E-cigarettes, JUUL and Vaping: What Pediatric Health Care Providers Need to Know

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E-cigarettes have exploded in popularity among teens over the last decade, making them the most common tobacco product used by youth. According to 2018 data, **1 in 5 high school students and 1 in 20 middle school students currently use e-cigarettes**, a 75 percent increase from 2017. In order to look more closely at what the U.S. Surgeon General has deemed an "epidemic," I worked alongside my colleagues as part of the American Academy of Pediatrics' (AAP) Section on Tobacco Control to draft a new policy statement, "***E-Cigarettes and Similar Devices***," summarizing the latest evidence on the health harms of e-cigarettes and supporting both clinical interventions for pediatricians and policy strategies to protect youth from the dangers of e-cigarette use.

As a pediatrician, I find the details of e-cigarette use incredibly disturbing. I have focused much of my research on the issue of adolescent tobacco use and tobacco policy, and have explored the impact of flavored tobacco products, media and campaigns, and smoking cessation and regulation. What's remarkable about this current trend is the speed at which it has grown, threatening five decades of public health gains in successfully deglamorizing, restricting and decreasing use of tobacco products.

But in my role, I also recognize the opportunity to shift this trend. Pediatricians are a trusted source of health information, and they can support families by educating patients and parents about the harms of these products, working to prevent youth from taking up vaping or smoking and guiding treatment options for tobacco users. In order to do this however, we must understand the problem and where we need more information and research to truly make a difference.

What we know about youth and e-cigarettes

The term "e-cigarettes" encompasses the wide variety of devices that are known as vapes, mods, tanks and pod systems, including popular brands like JUUL. Originally marketed as a product to help adults quit smoking—a claim with little evidence to back it up—e-cigarettes have been particularly appealing to youth due to their discreet designs and sweet and fruity flavors. E-cigarette retailers have marketed these flavor options using a wide variety of media channels and advertising strategies deployed successfully in the past by the tobacco industry to sell conventional tobacco products to youth. This advertising has effectively reached youth and is associated with current rates of e-cigarette use.

All of these factors have helped create the misconception among teens that e-cigarettes are less dangerous than other tobacco products. In reality, e-cigarette solutions contain numerous toxicants and carcinogens, just like traditional cigarettes. The nicotine concentration in JUUL, for example, is also higher than prior e-cigarette brands, with a single pod containing the same amount of nicotine as an entire pack of cigarettes. Adolescents and young adults who use e-cigarettes are also at high risk of transitioning to traditional cigarettes, making it

easier for them to develop a lifelong habit that we know can lead to serious health problems down the road.

Regulation, resources and research needed to protect youth

Despite these dangers, significant gaps remain in e-cigarette regulation. As of the publication date of the policy statement, federal laws and regulations do not appropriately restrict the advertising of e-cigarettes to youth. Further, without a ban on flavored e-cigarettes, child-friendly flavors are available and marketed to youth. In November 2018, the U.S. Food and Drug Administration (FDA) announced steps to protect youth by restricting the availability of some flavored e-cigarettes in certain locations. They preceded this with a warning letter to JUUL and other e-cigarette manufacturers in September 2018 requesting they take voluntary actions to curb youth appeal. The AAP applauds the FDA's attention to the problem but continues to advocate for stronger regulation to fully protect youth from e-cigarettes.

We also know there is a lack of resources for families who are trying to talk to their children about e-cigarette use or help them quit, as well as for people who interact with children on a daily basis like educators, school staff, coaches and others. There is also little to no existing knowledge on evidence-based approaches or research on how to help teens quit vaping. The New York Times recently profiled this challenge and I have personally heard from organizations and individuals seeking resources and more information and tactics to help with smoking cessation. The persistence and urgency of this problem is so great that the FDA held a public hearing just last week to discuss the role of drug therapies in curbing the trend.

Role of the pediatrician in helping teens quit vaping

Here at Children's Hospital of Philadelphia (CHOP), we recognize the need to help kids and families as they confront this issue, and we're digging into research to help. We know that pediatricians see the majority of the U.S. child and adolescent population, and adolescents view pediatricians as trusted sources for credible health information. Consequently, pediatricians are uniquely positioned to screen for tobacco use in their patients, initiate treatment and connect adolescents to smoking cessation services. But a critical knowledge gap exists: after screening, how do we ensure teens are effectively receiving treatment services that will lead them to quit?

At CHOP, we're conducting a clinical trial to explore just that, using a combination of routine screening, health information technology and financial incentives to help teenagers connect to evidence-based behavioral counseling through the Quitline, a free tobacco cessation service available in Pennsylvania. However, we particularly need more work to understand the trajectory of e-cigarette use and nicotine dependence in teen e-cigarette users. Adolescent users of JUUL and similar pod-based devices may require unique cessation approaches and therapies, as use of these high-nicotine delivery systems may increase both nicotine intake as well as frequency of use, compared to traditional cigarette users.

We know the risks from smoking and have seen the damage it can cause. We must take action now to ensure the gains we have made in reducing youth tobacco use are protected, and coordination is the key to our success. While more research is needed to help teen e-cigarette users quit, preventing youth use in the first place should be the FDA's primary goal. Prevention works. The vast majority of teens do not use tobacco products or e-cigarettes, and appropriate regulatory action, legislation and counterpromotion can continue to ensure that youth live tobacco-free lives. Along with swift action and regulation from the FDA, we must work to fill in the gaps in research, identifying proven methods to help kids and teens quit vaping, while expanding our efforts to educate patients and their families about the risks of e-cigarette use. Working together, we can continue to reduce all forms of tobacco use among youth in our communities.

For the full AAP policy statement and recommendations for pediatricians and policymakers, visit http://pediatrics.aappublications.org/content/early/2019/01/24/peds.2018-3652. Additional resources on e-cigarettes are also available at https://www.aap.org/en-us/advocacy-and-policy/aap-health-initiatives/Richmond-Center/Pages/Electronic-Nicotine-Delivery-Systems.aspx.

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