

A strong case for mammography sooner

The strongest evidence yet that mammography significantly reduces breast cancer deaths in women under 50 comes from a new analysis of a long-term U.S. study, begun in the early 1960s. Kenneth C. Chu and researchers at the National Cancer Institute in Bethesda, Md., report a 24 percent reduction in death from breast cancer in women aged 40 to 49 who underwent mammography and a physician's breast examination annually for three years. Patients in the control group followed their "usual" pattern of medical care. At that time, physicians rarely used mammography to screen for breast cancer and even breast examinations may not have been periodic, Chu told *SCIENCE NEWS*.

Previous reports from the Health Insurance Plan study of 61,000 women living in the New York City area showed a significant reduction in breast cancer deaths for women aged 50 to 64, but not for the younger group. The researchers attribute the new findings in part to longer follow-up of 742 patients for at least 18 years. Dutch and Swedish studies that do not show benefit to younger women from mammography have shorter follow-up periods, the researchers say. They also point out that the Breast Cancer Detection and Demonstration Project—a five-year study by the American Cancer Society and the National Cancer Institute that ended in 1978—which supports the benefits of screening sooner, was not a randomized trial. In the Health Insurance Plan study women were assigned at random to a study or control group.

The research team hopes the study, which is described in the Sept. 21 *JOURNAL OF THE NATIONAL CANCER INSTITUTE*, will help settle the debate about screening women under age 50.

Doctors-in-training: Wake up bright?

In medical training, hospital interns and residents must often care for patients after getting little sleep. Does this affect their performance? The much-debated question prompted a study of 26 surgeons-in-training to determine whether sleep deprivation impaired their cognitive and motor performance when they were on duty every other night.

For 18 to 19 days, the residents kept a sleep diary and underwent five tests each morning to measure cognition, visual and auditory alertness and hand-eye coordination. The scientists defined sleep deprivation as less than 4 hours of continuous sleep in the previous 24 hours, which occurred in 89 percent of the on-duty nights studied. When sleep deprivation occurred, total sleep averaged 3 hours, and the longest uninterrupted sleep averaged 2.2 hours.

Although residents showed "trivial" improvement on two tests when they obtained some sleep just before testing, the researchers said repetitive sleep deprivation did not impair the residents' test performances or, by extension, their patient care. The evidence "does not support arbitrary recommendations to limit working hours of residents."

The report by Timothy F. Deaconson of the Medical College of Wisconsin, in Milwaukee, and his colleagues appears in the Sept. 23/30 *JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION*.

Aspirin fells flu viruses *in vitro*

Aspirin may offer flu sufferers more than just relief from aches and pains. When researchers added aspirin to influenza viruses in cell cultures, it inhibited viral growth, according to Richard T.C. Huang and Ellen Dietsch of the Free University in West Berlin. At a low aspirin concentration, most viral activities remained detectable, but as the concentration increased, viral activity gradually decreased until, at 1.8 grams, aspirin "completely prevented" the synthesis of two key viral proteins, the researchers report in the Sept. 22 *NEW ENGLAND JOURNAL OF MEDICINE*.

One honey of an alternative to sulfites

For the same reason untreated apples turn brown once cut—a reaction involving the enzyme polyphenol oxidase, phenols in the fruit and oxygen in the air—freshly pressed apple juice quickly turns brown and cloudy. While roadside stands commonly sell such juice, it takes only a few days for the enzymatic activity to destroy the vitamin C and to give the juice an unpleasant taste. Most commercial producers avoid the problem by adding a pectin enzyme to limit cloudiness and sulfites to prevent browning. But concern over the life-threatening allergic reactions sulfites can trigger has prompted a search for more benign alternatives (*SN*: 7/25/87, p.63). And Cornell University chemists have happened onto a particularly sweet one: honey.

About 10 years ago, C.Y. Lee and co-workers in Cornell's laboratory at the New York State Agricultural Experiment Station in Geneva found that honey has the ability to clarify browned apple juice. Their new research relates this phenomenon to a characteristic protein that bees impart to their honey. This as-yet-unnamed protein interacts with the enzymatic-browning reaction products in apple juice, creating macromolecules that precipitate out.

Effective treatment involves mixing just 2 percent honey by weight with browned apple juice and letting it sit at room temperature for 90 minutes. The brown sludge that forms is easily filtered out. Pasteurizing the resulting juice provides the same long-lasting drink previously attainable only with sulfites, Lee says.

Though Cornell is seeking a patent on the process, the technique might not even be needed for juice from NY 674, a new apple the Geneva station hopes to introduce commercially next year. While most apples brown 5 to 20 minutes after they're cut open, the exposed flesh of NY 674 stays yellow-white for days. Lee's tests show the reason is its relatively low levels of the browning enzyme and phenols. Levels of each are less than 20 percent of normal.

Cheesy plaque attack

Four years ago, Mark Jensen, director of clinical studies at the University of Iowa dental school in Iowa City, noticed that aged-cheddar, Swiss and Monterey Jack cheeses help fight tooth decay. Although the mechanism of action remains unknown, he and his co-workers have now confirmed that another nine cheeses—Edam, Gouda, Muenster, mozzarella, Port Salut, Roquefort, Romano, Stilton and Tilsit—perform equally well in limiting tooth decay.

Ordinarily, when carbohydrates such as sugar become trapped in plaque—the film on tooth surfaces that incubates cavity-fostering bacteria—they are converted to tooth-destroying acids. But in a week-long study, electrodes implanted between the teeth in five volunteers recorded no significant increase in the acidity of plaque when a sucrose (table sugar) tooth rinse followed the subjects' consumption of any of the 12 cheeses. However, plaque acidity increased 1,000-fold—to a pH of 4—when the sugar rinses were not preceded by a cheese snack. In a related experiment involving only cheddar, Jensen found that consumption of this cheese four times daily for two weeks caused a 20 percent remineralization (tooth-surface rebuilding) in synthetic tooth-like materials temporarily attached to root areas and 5 to 10 percent remineralization in materials similar to tooth-crown enamel.

These studies suggest that the 12 tested cheeses, when eaten as snacks, are as benign as sugarless gum—at least in terms of cavity formation, Jensen says. And when eaten—or just chewed without swallowing—before a sweet meal, he adds, they might limit tooth decay by preventing the formation of tooth-demineralizing acids.