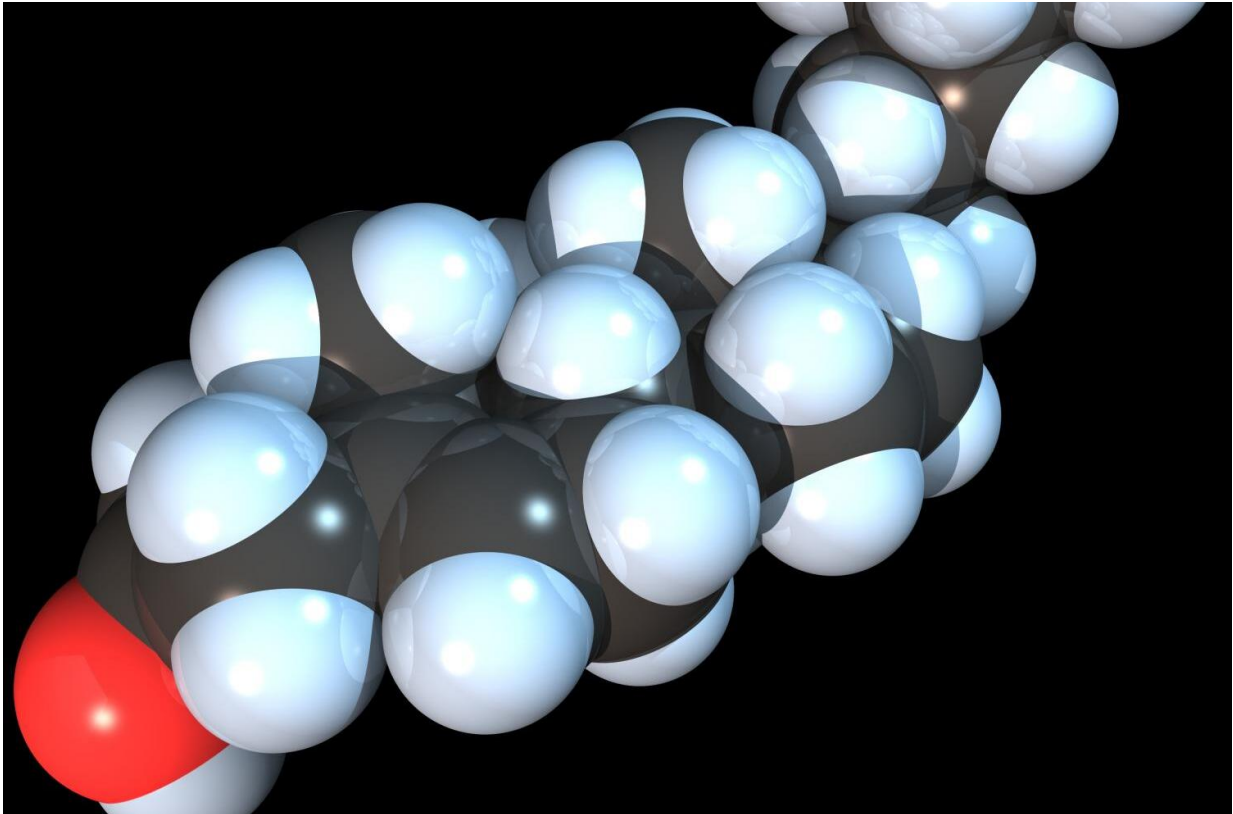


'Good cholesterol' may not always be good

July 19 2018



Space-filling model of the Cholesterol molecule. Credit: RedAndr/Wikipedia

Postmenopausal factors may have an impact on the heart-protective qualities of high-density lipoproteins (HDL) - also known as 'good cholesterol' - according to a study led by researchers in the University of Pittsburgh Graduate School of Public Health.

The findings, published today in *Arteriosclerosis, Thrombosis, and Vascular Biology*, a journal of the American Heart Association (AHA), indicate that this specific type of blood cholesterol may not translate into a lowered risk of cardiovascular disease in older women—bringing into question the current use of HDL cholesterol in a common equation designed to predict heart disease risk, particularly for women.

HDL is a family of particles found in the blood that vary in sizes and cholesterol contents. HDL has traditionally been measured as the total cholesterol carried by the HDL particles, known as HDL cholesterol. HDL cholesterol, however, does not necessarily reflect the overall concentration, the uneven distribution, or the content and function of HDL particles. Previous research has demonstrated the heart-protective features of HDL. This good cholesterol carries fats away from the heart, reducing the build-up of plaque and lowering the potential for cardiovascular disease.

"The results of our study are particularly interesting to both the public and clinicians because total HDL cholesterol is still used to predict cardiovascular disease risk," said lead author Samar R. El Khoudary, Ph.D., M.P.H., F.A.H.A., associate professor in Pitt Public Health's Department of Epidemiology. "This study confirms our previous work on a different group of women and suggests that clinicians need to take a closer look at the type of HDL in middle-aged and older women, because higher HDL cholesterol may not always be as protective in [postmenopausal women](#) as we once thought. High total HDL cholesterol in postmenopausal women could mask a significant heart disease risk that we still need to understand."

El Khoudary's team looked at 1,138 women aged 45 through 84 enrolled across the U.S. in the Multi-Ethnic Study of Atherosclerosis (MESA), a medical research study sponsored by the National Heart, Lung and Blood Institute of the National Institutes of Health (NIH). MESA began in

1999 and is still following participants today.

The study points out that the traditional measure of the good cholesterol, HDL cholesterol, fails to portray an accurate depiction of [heart disease risk](#) for postmenopausal women.

Women are subject to a variety of physiological changes in their sex hormones, lipids, body fat deposition and vascular health as they transition through menopause. The authors are hypothesizing that the decrease of estrogen, a cardio-protective sex hormone, along with other metabolic changes, can trigger chronic inflammation over time, which may alter the quality of HDL particles.

"We have been seeing an unexpected relationship between HDL cholesterol and postmenopausal women in previous studies, but have never deeply explored it," said El Khoudary. Her study looked at two specific measurements of HDL to draw the conclusion that HDL cholesterol is not always cardio-protective for postmenopausal women, or not as 'good' as expected.

The number and size of the HDL particles and total cholesterol carried by HDL particles was observed. The study also looked at how age when women transitioned into postmenopause, and the amount of time since transitioning, may impact the expected cardio-protective associations of HDL measures.

The harmful association of higher HDL cholesterol with atherosclerosis risk was most evident in women with older age at menopause and who were greater than, or equal to, 10 years into postmenopause.

In contrast to HDL cholesterol, a higher concentration of total HDL particles was associated with lower risk of atherosclerosis. Additionally, having a high number of small HDL particles was found beneficial for

postmenopausal women. These findings persist irrespective of age and how long it has been since women became postmenopausal.

On the other hand, large HDL particles are linked to an increased risk of cardiovascular disease close to menopause. During this time, the quality of HDL may be reduced, increasing the chance for women to develop atherosclerosis or cardiovascular disease. As women move further away from their transition, the quality of the HDL may restore—making the good cholesterol cardio-protective once again.

"Identifying the proper method to measure active 'good' HDL is critical to understanding the true cardiovascular health of these women," said senior author Matthew Budoff, M.D., of Los Angeles Biomedical Research Institute.

El Khoudary recently was awarded funding from the National Institute on Aging to expand upon this research work. Her goal is to continue understanding the link between quality of good cholesterol over the menopause transition and women's risk of [cardiovascular disease](#) later in life. She also seeks to examine the biological mechanisms that contribute to quality change of good [cholesterol](#), so that the cardio-protective contribution of [good cholesterol](#) to postmenopausal women's health can be clarified, which would impact guidelines for screening and treatment.

Provided by University of Pittsburgh Schools of the Health Sciences

Citation: 'Good cholesterol' may not always be good (2018, July 19) retrieved 19 April 2024 from <https://medicalxpress.com/news/2018-07-good-cholesterol.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.