A recent article reports that electronic cigarette (E-cigarette) use among patients diagnosed with cancer who are enrolled in a tobacco treatment program is not associated with subsequent tobacco abstinence (Cancer. 2014;120:3527-3535).

It has previously been shown that the continuation of smoking after a diagnosis of cancer adversely affects several outcomes, including treatment complications, disease recurrence, quality of life, and mortality. To emphasize the importance of quitting after a cancer diagnosis, the American Society of Clinical Oncology launched a campaign and published a guide for smoking cessation tailored to oncology providers (ascosites/default/files/tobacco_cessation_guide.pdf). The authors of the current study note that despite this information, approximately two-thirds of patients who are current smokers continue smoking.

E-cigarettes have become increasingly popular and there is controversy as to whether they are an effective smoking cessation tool. The current study addresses this question and examines patterns of use, characteristics, and cessation outcomes of E-cigarette users specifically in the oncology population.

Lead author Sarah Borderud, MPH, an epidemiologist at the Memorial Sloan-Kettering Cancer Center (MSKCC) in New York City, and colleagues analyzed characteristics and cessation outcomes of patients referred to the Tobacco Treatment Program (TTP) at MSKCC from January 2012 to December 2013.

At MSKCC, all new patients are screened for tobacco use and current smokers are referred to the TTP. TTP staff make up to 3 attempts to contact patients and offer comprehensive smoking cessation treatment to those who accept it. The intake assessment during the study period included patients’ demographics, clinical characteristics, and history of tobacco use, which encompassed E-cigarette use. Patients were specifically asked if they used E-cigarettes within the 30 days prior to enrollment. Furthermore, a Fagerstrom Test for Nicotine Dependence was calculated. This is a 6-item questionnaire with scores ranging from 0 to 10; a score of 5 or higher indicates higher nicotine dependence. At 6 to 12 months after intake, patients were contacted by telephone to collect smoking cessation outcomes.

During the study period, 4504 patients were referred to the TTP. Of these, 1074 enrolled and completed an intake assessment. At the time of enrollment, approximately 25% of patients (n=285) had used E-cigarettes within the prior 30 days, 92% of whom reported smoking regular cigarettes as well. A 3-fold increase in E-cigarette use among patients was noted in 2013 versus 2012 (38.5% vs 10.6%).

“Consistent with recent observations of increased E-cigarette use in the general population, our findings illustrate that E-cigarette use among tobacco-dependent cancer patients has also increased over the past 2 years,” says senior author Jamie KEY POINTS

- Continuing to smoke after a diagnosis of cancer has been shown to adversely affect outcomes, including disease recurrence and mortality.
- E-cigarettes are increasingly popular, although controversy remains over their safety and potential as a smoking cessation aid.
- E-cigarette use was not found to be helpful as a smoking cessation tool in patients with cancer.
S. Ostroff, PhD, chief of the behavioral sciences service and director of the TTP, both at MSKCC.

No demographic differences were observed between E-cigarette users and nonusers, but a significantly higher percentage of E-cigarette users were patients with thoracic or head and neck cancers compared with patients not reporting E-cigarette use (36.2% vs 27.0%; \( P < .01 \)). In addition, a significantly higher percentage of E-cigarette users had high nicotine dependence with a Fagerstrom Test for Nicotine Dependence of greater than 5 versus nonusers (51.8% vs 32.2%; \( P < .01 \)), and on average smoked a slightly greater number of cigarettes per day (13.7 cigarettes vs 12.4 cigarettes; \( P < .05 \)). E-cigarette users also reported more frequent and a longer duration of prior quit attempts than nonusers, but measures of quitting motivation and confidence did not differ.

**No Evidence for Improved Smoking Cessation**

Using a complete-case analysis, in which patients lost to follow-up were excluded, the self-reported, 7-day smoking abstinence was approximately the same for E-cigarette users and nonusers (approximately 44%). Using an intent-to-treat analysis, which included all patients and assumed that those lost to follow-up were still smoking, the 7-day smoking abstinence rate was twice as high for non–E-cigarette users compared with users (30% vs 14.5%; \( P < .01 \)). Results remained consistent in both the complete-case and intent-to-treat analyses when adjusted for nicotine dependence, number of past quit attempts, and cancer diagnosis.

E-cigarette use at the time of TTP referral did not appear to improve success rates in smoking cessation. The complete-case analysis did not find any association between E-cigarette use and the number of combustible cigarettes smoked per day. These results do not provide evidence for E-cigarettes being effective as a tobacco cessation strategy or as a way for patients to cut back on smoked cigarettes.

"This well-designed observational study is the first to examine cancer patients’ simultaneous use of E-cigarettes while attempting to quit smoking and addresses a gap in research in this area."

Lee Westmaas, PhD, director of tobacco control research in the Behavioral Research Center at the American Cancer Society in Atlanta, goes on to say, “The authors rightly caution against overinterpretation of the data. For example, it is unclear if patients who were using E-cigs during their quit attempt were doing so to quit combustible cigarettes, or if they were using them to get their nicotine through what they hoped was a safer channel. If the aim was the latter (ie, to not use E-cigs to quit, but simply to replace nicotine), then arguably it should not be surprising if E-cigs did not assist cessation.”

The authors point out that their study should not be interpreted to mean that E-cigarettes will never help patients in their attempts to quit smoking.

“Randomized, controlled trials are needed to evaluate the efficacy as well as the potential harms of E-cigarettes as a potential cessation approach for cancer patients,” says Dr. Ostroff. “There remains a paucity of data on the safety and potential toxicity of E-cigarettes. In the meantime, our recommendations to clinicians are to advise patients to stop smoking combustible cigarettes, encourage the use of [United States Food and Drug Administration] FDA-approved smoking cessation medications, refer for cessation counseling, and provide education regarding potential risks and unclear benefits of using E-cigarettes achieving long-term smoking cessation,” she says.

Dr. Westmaas agrees there is no solid evidence for the efficacy of E-cigarettes as a cessation aid and shares concern regarding their safety. “While the levels of toxicants in E-cigarette vapor may be lower than in combustible cigarettes, the current lack of regulation means that devices can vary considerably in the amounts of the nicotine they claim to provide and in the safety of the hardware itself,” he notes. “There are also concerns about their long-term safety which need to be addressed, particularly the consequences of inhaling the combinations of chemicals found in E-cigarette vapor, for example the chemicals used in flavorings.”

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