

Steps outlined to reduce the risk of stroke during, after heart surgery

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Steps for reducing the risk of stroke in patients undergoing heart surgery are detailed in a new American Heart Association Scientific Statement, "Considerations for Reduction of Risk of Perioperative Stroke for Adult Patients Undergoing Cardiac and Thoracic Aortic Operations,"

published today in the American Heart Association's flagship journal *Circulation*. Pre-screening, surgical technique changes, early diagnosis while in surgery and quick team response all contribute to better survival rates and reduce the risks of major disability for patients.

"Cardiac [surgery](#) has come a long way in recent decades, and improvements in pre-operative screening and treatment now really make a difference between a patient suffering a disabling stroke or surviving and thriving with a good quality of life," said Mario F.L. Gaudino, M.D., chair of the writing group for the scientific statement, and a cardiac surgeon and professor of cardiothoracic surgery at New York-Presbyterian and Weill Cornell Medicine in New York City. "This statement provides an overview of the latest surgical protocols and techniques that can reduce stroke risk after heart surgery and improve patient survival and outcomes."

A stroke that happens during or soon after heart surgery is called a perioperative stroke. Patients undergoing heart surgery who experience perioperative stroke have a 5 to 10 times higher risk of in-hospital death, increased costs and length of hospital stay, and increased risk of cognitive decline one year after surgery. The statement cites stroke as the most feared complication of [cardiac surgery](#)—most patients would sacrifice longevity for freedom from stroke.

Stroke risk for common cardiac procedures varies depending on both patient risk factors and the procedure. The risk is about 1% for a valve repair or coronary artery bypass alone; 2-3% if those procedures are combined; and 3-9% for surgeries involving the aorta, the body's main and largest artery. Stroke risk is also higher for the 27% to 40% of patients who develop [atrial fibrillation](#) after heart surgery. Atrial fibrillation causes the heart's smaller chambers to flutter and increases the risk of a dangerous blood clot that can dislodge, travel to the brain and cause a stroke.

Typical pre-surgery screening for perioperative [stroke risk](#) includes an assessment of age, [high blood pressure](#), high cholesterol, Type 2 diabetes, smoking, [heart](#) failure, renal disease, atrial fibrillation and prior history of stroke or transient ischemic attack. The scientific statement further suggests monitoring and actions to diagnose and treat a surgery-related stroke quickly. Highlights of the statement's recommendations are:

Prevention during surgery

- Monitor blood flow to the brain;
- Intraoperative (during surgery) imaging of the aorta;
- Tight blood pressure control; and
- Closely monitor blood loss and the need for transfusion.

Early stroke diagnosis

- Perform a complete neurologic exam as soon as possible after surgery;
- If a patient is high-risk for perioperative stroke, consider a fast-track anesthesia protocol to help quickly identify signs of a stroke after surgery;
- Have a stroke team in place to provide [emergency treatment](#) if a stroke is suspected; and
- Conduct a head CT and CT angiography of head and neck as soon as stroke is suspected.

Rapid treatment of perioperative stroke

- Transfer the patient to intensive care;
- Optimize brain oxygenation and perfusion;
- Consider clot busting or clot removal therapy; and

- Evaluate patient's speech and swallow function; evaluate for rehabilitation; screen for depression; and begin preventive therapy for deep vein thrombosis.

"It's imperative that a stroke team work together to assess a patient's health before, during and after [heart surgery](#). In addition to the surgeons, this multidisciplinary team should include [stroke](#) neurologists, neuro-interventionalists, neurocritical care specialists and neuro-anesthesiologists," added Gaudino. "Following these protocols can lead to quicker response times by medical teams in the event of an emergency and help to reduce the frequency of neurological injuries among patients."

This scientific statement was prepared by the volunteer writing group on behalf of the American Heart Association's clinical Council on Cardiovascular Surgery and Anesthesia; the Stroke Council; and the Council on Cardiovascular and Stroke Nursing.

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Provided by American Heart Association

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