

## **Breaking Down the Barrier**

**A statewide telemedicine initiative provides increased access to stroke care for rural New York patients.**

By Hollis Mahaney, RN

Stroke, which is now the third-leading cause of death in the United States, affects an estimated 795,000 people each year. In the state of New York alone, nearly 42,000 patients per year are treated for strokes.

Although the Empire State is home to the country's largest city, stroke care in the state's vast rural areas is minimal. Five New York counties have no hospitals at all, and 18 counties have only one hospital within their borders. These staggering statistics led New York State to launch a telemedicine initiative that expands access to stroke care for patients in sparsely populated areas of the state.

In September 2006, New York State Health Commissioner and former U.S. Surgeon General Antonia C. Novello sought a way to give patients in these rural areas prompt medical care and improved recovery from stroke.

### **Time is of the essence**

The faster a stroke patient receives care, the better the chances of recovery and of avoiding long-term disability. In 1996, the FDA approved tissue plasminogen activator (tPA), a thrombolytic treatment for acute ischemic strokes that must be delivered within three hours of the onset of stroke.

However, since the drug's approval more than 10 years ago, only 2 percent to 3 percent of stroke patients actually receive this life-saving treatment. Part of the reason for this statistic is because 40 percent of the U.S. population -- about 162 million people -- live in a county without a hospital that delivers the drug tPA to Medicare patients at or better than the national average rate of 2.4 percent.

The other reason for this low statistic is that, often, the crucial three-hour window has expired by the time the patient finally reaches the neurologist or neurosurgeon. If a rural patient is lucky enough to have a local hospital nearby, in many cases there is no neurologist or neurosurgeon on staff. Thus, the ER physician's ability to treat stroke patients may be limited because a neurologist or neurosurgeon should be the one to actually diagnose the patient and prescribe lifesaving tPA. What usually follows is a transfer to a larger hospital with an on-staff neurologist or neurosurgeon, which greatly delays treatment time.

After learning about the success in rural stroke care that the Medical College of Georgia had experienced using a new telemedicine service called REACH (Remote Evaluation of Acute isCHemic stroke), New York State decided to give it a try. Developed by Augusta, Georgia-based REACH Call, the REACH service is a Web-based telestroke/telemedicine application that enables a consulting neurologist or neurosurgeon to evaluate the stroke patient from anywhere in the world using only a standard PC with a Webcam and a broadband Internet connection.

Before implementing REACH, very few rural hospitals in New York had the capabilities to handle a full-blown stroke. In a rural hospital, not much could be done other than transfer a stroke patient to a larger facility. If a patient had a mild stroke, good results with IV drugs could be achieved. By the time the patients were transferred, however, it was too late to give the IV drug.

The state of New York deployed REACH in November 2006 in "hub-and-spoke" configurations, where larger hospitals serve as hub hospitals, providing physician-consulting services to spoke hospitals.

For instance, in our system, Buffalo-based Kaleida Health's Millard Fillmore Gates Circle Hospital was the first hub hospital to sign up with REACH in New York and has since partnered with 10 spoke hospitals: Olean General Hospital, Niagara Falls Memorial Medical Center, TLC Network, Medina Memorial Medical Center, Wyoming County Medical Center, United Memorial Medical Center, Brooks Memorial Hospital, Jones Memorial Hospital, Bertrand Chafee Hospital and WCA Hospital. This is one of the largest 100 percent Web-based hub-and-spoke telestroke/telemedicine networks in the country.

### **Ease of use**

Using REACH is quite simple. If a stroke patient is transported to a designated spoke hospital by ambulance, the ER contacts Millard Fillmore Gates Circle Hospital, which then contacts its on-call neurosurgeon. The on-call expert uses a laptop computer with wireless service to log on to the REACH system securely via the Internet. An audio and visual link is then established between the neurosurgeon and the spoke doctor, who is with the patient.

After completing a stroke assessment, which includes a CT scan, the neurosurgeon and ER physician work in collaboration with the stroke vascular surgeons to determine a treatment plan. Treatment, including the administration of tPA, is carried out by the spoke doctor.

The neurosurgeon can evaluate the patient and determine if giving tPA will help. The participating spoke hospital ERs have stocks of tPA. In a number of cases, tPA can be given intravenously in a rural hospital and the patient can subsequently be transferred to the hub hospital where additional catheter-based interventions can be carried out if needed.

The REACH program provides easily accessible online reporting tools to track the performance of the stroke network. These reports provide critical data for strengthening our network and preparing analysis for senior administrators. Reports show an increase in the administration of tPA since deploying REACH. Since implementing the REACH application in October 2006, our hub hospital has conducted 172 consultations, 12 of which have resulted in tPA administration.

The REACH program has increased the level of awareness in rural ERs that something can be done to save a patient's life. When I joined Kaleida in 2004, there were 400 to 600 stroke patients a year who came through our hospital's emergency department. In 2007, 1,700 came through, and that number was only slightly less in 2008. I believe this increase in stroke patients since implementing REACH is related to the fact that rural hospitals are more aware of the available care.

We have just begun to document our data, and next year at this time we expect to have more detailed statistics that will show an improvement in onset-to-treatment times. For now, we are optimistic that we will save even more lives each year as more hospitals bring the system online, and as awareness about our initiative increases.

*Ms. Mahaney is a physician liaison at Kaleida Health. She can be reached at [hmahaney@kaleidahealth.org](mailto:hmahaney@kaleidahealth.org).*

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