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Technology / Saskatchewan / Health

Virtual technology driving beneficial change in medicine, especially for isolated communities

Virtual communication has transformed the medical industry, making treatment more accessible and data more reliable.

Gillian Francis

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Stacey Lovo, a researcher at the University of Saskatchewan and former physiotherapist, stands outside the Health Sciences building on the U of S campus in Saskatoon. Lovo conducts research in northern communities to determine whether virtual technology can enhance rehabilitation access. PHOTO BY MICHELLE BERG /Saskatoon StarPhoenix

When Stacey Lovo visits villages and towns in northern Saskatchewan, she often hears complaints about the state of medical care and the geographical barriers that prevent locals from accessing it.

In particular, she remembers two First Nations women who travelled 12 and seven hours, respectively, to see medical professionals at the Angelique Canada Health Centre in Pelican Narrows, where Lovo was conducting research. It was December and the women had journeyed through a blizzard in minus-40 temperatures, spending two to three days away from their families. The bus on which they were travelling was scheduled to leave before the end of their appointment, so the medical consult had to be cut short.

That story is typical, according to Lovo, who's an assistant professor at the University of Saskatchewan with a background in physiotherapy. She says small communities in remote areas of the province often have a shortage of medical professionals, so people must travel hours to receive care or consults in larger towns or cities. In some cases, buses or medical taxis won't run at all in bad weather and, at other times, close-quarter travel can make a condition worse, particularly for those with chronic pain.

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Lovo has been conducting research in remote communities to determine how best to address the issue of accessibility and she believes the answer lies with virtual technology.

According to a nation-wide survey conducted by the Canadian Medical Association in 2020, satisfaction levels for virtual visits were only slightly lower than in-person visits. Seventy-seven per cent of people said they were satisfied with telehealth consults and 90 per cent said they were satisfied with a doctor-patient video chat.

Almost half of Canadians had virtual medical appointments during the pandemic — either by phone, e-mail, video conference or text.

Lovo has conducted research on virtual technology in Pelican Narrows and Arborfield and she's working on building relationships with La Loche and Waterhen Lake First Nation. Over the next few years, she'll be assessing 120 patients with chronic back pain and muscular skeletal disorders in remote communities — a two-part study that involves a combination of in-person and virtual visits. Patients will be able to visit with a physiotherapist and pharmacist remotely through Teladoc Health robots and traditional telehealth video conferencing systems.

“Virtual care allows patients to be at home and cared for where they live,” she says.

For most remote consults, Lovo continues, a patient visits a health centre or clinic in their own community. A local nurse walks them through the virtual consultation, providing hands-on strength and movement tests for the physiotherapist viewing the process remotely.

The robots that Lovo works with come from the remote presence lab at the University of Saskatchewan's department of surgery. The device is operated remotely through an iPad or laptop and the person in control can drive it around a hospital or medical centre and use the screen (the robot's face) to view the surrounding environment. It also has interactive components; practitioners can display visuals for the patients and draw on them like a whiteboard.

If a nurse is paying a visit to someone's house or working in an area with limited space, they can use an express unit, which is smaller than a robot and can be carried by hand. Traditional telehealth systems (displayed via laptop) and hospital-based telehealth units (TV) are used frequently as well.



Health clinics and centres in northern Saskatchewan utilize a variety of equipment to conduct medical appointments virtually, including traditional telehealth systems (left) and robots (right). The robot featured here is made by Teledoc Health. PHOTO BY JOELENA LEADER

Technology is opening new doors for Dr. James Purnell, a general practice physician who has operated his clinic remotely from the side of the Alaska Highway — in his camper and from hotel rooms. He currently works in Haines Junction, Yukon, about 1,000 kilometres north of Whitehorse, but he has also practised in Wollaston Lake, SK.

Prior to virtual medicine, Purnell says doctors would visit remote communities in person for a few weeks at a time. There would be about 20 doctors on rotation in a given area — a mix of locals and visitors, each setting up shop two times per year. At Wollaston, the area was so remote he would often take a private airplane or drive part-way by car and then take a ferry.

Virtual tech has been a game-changer, he says, making appointments easier to manage and providing greater accessibility to patients.

“I’m able to work from home,” he says. “I’m able to get more done because I’m not sitting on a plane for a couple of hours every day and, while I enjoy the trip, it really eats into the clinic time and being able to deliver services to the community.”

Purnell says he has developed stronger relationships with his patients through virtual medicine, visiting them regularly rather than seeing them twice per year. It also cuts down on travel time, which allows him to stay closer to his family, and he’s less impacted by the frequent power outages that happen in the north.

“Over time, as the community came to know me, I’d have elders that would bring their grandchildren to show them (the technology) ...,” he recalls. “They’d jokingly refer to me as the doctor in the box and, when I came to the community, they’d say I was let out of the box.”



Traditional telehealth units, like the one pictured here, enable doctors and nurses to video chat with patients. They can be transported from room to room. PHOTO BY JOELENA LEADER

Purnell has seen patients remotely for pre-natal care and back pain, even helping manage a seizure. Typically, two to three local nurses will consult with the patient in person before Purnell conducts his virtual check-up. He assesses physical conditions by walking them through mobility tests and joint examinations.

The nurses use high-tech medical equipment like bluetooth stethoscopes, otoscopes and ultrasounds, which can be attached to a robot or operated separately through a phone or iPad. The instruments transmit data to Purnell and help him assess the patient's condition from afar. The ultrasounds were originally developed by NASA, he says, to be used on astronauts in space.

“I get a lot more information than even what I would have in my regular clinic because a lot of digital tools are higher quality,” he says. “They cut out the noise. They amplify the sounds you want to hear.”

Virtual communication isn't limited to patient examinations. The pharmaceutical industry makes use of it as well.

Brent Zettl, CEO of ZYUS Life Sciences Inc., a Saskatoon-based international medical cannabis company, says they've switched to using virtual software to track test-patient data as opposed to tracking the information in person.

“What I found very often was that there was such a delay between when the information was gathered with a patient to when things were processed and then presented back to the researchers,” he says. “It was years in a lot of cases.”

According to Zettl, the company is in the process of developing cannabis-based oral gel capsules to help manage osteoarthritis and neuropathic pain. They will be using new custom-designed software to help track data from test-patient and physician interactions. They developed the program alongside an American company called Revon Systems and it took five years to get a patent, which they finally received on July 22.



Brent Zetl is CEO of ZYUS Life Sciences Inc., which uses technology to help make patient testing trials more efficient in the medical cannabis industry. PHOTO BY MATT SMITH /Saskatoon StarPhoenix

The software will keep track of data relating to treatment plans, patients' progress, control and treatment groups, dosing, safety, and negative and positive results. ZYUS used to track information by setting up patients with healthcare professionals for in-person interviews, but Zetl says it was time consuming and labour intensive.

Moving forward, the data will be arranged and organized virtually with their new system. A feedback mechanism will sort the data into categories and even remind doctors to check in with patients.

Plans for the electronic medical-records system were already in the works prior to the pandemic, but Zetl says the software will be more familiar now.

“People have become more accustomed to participating virtually on a medical basis,” he says. “It’s no longer a foreign concept.”

Those sentiments were echoed by Joelena Leader, a research facilitator at the University of Saskatchewan who studies virtual technology in medicine. Leader’s research started five years ago and she has visited a variety of northern communities, including Île-à-la-Crosse, Pinehouse, Hatchet Lake, Wollaston Lake and Lac La Ronge.

She reports that, prior to the pandemic, eHealth Saskatchewan did not provide billing codes for virtual visits and doctors received less pay than they did for in-person appointments. Spontaneous virtual consults were few and far between, she says, and telehealth sessions could only happen when they were prescheduled through a telehealth centre.

This has since changed; eHealth Sask now allows for spontaneous consults and doctors are compensated accordingly.



Local researcher Joelena Leader sits along the South Saskatchewan River in Saskatoon. For the past five years, Leader has been studying virtual medicine in northern communities, which she said has greatly improved during the pandemic. PHOTO BY MICHELLE BERG /Saskatoon StarPhoenix

Although virtual medicine has garnered overwhelming support, Leader says changes still need to be made if it is to succeed long-term.

The issue of privacy and patient confidentiality has been of top concern. She explains that many health centres and hospitals don't have a dedicated space to conduct virtual visits and that telehealth machines are often placed in multi-purpose areas like staff kitchens and board rooms, where conversations can be overheard. She also received reports of medical staff creating makeshift caps to cover the camera lenses to guarantee privacy in-between appointments.

Then there's the question of structural support. Can small communities find HR personnel to hire people who can operate the equipment? Are there IT specialists available who can set up the technology and keep it running smoothly? Do they have adequate broadband access?

"You have communities that have telehealth, but they're under-utilized because there's no real support to get it up and going," Leader says. "What needs to happen is consultation with communities themselves ... (in hopes of) having communities directly involved in decision-making right from the start."

Ultimately, virtual medicine will never truly replace in-person contact, Leader says. That's why she believes medical industries should continue to offer a mix of both in the future.

"The face-to-face (interaction) is really important for communities," she adds, "and it's to get a sense of trust and to build those relationships."

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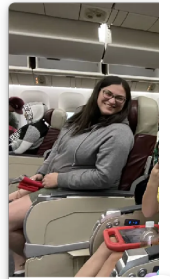
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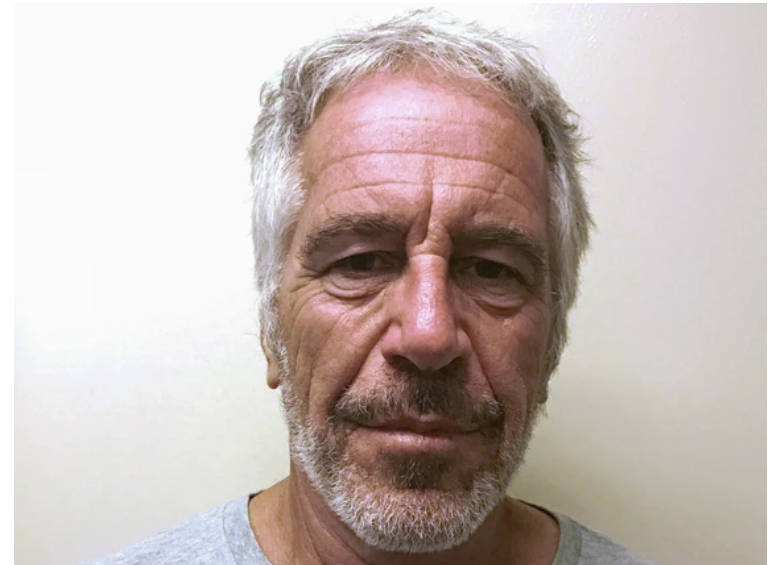
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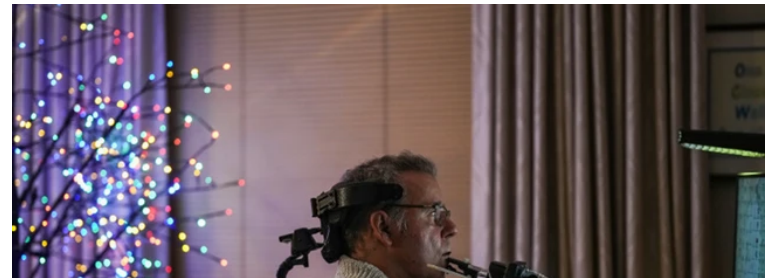


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