



Robots

Robostaff

Some pharmacy and nursing tasks don't need the human touch.

by Frank Jossi

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Nehran Anvari is part of a community of limited membership--physicians who have helped conduct surgeries on patients living hundreds of miles away. The surgery professor at McMaster University, Hamilton, Ontario, has performed 24 laparoscopic telesurgeries using ZEUS, a robotic device developed by Computer Motion, Santa Barbara, Calif., now part of Sunnyvale, Calif.-based Intuitive Surgical Inc.

Using robots for surgery --at the University's St. Joseph's Hospital as well as remote locations --has advantages, among them the ability to delicately manipulate surgical tools and to reduce minute tremors that even the finest surgeons suffer. "You have more dexterity with the top of instrument, and you can do fine movements more efficiently," says Anvari, who founded the university's Centre For Minimal Access Surgery.

And robotic surgery holds the potential for cost savings. Robots can improve the quality of surgery, reduce hospital stays, and may eventually reduce the amount of time and personnel required, he says. As they perform telerobotic surgery, Anvari and his colleagues also conduct an educational session for remote physicians, who assist the robot as it goes about its work under the control of Anvari. Such collaborations provide important training for small-town physicians and save time and money for patients, who no longer have to travel to Hamilton for surgery.

Figuring return on investment is problematic, confesses Anvari, but he's gathering the data now. "It's a complex calculation," he says. Yet it's a calculation that many healthcare providers are interested in as costs skyrocket and the pool of trained personnel remains stagnant, especially in rural areas.

While the world may be decades away from the kind of know-it-all robot who intoned "danger Will Robinson" on the television classic "Lost In Space," more than a few hospitals, nursing homes and pharmacies have employed robots to improve care and productivity and assist staff.

"The two most common areas robots can be found in are nursing and pharmacy," says Jim Osborn, executive director of the Medical Robot Technology Center at Carnegie Mellon University, Pittsburgh. One reason is because organizations have a strong belief that in those areas, "they're going to save money by reducing medication errors and improving patient outcomes," Osborn explains.

Another reason is the staff shortages in those fields. The U.S. Department of Health and Human Services

estimates that a severe nursing crisis will continue over the next 15 years and will reach a shortage of several hundred thousand by 2020. And the National Association of Chain Drug Stores reports that there are more than 5,400 pharmacy vacancies this year.

Pharmacy robots have been around for a while. McKesson Automation Inc., Pittsburgh, unveiled the first one more than a decade ago, Osborn says. But nursing "bots" remain relatively new. They hold promise as service applications based on improving productivity and relieving existing nursing staff: "not by replacing them," says Osborn, "but by freeing them from mundane activities and allowing them to do what they do best and what they're trained to do."

Nursing bots

Dr. Stephen Winner, co-founder and chief of culture at Silverado Senior Living Inc., San Juan Capistrano, Calif., visits with patients in Utah and Texas every week -- while sitting in his office. He has the help of a nursing bot called Companion, developed by InTouch Health Inc., Santa Barbara, Calif. The five-foot-tall robot has television cameras that allow the physicians and nurses in California to see, hear and talk to patients and staff at remote locations through a wireless Internet connection.

Silverado, which specializes in care for Alzheimer's disease, uses Companion in four of its 12 "communities." The system lets Winner visit with patients, collectively representing more than half of the patient load, once a week rather than the once a month he might be able to visit in person. Moreover, nurses can use the robot to immediately show the behavior of challenging patients to Winner and his corporate staff and get treatment guidance.

The main cost benefits come in less travel and more productivity. Visiting his facilities in Houston in person takes a total of three days, much of it wasted in airports and hotels, Winner says. Neither the patients nor the nurses seem put off by having a robot in their lives. "The staff's getting into the robots by giving them personalities and putting name tags and clothing on them," he says. "They're having fun with it."

Michael Chan, vice president of business development at InTouch Health, says the robots make sense in a long-term setting "where you can't afford to staff onsite experts all the time." Questions about reimbursement for telecare continue, but he believes staff shortages will force payers to consider distance consultation the same as in-house care. "Something has to change, and I think this at least makes experts and highly paid people able to work more efficiently and effectively and be in more than one place at one time," Chan says.

Pharmacy bots

Several healthcare facilities and pharmacy firms have employed robots to replace or assist the usual white-coated pharmacists who have served the public for generations. Pharmacy robots generally fill and label vials while using bar codes throughout the operation to ensure accuracy. The labels look no different than usual, and accuracy is as high as with human pharmacists doing the job, if not higher.

The Western Maryland Health System Inc. in Cumberland has used a robot for the past year to fill prescriptions for its 2,400 employees and their dependents. Designed by ScriptPro L.L.C., Mission, Kan., the pharmacy robot dispenses about 175 prescriptions a day on average, says Jerry Stewart, director of the Western Maryland's pharmacy.

"It saves us staff time, because without it we would need two full-time technicians and one pharmacist," he says,

adding that the robot handles prescriptions more cheaply than the mail-order system formerly used for employees. "The pharmacist now doesn't even have to work full time--probably only 50 percent of his time is spent on employee prescriptions. And we only need one technician."

St. John's Regional Medical Center, Joplin, Mo., a level-2 trauma center, began using McKesson's ROBOT Rx in 2002 and found savings of \$350,000 the first year alone, says pharmacy director Jack Udell. The main advantages of having a robot are the "tremendous accuracy" and the ability to free up pharmacists to visit patients, Udell says. Such visits often result in a recommendation for a medication change from expensive intravenously administered doses to oral ones--which can result in significant savings. Due to such interventions, St. John's saved \$44,000 in October and \$45,000 in November last year, says Udell. And retention of pharmacists has also improved, he says, because they appreciate having more time to spend on the floors with patients.

Delivering prescriptions is the job of San Diego-based Pyxis Corp.'s HelpMate SP robot named Scooby. Between 7 p.m. and 6 a.m., the pharmacy department at Good Samaritan Medical Center, Phoenix, uses Scooby to deliver medications to its five-story rehabilitation wing, says Ron Palmer, pharmacy supervisor. Once programmed for deliveries, Scooby does the rest, traveling down hallways and entering elevators on its own. After the robot gets off the elevator, it goes to a designated parking station where staff then collects medications. With Scooby able to do the traveling, "it allows the staff to do something more fulfilling than being the delivery person," says Palmer.

No substitute for people

Robots can help with staff shortages to a small degree, but they aren't about to replace a nurse, a pharmacist or a surgical technician. Robotic pharmacies, although growing sizably, are still relatively rare. For now, robots seem largely in experimental stages.

Even what might be the most interesting robotic application--surgery--remains unlikely to produce a humanless operation anytime soon. But Thomas Ahlering, associate professor of urology at the University of California-Irvine, loves using robots and believes they can save insurers money in the fewer follow-up treatments required by patients receiving robotic surgeries.

Ahlering has used Intuitive's da Vinci system for 121 prostate-related surgeries. A robot is "a reasonable expense," he says. "There's a savings to the entire system but you don't see that, like the fact people recover in less than half the time, sometimes a fifth of the time, and they lose less blood during the surgeries."

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