

Specialized care by experienced teams cuts death and disability from bleeding brain aneurysms

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People with bleeding brain aneurysms have the best chance of survival and full recovery if they receive aggressive emergency treatment from a specialized team at a hospital that treats a large number of patients like them every year, according to new guidelines just published by the American Stroke Association.

Diagnosing and immediately treating this kind of "bleeding [stroke](#)", and using advanced techniques to prevent re-bleeding and aneurysm [recurrence](#), reduces the chance of immediate death and disability by 30 percent for patients with aneurysm-related subarachnoid hemorrhages (aSAH), according to the newly published guidelines.

What's more, this kind of evidence-based treatment means better long-term survival and [quality of life](#) for [survivors](#), say the guideline's authors, who include University of Michigan [neurosurgeon](#) B. Gregory Thompson, M.D. The guideline is published online in the journal *Stroke*.

In a subarachnoid hemorrhage, blood collects on the surface of the brain after leaking from an aneurysm, or a weak spot in a brain blood vessel. About 5 percent of all strokes are caused by aSAH, which can occur at any time in any of the millions of Americans who have brain aneurysms.

Many people who suffer an aSAH have no idea they have an aneurysm. Their first sign is a severe [headache](#) – "the worst headache of their life"

as many describe it -- that comes on suddenly and doesn't fade away for hours if at all. The condition is often misdiagnosed.

The guidelines emphasize the importance of getting such patients diagnosed quickly – and transporting them immediately to a hospital that treats more than 35 aSAH patients in a year, which typically have a multi-specialty team available to quickly assess and treat each patient.

"The take-home message for physicians and patients is that admission to specialized high volume centers is associated with lower rates of death and disability," says Thompson, who heads U-M's cerebrovascular team and is the John E. McGillicuddy Collegiate Professor of Neurosurgery at the U-M Medical School.

Last year, more than 100 subarachnoid hemorrhage patients were treated by U-M's team, as well as more than 200 brain aneurysm patients who had their condition treated before a hemorrhage could occur.

Because each aneurysm is different, the team of physicians must decide quickly what technique they will use to prevent aneurysm re-bleeding. For some patients, the aneurysms are treated by microsurgery to "clip" the aneurysm – and for others, the treatment choice is use of minimally invasive endovascular (through the blood vessel) techniques, which employ coils, stents and other implants inserted through a catheter and threaded into the brain through [blood vessels](#) in the neck.

At a few highly specialized centers, such as U-M, a "brain bypass" operation that transplants a section of blood vessel from the arm or leg into the brain can be done for patients with "unclippable" or ruptured fusiform aneurysms, an especially complex type to repair.

Patients with an aSAH need to be treated within hours of the start of their hemorrhage, though the urgency is not quite as time sensitive as the

more common type of stroke caused by a clot that blocks blood flow into the brain. In about 50 percent of patients with [subarachnoid hemorrhage](#) the blood clot at the site of the arterial weakening between the [brain](#) and skull stops the arterial leak long enough for the patients to survive and be treated successfully. But if the bleeding begins again before the aneurysm can be secured, the risk of death is even higher, says Thompson.

"We want to treat these patients within the first 24 hours after their hemorrhage, to prevent re-bleeding and to give them the best chance for full recovery," he says. "Mortality increases to 80 percent after a second hemorrhage."

That's why it's important for patients to seek emergency care for their initial symptoms, whether by calling 911 or going to a local hospital. And, the guidelines note, initial diagnostic imaging with CT, CT angiography or MRI, or cerebrospinal fluid analysis, is needed to pinpoint the cause of symptoms. The guideline also calls for the immediate use of drugs to bring down blood pressure.

Thompson notes that the availability of medical helicopters staffed by trained teams, such as U-M's Survival Flight, helps speed patients to a highly experienced hospital.

Even after the initial operation, careful management of aSAH patients in Intensive Care Units and after discharge from the hospital is also crucial, say the guideline authors. U-M's Neurointensive Care Unit is an example of the kind of specialized inpatient care that can increase the odds of healthy survival, says Thompson. After the hospital stay is over, [patients](#) can benefit from the kind of testing and treatment offered through programs such as U-M's Stroke Rehabilitation Program.

More information: The new guidelines were written by a team of

clinicians with no major ties to industry, which helps ensure the independence of their recommendations. The full guideline is available for free at [stroke.ahajournals.org/content ... STR.0b013e3182587839](https://stroke.ahajournals.org/content/53/11/STR.0b013e3182587839). DOI: [10.1161/STR.0b013e3182587839](https://doi.org/10.1161/STR.0b013e3182587839)

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