Equipping Urologists With the Tools to Communicate Electronic Cigarette Associated Risks Related to Bladder Cancer With Youth

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A considerable number of youth are actively using electronic cigarettes (e-cigs). According to the 2022 Annual National Youth Tobacco Survey, 14.1% of high school students in the United States reported that they currently use e-cigs[1]. Further, among current youth e-cig users, 27.6% report using e-cigs daily[1]. E-cigs are products that heat liquid, which can be flavoured, and ultimately create an inhalable vapour for the user. These levels of youth e-cig use have the potential to threaten the progress made by anti-tobacco efforts and may even re-normalize smoking[2]. Further, the conflicting perspectives of national public health organizations may confuse young people. For example, the US Food and Drug Administration (FDA) has not approved e-cigs as a smoking cessation aid[3], while in the United Kingdom, the National Health Service (NHS) promotes e-cigs as a smoking cessation aid[4]. Unfortunately, young people may be unaware of the various chemical constituents in e-cigs and the overall harm associated with the use of e-cigs[5], such as an increased risk of bladder cancer.

Bladder cancer represents a significant proportion of the global cancer burden, with substantial associated impacts on health[6]. In the United States, the 5-year survival rate for bladder cancer patients is 77.1%[6]. The vast majority of bladder cancer diagnoses (90%) are made in patients over the age of 55, and men are more commonly affected than women[6].

One of the greatest risk factors for bladder cancer is tobacco smoking[6]. This makes the recent increase in the use of e-cigs among young people of great concern, as there is emerging evidence that e-cigs are also carcinogenic[7–9].

A systematic review by Bjurlin et al.[7] found that the urine of e-cig users contained many carcinogens that have an established linkage to bladder cancer. Moreover, Fuller et al.[8] directly studied the urine of e-cig users and found two carcinogenic compounds, o-toluidine and 2-naphthylamine, that have associations with bladder cancer. Additionally, Herriges et al.[9] found that e-cig users had a much higher odds ratio of being diagnosed with bladder cancer. Concerningly, e-cig users who were diagnosed with bladder cancer were found to be much younger at the time of diagnosis, compared with those who were never smokers or users of e-cigs[9]. Hence, although the vast majority of bladder cancer diagnoses are made after a patient's mid-fifties[6], using e-cigs may increase the risk of developing bladder cancer at an earlier age[9]. However, current research has yet to establish the aggressiveness, grade and stage of bladder cancer associated with e-cig use. Moreover, it remains unclear what effect current treatment methods will have on bladder cancer associated with e-cig use.

Therefore, further research is necessary to elucidate the relative carcinogenicity of e-cig use to traditional combustible cigarette use[10]. In the meantime, it is of utmost importance to communicate the potential risks associated with e-cig use to patients seen in the clinic. Urologists can play an important role in encouraging smoking cessation in patients[11], especially if patients are being seen for smoking-related diseases, such as

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suspected bladder cancer or renal cancer. Urologists can consider discussing the risks associated with e-cig use after assessing a patient's current substance use and learning that they use e-cigs. Unfortunately, urologists may not receive adequate training and support to effectively discuss smoking cessation with their patients[12].

Bjurlin et al.[12] studied the impact of a brief (less than 5 minutes) smoking cessation intervention offered by urologists working in an outpatient clinic. They determined that urologists can successfully provide this intervention to their patients and that patients who received the intervention had a significantly higher likelihood of trying to quit smoking (OR = 2.31, $P = 0.038$)[12]. A similar brief intervention can be useful when discussing e-cig cessation with patients. Specifically, using the 5 A's framework (ask, advise, assess, assist, and arrange), a discussion should focus on the benefits of quitting (improved well-being) and re-iterating the negative consequences of sustained e-cig use (including increased risk for bladder cancer, unknown long-term health risks, and the cost of e-cig use). **Table 1.** highlights specific points from the 5 A's framework that may be helpful to ask patients when discussing e-cig use.

Future studies should aim to assess the effectiveness of e-cig cessation interventions like this when conducted by urologists. In addition, it is necessary to acknowledge that research on the health impacts of e-cigs is still evolving, and it is clear that the long-term outcomes associated with e-cig use are still unknown[10]. Hence, there is a need for more evidence on the overall effects of e-cigs on the genitourinary system.

TABLE 1.

5 A's framework for electronic cigarette use

Ask	Are you using e-cigs? If so, how often do you use (monthly, weekly or daily)? When you use, how much do you typically use?
Advise	Highlight the various risks of e-cig use in a personalized manner (ie, discuss other known risk factors, such as potential hereditary risks from family history)
Assess	Would you be ready to quit using e-cigs? Have you ever tried to quit using e-cigs?
Assist	When would be a reasonable day to quit using e-cigs? Provide smoking cessation resources: 1-800-QUIT-NOW or for patients who prefer chatting, suggest chatting with experts from the National Cancer Institute's Quitting Smoking webpage
Arrange	Provide a time to follow up and check in with the patient's progress on e-cig cessation

References

1. Center for Tobacco Products. Results from the annual National Youth Tobacco Survey (NYTS) [Internet]. U.S. Food and Drug Administration. FDA; [cited 2022 Dec 16]. Available at: https://www.fda.gov/tobacco-products/youth-and-tobacco/results-annual-national-youth-tobacco-survey. Accessed October 27, 2023.

2. Fairchild AL, Bayer R, Colgrove J. The renormalization of smoking? E-cigarettes and the tobacco "endgame." *N Engl J Med*.2014;370(4):293–295. Available at: http://dx.doi.org/10.1056/*NEJM*p1313940. Accessed October 27, 2023.

3. Centers for Disease Control & Prevention. Adult smoking cessation—the use of E-cigarettes. Cdc.gov, https://www.cdc.gov/tobacco/sgr/2020-smoking-cessation/fact-sheets/adult-smoking-cessation-e-cigarettes-use/index.html (2022; accessed May 22, 2023).

4. Website NHS. Using e-cigarettes to stop smoking. nhs.uk, https://www.nhs.uk/live-well/quit-smoking/using-e-cigarettes-to-stop-smoking/ (2022; accessed May 22, 2023).

5. Bandara AN. Understanding adolescent perceptions on E-cigarettes is vital. *Am J Public Health*.2016;106(5):e13–e13. Available from: http://dx.doi.org/10.2105/ajph.2016.303116

6. Saginala K, Barsouk A, Aluru JS, Rawla P, Padala SA, Barsouk A. Epidemiology of bladder cancer. *Med Sci (Basel)*.2020;8(1):15. Available at: http://dx.doi.org/10.3390/medsci8010015. Accessed October 27, 2023.

7. Bjurlin MA, Matulewicz RS, Roberts TR, Dearing BA, Schatz D, Sherman S, et al. Carcinogen biomarkers in the urine of electronic cigarette users and implications for the development of bladder cancer: a systematic review. *Eur Urol Oncol*.2021;4(5):766–783. Available at: http://dx.doi.org/10.1016/j.euo.2020.02.004. Accessed October 27, 2023.

8. Fuller TW, Acharya AP, Meyyappan T, Yu M, Bhaskar G, Little SR, et al. Comparison of bladder carcinogens in the urine of E-cigarette users versus non E-cigarette using controls. *Sci Rep*.2018;8(1). Available at: http://dx.doi.org/10.1038/s41598-017-19030-1. Accessed October 27, 2023.

9. Herriges MJ, Pinkhasov R, Shapiro O, Jacob JM, Basnet A, Bratslavsky G, et al. E-cigarette use and the risk of bladder and lung cancer. *J Clin Oncol*.2022;40(6_suppl):443–443. Available at: http://dx.doi.org/10.1200/jco.2022.40.6_suppl.443. Accessed October 27, 2023.

10. Rink M. Electronic cigarettes and bladder cancer - a game-changer? *Nat Rev Urol*.2020;17(8):435–436. Available from: http://dx.doi.org/10.1038/s41585-020-0337-5

11. Matulewicz RS, Makarov DV, Sherman SE, Birken SA, Bjurlin MA. Urologist-led smoking cessation: a way forward through implementation science. *Transl Androl Urol*.2021;10(1):7–11. Available at: http://dx.doi.org/10.21037/tau-20-1204. Accessed October 27, 2023

12. Bjurlin MA, Cohn MR, Kim DY, Freeman VL, Lombardo L, Hurley SD, et al. Brief smoking cessation intervention: a prospective trial in the urology setting. *J Urol*.2013;189(5):1843–1849. Available at: http://dx.doi.org/10.1016/j.juro.2012.11.075. Accessed October 27, 2023.