

## Do follow-up MRIs one-up mammography?

**W**omen with newly diagnosed breast cancer have lots of options to consider, one of which is whether to undergo additional imaging to look for tumors that may not have been detected by mammography. A new study led by Dartmouth radiologist Petra Lewis, M.B.B.S., offers hard data to help women and radiologists assess the benefit of having an MRI (magnetic resonance image) prior to being treated for breast cancer.

**Data:** For women with newly diagnosed invasive breast cancer, bilateral breast MRIs are “becoming the standard of care,” says Lewis. But back in 2005, when DHMC began doing them routinely for such patients, the practice was limited mostly to high-volume medical centers. Lewis and her colleagues consulted DHMC’s breast tumor board, part of the Comprehensive Breast Program, before instituting the change. The board suggested monitoring the women closely and collecting data that could be used to assess the value of the practice.

Lewis and her colleagues did just that. They published the first comprehensive look at the data in the May 2009 issue of the *American Journal of Roentgenology*. Out of 199 women with newly diagnosed invasive breast cancer, 74 were found to have additional suspicious lesions (potential tumors, that is) that had not been detected earlier by mammography but that were detected with MRI.

**Lesions:** Those women then underwent additional imaging and/or biopsies to determine if the lesions were cancerous. Of the 74 women with suspicious lesions, 38 were found to have one or more additional cancerous tumors. Three-fourths of those were malignant and invasive, and not quite one-fourth were ductal carcinoma *in situ*—a very early form of cancer that has not invaded surrounding tissue and may never progress.

Using MRIs to look for additional breast cancers is not without controversy, Lewis acknowledges. Three of the sticking points are:

- Expense: At DHMC, a bilateral breast MRI costs about \$4,000.

- False positives: A lot of lesions that are detected turn out not to be cancer—about 50% in Lewis’s study. But, she notes, that’s a lot better detection rate than mammography.

- Uncertainty: No one knows for sure if finding and treating the MRI-detected cancers actually saves lives (or, rather, lengthens lives). Lewis believes that may never be known because it would cost too much, require too many patients, and take too long to conduct the large, randomized trial that would be necessary to determine that. So instead, she focused on the size of the tumors that were detected. The median size of the malignant invasive tumors detected by MRI in Lewis’s study was 10 millimeters.

“A 10-millimeter cancer is a real cancer,” says Lewis. Tumors of that size typically require surgery, she notes, not just radiation.

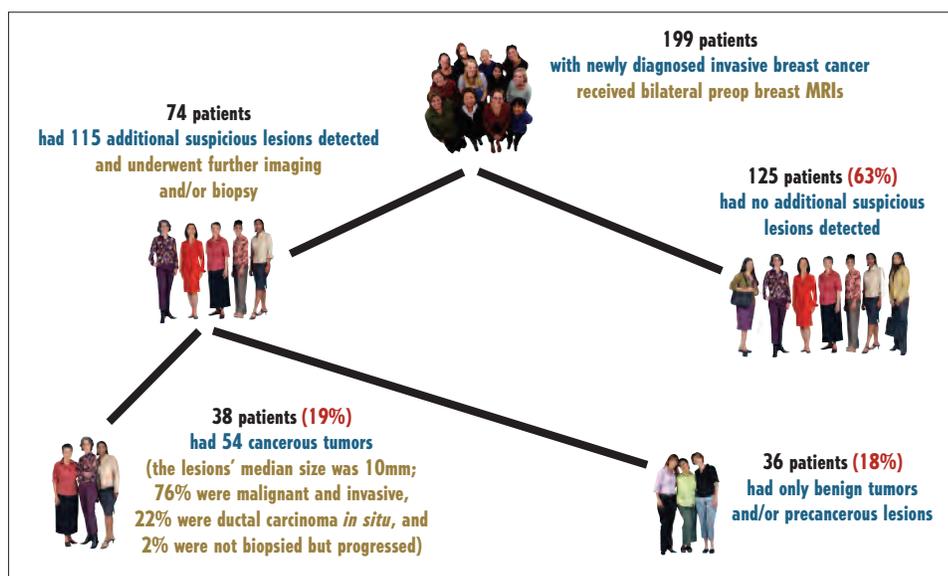
But while MRIs are expensive and generate a lot of false-positives, Lewis feels the op-



**Radiologist Petra Lewis collected data on the use of preop MRIs for patients with invasive breast cancer.**

portunity to prevent a recurrence makes those costs worthwhile. “In terms of the whole picture of cancer care, [the cost of breast MRIs] is probably a fairly small amount,” says Lewis, especially if an individual would have had to undergo two separate treatments. And there’s also the human cost. Recurrences are “emotionally devastating” for women, she says, even if the new tumor is “completely treatable.”

**Crunched:** The data that Lewis’s team has collected can be crunched in all sorts of ways. But, she concludes, “how do you quantify the woman’s reassurance of ‘I don’t have any other [breast] cancers?’” JENNIFER DURGIN



**This diagram shows the data from routinely performing preop breast MRIs, since 2005, on women diagnosed with breast cancer at DHMC. The final results by percentage for the 199 women in the study are shown in red.**