PEDIATRICS PERSPECTIVES

Electronic Cigarettes: The New Face of Nicotine

AUTHORS: Emily K. Duffy, MD, and Brian P. Jenssen, MD

The Children's Hospital of Philadelphia, Philadelphia, Pennsylvania

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e-cigarette, electronic cigarette, nicotine, tobacco, tobacco control and prevention

ABBREVIATIONS

e-cigarette—electronic cigarette

FDA—US Food and Drug Administration

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Address correspondence to Emily K. Duffy, MD, Department of General Pediatrics, Pediatric Residency Program, Suite 9NW55, The Children's Hospital of Philadelphia, 3400 Civic Center Blvd, Philadelphia, PA 19103. E-mail: duffye1@email.chop.edu

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A rugged actor with a prematurely lined face and raspy voice expounds on the virtues of regaining our freedom. A flaxen-haired actress waxes poetic on the sex appeal of puffing up in a bar. These are not images pulled from the archives of the golden age of television, when advertising tobacco products on the airwaves was unregulated, but rather from a new, and relatively unregulated, chapter in the saga of nicotine-containing products: electronic cigarettes.[1] Electronic cigarettes, or "e-cigarettes," have been on the market since 2007 and are catapulting into the mainstream. As their popularity skyrockets, however, so too does the need for product and marketing regulations at the federal level and sales restrictions to minors at the state and local levels.

In lieu of tobacco, e-cigarettes consist of a liquid cartridge, which typically contains nicotine derived from tobacco, with an atomizer and a rechargeable battery; when the user draws on the device, it atomizes the liquid and delivers a vapor, in lieu of smoke, to the user. E-cigarette users "vape" the atomized contents of the cartridge, which can have flavors ranging from "plain tobacco" to bubble gum or peach schnapps. (Of note, the sale of flavored cigarettes [other than menthol] has been banned since the 2009 Family Smoking Prevention and Tobacco Control Act because of their known appeal to young buyers.) Once rare, these products have become much more visible over the past few years, particularly with the aid of television commercials for "blu eCigs" (owned by the Lorillard Tobacco Company), filling a void in televised cigarette commercials since their ban in 1970.

Due to their novelty and the initial uncertainty of these products as drugs, devices, or tobacco products, e-cigarettes have yet to receive any federal oversight. E-cigarettes, with nicotine derived from tobacco, would need to be included in the Family Smoking Prevention and Tobacco Control Act's definition of "tobacco products" to qualify for federal oversight, but the US Food and Drug Administration (FDA) has yet to include them in that definition. As such, they cannot currently be regulated like other tobacco products, with measures such as warning labels regarding addiction, restrictions on product marketing, and biochemical testing to ensure truth in labeling. The FDA also regulates medical devices and drugs, but e-cigarettes cannot be considered medical devices or nicotine replacement therapy, such as nicotine patches or gum, unless the manufacturers decide to market these products as such.[2]

Concerns exist about potentially harmful substances in e-cigarette vapor (such as diethylene glycol, an ingredient in antifreeze, and nitrosamines, known human carcinogens), putting both users and those exposed to secondhand vapor at risk. Other concerns include inconsistencies when comparing the contents of the cartridges versus their packaging. Several steps are needed to address the appropriate health issues regarding e-cigarettes.

First and foremost, immediate FDA regulation of e-cigarettes is essential. Without such regulation, misinformation will persist, and public health consequences will ensue. The American Academy of Pediatrics, the American Lung Association, and the American Heart Association, along with others, recently wrote the President of the United States, urging him to ensure that the FDA asserts and extends its authority over all tobacco products, including e-cigarettes. A similar, bipartisan letter from 41 state attorneys general was also sent to the FDA commissioner in September 2013.[3] The power to extend the agency's authority lies with the executive branch of government, and President Obama must take action to protect children and adolescents from the harms of unregulated products.

In addition, FDA regulation is necessary to maximize the potential good in these products. E-cigarettes are marketed to current smokers as an aid to reduce or to stop smoking. Although controversial, smoking cessation experts see tremendous potential in these products as a cessation tool, addressing behavioral and sensory needs that other nicotine replacement products, such as transdermal patches and gum, do not. A recent randomized controlled trial published in the *Lancet* found that e-cigarettes were as effective as nicotine patches at achieving abstinence, with few adverse effects.[4] These products may help smokers quit.

Second, consistent and universal regulation by cities and states restricting both e-cigarette use in public spaces and access to minors is needed. The unfettered use of these unregulated, potentially hazardous items in public areas has left local governments and their citizens concerned, leading to efforts by multiple states and municipalities to restrict their public use.[2] The reintroduction and destigmatization of smoking behaviors and attitudes that these products represent, through advertising, easy access, and free public use, rightly worries public health advocates who have spent decades trying to demystify and deglamorize smoking to teenagers. E-cigarettes are commonly sold online, as well as in mall kiosks, strip malls, and convenience stores, all marketplaces that potentially cater to the teenaged buyer. A series of recent studies have shown that teenagers are increasingly aware of and willing to try e-cigarettes. One online survey found that two-thirds of teenaged males were aware of e-cigarettes, and, alarmingly, roughly one-fifth of respondents would be willing to try an e-cigarette if offered one by a friend.[5] A recent release from the Centers for Disease Control and Prevention showed that, from 2011 to 2012, ever-use of e-cigarettes among middle and high school students increased from 3.3% to 6.8%. Although most e-cigarette users were concurrently using conventional cigarettes, 20.3% of middle school students and 7.2% of high school students had never smoked a conventional cigarette before trying an e-cigarette. As of 2012, an estimated 1.78 million students have ever used e-cigarettes.[6]

Finally, on the individual provider level, due to the novelty of these products, clinicians may wonder how best to counsel patients about e-cigarettes. Our advice is guided by who we are counseling; e-cigarette use in different people means different things. For the teenager who has never smoked cigarettes but has tried e-cigarettes (and is thus at risk for trying traditional cigarettes), we should emphasize the potential for nicotine addiction introduced by these devices and caution them on the unknown risks of these unregulated products. For parents or caregivers interested in quitting smoking, e-cigarettes might serve as a tool either to reduce or to eliminate the known dangers of carcinogenic tobacco products. Although it is difficult to endorse a product not yet regulated for quality or consistency, studies like that published in *Lancet*[4] indicate what has already been intrinsically suspected: e-cigarettes could be a potential weapon in the battle against tobacco addiction. These interventions have lifesaving potential, both for the smoker and for children exposed to secondhand smoke.

Over time, we will learn the true nature of e-cigarettes and use that information to help our patients. In the interim, lack of evidence regarding the science of this product should not be mistaken for lack of clarity in terms of the steps needed for its regulation. The FDA already regulates tobacco products. Extending such authority of the FDA, an agency charged with protecting and promoting our health, over e-cigarettes is a clear, practical, and attainable adjustment. Pediatricians can advocate with their local and national lawmakers to encourage this needed oversight, a necessary step toward ensuring that these devices do the most possible good and the least possible harm.

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