

Prediction model superior to traditional criteria in bladder treatment decision

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A statistical model can accurately predict which patients will have poor outcomes after bladder surgery and can determine the need for chemotherapy. The analysis, to be published in the December 1, 2009 issue of *CANCER*, a peer-reviewed journal of the American Cancer Society, concludes that the model, which considers both how far the cancer has spread and other information, such as how the cancer cells look under the microscope and the time between diagnosis and surgery, could better identify patients who need to undergo further treatment.

Many individuals with bladder cancer have surgery to remove the bladder as an initial treatment. Following surgery, doctors must decide whether to recommend that the patient receive chemotherapy to kill any remaining cancer cells. Chemotherapy is typically recommended only for patients with higher stage disease. However, it is widely accepted that while many patients receive chemotherapy unnecessarily, some patients with low stage disease who are not referred to chemotherapy nonetheless experience a [cancer recurrence](#).

Researchers led by Andrew J. Vickers, PhD, of Memorial Sloan-Kettering Cancer Center in New York City set out to determine whether use of a previously published prediction model to inform medical decision making would lead to superior clinical outcomes. To demonstrate their findings, they compared the clinical outcomes of the different routes in which bladder cancer patients would be referred to chemotherapy: based only on cancer stage, as is current practice, or based on the bladder cancer prediction model.

After reviewing information from 4,462 patients who underwent surgery to remove the bladder and were monitored for cancer recurrence, the investigators found that the model indicated that patients with more advanced stages of disease without other risk factors, such as a long time from diagnosis to treatment, were actually at low risk of recurrence and might not benefit from chemotherapy. On the other hand, some patients with less advanced stages of disease were at high risk of recurrence because they had other risk factors.

The researchers found that for a drug that reduces the risk of cancer recurrence by 20 percent, use of the prediction model would, in effect, allow for 60 fewer chemotherapy treatments per 1000 patients without any increase in cancer recurrence rates.

The authors say many decisions about the care of cancer patients are based on risk, with patients thought to be at higher risk subject to more intensive treatment or monitoring. Prediction models could be used to personalize cancer treatment and replace many of the decisions that are currently made simply on the basis of cancer stage, including whether a patient receives surgery, [chemotherapy](#), and radiotherapy; how aggressively he or she is treated; the intensity of post-treatment follow-up; and eligibility for clinical trials. This study is one of the first to examine whether such 'personalized medicine' would actually lead to better outcomes for patients.

More information: "Clinical benefits of a multivariable prediction model for bladder cancer: a decision analytic approach." Andrew J. Vickers, Angel M. Cronin, Michael W. Kattan, Mithat Gonen, Peter T. Scardino, Matthew I. Milowsky, Guido Dalbagni, and Bernard H. Bochner for The International [Bladder Cancer](#) Nomogram Consortium. *CANCER*; Published Online: October 12, 2009 ([DOI: 10.1002/cncr.24615](#)); Print Issue Date: December 1, 2009.

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