



# NEWS

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## **AUA 2008: RETIRED Firefighters Could Be At Increased Risk for Developing Bladder Cancer**

**ORLANDO, FL, May 19, 2008**—A new study presented at the Annual Scientific Meeting of the American Urological Association (AUA) suggests that firefighters may be at an increased risk of developing transitional cell carcinoma (TCC, or bladder cancer) and should be considered for routine annual screening. Currently, no guidelines exist for regular TCC screening.

Researchers from the University of California, San Francisco presented their study to the media during a special press conference on May 19, 2008 at 3:30 p.m.

It is well known that prolonged exposure to certain environmental pollutants and chemicals puts humans at a major risk for developing bladder cancer. As the body absorbs carcinogenic chemicals, such as cigarette smoke, the chemicals are transferred to the blood, filtered out by the kidneys and expelled from the body through the urine. Greater concentrations of chemicals in the urine can damage the endothelial lining of the bladder and increase a patient's odds of developing transitional cell carcinoma (TCC). Firefighters, who are regularly exposed to smoke and chemical fumes, may be at a higher risk for developing the disease than other groups.

Researchers explored this possibility in a screening study of 1,286 active and retired San Francisco firefighters. From August 2006 to March 2007, the subjects – mean age 45 (SD±9.7) – participated in voluntary urine dipstick testing and point-of-care NMP-22 testing. 93 Patients tested positive for hematuria and six tested positive for NMP-22. These 99 patients were referred for upper tract imaging, cystoscopy and urine cytology. Of the group, a single firefighter tested positive for both NMP-22 and hematuria, with two patients – both retired firefighters – ultimately diagnosed with TCC.

The age and sex-adjusted incidence for TCC is 36 per 100,000. These findings represent a higher incidence, suggesting that retired firefighters may be a high-risk group.

In addition to the author, Anthony Y. Smith, M.D., a spokesman for the AUA, *will be on hand to provide expert commentary on the study.*

**NOTE TO REPORTERS: Experts are available to discuss these studies outside normal briefing times. To arrange an interview with an expert, please contact the AUA Communications Office at the number above or e-mail Wendy Waldsachs Isett at [wisett@auanet.org](mailto:wisett@auanet.org).**

Greene KL, Konety BR, Stoller ML: Results from the San Francisco Firefighters Bladder Cancer Screening Study. J Urol, suppl., 2008; **179**: 323, abstract 937.

**About the American Urological Association:** *Founded in 1902 and headquartered near Baltimore, Maryland, the American Urological Association is the pre-eminent professional organization for urologists, with more than 15,000 members throughout the world. An educational nonprofit organization, the AUA pursues its mission of fostering the highest standards of urologic care by carrying out a wide variety of programs members and their patients, including UrologyHealth.org, an award-winning on-line patient education resource, and the American Urological Association Foundation, Inc*

cancer-predisposing polymorphisms acting together and/or interacting with environmental factors warrants further research.

**Source of Funding:** Intramural Research Program of the NIH, National Cancer Institute.

**937 RESULTS FROM THE SAN FRANCISCO FIREFIGHTERS BLADDER CANCER SCREENING STUDY**

*Kirsten L Greene\*, Badrinath R Konety, Marshall L Stoller. San Francisco, CA.*

**INTRODUCTION AND OBJECTIVE:** Transitional cell carcinoma has been associated with certain high risk populations, such as smokers and workers exposed to pesticides and aniline dyes. The purpose of this study was to determine if firefighters constitute a previously unrecognized high risk group for transitional cell carcinoma and to conduct screening with both a classical and a new tumor marker.

**METHODS:** 1286 active and retired San Francisco firefighters participated in voluntary urine dipstick for hematuria and point of care NMP-22 testing from August 2006 to March 2007 at fire stations throughout the Bay Area. Detailed health related questionnaires were completed by all who participated. Patients who tested positive for hematuria on dipstick or NMP-22 were referred for upper tract imaging, cystoscopy and urine cytology. Multivariable logistic regression was performed using STATA 9.0.

**RESULTS:** Mean age of the cohort was 45 years (SD ± 9.7). 88% of the subjects were male and there was a 33% lifetime prevalence of cigarette smoking. Of the 1286 firefighters screened, 93 subjects tested positive for hematuria and six tested positive for NMP-22. Only one firefighter tested positive for both tests. Two subjects were diagnosed with transitional cell carcinoma: one in the renal pelvis and another in the bladder. Both are retired firefighters.

**CONCLUSIONS:** Although evaluation is ongoing, the finding of transitional cell carcinoma in 2 retired firefighters represents a higher incidence than the age and sex adjusted incidence predicted by SEER of 36 per 100,000. The majority of hematuria in this population is idiopathic. Retired firefighters may represent a novel high risk group, however, and should be considered for routine annual screening.

**Source of Funding:** None

**938 USE OF NMP-22, UROVYSION OR CYTOLOGY IN BLADDER CANCER SURVEILLANCE PROTOCOLS: DOES AN OPTIMAL ALGORITHM EXIST?**

*Jay B Shah\*, Kareem Kader, Robert S Svatek, H Barton Grossman, Colin P Dinney, Ruth Katz, Ashish M Kamat. Houston, TX.*

**INTRODUCTION AND OBJECTIVE:** Multiple markers exist which have purported utility in surveillance of patients with non-muscle invasive bladder cancer (NMIBC), with wide variation in cost. We designed a prospective trial to study whether a cost-effective algorithm might be identified. We hypothesized that cost might be reduced if all patients undergoing cystoscopy underwent either no marker, or the cheaper test (NMP22); with the more expensive test (Urovysion or cytology) reserved to identify which patients need further invasive testing.

**METHODS:** Patients being followed at our institution for NMIBC were prospectively enrolled in this IRB-approved clinical trial. All patients underwent cystoscopy, NMP22, cytology and FISH testing during surveillance cystoscopy. Using sensitivity and specificity data, receiver-operator characteristic (ROC) curves were generated for each test. Cost per cancer detected was calculated using Medicare reimbursement data for five different algorithms: 1) TURBT for all patients with positive NMP22; 2) TURBT for all patients with positive FISH; 3) TURBT for all patients with positive cytology; 4) TURBT only for patients with positive NMP22 'confirmed' by FISH test; 5) TURBT for positive cystoscopic findings only. All models assumed TURBT for positive or equivocal cystoscopy.

**RESULTS:** In a total cohort of 200 patients enrolled over a six-month period, 12 recurrent tumors were detected. Performance characteristics for detecting cancer were as follows: area under the

curve for cytology: .632 (95% confidence interval, CI, .447-.818, p = .125), NMP22: .533 (95% CI .357-.708, p=.703), and FISH: .715 (95% CI .545-.885, p=.013), respectively. The cost per cancer detected for each of the five algorithms tested was as follows\_ model 1: \$16,222; model 2: \$35,030; model 3: \$14,214; model 4: \$12,572; model 5: \$9,787.

**CONCLUSIONS:** In this single-institution study, the most cost-effective algorithm for surveillance of patients with NMIBC involved the use of cystoscopy only. An algorithm in which all patients undergo NMP22 with TURBT reserved for those in whom FISH 'confirmed' NMP22 positivity was slightly more expensive, but did not offer gain in detection. Notably, algorithms advocating nondiscriminatory use of FISH testing in all patients were significantly more expensive, without improved yield.

**Source of Funding:** None

**939 THE CLINICAL SIGNIFICANCE OF PERSISTENT ABNORMAL URINE CYTOLOGY TO PREDICT LATER TRANSITIONAL CELL CARCINOMA DEMONSTRATION**

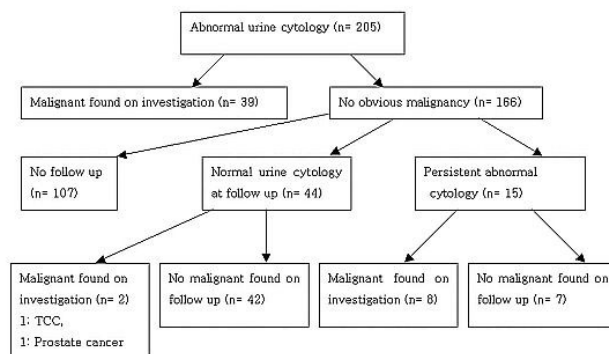
*In Ho Chang\*, Sung Hak Bang, June Hyun Han, Seung Hyun Ahn, Shin Young Lee, Tae Hyoung Kim. Seoul, Republic of Korea.*

**INTRODUCTION AND OBJECTIVE:** We reviewed the subgroup of patients with abnormal cytology and negative initial evaluations and investigated factors to predict later transitional cell carcinoma (TCC) demonstration in these patients.

**METHODS:** From January 2002 to June 2007, 2,410 urinary cytology specimens were collected from 2,079 patients at Hanil General Hospital. Of these we retrospectively identified 59 patients, and case was considered discordant if a work-up of abnormal cytology obtained during initial negative cystoscopy resulted in a negative or benign diagnosis during bladder biopsies and upper tract evaluation. According to later TCC demonstration, we compared risk factors to TCC between later TCC group and benign group, and evaluated independent factors to predict later TCC by Cox proportional hazard regression model.

**RESULTS:** Of the 59 patients, the mean follow-up was 12.7±17.3 months (range: 2-83 months), and 14 (23.7%) patients had prior history of TCC. During follow-up, 9 (15.3%) patients demonstrated TCC and 1 patient demonstrated prostate cancer. In later TCC group, the incidence of prior history of TCC (p<0.05) and persistent abnormal cytology (p<0.001) were higher than benign group in univariate analysis. In Cox proportional hazard regression model, persistent abnormal cytology (p=0.033, RR: 17.380 [95% CI: 1.265-238.783]) was only independent factor to predict later TCC demonstration. Mean follow-up duration of the later TCC demonstration was 8.55 months (range: 2-32 months).

**CONCLUSIONS:** Our results suggest that in the setting of persistent abnormal urine cytology with a negative initial evaluation, 53.3% of patients will later demonstrate TCC. Patients with persistent abnormal cytology need intensive follow up within 1 year.



**Source of Funding:** None