Western Medicine

Nature brought Nicholas Okon, D.O., to the West – and he brought the West top stroke care.

By Shirleen Holt

Photos by Pete Stone

When Murray Kiggins had a stroke, he was miles from a big-city hospital. Thanks to lifesaving technology, a Portland stroke neurologist was at his bedside within minutes.

Around 10:30 a.m. on June 17, 80-year-old Murray Kiggins and his wife, Bobbi, were at home in Hood River, trying to fix a stubborn ladder that leads from the garage to the attic. As Bobbi worked from below, Murray gave instructions from the opening above.

Suddenly, his words became garbled. He struggled to speak. >>>

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"I thought he was teasing me," recalls Bobbi, 73. She wouldn't put it past him; Murray's sense of humor – so subtle it takes the listener a beat before the joke sinks in – is as distinctive as his work ethic, which has kept him busy long after he retired as a log scaler.

But as she looked up at her husband, she noticed that the left side of his face was drooping. He was having a stroke.

"I told him to stay there, that something was wrong and I was going to go for help. He said, 'No, I'm getting down.' I said, 'If you fall, you'll take us both out!' "

Murray needed to get to a hospital immediately. Just as important, he needed to be evaluated by a stroke neurologist who could determine if he qualified to receive a time-sensitive clot-busting drug or some other urgent treatment. There was just one catch: the nearest stroke neurologist was in Portland, 60 miles away.

Murray and Bobbi Kiggins at home in Hood River: She knew something was wrong.

Murray's medical dilemma is not unusual in a state where, in some counties, livestock outnumber people. Nearly 1 million Oregonians live in rural towns, many of them miles from a full-service medical center and too small to support even a neurologist, let alone one specializing in stroke.

Recognizing an important community need, Providence Brain Institute has rolled out a solution: telestroke. Through a two-way video connection, a neurologist in Portland can perform a detailed, interactive exam of a patient at any hospital with a "remote-presence" device. This device may be a simple rolling stand with a privacy-secured video monitor or a more space-age robot controlled by the stroke neurologist miles away.

Now people living as far away as Gold Beach or as close as Hood River can have the same 24/7 access to Providence Stroke Center's experts as someone living in Portland.

Serving a town with 6,000 people and located an hour's drive from Portland, Providence Hood River Memorial Hospital was one of the first community hospitals to sign up for Providence's new telestroke network. And on June 17, the system was put to good use.

"I think there is something wrong"

Bobbi was on the phone with the 911 operator when she heard Murray come into the house. Somehow he'd made it through the garage, around the car, up some steps and into the kitchen. Still unaware of the severity of his condition, he expected that Bobbi would drive him to the hospital.

She remembered, however, how many times her doctor had emphasized "the golden hour," a metaphor for the brief window of time to save a life or minimize the damage from a life-threatening trauma. For most strokes, that window is about four-and-a-half hours.

"I said, 'You need help right now,' and I sat him down," Bobbi recalls. "This time he said, 'I think there is something wrong.' "

An ambulance took Murray to Providence Hood River. Emergency physician Philip Chadwick, M.D., performed a quick neurologic exam and sent Murray off for a CT scan to determine whether the stroke was caused by a burst blood vessel or by a clot. Then Dr. Chadwick paged the telestroke team in Portland.

Within minutes, Nicholas Okon, D.O., a doctor of osteopathy and a stroke specialist at Providence St. Vincent Medical Center, logged onto a secure laptop. It has a built-in camera and an attached joystick that allows him to tilt, pan and zoom the camera if necessary.

By the time Murray returned from testing, Dr. Okon was virtually at his bedside, present via a monitor on the remote device in Murray's room. Dr. Okon could peer in closely, see the droop on the left side of Murray's face and note that his gaze drifted to the right. When Murray tried to hold his left arm up and steady, Dr. Okon could spot the arm's telltale drift downward, indicating that the stroke affected the right side of Murray's brain.

He also could look at Murray's brain scans and magnify the results on his monitor. The images showed no evidence of hemorrhage. Just as encouraging, Murray's stroke was relatively mild, caused by a blockage in one of the brain's smaller vessels.

In most cases like this, doctors would be thrilled. The Kigginses knew exactly when Murray's symptoms began, and the official diagnosis was delivered within 90 minutes of the stroke's onset. That's well within the four-and-a-half-hour window to receive tissue plasminogen activator, or tPA, which can dissolve clots and reverse the effects of a stroke.

Nationally only a small fraction of patients with this type of stroke are treated with intravenous tPA, which can cause dangerous bleeding if given too late. Although the drug was approved for stroke in 1996, emergency physicians are still cautious about administering it without the advice of a stroke specialist.

"Using a thrombolytic in an ER like this is a bit problematic when you don't have a neurologist," Dr. Chadwick says. "If you give tPA to someone who has a hemorrhagic bleed that you were unable to detect you could quite possibly kill the patient."

At Providence Hood River Memorial Hospital, emergency physician Philip Chadwick, M.D., consulted with Dr. Okon via video on the best way to treat Murray's stroke.

But Murray's tests revealed another life-threatening complication, one that ruled out the use of tPA and brought a new challenge for Drs. Chadwick and Okon.

From his Portland office, Dr. Okon gave Murray a neurologic exam.

The traveling salesman

When he moved to Montana in 1998, Dr. Okon, 45, never thought he'd help transform stroke medicine in the Pacific Northwest. At the time, the Chicago native just wanted to live in a place where hiking trails were plentiful, life moved at a relaxed pace, and things were affordable enough that he and his wife, an internist, could pay off their mountains of medical school debt.

Shortly after he began to practice neurology in Billings, however, Dr. Okon noticed something disturbing.

"There were people in rural Montana and Wyoming who weren't getting the right stroke care," he says. "We would get patients transferred, and I would see on their records all these missed opportunities. They weren't getting the right testing done, they were sent home, they were told they had a migraine or [the doctor] thought they were faking it."

Similar scenarios were being played out in hospitals across the country. A survey published in 2000 by the medical journal Stroke showed that two-thirds of hospitals in North Carolina had no protocol for emergency stroke patients. A shocking 82 percent of hospitals surveyed couldn't quickly identify patients who were having a stroke. > > >

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– Nicholas Okon, D.O., Providence Brain Institute

For Dr. Okon, whose mild demeanor hides a driven, fix-it spirit, something had to be done. During the next eight years he spent countless hours helping to transform the nature of stroke care in Montana.

The first order of business: build relationships with physicians and teach rural hospitals how to diagnose and treat stroke. Since telestroke video conferencing was rare to nonexistent in the West back then, Dr. Okon would pack up his Jeep and drive hours to give a 90-minute presentation to whomever showed up.

In these presentations he talked about stroke diagnosis, treatment options, transfer protocols and how to determine if a patient is eligible for tPA. He directed them to a website he created where hospitals could read protocols and other educational materials about stroke. He made sure the doctors, or in some cases the nurses and physician assistants, had his cell phone number so that they could call any time they had a question.

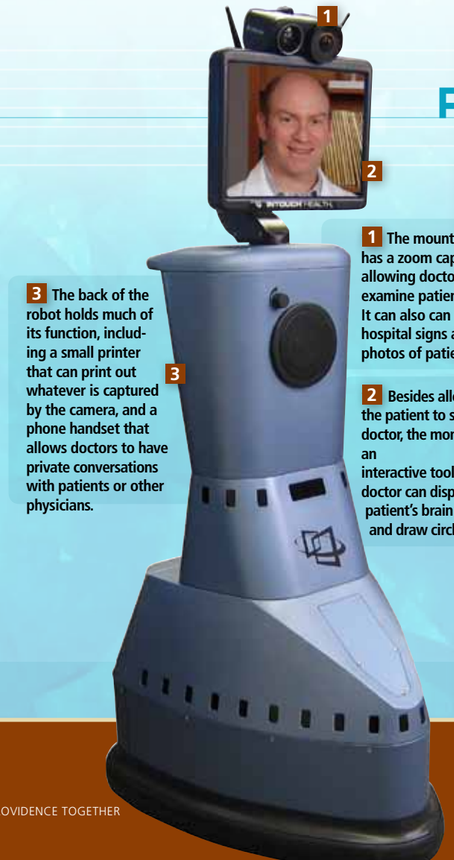
"I took calls every day, all hours of the day and night." He got so many calls, in fact, that he got his hospital in Billings – St. Vincent Healthcare – to hire a part-time nurse stroke coordinator. By design and default, Dr. Okon was building a primary stroke center in a town of fewer than 100,000 people.

More work followed: a partnership with the Montana Department of Public Health; a statewide stroke initiative; a five-state regional stroke network; formal primary stroke certification from The Joint Commission for St. Vincent Healthcare, and, in 2007, telestroke.

Suddenly a rancher in the farthest reaches of Montana had the same access to top stroke care as a patient in Seattle or Portland.

The results of Dr. Okon's stroke-awareness effort were dramatic: Between 2004 and 2008, half the outlying hospitals in Montana and northern Wyoming had used tPA, compared to none before telestroke was put in place. And the number of these rural hospitals with written stroke protocols nearly doubled.

When Providence Brain Institute in Oregon was searching for someone to help lead its new telemedicine effort, Dr. Okon was the obvious choice.



1 The mounted camera has a zoom capability, allowing doctors to examine patients closely. It can also can read hospital signs and snap photos of patient charts.

2 Besides allowing the patient to see the doctor, the monitor is an interactive tool. The doctor can display the patient's brain scan and draw circles

3 The back of the robot holds much of its function, including a small printer that can print out whatever is captured by the camera, and a phone handset that allows doctors to have private conversations with patients or other physicians.

ROBODOC OSCAR

(On-Call Stroke Conference Assisting Robot)

Birth name: RP-7
Height: 5 feet, 4 inches
Weight: 220 pounds
Speed: 4 mph
Arms: None

Teleporting used to be the stuff of science fiction. But now the Internet allows a doctor from Portland to be "beamed up" anywhere in the world through the use of a robot with a video monitor for a head and wheels for feet.

At Providence St. Vincent Medical Center, this robot's name is called OSCAR. (Providence Portland's is named

"As a physician, one is in a position to help people, but usually it's on a one-to-one basis," says Ted Lowenkopf, M.D., medical director of the Providence Stroke Center in Oregon. "Dr. Okon developed a telestroke network in Montana, and is developing one here. There aren't many physicians who have improved statewide access to health care in two different states."

Providence Telestroke Network launched in early 2010. It offers 24/7 access to specially trained stroke neurologists who not only help diagnose patients but are deeply involved in follow-up care.

The goal is to improve outcomes for stroke, which is the third-leading cause of death in the United States and the primary cause of long-term disability. It turns out that hospitals with telestroke networks use tPA for about 25 percent of patients with strokes caused by clots, a vast improvement over the 2.4 percent national average.

Donations to Providence St. Vincent Medical Foundation enable many programs at Providence Brain Institute, including telestroke. So far, the outlying hospitals using remote-presence stroke devices are in Medford, Gold Beach, Newberg, Seaside and Hood River. It was there, in June 2010, that Murray Kiggins lay in a hospital bed, waiting to hear what his doctors would decide.

Complications, then recovery

An electrocardiogram to measure the activity in Murray's heart revealed that he was ineligible for clot-busting drugs. Yes, he'd had a stroke, but in a surprising turn of events, he'd also had a heart attack. Although tPA would dissolve the clots in Murray's brain, it might also lead to fatal bleeding around his heart.

Drs. Okon and Chadwick agreed that the best course of treatment would be to immediately transfer Murray to Portland, where he could be treated for his heart condition and undergo rigorous rehabilitation to overcome the effects of the stroke.

Four days after his stroke, Murray was strong enough to sit up in a chair in his room at Providence Portland Medical Center. Bobbi sat nearby, repeating his words when his voice lost strength. Although Murray was the first Providence Hood River patient treated with remote-presence technology, the couple took the technology in stride – unlike the emergency staff.

"Those doctors were so excited to put that to work," Bobbi says with a sly laugh. She looks at Murray. "They were, remember that?"

After recovering at home for a few weeks, Murray returned to Portland for triple-bypass surgery that would clear blocked arteries around his heart and help to prevent another life-threatening event.

It was a major operation, but Bobbi says her husband is back at home and feeling better. After a stroke, a heart attack and triple-bypass surgery, Murray has undergone more medical emergencies in the past six months than some people do in a lifetime. Thanks to the skill of his doctors and therapists – and space-age stroke robotics – he begins his recovery. ■

TIA, for "transient ischemic attack.") With a tilt of a joystick, a neurologist can remotely steer the robot down hallways and into patient rooms. He can use the tilt, pan and zoom features to peer closely into the patient's eyes and then pivot to the bedside monitor displaying vital signs.

The robot allows the doctor to conduct the same kind of neurologic exam as if he were physically present with the patient. Then he can call up a brain scan and point to a blocked vessel or draw a circle around a bleed to highlight the problem areas for patients and family members. For hospitals that haven't fully converted to electronic medical records, the robot's camera can zoom in to read, capture and print paper charts.

The robot, formally called RP-7, was invented by InTouch Health, a California company headed by robotics engineer and science fiction enthusiast Yulun Wang, Ph.D. (When the machine is turned on, it makes the same sound as a "Star Trek" teleporter.)

InTouch is testing remote-presence technology for ambulances and for surgical mentoring in operating rooms. And it's already serving an unexpected function for the families of patients. Recently, a pregnant woman suffered a medical emergency at Providence Newberg Medical Center. Emergency doctors there performed a caesarean and rushed the newborn to Providence St. Vincent's Neonatal Intensive Care Unit. Shortly after, the hospitalized young mother met her son for the first time via the two-way monitor of the robot.

"Telemedicine is the future of health care delivery," Dr. Okon says. "To be able to distribute specialists to geographically underserved areas is going to give those rural populations access to top health care."