



DMS's David Goodman, M.D., found a 200% difference in physician supply across the U.S. For every physician who has moved to a low-supply area, four moved to a high-supply area.

Assessing old and new, with cost in mind

Most women probably don't even know if their mammogram is recorded on film or digitally, says Anna Tosteson, Sc.D. But the transition from film to digital imaging has raised questions—including whether there's a difference in the cost-effectiveness of the two methods.

A professor of medicine at DMS, Tosteson recently looked into that question in concert with the American College of Radiology Imaging Network (ACRIN). In phase one of the organization's Digital Mammography Imaging Screening Trial (DMIST), other ACRIN investigators focused on the clinical effectiveness of the two methods. In DMIST's second phase, Tosteson's team added cost to the analysis, to see if digital mammography's higher cost could be justified by better health outcomes.

Phase: The first phase showed that in younger women and women with dense breasts, digital mammography resulted in more screen-detected cases of cancer and fewer projected deaths from cancer. But digital was no better than film in women over 50 with non-dense breasts.

Tosteson's multisite team revisited the records of the nearly 50,000 asymptomatic women involved in phase one. They entered findings from the two types of mam-

mography, and the \$50 higher Medicare reimbursement for a digital screening, into a University of Wisconsin breast cancer model that simulates women's life history. This yielded a cost per quality-adjusted life-year (QALY) for each method; the numbers were run for the entire sample, as well as for the age and breast-density breakdowns.

Dense: The results, published in the *Annals of Internal Medicine*, were striking. The cost to use digital instead of film mammography for all women is over \$300,000 per QALY gained. If digital is used only for younger women and those with dense breasts, where its effectiveness is higher, it falls to between \$26,500 and \$84,500 per QALY gained.

Asked what inspired the study, Tosteson explains that "the U.S. spends more on health care than any other country . . . and there's a feeling that part of what's driving [that] are technological innovations. So if you have something big like digital mammography coming along, before it's adopted—fully adopted—some consideration ought to be given to the economic value." The team's goal was not to limit access to technology but to assess its "value . . . if you look at longer-term endpoints like life expectancy or quality-adjusted life expectancy."

Method: About 33.5 million mammograms are done in the U.S. each year, and the digital method appears to be gaining ground rapidly. Tosteson says 20% of all mammograms were digital in 2007, up from only 7% in 2005. (At DHMC, all mammograms are done digitally.) Why make the digital-film comparison when film seems headed for obsolescence? The ACRIN paper pointed out that it's important "to gain insight into how various population subgroups are affected by technologic innovation." **JAMES DiCLERICO**

"Some consideration ought to be given" to technology's value.



There are big differences in the cost-effectiveness of film and digital mammography, Tosteson found.

FLYING SQUIRREL GRAPHICS

Air line guide

An increasingly popular way to deliver oxygen to infants with respiratory problems may be easier but should not replace the standard method, DMS researchers recently reported in *Pediatrics*. The team measured the pressure inside the mouths of 27 infants as they received oxygen through heated, humidified, high-flow nasal cannula therapy. "Only in the smallest infants with the highest flow rates, with the mouth fully closed, can clinically significant but unpredictable levels of continuous positive airway pressure be achieved," wrote Zuzanna Kubicka, M.D., and her coauthors. "Our results and those of others also raise important safety and monitoring issues."



Organ lesson

Despite efforts to ensure equal access to organs, country-dwellers are up to 20% less likely than their urban counterparts to get a heart, liver, or kidney transplant, concluded a study led by DMS surgeon David Axelrod, M.D. Patients in "rural regions and small towns face multiple barriers to health-care access," wrote Axelrod and his coauthors in the *Journal of the American Medical Association*, "including the need to travel long distances, the lack of locally available specialty services, and difficulty in receiving follow-up care." ■

