Regions Hospital — Minnesota’s First Comprehensive Stroke Center: Capabilities in Treating Complex Stroke Cases

HealthPartners physicians practicing at Regions Hospital (left to right): Tenbit Emiru, MD-PhD, neurointensivist; Bret Haake, MD, Assistant Medical Director of Neurosciences; Ellie Choi, DO, stroke neurologist.
STROKE CAN BE devastating; it claims almost 130,000 American lives each year and is a leading cause of serious, long-term disability. Among medical subspecialties, stroke has one of the most mature independent data systems for patient treatment evaluation. Like trauma care, successful stroke treatment hinges on timeliness. Time is brain. In no other areas of medicine are outcomes measured and evaluated with as much exacting external criteria as in stroke and trauma care; the robust data in these specialties prompted certification of Level I Trauma Centers and Primary Stroke Centers.

In 2012, after outcome data clearly established that stroke patients fare better at dedicated stroke centers with the most advanced infrastructure, treatments and neurological teams, The Joint Commission designed a new Comprehensive Stroke Center Certification to recognize hospitals with the capabilities to treat the most complex stroke cases.

On Jan. 22, 2014, Regions Hospital — already a Level I Trauma Center and Primary Stroke Center — was the first hospital in Minnesota to receive Comprehensive Stroke Center Certification.

“Stroke outcome measurements are where the rubber meets the road,” says Bret Haake, MD, HealthPartners physician and Assistant Medical Director of Neurosciences at Regions Hospital’s Stroke Center. “Today’s treatments require a sophisticated level of expertise. In the past, aspirin helped one out of 77 patients with an ischemic stroke in the acute phase. Now we have the clot-buster medication, tissue plasminogen activator (tPA). If we can administer it within three hours of the onset of stroke, we help one in three patients. That is a huge increase. When tPA doesn’t help, we have additional interventional options. However, diagnosis and selection of tPA or another treatment option require subspecialty expertise. Regions has been dedicated to critically ill patients from its inception. Seeking Comprehensive Stroke Center Certification was in keeping with our commitment to providing complex critical care for neurological patients.”

Comprehensive Stroke Center Certification: Not for the Weak of Heart

Carol Droegemueller, Regions Hospital clinical nurse specialist and Stroke Program Coordinator, explains the certification process: “We have been certified as a primary stroke center since 2007, so comprehensive certification was a natural progression for us. Centers across the country pursued this certification, but the requirements are stringent. We had many of them in place, but the review process was still rigorous.”

“Achieving Comprehensive Stroke Center Certification is not for the weak of heart,” says Haake. “We are continuously developing our processes and systems to meet the requirement and to provide the best care possible. As a neurologist, I’m thrilled by this recognition.”

“Comprehensive Stroke Center Certification is an important milestone in the ongoing development of comprehensive stroke care in Minnesota,” said Dr. Haake.

RECENT HISTORY OF STROKE CARE

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
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<tr>
<td>2000</td>
<td>Brain Attack Coalition (BAC) publishes recommendations for Primary Stroke Centers (PSC).</td>
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<td>2001</td>
<td>American Heart Association launches Get with the Guidelines (GWTG) database.</td>
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<td>2002</td>
<td>Prototype of Paul Coverdell National Acute Stroke Registry is developed (Pilot in four states: Georgia, Michigan, Massachusetts, Ohio).</td>
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<td>2003</td>
<td>Stroke is second leading cause of death worldwide.</td>
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<td>2004</td>
<td>The Joint Commission (TJC) launches PSC certification.</td>
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<td>2005</td>
<td>BAC publishes stroke systems recommendations, Comprehensive Stroke Center criteria.</td>
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<tr>
<td>2006</td>
<td>New Stroke Center Committee adopts GWTG database.</td>
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Certification means your entire hospital needs to eat, breathe and sleep stroke,” Dr. Haake says. “That was the ‘aha’ factor for us. For example, during the certification process, the stroke education requirement surprised us — all of our staff had been educated in stroke at some point in their training — we thought that was a shoe-in. But then we learned the stroke education had to have occurred within the last two years. We had to provide eight hours of stroke training to each of 382 staff within 60 days. And our people stepped up to the plate, completing that training in their free time within that 60-day window. It was a stunning response and exemplifies Regions’ level of dedication to stroke care.”

**Expertise in Ischemic and Hemorrhagic Stroke**

Strokes can be divided into two groups. Approximately 87 percent are ischemic, in which a blood clot blocks the flow of blood to the brain. These strokes are treated with tPA and, in some cases, with delicate neurological procedures to remove the clot. The second category is hemorrhagic stroke, in which blood bleeds into the brain. Treatment for hemorrhagic strokes is more limited and very neurologically specialized.

The expertise required to deliver a full range of treatment options for both types of stroke is what distinguishes a Comprehensive Stroke Center from a Primary Stroke Center. Primary Stroke Center Certification requires a hospital to have the infrastructure to deliver tPA for ischemic strokes in a timely fashion. Comprehensive Stroke Center Certification requires a multidisciplinary staff — including neurointensivists, neurohospitalists, and neurosurgeons — with the capability to treat ischemic stroke and provide the highly specialized procedures needed to treat the most complex and rare type of hemorrhagic stroke.

**Treatment for Intraparenchymal and Subarachnoid Hemorrhage**

Comprehensive Stroke Center Certification requires demonstrated proficiency in both interventional and surgical approaches as well as pre- and postprocedural care.

“A Comprehensive Stroke Center has proven that it can take care of all strokes, including the most complicated,” says Ellie Choi, DO, a HealthPartners physician and stroke neurologist at Regions Hospital. “It must have the capability and neurosurgical skills to handle the entire continuum of a complex stroke patient.”

Hemorrhagic stroke affects only 10–15 percent of stroke patients. Some of these patients have a subarachnoid hemorrhage. Treatment options for subarachnoid hemorrhages include both surgical clipping of the bleeding aneurysm and endovascular coiling, a procedure that fills the aneurysm with a fine platinum wire.

“Nowadays, the majority of aneurysms are being coiled,” explains HealthPartners physician Tenbit Emiru, MD-PhD, a neurointensivist with Regions Hospital’s Stroke Center.

James Goddard, MD, St. Paul Radiology Medical Director and neurointerventional radiologist at Regions Hospital, adds, “The publication of the ISAT [International Subarachnoid Aneurysm Trial], revealed that for patients who can undergo either type of treatment, endovascular coiling is more likely to result in a better outcome at one year compared to clipping. In addition, for patients who are surgically high-risk, coiling is the less-invasive and safer option. We can safely coil a patient soon after his or her arrival at the hospital, and coiling has become the national trend in aneurysm treatment.”

**Gold-Standard Imaging Resources and Subspecialty Radiology Support**

Another critical factor distinguishing Regions’ Stroke Center is the availability of advanced neuro imaging 24 hours a day, seven days a week. Hospitals with only one CT scanner cannot be considered for Comprehensive Stroke Center Certification.

Regions Hospital has three CT scanners, including one of only 10 Toshiba Aquilion ONE ViSION scanners in the world, as well as two MRI scanners.

“These resources provide gold-standard imaging for stroke patients,” Dr. Goddard explains. “The Toshiba CT scanner’s wide band enables clinicians to capture an image of the entire brain in a single rotation, unlike...
scanners with smaller bands requiring multiple rotations to capture the same image. It is ultra fast, and the image is beautiful and gives us the ability to perform profusion imaging to determine whether there is brain that can be rescued from lack of oxygen.

"Ease of access is as important to these time-critical patients as availability," he continues. "We get MRI and CT scans all night long. All stroke patients have to be imaged to assess for the kind of stroke that they are having and to determine what kind of treatment would work best."

"In addition to capturing clear images quickly, interpretation is also absolutely crucial, as is timely intervention," Dr. Choi notes. "We have neuroradiology coverage 24/7. Our radiologist colleagues at St. Paul Radiology are dedicated, committed and really fantastic — their expertise is critical to treatment as well as diagnosis. St. Paul Radiology’s commitment to subspecialty services is extremely important, and their neurointerventional radiologists have been part of our stroke team and stroke care for over a decade."

**Handling Multiple Complex Patients Simultaneously**

Comprehensive Stroke Center Certification also required Regions to demonstrate the ability to handle two complex stroke patients simultaneously.

“We have a medical and a surgical ICU and a policy and process for moving patients to accommodate our stroke patients,” Droegemueller says.

Since receiving certification this year, there have already been two occasions when two code strokes occurred and were moved through diagnosis and treatment simultaneously.

**Dedicated Neuro-Critical Care Beds**

Comprehensive Stroke Centers must also prove they are able to care for the sickest neurologically ill patients in their intensive care units. The ICU team at Regions is ready and cares for these patients on a daily basis. In addition, the hospital staff includes neuro-critical care competent intensivists to guide the patients’ care.

**Research**

Regions Hospital participates in national and international stroke trials. Currently, the hospital is participating in the POINT trial, which is comparing aspirin monotherapy versus Plavix plus aspirin to prevent a stroke following a minor or warning stroke. Regions is also participating in the ATACH-II (Antihypertensive Treatment of Acute Cerebral Hemorrhage) clinical trial of blood pressure reduction in acute intracerebral hemorrhage and in the upcoming SOCRATES trial looking at a new blood thinner for stroke.

**Post-Stroke Care**

Acute inpatient rehab has long been a cornerstone of stroke care. The Regions Hospital Rehabilitation Institute has been accredited for stroke rehab by the Commission on Accreditation of Rehabilitation Facilities since 2008.

Following stroke, all patients are followed for their ongoing rehab needs and monitored for stroke risk factors, cognitive impairment and post-stroke depression. Additionally, Regions offers a stroke support group and a resource facilitation program in partnership with the Minnesota Stroke Association and Brain Injury Alliance.

“We have also launched a program of Regions stroke survivor volunteers,” Droegemueller says. “They visit stroke patients in the hospital, bringing support, encouragement and real-life experience that complements the care of our physicians and nurses.”

**External Validation: The Most Accurate Measure of Expertise**

“Every hospital and practice strives to deliver good care,” Dr. Haake observes. “Comprehensive Stroke Center Certification, based on stringent external evaluation, represents an objective measure of expertise and outcomes based on the highest standards of stroke care. It’s a distinction worth noting.”

Comprehensive Stroke Center Certification for Regions Hospital reflects the hospital’s consistently stellar national ratings. It was the first hospital in the state to receive the American Heart Association/American Stroke Association’s Gold Plus rating through the Get with the Guidelines program.

Those associations also use the nationwide Outcome Sciences database — one that collects quality rankings on nearly 3 million stroke cases in more than 2,300 hospitals — to recognize high performers, and they placed Regions among the highest-ranking hospitals in the country. But the physicians and staff at Regions Hospital never forget that behind each bit of data is a living, breathing patient affected by stroke.

Dr. Haake remembers a patient aged in the early 50s with complete paralysis on the left side.

“We administered intravenous tPA, but the patient didn’t improve,” he recalls. “We were able to go into the blocked vessel with a catheter and pull out the clot. The patient recovered fully and returned to work. Without Regions’ comprehensive resources, that person would be completely paralyzed on the left side and unable to work. This person would have been significantly devastated by the stroke. Instead, the individual is back at work with full function.”

“These are the stories we love to tell,” Dr. Haake continues. “This patient, and so many others, have such great outcomes because of our staff’s level of engagement and the learning environment that we cultivate here. We are absolutely committed to creating a system where people get the right neurological care. Regions Hospital allows us to do that, and I just love that. It’s fantastic, and it’s my favorite part of my job.”

For more information about the Regions Hospital Stroke Center visit [www.takemetoregions.com](http://www.takemetoregions.com) or call 651-254-3703. Regions Hospital is part of the HealthPartners Family of Care.