

Press Release

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Study Finds a Simple White Blood Cell Test Predicts Cardiovascular Risk in Women

In an article to be published March 14, 2005 in the *Archives of Internal Medicine*, researchers in the Women's Health Initiative (WHI) study have found that a simple white blood cell (WBC) count is a predictor of cardiovascular disease (CVD) events such as heart attacks, stroke and heart disease-related deaths in post-menopausal women. Women with a WBC count above 6.7 billion cells/liter had more than double the risk of fatal heart disease, compared with women who had WBC count 4.7 or lower. In addition, women with a high WBC count had a 50% increase in the risk of a CVD event or death from any cause. Further, this standardized and inexpensive test may identify CVD risk in women who do not otherwise have other CVD risk factors, such as smoking, diabetes, high blood pressure or high cholesterol.

The WBC count measures inflammation in the body, which is thought to be one of the underlying causes of heart attacks and other CVD events. The strength of the WBC count in predicting CVD risk is comparable to another test that measures inflammation, the C-reactive protein (CRP). However the WBC count is more routinely available in most clinic settings, and costs less than the CRP. Even after accounting for the CRP level and other risk factors, the risk of heart disease was found to be more than doubled in women with an elevated WBC count. Women with elevated levels of both the WBC count and CRP had nearly 7 times the heart disease risk compared to when both test results were low.

Dr. Karen Margolis, MD, MPH, of the Minneapolis Medical Research Foundation's Berman Center for Outcomes & Clinical Research, is part of a team of researchers in the Women's Health Initiative who conducted this research. The WHI is a large, multi-center study

sponsored by the National Heart, Lung, and Blood Institute (NHLBI), part of the National Institutes of Health (NIH). As Associate Medical Director at the Berman Center, Dr. Margolis used data from the WHI Observational Study (WHI-OS), which examines the relationship between lifestyle, health and risk factors and specific disease outcomes. Over 93,000 women across the country, (2,572 at the Berman Center) are participating in the WHI-OS.

“Our findings suggest that a WBC count higher than 6.7 is associated with a doubling in the risk of heart disease death and about a 50% increase in the risk of a cardiovascular event”, states Dr. Margolis, “whether or not a post-menopausal woman smokes, has diabetes or high blood pressure, or has cholesterol problems”. Based on these results, doctors may want to pay more attention to WBC counts that are in the upper range of what is often considered normal, especially if the test was part of a routine measurement called complete blood count, and was not ordered because of a suspicion of infection. This inexpensive and readily available test may help identify people who have a high level of systemic inflammation, and are thus at risk for CVD events.

This work is the first of its kind to assess the WBC as a predictor of CVD events in healthy people while also controlling for CRP. The WBC was found to be just as useful as the more expensive CRP in predicting CVD events. These findings from WHI-OS, while restricted to women aged 50-79, add to available evidence in men that suggest a similar relationship between the WBC count and CVD risk.

A copy of the study can be obtained from the JAMA/Archives media relations department at 312-464-JAMA (5262) or email: mediarelations@jama-archives.org. Information on WHI can be found at www.nhlbi.nih.gov/whi and www.whi.org. The Minneapolis Medical Research Foundation is at www.mmrf.org. The Berman Center for Outcomes & Clinical Research is at www.bermancenter.org.