

*Quest Diagnostics*  
**Diagnostics and Diabetes: Fast Facts**

Diabetes is a chronic condition in which the body produces insufficient insulin or does not properly use insulin to convert sugar into energy. Undiagnosed or poorly managed, diabetes can lead to serious health complications. If the disease is kept under careful control, complications can be delayed, minimized, or even avoided. People may be unaware they have the disease because the symptoms may go unnoticed or may be attributed to something else. Some diabetes symptoms include<sup>1</sup>:

- Frequent urination
- Excessive thirst
- Extreme hunger
- Increased fatigue
- Irritability
- Blurry vision

***Tests to Diagnose Diabetes*** -- Physicians rely on the following clinical laboratory tests for diabetes diagnosis<sup>2</sup>:

- A fasting plasma glucose (FPG) test measures your blood glucose after you have gone at least 8 hours without eating. This test is used to detect diabetes or pre-diabetes.
- An oral glucose tolerance test (OGTT) measures your blood glucose after you have gone at least 8 hours without eating and 2 hours after you drink a glucose-containing beverage. This test can be used to diagnose diabetes or pre-diabetes.
- In a random plasma glucose test, your doctor checks your blood glucose without regard to when you ate your last meal. This test, along with an assessment of symptoms, is used to diagnose diabetes but not pre-diabetes.

***Tests to Manage Diabetes*** -- Daily control and management of diabetes helps avoid long-term complications. People with diabetes should work with a physician to determine their blood glucose target, and to develop a schedule for self-monitoring blood glucose (SMBG). Generally, self-tests are done before meals, after meals, and/or before bedtime. Those who take insulin must check their blood glucose level more frequently. In any case, people with diabetes should work with their health care provider to determine the testing schedule that is best for them<sup>3</sup>.

**The HbA<sub>1c</sub> Test (also known as A<sub>1c</sub>)** is a test that measures the amount of sugar attached to hemoglobin, the primary protein in red blood cells and indicates a patient's average blood sugar level over the previous two to three months. The American Diabetes Association recommends that people with diabetes maintain a hemoglobin A<sub>1c</sub> level below 7 percent of the total hemoglobin in their red blood cells. People with diabetes need to have this test performed regularly. It is also a helpful way to confirm a patient's self-testing results. Together, the SMBG and A<sub>1c</sub> can provide a good picture of diabetes control.

***Tests to Monitor for Complications*** -- Too much glucose in the blood for a long time may cause related health problems. High blood glucose, also called high blood sugar,

may damage the heart, blood vessels, eyes, and kidneys. In turn, heart and blood vessel disease may cause heart attacks and strokes, the leading causes of death for people with diabetes<sup>4</sup>. The following are tests used to periodically monitor for diabetes-related complications:

**Cholesterol** – Even with cholesterol levels within normal range, people with diabetes may be at a higher risk for heart disease. As a vital clue to health status, a patient’s cholesterol numbers are essential. For those with diabetes, the recommended low-density lipoprotein (LDL) (so-called bad cholesterol) level should be less than 70 mg/dL. Too much LDL increases the risk of heart disease.

- **The total cholesterol test** panel measures the total amount of cholesterol (a fat-like substance in the blood).
- **The lipid panel** measures total cholesterol, LDL and high-density lipoprotein cholesterol (HDL) and triglycerides. It is an essential measure to monitor for and manage heart disease.
- **Vertical Auto Profile (VAP™) Test** – This advanced technology to detect heart disease and measure cholesterol has been shown to identify twice as many people at risk for heart disease compared to routine cholesterol tests. It takes a closer look at LDL density patterns and lipoprotein subclasses. It can also help physicians assess how well a patient’s treatment with statin drugs is working.

**Cardio CRP™ (C - reactive protein) Test** – CRP is a key marker for the type of inflammation that plays a role in the formation of arterial plaque. Even in patients whose lipid levels are low, high CRP levels may predict an increased risk of heart attack.

**Estimated Glomerular Filtration Rate (eGFR) Test** – Diabetes is the most common cause of kidney disease; the eGFR test provides the best indication of how well the kidneys are working, and it screens for early signs of chronic kidney disease.

**Microalbumin** – evaluates urine specimens for the increased presence of small amounts of the protein albumin.

**Hemocue Albumin 201** – this point-of-care test can detect microalbuminuria, the biological marker for signs of kidney and cardiovascular disease. This test is comparable in accuracy to laboratory albumin-to-creatinine (ACR) estimates, another reference test for kidney function.

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<sup>1</sup> American Diabetes Association. Diabetes Symptoms. Available at <http://www.diabetes.org/diabetes-symptoms.jsp>. Accessed June 11, 2007.

<sup>2</sup> National Diabetes Information Clearinghouse (NDIC). Diagnosis of Diabetes. Available at <http://www.diabetes.niddk.nih.gov/dm/pubs/diagnosis/index.htm#2B>. Accessed June 11, 2007.

<sup>3</sup> National Diabetes Education Program. If you have diabetes...know your blood sugar numbers! Available at [http://www.ndep.nih.gov/diabetes/pubs/KnowNumbers\\_Eng.pdf](http://www.ndep.nih.gov/diabetes/pubs/KnowNumbers_Eng.pdf). Accessed on June 11, 2007.

<sup>4</sup> National Diabetes Information Clearinghouse (NDIC). Prevent diabetes problems: Keep your heart and blood vessels healthy. Available at [http://diabetes.niddk.nih.gov/dm/pubs/complications\\_heart/index.htm](http://diabetes.niddk.nih.gov/dm/pubs/complications_heart/index.htm). Accessed June 11, 2007.