

# Simple blood test could predict a person's heart disease risk 30 years out, study finds

Including additional markers in the blood test gave scientists a more complete picture of patients' long-term heart disease risk.

Scientists looked at three measures in the blood: LDL cholesterol; lipoprotein(a), a type of fat; and C-reactive protein, a marker of inflammation.

A new approach to a routine blood test could predict a person's 30-year risk of heart disease, research published Saturday in the [New England Journal of Medicine](#) found.

Doctors have long assessed their patients' risk for cardiovascular disease by using a blood test to look at cholesterol levels, focusing particularly on [LDL or "bad" cholesterol](#). But limiting blood testing to just cholesterol misses important — and usually silent — risk factors, experts say.

“We have other biomarkers that tell us about other kinds of biological problems our patients who are destined to have cardiovascular disease are likely to have,” said lead study author Dr. Paul Ridker, director of the Center for Cardiovascular Disease Prevention at Brigham and Women's Hospital in Boston.

Ridker and his team found that in addition to LDL cholesterol, two other markers — a type of fat in the blood called [lipoprotein \(a\), or Lp\(a\)](#), and an indicator of inflammation — are important predictors of a person's risk of [heart attack](#), stroke and coronary heart disease.

The findings were also presented Saturday at the European Society of Cardiology Congress 2024 in London.

In the study, the researchers analyzed data from nearly 30,000 U.S. women who were part of the [Women's Health Study](#). On average, the women were 55 years old when they enrolled in the years 1992 through 1995. About 13% — roughly 3,600 participants — had either a heart attack or stroke, had surgery to fix a narrowed or blocked artery, or died from heart disease over the 30-year follow-up period.

Though the research was done in women, Ridker said the findings would likely also apply to men.

Still, the focus on women was on purpose, he said. “This is a largely preventable disease, but women tend to be under treated and underdiagnosed.”

All of the women had blood tests done at the beginning of the study to measure their LDL cholesterol, Lp(a) and C-reactive protein levels, a marker of inflammation in the body.

These measurements, individually as well as together, appeared to predict a woman's heart health over the next three decades, the study found.

Women with the highest levels of LDL cholesterol had a 36% higher [risk for heart disease](#) compared with those with the lowest levels. The highest levels of Lp(a) indicated a 33% elevated risk, and those with the highest levels of CRP were 70% more at risk for heart disease.

When the three were looked at together, women who had the highest levels were 1.5 times more likely to have a stroke and over three times more likely to develop coronary heart disease over the next 30 years compared with women with the lowest levels.

All of the markers have been individually linked to higher risk of heart disease, but “all three represent different biological processes. They tell us why someone is actually at risk,” Ridker said.

Intervening early

Traditional risk factors for heart disease include [obesity, diabetes](#), high blood pressure and [high cholesterol levels](#). Testing for Lp(a) and CRP can reveal less obvious risk factors.

“You can have no traditional risk factors and just by having that high Lp(a), you are at higher risk,” said Dr. Rachel Bond, system director of women’s heart health at Dignity Health in Arizona, who was not involved with the study.

Bond said everyone should get their Lp(a) tested once in their lives. If they have elevated levels at any point, they will for life. There is one caveat: Post-menopausal women can develop high Lp(a) and may want to have their levels tested again at that time, Bond said.

On the other hand, LDL cholesterol and CRP levels fluctuate throughout a person’s life. Ridker supports doctors running the three-pronged blood test when patients are in their 30s or 40s, to catch potentially overlooked risk factors early, when there is time to intervene.

Although exercising, eating well and not smoking are all important, people with already elevated levels of Lp(a), LDL and CRP will likely require medication, said Dr. Steven Nissen, chief academic officer of the Heart, Vascular and Thoracic Institute at the Cleveland Clinic, who was not involved with the study.

“We can’t expect lifestyle interventions are going to do the job alone for most people,” Nissen said.

The study had several limitations that future research may address, including a lack of racial and ethnic diversity, which [plays an important role](#) in a person’s risk for heart disease. Nearly all of the participants — 94% — were white.

Nissen also noted that the study stopped measuring Lp(a) levels once they passed a certain threshold.

“The highest levels of lipoprotein (a) in this study weren’t even high enough to reach the clinical threshold at which a patient would be treated,” he said. “It tends to underestimate the risk of lipoprotein (a).”

Dr. Kunihiro Matsushita, a professor of epidemiology at Johns Hopkins Bloomberg School of Public Health, who specializes in cardiology, said that while inflammation is definitely important, “that doesn’t mean CRP is the best marker for predicting cardiovascular disease risk.”

“Using three biomarkers is interesting, but the choice of which biomarkers these are can be explored further,” said Matsushita, who also wasn’t involved with the new research.

He added that testing for inflammation, LDL and Lp(a) is particularly important for people who are traditionally thought of as low risk for heart disease, including women, young people and those of East Asian descent.

Ridker agreed.

“Physicians will not treat things they don’t measure,” he said.

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