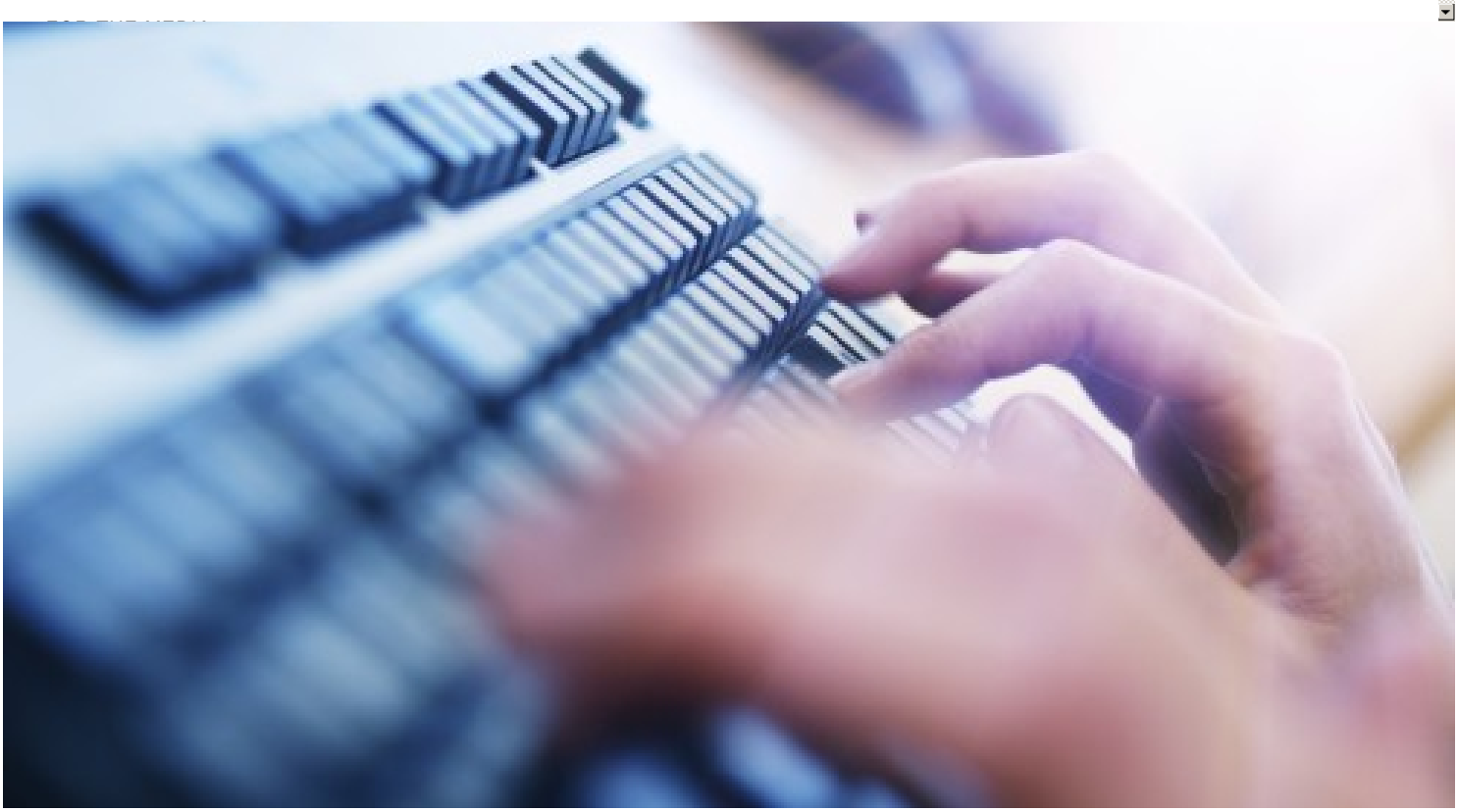
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Prediction Tools

Use our online nomograms to calculate elements of breast cancer risk. Results can help physicians and patients make important treatment decisions

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Researchers at Memorial Sloan Kettering Cancer Center (MSKCC) have developed a new computerized tool called a nomogram that will help patients

and their physicians calculate the likelihood of breast cancer spreading beyond the sentinel lymph nodes to additional lymph nodes under the arms (axilla). Further axillary lymph node metastasis is a key factor in determining whether a patient is likely to benefit from additional surgery to remove all of the nodes.

A new study published in the December issue of the Annals of Surgical Oncology demonstrates the accuracy of the nomogram. Investigators assessed the pathological features of the primary breast tumor and the sentinel lymph node metastasis of 702 breast cancer patients. Using that information, they developed nomogram calculations to predict the presence of additional disease in the axillary lymph nodes in those patients.

Study investigators then prospectively applied the nomogram to 373 patients whose breast cancer was detected through biopsy in the sentinel lymph nodes and found that the prognostic model accurately predicted the likelihood of axillary lymph node metastasis to within a few percentage points.

“This easy-to-use nomogram will allow patients and their physicians to obtain accurate estimates of a patient’s risk for additional disease in the axillary lymph nodes,and can assist greatly in individualized decision-making regarding further treatment,” said the study’s lead author Kimberly Van Zee, MD, a breast cancer surgeon at MSKCC.

The nomogram takes several pathological factors into account, including tumor size; tumor type (ductal or lobular); estrogen-receptor status of the primary tumor; the method of detection of sentinel lymph node metastases (frozen section analysis, routine analysis, or enhanced pathologic analysis); and the number of positive and negative sentinel lymph nodes.

“There are many variables affecting the probability of additional lymph node metastasis, however, this nomogram represents the best prediction model currently available,” said the study’s senior author Michael Kattan, PhD, Outcomes Research Scientist at MSKCC and developer of the breast cancer nomogram.

MSKCC investigators have pioneered the use of nomograms to predict outcomes for patients with cancer to help them and their physicians decide which treatment approach is likely to result in the greatest benefit for individuals with a variety of malignancies, including prostate cancer, renal cancer, and sarcoma. The new nomogram is designed specifically for patients whose breast cancer has been found in their sentinel lymph nodes (the first few lymph glands that drain fluid away from the site of the cancer and are the first to which the cancer is likely to spread.)

Previous studies have shown that among women whose breast cancer has spread to their sentinel lymph nodes, about 50 percent will not have breast cancer in the other lymph nodes. The standard of care for these patients includes the complete surgical removal of the lymph nodes under the arm. However, many question the need for this operation - called an axillary lymph node dissection (ALND) - particularly for those who have a low risk of further axillary lymph node metastasis (women with early stage invasive breast cancer, for example).

While many research studies show that ALND will not affect how long patients live, it does reduce the chance of the cancer returning in the armpit later on; if this happens, a patient may need to have an ALND at that time. Side effects of the procedure include an increased chance of swelling and a greater risk of infection in the affected arm.

The likelihood of additional disease in the axillary lymph nodes is one of several considerations in the process of deciding whether to have further surgery. “Because the nomogram results make no actual treatment recommendations, we advise that patients discuss risk estimates with their doctor and consider which treatment options are most appropriate for their individual circumstances,” said Dr. Van Zee.

The breast cancer nomogram is available for free on the MSKCC Web site: www.mskcc.org/nomograms/breastcancer.

“We look forward to investigators at other centers testing the applicability of this nomogram - based on our experience - to the results in their institutions,” said Dr. Kattan.

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