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This Trio of Blood Tests Predict 30-Year Cardiovascular Disease Risks for Women

Analysis by Dr. Joseph Mercola | October 24, 2024

STORY AT-A-GLANCE

- Cardiovascular disease (CVD) is the leading cause of death among women in the U.S., affecting nearly 44% of the female population — over 60 million women
- A 30-year study published in August 2024 used a trio of blood tests to examine three key biomarkers — high sensitivity CRP (hs-CRP), LDL cholesterol and Lp(a) — and determine how they influence long-term cardiovascular disease
- High sensitivity-CRP measures inflammation, LDL cholesterol measures atherosclerosis risk and Lp(a) indicates the risk of plaque formation and blood clotting. Lower levels of these biomarkers are generally better for cardiovascular health
- The study found that higher baseline levels of all three biomarkers were strongly linked to increased 30-year cardiovascular risk, with hs-CRP showing the strongest association
- The researchers suggest implementing early interventions as early as 30 to 40 years old to effectively reduce the risk of CVD. Strategies to protect your cardiovascular health are included below

Cardiovascular disease (CVD) is the leading cause of death among women in the United States. The U.S. Centers for Disease Control and Prevention (CDC) reports that nearly 44% of the female population in the country — over 60 million women — are affected by some form of CVD.[1]

Early interventions are important for mitigating the development and impact of CVD, and recent research[2] supported by the National Institutes of Health (NIH) found this could be achieved by measuring specific biomarkers in the bloodstream to get a comprehensive and long-term view of an individual's heart disease risk.

"We can't treat what we don't measure," said Paul M. Ridker, M.D., M.P.H., one of the study authors and the director of the Center for Cardiovascular Disease Prevention at Brigham and Women's Hospital, Boston. "We hope these findings move the field closer to identifying even earlier ways to detect and prevent heart disease."

Key Findings from a 30-Year Study on Three Biomarkers of Cardiovascular Risk

Published in August 2024 in the New England Journal of Medicine[3] and presented at the European Society of Cardiology Congress, the featured study examined three key biomarkers — high-sensitivity C-reactive protein (hs-CRP), low-density lipoprotein (LDL) cholesterol and lipoprotein(a), or Lp(a).

While these biomarkers are already used to predict cardiovascular risk over five- and 10-year periods, the researchers aimed to determine their potential for assessing long-term cardiovascular disease risk. The study involved 27,939 initially healthy American women previously enrolled in the landmark Women's Health Study.

The participants, who began the study between 1992 and 1995 at an average age of 55, were followed for 30 years. At the beginning of the study, researchers measured each woman's levels of hs-CRP, LDL cholesterol and Lp(a). The primary goal was to track the first occurrence of a major cardiovascular event, such as a heart attack, coronary revascularization, stroke or death from cardiovascular causes.

To assess risk, the researchers analyzed how different levels of each biomarker influenced heart disease outcomes over 30 years, while accounting for factors like age and other health conditions. Throughout the follow-up period, 3,662 major cardiovascular events occurred, and the study demonstrated that higher baseline levels

of all three biomarkers were strongly linked to increased 30-year cardiovascular risk. According to a news release published by the NIH:[4]

> *"Researchers found that women with the highest levels of LDL cholesterol had a 36% increased associated risk for heart disease compared to those with the lowest levels. Those with the highest levels of Lp(a) had a 33% increased associated risk, and those with the highest levels of CRP had a 70% increased associated risk.*
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> *When all three measures — LDL cholesterol, Lp(a) and CRP — were assessed together, participants with the highest levels had more than a 1.5-times increased associated risk for stroke and more than a three-times increased associated risk for coronary heart disease compared to women with the lowest levels."*

Although the study[5] focused on women, the researchers believe that similar findings would likely apply to men as well. This suggests that the biomarker screening approach could have broad implications for cardiovascular risk assessment across the general population and could advance preventive cardiology for both men and women.

What Do These Biomarkers Measure?

LDL cholesterol is commonly measured when assessing heart disease risk, as elevated levels are linked to atherosclerosis and cardiovascular events.[6] However, it's not always an accurate predictor of cardiovascular disease risk, as it's possible to have normal total cholesterol and/or normal LDL cholesterol levels, yet still have a high LDL particle number, which more accurately reflects the amount of LDL particles circulating in the blood.

In summary, the primary risk factor for heart disease isn't the amount of cholesterol but the number of LDL particles carrying it. A higher number of LDL particles increases the likelihood of having oxidized LDL (oxLDL), which is significantly more atherogenic.

The hs-CRP and Lp(a) levels provide a better assessment of CVD risk as they reveal less obvious risk factors. In fact, Ridker recommends patients ask their physician to specifically measure these parameters.[7] An hs-CRP test measures the liver protein produced in response to inflammation in the body.[8] Chronic inflammation is a hallmark of most chronic diseases, including CVD. It contributes to plaque formation and destabilization within the arteries.

Rising CRP levels indicate increased inflammation and a higher risk for heart disease or other cardiovascular events like stroke. Hence, the lower your hs-CRP level the better. Aim for levels below 0.7 milligrams per deciliter (mg/dl). I like to keep mine under 0.2 mg/dl. Levels above 3 mg/L are associated with a high risk for cardiovascular events.

Lp(a) is another important, though lesser-known, biomarker for cardiovascular health. Lp(a) is a type of LDL cholesterol particle with an additional protein called apolipoprotein(a), which makes it more likely to stick to blood vessel walls, promoting plaque formation and blood clotting. Elevated levels are associated with an increased risk of atherosclerosis, heart attacks and stroke.[9]

In some countries, Lp(a) screening is routinely recommended because it has a strong genetic component. In countries like the U.S., where universal Lp(a) screening is not standard, physicians may order tests for those with existing heart disease or a family history of CVD.[10] The optimal Lp(a) level is considered to be below 30 mg/dL. Levels above this threshold are associated with a higher risk of CVD, even in individuals who have normal levels of LDL cholesterol.[11]

Lowering Cholesterol Using Statins Is Not the Solution

While the NIH news release[12] mentioned that LDL cholesterol can be treated with **statins**, I do not agree with this approach. While these widely prescribed drugs are undeniably effective in lowering cholesterol, they do little to reduce heart disease risk and cause significant side effects, including an increased risk of Type 2 diabetes.

It's important to recognize that while cholesterol is often blamed for CVD, it is more of a marker than a root cause. Cholesterol itself is not inherently harmful — in fact, it is essential for various bodily functions, including hormone production and cell membrane integrity.[13] The real problem occurs when cholesterol, especially LDL, becomes oxidized or damaged due to inflammation and other metabolic dysfunctions.

Focusing solely on lowering cholesterol levels without addressing the underlying factors that contribute to its oxidation misses the bigger picture. Inflammation, poor diet, stress and exposure to environmental toxins like seed oils (rich in **linoleic acid** or LA) and processed foods can lead to the oxidation of LDL particles, making them more likely to form plaques. This is why simply lowering LDL with drugs like statins does not address the root cause of heart disease.

Addressing Inflammation Is Key

Inflammation is increasingly recognized as a major player in the development of cardiovascular disease. Chronic, low-grade inflammation damages the lining of your blood vessels. In response, your body sends cholesterol to the damaged area, similar to how a scab forms over a cut. This process leads to plaque buildup and an increased risk of blood clots. As reported in the NIH news release:[14]

> *""In recent years, we've learned more about how increased levels of inflammation can interact with lipids to compound cardiovascular disease risks,' said Ahmed A.K. Hasan, M.D., Ph.D., a medical officer and program director at NIH's National Heart, Lung, and Blood Institute (NHLBI). 'This helps explain why lower levels are often better.'*
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> *Immune cells, which help the body repair itself from wounds or infection, can also sense the accumulation of extra cholesterol in cells or become activated in response to the build-up of plaque and send out inflammatory signals. This creates a hyperinflammatory environment where plaque can form, become larger, or even rupture — and cause cardiovascular events."*

Dr. Marc Siegel, senior medical analyst for Fox News and clinical professor of medicine at NYU Langone Medical Center, told Fox News Digital that inflammation increases the risk of heart disease by as much as 70%.[15] Supporting this, a January 2024 study found that chronic inflammation combined with living in poverty boosts the risk of heart disease mortality by an astounding 127%.[16]

To delve deeper into how inflammation contributes to heart disease and learn effective strategies to reduce inflammation, read "**Cholesterol Isn't the Problem in Heart Disease: Inflammation Is**."

Additional Strategies to Protect Your Cardiovascular Health

Ridker suggests taking action as early as your 30s or 40s to effectively reduce your risk of heart disease. Key steps include staying physically active, adopting a heart-healthy diet, managing stress and quitting smoking.[17] In addition to these foundational measures, here are strategies to further enhance your cardiovascular health:

Avoid unnecessary use of nonsteroidal anti-inflammatory drugs (NSAIDs) — Although NSAIDs like ibuprofen and naproxen are effective at reducing inflammation, they also block COX-2, which can trigger platelet aggregation. In simpler terms, they activate your body's clotting mechanism, increasing your risk of blood clots and cardiovascular events.

Avoid seed oils and processed foods — As I mentioned above, seed oils are a primary source of LA, which I believe to be far more harmful than sugar. Excessive LA intake is associated with almost all chronic diseases, including high blood pressure, obesity, insulin resistance and diabetes.

According to Dr. Paul Saladino, LDL cholesterol helps mitigate the harmful effects of LA and other PUFAs. This means that high oxLDL could be a marker of high PUFA consumption, and it's the PUFAs, LA in particular, that are driving cardiovascular disease.

The primary way to prevent it, then, is to radically reduce your LA intake by eliminating seed oils from your cooking, and avoiding processed foods (which are loaded with seed oils) and restaurant foods (as most are cooked in seed oils).

Spend time under the sun — Sun exposure stimulates the production of nitric oxide (NO), which dilates your blood vessels and lowers your blood pressure. NO also protects your endothelium and increases mitochondrial melatonin to improve cellular energy production. However, it's important to approach sun exposure with care, especially if your diet is high in seed oils.

These oils migrate to your skin and oxidize when exposed to sunlight, causing inflammation and DNA damage, which makes you more prone to sunburn. If you're on a high-LA diet, I recommend avoiding intense sun exposure until you've reduced your seed oil intake for four to six months. As you reduce your LA intake, slowly increase your time outdoors. You'll eventually be able to enjoy an hour or more during peak sunlight hours.

Lower your insulin and blood sugar levels — Simple strategies to accomplish this include avoiding ultraprocessed foods and artificial sweeteners, significantly restricting your LA intake and getting regular exercise.

Address chronic stress — This raises both blood sugar and blood pressure, promotes blood clotting and impairs your repair systems. Cortisol, a key stress hormone, reduces endothelial cell production.

Optimize your gut health — Poor gut health leads to systemic inflammation, increasing your risk of heart disease. Certain gut bacteria, particularly Oscillibacter, have also been associated with lower cholesterol levels and reduced heart disease risk.[18] These bacteria can break down cholesterol into smaller molecules that don't raise heart disease risk.

Maintaining a diverse and balanced gut microbiome, especially fostering oxygen-intolerant bacteria like Akkermansia, can strengthen intestinal defenses and overall health. The importance of gut health in heart disease prevention also extends beyond

cholesterol management. Oxygen-intolerant bacteria produce beneficial short-chain fats that support intestinal health.

However, modern lifestyle factors like seed oil consumption and exposure to toxins like endotoxin-disrupting chemicals in plastics can disrupt this delicate balance, leading to increased endotoxin production and systemic inflammation. To bring your gut microbiome back on track and reduce inflammation, incorporate fermented foods, such as grass fed yogurt, sauerkraut, kimchi or kefir, into your diet and consider taking a high-quality probiotic.

Take coenzyme Q10 — CoQ10 is a powerful antioxidant essential for cellular energy production, making it particularly beneficial for the cardiac muscles, which have about 5,000 mitochondria per cell.[19]

A study published in the journal Antioxidants (Basel)[20] says that CoQ10 helps reduce oxidative stress, lowers the risk of death from cardiovascular causes and improves outcomes in patients undergoing coronary artery bypass surgery.

It also helps prevent the buildup of oxLDL in arteries, reduce vascular stiffness and high blood pressure, improve endothelial function by cutting down on reactive oxygen species (ROS) and boost NO levels.

Increase your magnesium levels — This mineral plays a role in transporting calcium and potassium across your cell membranes, which is important for "nerve impulse conduction, muscle contraction, vasomotor tone and normal heart rhythm."[21] Check out my article, "**Magnesium 101 — A Comprehensive Guide to Its Health Benefits**" to learn more.

Sources and References

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