

# New NIH fact sheet explains test for diabetes, prediabetes

January 27 2012, By Mary Harris

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A new fact sheet from the National Institutes of Health explains the A1C test, a widely used and important test to diagnose type 2 diabetes and prediabetes, and to monitor blood glucose levels of people with type 1 and type 2 diabetes.

The A1C blood test provides information about average blood glucose levels, also called [blood sugar](#), over the past three months. The test is sometimes referred to as the [hemoglobin A1c](#), [HbA1c](#), or glycohemoglobin test. The test result is reported as a percentage. The higher the percentage, the higher a person's average blood glucose levels, which can cause complications in people with diabetes. A normal A1C level is below 5.7 percent.

"The fact sheet, called The A1C Test and Diabetes, offers in-depth information for people being tested," said Judith Fradkin, M.D., a diabetes specialist at the NIH's National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK). "Lab tests and results, particularly the A1C, can be confusing. We hope this fact sheet will help people better understand why the test is important, how to interpret results, and why results may differ from expected."

The A1C Test and Diabetes covers a wide range of information, including

- how the test works
- other blood tests for type 2 diabetes and prediabetes

- accuracy of blood tests
- where to learn more about A1C tests in people with hemoglobin variants
- A1C targets

Originally, the A1C test had been recommended only for monitoring diabetes. But in 2009, an international committee of experts convened by the American Diabetes Association, International Diabetes Federation and European Association for the Study of Diabetes recommended expanding the use of the test to include diagnosing type 2 diabetes and prediabetes. The test is convenient because it does not require fasting.

Experts hope the ease of A1C testing will encourage more people to be checked for prediabetes and type 2 diabetes. Early identification and prompt treatment can delay or prevent type 2 diabetes and complications of the disease. The A1C test also helps providers adjust medication for people with diabetes to reduce the risk of long-term complications.

About 26 million Americans are living with diabetes, and more than 7 million of them do not know it. Left untreated, diabetes can lead to heart disease, stroke, kidney disease, blindness, amputation, and other serious complications. An estimated 79 million adults have prediabetes, [blood glucose levels](#) that are higher than normal but not high enough to be called diabetes, which places people at increased risk for developing type 2 diabetes. Weight loss and increased physical activity or the drug metformin can delay or prevent type 2 diabetes, but fewer than 10 percent of people with prediabetes have been diagnosed.

The standard blood glucose tests for diagnosing type 2 diabetes and prediabetes — the fasting plasma glucose test and the oral glucose tolerance test (OGTT) — measure blood glucose in a person who has not eaten anything for at least eight hours. The OGTT also measures blood glucose two hours after a person drinks a glucose-containing beverage.

To confirm positive results, people should return on a different day to repeat the tests. The A1C test should also be repeated to confirm a diagnosis.

"Now people can be tested for diabetes without fasting," said David Sacks, Ph.D., chair of a group working to standardize lab testing for diabetes and a member of the NIH Clinical Center's Department of Laboratory Medicine. "We hope the convenience of the A1C test will encourage more people to be tested for [prediabetes](#) and diabetes."

If you are at least 45 years old, or younger than 45 and are overweight, inactive, and have at least one risk factor for [type 2 diabetes](#), consider being tested for the disease. Risk factors include high blood pressure; high cholesterol; a family history of diabetes; a history of gestational diabetes; and African-American, Hispanic-American, Asian-American, Pacific Islander or American Indian heritage.

A1C results can be unreliable in some people. For example, people of African, Mediterranean or Southeast Asian descent, or people who have a family member with sickle cell anemia, may not know that they have a less common type of hemoglobin that can interfere with some A1C tests. If you have a family history of sickle cell or thalassemia, or A1C results seem very different from those of a [blood glucose](#) test, talk to your doctor about which A1C tests are appropriate for you.

The fact sheet, The A1C Test and Diabetes, is available from NIDDK's National Diabetes Information Clearinghouse at [diabetes](#).niddk.nih.gov/dm/pubs/A1CTest" target="\_blank">www.[diabetes](#).niddk.nih.gov/dm/pubs/A1CTest .

Provided by National Institutes of Health

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