



## Transcript:

### Vaping 101 – Trends Among Illinois Youth

Presenter: Brian Williams & Jake Levinson  
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**PRESENTER:** Good morning, everyone. And welcome to our webinar, Vaping 101-- Trends Among Youths in Illinois. Our webinar today is brought to you by the Great Lakes ATTC, PTTC, MHTTC, and SAMHSA. It is also brought to you in collaboration with Prevention First and the Great Lakes PTTC.

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This presentation was prepared for the Great Lakes ATTC, MHTTC, and PTTC under our cooperative agreement with SAMHSA. The opinions expressed in this webinar are the views of the speakers and do not necessarily reflect the official position of DHHS or SAMHSA.

Just some housekeeping details today-- our webinar will be recorded. The recording link and slides will be made available on the Prevention First website, the Great Lakes PTTC website, and the Great Lakes current YouTube channel.

Prevention First is managing and distributing the certificate of completion or CEU credit for this webinar. So when you registered, you were included to receive a CEU credit. If you have any questions, feel free to contact Prevention First.

Just a couple more housekeeping-- please enter your questions in the Q&A section of our webinar. And the presenters will answer them at the end of their presentations. If you have any other general questions, you can feel free to contact the Great Lakes PTTC. For more information about our center, please follow us on social media.

Our speakers today will be Brian Williams, Internal Medicine and Pediatrics, UW Madison School of Medicine and Public Health, and Jake Levinson, Prevention First.

Doctor Williams is an Assistant Professor of Internal Medicine and Pediatrics at the University of Wisconsin School of Medicine and Public Health. He



works as an adult and pediatric hospitalist. His academic interests include helping protect children from second- and third-hand smoke exposure, as well as reducing adolescent vaping. Thank you, Dr. Williams. We look forward to your presentation.

BRIAN WILLIAMS: All right. Well, thank you very much for having me. In a world of COVID, where every headline is dominated by COVID, I think we're at a big risk of putting other important health topics to the background. And I'm thrilled that so many people have joined to discuss vaping because this continues to be a major, major problem in adolescence and something that I worry is setting up this whole new generation for lifelong nicotine addiction.

And I also want to thank everyone who is on this call for all the work that you are doing to improve the health of adolescents, young people, and adults. I have no relevant financial relationships to disclose.

So our goals today-- and this is really going to serve as our outline-- is first we're going to start by talking about traditional cigarettes because E-cigarettes were born out of concern for cigarettes and maybe an alternative for helping people quit smoking. We're going to go over the E-cigarette devices, how they work, how they've evolved, and what makes up the E-juice, or the liquid component, of an E-cigarette.

We're going to dive into adolescent vaping. There's been skyrocketing amounts of use over the past couple of years. And we're also going to go into the health harms associated with use. And then we're going to talk a little bit about marijuana, as the vaping culture has certainly spread to people who are using marijuana. So we'll go over those devices a little bit.

So to start, everyone knows that cigarettes are bad. The average person on the street knows that smoking cigarettes can lead to lung cancer, COPD, or emphysema And it increases chances of heart attacks and strokes. But to be honest, cigarettes can affect essentially any organ system in our body.

There is conclusive evidence about cigarette use leading to multiple cancers, but also multiple medical problems. We see pneumonia, diabetes, blindness, impaired immune function. And then there is lots of data around the harms of smoking during pregnancy leading to premature birth, stillbirth, ectopic pregnancy. Then after a baby is born, there's increased risk of SIDS with secondhand smoke exposure.

Cigarettes are so bad that 1,300 people are going to die today in the United States as a health consequence of smoking cigarettes. Cigarettes remain the number-one cause of preventable death in the United States.

Fortunately, it's not all doom and gloom. In 1964, the surgeon general came out with his first report on the health consequences of smoking cigarettes. At



that point, about 46% of adults were smoking cigarettes. And we've seen a steady and consistent decline in smoking rates across the country.

There's been a huge amount of preventive education that's been put out there. We've used the data that we've gathered through research over the past many decades, spread that information to the general public to help them make a more informed decision about smoking.

And there's also been a lot of policy changes that have assisted in this declining rate of tobacco use. Things like increasing taxes on cigarettes have worked. Things like the smoke-free air laws, making it harder for people to smoke in bars, restaurants, and the workplace-- all those things have had a big impact on improving our smoking rate.

The state of Illinois-- the most recent data I could find was about 15 and 1/2% of adults are smoking cigarettes. And you guys are doing a little bit better than us up here north of the border, where our rate is in the 16 percentile range.

So let's talk about the E-cigarette, the revolution. This is Hon Lik. He is a Chinese pharmacist whose father actually died, unfortunately, from complications of smoking cigarettes. And he is the one that is largely credited with inventing the modern E-cigarette in the early 2000s.

Interestingly, the E-cigarette is not necessarily a new idea. I was able to find this patent application from 1965 for the smokeless non-tobacco cigarette. So certainly the idea of getting that same nicotine fix in you without the consequences of combustion and smoke has been around for a long time.

So next I'm going to talk about the basic makeup of the electronic cigarette. And all electronic cigarettes are essentially the same. They all consist of a battery. And the job of that battery is to provide the energy source to heat a metal coil. Now, some of these devices have ceramic coils. But for the sake of simplicity, we're just going to say that the battery heats up the metal coil.

And that metal coil then comes in contact with the liquid, also known as the E-juice. And what that does is create an aerosol that is then inhaled by the user.

And I think it's important to use the term "aerosol" in this situation because vapor and vaping is actually a misnomer. A vapor is a liquid in a purely gaseous state. And what an aerosol is-- it's a gas. But it has fine particles of solid and liquids suspended within it. And that's truly what is being inhaled when people are vaping.

So the E-cigarette has undergone quite the evolution over the last 10-plus years. The first-generation E-cigarette is the cigalike, which I have here. And the goal of the cigalike was really to represent the traditional cigarette. So this is largely consisting of the battery. And this is the E-juice. You screw it on.



This one is activated when you inhale and you're off and smoking. And you've got a very similar experience to smoking a cigarette.

The second generation of E-cigarettes is the vape pen. And basically what the vape pen does is it just enhances the cigalike. So now you've got a bigger battery. So you can heat the coil hotter. You can heat a larger coil. And you can create a larger aerosol with a larger concentration of nicotine in it.

The other thing the vape pen has is a larger storage container for the E-juice. So what that allows you to do is vape for a much longer period of time. And one thing that I find troubling with E-cigarettes is that unlike the traditional cigarette, where you light up a cigarette and you smoke it-- you take about 20 puffs. It burns out. That experience is over. And sure, you can light up another cigarette. But there's a shut-off. It ends after about 20 puffs.

The E-cigarette-- you can puff on this for hours and hours and hours. So you're a teenager riding around in a car with your friends. You guys are vaping. You could be inhaling a pack of nicotine concentration in just a few hours using these devices. There's no shut-off. There's no keeping a tally of how much you're inhaling.

The third-generation is the mod. I've got one here. And basically, what this is is the vape pen on steroids. And what the mod has is a huge battery that's much more powerful and allows a much bigger concentration and amount of that E-juice to be aerosolized.

These were popular a few years ago. And these were the devices that led to that huge white cloud that you would see around users as they're walking down the street or in their car. So very powerful devices allowed you to really inhale a huge amount of aerosol at one time.

And then the fourth generation is the latest and greatest. And that's the pod-based E-cigarettes. I've got one here as well. This is the Juul. And Juul was really key in revolutionizing the E-cigarette industry. Exact same makeup-- you've got your battery component. And you've got your prefilled pod that comes in different flavors.

So basically all you're doing is clicking that in there, and you're off and puffing and ready to go. It's very simple to use. The design here is what has really helped this device take off. It's very slick. It's easy to hide in a shirt pocket. And vaping doesn't have combustion. So it's very easy to inhale, exhale into your shirt, or even hold it in for 10, 15 seconds. And you don't see that cloud of white coming out of your mouth.

So Juul, although designed-- or I should say, marketed-- to help the 1 billion smokers in the US quit smoking, has instead led to an incredible popularity in E-cigarettes in adolescents. And this has gotten a lot of headlines over the



last one to two years and has been a real challenge in schools. Kids are now calling bathrooms "Juul rooms."

Kids are playing games where they see if they can get their teacher to charge their Juul stick on their USB, acting like it's just a thumb drive, which it was designed to look like. So this has been a real challenge for schools and has really taken off from a popularity standpoint with adolescents. And there's a picture of the Juul device. It charges on a computer. And yeah, it's hard to distinguish that from a USB stick.

As Juul became more popular, by the end of 2018, it was estimated to have a valuation of \$35 billion. We know that because that's when Altria, which is the - that's the new name for Philip Morris. They bought a 35% stake in Juul for about \$12 billion, giving it a \$35 billion valuation.

A lot of other people have wanted to get in the game because there is big money to be made in E-cigarette. Suorin is one. You can see here this is the Suorin Drop. This is a little different from the Juul because this has two little openers here. So you can mix and match any flavors you want to.

This is one that you have to fill yourself. You have to grab your bottle of E-juice and fill into these pods. But you can vape anything you want. You can mix. You can match flavors. You can put CBD oil in here-- so a lot of potential for harm using these devices. And then there's been a lot of knockoffs that have come that have tried to represent the Juul given their popularity.

As E-cigarettes have evolved, they've become even more discreet. So this looks like an Apple Watch. No. This is an E-cigarette. You vape off of this-- very hard for school administrators to detect. Here's what looks like Chapstick or lipstick. That is a vape pen.

This has gotten a lot of attention, the vape hoodies. So they look like drawstrings. But instead you're taking a puff off that. That's got to be really hard for school administrators. And then here's the backpack. It sort of looks like one of those camel backs. You're taking a drink of water. Instead, you're vaping.

So let's look at the rates of E-cigarette and cigarette use over the past several years in adolescents. This is the National Youth Tobacco Survey that's done every year by the CDC. As you can see, over the past seven, eight years, cigarette use has really been on the decline. Compare that to E-cigarettes, which have been largely displacing cigarette use in adolescents. That's been consistently on the rise.

I want to point out 2014 and 2015. There was an abnormal spike in those two years around the way the question was asked. But there was concern in 2017 that there was a little bit of an uptick from 2016. And everyone was concerned about where this was going as far as popularity.



And you can see in 2018 there was a 78% increase in E-cigarette use amongst high schoolers. So 20.8% of high schoolers self-reported using E-cigarettes in the past 30 days. This led FDA commissioner Scott Gottlieb to call a youth vaping an "epidemic" and led to a lot of interventions with doing raids of retail stores, online store evaluations to try and curb the selling of E-cigarettes to youth.

So everyone was curious to see, gosh, it got a lot of attention. Were we able to make any progress? And you can see it's only gotten worse. In 2019, 27 and 1/2% of high schoolers reported using E-cigarettes in the past 30 days. So you can see this is just flying off the charts.

And there's growing and growing concern that this whole new generation of adolescents is going to be addicted to nicotine. We have made so much progress in curbing cigarette use over the last 20 to 30 years. E-cigarettes are wiping all those gains away.

If we look at Illinois, this is the Illinois Youth Survey that's done every two years. The most recent data we have is from 2018. And at that point, they found that 26.7% of high school seniors were using E-cigarettes. Now, these numbers seem to mirror national averages.

If you look at it by grade, they sample every other grade-- so 8th, 10th, and 12th graders. You can see there's still a lot of use in younger population. 7 and 1/2% of eighth graders are using. And that seems to be consistent with most national studies.

Middle school use is about 5% to 10%. So kids are starting using these younger and younger. And those numbers are also climbing every year, just like the high school use is. So there is a lot of concern about how popular these devices have become.

So the federal government has done two major interventions. One, they raised the tobacco age for purchase to 21. Now, there's been some complications with that rollout because states are having a hard time enforcing federal regulations. So states are also required to pass tobacco 21. I know we're in the process of trying to pass a tobacco 21 state mandate here in Wisconsin. That is currently stalled due to the COVID epidemic.

The other thing the federal government did was that they said, you know, we need to address this flavor issue. Everyone knows that the flavor appeal of E-cigarettes is really drawing kids in. They taste good. You're not getting that flavor of a traditional cigarette. So there's good data to show-- and we'll go over some of that-- that flavors really draw kids in.

So the federal government actually banned these prefilled pods. So these are the Juul pods. The prefilled flavors-- anything aside from menthol or tobacco



flavor have been banned. So there was a lot of hope that there was going to be a really meaningful flavor ban.

Unfortunately, there's some major loopholes that have just shifted the way teenagers are using these devices. So one, the refillable E-cigarettes are not banned from flavors. So these prefilled bottles-- and I've got a couple here-- that you just are using to fill up your E-cigarette, whether it's this or this or that, flavor is still legal. So you can still get tons of flavoring in these bottles.

The other thing is that disposable E-cigarettes were exempt from this policy. Now, prior to this policy coming out, I had never actually heard of a disposable E-cigarette. But now there is a booming marketplace of disposable E-cigarettes.

The Puff Bar was one of the early ones to really get into the market. And it became very popular amongst youth. But now all E-cigarette companies are making their own version of a disposable E-cigarette. And that allows to still get flavors to the adolescent.

Now, if you look at this Puff Bar and the Juul side by side, you can see these are exactly the same size. This is disposable. So you use this, and you throw it away. Whereas you use this, and you have to refill the pod. This has about 0.7 milliliters of E-juice. In it. And this has about twice as much, 1.3 to 1.4 milliliters, of E-juice in it.

A Juul pod costs around \$4. This costs around \$8. So you're getting twice as much for twice the cost. So we've really just changed what kids are using.

So Juul-- as you can see, Altria's stock has really gone down. Juul sales have really gone down. But the devices are still out there. So there's a lot of concern that this flavor ban, although it received a lot of press, has not been all that meaningful in stemming adolescent use because the flavors are still available in multiple forms.

So let's talk a little bit about the E-juice. I always like to show this bottle. This is called Naked Unicorn. When I saw Naked Unicorn, my first question was, aren't all unicorns naked?

But then the real question is, who are we trying to appeal to with a name like Naked Unicorn? It's not the 50- or 60-year-old who's been smoking for 30, 40 years and can't quit. It's adolescents. This is the nic salt BlowSauce. This is a taffy flavor-- again, very appealing. Labels are consistent with what kids like, candy.

Go to the back of a bottle of E-cigarette, and you'll find four main ingredients. One is nicotine. One is propylene glycol and vegetable glycerin. And those are common in our food additives, in some beauty supplies, makeup creams, and things like that. And then there's flavorings. And flavorings is just listed as



flavorings. It's sort of a catch-all term. But as we'll see, there's a lot more going on in that E-juice than these four components.

Now, one thing I also want to talk about is nic salts. So nic salts are a brilliant adjustment to nicotine. What they did was they combined the nicotine with benzoic acid-- so lowering the pH of the nic salts. So when you inhale a nic salt, you don't get a harsh throat hit. So it allows you to take a bigger hit of an aerosol. It allows you to vape more frequently without having the harshness that some of the regular E-juice can cause.

The other thing it does is it creates an aerosol at a lower temperature. So the devices have gotten a lot smaller because you don't need that massive battery. You don't need as high of temperature is to create that aerosol. So nic salts have really helped revolutionize these devices and their ability to get a lot smaller.

The concentrations in the bottles-- you can see a wide variety. There's some nicotine-free E-juices. Studies have shown a lot of them still contain nicotine in them. And then there's very concentrated solutions of E-juice up into the 30, 35 milligrams per milliliter.

So let's talk a little bit about the aerosol. So again, these devices were marketed to us as harmless, as safe. They are not. There are a lot of toxic chemicals that are still being inhaled in the user, things like formaldehyde, acetaldehyde. There's metals-- cadmium, nickel, and lead-- that are being inhaled. You're inhaling those solid particles, depositing them in your lungs.

There's something called VOCs, or Volatile Organic Compounds. These are known to cause cancer. These are known to cause reproductive issues. We're finding all of these toxic chemicals in aerosol. And then there's particulate matter-- like I said, those fine, little pieces of solid material and gas-- that's being inhaled and deposited directly into the lungs, causing inflammation in the lungs.

The challenge is we have no long-term data on E-cigarette use. So we don't know what the lungs of that 12-year-old-- what they're going to look like in 20 years after they've been vaping. We have a lot of concern. We have a lot of data from cigarettes about the chronic inflammation that happens in the lungs. But we can't definitively make comments to say what the long-term effects are.

Now, there's growing and growing evidence of increased risks of heart attacks, strokes. There's some animal data showing increased risks of lung cancer and bladder cancer in mice that were exposed to E-cigarette. But again, it's hard to make definitive statements in a data-driven world until we have more time to see what the long-term effects of these devices are.





Now, are these less toxic than traditional cigarettes? Yeah. They probably have less fewer chemicals in them and fewer carcinogens. But I don't think that is enough information to say that they are safer. Less toxic doesn't necessarily mean safer.

So I'm going to just change gears a little bit and talk about nicotine specifically. So we know that nicotine addiction really hits when you're an adolescent. And this is from David Kessler, the commissioner of the FDA, who says, "nicotine addiction begins when tobacco users are teenagers, so let's call this what it is-- a pediatric disease." And that's absolutely what nicotine addiction is.

Another good quote-- and I'll read-- "today's teenager is tomorrow's potential regular customer, and the overwhelming majority of smokers first begin to smoke while in their teens. The smoking patterns of teenagers are particularly important to Philip Morris." They've known this for decades.

So why is that? So anyone that has a teenager knows that the teenage brain is just different. The prefrontal cortex, which is the part of our brain that really separates us from primates, is still developing through the age of 25. There is a ton of remodeling going on in there. The nAChR, the nicotinic acetylcholine receptor, is highly active in brain development.

And the exposure of nicotine to that brain can really change the way the teenage mind processes moods, critical thought processes, the formation of memories. So nicotine itself is toxic to the brain.

But we also know that there's a ton of wiring that's continuing to go on in the late teen years and the early 20s. And nicotine exposure sets up those hardwired pathways for lifelong addiction. And in fact, we know that 90% of adult smokers today started before the age of 18. 95% started before the age of 21.

The former surgeon general talked a little bit about the health concerns of nicotine, specifically saying, the brain of youth and young adults is more vulnerable to the negative consequences of nicotine, including addiction, priming for use of other addictive substances, reduced impulse control, deficits in attention and cognition, and mood disorders.

Another concern that has been out there for a couple of years is, if kids are using E-cigarettes, are they at higher risk for transitioning to combustible cigarettes? So there has been a lot of studies that have looked at teenagers-- whether or not they're using E-cigarettes and then looked at them a year later, saying, gosh, have they transitioned to using traditional cigarettes?

And basically, if you had used a E-cigarette in the past 30 days-- and then when they surveyed you a year later, the chance that you had used a cigarette was 21 and 1/2%, so much higher than if you hadn't been using an



E-cigarette. So basically, the pooled odds ratio says that if you're a past E-cigarette user, if you've used it in the past 30 days, a year later, you're over four times more likely to be using a traditional cigarette than somebody who isn't using an E-cigarette. And the National Academy of Science came out with a statement that supported this evidence.

So I want to just summarize the harms here of E-cigarettes. Number one, there absolutely are toxic chemicals and carcinogens that are being inhaled when you're using E-cigarettes. So there's certain biologic plausibility that down the road, we're going to see a lot of disease as a result of using these devices.

Number two, nicotine is toxic to the adolescent brain. Nicotine is also much more likely to cause addiction in the younger adolescent brain than in an adult. And the risk of transitioning to traditional cigarettes is higher if you're using an E-cigarette.

So how did we get here? So I'm going to fly to this from a time standpoint. But there is no doubt that these devices have been marketed to youth. There's no doubt that there has been marketing on the safety of these devices without data to support those safety claims. And flavors are playing a huge component in these devices.

So this was Juul's launch party back in 2015. I look at this guy on the right side of the screen. And I think, gosh, he looks stupid with this thing sticking out of his mouth. But when I was 17, that kid looked pretty darn cool, especially compared to me. So it's really hard to say that Juul is appealing to the 20-, 30-, 40-pack-year smoker when they launched with images like this clearly targeting adolescents.

These terms harm reduction, safer alternative that have been used consistently by E-cigarettes-- the teenager hears, this is harmless and safe. Here's a Juul ad with their Juul right next to a nice, healthy salad.

As we talked about vapor, when you hear a vapor, that sounds safe. I think water vapor. I don't think aerosol. Aerosol is clumsy to say. And then this misleading appeal of flavor-- I wish my kids would eat things like this. Mango, mint, strawberry, fruit medley-- that belongs in our stomach, not in our lungs.

So what a teen sees in their E-cigarettes-- the vast majority are saying it's just flavoring. A small percentage recognize that there's nicotine in them. And the most accurate group here is probably the 13% that say they don't know because I don't think we truly know. And each combination is a little different.

If we look at flavors, we know that they're hugely appealing to youth. 85% in 2015 said they like to use them because they come in flavors I like. Wisconsin Youth Tobacco Survey in 2018 asked a similar question. 89% of high school students said they would not use unflavored E-cigarettes. So certainly, there's



a lot of information that the teenagers are telling us. If we want to enact some policy change to make a meaningful reduction, gosh, I think we really need to target flavors.

I'm going to change gears again and close by talking about the E-cigarette- or Vaping-Associated Acute Lung Injury, or EVALI. This was actually a joint evaluation by the Wisconsin and Illinois Departments of Public Health, as there was a group of cases that cropped up in Wisconsin and Illinois just last summer-- it feels like two years ago at this point-- where teens were buying THC cartridges off the street, vaping, and having a severe lung injury.

And this really made people think twice about E-cigarettes. So it did hurt Juul sales. But it ultimately was deemed to be the result of vitamin E, which was being added to these THC cartridges. And that vitamin E was causing a huge inflammatory response in the lungs.

This has essentially gone away. If you look at the CDC website, the number of cases is really low, although I did have a colleague contact me yesterday thinking that he had a patient in the hospital yesterday with E-cigarette-associated lung injury.

So real quick on marijuana, as the E-cigarette devices have evolved, people have found a way to use marijuana. There's three main ways that people are vaping marijuana. There is the dry herb vaporizer. So this is actually the-- you're just heating the dry herb to a very hot temperature and inhaling it. So you've got certain devices that do that.

You've got the vape pens, which are similar to E-cigarettes but for using a THC oil that you're vaping with. And then the one on the right is the dab pen, where basically you've got this wax or this really concentrated marijuana. And oftentimes people started by just putting that directly on the coil of an E-cigarette but now there's dab nails, where you basically heat up a nail super hot, put a tiny amount of that wax on it, and then you inhale the gas that comes off of it.

Looking a little bit at marijuana-- because Illinois just legalized it. It hasn't been legalized here yet. I think there's still a lot of questions about, what does legalization of marijuana do in adolescents?

In 2017, there was a paper that came out looking at both Washington and Colorado, the first two states to legalize recreational marijuana. And they showed that there was increased use amongst 8th and 10th graders in Washington, whereas there wasn't any evidence of increased use in Colorado. They used the Monitoring the Future survey data.

In 2019, Dilley et al. Used the Washington Health Youth Survey. And they actually noted that there was a decrease in use amongst 8th and 10th graders. So a lot of people that are proponents of marijuana legalization have



cited this 2019 paper. I think it's too early to tell the data is mixed. I think we're going to need more time to determine what's going on there.

And I'll close there with just a brief summary that E-cigarettes-- they're certainly a major problem in adolescents. We've seen a continued rise in use and something that, again, as I've said, sets up a whole generation for lifelong nicotine addiction.

We're really putting at risk all that hard work in curbing traditional cigarette use. We're sort of throwing that out the window with this rapid rise in E-cigarettes. And there's incredible concern about the health harms that E-cigarettes are going to cause in our population in the future. And I will close it at that point for questions.

PRESENTER: Thank you very much, Dr. Williams. That's fascinating information and a little scary. We have a couple of questions. The first one is, could you clarify the cost of Juul versus the Puff Bar? I know you said one was \$8, and one was \$4.

BRIAN WILLIAMS: Yeah. So when I bought my Juul pack a couple of years ago, it came with four pods. It was \$49.99. I believe the starter pack has cut down to about \$20-ish. I'd have to look at their website. So you get your Juul stick. And then when you get your replacement pod, I believe these are around \$4 to replace your pod.

And that's equivalent to about a pack of cigarettes, whereas this Puff Bar is about \$8 to \$10-- so twice as much-- but twice as much volume and nicotine as just your replacement pod. So the cost per milliliter once you take out the initial investment in the stick is about the same, if that makes sense.

PRESENTER: Thank you. Another question we have is, is talking to middle school kids about EVALI considered a fear tactic to be avoid-- do classroom presentations avoid it because the vitamin E ingredient has been removed? So the cases are no longer a thing.

BRIAN WILLIAMS: Yeah. So that's a great question. I think our job as anti-tobacco advocates is to be honest and upfront and consistent with our messaging. So I don't think there is as much benefit in lumping vaping with the EVALI because I do think that was really specific to THC. And that has gone down. We're really not seeing those cases anymore.

So I think using the data we have, there's clear evidence that these are increasing risk of cancer, educating adolescents on what exactly is going into your lungs, making comparisons with cigarette smoke. And there are a lot of toolkits out there for education. University of Texas has a great education toolkit. Stanford has an education toolkit for schools. And the CDC also has a nice toolkit.



PRESENTER: Thank you. We have a question from James that says, when it comes to policy solutions, how should we think about balancing the safety risks to youth and the preferences of adult tobacco E-cigarette consumers?

BRIAN WILLIAMS: Right. I think that's the argument you're going to face when you have these conversations with legislators. I've testified in some hearings here. And my argument is that 2% to 3% of adults are vaping, whereas we're seeing a quarter of kids vaping. I think the potential benefit of flavors and their appeal to adults-- I think any benefit there is dramatically outweighed by the health harms that are going to accompany this adolescent epidemic.

And the surgeon general report on smoking that just came out in January didn't-- it said there is not conclusive evidence. We can't make a statement that E-cigarettes help people quit smoking. Now, there is some suggestive evidence out there. But this is certainly not a proven quit-smoking device.

PRESENTER: Thank you. Our last question is, can you name any groups on a national level that come to mind who are working publicly to fight the use of E-cigarettes?

BRIAN WILLIAMS: Yeah. So the Truth Initiative-- go to their website. They are a fantastic organization. They've got grants to try and support legislation. They've got a text-to-quit program for adolescents.

The University of Texas has their Catch My Breath program. Stanford, as I mentioned, and then the FDA and CDC both have programs. But I think to answer your question specifically, I'd look at the Truth Initiative. They are a fantastic organization. Initially, they were anti-cigarette-based. And now they've moved towards a ton of E-cigarette.

PRESENTER: Thank you. Yes. They are a very good organization. That's it for our questions for Dr. Williams. Our next speaker-- we want to thank you very much for all of this information and answering our questions.

And if people have additional questions, you can submit them. And we can always get to them at the end of the webinar. Or if we run out of time, we'll have them answered and send them out to people. But again, thank you very much, Dr. Williams.

And our next speaker is Jake Levinson. Jake joined Prevention First in 2019. Jake's areas of expertise include planning and implementing use prevention and education, school-based communication campaigns, coordinating community coalitions, engaging stakeholders in community assessment, and data analysis, grants, and management. Jake earned his BA from the University of Illinois in Chicago in education. Thank you very much, Jake, for joining us. And we look forward to your presentation.



JAKE LEVINSON: Well, thank you so much. And I really appreciate the introduction. I want to thank Dr. William for that fantastic presentation. And I want to thank the PTTC for hosting us today.

My name is Jake Levinson. As Ann said, I'm a training and technical assistance specialist at Prevention First. Prevention First is the statewide training and technical assistance organization that provides support to Illinois' substance use prevention program. So we have trainings for prevention professionals, as well as a wealth of information on our website. I encourage you to explore that, [prevention.org](http://prevention.org), for additional resources on vaping, but other substance use topics as well.

Today I'm going to be talking about the vaping trends among youth in Illinois. This is all based on data from the Illinois Youth Survey, which Dr. Williams actually presented some during his portion of the presentation. And I'm just going to be going into a little bit more detail about that.

But I wanted to acknowledge the work that has gone into this portion of the presentation. These slides were developed by the Center for Prevention Research and Development at the University of Illinois. They are the organization that implements and administers the Illinois Youth Survey, the statewide survey tool for substance use and other health behaviors that's given every two years in Illinois schools, as Dr. Williams mentioned. And I want to thank Becky Diamond and Scott Hayes for their input and work on these slides in particular.

And I also want to point out, too, that-- and we can share this link, I believe, afterwards. But the data that's presented here is also available in a white paper form at CPRD's website. That's [iys.cprd.illinois.edu](http://iys.cprd.illinois.edu). And again, we'll share that link some other way.

So just a little bit of background about the Illinois Youth Survey-- it is a biannual survey given every two years to 8th, 10th, and 12th grade students in Illinois. It's a self-report survey. And it's administered in school settings. So it's actually given at the schools.

And really, it's designed to gather information about both a variety of health and social indicators, including those substance use patterns and attitudes of Illinois youth. Attitudes about substance use are significant factors in whether a particular youth will engage in substance use.

In 2018, which is the year that this data comes to us from, it included over 230,000 youth and was surveyed at more than 970 Illinois schools. The survey window was between January and June of 2018. So this data will be from 2018. They did just recently close the survey window for 2020. So data for 2020 was not currently available but will be available in the future.



The data that's presented here is also based on a statewide randomly drawn, scientifically weighted sample of the students that took the survey. It was 11,259 students included in the sample. And really, it was selected to make sure that it was representing the full state population of 8th, 10th, and 12th graders in Illinois public schools just to get as much of a representation of all the state's diverse community types and community areas possible.

That table that's presented there indicates how many students from each grade are included in the sample. So you can see that it really is representative among the different grade levels.

I also wanted to point out that at the IYS website, you can find some additional reports that go more into detail among the different geographic areas. So in addition to state reports, there are also county-level reports. There are regional reports. So if you'd like to know more about the city of Chicago or suburban Chicago or how rural counties look, as well as how maybe urban and suburban counties outside of the Chicago metro look, you can find those at the IYS website as well.

This slide probably looks familiar. This is the same chart that Dr. Williams showed earlier. That really is indicating that even though we're seeing a precipitous drop in traditional combustible cigarette usage among youth, we are seeing a significant increase in E-cigarette or vaping use among those same youth.

So in the last two survey years, just the last two, 2016 and 2018, we saw a dramatic rise from 18.4% in 2016 to 26.7% in 2018 among seniors in Illinois just in two years. And it was pointed out that this is one of the most dramatic and alarming annual changes in youth substance use trends that the IYS has ever measured.

One of the things that we know is a significant factor in youth-- whether they'll begin to initiate substance use-- is their perceived risk of harm of the particular substance. So while we see that 87.6% of teens do perceive a moderate or great risk of smoking one or more packs of combustible or traditional cigarettes per day, only 58% of those same youth perceive moderate or great risk of harm from E-cigarette use.

So there is a significantly less amount of perception of risk for E-cigarette use. And a full 12.1% of high school seniors perceive no risk from E-cigarette use. So there's definitely a battle to be fought in terms of risk of harm. And again, as a youth perceives less risk of harm in a certain substance, that can certainly influence their decision to initiate that use of that substance.

In terms of the method of use, E-cigarettes are now nearly three times more prevalent than any other form of tobacco use among Illinois youth. So it's significantly higher than traditional cigarettes, smokeless tobacco, cigars, or hookahs, any other type of use.



Over the 30 days prior to the survey in 2018, 25.6% of seniors reported marijuana use. 26.7% reported that use of E-cigarettes. But only 5.2% reported cigarettes. So that's just to really re-emphasize how much more popular of a method for using tobacco E-cigarettes have become than other forms of tobacco usage.

We know that it's not just tobacco or nicotine that's being used in vaping or E-cigarette products. Marijuana is also becoming a more common method of use through vaping. But the most common means of use of marijuana use still remains smoking it through something like a joint, a bong, a pipe, or a blunt.

However, vaping is becoming a more popular method of delivery for marijuana. In 10th and 12th graders, it's the second most common method of use. In eighth graders, it's the third most common method of use, still behind edible marijuana.

Another significant factor in predicting whether a youth will begin to use a particular substance is their access to those products. So among all the grades-- 8th, 10th, and 12th grades-- we found that the most common source of tobacco or vaping products for teens is that they're actually given to them by a friend.

Seniors, though, are far more likely to purchase tobacco or vaping products at a store than 8th or 10th graders. And one of the things that might be driving that is 63% of 12th grade Illinois Youth Survey respondents were 18 or older and could legally purchase tobacco or vaping products. This is all at the time of the survey, which, again, was administered in 2018.

I do need to point out that on July 1, 2019, the state of Illinois had the tobacco 21 law go into effect. So that meant that as of that date, anyone under 21 can no longer legally purchase tobacco or nicotine products, including E-cigarettes or vaping devices.

It also added vaping or E-cigarette devices to the state's tobacco prevention sting program. So compliance checks are now also including vaping or E-cigarette devices. Those things may influence the data for 2020 in terms of what we're seeing among the rates of use, purchase, and access among 12th graders in particular.

So just to do a little bit of summarization, we do see now that E-cigarettes, again, are by far the most common method of use for tobacco and nicotine among our high school youth and middle school youth. In eighth grade, 7.4% of youth reported E-cigarette use in the 30 days prior to the survey. 10th graders-- 18.3% of them reported E-cigarette use. And that got to as high as 26.7% of 12th graders in the 30 days prior.

Additionally, 7.4% of seniors reported that they were using E-cigarettes at least or more than once per day. That's a significantly high number of that





really frequent and high usage. So just like we see with all substances, the use of E-cigarettes does increase as a young person progresses through their high school years into their senior year. So this is not a trend that we're unaware of. But it is very, very visible especially now with E-cigarette usage.

Just a little bit about some national data-- the 2019 Monitoring the Future survey, which is a national survey-- our rates in Illinois are just a little bit below. But you always use caution when comparing two different survey instruments.

So whereas 18.3% of 10th graders in Illinois reported using E-cigarettes or vaping use, 25% reported that on the Monitoring the Future survey. In 12th graders, it was 30.9% on the national survey, again, versus 26.7%. Again, there is that one-year lag, though. So we may see potentially an increase in 2020. We won't know until we have the full data. But I did just want to make you aware of some of those national data points as well.

So that takes me to the end of my slides. And I think we're going to open it up for some additional Q&A.

PRESENTER: Excellent. Thank you, Jake. That's actually very good information. We do have a couple of slides-- or some questions. I had someone who wanted to just confirm. Did you say that marijuana was legal in Illinois now?

JAKE LEVINSON: Marijuana for adult use is now legal in Illinois as of January 1, 2020, both for the medical program, as well as for adult recreational or retail use as of January 1.

PRESENTER: OK. And then we had some other questions that address the flavors. So either you or Dr. Williams could address these. An example is saying that while youths are saying they like the flavors, adults are also reporting that the flavors help them transition to E-cigarettes from combustible and ultimately quit nicotine products altogether.

BRIAN WILLIAMS: So there is no doubt that that argument is going to continue to persist. And again, I think it's weighing the risk of a whole new generation of adolescents being addicted to nicotine E-cigarettes and a small proportion of adults who are finding success in these devices.

These devices are not FDA-approved quit devices. There's seven FDA-approved medications that are proven to help people quit smoking. There's programs out there that are proven to help quit smoking. And again, I think we're going to find that when you meet resistance, it's going to be anecdotal stories that help drive the narrative of, these help adult smokers quit. And on a large scale, we just don't have data supporting that.



We do have data showing that these devices definitively are getting a large proportion of adolescents addicted to nicotine. So again, I think there is not a perfect answer here. But I think you have to weigh risks and benefits. And again, that appeal of flavors being so huge in kids is certainly outweighing the benefit that those flavors of providing in adults.

PRESENTER: Thank you. Do we talk about vaping cannabis when we're talking with use about vaping nicotine or keep that as a separate educational topic? For either of you.

BRIAN WILLIAMS: I can take it. I think any time you have an opportunity to educate youth, I think educating them on the harms of marijuana use with E-cigarettes-- I think combining those is certainly an opportunity that I would not miss. So I think presenting them both in a topic would be very reasonable. Just try to maximize your opportunity.

JAKE LEVINSON: Thank you. I would just like to add, too, that we encourage - whenever possible, do your research. And find what evidence-based messages are out there. There is certainly evidence-based programs both for the prevention of tobacco use, as well as for marijuana use. And again, I encourage you to seek those sources out. You can start with prevention.org as one resource for that.

But there's also national organizations that are also advancing in the science of evidence-based prevention, like CADCA, the Community Anti-Drug Coalitions of America, I can think of in particular. They're also another organization-- I believe there was a question earlier about policy-- who are addressing policy in regards to vaping as well.

PRESENTER: I just have one more question that we have time for, Jake. And it says, how accurate does the CPRD believe that the 2020 Illinois Youth Survey will be since many of the schools registered were unable to complete the survey before the pandemic?

JAKE LEVINSON: That's a good question. I know that that's certainly been on their minds. I would have to refer that question to CPRD. So I can certainly do some follow up with them and see what their particular concerns are in terms of how this has affected.

I am not sure about how many schools were able to complete prior to the closures due to COVID. But I can certainly follow up and find out if they have some information about how many schools completed and if they predict any changes due to those closures. Changing things changes things, is a dictum I've always heard in regards to surveying. So certainly it's a possibility. But I would have to do some follow up to CPRD.



PRESENTER: Great. We are at time. So I just want to let everyone know that if you submitted questions, and we were not able to get to them, we will address them. And that information will be available on our websites.

Again, I really want to thank our speakers, Jake Levinson and Dr. Williams, for their time and expertise. It's been fascinating. I'd like to thank all of you for your time to listen to our webinar.

And I just want to take a quick minute. You will be receiving an email from Prevention First with a brief evaluation for today's webinar. And we would be very grateful if you would take a couple of minutes to fill it out. And thank you, everyone.

BRIAN WILLIAMS: All right. Thank you, guys.

JAKE LEVINSON: Thank you.