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VITAL SIGNS

## Behavior: Hostility May Raise Risk for Disease

By NICHOLAS BAKALAR

Researchers studying 313 healthy Vietnam veterans have found that anger and hostility may increase the risk for cardiovascular disease, [diabetes](#) and high [blood pressure](#).

Over a period of 10 years, the men had regular physical examinations involving a wide variety of medical tests. They also underwent psychological examinations using well-established questionnaires to determine their levels of hostility, anger and [depression](#).

The researchers measured blood levels of a protein called C3, a marker for the inflammation that is a risk factor for cardiovascular illnesses. After controlling for other variables, the scientists found that those in the highest one-quarter in hostility, anger and depression showed a steady and significant increase in C3 levels, while those in the lowest one-quarter had no increase.

“This may put those men at increased risk for hypertension, diabetes and coronary [heart disease](#),” said Stephen H. Boyle, the lead author of the study and a researcher at Duke University Medical Center.

Why these increases in C3 levels happen is unknown, but the authors speculate that anger in hostile and depressed men initiates a series of chemical responses in the immune system that lead to inflammation.

Taking steps to control hostility may be helpful. “There are interventions that appear to be useful in lowering levels of anger,” Dr. Boyle said. “I don’t know if their long-term effects on physiology have been tested, but if you’re less angry and hostile, that in itself is a worthy goal.”

The [study](#) was published in the August issue of Brain, Behavior and Immunity.