

# Glucose, Lipids Key in Managing Diabetic Stroke

About 1/3 of stroke patients have diabetes, but risk factors such as glucose and lipids are often neglected.

BY JANE SALODOF MACNEIL  
Southwest Bureau

SAN FRANCISCO — Stroke and diabetes need to be treated as comorbidities, and physicians treating stroke patients should ensure that their patients receive aggressive lipid management, Dr. Lee H. Schwamm reported at the 32nd International Stroke Conference.

Significant numbers of people with diabetes—both the newly diagnosed and the patients previously treated—leave the hospital after a stroke without treatment plans that met evidence-based guidelines, according to Dr. Schwamm.



“We need to educate people who take care of stroke patients about the comorbidity of diabetes and coronary disease to make sure patients get treatment that is best for their combination of conditions and not just the treatment they present with,” he said.

A review of 159,338 acute stroke and transient ischemic attack patients revealed that 49,066 patients—about 31%—had diabetes. The diabetic population comprised 46,436 patients whose diabetes was known before admission and 2,630 patients who were diagnosed with diabetes after being admitted for stroke.

Although the proportion of diabetic stroke patients was in line with earlier studies, the actual number of stroke patients who have comorbid diabetes may be higher, said Dr. Schwamm, vice chairman of neurology and director of acute stroke services at Massachusetts General Hospital in Boston. The diagnosis of diabetes is dependent on measurement of HbA<sub>1c</sub> levels, he said, and many hospitals do not routinely screen stroke patients.

“What is really startling is that [66%] of the patients who were known to be diabetic had no measure of [HbA<sub>1c</sub>] while in the hospital, which tells you that diabetes was not being addressed in the inpatient setting,” he said during an interview at the conference, which was sponsored by the American Stroke Association.

LDL cholesterol levels, he added, were not found in charts for 42% of the stroke patients who were known to have diabetes.

Despite making up a much smaller proportion of the study population, patients who were newly diagnosed with diabetes had significantly worse control of risk factors than did those who had been treated previously, Dr. Schwamm and his colleagues reported.

The researchers said the average age of participants was 70.5 for 46,436 patients known to have diabetes when admitted and 68.67 for 2,630 patients who were newly di-

agnosed. The difference was statistically significant with a *P* value of less than .0001.

The mean LDL cholesterol for newly diagnosed patients was 117.6 mg/dL, compared with 106.1 mg/dL in known diabetics; their average total cholesterol was 192.5 mg/dL, compared with 178.2 mg/dL in the stroke patients previously treated for diabetes. The average HbA<sub>1c</sub> was 7.87% in the previously diagnosed diabetics and 8.18% in patients who were diagnosed while they were hospitalized for stroke.

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DR. SCHWAMM

but more likely to smoke (19.9% vs. 13.7%). They also had fewer vascular risk factors documented in their records before hospitalization.

Ischemic stroke was more common in the patients who had not previously been diagnosed with diabetes (89% vs. 78%).

Dr. Schwamm said the investigators had no way of knowing why diabetes had not been spotted before hospitalization for stroke in the newly diagnosed group. “If you are recognized as a diabetic, lipid control becomes a very important intervention. So the failure to detect diabetes means you are less likely to have lipid control introduced.”

The patients were drawn from a database of 659 hospitals participating in the American Stroke Association’s “Get With the Guidelines” stroke initiative, a quality improvement program aimed at increasing adherence to evidence-based guidelines for treatment of acute stroke and prevention of ischemic stroke. ■

# Stabilizing Glucose Didn’t Help in Acute Stroke Trial

BY JANE SALODOF MACNEIL  
Southwest Bureau

SAN FRANCISCO — Stabilizing glucose levels in acute stroke patients failed to reduce mortality or influence survival with severe disability at 90 days in a large randomized controlled trial presented at the 32nd International Stroke Conference.

Patients treated with a continuous infusion of glucose, insulin, and potassium (GIK) had significant reductions in glucose levels and blood pressure but received no benefit in outcomes, compared with a control group given a saline solution, Dr. Christopher Gray reported.

The reduction in blood pressure surprised investigators of the United Kingdom Glucose Insulin in Stroke (GIST-UK) study. The finding suggests that tight glucose control might be harmful to stroke patients, said Dr. Gray of the Newcastle University School of Clinical Medical Sciences in Sunderland, England.



“We may have inadvertently explained why lower glucose levels confer benefit in [acute myocardial infarction],” he said at a press briefing prior to his presentation at the meeting, which was sponsored by the American Stroke Association.

Reduced blood pressure “was not something we expected,” said Dr. Gray, chief investigator of GIST-UK. Other studies of glucose levels in myocardial infarction have not reported changes in blood pressure.

Although hyperglycemia is associated with greater mortality in stroke patients, he emphasized that tight glucose control has not been shown to be safe in stroke patients who are not diabetic. “It may be intensive glucose lowering is

not associated with benefit,” he said. “It may be associated with risk.”

Regarding stepped-up efforts to control glucose in intensive care units, Dr. Gray added in an interview that “for stroke patients with mild to moderate elevations in glucose, we should leave well enough alone.”

GIST-UK randomized 933 acute stroke patients presenting with cerebral infarction or intracerebral hemorrhage at 21 centers from 1998 to 2006. It enrolled less than half of the intended trial population, but Dr. Gray said the results were statistically valid.

All patients had mild to moderate elevations in plasma glucose levels (6.1-17.0 mmol/L). Insulin-dependent diabetics were excluded, he said, because assigning them to a control arm would have been unethical.

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DR. GRAY

The trial randomized 464 patients to a variable continuous infusion (100 mL/hr for 24 hours) of a 10% glucose solution supplemented with insulin and potassium chloride. They were monitored every 2 hours in an effort to maintain capillary glucose at 4-7 mmol/L. Another 469 patients were randomized to a saline solution with no attempt to stabilize glucose levels.

The GIK treatment resulted in a significant overall reduction in mean blood glucose of 0.57 mmol/L over 24 hours. It also produced a significant overall reduction in mean blood pressure of 9.03 mm Hg over 24 hours. With the saline solution, glucose levels fell spontaneously but by a smaller amount, Dr. Gray reported.

At 90 days post treatment, 139 patients (30%) in the GIK arm and 128 patients (27.3%) in the control arm had died. The difference was not significant, but it favored the saline solution. The impact on survival without severe disability also was not significantly different between the two groups.

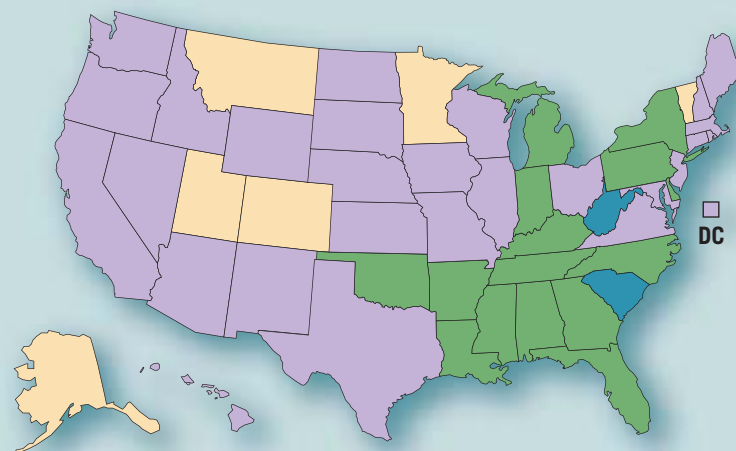
The investigators looked at patients who had the greatest reductions in glucose levels to see whether reductions greater than the modest improvements in the study would have been beneficial. “Those patients who died had the greatest reduction in glucose level,” Dr. Gray said.

In an interview, press briefing moderator Dr. Philip Gorelick said the results of study—the first to test tight glycemic control in acute stroke patients—departed from findings in other recent trials showing benefits for critical care patients in intensive care units. “I don’t think we can leave this issue yet. I think we need more studies,” said Dr. Gorelick, the John S. Garvin professor and head of neurology and rehabilitation at the University of Illinois at Chicago. ■

## DATA WATCH

### Prevalence of Diabetes Highest in the South

4.1%-6% 6.1%-8% 8.1%-10% >10%



Note: Based on 2005 data from the Behavioral Risk Factor Surveillance System.  
Source: Centers for Disease Control and Prevention