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**Testimony in support of S. 18**  
**An act relating to banning flavored tobacco products and e-liquids**

Good morning, and thank you for the opportunity to return to speak to the committee about the role of flavors in tobacco products, including electronic cigarettes, and their effects on child health. My name is Dr. L.E. Faricy, and I am a practicing pediatrician at the University of Vermont Children's Hospital. I specialize in caring for children with lung and breathing problems. I am here to speak on behalf of the Vermont Medical Society and the Vermont State Chapter of the American Academy of Pediatrics in support of legislation that eliminates flavors in tobacco products and e-liquids, including mint and menthol flavoring.

Vermont pediatricians are increasingly concerned about the rising rate of youth vaping. Young people tell us they start in part because the flavors are appealing and make the product seem benign. But then they find themselves addicted and can't stop using these products even when they want to.

One 18 year old who began vaping at age 13 and said "I didn't know what I was doing. Another kid passed me something and told me it tasted like fruit punch, and that sounded good to me. It made me feel really good. I didn't know it had nicotine in it, I just knew I wanted to do it again." This young person has made two attempts to quit in the last year but has not been able to tolerate the emotional swings that come from nicotine withdrawal. They also said "I feel like I have lost a lot of control over my life because I can't do anything without having a vape on me." This young person uses a flavored nicotine-containing vape every day within 5 minutes of waking up, uses it throughout the day, and it's the last thing they do before they fall asleep. The young person also has months of coughing when they have a cold and ongoing chest pain that worsens when they vape, and they have not been able to quit even though they want to.

I want this committee to know that these are the types of stories pediatricians across the state are seeing in clinical practice over the last several years with respect to nicotine addiction in youth. I have had the opportunity to visit about 12 primary care pediatric and family medicine practices across the state of Vermont, from Brattleboro all the way up to Newport, and worked where I can to connect these practices with their local schools or substance use prevention specialists. All across the state, pediatricians and schools are seeing a lot of youth use, a lot of youth nicotine dependence, and a lot of difficulty quitting.

I have another patient who has been hospitalized twice for vaping-related breathing difficulties and has related lung damage that is visible on a chest CT. She has been unwilling to seriously consider quitting her e-cigarette use because "I haven't found anything else that gives me the same dopamine rush that vaping does."

There are not good data to guide doctors in how to help teenagers with nicotine dependence. We can do our best to extrapolate how we use nicotine replacement therapy, like nicotine patches or nicotine gum, for adults – but this use remains off-label for youth under 18. As pediatricians, we try to adapt to support youth however we can. Even if we can prescribe nicotine replacement, there is no guarantee it

will be effective, or that young people will tolerate the side effects. Using nicotine replacement for youth with nicotine dependence from e-cigarettes hasn't been studied, and yet, this is what I'm trying to teach other physicians how to prescribe because doctors don't have better tools once someone is dependent. I wish I had a lot of success stories to share with you about young people who have successfully quit nicotine but in my experience they are few and far between. A 17 year old patient I have who started vaping in middle school has been able to quit almost completely in the last 6 months by using nicotine replacement patches but is still plagued by frequent cravings saying, "I need nicotine to feel normal. It keeps me going. Without it I get really depressed."

Both teenagers and adults that I talk to tell me how difficult it is to overcome a nicotine addiction. Nicotine withdrawal is uncomfortable. It can cause headaches, poor sleep, irritability, anxiety, and depression, and these symptoms make it very hard stop using it. It is often a much easier choice for an adolescent to just continue vaping rather than muscle through several months of feeling these unpleasant symptoms.

You might be thinking – what's the problem? It's just nicotine, it's not like they're smoking cigarettes. Nicotine has unique effects on the adolescent brain, which is in the process of strengthening signals that are used repeatedly. Vaping delivers a fast rush of nicotine to the brain, where it imitates a chemical that releases dopamine, a reward/pleasure pathway. The brain pathways that support a quick and easy dopamine release are strengthened, and those behaviors are reinforced. Once the brain becomes dependent on nicotine, it will continue to seek other quick and easy forms of reward/pleasure. This leads to increased risk for addiction, including other forms of nicotine, such as combustible cigarettes, as well as other addictive substances or drugs (1). Other long-term impacts of nicotine on the adolescent brain include impairments in attention capacity and working memory as well as increased risk for mood disorders and poor impulse control (2).

Understanding these patterns can explain why 90% of adults who smoke cigarettes daily started when they were teenagers. The reason that tobacco related illness and death is a problem *at all* for adult Vermonters is because tobacco and nicotine addiction is a problem for Vermont's young people. Vermont pediatricians are also alarmed because young people who use e-cigarettes are not necessarily kids who would otherwise just start smoking cigarettes. Several separate research studies show that youth who use e-cigarettes are more likely to go on to use combustible cigarettes at around four times the rate of youth who don't use e-cigarettes, even if they specifically express an intention not to smoke (3-5). **The prevalence of youth vaping is creating a new generation of nicotine-dependent youth that will take a lot of undoing. Flavors act as a hook for youth to start using these products, and the nicotine dependence keeps them coming back for more. Policies like the one before you that will help prevent or delay teen use of nicotine-containing products should be a priority.**

So far I've focused on nicotine, but the bill before you is about restricting flavors in tobacco products. We know that the tobacco Industry has a long history of using flavored tobacco products to attract youth. Flavors are used to increase the appeal of tobacco and e-cigarettes by improving flavor and reducing harshness. This is particularly true for menthol. There is no public health reason to exempt menthol from a ban on flavors, and the public health data on menthol strongly support the need to remove it from the market. As you have heard or will hear from others today, including menthol in this legislation is paramount in our goals of reducing health disparities. Youth in are not affected in the same

ways by e cigarette and tobacco use, and we know from Youth Risk Behavior Survey data that students of color and LGBTQ youth are using at higher rates.

I'd like to shift to talk a little more about the health effects of other components of e cigarettes besides nicotine. E-cigarettes reached the market without extensive preclinical toxicology testing or long term safety trials, and then were heavily marketed to target a youth population as a perfectly safe product. We obviously do not have long-term safety data about e-cigarette use over time the way that we have about combustible cigarettes. The serious dangers of cigarette smoking were established much too late, at a time when half of Americans were regular smokers. Pediatricians are worried that our nation will follow the same pattern with e-cigarettes. Based on what I know about other lung damage from inhaled irritants, I have every reason to believe that people who regularly vape are at risk for developing chronic lung disease similar to COPD.

I have seen a lot of negative short term effects in youth such as repeated asthma flares, ongoing cough, and wheeze. In the summer and fall of 2019, you may recall thousands of cases nationwide of lung injury related to vaping that was severe enough the people needed to be hospitalized, many needed to be on ventilators, some died, and a young athlete required a double lung transplant.

Pediatricians, parents, and schools continue to struggle to support a large number of youth with nicotine dependence. The degree of widespread use we are seeing is not harmless experimentation, nor is it inevitable. A lot of youth show signs of serious nicotine addiction. School nurses, teachers, and young people have all told me about students who cannot sit through a 90 minutes class without vaping. This might be something they do surreptitiously through their sweatshirt sleeve in the back of the classroom, or they ditch class to go vape in the bathroom, sometimes resulting in the closure of bathrooms for all students. Students cannot learn well when they are so distracted by nicotine cravings, and they also can't learn if they are hiding out in a bathroom during class to satisfy their nicotine craving. The patterns happening in schools are incredibly disruptive to learning.

Vermont cannot afford to wait for a solution to come from national regulations. The FDA allowed JUUL and other e-cigarette makers with a large youth appeal to proliferate unchecked for years before requiring these companies to submit premarket tobacco applications. By the time Juul was forced off the market, the majority of youth had moved on to using disposable e-cigarette brands like Puff Bar and Loon that were not subject to the incomplete flavor ban from the FDA in 2020. This also shows how anything short of a comprehensive flavor ban risks shifting youth use patterns without decreasing use. We can look South to our neighbor Massachusetts, which passed a ban in June 2020 for all flavored tobacco products and the state did see a decrease in state-level menthol and cigarette sales compared to other states. (6)

This is my third visit to this committee to speak in support of this legislation. The bottom line is that youth vaping and subsequent nicotine addiction continues to be a widespread issue in the state of Vermont and flavors help introduce these products to young people more easily, helping to establish the brain's dependence on nicotine at a critical developmental stage. Most of the young people using e-cigarettes are not the same youth who would start smoking regular cigarettes if vapes were unavailable or less appealing. I'm here to ask you to do everything you can to keep tobacco products and e cigarettes out of the hands of young people. We have to have policies that make them unappealing and unavailable. My work in trying to help young people overcome addiction has been really disheartening. Where I sit in my clinic to support them is downstream of whatever bills are or are

