

# Deadliest type of stroke seeing surge of new research

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Credit: American Heart Association

Patricia Nelson was leaving a restaurant after dinner last June with friends when she started hearing wind blowing in her ear before she'd even stepped outside. "I just didn't feel right," says Nelson, a stroke rehabilitation nurse.

The 51-year-old from Atlanta knew something was wrong and asked her friend to drive her to the hospital. By the time they got there, Nelson's right side had gone numb. Doctors discovered she was having a

hemorrhagic stroke.

Most strokes are caused by a clot that cuts off blood flow to the brain. But about 13 percent are caused by a weakened blood vessel that ruptures and bleeds into the brain. These so-called hemorrhagic strokes are the deadliest and least treatable type.

The focus of stroke research tends to follow the statistics, with more attention on clot-caused ischemic stroke, said neurologist Dr. Richard Benson, associate medical director of the Comprehensive Stroke Center at Medstar Washington Hospital Center in Washington, D.C.

Just last month, however, the American Stroke Association received an \$11.1 million donation from the Henrietta B. and Frederick H. Bugher Foundation to fund hemorrhagic stroke research.

And in the last decade, there's been a surge of clinical studies for intracerebral hemorrhage, or ICH, the most common of the two types of hemorrhagic stroke. ICH is caused by bleeding in the brain when an artery bursts.

"More money should be placed on stroke research and campaigns to educate people about the risks of stroke," Benson said.

Most recently, research has focused on prevention and the immediate management of ICH.

On the prevention side, [high blood pressure](#)—the most common cause of ICH—gets a lot of attention. Other causes include trauma, infection, tumors, blood vessel malformations and a degenerative condition known as cerebral amyloid angiopathy.

High blood [pressure](#) is more prevalent among African-Americans, who

also are more likely to have diabetes and face higher obesity rates. All of these factors increase the risk of stroke.

Nelson, who is African-American, thinks stress may have caused her blood pressure to rise without her realizing it. She didn't have any other traditional risk factors for stroke.

"About two months before the stroke, I had a new job, new marriage and my car was broken into," said Nelson.

Nelson's blood pressure was dangerously high at the time of her stroke: 240 over 150. A blood pressure of less than 120 over 80 is what's considered normal, according to [blood pressure guidelines](#). Although blood in the brain can cause blood pressure to rise, Nelson's blood pressure had likely been elevated for some time prior to her stroke.

"I know I'm very lucky," she said.

The first few hours after bleeding begins are crucial. Within three hours, about one-third of ICH patients experience significant increased bleeding, which can cause neurological deterioration and even death. Current treatments include [blood pressure](#) management, medication and emergency surgery.

Aggressive medical care helps [hemorrhagic stroke](#) patients, but there's less known about early surgical or medical treatments that decrease the rates of death and disability, said Dr. Steven Greenberg, a neurologist and director of the Hemorrhagic Stroke Research Program at Massachusetts General Hospital in Boston and an author of the [AHA's 2015 guidelines for treating ICH](#).

The role of invasive brain surgery in sensitive ICH patients remains controversial. A 2013 study confirmed earlier findings that ICH patients

don't benefit from surgery to remove hematomas to reduce bleeding and disability. Now, a trial called SWITCH is examining if surgery can reduce intracranial pressure and benefit ICH patients.

Other researchers are studying minimally invasive surgery as an alternative, like in the soon-to-be-completed MISTIE trial that's examining whether minimally invasive endoscopic surgery plus a clot-dissolving drug called alteplase can safely lessen disability in ICH patients.

"If we can identify those at risk and offer treatment options to reduce that risk, then we can improve outcomes," Greenberg said.

Sometimes, bleeding in the brain can be caused by blood-thinning medicines and until recently, there were limited options to reverse that excessive bleeding. One of the oldest oral anticoagulants, warfarin, can be reversed with Vitamin K. But newer anticoagulants did not have a reversal agent until 2015, when a drug called idarucizumab, marketed under the brand name Praxbind, was approved in emergency situations to reverse the effects of dabigatran, a [blood](#) thinner sold under the name Pradaxa to treat conditions such as atrial fibrillation. Trials for other reversal drugs are ongoing.

"We have some exciting things going on in [stroke](#)," Benson said.

Provided by American Heart Association

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