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Doctor R2-D2? Not Quite, But Robots Assisting Docs

By PATRICK SEITZ

The success of robotic surgery company **Intuitive Surgical** (ISRG) has cut a path for other robotic medical device and health care companies.

Intuitive Surgical, maker of the da Vinci surgical system, was a top stock last year, with shares rising 237%. Shares were also up in 2008 until April 18, when they plummeted 17% on disappointing sales guidance for the year. The firm says it expects sales growth of 42%, while analysts were expecting 46%.

The Sunnyvale, Calif., company said first-quarter profit rose 81% from the year-earlier quarter to $1.12 a share, while sales rose 65% to $188.2 million. Both figures handily beat analyst views.

Intuitive Surgical leads the fast-emerging field of robot-assisted minimally invasive surgery. Its systems are used in cardiac, urologic, gynecologic, pediatric and general surgeries. The da Vinci prostatectomy procedure is the fastest-growing treatment for prostate cancer.

Other robotics companies are also making tracks in health care.

Mako Surgical (MAKO) has developed an advanced robotic system and implants used in minimally invasive orthopedic knee surgeries.

The Fort Lauderdale, Fla.-based Mako, founded in 2004, has yet to post a profit, but sales are growing as more surgeons adopt the technology. Last year, Mako posted sales of $771,000, up from $63,000 the year before. This year, analysts expect sales of $1.9 million. But investors aren't impressed. Mako went public in February at $10 a share and now trades near 8.50.

Privately held Energid Technologies has developed a robotic system that uses high-intensity focused ultrasound to ablate tumors and stop internal bleeding. The noninvasive system has been used to treat prostate tumors and uterine fibroids, says David Askey, director of business development for Energid.

Developed under contract with the U.S. Army, the system can be carried on a stretcher to aid soldiers in the field or deployed in ambulances. Many patients who die from internal bleeding could be saved if treated sooner, Askey says.

The Energid system can be teleoperated, with the surgeon controlling the robotic arm remotely.

Robotic machines are automating pharmacies and ferrying specimens around labs and hospitals.

Parata Systems of Durham, N.C., is filing a niche with its pharmacy automation systems. It sells a robotic pill-dispensing system that can fill prescriptions faster and more accurately than people can.

Founded in 2001, privately held Parata says its annual sales top $100 million. The market is barely 10% penetrated, says Doug Townsend, its chief financial officer.

Parata has installed about 1,800 systems across the U.S. Parata's systems are in demand because there's a shortage of pharmacists and prescription volumes are rising, says David Calderwood, vice president of engineering for Parata.

Pharmacies filled more than 4 billion prescriptions last year, twice as many as 10 years ago, he says.

With the aging U.S. population, the number of prescriptions will continue to rise. Those 65 and older were 12.6% of the population (35 million people) in 2000 but are expected to be 30% (90 million) in 2050, Calderwood says.

"To keep up with the volume, you're going to have to automate or, quite frankly, you'll probably end up going out of business, because the tidal wave is coming," he said. "Robotics is the solution."

Parata's machine can automate about half the prescriptions of a typical retail pharmacy. It only handles pills. It selects a vial, counts the pills, caps the vial, and labels and sorts it by patient last name, all in about 20 seconds and with 99.95% accuracy, the company says.

It takes a human an average of two to three minutes to fill a prescription, with an average accuracy of 95.4%, or 90.1% during busy periods, Calderwood says. Most mistakes are counting errors, he says.

Automation systems before Parata's were too big for most pharmacies and required expensive remodeling to accommodate, according to Calderwood. The Parata system is 6 feet tall and 2 feet wide.

Parata has expanded its product line to include a machine that packages individual doses for customers and a self-service kiosk for people to pick up their prescriptions.

CCS Robotics, a unit of Cypress Computer Systems, sells autonomous mobile robots for health care and security. Its robots are used in hospitals to deliver lab samples from one location to another.

Lab technicians were spending too much time walking back and forth dropping off specimens, says Tony Diodato, chief technology officer of CCS Robotics. The walking took time away from technicians' main job. Customers realized that a mobile robot would be ideal for transporting tissue and blood samples, Diodato says.