

## Experts weigh the benefits of mammography

Several studies find no survival advantage for fortysomething women who obtain regular mammograms, an X-ray picture that detects malignant tumors in the breast. By contrast, women in their 50s and 60s do reap significant longevity benefits from routine mammography, the same studies show.

"For women over 50, there's no question that mammography really does work: It saves lives," says Russell Harris of the University of North Carolina School of Medicine in Chapel Hill. For women in their 40s, however, the story is considerably different: "There's no evidence that mammography screening shows a benefit," says New Zealand researcher J. Mark Elwood. "We don't recommend it."

Harris, Elwood, and other breast cancer experts aired their opinions on this screening test last week at a meeting sponsored by the National Cancer Institute (NCI). Health officials estimate that breast cancer will kill an estimated 46,000 women in the United States this year alone.

Although mammography has been seen as a way to save lives, the story isn't that simple for women in their 40s, says Elwood, an epidemiologist at the University of Otago in Dunedin, New Zealand. Elwood, who presented his team's findings at the meeting, employed a statistical technique called meta-analysis to pool data from six randomized trials of mammography. His study, which appeared Feb. 25 in the *ONLINE JOURNAL OF CURRENT CLINICAL TRIALS*, included information on nearly half a million women worldwide.

The New Zealand analysis showed that for women age 40 to 49 there is no reduction in breast cancer deaths that can be attributed to screening with mammography. Women who got routine mammograms every year or every other year had the same breast cancer death rate as women who got standard medical care, which did not always include a mammogram, Elwood says.

Scientists don't know why regularly scheduled mammography should fail to protect women in their 40s. It may be that younger women who develop cancer have faster growing tumors that fail to respond to conventional treatment, even when detected at a very early stage, Elwood speculates.

For women in their 50s and 60s, the risk-benefit equation for breast cancer screening appears very different. Elwood's study shows an average 30 percent reduction in deaths caused by breast cancer for women age 50 to 69 who received regular mammograms. It may be that older women suffer from a slower growing breast cancer, one more easily quashed when detected, he says.

Researchers from Sweden and the

United Kingdom also presented their data at the meeting, which was held in Bethesda, Md. Together, the studies underscore the benefits of mammography for women in their 50s and 60s and cast doubt on mammography's efficacy for women in their 40s, Harris says.

The results also bolster the conclusion of a previous trial. In that study of more than 50,000 women, Canadian researchers found no reduction in breast cancer death rates for women in their 40s who received annual mammograms.

The new findings cast doubt on breast cancer guidelines issued by the NCI and the Atlanta-based American Cancer Society (ACS). Right now, ACS advises healthy women age 40 to 49 to get a screening mammogram once every year or two. The thinking has been that a routine mammogram would identify tumors at a very early stage and thus boost a woman's chance of beating the disease, says Gerald Murphy, the chief medical officer for the ACS.

## Study erodes image of pre-Columbian farmers

Traditional farming in central Mexico, first implemented around 3,500 years ago, caused at least as much soil erosion as plows, livestock raising, and other techniques introduced by the Spanish in the 16th century A.D., according to a new study.

And a return to traditional farming methods in order to make more efficient use of agricultural land, now under consideration in Mexico, probably will not produce the desired results, geographer Sarah L. O'Hara of the University of Sheffield in England and her colleagues assert in the March 4 *NATURE*.

"[The researchers] have provided a landmark study which shatters the myth of pre-Columbian America as an Eden in which people were 'transparent in the landscape,'" writes Karl W. Butzer, a geographer at the University of Texas at Austin, in a commentary accompanying the new report.

O'Hara and her co-workers obtained 21 sediment cores, ranging in length from about 4 feet to more than 8 feet, from the floor of Lake Patzcuaro, which lies more than a mile above sea level in central Mexico. Archaeological evidence for human settlements in the highlands surrounding Lake Patzcuaro dates back about 4,000 years.

Soil erosion into the lake, indicated by a predominance of clay and minerals associated with nearby agricultural land rather than natural lake sediments, first appears in core segments carbon-14 dated from around 3,600 to 2,900 years ago, the scientists say. These dates correspond to the rise of maize cultivation in

central Mexico, they maintain. But Murphy says that ACS will reconsider those recommendations, a process that may take several months. "We'll have to look at the data," he adds.

Not everyone thinks that women in their 40s should forgo mammography as a screening test for breast cancer. Daniel Kopans, a radiologist at the Massachusetts General Hospital in Boston, points out that mammograms do pick up malignant tumors growing in the breast well before any other symptoms surface. Does such early detection help younger women live longer? Kopans admits he doesn't know, but he points out that the studies done so far haven't tracked women long enough to provide a clear-cut answer to that question.

Kopans still advises women in their 40s to get a mammogram. "We know that high-quality mammography can find cancers at a smaller stage, even in younger women," he says. "My feeling is that we should make screening available to those women." Other researchers disagree. One thing is certain: Women in their 40s may be left in limbo until the experts sort out the controversy. — K.A. Fackelmann

central Mexico, they maintain.

A more intensive period of soil erosion extended from about 2,500 to 1,200 years ago, O'Hara's group reports. Sediment built up most rapidly in the lake's north basin, they note. The region's inhabitants, whose identity remains uncertain, apparently preferred to settle just north of Lake Patzcuaro and farm the steep slopes jutting down to its waters, the investigators say.

Comparable soil erosion occurred again between 850 and 350 years ago, reflecting extensive forest clearing by the Tarascan people, who dominated the region at the time of the Spanish conquest in 1521 A.D., O'Hara's group holds.

Soil erosion into Lake Patzcuaro following the introduction of Spanish agricultural methods falls at or below previous levels, they point out.

The environmental damage produced by pre-Columbian agriculture around Lake Patzcuaro equals that generated by ancient Maya "slash and burn" farming techniques in Central American forests more than 1,000 years ago, according to the scientists.

Native Americans exploited the land and other natural resources to support their large population centers, Butzer notes. O'Hara's study indicates that they did not operate "in harmony with nature" and possessed no panaceas that would improve modern land use, he contends.

Some rural areas may reap benefits by incorporating small-scale traditional farming methods into an overall subsistence strategy that includes livestock raising, Butzer asserts. — B. Bower