

HbA1C test for glucose monitoring poorly predictive in dialysis patients

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The gold standard long-term glucose monitoring test for patients with diabetes proved to be of limited value in dialysis patients, according to a new study at Wake Forest Baptist Medical Center.

The study appears online in the *Clinical [Journal of the American Society of Nephrology](#)* and is scheduled for the July print issue.

Blood sugar monitoring is a vital part of diabetes management. Patients and physicians rely on the [hemoglobin A1c](#) (HbA1c) [test](#) to measure an individual's average [blood sugar level](#) over the prior three months. It is the most commonly used long-term blood sugar test, and is widely trusted in the medical community.

While the American Diabetes Association has deemed the HbA1c test an effective tool for diagnosing diabetes, kidney doctors recently determined that the HbA1c is not as useful for managing patients with diabetes and advanced [kidney failure](#). Another test, the glycated albumin or GA assay, appears to be far more effective in this setting.

"Many organs don't function properly in severe kidney failure," explained Barry I. Freedman, M.D., John H. Felts III Professor and lead investigator. "For example, most [dialysis patients](#) have anemia with fewer [red blood cells](#) than they should, which has a dramatic impact on the accuracy of the HbA1c reading."

Hemoglobin inside red blood cells carries oxygen in the body. Blood

sugar chemically interacts with the hemoglobin to identify a value for HbA1c. But HbA1c results are only accurate when red cells have a normal lifespan. Dialysis patients have shorter red cell survival, reducing the time that sugar in the bloodstream has to interact with hemoglobin, and causing lower HbA1c values.

"Doctors long thought the HbA1c predicted outcomes in diabetes," Freedman said. "This test is not predictive of outcomes in [diabetes patients](#) with kidney disease on dialysis. Dialysis patients and physicians get a false sense of security because their lower HbA1c actually relates to shorter red cell survival, yet suggests diabetes control is better than it really is."

Nearly 500,000 people are on dialysis in the United States and diabetes is the cause of kidney failure in nearly 50 percent of them. Diabetes is the most common cause of kidney failure worldwide and is associated with high mortality rates – more than 20 percent of dialysis patients die each year. As such, there is an urgent need for accurate blood sugar testing in diabetic dialysis patients.

Freedman and colleagues evaluated 444 patients with diabetes undergoing dialysis. Patients continued their normal treatment and HbA1c monitoring, but also agreed to have a GA test every three months for an average of more than 2.3 years.

The GA test, developed by Tokyo-based Asahi Kasei Pharma Corporation, measures blood sugars over the past 17 days, as opposed to the longer time frame for HbA1c. In situations where rapid changes occur in blood sugar, the GA gives a more accurate picture of [diabetes](#) control. The GA test used in this study is available in Japan, China and South Korea, but is not yet FDA approved in the United States.

Wake Forest Baptist researchers compared the patients' HbA1c and GA

test results, assessing their ability to predict hospitalizations and survival. They found that the HbA1c failed to predict these important medical outcomes. In contrast, the GA was a strong predictor of patient survival and hospitalizations.

"This is the first study showing that a [blood sugar](#) test predicts risk of death in diabetic dialysis patients, as well as risk of hospitalization," Freedman said. "This test provides the missing link that will allow dialysis patients and physicians to accurately gauge risk. The association is clear: high GA readings predict higher risk."

Freedman suggests physicians not rely on the HbA1c in dialysis patients, instead suggesting that blood glucose levels be directly monitored with multiple daily readings until the GA test is available in the states.

Provided by Wake Forest Baptist Medical Center

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