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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 speak to this 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. I'm going to talk about what we are seeing in Vermont with respect to youth nicotine product use, what nicotine does to the adolescent brain, what is known about the health effects of electronic cigarettes, flavors, and menthol, and what we know about the effect of flavor restrictions from areas outside of Vermont.

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. The most recent statewide date from Vermont is from 2019 which showed 26% of high school students were current users of electronic vapor products and about 7% smoked cigarettes.

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.

Another young man I know moved to the United States from a politically unstable area and when he started high school here, he started getting flavored vapes from his peers because "they were everywhere, it was so easy to get them." He had specific reasons that he said he would never smoke cigarettes, including the death of several relatives from smoking-related diseases and the unpleasant smell of cigarettes. He now reports vaping every 5 minutes throughout his classes and during his weekend job to deal with stress and avoid nicotine withdrawal. He was an active teenager who has not been able to play his favorite sport because his asthma has been so difficult to control that he cannot run without wheezing.

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 15 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.

Schools are seeing rampant use. Just yesterday I spoke with an elementary school nurse in central Vermont who contacted me to discuss training school staff to respond to the degree of vaping they are seeing from students in their 6th through 8th grades. She said "every product we are confiscating from these kids is basically candy." 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.

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. For years, she was 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." We know that the current state of youth mental health struggles with depression and anxiety intersect with nicotine use, and nicotine dependence and withdrawal make these symptoms worse. When people experience mental health challenges, pediatricians want to get those youth connected to professionals who can help them, and not have a sea of nicotine products be the first thing they see around them when they are trying to feel better. Right now young people are inundated with exposure to nicotine products.

Another issue that is important for this committee to be aware of is that 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. It is a resource intensive process. I wish I had a lot of success stories to share with you about young people who have successfully quit nicotine if they were moderately or severely addicted, 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." You can imagine that this person's recovery from nicotine addiction isn't a done deal, and he is definitely at risk for starting to use nicotine containing products again, and it might be a combustible cigarette if that's the closest thing to him.

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). Flavors act as a hook for youth to start using these products, and the nicotine dependence keeps them coming back for more. 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 earlier a nicotine dependence develops, the harder it is to break. 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. So when we say that flavor restrictions protect young people by reducing their rates of tobacco use, that's only part of the story. Eventually these teenagers age into adulthood, and will either be adult Vermonters who use tobacco products or not. This legislation protects Vermonters of all ages.

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, and threatens the public health successes in recent decades that reduced the youth smoking rate to all time lows. Policies like the one before you that will help prevent or delay teen use of nicotine-containing products should be a priority to reverse these trends.

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 – this is why the Tobacco Control Act in 2009 banned flavors from cigarettes. 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. Menthol helps people start smoking and makes it harder to quit, and has been a longstanding tool of the tobacco industry to target communities of color and LGBTQ people, both of which are communities that experience more of the burden of tobacco-related diseases. Banning menthol and flavors will reduce the number of tobacco users and benefit public health. Policy evaluations of existing bans that include menthol indicate that these users have more cessation efforts, and there is no increase in illicit purchases. Menthol cigarettes comprise almost 40% of cigarette profits for tobacco companies and these companies have a huge financial stake to protect, which will drive lobbying efforts to oppose this legislation.

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 and the changes researchers have seen in the lab when studying components of e cigarettes, I have every reason to believe that people who regularly vape are at risk for developing chronic lung disease similar to COPD. Flavors themselves are chemicals that have not been shown to be safe when used as inhalants – although they are "generally recognized as safe" by the FDA, this is referring to them as food ingredients and not inhalants. Researchers have identified concentrations of flavors in e-liquid products that exceed the "occupational exposure" limit recommended for these chemicals from the American Industrial Hygiene Association. When flavor chemicals are mixed, thousands of combinations are possible all with different toxicity potentials. The combination of these products can then react further in the airways after heating. Several flavors have also been shown to stun the hair cells that protect the lungs from infection, which makes people more susceptible to illness (6). There are some very dramatic respiratory illnesses linked to vaping, which we have seen here in the pediatric ICU in Vermont, but the majority of the lung issues are lower acuity but still limiting for youth: repeated asthma flares, ongoing cough, wheeze, and difficulty with exercise.

There are precedents for banning flavors – Massachusetts passed a comprehensive flavor ban that took effect in 2020, California just passed one last year, and New York State is considering this right now. Although the FDA has signaled that

they are considering a more comprehensive federal ban, this isn't something Vermont can wait for because the timeline is too unclear and the FDA has stalled in regulating these products for years while still allowing them to be on the market and hooking kids. These are obviously recent bans, but Massachusetts did see a decrease in state-level menthol and cigarette sales compared to other states. There was an initial increase in cross-border sales in New Hampshire that was not sustained after two years (7, 8). Youth vaping rates decreased form about 32% to 17%, youth smoking rates declined from 4.3% to 2.9%, and adult cigarette smoking declined from 12.1% to 10.6% (9).

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. Responding to these continued high rates of youth use takes additional time and resources from schools that are already stretched to their limits. Young people in the state of Vermont deserve to have environments built for them to thrive – to pursue their passions, develop skills, and figure out who they are and what their place is in the world. They deserve to have a good chance of reaching adulthood without being targeted for addiction to substances by corporations. Flavors in tobacco products help introduce and establish the brain's dependence on nicotine at a critical developmental stage. The bill before you is what prevention work looks like – reduce the appeal of and demand for harmful products by eliminating flavors as a hook.

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 polices 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 not passed by your legislative body, and I can tell you that from where pediatricians stand in clinic, this is the wrong place in this process to intervene in this problem. Where you are sitting is a much more impactful place to intervene. This legislation can be a key part of that prevention as we work to make harmful and addictive substances less appealing for youth to use.

Thank you for your time.

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