Cholesterol Numbers Don't Always Tell the Whole Story

By Gregory S. Cohn, M.D.

Have you had your cholesterol tested recently? While this is a positive step towards a healthier new year, these results may not be telling the whole story. It is a medical fact that elevated cholesterol levels are associated with an increased risk for cardiovascular disease. Monitoring cholesterol levels on a regular basis can help determine future risk and gauge success (or lack thereof!) in modifying this risk. A standard cholesterol profile, usually collected after at least an 8 hour fast, contains information on total cholesterol, LDL-cholesterol ("bad cholesterol"), HDL-cholesterol ("good cholesterol"), and triglycerides (fats). Current guidelines recommend total cholesterol levels less than 200 mg/dl, triglyceride levels less than150 mg/dl, and HDL-cholesterol levels greater than 40 and 50 mg/dl for men and women, respectively. However, the most stringent recommendations are reserved for LDL-cholesterol. Optimal levels for **all** people are considered to be less than 100 mg/dl, but levels up to 130 or 160 may be acceptable depending on one's overall cardiovascular risk.

Despite the above recommendations, many patients with normal or even optimal cholesterol levels continue to have heart attacks and strokes. What is the explanation for this? In fact, there are several possible explanations, but a major one relates to the inherent limitations of measuring cholesterol levels. It is actually **not** the cholesterol itself that is bad or good, but the **particles which carry it that are**. In other words, measuring cholesterol is a **surrogate** for directly measuring LDL and HDL particles. In reality, there are several different kinds of LDL and HDL particles, which are **not** all associated with the same risk or benefit. Small, dense LDL particles are much worse (higher risk) than large, fluffy LDL particles. Similarly, large HDL particles are more highly protective than smaller varieties. Measuring cholesterol tells you **nothing** regarding the actual distribution of particle sizes that are present. In fact, the greater the number of small particles that are present, the higher the cardiovascular risk, and the more likely cholesterol levels are to be inaccurate! Even the most precise LDL-cholesterol measurement can significantly **underestimate** the number of LDL particles. That is why standard cholesterol testing may be inadequate, and it is no wonder that **many patients are being under treated due to reliance on cholesterol measurements**.

There are certain patient types that are more likely to manifest this **mismatch** between cholesterol and particle numbers. Most commonly it is those with diabetes and the Metabolic Syndrome that have this problem. Given the current epidemic of obesity and diabetes, this means that **many of us may be at higher risk than we realize.** Particle number **can** be accurately measured through a simple blood test generally known as an advanced lipid profile. The results of this test can provide your physician with a superior tool to use in formulating an optimal treatment plan. Check with your doctor to see whether you warrant such advanced testing.