



Who decides where elective surgery is performed? A recent Dartmouth study of 500 Medicare patients found that in 31% of cases, the doctor was the primary decision-maker.

Findings cast iron as heart un-healthy

Buyer beware! Iron-fortified foods and vitamins with iron could be hazardous to your cardiovascular health, especially if you're a man or a postmenopausal woman. Too much iron promotes the creation of free radicals—highly reactive molecules that can damage arteries, particularly in the early stages of arteriosclerosis.

But don't despair. A recent Dartmouth study, led by Leo Zacharski, M.D., and published in the *Journal of the American Medical Association*, suggests that lowering excess body stores of iron—through drawing blood—can improve outcomes for some people with peripheral arterial disease (PAD).

Correlation: The story begins in 1981, when a pathologist in Florida observed a correlation between increased levels of iron in the blood and age- and gender-related heart attack rates. He hypothesized that premenopausal women—who regularly lose blood, and thus iron, through menstruation—as well as men who donate blood regularly have lower cardiovascular risk than men who don't give blood. Some later studies supported that hypothesis, though others have shown mixed results.

Zacharski, a DMS faculty member and a physician at the VA Medical Center in White River Junction, Vt., launched what he describes as “the first big study . . . to show in a controlled manner that having relatively low levels of body iron is associated with reduced disease risk.” The randomized clinical trial, conducted from 1999 to 2005 at 24 VA hospitals (including the one in White River Junction), involved 1,277 men and postmenopausal women aged 43 to 87 with symptomatic but stable PAD. About half were randomly assigned to a control group and received no iron reduction. The other half underwent iron reduction through phlebotomy; every six months, defined volumes of blood were removed.

“We wanted to bring their ferritin levels—meaning their body iron stores—down to the level of premenopausal women,” Zacharski explains. “So we drew blood off to lower the iron to a nadir of 25.” Ferritin levels in children and menstruating women average about 25 nanograms per milliliter of blood serum.

Significant: At first, the researchers found no statistically significant difference between the two treatment groups. Then they analyzed the data from the younger patients—those aged 43 to 61. This time there was a significant difference in the iron-reduction group: 54% fewer deaths from all causes.

“If we could just lower the amount of iron in our system, we could . . . lower the risk of vascular disease,” Zacharski says. While he acknowledges that further controlled studies are needed to clarify the role of iron in cardiovascular disease, he points out that “iron has been implicated in other diseases,” too.

He expects to publish results from a new study, one that focuses on iron's effects in another disease, in the very near future. **LAURA STEPHENSON CARTER**



Iron, cautions Zacharski, including from fortified food and vitamins, can be too much of a good thing.

Aging well

A new fountain of youth for yeast was reported by DMS biochemists in the journal *Cell*. Previously, the best known way to prolong life in yeast, as well as more complex organisms, was by calorie restriction. But Charles Brenner, Ph.D., and colleagues have found a new vitamin



that prolongs life in yeast. “If we could do this in humans,” he says, “we would be able to provide some of the benefits of calorie restriction, which are pretty striking in model organisms.” The findings may one day help people with neurodegenerative diseases and other conditions associated with aging.

Needlepoint

Administering vaccinations against measles, mumps, rubella, and chicken pox may soon be easier in developed and developing nations alike. Pediatric researchers at Dartmouth recently evaluated a combination vaccine that only needs to be refrigerated, not frozen, and found it to be just as good as its frozen counterparts. Adopting the refrigerator-stable formulation “will lessen the burden of distribution and storage on pediatric practices, increase the ease of vaccine administration, and allow additional global expansion of current recommendations throughout the world,” the authors wrote in the journal *Pediatrics*.

