

# Poor sleep quality leads to poorer prognosis after stroke

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Stroke victims tend to do worse if they also have diagnosed or undiagnosed obstructive sleep apnea prior to having the stroke, according to a study presented April 28, 2009, at the American Academy of Neurology (AAN) annual meeting in Seattle.

Latha Stead, M.D., professor and chair of the Department of Emergency Medicine at the University of Rochester Medical Center, and professor of Neurosurgery, reported the findings at AAN, along with several other stroke studies measuring the factors that lead to a poor prognosis.

"We know that obstructive [sleep apnea](#) has been linked to a multitude of cardiovascular problems, yet it is concerning that the vast majority of cases remain undiagnosed," Stead said. "In the context of recovering from a stroke, sleep apnea can have a serious impact, and for that reason we encourage people to become more aware of obstructive sleep apnea and to get treatment."

The prospective study included 174 patients who were diagnosed with an [acute ischemic stroke](#) in the emergency department at the Mayo Clinic between June 2007 and March 2008. (Stead was the inaugural chair of the Division of Emergency Medicine Research at Mayo before recently joining the URMC.) The stroke-sleep study was conducted in collaboration with Virend Somers, M.D., Ph.D., who is well known for his work in sleep apnea.

Researchers used a standard questionnaire to assess the risk of sleep

apnea among all 174 patients, sometimes aided by the patients' sleep partners. They found that 60 percent were at high risk of sleep apnea, seven patients had a previous diagnosis of sleep apnea, and those seven patients had a higher risk of death within the first month following the stroke.

After adjusting for age and stroke severity, researchers also found that high risk of obstructive sleep apnea was a predictor of having a worse outcome. Stroke patients with diagnosed or undiagnosed sleep apnea were also more disabled at the point of discharge from the hospital. Other studies have shown similar results, Stead said, but the latest research included a larger sample size compared to earlier studies.

Strokes are the third leading cause of death and the leading cause of disability in the United States. Since sleep apnea is a breathing disorder associated with the collapse of the pharyngeal airway, it causes potentially dangerous fluctuations in blood pressure.

Researchers do not know the exact mechanisms associated with sleep apnea and poorer outcomes following a stroke. But Stead noted it is more difficult for the brain and related tissue to heal when blood is not properly oxygenated during a disrupted sleep cycle. Furthermore, patients do not respond well to stroke rehabilitation programs when they are repeatedly sleep deprived.

"The next step," she said, "is to begin routine screening for obstructive sleep apnea as part of the emergency department evaluation of stroke patients."

Stead and research colleagues also presented a study at AAN showing that high blood sugar, or hyperglycemia, is another predictor of early death following a stroke. While other studies have shown that diabetics face poorer outcomes after a stroke, this study focused on non-diabetics

or undiagnosed diabetics who had higher-than-normal blood sugar levels in the emergency department.

"The important message is that in the Emergency Department setting, it's critical to investigate all of the known risk factors that indicate a poor prognosis following a [stroke](#)," Stead said. Other known risk factors include low blood pressure and irregular heart rhythm.

Stead's research is funded by a Mayo Foundation Emergency Medicine Research Career Development Award.

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