

Clock Management

TAKING A TEAM APPROACH TO SHORTENING THE TIME FROM DOOR TO TREATMENT

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KATHLEEN BURGER, D.O.

hen it comes to treating a stroke, every second counts. With each tick of the clock, more than 32,000 brain cells die, making time the most critical element of stroke therapy.

“The saying goes ‘time is brain,’” says Henry J. Kaminski, Meta Amalia Neumann Professor and chair of the Department of Neurology at the GW School of Medicine and Health Sciences (SMHS). “The longer you wait, the greater the likelihood that you’ll have permanent damage.”

Although clinicians have little control over how quickly patients get to the hospital, “what we do have control over is what’s called ‘door-to-needle’ time,” says Kaminski. With this in mind, SMHS, the George Washington University Hospital (GW Hospital), and the George Washington Medical Faculty Associates (MFA) created a stroke team to provide essential treatment the moment patients arrive, 24 hours a day.

“Here at GW Hospital, Kathleen Burger has led an initiative that has experienced phenomenal results, with a door-to-needle time of around 60 minutes,” says Kaminski. “That puts us in the top tier of centers across the country, the top 2 percent, and it’s certainly the best in the Washington, D.C., metro area,” he adds.

“Our goal is to administer ‘clot-busting’ medication within an hour upon a patient’s arrival,” says Kathleen Burger, D.O., assistant professor of neurology at SMHS, who coordinates the stroke team. “The faster you give the medication, the more brain you’re able to save, and the less likely the patient is to have complications from the medication or the stroke,” she says.

Providing high-quality stroke care quickly isn’t easy; it took constant refinements in treatment methods and a concerted effort from many different departments. But the efforts have paid dividends, earning numerous awards in the process.

WORKING AGAINST THE CLOCK

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Focusing on Speedy Treatment

Stroke is a major cause of death and disability worldwide. In the United States, someone suffers a stroke every 40 seconds, adding up to roughly 800,000 strokes each year. An American dies from stroke every four minutes, making it the fourth leading cause of death in the country. Even when it doesn’t lead to mortality, stroke is a leading cause of long-term disability, causing problems with thinking, talking, and walking.

Stroke is the general term for an interruption in the flow of blood to the brain. There are two basic types: ischemic, involving a blockage in the vessel supplying the brain with oxygen-rich blood; and hemorrhagic, caused by bleeding among the brain’s vessels. “The outcome of treatment depends on how quickly doctors can restore the blood flow to the brain, while minimizing the risk to patients,” says Wayne Olan, M.D., associate professor of neurological surgery and director of interventional and endovascular neurosurgery at GW Hospital.



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The most common type of strokes, called acute ischemic strokes, are treated using a thrombolytic, or “clot-dissolving,” drug called tissue plasminogen activator (t-PA), which can open a clogged artery, improve blood flow to the brain, and increase the patient’s chances of recovery. How long doctors have to treat the stroke depends on where the clot is located. Ideally patients should receive treatment within three hours of stroke onset. The GW Hospital stroke team’s ability to administer t-PA to the majority of patients in less than an hour has contributed to a lower rate of ischemic stroke mortality in comparison with most hospitals in the region as well as the rest of the country, Burger says.

These efforts earned the stroke team multiple American Heart Association/American Stroke Association (AHA/ASA) Target: Stroke Honor Roll awards. “It’s one of the hardest awards to obtain from the American Heart Association,” Burger says. “We’ve earned it three years in a row, something we’re really proud of.” She adds that GW Hospital is the only facility in the area to receive the award that many times, let alone over three consecutive years.

A United Effort

“Stroke is one of the ultimate multi-specialty endeavors in medicine,” says Olan. Treating strokes requires cooperation across almost the entire institution, from emergency medical services (EMS) to the emergency department (ED), nurses, neurologists, the intensive care unit, neurosurgery, radiology, and the rehabilitation unit, among others. “It represents a significant level of commitment from the institution, the medical staff, and the ancillary services, and we take a lot of pride in the service we’re able to provide,” he says.

The team approach begins with EMS notifying the ED and the stroke unit that there’s a potential “brain attack” candidate. GW Hospital has a rapid initial evaluation protocol set up that helps doctors and nurses quickly identify patients who might have had a stroke, and begin initial treatment while they wait for the stroke team.

A single call goes out to several members of the stroke team. Once they’re notified, team members race to the ED to evaluate the patient. “The team approach that was developed

allows us to arrive in the emergency room to assess any potential brain attack patients within minutes,” says Burger.

Assessing the patient quickly also requires coordination with the neuroradiology department, which conducts a CT scan of the patient, and laboratory technicians, who conduct required lab tests. “As soon as it’s determined that this patient is a candidate for thrombolytic therapy, we go ahead and start treatment,” says Burger.

The stroke unit continues to monitor the patient throughout the care and rehabilitation process. “The same team that greets patients in the ED takes care of them until they’re discharged. They get immediate attention followed by continued care,” she says. “No matter what happens, we’re there with the patient.” The specialized stroke nurses are particularly valuable in this continued care.

Although most stroke patients are eligible for thrombolytic treatment, there are cases where dissolving the clot is not an option. That’s where the neurosurgical team comes in.

“Some blockages are better treated through a mechanical removal of the clot,” says Olan. “It involves going into the patient’s head to get the clot out using a mechanical device, a clot-breaking medication, a suction, or a stent,” he explains. “We have multiple different technologies available to us.”

Technological moves almost as quickly as the clinicians, so serving at a teaching hospital has its benefits. “One of the nice things about GW Hospital is that we see all the newest technologies available for stroke treatment,” Olan says. “For example, initially, all that was available for these patients was administering clot-breaking medication, but over the course of time different mechanical devices have evolved for direct removal of the clot, rather than waiting for it to melt away.”

Rising to the Challenge

GW Hospital is working toward being certified as a Comprehensive Stroke Center. The designation requires a steady process of improvement, and requires buy-in from both the administration and clinical staff, says Henry Kaminski. For example, nurses in a Comprehensive Stroke Center are expected to be able to recognize stroke, skills that require hours of specialized education, Kaminski says.

“If you have signs of stroke — facial droop, change in speech, weakness of one arm — don’t think about it, immediately go to an emergency room. Ultimately what we want to do is to make the entire population here safer from stroke.”

HENRY KAMINSKI, M.D.



Wayne Olan, M.D., assistant professor of neurological surgery

“That’s a lot of hours that the personnel could be doing something else, but we figured out novel ways to place coursework online, and it’s being accomplished,” he says. “So those are the kind of challenges that the AHA is putting out for institutions, and we’ve been able to rise to hit those challenges.”

Training nurses across the hospital about stroke has already shown benefits, Kaminski says. A patient admitted with a transient ischemic attack (TIA), a sort of “mini-stroke,” suddenly showed signs of a full stroke while in the hospital and was promptly given treatment. “That’s because our nurses easily identified the problem and did the right thing, and that person had the thrombolytic treatment in less than an hour,” Kaminski says.

GW Hospital has already expanded its stroke data collection to meet the needs of a Comprehensive Stroke Center. Data helps the stroke team in their efforts to constantly refine their stroke treatment protocols, and the team also conducts monthly meetings and peer review sessions to elicit feedback and improve their performance. “Three to four years ago we did not have a door-to-needle time of 60 minutes,” Kaminski says. “Our challenge has been to build systems that allow us to educate ourselves about where the slow-downs are, and how we can continue to do better.”

Working with the D.C. Community

GW Hospital’s stroke team has a particularly important role to play in an area such as Washington, D.C., which has high incidences of stroke, Kaminski says. According to the Centers for Disease Control and Prevention, the age-adjusted prevalence of stroke in Washington, D.C. is 3.3

percent, almost a full percentage point higher than the national average. “Although the 30-day mortality and acute mortality rate from stroke is very low, it does still lead to significant disability,” he says.

Getting patients to the hospital sooner would go a long way toward minimizing the effects of stroke. GW Hospital is working to increase stroke awareness in the community, so that patients recognize symptoms of stroke and quickly call emergency services. “If you have signs of stroke — facial droop, change in speech, weakness of one arm — don’t think about it, immediately go to an emergency room,” Kaminski says. “Ultimately what we want to do is to make the entire population here safer from stroke.”

To learn more about our rapid stroke treatment, visit www.gwhospital.com/hospital-services/neurosciences-institute/rapid-stroke-treatment.