

New measurement of HDL cholesterol function provides information about cardiovascular risk

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Groundbreaking research from UT Southwestern Medical Center shows that cholesterol efflux capacity (cholesterol efflux), which measures HDL cholesterol function, appears to be a superior indicator of cardiovascular risk and a better target for therapeutic treatments than standard measurements of HDL. Current measurement methods reflect only the circulating levels of HDL and not the functional properties of this lipoprotein.

The [latest findings](#) appear online today in *The New England Journal of Medicine*.

HDL's key function is the removal of [cholesterol](#) from plaque in blood vessels and delivery to the liver for excretion. Until recently, this functional property could not be measured. The new study, led by Dr. Anand Rohatgi, Assistant Professor of Internal Medicine at UT Southwestern, measured cholesterol efflux using this new method of measurement in more than 3,000 participants from a multi-ethnic, population-based cohort known as the Dallas Heart Study.

The study found that this functional measurement of cholesterol efflux provided significantly different information than did standard measurements of HDL cholesterol. The findings uncovered a significant protective relationship between cholesterol efflux and [cardiovascular risk](#). The better a person's cholesterol efflux, the less likely he or she was

to suffer a heart attack, stroke, or death from heart disease. The association was much stronger for cholesterol efflux than for the traditional measurement of HDL cholesterol level.

HDL cholesterol has long been considered [good cholesterol](#) because numerous population studies have shown a consistent, strong, inverse relationship between HDL [cholesterol levels](#) and risk of heart disease. "Unfortunately, that observation has not translated into effective therapies that target HDL cholesterol," said Dr. Rohatgi. "Niacin raises HDL cholesterol 20-25 percent and newer drugs called CETP inhibitors raise HDL cholesterol even more, but none have been shown to reduce cardiac events."

"So now we're looking under the hood, so to speak, and we're realizing that the whole story of what HDL does is not being told by HDL cholesterol levels alone," said Dr. Rohatgi. "HDL is very dynamic. It has many functions that are not fully captured by the measurement of static cholesterol levels. The hypothesis has changed from an HDL-cholesterol hypothesis to an HDL-function hypothesis to better capture cardiovascular risk and provide a better target for therapy to reduce that risk."

Atherosclerosis, which is a hardening and narrowing of the arteries, is caused by the buildup of fatty plaques made up of cholesterol and cells on artery walls. Atherosclerosis is the leading cause of heart attacks, and understanding how HDL acts to remove cholesterol from these plaques could offer a target for reducing heart disease risk.

"We drew on the strengths of the Dallas Heart Study to thoroughly investigate the relationship between HDL function and cardiovascular disease," said Dr. Rohatgi. "What we found was a strong, graded, protective relationship between cholesterol efflux and incidence of cardiovascular events among people who were free from [heart disease](#) at

baseline testing."

This is the first report of a measure of HDL function in a population-based study and supports future studies investigating HDL cholesterol efflux and cardiovascular disease.

Provided by UT Southwestern Medical Center

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