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Physicians' Counseling of Adolescents Regarding E-Cigarette Use

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A B S T R A C T

Purpose: Electronic cigarette (e-cigarette) use now surpasses the use of conventional cigarettes among U.S. adolescents. Given the important role of physicians in preventing adolescent risk behaviors, we sought to understand how physicians communicate about e-cigarettes when counseling adolescent patients and their parents. We also explored physicians' support for regulations aimed at discouraging adolescents' e-cigarette use.
Methods: A national U.S. sample of 776 pediatricians and family medicine physicians who provide primary care to adolescent patients completed an online survey in Spring 2014.
Results: Many physicians (41%) would, if asked, tell their patients that e-cigarettes are less harmful than cigarettes, and a substantial minority (24%) would recommend e-cigarettes to adolescents for smoking cessation. Most physicians reported routinely screening adolescent patients for cigarette smoking but few routinely screened for e-cigarette use (86% vs. 14%; $p < .001$). Routine counseling was similarly more common for avoiding cigarette smoking than for avoiding e-cigarette use (79% vs. 18%; $p < .001$). Support for government regulation of e-cigarettes was high, with 91% of physicians endorsing policies that prevent minors from buying e-cigarettes.
Conclusions: Physicians infrequently screen or counsel their adolescent patients about e-cigarette use, although e-cigarettes often come up during visits. Additional efforts by physicians could help prevent future use by adolescents. Recommending e-cigarettes as a smoking cessation aid to adolescent patients is inadvisable given the lack of evidence for efficacy in that population. As federal regulation of e-cigarettes remains in limbo, pediatricians and family medicine physicians can offer a powerful voice for informing regulations aimed at reducing use by adolescents.

IMPLICATIONS AND CONTRIBUTION

More adolescents now use e-cigarettes than conventional cigarettes. In this national study, many fewer physicians screened or counseled their adolescent patients about use of e-cigarettes compared with cigarettes. Enhancing physicians' abilities and opportunities to screen and counsel about e-cigarette use could help prevent adolescents from engaging in this risky behavior.

Adolescents' use of electronic cigarettes (e-cigarettes) is a growing public health concern. E-cigarettes are battery-powered devices that heat a solution of e-liquid (typically containing humectants, flavorings, and nicotine) into an inhalable aerosol. Adolescents' use of e-cigarettes, which are also called vapes, vape pens, and mods, has increased dramatically since their introduction in the U.S. marketplace in 2007 [1–3]. E-cigarette use tripled among middle- and high-school students from 2013 to 2014, and more students reported using e-cigarettes in the past 30 days than conventional cigarettes [3]. E-cigarettes pose a risk to adolescent health for multiple reasons. E-cigarette use may act as a gateway to smoking conventional cigarettes [1], although studies have yet to conclusively demonstrate such a finding.

Conflicts of Interest: The authors have no conflicts of interest to disclose.

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However, recent increases in rates of use of e-cigarettes by adolescents occurred simultaneously as decreases in rates of conventional cigarette smoking, allowing for the possibility that e-cigarettes could be a pathway from or substitute for tobacco smoking [3]. Nonetheless, most e-liquid and e-cigarette aerosol contain nicotine [4], which is addictive. Although research with adults suggests that e-cigarettes may be less addictive than cigarettes [5,6], no studies have examined the addictive potential of e-cigarettes among youth, who have heightened sensitivity to nicotine [7]. Exposure to nicotine can alter the structure and function of the developing brains of adolescents [8,9] and harm fetal development should adolescents be using e-cigarettes during pregnancy [10]. If ingested or spilled on the skin, e-liquid containing high concentrations of nicotine can be toxic [11]. Finally, e-cigarette aerosol contains harmful chemicals such as formaldehyde and acetaldehyde [12]. Thus, although e-cigarettes are likely less harmful than conventional tobacco cigarettes [13,14], their use is not completely safe [15]. Unfortunately, e-cigarettes are not currently subject to federal regulation, although the U.S. Food and Drug Administration (FDA) has proposed a set of regulations including a nationwide ban on sales to minors [16].

Health care providers are well positioned to intervene to prevent or reduce adolescents' use of e-cigarettes as they do with other adolescent risk behaviors [17]. Organizations such as the American Academy of Pediatrics (AAP) have guidelines on best practices for preventing and treating tobacco use [18]. The AAP's "Bright Futures" guidelines suggest using the five A's approach, adding a sixth A for younger patients: (1) anticipate (future use among younger patients); (2) ask (about current use); (3) advise (about the dangers); (4) assess (willingness to change); (5) assist (with cessation efforts); and (6) arrange (for follow-up to check on progress). Unfortunately, not all physicians include these components (e.g., more physicians "advise" than "assist"), and prevention efforts are particularly lacking for younger adolescents [19]. When implemented, primary care–based interventions for children and adolescents can be effective for preventing and treating adolescent tobacco use [20]. However, little is known about how providers incorporate the topic of novel tobacco products such as e-cigarettes into preventive care visits with adolescents. Prior studies suggest that health care providers regularly discuss e-cigarettes with adolescent and adult patients [21–23] and the frequency of patient inquiries is increasing [23], but most providers feel that they lack sufficient knowledge about the product and express interest in learning more [21,24]. To our knowledge, this is the first study to explore the topic among a national sample of physicians who treat adolescents. Our study aimed to explore physicians' perceptions of the health harms of e-cigarettes, beliefs about using e-cigarettes for smoking cessation, and their strategies for counseling adolescent patients about e-cigarettes. Finally, given that federal regulation of e-cigarettes is currently in flux, we also examined physicians' support for possible regulatory efforts.

Methods

Participants

We conducted an online survey of pediatricians and family physicians (the specialties responsible for most adolescent primary care) in Spring 2014. The survey focused on administration of adolescent vaccines but also included questions about beliefs and behaviors relevant to other preventive care services, including prevention of tobacco and e-cigarette use. Respondents were members of an existing national panel of physicians that was initially constructed from American Medical Association lists and maintained by a survey research company. Physicians were eligible to participate if they resided in the United States, spoke English, specialized in pediatrics or family medicine, and provided routine primary care to young adolescent patients (ages 11–12 years).

The survey research company sent invitations via e-mail to 2,368 physician panel members with pediatric or family medicine specialties, and 1,022 physicians (43%) opened the invitations and visited the survey Web site. Of these, 776 (76%) were eligible and completed the survey. Data on the percentage of ineligible respondents are not available, but overall, 33% of physicians in the panel completed the survey. Respondents provided informed consent online and received up to $45 for their participation. The Institutional Review Board at the University of North Carolina approved the study protocol.

Measures

Respondents first viewed images and a brief description of e-cigarettes. If they reported ever having talked about e-cigarettes during an adolescent visit, the survey assessed who typically raised the topic (the adolescent, the parent, the physician, or someone else) and the topics discussed. The survey also assessed respondents' main concerns about e-cigarettes and which e-cigarette topics they would like to learn more about. For items on e-cigarette topics and concerns, the survey used closed-ended response options including the potential health harms of using e-cigarettes, the potential health harms of breathing secondhand e-cigarette aerosol, whether using e-cigarettes helps smokers quit, and whether using e-cigarettes leads to smoking.

To understand attitudes about e-cigarettes as a possible tool for smoking cessation or harm reduction, we asked participants to indicate agreement (response scale ranged from "strongly disagree" [coded as 1] to "strongly agree" [coded as 5]) with these statements: "I would recommend adolescent smokers use e-cigarettes to quit smoking"; "I would recommend adult smokers use e-cigarettes to quit smoking"; and "If asked by adolescents or their parents, I would say that e-cigarettes are less harmful than regular cigarettes." In addition, participants indicated their agreement (same scale as aforementioned) with four possible regulations that would ban flavored e-cigarettes, ban advertisements targeting youth, prevent minors from purchasing, and prohibit e-cigarette use in places where smoking is not allowed. For the statement about willingness to recommend e-cigarettes to adolescents for smoking cessation and for the policy support variables, we recoded the variable such that a value of 0 indicated "strongly disagree," "somewhat disagree," or "neither disagree or agree," and 1 indicated "strongly agree" or "somewhat agree."

The survey assessed routine screening and counseling practices with the items "How often do you ask adolescents whether they [use e-cigarettes/smoke regular cigarettes]?" and "How often do you counsel nonsmoking adolescents about avoiding [e-cigarette use/smoking regular cigarettes]?" We dichotomized these variables such that a value of 0 indicated "never," "rarely," or "sometimes" and 1 indicated "often" or "always." We also combined the variables regarding screening and counseling to create a single, composite variable representing the physician's efforts at cigarette smoking prevention and e-cigarette use prevention. For