Written Testimony - Andrea Villanti, PhD, MPH

Vermont Senate Health & Welfare Committee

February 13, 2019

Good morning, my name is Andrea Villanti. I am an Associate Professor in Department of Psychiatry at University of Vermont Larner College of Medicine, with a joint appointment in the Department of Psychological Science at UVM. I am also the Co-leader of the Cancer Control and Population Health Sciences Program in the UVM Cancer Center.

The UVM Cancer Center (http://www.med.uvm.edu/uvmcancercenter/center-home) brings together partners across UVM, the health network, the state, region and across the nation to collaboratively address the challenges faced by cancer patients and their families. It has over 200 members contributing to cancer research, policy, advocacy and education who conduct lab research, clinical research and clinical trials, behavioral research and population health research in a highly collaborative way. Our members represent nearly all academic areas/Colleges of the University as well as many regional and community organizations partnering with us. This collective work represents roughly $20M a year in grant funding.

By way of disclosures, I receive funding from NIH and FDA. I have not received any funding from any tobacco, e-cigarette, or pharmaceutical company for my work and don't have any other conflicts to disclose. I am here representing myself today, not my funders or my employer.

I am a public health researcher who focuses on youth and young adult tobacco use. Since much of what we know works to prevent tobacco use in young people is population-level interventions like policy change or health communication campaigns, my research aims to inform and evaluate those efforts.

It is a particular pleasure to have the opportunity to speak with you today, as my grandmother represented Chittenden County in the Senate for 10 years and worked on issues related to the health of children and families. So, I am speaking to you as a scientist, but also a Vermonter who is invested in reducing tobacco use in our state.

I have four main topics to cover today:

1. Primer on e-cigarettes
2. Importance of a tax on e-cigarettes
3. Opportunities to further reduce tobacco use
4. Need for appropriations to support tobacco prevention and cessation in concert with the tax

1. **Primer on e-cigarettes**

First, electronic cigarettes, or e-cigarettes, are not a single product class – some look like cigarettes, some look like USB drives, some look like high tech tanks. They are a heterogeneous group of products that are used differently and likely have different public health impacts based on their ability to deliver nicotine efficiently.

All e-cigarettes essentially have a battery, heating element, nicotine-containing cartridge, pod, or tank, mouthpiece. Drawing on the mouthpiece activates the battery/heating element and aerosolizes the nicotine liquid. Liquids typically contain nicotine, propylene glycol, vegetable glycerin, and flavorings.

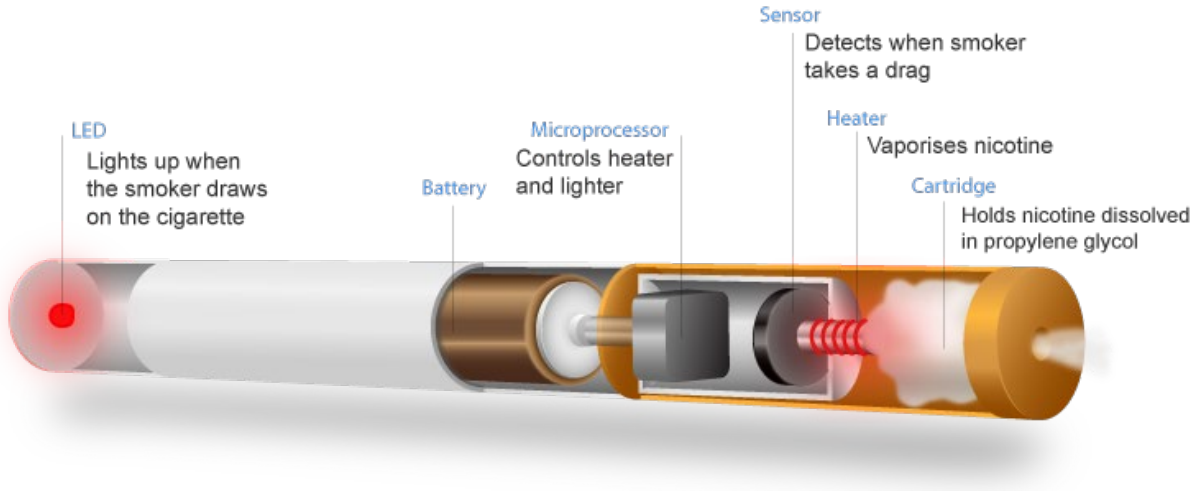

Figure. Diagram of components of an e-cigarette
(from http://med.stanford.edu/tobaccopreventiontoolkit/E-Cigs.html)

These products vary in nicotine delivery and consumer satisfaction – both of which are likely to impact their uptake. Early products like blu delivered little nicotine and new products like JUUL are very efficient at nicotine delivery. There are a number of variables that affect both nicotine delivery and satisfaction: the size/strength of the battery and voltage, the concentration of nicotine in the liquid, the type of nicotine liquid (protonated nicotine in JUUL is less harsh than free-base nicotine found in most e-liquids; allows for higher concentration of nicotine in the e-liquid).

FDA has regulatory authority over e-cigarettes, but there are no established quality or safety standards for these products.

There are a variety of e-cigarette manufacturers – some are small companies, but now the largest companies have some connection to cigarette companies. Product advertising is largely driven by cigarette company products, now Vuse (Reynolds American), MarkTen (Altria;), and JUUL (Altria).[1]

In contrast to highly engineered cigarettes which look and function the same way across brands, provide consistent nicotine delivery, and are generally smoked in a quantifiable pattern (e.g., cigarettes per day),

e-cigarettes are a heterogeneous class of devices with wide variability in design, nicotine content and delivery, and patterns of use.

FDA has regulatory authority over e-cigarettes, but is limited in the range of regulations that it can propose. As a result, policies regarding e-cigarettes have been implemented at the state and local levels and there is wide variety in implementation of e-cigarette-related policies across U.S. states.[2] Currently, 8 states, DC, Puerto Rico and U.S. Virgin Islands currently tax e-cigarettes, but there is no set standard on taxing (mL of nicotine liquid, wholesale price, wholesale cost, purchase price).[2]

Table. State laws related to e-cigarettes
(excerpted from https://www.cdc.gov/mmwr/volumes/66/wr/mm6649a1.htm)

State/Territory	Prohibits e-cigarette use in worksites, restaurants, and bars	Retail license required to sell e-cigarettes over the counter	Self-service displays of e-cigarettes prohibited	Sales of tobacco products including e-cigarettes to persons aged <21 yrs prohibited	E-cigarette tax (tax rate)	Summary of laws enacted as of September 30, 2017
Vermont	Jul 1, 2016	Jul 1, 2013	Jan 1, 2017	—	—	EF, RL, SS
Total	**8 states, DC, and Puerto Rico**	**16 states, DC, and U.S Virgin Islands**	**26 states**	**5 states, DC, and Guam**	**8 states, DC, Puerto Rico and U.S. Virgin Islands**	**—**

EF: state law prohibits e-cigarette use in indoor areas of private worksites, restaurants, and bars; RL: state law requires retailer to purchase a license to sell e-cigarettes; SS: state law prohibits self-service displays of e-cigarettes; T: state law applies tax to e-cigarettes; T-21: state law prohibits sales of tobacco products, including e-cigarettes, to persons aged <21 years.

Higher disposable e-cigarette prices appear to be associated with reduced e-cigarette use among adolescents in the US from 2014-2015.[3] This suggests that increasing the price of products available to young people at convenience stores through tax is likely to reduce e-cigarette use. However, the products on the market have changed significantly since 2014-2015 and research in this area is ongoing.

2. Importance of a tax on e-cigarettes

Bringing e-cigarettes under the same taxation scheme as other tobacco products is an important and common sense approach. We know that young people are sensitive to price and that increasing the unit price of tobacco products reduces youth tobacco use and facilitates adult cessation.

One consideration I want to raise, however, is that existing prices of e-cigarettes are generally much higher than of combustible cigarettes and cigars.[4] As part of my research, I conducted focus groups with young adult smokers this year. Several young adults in my focus groups noted that JUUL was too expensive, so they went back to smoking cigarettes. Young people also told me that when they couldn't afford a pack of cigarettes, they would buy a single cigarillo – a Black and Mild or a Swisher. This is also an opportunity to make sure that cigars don't slip through a tax loophole.[5]

We know that increasing cigarette taxes reduces smoking in young people who are more price sensitive.[6] Something to consider is whether taxing e-cigarettes also provides an opportunity to raise the tax on cigarettes, which we know contribute to significant morbidity and mortality in Vermont.[7]

I also want to put on your radar that there are products likely to enter the market in the next few years that will need to be covered by our state's tobacco policies. These include "heat-not-burn" products (e.g., Philip Morris's iQOS, British American Tobacco glo).

3. Opportunities to further reduce tobacco use

In considering how best to reduce youth tobacco use, I would be remiss if I did not suggest, in addition to increasing the minimum age of sale to 21 (Tobacco21) and raising the price of tobacco products, that Vermont consider banning sales of menthol cigarettes and flavored tobacco products.

Youth (aged 12-17) and young adults (aged 18-24) are more likely to use menthol cigarettes and flavored tobacco products than older adults (aged 25+).[8-10] There is strong evidence that menthol in cigarettes facilitates smoking initiation and nicotine dependence in young people and reduces smoking cessation in adult smokers.[11] There is also strong research emerging that flavors in cigars, hookah, e-cigarettes, and smokeless tobacco are appealing to young users, a top reason for using these products, and may facilitate their continued use of these products.[8]

This is an area where I have focused my work. There is a significant evidence base to support banning menthol cigarettes and flavored tobacco products, and the success of flavored tobacco bans in large cities like New York and San Francisco highlight that it is feasible.

4. Need for appropriations to support tobacco prevention and cessation

Comprehensive tobacco control programs and infrastructure are needed to reduce use of all tobacco products in young people. Evidence-based interventions include providing access to tobacco cessation services and conducting mass media education campaigns about tobacco. Comprehensive tobacco control also requires ongoing administration and surveillance.

There are three areas requiring new funds:

First, there is a need for public education on preventing e-cigarette and tobacco use and on nicotine, more generally. Appropriations should fund widespread efforts to develop educational materials for youth, young adults, parents, schools and to support mass media education campaigns about tobacco.

Second, we are just starting to deal with a cohort of young e-cigarette users who want to quit and our programs are lagging behind. We need tailored cessation programs for e-cigarettes and other tobacco products – for adults and youth. We have focused our programs on cigarette smoking cessation, but we know that young people use multiple tobacco products. Funding is need to expand services in 802 Quits to address e-cigarette cessation and other tobacco product cessation, especially among young people.

Third, there is a need for more rapid surveillance of youth substance use to identify trends earlier and be able to address issues in real-time, especially as the tobacco and marijuana markets evolve in Vermont.

CLOSING

In closing, I want to thank you for keeping tobacco prevention on the agenda. The tobacco epidemic endures – and its impact on deaths in our state still far exceeds the number of opioid-related fatalities. We cannot forget about tobacco and its toll on the health of Vermonters.

Smokers die about 10 years earlier than non-smokers and if we can prevent young people from using tobacco, we can avert the long-term health consequences and medical costs related to smoking.[12] In Vermont, the lifetime health care costs for a smoker are over $200,000.[13] In fact, we have the 7th highest health care costs per smoker in the country.[13]

Vermont is an innovator in health care reform; tobacco prevention needs to be a key part of our strategy to reduce medical costs while improving the health of Vermonters.

Thank you.

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