

# Use of surgical robots booming despite hefty cost

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Dr. John Lenihan sits at a computer console about 20 feet from his hysterectomy patient lying on the operating table.

As if playing a video game, Lenihan manipulates foot pedals and joysticks as he watches the action on a screen, remotely controlling tiny instruments on robotic arms inserted into her abdomen through small [incisions](#).

A camera on one of the robot's arms gives Lenihan, an experienced [robotic surgeon](#) at MultiCare's Tacoma General Hospital, a greatly magnified 3-D view. The swiveling instruments allow him to make more complex, precise moves, he says, than he could accomplish with conventional instruments.

Lenihan and many other surgeons say the surgical robot, the da Vinci, gives them powerful new abilities in the operating room, shortens [recovery time](#) for their patients, and decreases their risk of complications.

Despite its stunning price - up to \$2.6 million - the robot has been enthusiastically adopted by hospitals large and small. In the competition for patients, they say they can't afford not to use this latest technology.

Washington hospitals now have at least 37 surgical robots, and robotic surgeries - most to remove a uterus or prostate - have skyrocketed in recent years. Swedish Medical Center has seven robots, Sacred Heart in

Spokane has three. Even tiny Pullman Regional Hospital, with 25 beds, bought one. It cost twice as much as the hospital netted in 2010.

This headlong proliferation, with uneven safeguards and significant costs that may ultimately push [insurance costs](#) higher, has raised alarms even among surgeons.

Today, 12 years after the FDA first approved the da Vinci, there is still no industry standard for training and credentialing of doctors to use the robot, beyond a basic course by the manufacturer.

Critics - and lawsuits - claim some hospitals allow surgeons without sufficient experience to use the robots. And some surgeons and hospital officials say it's being overused, employed for procedures where it offers no advantage.

Splashy ads by hospitals claiming better outcomes and shorter stays appeal directly to patients, despite conflicting studies on outcomes and complications, depending on the procedure.

But there is no question it adds thousands of dollars to the costs of each surgery - up to \$4,800 for a prostate surgery, for example - in an era when businesses and governments are struggling to pay rising health care costs.

"Out of all the instruments and surgical tools that hospitals have adopted, this is one of the most expensive items in American operating rooms today," says Dr. Marty Makary, a general surgeon and director of surgical quality at Johns Hopkins.

"It's a symbol of what's wrong with American health care: the widespread adoption of expensive new technology with little evidence to support its use - all within the context of a poorly informed, even

misinformed, public."

Is the da Vinci worth its cost? Surgeons and others debated that point recently during an inquiry by Washington's Health Technology Assessment committee, which decides what treatments the state should cover for state employees, injured workers and people on Medicaid.

In testimony and comments, many surgeons said the robot has reduced complications such as bleeding, shortened expensive hospital stays, and allowed a less-invasive approach for many procedures.

"I think open surgery is going by the wayside," says Dr. Jim Porter, a urologic surgeon at Swedish Medical Center who has done more than 1,300 robot-assisted prostate surgeries since August 2005 - and had one himself in 2006. "It's great technology, and it's made a huge difference for my patients."

But others, including Dr. Michael Florence, a Seattle general surgeon, questioned the robot's rapid rise. "Robotic assisted surgery is clearly part of the 'medical arms race,' as hospitals struggle to keep market share."

Studies assessing effectiveness and safety of the [surgical robot](#) have lagged.

"What disturbs me is that we haven't done the thing we always say we should do - which is look at a detailed, randomized trial across institutions to assess whether what we're offering patients is better," said Dr. John Luber, a Tacoma heart surgeon.

Dr. Myriam Curet, chief medical adviser for Intuitive Surgical, the da Vinci's manufacturer, contends that overall, robotic surgery is safer than open surgery.

Still, the robot, with its multiple arms and multidirectional tools, requires complex spatial and eye-hand coordination skills from surgeons. As they operate the remote controls, they no longer feel tissues when cutting, cauterizing and suturing.

Critics say that in the wrong hands, on the wrong patients or for the wrong procedures, the robot poses unique risks to patients, including burns and lacerations detailed in lawsuits and in reports to a federal "adverse event" database. Because surgeries may take more time, patients may be anesthetized longer.

But hospital ads for robotic surgery don't mention risks, says Makary, who studied hospital websites for a paper published last year. While patients wrongly believe hospital websites and ads are vetted by doctors, he says most are "misleading to outright dishonest."

Some critics claim the slick new technology tempts some surgeons to try too-difficult procedures or ones that could be done just as well laparoscopically. Although fiber-optic laparoscopic tools do not have the robot's multidirectional capabilities, the surgeon controls them directly through small incisions.

There are good arguments for the robot, too.

"You can do things with the robot that you can't do with a laparoscope - or only the world's best surgeon can do," said Dr. Richard Satava, a robotics pioneer at the University of Washington. "It's kind of a democratizing tool, if you will."

Porter, who helps train other surgeons on the robot for Intuitive, says his robotic prostate-surgery patients have shorter hospital stays, less blood loss and more complete cancer removal.

Dr. Paul Kozlowski, director of minimally invasive surgery for Virginia Mason Medical Center's urology department, says the surgeon's experience is key: "The bottom line is, it's who does your surgery, not how they do it."

Even supporters have concerns about training.

Intuitive runs an intensive three-to-four-day course at its Sunnyvale, Calif., home, including cadaver work, and dispatches mentors to monitor trainees for several cases before certification.

Then, it's up to the hospitals to set rules - and they're all over the map.

Lenihan, MultiCare's medical director for robotics and minimally invasive surgery, said lawsuits by patients injured during robotic surgery increasingly allege that hospitals didn't properly train or credential surgeons.

The lack of national standards has prompted some to argue for restricting robotic surgery to large, research-oriented medical centers.

Curet says Intuitive found surgeons, after training, can operate robots safely in the first 25 cases, gaining speed with experience. "You're starting out safe, and just getting faster."

But Lenihan recalls MultiCare's steep learning curve from 2005 to 2008. At first, MultiCare and other hospital systems pushed surgeons to use the pricey new tool, he said. By 2008, "We saw a big jump in the number of cases, and we also started to see a big jump in the number of complications."

Urologists needed 200 to 250 cases to get "consistently good," he said, and even laparoscopy-savvy gynecologists took 50 to 100.

Now, MultiCare and other large local centers, such as Swedish and the University of Washington, require surgeons to train on simulation programs on the da Vinci or on a console called Mimic, which tests skills on lifelike video "tissues" that spurt blood when cut and smoke when burned.

MultiCare, for example, also requires all surgeons to do at least 20 robotic surgeries a year to keep their robot-use credentials.

Doing open surgery is like riding a bicycle, says Lenihan, a former Air Force pilot. But robotic surgery is like flying an airplane.

"You're in a cockpit, you have hand and feet controls, and the technology is constantly being upgraded and changed. A lot of things can happen, because you're no longer sitting at the patient's bedside, and you no longer have your hands in the patient. You're operating by remote control."

Like pilots who fly commercial jets, he insists, surgeons who use robots should undergo standardized training, testing and evaluation.

At the UW, Satava is developing a course to certify that surgeons are competent to perform robotic surgery.

If adopted by national surgical boards, the course will train surgeons on simulators, allowing them to learn from their mistakes and ultimately requiring expert-level performance on 26 skills.

The Patient Protection and Affordable Care Act, upheld last month by the U.S. Supreme Court, has reignited discussions about controlling health care costs.

The latest da Vinci costs \$2.6 million, plus per-procedure instrument

costs of \$1,300 to \$2,200 and a yearly service contract of up to \$170,000.

A 2010 report in the New England Journal of Medicine calculated that a robot, with its amortized cost, added 13 percent to the cost of the average surgery, and, in the case of prostate surgery, appears to lead more men to choose surgery than if robotic surgery had not been offered.

Overall, the authors wrote, if robots completely replaced conventional surgeries in all the procedures where they're now used, it would increase total health care costs by more than \$2.5 billion per year.

Robots figure heavily in Makary's new book, "Unaccountable," which he says explores "health care's unaccountable culture and runaway costs."

Some strapped state governments can no longer cover some desperately needed surgeries for patients on Medicaid, he notes. "At some point, people have to ask: What are our health priorities?"

Intuitive's Curet says studies show that robotic surgery's shorter hospital stays reduce costs, even after taking into account the robot's purchase price. For patients, it reduces care-giving costs and gets them back to work faster, she adds. And hospitals argue that insurers don't pay more when a surgeon uses a robot.

That's partly true. Hospitals often are paid a lump sum for procedures, so shorter stays may save them money.

The health technology committee, in a draft decision, voted against paying extra for robotic assistance.

But ultimately, the costs of such technology show up when hospitals

negotiate with insurers, notes Dr. Joseph Gifford, executive medical director for Regence BlueShield, one of the state's largest insurers.

"Eventually, they show you their books and say, 'We just have to have the money or we're going to walk away,' " Gifford said. Then, "We all pay."

Medical care is out of reach for many, now, he says.

"Like spiffy new free-standing emergency rooms, robots have "showroom appeal," Gifford says. "It's a fancy thing that people like, and nobody is paying for - except the overall system."

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