

Going the distance in stroke treatment Remote care approach widens in state's hospitals

By Liz Kowalczyk, Globe Staff | April 3, 2006

It was 2:40 a.m. when paramedics rushed Paul Brigette into the emergency room at Jordan Hospital in Plymouth. An hour earlier, Brigette's wife, Janet, had found her husband on his knees in the living room of their Middleborough home, bewildered and unresponsive.

Dr. Charles Schaub, on duty that January night, suspected a stroke. He knew he had to act fast.

He began examining Brigette and ordered a brain scan. But the small hospital did not have a neurologist on call to help make the diagnosis and order treatment. Instead, the staff at Jordan sent the CT scan to Massachusetts General Hospital over the Internet and paged its neurology team. Nurses at Jordan then wheeled Brigette into an exam room with a special two-way video and audio hookup to the Boston hospital, where Dr. Sherry Hsiang-Yi Chou waited.

In a race against time, Chou began to examine Brigette, gauging his mental status -- from 43 miles away.

Such remote care is part of a novel attempt to solve a vexing problem: Many stroke patients do not get the best treatment available because time is of the essence and few community hospitals are staffed at all hours by brain doctors with the expertise to make treatment decisions.

Massachusetts is among the first states where neurologists have begun to treat stroke patients without seeing them in person. Fourteen community hospitals have signed contracts with Mass. General's "telestroke" service, and the hospital is considering expanding into New Hampshire and Vermont.

Meanwhile, a neurologist at South Shore Hospital in Weymouth, Dr. Colin McDonald, and four partners convinced investors to part with \$5 million to start Brain Saving Technologies, a for-profit company that competes with the Mass. General service and so far has signed up nine hospitals in Massachusetts and New Jersey. Hospitals in San Diego, Georgia, and Utah have also set up telestroke services.

Doctors at large hospitals routinely use "telemedicine" to treat thousands of patients in rural locations across the United States, diagnosing skin conditions, monitoring irregular heartbeats, and conducting therapy sessions. But diagnosing and treating patients in the middle of a potentially fatal or disabling emergency is a new frontier. Doctors on both ends of the monitor are concerned about who is liable if a mistake is made treating a patient. And in many states, including Massachusetts, health insurers and the federal Medicare program usually refuse to pay "remote" doctors for their services.

Dr. Larry Goldstein, director of the stroke center at Duke University Medical Center in Durham, N.C., said telemedicine "offers lots of potential" in treating stroke patients, but that it hasn't been proven yet in clinical trials to actually improve outcomes for patients.

About 80 percent of strokes are caused by a blockage, usually a blood clot, in one of the brain's vessels, called an ischemic stroke.

An intravenous drug called tissue plasminogen activator, or tPA, can dissolve these clots and reverse the symptoms. But fewer than half of patients who are eligible for the drug get it, doctors

estimate. It is risky -- 4 percent of patients die from bleeding into their brain-- and many emergency room doctors are afraid they will cause harm if they give tPA to the wrong patient. Adding to the challenge, tPA must be given within three hours of the patient's first symptom, or else the risks become even more pronounced.

This gap in treatment is contributing to stroke's devastating effect: Only about 38 percent of the 700,000 Americans who have strokes each year recover with little disability; studies show that among patients given tPA, 50 percent return to normal.

"A lot of patients miss that opportunity for treatment," Chou said.

Hospitals in other states also are pushing to improve stroke care; some have launched public education campaigns to familiarize people with the symptoms, while several states have established networks of special stroke centers with highly trained staff.

The Mass. General program took off after the state Department of Public Health approved regulations in 2004 creating "primary stroke service" hospitals as recommended by national specialists on strokes, and requiring ambulances to take most stroke patients to those 68 hospitals.

Dr. Lee Schwamm, director of Mass. General's telestroke and acute stroke service, helped the state develop the regulations, but he realized they created a problem for many hospitals. To qualify as a stroke center, a hospital must have 24-hour access to a CT scanner and a neurologist, which few community hospitals do. To participate in the telestroke program, the hospitals buy the audio and video equipment, and pay Mass. General or Brain Saving Technologies a fee. Mass. General also gets revenue if, after providing initial care, community hospitals transfer patients there.

McDonald said he started his company when he realized few community hospitals would have access to neurologists 24 hours a day. "There just aren't enough. And many neurologists don't want to be on call for emergency care; they have to cancel an entire group of patients to go to the emergency room when, economically, they'd do better seeing the patients in their office," he said.

On Jan. 24, Chou, who was sitting in the Mass. General neurointensive care unit, began to examine Brigette. She could see him on a 21-inch television monitor, which had a camera mounted on top. In the Jordan emergency room, Brigette, in a hospital gown, was lying in a bed in front of a similar setup. His wife, two sons, and Schaub stood next to him. The images and sound traveled over a high-speed telephone line. The Globe watched a videotape of the consultation.

"Can you tell me where you are right now?" Chou asked, pressing a button to zoom-in on Brigette, 69. He mumbled no. His wife held his hand. He could not tell her his age or the month. After Chou saw that Brigette could move his eyes or raise his arms and legs, she left to review the CT scan with a senior physician. It showed bright spots signifying a clot in an artery that supplies blood to an area that controls language.

Chou reappeared on the screen. "He is a tPA candidate," she said. "His wife was with him when he fell. She can target it at 1:30."

Janet Brigette looked at her husband and then back at Chou. She asked about the risks. Chou explained that 6 percent of patients experience bleeding in the brain. "We have about 24 minutes left to give him this medicine," she added.

Janet Brigette looked at her two sons, who both nodded yes. She said OK, then put her hand on her husband's shoulder.

"It was a very hard decision for all of us," she said later. "tPA is a kill them or cure them type of thing. I was frightened to death of it. But he had this terribly vague faraway look, and you weren't sure anything you said was getting through. We didn't want that."

At 4:20 a.m., nearly three hours since his first symptoms, emergency room staff began the infusion.

Of the 55 telestroke cases Mass. General has handled in the past year, Brigette's case was one of the smoothest, Chou said. Community hospital doctors used to call her for advice before the service began, but she gave it without seeing the patient or the CT scan. "I often felt uncomfortable in my stomach," she said.

Still, the hospital's program has encountered problems. Many community hospital doctors work in the emergency room infrequently and may not be trained to use the equipment. There have been cases where it took several attempts to connect the two hospitals, a problem Brain Saving Technologies has experienced as well.

But one of the more significant problems, Schwamm said, is that many patients don't arrive at the emergency room in time to get tPA, often because they do not realize immediately they are having a stroke, or were asleep when it occurred.

That's where Paul Brigette was lucky. A retired sheet metal worker, he often gets up to watch television during the night. On the night of his stroke, he had just let out his cat, Mischief, and his wife was making coffee and heard him fall.

Two months later, he can walk, converse, and even drive. But he is tired, and when two friends from Quincy came to visit one day, he realized he had some residual effects. He handed them a dish of candy and asked, "Would you like some ice cream?"

"Sometimes," he said, "I cannot find the right words." ■