultaneously. This model is expected to become the norm as hospitals move to electronic records.

Future generations of control stations are expected to be portable and operational from virtually anywhere in the world, Wright said.

Because the resolution of the image is critical, current technology that limits the bandwidth available for transmitting over the Internet prevents the robots from being used outside places specially wired with enough bandwidth to carry high-resolution images back and forth.

"The long-term goal is for this to be very portable and for anyone to log onto this anywhere."

Contact **KIM NORRIS** at 313-222-8762 or [norris@freepress.com](mailto:norris@freepress.com).