

## COMMENTARY

# The Need for Nationwide Electronic Cigarette Smoking Cessation Curricula Across the Healthcare Spectrum

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Using electronic nicotine delivery systems (ENDS) has become a stepping stone for smokers in their cessation of tobacco use. Students within Doctor of Pharmacy and other health care programs have expressed varying responses as to how likely they are to recommend ENDS based on their knowledge of these devices. Because the amount of education on these products provided by PharmD programs varies, one study shows student pharmacists were less likely to recommend the use of ENDS to current cigarette smokers. This commentary suggests why some student pharmacists support such recommendations and therefore require more adequate ENDS education to better equip themselves for future patient education counseling sessions.

**Keywords:** vaping, smoking, electronic cigarettes, education, healthcare students

## INTRODUCTION

The use of electronic nicotine delivery systems (ENDS) has become an increasing social trend among middle school, high school, and college students across America within the past five years.<sup>1</sup> The use of ENDS now surpasses the use of traditional cigarettes among high school students alone, with a 400% increase in use from 2013 to 2018.<sup>1</sup> Such products are claimed to have been used by one-fourth of America's youth and young adults due to marketing strategies targeting younger generations with a variety of flavors and sexually appealing advertisements.<sup>2</sup> In 2014, 26.8% of young adults perceived ENDS as very harmful and greater than 50% believed they caused some harm; however, 20% of young adults believed such nicotine-containing devices caused no harm.<sup>2</sup> Now in an attempt to reduce the number of young patients using ENDS, marketing tactics have switched their advertisements to focus on individuals who currently smoke traditional cigarettes by claiming such devices are safer and provide a better transition to smoking cessation.<sup>2</sup>

Although studies on the full extent of ENDS use are still in development, such nicotine-containing devices may be more harmful than originally thought. Electronic nicotine delivery systems contain a variety of other chemicals that can potentially harm a patient's health, including formaldehyde, flavoring chemicals, vitamin E acetate,

THC, and other volatile organic compounds.<sup>3</sup> Such ingredients have been shown to lead to liver, kidney, and neurologic deficits; bronchiolitis obliterans and other serious lung diseases; and various forms of cancer.<sup>3</sup> The lack of US Food and Drug Administration (FDA) regulation and testing of ENDS prevents users from knowing all the ingredients contained in them as these products do not have to list all harmful substances on the packaging label. As of February 2020, ENDS have led to a reported 2,807 hospitalizations and 68 deaths from e-cigarette or vaping use-associated lung injury (EVALI) in the United States.<sup>4</sup>

## DISCUSSION

If health care workers do not properly educate and counsel patients on the negative consequences of ENDS, this could further increase the rate of EVALI prevalence and hospital admissions resulting from health complications. This could also lead to unintended increases in cigarette use, illicit drug use, and developmental changes in patients.

Studies show ENDS use is a gateway to smoking traditional cigarettes, marijuana, and other illicit drugs.<sup>1,5</sup> This is because some nicotine-containing devices also contain THC, the psychoactive mind-altering compound in marijuana that provides a "high" for users due to dopamine release in the brain.<sup>4</sup> For those who currently smoke, ENDS are considered to have a lower six-month remission rate (22.5%) compared to nicotine patches (93%) for patients who wish to quit smoking.<sup>6</sup> This is because ENDS reinforces the behavioral pattern similar to that associated with use of traditional cigarettes.<sup>6</sup>

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Nicotine acts in a similar manner to THC in stimulating the brain's reward system. In young children and adults, the release of dopamine can lead to neurologic and developmental effects since the prefrontal cortex is the last portion of the brain to develop at 25 years of age. Compared to adults, adolescents are more likely to develop a nicotine addiction because of their greater desire for rewards, less adversity towards risk, and strong influence by peers.<sup>7</sup> This is a threat to younger generations, as smoking during adolescence increases the risk of developing psychiatric disorders and cognitive impairment later in life.<sup>7</sup> This potential addictive risk is also seen in children diagnosed with attention deficit hyperactivity disorder (ADHD). From a 2016 national parent survey published by the CDC, approximately 388,000 children ages 2 to 5 years old and four million children ages 6 to 11 years old were diagnosed with ADHD, respectively.<sup>8</sup> Because ADHD adolescents having impulsive and risk-taking behavior characteristics, they are deemed to have a greater risk for addiction and development of regular smoking habits.<sup>9,10</sup> Patients with ADHD also demonstrate an increased loss of impulse control, which can be further exacerbated with nicotine products.<sup>9</sup>

With the increasing use of ENDS, along with the rise of EVALI and other disease complications, Shar and colleagues conducted a study to determine how these devices are perceived by various health care students.<sup>11</sup> A 33-item questionnaire was used and responses from 1,152 student pharmacists and other health care students from nursing, public health, optometry, and dental hygiene were recorded. Compared to other health care students, this study showed student pharmacists felt there was more harm inflicted on the body with the use of ENDS ( $p < .05$ ).<sup>11</sup> Student pharmacists also had more experience in ENDS counseling with patients (47% vs 38%,  $p = .005$ ) than other health care students and indicated on a six-point Likert scale (1 = strongly disagree, 6 = strongly agree) they were more willing to counsel patients on cigarette cessation ( $5.0 \pm 1.1$  vs  $4.4 \pm 1.4$ ) and ENDS cessation ( $4.3 \pm 1.2$  vs  $3.9 \pm 1.4$ ).<sup>11</sup> This may be attributed to their patient care experiences and student pharmacists feeling they received an adequate level of education to counsel patients about cigarette and ENDS cessation compared to other health care students.<sup>11</sup> The education student pharmacists received was not described.

Because of the lack of uniformity in education on cessation, Williams distributed an educational smoking cessation curriculum to all pharmacy schools based on a train-the-trainer format.<sup>12</sup> It is used to varying degrees in pharmacy schools across America, but the lack of confidence expressed by professors and a lack of perceived demand by patients prevents it from being fully

incorporated into all pharmacy curricula.<sup>12</sup> Other health care curricula have implemented smoking cessation programs based on the "5A's" model (ie, Ask, Advise, Assess, Assist, and Arrange).<sup>13</sup> This model uses a mnemonic to guide health care professionals in initiating a brief 10-minute intervention session with patients on how to quit smoking cigarettes. Due to professors having different teaching styles and personal experiences with the use of the 5A's model, there is a sense of doubt in the mnemonic actually working and making a true difference in patients who smoke.<sup>13,14</sup> The lack of a secure foundation in the 5A's model has led to it being used improperly in health care practice.<sup>15,16</sup> One study recorded 38 physicians during their tobacco cessation counseling sessions and found that 32% of physicians did not ask or assess the patient's current smoking status, thus defeating the purpose of the 5A's model.<sup>15</sup> Another survey of Medicaid enrollees found that 13% of providers failed to ask about the patient's smoking status, 35% failed to give advice on quitting, 49% failed to assess the patient's willingness to quit, 76% failed to offer any assistance, and 87% failed to give follow-up appointments.<sup>16</sup>

With proper education, pharmacists could have a greater impact on patient health and ENDS cessation than many might think. Responses to a survey of pharmacists in Los Angeles, CA, demonstrated the impact they have on patient smoking cessation because of their prevalence, accessibility, and availability for counseling within a community.<sup>17</sup> Of the 86 survey responses collected, 42% of the pharmacists received tobacco cessation training in pharmacy school.<sup>17</sup> Participating pharmacists were encouraged to attend a 60-minute, live, web-based training on how to implement brief smoking cessation interventions with patients when providing nicotine replacement therapies (NRTs).<sup>17</sup> Over a five-month period, pharmacists in the Los Angeles area provided a five-minute intervention counseling session and distributed an NRT starter kit to 17,013 patients.<sup>17</sup> Information on the number of patients who quit smoking as a result of the intervention was not collected, but 62% of pharmacists agreed patients appeared highly motivated to stop tobacco use after their intervention, 41% believed patients would return to their pharmacy for refills of NRT products, and 94% agreed they were better equipped to help patients quit smoking as a result of the program, including those who had previously received training in pharmacy school ( $p < .05$ ).<sup>17</sup>

Improper ENDS educational interventions prevent health care professionals from initiating a meaningful impact on patient lives and achieving their best health. This lack of initiation is a strike against a health care professional's oath of upholding the priority of a patient's health, as well as impacting the personal health of the

patient and their loved ones. This commentary is a call to action in educating future health care workers and implementing a standard educational curricula system that advises against the use of ENDS and traditional cigarette use. Such education can be achieved when standardized academic interventions are upheld and rigorously implemented through course work and early immersion experiences for health professions students.<sup>18</sup>

In seeing the positive patient impact that proper education has on student pharmacists, an enhanced ENDS and smoking cessation curriculum is necessary and would be beneficial for all health care students. This would ensure that students and patients have a better understanding of the risk-benefit profile of ENDS and their long-term health consequences. A standardized curriculum could include enhancing the use of the 5A's model, adding training in motivational interviewing skills to counseling sessions, and providing health care students with more patient counseling opportunities. This curriculum addition should be taught to pharmacy students before their first early immersion experience organized by their respective school to obtain more practice. Such education could include a combined formal teaching session with practice opportunities through co-curricular events, health fairs, and student organization events.

With regard to the effectiveness of the 5A's method, many physicians and health care professionals admittedly forget what the 5A's stand for, do not know how to correctly implement the steps, or lack the empathy to take an ongoing interest in the patient's need for smoking cessation.<sup>15</sup> This training can be more effective if better health care curricula implementation strategies are used, such as adjusting the mnemonic to be more memorable and dedicating more time to educating students about cessation from smoking cigarettes and using ENDS.

Motivational interviewing and encouragement are necessary to assist patients in their ENDS and smoking cessation journey. The College of Psychology at NOVA Southeastern University provides guidance on how to teach pharmacy students to ask patients affirmative and open-ended questions as well as how to provide information to patients who may not want it.<sup>19</sup> Eliciting "change talk" has also been shown to help patients identify their motivations and guide providers on how to teach patients about the health consequences of their actions.<sup>19</sup> Motivational encouragement includes affirming the patient's feelings, normalizing a patient's fears, and embracing reflective listening. These examples for health care students and professionals acknowledge a patient's feelings about smoking cessation and encourages them to begin, and continue, their nicotine cessation journey. These motivational and empathetic interventions are critical for

patients because of the risk of addiction electronic and traditional cigarette use has for all users.

Because there is a lack of opportunities for health care students to learn and practice their counseling skills, they need more smoking cessation counseling experiences within their community and the educational curricula.<sup>11</sup> Potential solutions include health care education, including more experiential hours in students' respective fields, providing practice consultation opportunities to students, and encouraging community involvement. At the UNC Eshelman School of Pharmacy, a new curriculum has been implemented that requires students to obtain 2,400 hours of experiential pharmacy education before graduating. Early student immersions in pharmacy practice are thought to lead to greater knowledge retention based on personal patient interactions and experiences encountered.<sup>20</sup> The school additionally provides opportunities for students to volunteer outside of the classroom through the Student Health Action Coalition (SHAC). This community opportunity allows a variety of health care students to work together to help underserved patients obtain health care service. These interactions include full patient workup assessments and providing clinical recommendations. Objective structured clinical examinations (OSCE) are also performed by students in patient education courses to give students the opportunity to apply their knowledge in a pretend clinical practice setting with a volunteer patient.

## CONCLUSION

The use of ENDS is an increasing trend across the nation among teenagers, young adults, and cigarette smokers who desire to quit smoking. Health care students must learn how to properly educate patients on the dangers of ENDS use and why ENDS should not be used as an alternative to traditional cigarette cessation. Health care students should be fully educated regarding these products so they are able to make informed risk-benefit analysis decisions. A standardized educational intervention for all health care students is needed to enhance the 5A's method, implement motivational interviewing with empathic listening, and provide more hands-on experiences. Future health care providers will then ultimately be fully equipped to create a healthier future and potentially eliminate ENDS usage.

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