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Testimony of

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On behalf of the

**American Academy of Pediatrics**

Before the

**U.S. House of Representatives**

**Committee on Oversight and Reform**

**Subcommittee on Economic and Consumer Policy**

**“Examining JUUL’s Role in the Youth Nicotine Epidemic”**

July 24, 2019

Good morning. Chairman Krishnamoorthi, Ranking Member Cloud, members of the subcommittee, it is my pleasure to be here today to talk about JUUL and e-cigarettes, a critical issue for our nation's youth. My name is Dr. Jonathan Winickoff. I am a practicing pediatrician at Massachusetts General Hospital and I have over twenty years of experience caring for children and adolescents. I am also a professor of pediatrics at Harvard Medical School, where I serve as the Director of Pediatric Research in the Tobacco Research and Treatment Center.

I am here today representing the American Academy of Pediatrics (AAP), a non-profit professional medical organization representing over 67,000 pediatricians, pediatric medical subspecialists and pediatric surgical specialists across the United States. I previously served as the chair of the AAP Julius B. Richmond Center of Excellence Tobacco Consortium and continue to work with the Richmond Center on research initiatives to address tobacco control issues that impact children.

JUUL use among adolescents has reached epidemic proportions and I see the impact of this every day in my own practice. Many of my patients are teenagers. This year, not a visit with a teenager has gone by where we haven't talked about e-cigarettes. Every one of my teenage patients—and even many of my preteen patients—either uses e-cigarettes or has friends who use them.

Counseling teens and preteens on e-cigarette use is challenging. Many of my patients have wildly incorrect beliefs about e-cigarettes. They know that cigarettes are dangerous, but assume that JUUL—since it's ubiquitous, comes in child-friendly flavors, and is marketed as a healthier alternative to smoking—must be harmless. I have to explain to kids that e-cigarettes do not have the same positive health benefits as the fruits whose flavors they copy. Even the term vapor calls to mind harmless water vapor. There is no water in these products.

Rather, e-cigarette liquid contains, in addition to nicotine, a number of toxins including heavy metals, volatile organic compounds, and carcinogens like tobacco-specific nitrosamines.<sup>1</sup> The heating element in the liquid creates ultrafine chemical particulates that are inhaled deep into the lung where they remain, well beyond the reach of cilia that remove toxins from the upper bronchial tree. The nicotine is immediately absorbed into the arterial blood stream, crosses the blood brain barrier, and proceeds to the pleasure center of the brain, where addiction neuronal pathways become saturated with nicotine and later require more to make the adolescent feel normal.

E-cigarettes are also not good for growing lungs. They cause children to cough and wheeze. They are particularly bad for children with asthma as they can increase asthma exacerbations.<sup>2</sup> There are also a growing number of case reports of a rare side effect for young e-cigarette users: hypersensitivity pneumonitis.<sup>3</sup> This serious condition causes acute respiratory distress and requires hospitalization for intensive care and treatment with steroids. FDA has also publicly warned about increasing reports of seizures in children resulting from e-cigarette use.<sup>4</sup>

While we have enough short-term data to be seriously concerned about adolescent use of e-cigarettes, we of course have no long-term data on its health impacts on children because e-cigarette use is a relatively new phenomenon. In the case of cigarettes, the public found out how damaging they were to health many years too late. Pediatricians worry about what we will learn about e-cigarettes after it's too late. The National Academies of Science, Engineering and Medicine, for instance, determined that there is "biological plausibility that long-term exposure to e-cigarette aerosols could increase risk of cancer and adverse reproductive outcomes."<sup>5</sup>

My patients are often not aware of JUUL's massive nicotine content and do not understand the dangers of nicotine. Nicotine is not a benign substance. Nicotine dependence impacts areas of the brain that control executive function, memory, and mood.<sup>6</sup> My patients do not understand that one JUUL pod contains as much nicotine as twenty cigarettes. In fact, a recent study showed that adolescents who use pod-based e-cigarettes such as JUUL have higher concentrations of nicotine biomarkers in their body than adolescents who smoke cigarettes.<sup>7</sup> Nicotine addiction can take hold in only a few days, especially in the developing adolescent brain that is particularly vulnerable to addiction to nicotine.<sup>8</sup> My teenage patients who use JUUL are not merely engaging in harmless youthful experimentation. Many of them are using JUUL on a daily basis and show significant signs of nicotine addiction.

A soon-to-be-published study of high school students in Massachusetts found that daily JUUL and other e-cigarette use is much more likely to continue than daily smoking. Of students surveyed who said they had ever used combusted tobacco daily, only 17 percent said they remained daily smokers. However, of the students who reported having ever used e-cigarettes daily, 58 percent remained daily users.<sup>9</sup> This demonstrates that e-cigarette use among teens is very persistent, a result consistent with what we have seen in terms of JUUL's addictiveness and the difficulty teens have trying to quit.

E-cigarette addiction concerns us not only because of its direct health consequences, but also because use of e-cigarettes can lead to combustible tobacco use. E-cigarette use puts adolescents at risk for cigarette smoking, which kills over 400,000 American every year. Compared to adolescents who do not use e-cigarettes, those who use e-cigarettes are 3.5 times more likely to begin smoking cigarettes.<sup>10</sup> Adolescent e-cigarette use is also associated with subsequent use of marijuana, alcohol, and non-prescribed stimulants like Adderall.<sup>11</sup>

Many of my patients find JUUL nearly impossible to stop. Nicotine withdrawal can cause headaches, insomnia, irritability, anxiety, and depression, and these withdrawal symptoms are one of the primary reasons a nicotine addiction is difficult to overcome.

Unfortunately, doctors lack effective tools to help adolescents stop using JUUL. There is no good data on how to treat an adolescent with e-cigarette dependence. There also is not a whole lot we can borrow from our experience helping adolescents quit smoking cigarettes. There has not been enough research on youth tobacco cessation strategies, and most of the pharmacological therapies approved for adults have been shown to be ineffective or only marginally effective in adolescents. While this means we need more research, it also means that policymakers must act quickly and decisively to address this problem. The only surefire way to eliminate e-cigarette use in adolescents is to stop it before it starts.

The good news here is that we already know what we need to do to reduce and eliminate e-cigarette use in adolescents. We know this from our experience with cigarettes and other tobacco products. Mostly importantly, we need to make e-cigarettes less appealing to children, we need to make them harder for children to access, and we need them to be regulated appropriately by the Food and Drug Administration (FDA).

Raising the tobacco sales age to 21 is an important policy priority to reduce teen access to tobacco products. Sixteen states have enacted state-level 21 laws, and bipartisan efforts in Congress are progressing to make this policy national. The Institute of Medicine has found that raising the tobacco sales age will lead to substantial reductions in smoking-related disease and death, improve maternal, infant, and fetal outcomes, and reduce exposure to secondhand smoke. Estimates indicate that tobacco 21 policies would prevent a quarter-million premature deaths by the end of the century.<sup>12</sup> Tobacco 21 laws represent an important step forward, but much more needs to be done to ensure that children do not ever try these highly addictive tobacco products. While

JUUL says it supports 21 policies, it still allows its devices and pods to be sold to 18-year-olds in stores across the country.

JUUL pods come in a whole array of sweet fruit and dessert flavors including mint, mango, and crème. Youth surveys show that e-cigarette flavors are one of the primary reasons teens try e-cigarettes in the first place.<sup>13</sup> The flavors also help mask the harsh taste of nicotine, making repeated use more likely, and thereby increasing the likelihood of developing addiction. Tobacco companies have a long history of making products that are attractive to children and exploiting the addictiveness of nicotine to turn users into lifelong customers with an expensive addiction that could cost them thousands of dollars a year. JUUL is no different. It has taken a page out of Big Tobacco's playbook.

Unfortunately, while JUUL is clearly aware of the role flavors play in teen use of its products, it has chosen to keep flavored products on the market. While the company has temporarily halted sales of certain flavored JUUL pods in brick-and-mortar stores, it has chosen to keep mint and menthol flavored pods available in these stores.

It's completely false to suggest that mint is not an attractive flavor to children. From candy canes to toothpaste, children are introduced to mint flavor from a young age. Not only do children enjoy mint, but it has special properties that make it an especially dangerous flavor for tobacco. Menthol's anesthetic properties cool the throat, mask the harshness of nicotine, and make it easier for children to start using and continue using tobacco products. The impact of mint and menthol flavors on increasing youth tobacco addiction is well documented.

When JUUL removed its other flavors from stores, I would have hoped to see my patients take that as an opportunity to stop using JUUL altogether. Instead what I saw is that the vast majority of them merely switched to mint since access to it was still easy. What's more, children are still gaining access to the other candy flavored JUUL pods, even though they are now sold only online. Eighty percent of children get e-cigarettes from social sources, such as older friends, meaning that if the products are available for sale somewhere, children will get their hands on them.

A simple practical solution is available: We must eliminate child-friendly flavors from tobacco products. The data on children and flavored tobacco products has been so compelling that Congress took action years ago to ban flavored cigarettes. We urge Congress to do the same for all tobacco products by passing legislation immediately to prohibit all flavors, including mint and menthol, from tobacco products.

The federal agency with the greatest ability to address the e-cigarette epidemic is the FDA. Unfortunately, FDA's actions over the last two years have allowed JUUL and other products to proliferate unabated. While current FDA regulations require e-cigarettes like JUUL to come off the market unless they go through public health review at the agency, FDA initially announced it would not enforce that requirement until the year 2022. The AAP believed that FDA's decision to postpone public health review was unwise and unlawful, and joined with others to file a lawsuit against the FDA. Just this month, a federal judge ruled in our favor, and ordered that e-cigarette manufacturers submit applications within 10 months or take their products off the market. This was a strong victory for public health. We urge the FDA to now do everything in its power to ensure that any e-cigarette products that remain on the market actually benefit public health and do not appeal to children.

Chairman Krishnamoorthi, Ranking Member Cloud, JUUL is a fatally flawed product. A recent study showed that 15-17 year olds are 16 times more likely to report use JUUL than 25-34 year olds,<sup>14</sup> even though JUUL claims

its products are only intended for adults. When so much of the product that JUUL profits from ends up in the hands of children, it is time we declare JUUL a failed product. The American Academy of Pediatrics believes that JUUL is a public health threat that must be removed from the market as soon as possible.

And while the focus today is on JUUL because it is the dominant e-cigarette product currently used by children, all e-cigarette products present a major risk to children's health. We must also address the fact that current regulations are insufficient to prevent other companies from mirroring JUUL's irresponsible practices.

We've made a lot of progress over the years in reducing adolescent tobacco use, but products like JUUL are eroding that process and reversing that trend. Teenagers today are taking up e-cigarette use when many of them would otherwise have never used a tobacco product. JUUL and companies like it must be held to account for the epidemic they have created, and Congress and the administration must take action to end it.

Thank you for holding this important hearing for child health.

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