Cardiometabolic Risk Screening

Why screen for risk of cardiovascular disease and diabetes?

The news media frequently reports the growing numbers of people with cardiovascular disease and type II ("adult onset") diabetes, especially in countries like the United States. Risk for these diseases is known to be particularly high in people who have a disorder known as "metabolic syndrome", which is often associated with being overweight.

Health-conscious people know that it's important to eat a healthy diet and take regular exercise, which can reverse metabolic syndrome and significantly reduce their chances of becoming diabetic, or of developing diseases of the heart and blood vessels, collectively known as "cardiovascular" disease. But the continual rise in obesity rates to epidemic levels shows that not enough people are taking their long-term health seriously.

A simple blood spot test can help people understand that they are at risk. ZRT's CardioMetabolic Profile tests blood markers that can identify people at high risk of cardiovascular disease and diabetes. If levels of several of these blood markers are abnormal, this should be an important "wake-up call" that tells them they need to tackle the problem. The good news is that there are simple lifestyle changes that they can make to get back on the right track to health.

What are the signs of metabolic syndrome?

It is very likely that you could be diagnosed with metabolic syndrome if you have several of the following conditions:

- Obesity, especially in the waist/abdominal area (the "apple-shaped" body type)
- A body mass index (BMI) greater than 25
- High blood pressure
- Insulin resistance and/or glucose intolerance (high fasting blood glucose or high fasting insulin levels)
- An abnormal lipid profile known as "atherogenic dyslipidemia" (low HDL cholesterol, high LDL cholesterol, high VLDL cholesterol, high triglycerides)
- Inflammation

Your doctor can diagnose metabolic syndrome by evaluating these conditions. The last three (insulin resistance, atherogenic dyslipidemia, and inflammation) are known as cardiometabolic risk factors and can only be assessed by a blood test such as the CardioMetabolic Profile.

What are the cardiometabolic risk factors?

Fasting Insulin – Checking insulin levels following a 12-hour fast is a reliable way of measuring the degree of insulin resistance. Insulin is a hormone produced by the pancreas and is used by most cells, particularly muscle and liver cells, to take in glucose for immediate conversion to energy, or to store it for future use. In the case of insulin resistance, cells do not respond to insulin normally, and insulin levels rise above normal levels. Insulin resistance is usually associated with increasing body fat, but it can also occur in people of normal weight. When insulin resistance is present, this can also lead to frequently high blood sugar levels, which can evolve into full-blown diabetes. High insulin levels can create other metabolic disturbances that lead to changes in the blood lipid profile and high blood pressure.

Hemoglobin A1c – This test assesses the average blood sugar level over the past three months. HbA1c measurements are considered to be a more reliable indicator of overall high blood sugar than an occasional fasting blood glucose level test, because fasting blood glucose can vary considerably from day to day. Consistently elevated blood glucose, evidenced by high HbA1c levels, indicates a loss of blood sugar control that may lead to diabetes.

Total Cholesterol, LDL Cholesterol, HDL Cholesterol, and VLDL Cholesterol – High levels of total cholesterol, LDL cholesterol and VLDL cholesterol have consistently been associated with risk of cardiovascular disease because they can contribute to plaque buildup in the arteries, known as "atherosclerosis". HDL cholesterol, however, is known as "good" cholesterol because high levels of this are known to reduce cardiovascular disease risk. A low level of HDL cholesterol is one of the criteria for diagnosing metabolic syndrome. Too much "bad" cholesterol and too little "good" cholesterol is called "atherogenic dyslipidemia", which means an abnormal lipid profile that leads to atherosclerosis and therefore increased risk of heart disease and stroke.

Fasting Triglycerides – High triglycerides are a significant component of the metabolic condition that leads to arterial

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plaque buildup, and often are linked with blood sugar dysfunction. In people with diabetes, triglyceride levels can increase significantly. High fasting triglyceride levels are another very important indicator of atherogenic dyslipidemia, and one of the established criteria for diagnosing metabolic syndrome.

High-sensitivity C-Reactive Protein (hs-CRP) – This protein, produced in the liver, is one of the key indicators of inflammation in the body. CRP levels can rise to very high levels in the presence of acute inflammation or infection. However, a high sensitivity assay detects the smaller rises in CRP levels that are associated with the metabolic syndrome. This is known as "high sensitivity" CRP and can be measured very accurately in blood spots. High hs-CRP test results can be an early indicator of cardiovascular risk.

Are there special instructions for testing with blood spot?

The CardioMetabolic Profile test can be easily done in your doctor's office or conveniently at home. This is particularly important because a fasting blood spot sample is needed for the tests, so collection at home can be done easily before breakfast. Blood spot collection is easy – full instructions come with the test kit, and you can also watch a short video demonstration at www.bloodspotvideo.com. After a simple nick of the finger with the lancet provided, blood drops are collected on the filter card provided and sent to ZRT Laboratory for analysis.

What simple lifestyle changes may improve overall risk?

First and most important is to be aware that you may have a problem. The CardioMetabolic Profile test results, along with blood pressure testing, waist circumference, and BMI (Body Mass Index) measurements (see chart at right), will help your doctor to assess your risk of cardiovascular disease and diabetes.

- Lose weight (especially with abdominal obesity)
- Increase physical activity to at least 30-60 minutes a day, and include simple changes such as taking the stairs instead of the elevator wherever possible
- Do weight-bearing exercises including strength training
- Replace white flour and sugars with more whole grains, fiber, fruits and vegetables
- Reduce meal portion sizes – stop eating before you are full
- Stop smoking
- Minimize unnecessary stress with relaxation techniques

Body Mass Index, or BMI, is the measurement of choice for physicians and researchers for measuring obesity. BMI uses a mathematical formula that takes into account both a person's height and weight. You can calculate your personal BMI by cross referencing your height and weight using the chart below.