

# Menopause potentially linked to adverse cardiovascular health through blood fat profile changes

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New research presented at the [ESC Congress 2024](#) in London, UK (30 August—2 September) shows that women in the menopause transition

period show changes in their blood cholesterol profiles which could have an adverse impact on their cardiovascular health.

"There is an increase in 'bad' low-density type lipoprotein (LDL) particles and a decrease in 'good' high-density lipoprotein particles (HDL) that takes place during and after the [menopause](#) transition," says study author Dr. Stephanie Moreno, University of Texas Southwestern Medical Center, Dallas, TX, U.S. "Taken together, these changes suggest that menopause is associated with a transition to a higher-risk lipoprotein profile that could be more likely to cause cardiovascular disease, such as [coronary artery disease](#)."

Cardiovascular disease (CVD) is the biggest killer of women, despite the misconception that CVD is a "man's disease"—40% of all deaths in women are from CVD. While women develop cardiovascular disease (CVD) approximately ten years later than men, risk of CVD in women rises after menopause. The mechanisms underlying this acceleration in CVD risk are not well understood, but adverse changes in blood fat (lipid) measures are known to occur during the perimenopause period.

Previous investigations have been largely restricted to traditional lipid measures (LDL [bad] cholesterol, HDL [good] cholesterol, and triglycerides) and have not examined changes in advanced lipids, including lipid subfractions and particle number, which have been shown to be more predictive of cardiovascular disease in various studies.

In this study, the authors examined the changes over time in lipoprotein particles that occur during the menopause transition. A total of 1246 participants in the Dallas Heart Study (DHS) with known menopause status underwent measurement of common lipoproteins associated with CVD, including atherogenic LDL-P and small dense-LDL.

Using [nuclear magnetic resonance](#) (NMR) technology, at two time points

(DHS1 and DHS2) they compared longitudinal changes in lipoprotein measures between pre-, peri-, post-menopausal women and men using statistical modeling. For their analysis, peri- is the group that was pre-menopause at DHS I and post-menopause at DHS 2.

There were also 1346 men (reference group) included in the study with a mean age of 43 years. There was a total of 1246 women with a mean age of 42 years for the peri-group, 54 years for the post-group, and 34 years for the pre-group. Of the women, 440 (35%) were pre-menopausal, 298 (24%) were peri-menopausal, and 508 (41%) were post-menopausal.

Over a median follow-up time of 7 years. All three female groups had an increase in LDL-P but the greatest percent change was found to be between peri and post groups at 8.3%. When compared to men, the post-group had the greatest percent change in HDL-P with a negative change of 4.8%.

Small-dense LDL had a greater percent change in the peri- group when compared to men with a change of 213%. This percent change is ~15% higher than both pre- and post-menopause groups.

"We found that menopause is associated with adverse changes in lipoprotein profiles, with the most pronounced changes found to be in increases in 'bad' LDL-particles and subfractions observed for peri-menopausal women," said Dr. Moreno. "When looked at together, these changes could help explain the increase of [cardiovascular disease](#) in [post-menopausal women](#) and help determine if earlier interventions are warranted."

She concludes, "More research is needed to investigate whether these adverse changes in lipoproteins translate to greater cardiovascular risk."

**More information:** [esc365.escardio.org/ESC-](http://esc365.escardio.org/ESC-)

[Congress/sessions/11918](#)

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