Blood test identifies people at risk for heart attack that other tests miss

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A simple blood test can identify people who are at risk for a heart attack, including thousands who don't have high cholesterol, according to researchers at Oregon Health & Science University.

The new test measures gamma-prime fibrinogen, a component of the blood's clotting mechanism. Elevated levels indicate greater likelihood of a heart attack, even when other signs don't point to cardiovascular trouble, says David H. Farrell, Ph.D., professor of pathology in the OHSU School of Medicine and a member of OHSU's Heart Research Center. The results were recently published in *Clinical Chemistry*.

"Half a million people suffer fatal heart attacks each year," Farrell says. "About 250,000 of the patients who die have normal cholesterol and some of the patients with normal cholesterol also have elevated levels of gamma-prime fibrinogen. We think this is another risk factor that we should test for."

Farrell and his team confirmed the effectiveness of the gamma-prime fibrinogen test by analyzing 3,400 blood samples from the landmark Framingham Heart Study, the oldest and most prestigious cardiovascular disease study in the world. In addition, OHSU's analysis of the Framingham samples found that patients with well-established heart attack risk factors, including cholesterol, high body mass index, smoking and diabetes also have elevated gamma-prime fibrinogen levels.

"We found that if your gamma-prime fibrinogen levels were in the top

25 percent, you had seven times greater odds of having coronary artery disease," Farrell says.

A small pilot study in 2002 gave OHSU researchers their first inkling that gamma-prime fibrinogen might be linked to heart disease. They obtained the Framingham samples - which are rarely shared - and proved the link. The next step is using the test at several hospitals and medical centers to demonstrate it works on a large scale.

"It will take some time to build consensus within the field of cardiology for this test," Farrell says. "The gamma-prime fibrinogen test would be used in conjunction with a cholesterol test to better predict who is likely to suffer a heart attack. Ultimately we are optimistic we can identify people who are at risk who didn't know they are at risk."

OHSU has filed a provisional patent application for a gamma-prime fibrinogen test. Farrell and his colleagues also have formed a company called Gamma Therapeutics, Inc. to mass-produce the assay. OHSU has a process in place to review and manage the individual and institutional conflicts of interest that may arise through its start-up companies.

The gamma-prime fibrinogen research was sponsored by the National Heart, Lung and Blood Institute of the National Institutes of Health.

Provided by Oregon Health & Science University