

Hopelessness tied to heart, cancer deaths

Bleak expectations about oneself and the future bode ill for physical health, a new study finds. Men who cite an abiding sense of such hopelessness die at higher than average rates from heart disease, cancer, and other causes, assert Susan A. Everson, an epidemiologist at the Western Consortium for Public Health in Berkeley, Calif., and her colleagues.

Hopelessness also exhibits a strong statistical link to the emergence of new cases of heart disease and cancer. Moreover, the link holds up regardless of the presence of other major risk factors for disease and death, including depression, cigarette smoking, high blood pressure, frequent alcohol use, and lack of social support, Everson's group argues.

"We were astonished by these findings," remarks epidemiologist George A. Kaplan of the California Department of Health Services in Berkeley, a coauthor of the report. "It looks like people who experience a pervasive sense of hopelessness are at increased risk for a variety of serious health problems and require careful medical surveillance."

The findings contradict the widespread notion that hopelessness represents an extreme form of depression, writes C. David Jenkins, a psychologist at the University of North Carolina at Chapel Hill School of Medicine, in an accompanying comment. In the new study, hopelessness incurred different, more serious types of damage than depression did, he states.

The study consisted of 2,428 men age 42 to 60 living in Finland and participating in an ongoing study of psychological contributions to cardiovascular disease. Volunteers' hopelessness was ranked according to the extent to which they agreed or disagreed with the statements "It is impossible to reach the goals I would like to strive for" and "The future seems to me to be hopeless, and I can't

believe that things are changing for the better."

Over the next 4 to 10 years, a Finnish national registry recorded 174 deaths in the study sample. Half the deaths were caused by cardiovascular disease; most of the rest resulted from cancer, violence, or injury. The registry also noted 73 new cancer cases and 95 first-time heart attacks.

Men reporting moderate to high hopelessness died from all recorded causes at two to three times the rate of those reporting low or no hopelessness; the former group also developed cancer and heart attacks more frequently, Everson's group reports in the March-April *PSYCHOSOMATIC MEDICINE*. The team plans further research to distinguish among the types of cancer, Kaplan says.

Among men in good physical health at the study's start, those scoring high on the hopelessness questions displayed five times the overall death rates of those in the other hopelessness rankings, the researchers report. In contrast, among those with heart disease or other health problems, even moderate levels of hopelessness boosted the likelihood of dying.

Physiological effects of prolonged hopelessness that contribute to physical disease remain poorly understood, Kaplan contends. Hopeless men may experience surges of stress hormones, which can undermine the heart or other internal organs, or they may undergo immune changes leading to cancer, the Berkeley researcher theorizes.

Over the course of the study, he adds, hopeless men may have increased their cigarette smoking or otherwise endangered their health.

Much previous research indicates that optimism in the face of losses and failures promotes mental and physical health, whereas pessimism does the reverse, notes Michael F. Scheier, a psychologist at Carnegie Mellon University in Pittsburgh. — *B. Bower*

More B vitamin benefits

Because ordinary diets often fail to provide a pregnant woman with enough folate—a B vitamin that aids cell growth—to prevent her fetus from developing potentially devastating neural tube defects (SN: 3/30/96, p. 198), obstetricians usually prescribe folate-rich supplements. Now, researchers have uncovered another benefit of extra folate: reduced risk of premature birth, the leading cause of death among black newborns in the United States.

Theresa O. Scholl of the University of Medicine and Dentistry of New Jersey in Camden and her colleagues followed

832 pregnant inner-city women, 60 to 65 percent of them black. Women consuming 60 percent or less of the recommended daily allowance of folate 28 weeks into pregnancy had twice as many preterm and low-birthweight babies as women getting the full 400 micrograms daily, Scholl's team reports in the April *AMERICAN JOURNAL OF CLINICAL NUTRITION*.

Conducted in one of the nation's poorest communities, this study suggests that fortifying inadequate diets with vitamins "could make a big difference," Scholl says. However, she adds, "you can buy candy and chewing gum with food stamps, but you aren't allowed to buy vitamins." — *J. Raloff*

Ancient metal mines sullied global skies

As Socrates took in the latest tragedy at his local theater, little did he realize that Athenian smelters were sending showers of fine metallic dust into the sky. Yet deep ice drilled from Greenland now provides clear evidence that a variety of heavy metals polluted the global atmosphere during ancient times—and in quantities far larger than expected.

Sungmin Hong of Domaine University in Saint Martin d'Hères, France, and his colleagues measured the copper concentrations in ice that dates back through the last 7,000 years to the beginning of the Bronze Age. As the Greenland glacial cap builds up year by year, each layer, like a ring of a tree, retains a chemical signature of the precipitation and dust that settle out of the atmosphere.

Unmistakable signs of copper emissions from smelting started showing up in Greenland around 2,500 years ago, during the Golden Age of Greece, the researchers report in the April 12 *SCIENCE*. Copper concentrations in the ice rose during the heyday of the Roman Empire, dropped during the Middle Ages, and then climbed again with the start of the Industrial Revolution.

The researchers also compiled records of copper mining and smelting around Europe and Asia to estimate how emissions into the atmosphere changed with time. These data dovetail with the measurements made in Greenland, they report.

Although most people consider air pollution an invention of modern society, the new results "provide strong evidence that pollution was a global problem even in ancient times," comments Jerome O. Nriagu, an environmental geochemist at the University of Michigan in Ann Arbor.

In previous studies, Hong and his colleague Claude F. Boutron, as well as another team, had documented lead pollution reaching Greenland and northern Europe during Greek and Roman times (SN: 3/26/94, p. 198). But the copper results indicate that many by-products of smelting were wafting across the Northern Hemisphere and perhaps the globe.

In a preliminary analysis of Antarctic ice, Todd Hinkley of the U.S. Geological Survey in Denver and his colleagues found hints of air pollution from smelting going back as far as 4,000 years. Because Greenland lies closer to the location of these early societies, he suspects that Arctic ice will show clearer signs of the first widespread industrial activities.

The health effects of these pollutants remain unclear. During Roman times,