



**DMS interventional radiologists found that in treating an aortic aneurysm from a blunt trauma injury, endovascular repair—done from inside the blood vessel—is better than surgery.**

## Ironing out a historical problem

In 1941, President Franklin Roosevelt faced a looming crisis: poor nutrition. Too many young men enrolling in the Army weren't getting enough vitamins and minerals, especially iron, in their diets. To produce hardier soldiers (and citizens), the government mandated that flour and bread be fortified with iron.

One result of this public-health intervention was a decline in anemia, which is caused by iron deficiency. But there may be some less-fortunate consequences.

**Lungs:** Iron performs many critical functions, including carrying oxygen from the lungs to the rest of the body. But humans use only a small amount of iron each day, so it accumulates—usually starting in the teen years for men and after menopause for women.

For years, researchers have hypothesized that iron might contribute to a number of medical problems, but few randomized trials have been done to confirm the connection. One of the few has been led by Leo Zacharski, M.D., a professor of medicine at DMS. Since 1999, he's studied iron levels and disease, including cancer, in 1,277 patients in a trial funded by the Department of Veterans Affairs.

**Levels:** Zacharski measured the amount of ferritin—a protein that stores iron—in all the patients' blood. Then about half of

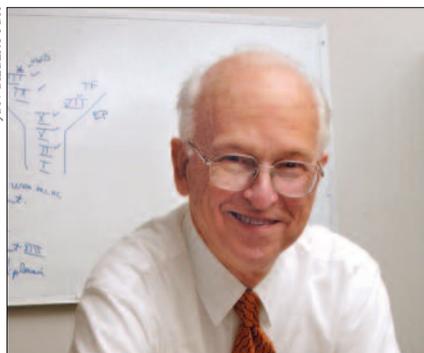
them underwent periodic phlebotomies—or bloodletting—to reduce their iron levels. At the start of the trial, the average ferritin level for all participants was 122.4 nanograms of ferritin per milliliter of blood (ng/ml). The goal for those in the reduction group was to keep their ferritin levels between 25 and 60 ng/ml.

The results confirmed the concern about the risks of excess iron. Of the 641 patients in the control group, 60 developed new malignancies during the study and 36 died of cancer. In the reduction group, only 38 of 636 patients developed malignancies and 14 died of cancer—a statistically significant difference.

Further insight came from the fact that not everyone in the reduction group followed the study's guidelines. The intention was that they'd have their ferritin checked every six months and have a phlebotomy if it was over 60 ng/ml, but some patients waited longer than six months. Zacharski says this variability strengthened the finding, because patients who stuck to the schedule were less likely to develop a malignancy than those who did not. And in the control group, patients who developed malignancies had a higher average ferritin level than those who did not (127.1 versus 76.4 ng/ml).

Questions remain about how iron could cause cancer, but Zacharski is convinced of the connection. "Iron loves to react with oxygen," he says. Its affinity for oxygen is what makes it essential for proper cellular functioning. Extra iron, however, can produce molecules called free radicals, known to damage DNA, proteins, and lipids—a possible pathway to malignancy. So is it time to ditch a policy from a different era? Yes, argues Zacharski. For most Americans today, he feels, iron supplementation is unnecessary—and, in some cases, harmful.

**The results confirmed the concern about the risks of excess iron.**



JON GILBERT FOX

**Zacharski showed a link between iron and cancer.**

AMOS ESTY

### Thinking about drinking

Between 1982 and 1988, the U.S. military set a drinking age of 21 on all U.S. bases and instituted programs to prevent alcohol abuse.

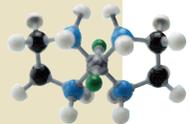
According to members of the DMS Department of Psychiatry, those efforts resulted in some dramatic changes. In a paper in *Military Medicine*, the team showed that



from 1992 to 2003, alcohol treatment rates dropped by 60% for young male veterans, compared with about a 25% drop for the general male population during that period. The findings, they argue, support earlier work "suggesting that adolescent alcohol use, even in late adolescence, may contribute to later problem drinking."

### Playing defense

The immune system is the body's best defense against the spread of cancer, but the system's dendritic cells actually play a role in *sustaining* tumor growth. Members of the microbiology and immunology department reported in *Cancer Research* that



targeting certain dendritic cells led to more effective treatment of ovarian cancer in mice. They found that depleting the number of dendritic cells made it harder for the cancer to spread and, surprisingly, strengthened the immune response. Used with standard chemotherapy, this technique "significantly delayed cancer progression." ■