

## Feel smug about your high HDL-cholesterol? Don't.

By Ann Gerhardt, MD

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**Bottom Line at the Top: Sometimes high HDL-cholesterol levels do not protect against heart and vascular disease. Non-HDL-cholesterol is a better predictor of cardiovascular disease. Read on to find out more about the vagaries of HDL-cholesterol.**

Doctors and patients alike believe that, when it comes to vascular disease and heart attacks, very high HDL-cholesterol levels protect against the bad guys, LDL-cholesterol and VLDL. They would often be wrong.

We used to think that the ratio of LDL- to HDL-cholesterol was the best heart attack predictor, lower being better. **But it turns out that high levels of HDL-cholesterol are sometimes protective and sometimes not.**

Usually HDL particles contain good-guy proteins that exert anti-oxidant and anti-inflammatory effects and clear blood vessel walls of stuck cholesterol. But when people are sick or inflamed or deficient in anti-oxidants, their HDL often turns bad. Under those conditions HDL proteins may contribute to the damage by being pro-inflammatory. It's like a good teenager who keeps company with undesirable friends and turns bad.

It might not even take overt sickness to convert to bad-guy HDL. Pro-inflammatory and pro-oxidant substances circulate in the blood of otherwise healthy diabetics and people with metabolic syndrome (obesity, hypertension, apple shape, high triglycerides and insulin resistance). These substances adversely affect HDL particles and promote heart disease.

Some people with HDL-cholesterol levels as high as 120 mg/dl have heart attacks, even when their ratio of HDL to LDL is very low. These people are often diabetic. Others, with congenitally high HDL, may live long lives without heart disease, while others die in their fifties.

**The HDL-cholesterol level tells us only how much cholesterol has attached to HDL particles. It says nothing about HDL particle function or even how many particles are on the job.**

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## HEALTHY CHOICES FOR MIND AND BODY

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I attended a recent American Heart Association seminar about HDL-cholesterol. Amazingly, the discussants focused entirely on the HDL-cholesterol *number*, rather than its functionality and beneficence. When I asked, the panel knew darn well that the number doesn't equal function. But we can't yet measure function, so they discussed number.

Regardless of the level, I want all my HDL particles to be anti-inflammatory and anti-oxidant, not the opposite. I want my HDL to churn away at pulling cholesterol from cells and blood vessel walls, and throwing it like a hot potato down a chain of particles back to the liver for disposal.

**What should you do to optimize your HDL?** Exercise, a lot. Eat bushels of vegetables and beans. Eat moderate amounts of fruits and nuts. Keep your weight near the ideal for your height. Stay uninfected and uninflamed. You know, the usual advice that just doesn't go away.

The HDL-cholesterol level may be high or low. But it is impossible to tell whether it will help or hurt - lead to heart disease or prevent it. **So take HDL out of the equation.**

Non-HDL cholesterol has taken center stage as that number to watch. Non-HDL particles include LDL, which contains cholesterol and the protein apoB, VLDL, rich in fat (triglyceride), and their breakdown particles. Non-HDL-cholesterol predicted best who would have another heart attack in 18,889 heart disease patients.

**Non-HDL-cholesterol is an easy measurement,** because all you have to do is measure total cholesterol and HDL-cholesterol, subtract the HDL-cholesterol from total cholesterol and the resulting number is a very good indication of cardiovascular risk.

The second best predictor is apoB, a protein in non-HDL particles. We don't measure apoB routinely, but it is available with special testing.

Maybe someday we can measure HDL functionality, but for now do the things that might keep your HDL healthy and try to minimize non-HDL-cholesterol. †