

Glycated hemoglobin, diabetes, and cardiovascular risk in nondiabetic adults

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Fasting glucose is the standard measure used to diagnose diabetes in the United States but recently, glycated hemoglobin was also recommended for this purpose. This test presents several advantages as a diagnostic test: it has higher repeatability, can be assessed in the nonfasting state, and is the preferred test for monitoring glucose control. But glycated hemoglobin has been recommended only for the determination of glucose control among persons who have already received the diagnosis of diabetes. New clinical practice recommendations from the American Diabetes Association advocate the use of glycated hemoglobin in the diagnosis of diabetes, largely on the basis of the established association between glycated hemoglobin and micro vascular disease.

This study was designed to characterize and compare the relationships between values of glycated hemoglobin and fasting glucose and the risk of diabetes, coronary heart disease, ischemic stroke, and death from any cause in a large community-based cohort of middle-aged adults who did not have a history of diabetes.

The glycated hemoglobin was measured in whole-blood samples from 11,092 black or

white adults who did not have a history of diabetes or cardiovascular disease and who attended the second visit (occurring in the 1990–1992 period) of the Atherosclerosis Risk in Communities (ARIC) study.

Results evidenced that glycated hemoglobin value at baseline was associated with newly diagnosed diabetes and cardiovascular outcomes. People with a glycated hemoglobin value of 6.0% or higher are at high risk for the development of diabetes, even after adjustment for other risk factors and independently of baseline fasting glucose levels. The authors observed that glycated hemoglobin is a marker of cardiovascular risk for nondiabetic population and remained associated with cardiovascular disease and death even after we accounted for baseline fasting glucose levels; in contrast, fasting glucose was not significantly associated after adjustment for the glycated hemoglobin value. The study also demonstrated improved risk reclassification for coronary heart disease with the inclusion of glycated hemoglobin in fully adjusted models, suggesting that glycated hemoglobin may be superior to fasting glucose for characterizing long term risk. There was no significant interaction between sex and glycated

hemoglobin category for any of the clinical outcomes ($P > 0.20$ for all interactions). There was also no significant interaction between race and glycated hemoglobin value regarding the risk of coronary heart disease, ischemic stroke, or death from any cause ($P > 0.80$ for all interactions).

In conclusion, in this community-based population of nondiabetic adults, glycated he-

moglobin was similarly associated with a risk of diabetes and more strongly associated with risks of cardiovascular disease and death from any cause as compared with fasting glucose. These data add to the evidence supporting the use of glycated hemoglobin as a diagnostic test for diabetes. □



Comment on a paper:

Elizabeth Selvin, PhD, MPH, Michael W. Steffes, MD, PhD, Hong Zhu et al – Glycated Hemoglobin, Diabetes, and Cardiovascular Risk in Nondiabetic Adults. *N Engl J Med* 2010; 362:790-799