

Robots can extend a physician's reach and expertise

In Fall 2010, Tech Notes | [Comments Disabled](#)

Today, telemedicine enables physicians to extend their presence and reach to multiple locations in the form of robots that see, hear, speak and interact with patients and staff.

InTouch Health has the only FDA-cleared remote presence (RP) products on the market, such as the RP-7i (and predecessor RP-7), which connect directly to Class II medical devices including electronic stethoscopes, otoscopes and ultrasound. This enables physicians to diagnose and consult with patients from a distance.

Thanks to the robotic technology, specialists in demand for stroke, ICU care and pediatrics reach patients they otherwise might not. Burn victims, heart patients, psychiatric patients and trauma patients benefit as well.



To accomplish examinations and

For example, the Brooke Army Medical Center Burn ICU employs the robots to assess burn victims from as far away as Baghdad, says Jennifer Neisse, marketing communications manager for InTouch Health, headquartered in Santa Barbara, Calif. The robot's camera zooms in from multiple angles on skin sections affected with burns for accurate, immediate examination.

Cardiologists facilitate distant monthly cardiology and echocardiogram consults through the robots. Remote hospital staff plug ultrasound devices directly into the robot's video ports for the cardiologist's use. Trauma units use the robots to make up for the shortage of trauma doctors. And psychiatrists reach out to rural areas through the robots, providing consultations.

consultations, the robot's head pans and tilts, giving the doctor a complete view of his surroundings. The robot's camera, monitor/display, microphone and speaker extend the doctor's natural senses while ensuring that the doctor is seen and heard, as well.

PracticeLink spoke with three physicians specializing in neurology and pediatrics who have made extensive use of RP robots.

Neurologist offers urgent care robotically

Dr. Paul M. Vespa, M.D., director of the Neurocritical Care Program at UCLA Medical Center in Los Angeles, has relied on the RP-7 and now the RP-7i remote presence robots for a total of more than five years. Vespa uses the robots in the neuro ICU as he visits, diagnoses and treats neurosurgical and stroke patients.

Via the RP-7i model, Vespa speeds down clinic and hospital hallways at the patient's side as staff transport them on gurneys.

Three balls in the robot's base, each one six inches in diameter, enable this precise locomotion. Motors drive the balls, which also spin passively when following another ball's lead. The robots maneuver accurately in tight spaces without bumping into walls or people.

In the big picture, the robots help Vespa address the shortage of ICU practitioners available to physically enter the ICU. When needed, Vespa drives the RP-7i model robots into the neuro ICU to offer immediate care to critical stroke victims.

To accomplish examinations and consultations, the robot's head pans and tilts, giving the doctor a complete view of his surroundings. The robot's camera, monitor/display, microphone and speaker extend the doctor's natural senses while ensuring that the doctor is seen and heard, as well. The robot's audio capabilities enable the physician to tune in to specific sounds or conversations, as if he were in the room himself.

The RP-7i brings Vespa up close to observe and monitor patient response to medicines and treatments in real time. "Rather than ordering a medicine and coming back the next day to see whether it worked, I can see that right away," he says.

This saves time for the patients, speeds care as the doctor shifts treatment to another medicine more quickly, and even changes outcomes. "By moving more quickly to an approach that works, we can save the patient's life," Vespa says.

Vespa also tests patients for brain ischemia and other neurological maladies via the robot. If a patient is seizing, the doctor sees the seizing and stops it immediately. "I can treat a patient who is having a cardiac arrhythmia through the robot and make life and death decisions, such as whether to go into surgery," says Vespa.

Currently, Vespa also uses the robot to supervise trainees who are performing ICU procedures. He is considering applying the robots to home visits.

Oregon neurologist uses robots for stroke outreach

Dr. Nicholas J. Okon, D.O., a neurologist in Portland, Ore., uses the RP-7i and RP-Lite model remote presence robots in his stroke outreach program.

The more affordable RP-Lite enables the doctor to be present at emergency rooms, rural treatment centers and hospitals, clinics and other facilities.

Though a nurse must physically move the RP-Lite around, it still uses pan and zoom capabilities to see patients and medical staff. Through the RP-Lite, the doctor can speak with and hear patients and nurses in the room. The robot comes with a workstation that nurses can use while the doctor is logged on to the RP-Lite's cart and a stethoscope and video port.

Prior to the RP robots, staff had to physically transport patients to Okon's regional referral center for stroke.

"There I would see what the opportunities were to help them. I would see that they did not receive treatment with tPA," Okon says, referring to the medication for acute ischemic stroke.

"With the RP robot (and available Telestroke software), I can do the history, physical and stroke examination myself directly on the stroke patient without having to transport them," he says.

Okon particularly likes the Telestroke application, which provides access to CT scans of the brain that he can view in the ControlStation to determine if he is working with a normal brain with no bleeding.

Ultimately, the robot enables Okon to extend the reach of his practice to multiple hospitals throughout the state and across state borders. When other doctors do not have the experience or knowledge base to prescribe tPA for acute ischemic stroke, Okon can be there to do it himself.

The VisitOR1 robot lets remote physicians be present at rare surgeries

The VisitOR1 is a robot head mounted above the OR either statically or dynamically. Dr. Steven Rothenberg, M.D., a pediatric surgeon and clinical professor of surgery at the Columbia University College of Physicians and Surgeons in New York City, is having the VisitOR1 installed on a boom over the OR at the university's teaching facility.

The mountable robotic head, available from InTouch Health partner KARL STORZ, enables physicians and consulting surgeons to have a presence in the operating room to observe and advise surgeons in the OR. The VisitOR1 enables physicians to train other physicians in the operating theater in real time.

Through the robot, Rothenberg can view or participate in the surgery via telepresence without having to travel and scrub in.

And, because many of the cases he and his colleagues do as pediatric surgeons are rare, there is a great benefit to having physicians at other sites tune in and interact live. "It is about sharing medical expertise in an efficient fashion," he says.

The robot enables Rothenberg to receive video feeds of the OR as well as the video feed of the laproscopic images the doctor is seeing. He can switch between views of each. "It is like being on Skype in that we doctors can interact vocally and see each other as well. I can draw what they should do on a snapshot of the feed from the endoscopic camera and show them," Rothenberg says.

How physicians control the robots remotely

Physicians operate the robots while seated at a ControlStation, which is located at their home, office or another hospital. The robot's ControlStation comes

with special software loaded in a PC Windows operating environment.

From the station, the physician sees the robots that are available to him at various locations. The station brings medical data, chart information, CT scan results and other medical images within the doctor's reach. The ControlStation presents these items in its monitors as the doctor manipulates the robot.



InTouch Health offers three types of control stations:

laptop based, desktop based, and via a

ControlStation Kit (the CS Kit) that comes with Remote Presence software and a camera, microphone, joystick and speaker to operate the robots. The joystick moves the robot and its head. The other hardware enables the highest-quality instantaneous audio/video communication between the physician and the staff and patients.

The ControlStation lets the physician interact with patients remotely.

The Laptop ControlStation enables portable, remote access to RP-7 and 7i robots over broadband connections. Doctors use the solution to view electronic health records as well as to operate the robot. The Desktop ControlStation uses two monitors to view EHRs and operate the robot. Physicians can add the CS Kit to qualifying, compatible laptop makes and models.

Because the robot systems use the public Internet and existing infrastructure, all the doctors require is InTouch Health's hardware and software.

To enable the robot's connectivity back to the ControlStation, InTouch Health has placed its own servers out on the Internet backbone to broker connections between any two sites, even if they are behind firewalls. The system also uses compression technology to send real-time video, and a proprietary technology

to manage the available bandwidth to ensure quality of service.

Physicians who find themselves unable to travel or spread too thin should appreciate the remote presence robots for their precision, accuracy, efficacy and reliability.

***David Geer** is a 10-year veteran technology journalist. David lives and works in Northeast Ohio.*

Article printed from PracticeLink Magazine Online:

<http://www.practicelink.com/magazine>

URL to article: **<http://www.practicelink.com/magazine/tech-notes/robots-can-extend-a-physicians-reach-and-expertise/>**

Copyright © 2010 PracticeLink's Unique Opportunities Online Magazine. All rights reserved.