

## Testimony to the Senate Standing Committees on Consumer Protection, Health, and Education, Public Hearing on Vaping and Electronic Cigarette Safety

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Mr. Chairman, members of the Committee, I want to thank you for the opportunity to speak this afternoon about tobacco, ecigarettes, vaping and health. My name is Andrew Hyland and I run the tobacco control activities at Roswell Park Comprehensive Cancer Center in Buffalo. I've spent 25 years working to reduce the disease burden caused by tobacco not only in New York State but across the country and the globe. Science is our tool and I believe effective public policy needs to be based on the best science we can offer. I've published nearly 300 scientific papers, I run the New York State Smokers Quitline, and I'm the scientific leader of a national 46,000 person longitudinal study of tobacco use that is funded by the FDA. I see the terrible burden tobacco places on us every day, and my goal when I wake up every morning is to try to reduce the disease burden caused by tobacco by as much, to as many people and as quickly as possible.

In the time I have I will make the following 4 points:

First, cigarette smoking is incredibly harmful.

Second, ecigarettes, or vaping, is less risky than smoking cigarettes but not risk-free. These are complex issues.

Third, we can do so much more! Comprehensive action is what works to save lives.

Fourth, the elements of a Comprehensive approach will

- a. Increase public education about smoking, vaping, and nicotine addiction
- b. Decrease the affordability of tobacco and vaping products
- c. Decrease the appeal of tobacco and vaping products, especially to young people
- d. Decrease the accessibility of tobacco and vaping products, especially to young people
- e. Increase resources to help people stop using tobacco and vaping products who choose to do so.

### Cigarette Smoking Is Incredibly Harmful

You've seen the statistics. 28,000 deaths each year in New York State are caused by cigarette smoking. 480,000 deaths nationwide every year are caused by cigarette smoking. About 1/3 of these deaths are from cancer, about 1/3 are from heart disease, and the remaining are mostly from other respiratory diseases like emphysema. About every hour a New York State resident dies from lung cancer caused by cigarette smoking. Half of regular cigarette smokers will die prematurely from smoking. 30% of ALL cancer deaths are caused by cigarette smoking. Imagine a vaccine that could eliminate 30% of all cancer deaths – if it were a pill or genetic tool it would win the Nobel prize and be the discovery of the century. After decades of research we know how incredibly harmful cigarette smoking is. You know what makes cigarette smoking so incredibly harmful? It's a burning question...and literally, it's the burning. If you burn it, its bad. The smoke that you see when a cigarette is burned is the combustion byproducts – or the 'tar'. The 'tar' is where the harmful chemicals are in cigarette smoke and

when a smoker breathes those chemicals deep in to their lungs puff and puff and puff, hour after hour, day after day, their lungs are continuously bathed in toxins and harmful chemicals.

But there's another aspect of cigarette smoking that is key to the sickness cigarettes cause – cigarettes are addictive. Put simply, nicotine stimulates reward circuits in the brain to release dopamine, which makes you feel good. But after a few minutes the dopamine goes away but your brain wants to feel that feeling again and you feel cravings for nicotine – you feel anxious and uncomfortable until the next dose of nicotine hits the brain to relieve the craving and flood the brain with dopamine again. It's a vicious cycle – you need to keep using nicotine or face the brain's temper tantrum it throws when the nicotine tribute isn't paid. But there's one more element in the nicotine story that is vital. Not all nicotine is created equal for its ability to cause addiction, and inhaled is the most addictive way to take it. That's because within a few seconds of inhaling the nicotine, whether its in cigarette smoke or ecigarette vapor, it enters the blood stream and hits the brain. The quicker the nicotine hits the brain the more potential for addiction. Its that combination of addiction and toxicity that makes cigarettes so lethal. People smoke for the nicotine but die from the tar.

### Ecigarettes, Or Vaping, Is Less Risky Than Smoking Cigarettes But Not Risk-Free

Ecigarettes themselves are almost certainly less toxic than cigarettes but they are not safe. This means the issue is complex and I tend to think about the issue in terms of understanding under what conditions ecigarettes may be beneficial for public health and under what conditions they may not. Because ecigarettes are not burning anything there are far fewer toxins in the vapor and they are generally at lower levels than those found in cigarettes. But as a public health practitioner, saying something is less toxic than cigarettes leaves a lot to be desired when talking about public policy.

Unfortunately we don't have a lot of definitive information about the absolute or relative health risks of vaping. A recent National Academy of Science Report on ecigarettes published last year<sup>1</sup> had one of its conclusions read “e-cigarettes cannot be simply categorized as either beneficial or harmful to health.” A recent review just this month of respiratory effects of ecigarettes in the British Medical Journal noted that ecigarettes have “measureable adverse biologic effects on organ and cellular health in humans.”<sup>2</sup> Nicotine is known to impact the cardiovascular system through several mechanisms including inflammation, endothelial dysfunction, and impeding blood flow<sup>3</sup>. Its not yet known if this translates in to increased risk for cancer or myocardial infarction, but because of the lower toxin profile most scientists agree that ecigarettes likely pose lower risks for these diseases compared to cigarette smokers but the risk may be higher than never users of any tobacco product.

Next is a word about the ‘gateway in’ hypothesis. That's the issue whether kids who experiment with ecigarettes are more likely to progress on to cigarette smoking later on where we know for sure there are higher health risks. There is merit to this argument. The National Academy of Science Report concludes “there is substantial evidence that e-cigarette use increases risk of ever using combustible tobacco cigarettes among youth and young adults”<sup>4</sup> but there is more limited evidence on whether ecigarettes are related to more regular or heavy smoking later on, which is the most harmful use pattern. We also know that the top reason youth say they use ecigarettes is that they ‘come in flavors I like’ nominated by 81% of US youth ecigarette users. For adults, health reasons and trying to quit smoking are the top reasons for ecigarette use<sup>4</sup>. A paper out just a couple weeks ago tracking youth ecigarette users over time concluded that “First use of a flavored tobacco product may place youth, young adults, and adults at risk of subsequent tobacco use.”<sup>5</sup>

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<sup>1</sup>. National Academies of Sciences, Engineering, and Medicine. 2018. *Public health consequences of e-cigarettes*. Washington, DC: The National Academies Press. doi: <https://doi.org/10.17226/24952>.

<sup>2</sup>. Gotts JE, et al. What are the respiratory effects of e-cigarettes? *British Medical Journal* 2019; 366:15275.

<sup>3</sup>. Benowitz NL, Burbank AD. Cardiovascular toxicity of nicotine: implications for electronic cigarette use. *Trends in Cardiovascular Medicine* 2016 Aug; 26(6):515-523.

<sup>4</sup>. Villanti A, et al. Flavored tobacco product use in youth and adults: findings from the first wave of the PATH Study (2013-14). *American Journal of Preventive Medicine* Vol 53, Issue 2, August 2017, 139-151, Supplemental Table 3.

However, there is also this ‘gateway out’ hypothesis – that ecigarettes can help people get off of cigarettes. I believe there is merit to this argument as well although there simply hasn’t been as much scientific study of this topic yet compare to the ‘gateway in’ topic. The National Academy of Sciences report concluded at the time of the report that “there is limited evidence that e-cigarettes may be effective aids to promote smoking cessation”. However, two recent clinical trials this year in the leading New England Journal of Medicine and the Lancet show that those who used more recent types of ecigarettes more like what people use today showed some promising results with significantly higher cigarette quit rates in those who used ecigarettes compared to those who used the nicotine skin patch<sup>6,7</sup>. A notable added finding was that most ecigarette users who eventually quit smoking ended up switching from a tobacco flavored ecigarette to a flavored ecigarette during the trial, which indicates adult ecigarette users are using flavors to help them quit smoking although it doesn’t speak to whether they help them quit.

Some studies have done experiments to simulate different policy scenarios about flavors to examine how these competing factors might play out in terms of choice for cigarettes and ecigarette products and it’s a complex picture of the interaction between cigarette and ecigarette policy. The take away from this research is that the most effective approach would restrict both menthol cigarettes and ecigarette flavors, which is expected to reduce cigarette smoking, ecigarette use and increase quitting. However, limiting ecigarette flavors without also limiting menthol cigarettes is predicted to INCREASE cigarette smoking in adults<sup>8,9</sup>. When it comes to kids and whether ecigarette flavor restrictions would reduce ecigarette use, studies like this have not been done among kids, but one study of students in Texas indicate that 93% of middle school and 74% of high school current flavored ecigarette users said they would no longer continue using the product if it were not flavored<sup>10</sup>. Studies that rely only on intentions are not perfect but in the absence of other data this suggests that restricting ecigarette flavors would reduce youth ecigarette use although the potential for unintended consequences is real.

Some of the most up to date information about sales comes from companies that track tobacco stocks. A report last week concluded a ban on non-tobacco ecigarette flavors and their modeling predicts a 2.5% increase in cigarette sales as a result of a ban on non tobacco ecigarette flavors<sup>11</sup>. In Massachusetts all ecigarette sales have been halted since September 24th and the very latest sales data just came out last week that showed cigarette sales in the most recent period after the ban increased by 5.7% compared to the period immediately before the ban<sup>12</sup>. Most everyone would agree that a policy that increase cigarette sales is bad for public health. Its not an apples to apples comparison with a policy the limits ecigarette flavors but the point I am making is that the potential for unintended consequences is very real without a Comprehensive approach.

Lastly on this point, historical context about use patterns is important. Among adults in NY, cigarette smoking rates are down 39% between 2009 and 2018. Cigarette smoking in high school students has

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<sup>5</sup>. Villanti A, et al. Association of flavored tobacco use with tobacco initiation and subsequent use among US youth and adults, 2013-2015. *JAMA Network Open* 2019; 2(10).

<sup>6</sup>. Hajek P, et al. A randomized trial of e-cigarettes versus nicotine replacement therapy. *New England Journal of Medicine* 380; 7, February 14, 2019.

<sup>7</sup>. Walker N, et al. Nicotine patches used in combination with e-cigarettes (with and without nicotine) for smoking cessation: a pragmatic, randomized trial. *The Lancet Respiratory Medicine*, September 9 2019.

<sup>8</sup>. Buckell J, Sindelar JL. Should flavors be banned in e-cigarettes? Evidence on adult smokers and recent quitters from a discrete choice experiment. National Bureau of Economics Research Working Paper 23865, September 2017.

<sup>9</sup>. Buckell J, Sindelar JL. The impact of flavors, health risks, secondhand smoke and prices on young adults’ cigarette and e-cigarette choices: a discrete choice experiment. *Addiction*, March 13 2019.

<sup>10</sup>. Herrell MB, et al. Flavored tobacco product use among youth and young adults: what if flavors didn’t exist? *Tobacco Regulatory Science* 2017;3(2):168-173.

<sup>11</sup>. PiperJaffray. Altria Group, Inc. Estimating potential 2020 category outlook, October 24, 2019.

<sup>12</sup>. PiperJaffray. Tobacco. Early look at category volumes without vapor in Massachusetts. October 29, 2019.

gone down by 67% over about the same time period. For the first time I can recall, the number of deaths in New York State attributable to cigarettes has gone DOWN so we are headed in the right direction but there is so much more work to be done<sup>13</sup>.

What about vaping? Adult use of ecigarettes has been pretty stable from 2015 to 2018 at about 6%. However among high school students in New York State it's a different story with ecigarette use nearly quadrupling from 7.4% in 2014 to 27.4% in 2018 among high school students. Why has youth ecigarette increased so much?<sup>12</sup> I think about these things along 3 factors – appeal, accessibility, and affordability. Ecigarettes, especially those available more recently as these products are continually changing, score high marks are these factors. Kids tell us that the flavors are the #1 reason why they vape, and through loopholes they have been marketed in ways that cigarettes are not allowed to has contribute to their appeal. For accessibility, we have a long way to go to seriously make it hard for kids to get these products, but that may be changing with new retail licensure rules and raising the minimum sales age to 21. On affordability, ecigarettes compare favorably to cigarettes and the 'on demand' way ecigarettes are used – you puff and tuck it in your pocket - makes it easier to get more out of every cartridge. Youth vaping is a complex, multifaceted problem that requires a Comprehensive solution. Reducing the appeal, accessibility, and affordability of these products will reduce youth use of these products.

#### We Can Do So Much More! Comprehensive Action Is What Works

We can do so much more here and dialog like this is so important. We are talking about the leading preventable cause of death in New York. New York has long been a leader in addressing tobacco use – New York's Bureau of Tobacco Control is outstanding, the Quitline offers help to thousands every year looking to quit, and state policies including Governor Cuomo's recent push to raise the minimum age to sell tobacco products to 21 years of age are incredible and will save many lives. But with dialog like we are having today its clear this issue is so complex and that so much more needs to be done. A Comprehensive solution is needed.

#### *What Does Comprehensive Mean?*

A Comprehensive approach means tackling the problem with multiple strategies. For example, educating youth in schools about the dangers of smoking by itself is generally ineffective, but when this is done in conjunction paid media education efforts, restrictions on the sale of tobacco products to kids, and decreasing the affordability of tobacco the outcome is much more effective.

The Centers for Disease Control have a lengthy document describing the Best Practices for Comprehensive Tobacco Programs<sup>14</sup>, and the evidence shows greater effectiveness with when multicomponent interventions are implemented. New York is a great example of this. In the early 2000s New York State invested in a large program to educate the public about smoking, adopted the nation's strongest smokefree law, supported the busiest Quitline in the country and soon after made cigarettes much less affordable. The results are the historically low cigarette smoking rates in adults and kids that I mentioned earlier in my remarks. A further updating of a Comprehensive approach can continue this progress with cigarette smoking and also work to dramatically reduce youth ecigarette use.

#### *What Is In a Comprehensive Plan?*

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<sup>13</sup>. RTI. Independent Evaluation of the New York Tobacco Control Program, NY TCP Advisory Board Meeting, October 10, 2019

<sup>14</sup>. Centers for Disease Control and Prevention. Best Practices for Comprehensive Tobacco Control Programs—2014. Atlanta: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, 2014.

The bedrock of a comprehensive plan is to do a lot more public education. Young people need to continue to get the message that no tobacco or vaping product is a good idea, and everyone should get factual information about cigarette smoking, vaping, and the use of other tobacco products. The New York Bureau of Tobacco Control has the infrastructure and experience to do this public education but they are far below CDC recommended budget to do this type of work. The state's budget for this work has been flat or declined in every year since 2012 and this is eroded further when adjusted for inflation. The Independent Evaluator for the state tobacco program has recommended funding to at least 50% of CDC minimum funding levels.

The next component is to decrease the affordability of cigarettes, vaping and other tobacco products. There are different ways to accomplish this. New York now has a structure to tax cigarettes, ecigarettes and other tobacco products. For context, I estimate a \$1 increase in the price of a pack of cigarettes by boosting the cigarette excise tax will generate about \$300 million in added revenue, which can be used to support public education and other activities. Higher prices are one of the most effective, time tested tools to reduce tobacco consumption and an intervention that is especially effective in reducing youth use because kids are much more price sensitive than adults.

Efforts to decrease the appeal of tobacco products, particularly to youth, are another component. There are many strategies to accomplish this. Limiting flavors is an option as described above but policymakers should be mindful of possible unintended consequences. Significant limits on if/how tobacco products are advertised and how they are packaged would diminish the appeal. Cigarettes have had limited ability to advertise for years, but only through loopholes in federal policy are ecigarettes allowed to advertise – options for closing these loopholes will diminish the appeal of these products. The changes in advertising for JUUL are a great example – not too long ago JUUL used youthful models in their ads to make JUULING look fun, but more recently advertisements feature adults looking to switch from cigarettes to JUUL, which probably has a different impact on kids. Other options to reduce appeal include limiting where tobacco products can be sold or limits on the in-store advertising such as the tobacco displays often prominently displayed behind the counter. All these efforts go hand in hand with the public education efforts.

Another component is to reduce the accessibility of tobacco products to young people. The new law to raise the minimum age to sell tobacco products to 21 years of age is a big deal and one that will save thousands of lives. But why are addictive products sold in more than 20,000 retail outlets around the state? And why are tobacco products and ecigarettes sold near schools? We are here to talk about policy approaches to address an issue we all agree on – that kids using tobacco is a bad idea.

As a wind down my remarks, let me also share the highlights of a new approach you may not have heard much about. A few years ago our team developed some guiding principles for how tobacco products could be sold 'responsibly' acknowledging they are legal products for adults but there are ways to also minimize potential harm for youth. We called it the Responsible Tobacco Retailing Act and its very relevant to the discussion today. The Responsible Retailing Act is a comprehensive multifaceted approach to guide rules about the retail sale of tobacco. It caps the number of businesses selling tobacco products and allows for a gradual decline through attrition. It prohibits any new tobacco sales outlets near schools or playgrounds. It restricts the sale of tobacco products at below-market prices. It prohibits kid-attracting flavors except in adult only establishments. It diminishes the amount of tobacco advertising in store and it requires customers are reminded about the addictiveness and harmfulness of tobacco products right at the point of sale. At the same time, The Responsible Tobacco Retailing Act makes sure that retailers and manufacturers of tobacco products will still be readily able to reach their legal adult customers with relevant commercial information about the tobacco products they sell. The Responsible Retailer Act does not charge retailers with any new fees, but rather it requires those tobacco product manufacturers that profit from tobacco product sales in our community to act responsibly in their related

retailer-based marketing and promotional efforts – with the manufacturers also paying a modest permit fee for each of the brands and sub-brands they sell in a given jurisdiction solely to cover the costs of administering and enforcing the provisions of the Act. With a permit associated with the right to sell tobacco products then violations could subject the manufacturer to losing the right to hold that permit. Communities all over the country have adopted various components of the Responsible Retailer Act but no community has swept them all together in such a comprehensive way. Why can't New York State be the first?

My last point is that any Comprehensive effort should provide resources to help those trying to stop using tobacco or vaping products who choose to do so. The infrastructure with the New York State Smokers Quitline exists to expand service offerings. But I think there are opportunities to better integrate efforts with the health care community, service providers, insurers, and other stakeholders. Any Comprehensive effort will result in more people trying to quit and services should be there for these people to help getting off these products.

#### Concluding Remarks

In conclusion let me recap the points I made. First is that cigarette smoking is incredibly harmful and reducing cigarette smoking is the fastest way to reduce the disease burden caused by tobacco. Next, ecigarettes are less risky than smoking but not risk-free and these are incredibly complex issues with potential for unintended consequences. Next is that what we've learned over the decades of working to reduce cigarette smoking is that Comprehensive approaches work best and synergistically. And lastly the core elements of a successful Comprehensive initiative will significantly boost public education, decrease the affordability, appeal and availability of tobacco and vaping products, and also add support for those looking to quit tobacco or vaping. I also went in to some detail about a possible new comprehensive approach to guide Responsible Tobacco Retailing.

We serve as a resource for the State on this issue and look forward to continued dialog as solutions are considered.