

## Studies Raise Concerns for the Bladder Cancer Risk of E-Cigarette Smokers and Show Intensity of Traditional Smoking Increases Mortality Rate of Bladder Cancer Patients

### 2 Studies Link E-Cigarettes to Potential Increased Bladder Cancer Risk; 3rd Study Associates Smoking Intensity with a Higher Risk of Mortality among Patients

BOSTON, May 15, 2017 /PRNewswire-USNewswire/ -- Data being presented at the 112<sup>th</sup> Annual Scientific Meeting of the American Urological Association (AUA) shows harmful links between the use of e-cigarettes and bladder cancer risk, and associates the intensity of smoking traditional cigarettes to a higher risk of mortality among bladder cancer patients. Even a small decrease in the amount of traditional smoking a bladder cancer patient makes may help them live longer. Researchers will share data highlighting these links during a joint press conference at the Boston Convention and Exhibition Center on Monday on May 15 at 8 a.m. ET. Sam S. Chang, MD, MBA, professor of urologic surgery at Vanderbilt Ingram Cancer Center will moderate the session

Use of electronic cigarettes (e-cigarettes), which is also known as "vaping", has grown drastically since first entering the marketplace more than a decade ago. While traditional cigarette smoking is a clear cause of bladder cancer, much less has been studied about the bladder cancer risk associated with e-cigarettes. Furthermore, there is limited information regarding the association between the amount of traditional cigarettes a bladder cancer patient smokes per day and their mortality risk.

#### **Study Details**

**Smoking Intensity as a Predictor of Survival in Bladder Cancer Patients: Results From a Population-Based Florida Cancer Registry (1981-2009) - (#MP04-18):** Survival rates were compared between more than 14,000 smoking adults with bladder cancer living in Florida between 1981 and 2009. Median and five-year overall survival rates were compared between patients who smoked less than one pack of cigarettes a day, to those who smoke 1-2 packs per day and patients who smoked more than two packs per day.

Results showed:

- Smoking more packs per day was associated with an increased risk of mortality among patients with bladder cancer.
- Patients smoking a minimum of 1-2 packs per day were significantly more likely to have a higher risk of mortality compared to patients that smoke less than one pack per day.
- Even a small reduction in the amount of smoking a patient makes may potentially allow them to survive longer with bladder cancer.

**Evaluation of E-Cigarettes Users Urine for Known Bladder Carcinogens (#MP88-14):** Researchers compared the urine of e-cigarette users to that of non-smokers. Urine samples were examined for five known bladder carcinogens that are either present in traditional cigarettes or common solvents believed to be used in some e-cigarette liquids.

The users were mostly male with an average age of 39 years old. The non-smokers had abstained from traditional cigarettes for at least six months prior to the test.

Results showed:

- Urine from 92 percent of e-cigarette users tested positive for two of the five carcinogenic compounds.
- Further study is needed to clarify the contribution e-cigarettes make to the development of bladder cancer, given the greater concentration of carcinogenic compounds in the urine of e-cigarette users in this study.

**E-Cigarette Smoke is Potentially Bladder Carcinogenic - It Induces Tumorigenic DNA Adducts and Inhibits DNA Repair in Urothelial Cells (#PI-11):** E-cigarettes have been advertised as a way of delivering the stimulating effects of tobacco smoke, without the harmful health risks. Since 90 percent of inhaled nicotine is excreted to urine, New York University researchers set out to examine if e-cigarette smoke induced DNA damage in bladder mucosa. Researchers also looked at the effect of nicotine and its metabolites, nitrosamines and formaldehyde on DNA repair and mutational susceptibility in cultured human urothelial cells. Urothelial cells form the tissue that lines much of the bladder.

Results showed:

- E-cigarette smoke induced tumorigenic DNA damage in bladder mucosa.
- Nicotine, nitrosamine and formaldehyde also induced the same types of DNA damage in human urothelial cells, as well as inhibited DNA repair and enhanced mutational susceptibility.
- Nicotine can be nitrosated in urothelial cells, then further metabolized into carcinogenic nitrosamines and formaldehyde.

Overall, researchers predicted e-cigarette smokers have a high bladder cancer risk.

"These studies raise new concerns about the harmful impact of e-cigarettes on bladder cancer," said Dr. Chang. "We've known traditional smoking raises bladder cancer risk, and given the surge in popularity of e-cigarettes, it's imperative we uncover any potential links to e-cigarette smoke and bladder cancer."

This research underscores the importance of smoking cessation (of both traditional and e-cigarettes) for people with bladder cancer, and people looking to avoid it."

**NOTE TO REPORTERS: Experts are available to discuss this study outside normal briefing times. To arrange an interview with an expert, please contact the AUA Communications Office at 410-689-3932 or e-mail [cfrey@AUAnet.org](mailto:cfrey@AUAnet.org).**

***About the American Urological Association:*** The 112th Annual Meeting of the American Urological Association takes place May 12 - 16 at the Boston Convention and Exhibition Center in Boston, MA.

*Founded in 1902 and headquartered near Baltimore, Maryland, the American Urological Association is a leading advocate for the specialty of urology, and has more than 21,000 members throughout the world. The AUA is a premier urologic association, providing invaluable support to the urologic community as it pursues its mission of fostering the highest standards of urologic care through education, research and the formulation of health policy.*

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