

## RELATED ARTICLES IN JAMA

### This Week in JAMA

JAMA. 2005;293:771.

FULL TEXT

### Bladder Cancer

Janet M. Torpy, Cassio Lynn, and Richard M. Glass

JAMA. 2005;293:890.

EXTRACT | FULL TEXT

## THIS ARTICLE HAS BEEN CITED BY OTHER ARTICLES

### Medical Applications of Biotechnology

Fontanarosa and DeAngelis

JAMA 2005;293:866-867.

Vol. 293 No. 7, February 16, 2005

## Detection of Bladder Cancer Using a Point-of-Care Proteomic Assay

H. Barton Grossman, MD; Edward Messing, MD; Mark Soloway, MD; Kevin Tomera, MD; Giora Katz, MD; Yitzhak Berger, MD; Yu Shen, PhD

JAMA.2005;293:810-816.

**Context** A combination of methods is used for diagnosis of **bladder cancer** because no single procedure detects all malignancies. Urine tests are frequently part of an evaluation, but have either been nonspecific for **cancer** or required specialized analysis at a laboratory.

**Objective** To investigate whether a point-of-care proteomic test that measures the nuclear matrix protein NMP22 in voided urine could enhance detection of malignancy in patients with risk factors or symptoms of **bladder cancer**.

**Design, Setting, and Patients** Twenty-three academic, private practice, and veterans' facilities in 10 states prospectively enrolled consecutive patients from September 2001 to May 2002. Participants included 1331 patients at elevated risk for **bladder cancer** due to factors such as history of smoking or symptoms including hematuria and dysuria. Patients at risk for malignancy of the urinary tract provided a voided urine sample for analysis of NMP22 protein and cytology prior to cystoscopy.

**Main Outcome Measures** The diagnosis of **bladder cancer**, based on cystoscopy with biopsy, was accepted as the reference standard. The performance of the NMP22 test was compared with voided urine cytology as an aid to **cancer** detection. Testing for the NMP22 tumor marker was conducted in a blinded manner.

**Results** **Bladder cancer** was diagnosed in 79 patients. The NMP22 assay was positive in 44 of 79 patients with **cancer** (sensitivity, 55.7%; 95% confidence interval [CI], 44.1%-66.7%), whereas cytology test results were positive in 12 of 76 patients (sensitivity, 15.8%; 95% CI, 7.6%-24.0%). The specificity of the NMP22 assay was 85.7% (95% CI, 83.8%-87.6%) compared with 99.2% (95% CI, 98.7%-99.7%) for cytology. The proteomic marker detected 4 **cancers** that were not visualized during initial endoscopy, including 3 that were muscle invasive and 1 carcinoma in situ.

**Conclusion** The noninvasive point-of-care assay for elevated urinary NMP22 protein can increase the accuracy of cystoscopy, with test results available during the patient visit.

**Author Affiliations:** Department of Urology (Dr Grossman) and Department of Biostatistics and Applied Math (Dr Shen), M.D. Anderson **Cancer** Center, Houston, Tex; Department of Urology, University of Rochester Medical Center, Rochester, NY (Dr Messing); Department of Urology, University of Miami School of Medicine, Miami, Fla (Dr Soloway); Alaska Clinical Research Center, Anchorage (Dr Tomera); Department of Surgery-Urology Service, Lake City Veterans Administration Hospital, and LakeShore Urology, Manitowoc, Wis (Dr Katz); and Associates in Urology, West Orange, NJ (Dr Berger).