

## I, Doctor Robot

**Machine allows physicians to check on patients while away from the hospital**

**By Dorsey Griffith - Bee Medical Writer**

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Rudy the Robot goes to visit a patient.

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A new member of the UC Davis medical staff is turning more than a few heads as he wanders down hospital corridors, humming quietly.

Never mind that he has no arms or legs and stands just 5 feet 6 inches tall. "Rudy" is gaining the respect of patients and making others squirm.

The 200-pound robot is the star participant in a multihospital clinical trial to determine whether patients who have undergone certain types of surgery can be safely taken care of by a doctor in a different location.

If he proves effective – and cost-effective - the brainy hulk also may represent the latest trend in a new frontier in medical technology. The field already has produced robotic arms to extend a surgeon's grasp, telemedicine units to give patients in far-flung communities access to experts in big cities, and devices that allow non-English speaking patients to communicate with a nurse or doctor.

"We look at this research project as being the next step," said Dr. Thomas Tintman, associate director for clinical information systems at the UC Davis Medical Center. "It may be that the doctors don't like it. It may not be cost-effective."

Rudy gets high marks from his first patient, 59-year-old Dennis Early, a retired entertainer from Grass Valley. Early agreed to participate in the study before having his cancerous left kidney and ureter removed.

During Early's four-day hospital stay earlier this month, surgeon Lars Ellison visited him several times in the form of Rudy the Robot. In most cases, Ellison was operating Rudy with a joystick from his office on Y Street, a few blocks from the hospital.

Another remote workstation allows him to run Rudy from home.

The day after Early's surgery, Ellison directed Rudy through the surgical floor hall where Early was recuperating. Patients, hospital visitors and medical staff gawked as Rudy passed.

The image of Ellison's boyish face beamed in color on the robot's monitor as he entered Early's room.

"How's our patient today?" Ellison asked, maneuvering the digital camera mounted on the robot to view the scene. Turning the screen to face Early's wife, Trish, he said: "Everything is going exactly as we can expect. The first day is the toughest."

The doctor talked about pain control and the importance of Early's creatinine level, which measures kidney function. He said her husband could probably go home in two days and then turned the screen to face Early in the bed.

"Are you comfy?" he asked his patient. "Yeah," Early responded.

Early mentioned that he had felt pain now and then below his incision. The two discussed the pain and Ellison asked Early to pull his sheet back to expose the incision.

"That looks fine," Ellison said, examining the incision from his monitor. "I don't see any redness on the belly." A few minutes later, Ellison said goodbye and moved Rudy out of the room.

Early was amused – and satisfied – with the doctor's wireless visit, calling the experience a "fun thing," adding, "You can still see your doctor, and talk to him."

Trish Early said it might bother her to visit with her primary care doctor via robot but not the urologist in the hospital following surgery.

"We don't know Dr. Ellison that well," she said. "All I want him to do is to get the job done and keep my husband alive."

Ellison said an earlier trial of the robot at Johns Hopkins Hospital in Baltimore found that when the robot was added to usual postoperative care, patients of all ages were more satisfied than were those who did not have the robot visit them after surgeries.

"They felt they got better attention from their physicians," said Ellison, who participated in the Johns Hopkins trial.

What Ellison and the robot's manufacturer want to know now is whether use of the robot is safe. The study will compare the health outcomes of patients who see the robot and those who see the attending physician in their rooms after elective surgeries.

The UC Davis patients who opt for the robot rounds still have round-the-clock nursing care and regular visits from the resident physician on duty. Michael Chan, vice president of In-Touch Health, the Santa Barbara company that builds the robot, emphasized that the robot is not designed to replace a nurse or physician, but to make highly skilled people more accessible to more patients.

"If you can't have enough health care providers serve the growing population of need, you have to use technology to leverage your skilled experts so they can be more efficient and serve more people," he said. "That's what we are doing."

Chan said the robot represents a natural evolution of the technology developed by In-Touch founder Yulun Wang, who pioneered medical robotics and was first to get federal approval of a surgical robotic device that responded to a doctor's voice command.

Robots are becoming common sights in hospitals, he said, citing the Tug, a pilotless cart that automatically roves halls ferrying everything from linens and medical supplies to lunch.

Chan envisions a time when emergency departments use robots to allow specialists to consult on emergency cases without having to race to the hospital. Ellison imagines using the robot to visit hospitalized patients on days when a busy clinic schedule makes rounds difficult or when he's attending an out-of-town medical conference.

But technology analyst Eric Brown of Forrester Research in Cambridge, Mass., has doubts. He said the most promising and money-saving innovations in medical technology are devices that really do make house calls.

Wearable technology allowing patients with chronic illnesses to leave the hospital and receive continuous monitoring by health professionals is more apt to succeed, Brown said. Such systems could remotely measure a patient's blood sugar, heart rate, perhaps even how quickly a drug metabolizes, for example.

"Make those devices cheap enough, and forget the robot," Brown said. Useful or not, the robot just rubs some people the wrong way. Gina Fagan, one of the nurses on duty when Rudy saw his first patient, said the robot would make medicine even more impersonal. And she questions how well a physician could assess a patient through broadband wireless technology.

"We use all of our senses throughout the day to see if a patient is getting worse and sicker," she said. "If it were me in that bed, I would rather see the doctor in person."

Tintsman said he always worries about the potential for new gadgets to alienate hospital patients.

"I don't think technology can replace everything in medicine," he said. "The art is learning when to use it and when not to use it."

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Dr. Lars Ellison, by way of Rudy the Robot, talks with patient Dennis Early, right; Early's wife, Trish, center; and friend Erica Sawyer, as Early recuperates from surgery at UC Davis Medical Center.

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Sitting in his office a few blocks from UC Davis Medical Center, surgeon Lars Ellison uses a computer joystick to move Rudy the Robot.

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Using the robot, Dr. Lars Ellison stops by a family waiting area at UC Davis Medical Center in Sacramento, which is trying out the robot. Ellison also participated in a trial with the robot at Johns Hopkins Hospital in Baltimore.

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