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Hospitals take stroke expertise statewide

With top advisers, helicopters, goal is faster life-saving action

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Metro area certified stroke centers



All Crystal Nelson remembers is collapsing when she reached under a desk at her office in Olivia, Minn., to wipe up a spill. She later tried to convince her boss she just needed a nap, but her eyes and slurred speech suggested something else.

Within an hour, Nelson, 56, was loaded from

Renville County Hospital into a helicopter that would speed 90 miles east to Abbott Northwestern Hospital in Minneapolis. All signs pointed to a large ischemic stroke — a blockage cutting off blood to her brain — with a need for rapid treatment to limit brain damage and disability.

"This," said Abbott's Dr. John Perl, "could have been a devastating event."

During the past decade, Twin Cities hospitals have created high-speed systems for treating stroke patients and giving them clot-busting drugs that can increase their odds of survival and recovery.

Now, they are branching out, advising rural hospitals that lack the expertise to make dicey stroke decisions and arranging helicopter transport for patients with the worst attacks.

The arrangements for stroke patients mirror successful programs that hospitals such as Abbott have used to provide rapid transport and treatment of heart attack patients.

North Memorial Medical Center in Robbinsdale and Regions Hospital in St. Paul are among the metro hospitals that have established stroke networks. The Mayo Clinic in Rochester launched its version in late 2007.

Methodist Hospital in St. Louis Park uses a videoconferencing "telestroke" program to examine stroke patients at four other hospitals and advise treatment.

Most metro hospitals provide top stroke care, said Dr. Bret Haake, a Regions neurologist. "The challenge is, can we roll out that professional level of care in community (hospital) settings?"

HIGH ANXIETY

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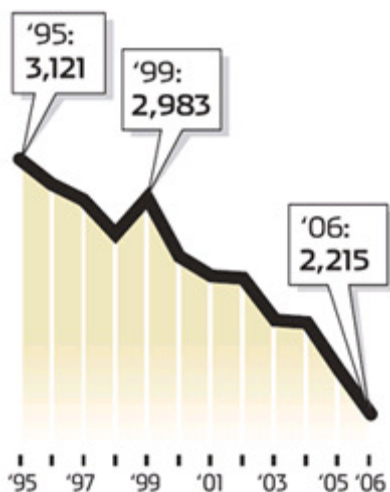
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Annual stroke deaths in Minnesota have dropped nearly 30 percent since 1996, when the federal government approved a clot-busting drug known as tissue Plasminogen Activator,

Stroke deaths decrease

Stroke deaths have declined in Minnesota since 1995 as hospitals have improved their stroke care and their use of clot-busting drugs in appropriate cases. Metro stroke centers are now aiding smaller hospitals in an effort to further reduce deaths and disabilities.



(Pioneer Press Graphic)

or tPA, for ischemic strokes.

The drug still has skeptics. Roughly 35 percent of patients with ischemic strokes will make full or

nearly full recoveries with appropriate hospital care. The addition of tPA raises that success rate to 50 percent, at best.

The drug can cause severe or even fatal complications, especially if given mistakenly to patients on blood thinners or for strokes caused by bleeding in the brain instead of by blockages.

The hospital stroke networks are partly an effort to reduce those errors and to help ER doctors in small towns with the tough decisions about when to give tPA.

"It causes me anxiety every time I'm faced with it," said Dr. Jim Jessen, an ER doctor in Glencoe, Minn., "because you don't want to be wrong."

The goal with ischemic strokes is to treat them with intravenous tPA within three hours of the first symptoms. Any later, and the drug isn't as safe or effective. Doctors then consider other treatments, which can present their own risks.

Most hospitals try to give tPA intravenously to patients within one hour of arrival, but it's a challenge when considering the need to diagnose strokes in the ER, verify the causes with an imaging scan and then provide treatment. Just mixing the volatile tPA solution can take 15 minutes, and at \$2,000 per dose, hospitals usually don't start preparing the drug until they are sure it is needed.

The main problem is that most patients don't recognize symptoms quickly enough. Only 5 percent to 20 percent of stroke patients reach hospitals in time for intravenous tPA to be considered.

"Time is of the essence," said Perl, an Abbott neuroradiologist. "The odds of a good outcome decrease with every 15 minutes that pass."

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THE EXTRA MILE

Nelson seemed OK around 12:30 p.m. April 28, but her boss checked in after lunch and found she couldn't pull herself from the floor. Doctors at the nearby hospital examined Nelson, ordered a CT scan and then shared the test results with Perl at Abbott. The stroke appeared severe enough to warrant the helicopter ride for specialized care.

To save time, Nelson received tPA while in the helicopter. Despite tPA's risks, research has shown this "drip and ship" method of giving the drug

"Door-to-drug time"

Stroke centers try to provide clot-busting drugs within three hours of ischemic strokes, and 60 minutes of patients' arrivals (door-to-drug time). The hospitals assemble stroke treatment teams to prevent delays, but many patients arrive too late to receive the intravenous drugs, which aren't as safe or effective after three hours.

Hospital	City	Door to drug time (minutes)	Patients who received the drug	Data year
Abbott Northwestern	Minneapolis	68	11	2007
Fairview Southdale	Edina	84	14	2007
Methodist	St. Louis Park	66	34	2007
North Memorial	Robbinsdale	*	29	2007
Regions	St. Paul	74	11	2007
St. John's	Maplewood	75	13	2006
St. Joseph	St. Paul	63	24	2006
United	St. Paul	69	7	2007
Woodwinds	Woodbury	55	1	2006
National Goal		60		

*Note: North Memorial provided median time of 62 minutes. Others provided average times, which tend to be higher. Source: Minnesota Department of Health

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while in transport is safe. One of those studies was produced this year at the University of Minnesota

Medical Center, Fairview, which also advises rural hospitals on stroke care.

In Nelson's case, tPA within three hours didn't appear to be enough. At Abbott, doctors threaded a catheter inside her arteries so they could shoot tPA directly at the large blockage and try to remove it and restore normal blood flow to her brain.

All of this effort doesn't really pay off for hospitals. Most stroke patients are elderly and covered by the federal Medicare program, which pays so little for stroke care that hospital officials said they lose money on most cases.

Even so, the hospitals are competing to build large stroke networks and to gain reputations as top stroke centers. Nine metro hospitals have gained national accreditation as stroke centers.

"The reason to be the go-to place is really more about marketing and the halo effect — making people see your hospital as the center of choice," said Regions' Haake.

Competition can be positive, said Dr. Sandra Hanson, who directs Methodist's stroke program. "The rural hospitals are going to be the ones that benefit."

Hanson said telestroke will catch on, because it allows stroke specialists to see patients rather than trust the rural doctors' judgments over the phone. A video screen in her basement even allows her to respond to requests at home.

The Glencoe hospital hadn't administered tPA to a stroke patient in two years, she said. After a year with the telestroke system, the hospital gave the drug to four stroke patients.

Doctors hope the stroke networks will cause a

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further drop in deaths and a decrease in poststroke disabilities — which can range from loss of memory or sensation to loss of movement in a limb or side of the body.

Nelson considers herself fortunate. Her stroke was a mystery. Her family has no history of the disease, and she hadn't experienced any prior episodes. She didn't smoke, and her diet — other than occasional buttered popcorn — was good.

After nine days of hospital treatment, Nelson returned home.

Her left side was weak — causing her to drift as she walked — but physical therapy restored much of her mobility. She started driving last week and, most importantly, walked down the aisle Saturday to watch her oldest son's wedding.

"I'm actually doing pretty good," she said.

Jeremy Olson can be reached at 651-228-5583.

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