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Wade Hemsworth Fri Mar 18 2011 3 7 Recommend

### Medicine's future

Mehran Anvari stands at the threshold of major medical changes that will profoundly affect the lives of people across Ontario, across Canada and perhaps everywhere.

What the Hamilton surgeon, inventor and educator sees from his vantage point is less invasive, more effective, more efficient and equitable care through technology, where medicine has some serious catching up to do.

"I think that medicine has dragged behind," he says. "I would say in the next five to 10 years, there will be a major revolution in the way people interact with their physicians."



Dr Anvari Portrait Dr. Anvari with Image Guided Automated Robot  
Gary Yokoyama/The Hamilton Spectator

He sees televisual medical appointments that let us visit the doctor without waiting in an office, machinery that finds and destroys tumours before they take hold, remote robotic surgery by doctors across the room or across the country, and keyhole bariatric surgeries that improve and extend the lives of obese patients while saving taxpayers untold millions.

Anvari is not working alone by any means, and while he emphasizes he is a facilitator more than a driver, it's also true that his work touches all these developing areas.

Within the year, the lab of which he is CEO and scientific director — a partnership of space-robotics giant MDA Corporation, the federal government, St. Joseph's Healthcare and McMaster University, among others — expects to begin patient testing of a new image-guided robot that could propel the detection and treatment of breast cancer into the modern era, making it more effective and less traumatic.

The platform — called the Image Guided Autonomous Robot, or IGAR, uses more accurate, much smaller

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and more effective robotic probes in conjunction with far more sensitive scanning techniques to differentiate between benign lumps and cancerous tumours even at a very early stage.

It would retrieve biopsy samples with pinpoint accuracy, analyze them and treat early tumours without open surgeries. The result could be better outcomes and less pain for patients and savings for all by reducing postoperative hospital stays.

Since IGAR has yet to be unveiled, Anvari can't say much more about it yet, but if the equipment and methods work as planned, he said they could also lend themselves to earlier detection and treatment of cancers in the lungs, liver, kidneys and prostate gland. The concept also holds promise for delicate spinal surgeries.

Bill Orovan, chair of the surgery department in McMaster's faculty of health sciences, said Anvari helped carry the once experimental concept of keyhole surgery through a barrage of skepticism to the point where it is now routine. He expects the new platform from Anvari's lab to have a similar impact.

"His new focus on medical robotics is a huge potential growth area," Orovan says. "I can say that these things will be revolutionary, not evolutionary, in terms of their impact on medical treatment and medical science."

Anvari says Hamilton's scale, resources, personnel and co-operation among its health, education and research institutions make it a crucible for innovations such as these.

"The beauty of Hamilton is that it's large enough to have a richness of individuals with very special capabilities, and at the same time it's not so large that we can't connect," he says. "In Hamilton, it's very complementary, very collaborative."

He hopes biotechnology will lead the city's economic redevelopment, and sees parallels with other cities that have made similar conversions.

"Sometimes, Hamiltonians are a bit humble about what their city has to offer," he says. "I think we need to be much more open about saying this is an incredible city."

Anvari, 51, a busy surgeon and McMaster surgery professor, has long been a leader in the once far-out fields of keyhole surgery and telerobotic surgery. He founded and continues to direct the Centre for Minimal Access Surgery here. Since 1999, it has trained 3,000 doctors and nurses in new techniques.

Anvari was at the controls in 2003 for the first hospital-to-hospital telerobotic surgery ever, when he manipulated surgical instruments from Hamilton to operate on a patient in North Bay, 400 km away. To date, he has performed 22 complex procedures using telerobotic technology.

Today, he promotes further research as the scientific director of the Centre for Surgical Invention and Innovation.

He is also director of the province's bariatric surgery network – also based at St. Joseph's Healthcare in Hamilton – with a mandate to quintuple the number of gastric bypass procedures in Ontario by next year.

He says advances in laparoscopic, or keyhole surgery, make it possible to perform gastric bypasses with far less impact on patients, meaning they spend much less time recovering in hospital. In one week this month, he himself performed 11 such procedures.

With so many responsibilities, Anvari is an especially busy man, but he emphasizes that he is not doing these projects on his own.

Each of Anvari's projects involves a team of leading experts who hopscotch among McMaster University, Hamilton Health Sciences Corporation, St. Joe's and other institutions.

"There's a balance between what you can contribute and recognizing the strength of others around you," he says.

McMaster's dean and vice-president of health sciences and dean of its DeGroot School of Medicine, John Kelton, says Anvari's output is also a function of his intellect.

"It's much more than just juggling balls. His ability to focus on the task at hand is absolutely precise," Kelton says. "Oftentimes, his vision is a year, or two years, or five years ahead of the technological advances that allow him to do it."

Anvari's wife of 18 years, Sima, met him in Australia during his PhD studies. Even then, she was sure he would go far.

"He sees things very clearly in his head. I always knew that he would do amazing things because of the way he is. He's very determined and visionary," she says. "He's always been that way. Nothing is impossible to him."

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Anvari came to Canada from Iran in 1978, when he was in his late teens. As members of the Baha'i faith, his family had faced persecution in their home country, then building toward its Islamic revolution. They settled in Grimsby.

Today, he lives just five minutes' walk from St. Joseph's, so he can go home for dinner with his wife and their three children, aged eight to 14.

Sima says her husband's optimism, idealism and trust in teams drive all of his work.

"If you have that all-encompassing belief that people are essentially good, and you have a vision of what you want to do, it does make things easier because it makes sense at the end of the day," she says. "If you're just doing it because you want to be the first or the best or the biggest or whatever, you can't achieve it."

Balancing family, faith and work is critical to Anvari, and Baha'i principles inform his approach to medicine.

"Who we all are is defined by what we believe in, and the Baha'i faith gives me the compass to start my day and end my day," he says. "It's a very important, strong part of who I am."

Among the faith's central tenets are that science and religion are complementary, and that all people — regardless of origin, belief or wealth — deserve equal treatment.

Such ideals inspired him to promote telerobotic surgery and telementoring of distant surgeons to improving access to care for Canadians in remote areas.

He was appalled when a 1996 trip to visit friends in Nunavut revealed shocking disparities between care available in major cities and in the North.

He was deeply affected by meeting a mother whose child had died of appendicitis because no air ambulance could get through in time.

"I came back depressed looking at the standard of health care. I thought, 'There has to be a better way of providing equitable access to health care,'" he remembers. "Seeing that inequity made me think there must be something I can do to change that."

His faith told him those Canadians deserved better. His skill and determination gave him the tools to make change in a field he says is notoriously conservative, but could become much more efficient in terms of time, economy and outcomes.

"In many of the things I have done, I have tried to advance the case for technology in the right context," he says. "The right context is that patient care has to be paramount. If you focus on technology for the sake of technology, that's when you lose. But if you're using technology to improve access to improve care and improve care for patients, then it will be your friend."

With a monitor prominently positioned in his office at St. Joe's, he often visits faraway patients by video, an idea he'd like to see used much more often between doctors and patients, regardless of where they live.

If patients could talk to their doctors online, he says, they wouldn't have to spend hours in a waiting room for a consultation that lasts minutes. It might even create more time to talk to patients, he said.

His experience tells him patients are ready to trade the intimacy of face-to-face contact for easier access to care, where appropriate.

"People look at technology and think that somehow reduces human interaction," he says. "It can, if you're not careful, but it can enrich human interactions."





The quality and the length of patients' lives is what drove Anvari to ask the province to expand its capacity for bariatric surgeries, which it has done by creating a network of four centres of excellence, in Toronto, Ottawa, Guelph and Hamilton.

Collectively, they are expected to deliver at least 1,470 surgeries annually — including 450 at St. Joe's — a fivefold increase from 2007-08, the year before the initiative was announced.

Obesity raises the risk of diabetes, joint problems, high blood pressure and cancer.

Opening access to more surgeries will reduce pressure throughout the health care system, Anvari says. Each dollar spent on gastric bypass treatment is expected to save three to four dollars in obesity-related medical costs.

Just as it has taken decades of education and advocacy to reduce smoking enough to bring down lung cancer rates, it will take decades to change the way we think about eating enough to bring about a

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natural drop in obesity and its effects.

In the meantime, Anvari says, it is necessary to help patients who are already suffering under their own weight, so they can live better and longer lives.

"When you look at that," he says, "it's almost a no-brainer."

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I am honoured to have had Dr. Anvari perform my ileostomy surgery 17 years ago Laparoscopically. I can't imagine how my life would have evolved without this type of procedure. Mike

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Mar 18, 2011 10:25 AM

### Amazing!

I speak first hand. This doctor does amazing work!! He is top notch and he's in Hamilton!

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