FCD Prevention Works with Stanford Medicine:

Vaping 101 for Parents and Caretakers

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Presenters

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FCD Prevention Works

Prevention is a **climate**, not a program

- Nonprofit
- **Over 40** years of school-based substance abuse prevention
- **Over 2.5** million students, **over 70** countries
FCD’s Prevention Approach

- A collaborative process promoting healthy young people by:
  - Nurturing protections
  - Reducing risks
  - Intervening on unhealthy behaviors
Today’s Webinar Workshop:

- Part 1: Health Information
- Part 2: Strategies for Parents

Questions, answers, and tutorials throughout!
Part 1: Health Information
What are vapes?
What is vaping?
Origins

- **2003**: 1\textsuperscript{st} commercially successful electronic cigarette is created by pharmacist in Beijing
- **2006**: Introduced in Europe and U.S.
- **2008**: First health statements issued by federal governments and the WHO

*Consumer Advocates for Smoke Free Alternatives, 2019*
Parts of an E-cigarette

- LED lights up when the smoker draws on the cigarette
- Battery: controls heater and light
- Microprocessor
- Sensor detects when smoker takes a drag
- Heater vaporises nicotine
- Cartridge holds nicotine dissolved in propylene glycol
JUUL and Pod-Based Systems
Anatomy of a Pod-Based System

These cartridges/pods do contain **NICOTINE**!

Devices with Rechargeable Battery

Covers

Cartridges/Pods
What’s in that Pod?

- Salt-based Nicotine
- Benzoic Acid
- Glycerol
- Propylene Glycol
- Natural Oils
- Extracts and Flavors
- ???
# Nicotine Levels in Pod-Based Products

**NOTE: ALL SALT-BASED E-JUICE/LIQUID CONTAINS NICOTINE!**

<table>
<thead>
<tr>
<th>Product</th>
<th>Amount</th>
<th>Equivalent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 pack cigarettes</td>
<td>20 cigarettes (contains 8mg per cigarette, but only inhale 1mg)</td>
<td></td>
</tr>
<tr>
<td>1 JUULpod</td>
<td>0.7 mL pod &quot;5% nicotine by volume&quot;</td>
<td></td>
</tr>
<tr>
<td>1 PHIX pod</td>
<td>1.5 mL pod &quot;5% nicotine by volume&quot;</td>
<td></td>
</tr>
<tr>
<td>1 Suorin pod</td>
<td>2 mL cartridge &quot;5.4% nicotine by volume&quot;</td>
<td></td>
</tr>
</tbody>
</table>
What does youth vaping look like today?
Local and Global Teen Use Trends

Vape use reversing years of declining nicotine use and addiction among teens.

Monitoring the Future, 2018
Question to Audience

What percentage of U.S. 12th graders used a vaporizer in the past 30 days?

21%
Uncommon, but Trending:

- **8th Grade**: 6%
- **10th Grade**: 16%
- **12th Grade**: 21%

*Monitoring the Future, 2018*
Adolescent Use in 2018

Trends in 30-Day Prevalence of Use for Grades 8, 10, and 12 Combined

Social Norms

- Gross exaggerations
- False perceptions
- Perception influences reality
- Affects younger children
- Research-based prevention strategy
Exaggerated and False Beliefs

What do students think is in the e-cigarettes they have used?

- 65% "just flavoring"
- 20% nicotine
- 6% marijuana
- 6% do not know

*Monitoring the Future, 2015*

U.S. Surgeon General Dr. Jerome Adams said Tuesday that local restrictions, including bans on indoor vaping, are needed to reduce youth e-cigarette use.

Eric Baradat/AFP/Getty Images

Vaping by U.S. teenagers has reached epidemic levels, threatening to hook a new generation of young people on nicotine.

*NPR, December 2018*
Other Myths: “Water Vapor”
Other Myths: “Non-Addictive & Safe”
Introduction to the Toolkit

The Tobacco Prevention Toolkit
Materials for educators, administrators, parents/guardians, and anyone who works with youth.

tobaccopreventiontoolkit.stanford.edu
Development and Evidence

Theory
+ Research
+ Partnerships
+ Evidence-informed
+ Fact-checked

= Tobacco Prevention Toolkit
Goals of the Toolkit

• Understand basic information and the harm they cause

• Awareness of marketing strategies

• Skills of refusal
Structure

Module

Units

Lessons

Activities & More
## Toolkit Content

<table>
<thead>
<tr>
<th>Activities</th>
<th>Educator Crash Courses</th>
<th>Discussion Guides</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factsheets</td>
<td>Kahoots</td>
<td>PowerPoints</td>
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</table>

**Interactive**

**Online**

**Free**
PowerPoints

E-Cigarettes and Vape Pens 101

Teacher Talking Points:
- E-cigarettes may be the bridge that introduces non-users to tobacco cigarettes.
- In a recent study, they found that adolescents who were first time e-cigarette users were 4 times more likely to report cigarette smoking, in just one year.
- It is a major concern among health professionals that using e-cigarettes/vape pens at a young age can lead (click) to use of traditional cigarettes (click) down the road.

Sources:
http://tobaccocontrol.bmj.com/content/early/2017/01/04/tobaccocontrol-2016-053291
### Activities

<table>
<thead>
<tr>
<th>What do you know or what have you heard about JUULs?</th>
<th>Is it True or False?</th>
</tr>
</thead>
<tbody>
<tr>
<td>[Blank]</td>
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</table>

**Answer Key**

- The use of JUULs can lead to addiction.
- JUULs release a large amount of chemicals into the bloodstream.
- These chemicals can cause respiratory issues.
- JUULs are often used as a gateway to traditional cigarettes.

**Image 1**

A person using a JUUL device, emitting a cloud of vapor.

**Image 2**

A close-up of a JUUL device showing the atomizer and liquid reservoir.

**Image 3**

A diagram explaining the components and effects of JUUL use.
Factsheets

Risks of E-Cigarette and Vape Pen Use
Although the overwhelming majority of young people do not use e-cigarettes, the recent increase in use among adolescents is concerning to health professionals.

- Nicotine use in early adolescence causes changes in the brain that make lifelong addiction much more likely for young e-cigarette users.
- Ear, eye and throat irritation is common among e-cigarette/vape pen users.
- The nicotine produced by the chemicals in e-juice enters into the user’s lungs unfiltered and leaves chemical residue behind.
- Nicotine is known to have effects on the cardiovascular system. Some recent studies show that acute use of e-cigarettes impaired flow-mediated dilation, this suggests that e-cigarettes can lead to cardiovasculardisease.

Recent studies show that e-cigarette/vape pen use is associated with the use of other tobacco products that are known to cause further health issues, including cancer and heart disease.

Many people incorrectly believe that these devices produce a water vapor when in fact they create aerosols that contain harmful chemicals, and ultrafine particles that are inhaled into the lungs and not into the mouth, environment, making them hazardous to the user and other nearby persons.

These devices are still very new so we have so many of the long-term health consequences of their use are still unknown. Even still, the mounting evidence shows that these devices are not harmless.

Smokeless Tobacco
Snuff: finely shredded tobacco is ‘spit’ in the cheek.
Chewing tobacco: larger pieces of diluted tobacco that are chewed to release the nicotine.
Snus: chemically treated tobacco stuffed in a cloth-mesh pouch and placed against the gums and cheeks.

How do they work?
- Blood vessels in gums and cheeks can expand and become inflamed. Chewing tobacco contains chemicals and deliver to the brain.
- Oral, throat, pancreas, liver, and lung cancers.
- Permanent facial disfigurement, nasal paralysis, and scarring.

Why do we care?
- Oral, throat, pancreas, liver, and lung cancers.
- Permanent facial disfigurement, nasal paralysis, and scarring.

Is smokeless tobacco addictive?
Yes, these products all contain nicotine, which is extremely addictive. Some will develop a craving for nicotine and will experience withdrawal symptoms when their ‘nicotine- like’ products are not used. Others may develop physical symptoms such as dry mouth, dizziness, and restlessness.

Is smokeless tobacco even in use for young people?
Almost 1 in 30 high school students use smokeless tobacco.

While use is more common among boys, products such as dissolvable and snus are intended to attract girls.

Smokeless tobacco also and also in use for young people?
How did vaping become popular?
Design of new tobacco products *mimics* the aesthetics and appeal of other personal smart devices in the tech space.
Flavors and culture appeal to tastes of children, pre-teens, teens, and young adults.
Instagram 2019
Flavors of Vapes

15,500 tobacco flavors and counting

What's Your Taste?

CHICKEN & WAFFLES

STACEY
Exposure to tobacco and e-cigarette related advertising nearly doubles the likelihood of initiating use vaping or tobacco smoking.

Social Media

- 53% 6th, 8th, and 10th grade students in Texas report exposure to electronic cigarette social media within the past month.
- Females more likely exposed via Instagram, Snapchat, Twitter, Vine, Tumblr, etc.
Piggyback Products

- Vitamin and aromatherapy portable diffusers
- Primes future vaping behavior

Aromatherapy pens mirror look and feel of e-cigs/vaporizers, not recommended for people under 18, those pregnant, etc.
Instagram, 2019
What is the response from health advocates today?
Youth say ads for flavored e-liquids are for them

Karma McKelvey\textsuperscript{a}, Mike Baiocchi\textsuperscript{b}, Divya Ramamurthi\textsuperscript{c}, Sheila McLaughlin\textsuperscript{a}, Bonnie Halpern-Felsher\textsuperscript{a,*}

Addictive Behaviors, Volume 91, April 2019, Pages 164-170
Irregular Regulation

- U.S. regulation of ENDS announced **May 2016**
- Full regulation of these products continues to be **delayed**
- It will take **years** to implement all safety measures and warnings
- **Current product claims cannot** be substantiated
What are the health risks to teens?
# Chemicals Found in E-Cig/Vape Pen Aerosol

<table>
<thead>
<tr>
<th>Compounds</th>
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<tbody>
<tr>
<td>Propylene glycol</td>
<td>Chlorobenzene</td>
<td>Benzo(ghi)perylene</td>
</tr>
<tr>
<td>Glycerin</td>
<td>Crotonaldehyde</td>
<td>Acetone</td>
</tr>
<tr>
<td>Flavorings (many)</td>
<td>Propionaldehyde</td>
<td>Acrolein</td>
</tr>
<tr>
<td>Nicotine</td>
<td>Benzaldehyde</td>
<td>Silver</td>
</tr>
<tr>
<td>NNN</td>
<td>Valeric acid</td>
<td>Nickel</td>
</tr>
<tr>
<td>NNK</td>
<td>Hexanal</td>
<td>Tin</td>
</tr>
<tr>
<td>NAB</td>
<td>Fluorine</td>
<td>Sodium</td>
</tr>
<tr>
<td>NAT</td>
<td>Anthracene</td>
<td>Strontium</td>
</tr>
<tr>
<td>Ethylbenzene</td>
<td>Pyrene</td>
<td>Aluminum</td>
</tr>
<tr>
<td>Benzene</td>
<td>Acenaphthylene</td>
<td>Chromium</td>
</tr>
<tr>
<td>Xylene</td>
<td>Acenapthene</td>
<td>Boron</td>
</tr>
<tr>
<td>Toluene</td>
<td>Fluoranthene</td>
<td>Barium</td>
</tr>
<tr>
<td>Acetaldehyde</td>
<td>Benz(a)anthracene</td>
<td>Copper</td>
</tr>
<tr>
<td>Formaldehyde</td>
<td>Chrysene</td>
<td>Selenium</td>
</tr>
<tr>
<td>Naphthalene</td>
<td>Retene</td>
<td>Arsenic</td>
</tr>
<tr>
<td>Styrene</td>
<td>Benzo(a)pyrene</td>
<td>Nitrosamines</td>
</tr>
<tr>
<td>Benzo(b)fluoranthene</td>
<td>Indeno(1,2,3-cd)pyrene</td>
<td>Polycyclic aromatic hydrocarbons</td>
</tr>
</tbody>
</table>

Compounds in **yellow** are from FDA 2012, Harmful and Potentially Harmful Substances – Established List
What’s in Vape?

E-cigarettes contain nicotine, ultrafine particles, heavy metals, and volatile organic compounds.

- Diacetyl (butter flavor)
- Benzene (gasoline)
- Cadmium (batteries)
- Nickel (cheap jewelry)
- Formaldehyde (dead tissue preservative)
- Toluene (paint thinner)
- N-Nitrosonornicotine (pesticides)
- Lead (car batteries)
- Nicotine (tobacco)
The Body on Nicotine
Brain development
Nicotine in the Brain
Nicotine Effects

- Highly addictive substance
- Causes changes in brain chemistry – stimulates pleasure centers, alters normal brain function
- As nicotine levels in brain drop, brain craves nicotine to feel pleasure and relieve feelings of anxiety and stress (withdrawal)
Nicotine Effects

Until about age 25 the brain is still growing

- Nicotine addiction
- Slows development of learning, memory, attention and behavior
- Mood disorders like anxiety and depression
- Permanent lowering of impulse control
- Increased risk of other addictions
The Body on Nicotine

- Heart beats faster - activates “fight or flight” response
- Increased acid reflux
- Trouble breathing - damage to lungs
- Brain development
Your Body and Benzoic Acid?

When Inhaled:

- Irritation to the lungs, nose, and throat
- Coughing, shortness of breath and even wheezing

When Exposed to Skin:

- Cracking and drying
- Little research; what are the long term effects?
Respiratory Effects of Flavors

- Inhaled flavorings associated with:
  - Respiratory illness/bronchitis
  - Life-threatening respiratory failure

- Largely due to diacetyl, a buttery flavoring agent used in microwaveable popcorn
  - Generally Recognized as Safe (GRAS) – for oral but not inhalation

- Some of the most toxic flavorants include **vanillin** and **cinnamaldehyde**
E-Cigarette/Vape Bridge to Cigarettes

Adolescents who vaped were **4 times** more likely to report cigarette smoking.

[Diagram showing non-user and user sides of a bridge with icons representing e-cigarettes and cigarettes.]

Non-User Side

E-Cig/Vape Bridge

Cigarette User Side

[Website link: tobaccopreventiontoolkit.stanford.edu]

FCD Prevention Works
Part of the Hazelden Betty Ford Foundation
“Thirdhand” Effects

Nicotine & other chemicals
Marijuana Too

- Plant matter or cartridges, concentrated
- “budder,” “shatter,” “crumble,” “wax,” “oil”
- Unregulated and under-researched ingredients
- Same health concerns about carcinogens and irritants as e-cigs
  - minus nicotine, plus THC
  - Micro dosing
Cigarette Smoking

Adolescents who vape:

- **5x more** likely to use cigarettes
- **4x more** likely to start
Addiction in the Teen Brain

- Addiction as a disease
- All use equals risk
- 90% of current smokers started before they were 18

*U.S. DHHS Office of Adolescent Health*
The Tobacco Prevention Toolkit
Materials for educators, administrators, parents/guardians, and anyone who works with youth.

tobaccopreventiontoolkit.stanford.edu
Tobacco Prevention Toolkit
E-cigarette and Vape Pen Module
Unit 1 Quiz

1. Which advertising techniques have been used by tobacco companies?
   a. Claims they are doctor recommended
   b. Sexist marketing
   c. Using cartoon characters
   d. All of the above

2. Which government official first warned America about the dangers of smoking?
   a. The Attorney General
   b. The President
   c. The Executive Doctor
   d. The Surgeon-General

3. Under oath before Congress, the chief executives of the major tobacco companies swore that...
   a. Cigarettes are produced under high standards of control
   b. Children do not have access to tobacco products
   c. Cigarette smoking is not addictive
   d. The FDA should not have control over tobacco production

4. Second hand smoke
   a. Affects young children
   b. Can affect an entire apartment building
   c. Is smoke released by those smoking
   d. All of the above

5. Smoking tobacco originated
   a. At the time of the Civil War
   b. The 1920s
   c. In the Americas

6. E-Cigs are devices that produce nicotine and/or additives in the form of a...
   a. Vapor
   b. Aerosol
   c. Steam
   d. Liquid

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Unit 1: Where Did E-Cigarettes and Vape Pens Come From?

Families: Review the PowerPoints in Unit 1 (optional) to refresh the content discussed in class. Then use this discussion guide to start a conversation at home about the topics discussed in the unit.

What are some of your earliest memories of tobacco products? This can include commercials, people you knew who smoked, experiences being pressured into smoking, etc.

What do you think about the tobacco company’s history in targeting young people in their advertising efforts?

Unit 2: So, What’s Really in These E-Cigarettes and Vape Pens?

Families: Review the PowerPoints in Unit 2 (optional) to refresh the content discussed in class. Then use this discussion guide to start a conversation at home about the topics discussed in the unit.

Research the origins of the e-cigarette and how it was first developed (Optional). Why do you think the terminology related to these devices has changed from “e-cigarettes” to “vape pens?”

What do you know about the differences between the term “vapor” and “aerosol?” Do you think it is important to emphasize the differences between the terms when talking about e-cigarettes/vape pens?
Crash Courses

Unit 1 The Brain Crash Course
A Quick Guide
Click on the "spin" icon to view our sources.

Unit 2 Addiction Crash Course
A Quick Guide

Unit 6 The Pod-Based Device Crash Course
A Quick Guide
Click on the "spin" icon to view our sources.

E-Cigarette and Vape Pen Module Crash Course
A Quick Guide

BONNIE
Ways to Use the Toolkit

- Develop a **new lesson** to deliver to your **entire school**.
- Utilize our **integrated-material** for **all your classes** or create your own curriculum.
- **Present** one of the Powerpoints at a community forum for **parents** and students.
- Use as a resource for **one-on-one meetings** or in programs intended for students **quitting tobacco**.
- Have your **youth present** to your Board of Education.
- **Link** our Toolkit to your **website’s resource page**.
- Present at an annual **conference**.
Q&A: Health Information
Part 2: Parent and Caregiver Strategies
The Common Concern

“How do I talk to my kids in ways that will keep them safe? I feel clueless.”
Your Role in Prevention

► Stay informed
► Nurture protections
► Prevent use
  ► Seek healthy highs
  ► Alternatives for stress reduction
► Intervene early
► Keep the conversation going
Appreciate your Impact

- Parents versus peers
- The value of your opinions
  - What listening looks like in teens
  - Giving them their space to think
- The importance of consistent words and actions
Use Teachable Moments

- **DISCUSS** – the news
- **DISSECT** – pop culture and media
- **DIG INTO** – peer relationships
- **DESCRIBE** – vaping as a health issue
Learn Together

- Family research projects
- Take turns teaching each other
Honest Collaboration

“I don’t know, but I care enough to find out with you. Let’s figure it out!”

“I’m happy about your healthy choices and support them 100%. What more can I do to show you I honor your decisions?”

“I’m sad about the risks in your life. Out of both responsibility and love for you as a parent, from now on I am going to work with you to make some changes as a family that support your health. What step can we take together? I have some ideas too.”
Effective Prevention Efforts:

- **Nurture** protections
- **Reduce** risks
- **Intervene** on unhealthy behaviors
  - *Seeking Treatment and Cessation Support*
Tools for Parents

The Tobacco Prevention Toolkit
Materials for educators, administrators, parents/guardians, and anyone who works with youth.

[Link to Tobacco Prevention Toolkit](tobaccopreventiontoolkit.stanford.edu)
Parents/Caregivers…

- Stay informed
- Talk to your children
- Be an advocate
- Talk to healthcare providers
- Drug testing
- Talk to your children
Behavioral Indicators

- Change in clothing
- Depression and withdrawal
- Moodiness and irritability
- Reduced communication with family members
- Deterioration in school performance and/or truancy
- Physical changes
Talk to Healthcare Providers

- Treatment/referrals
  - Nicotine replacement therapy (off-label)
  - Cognitive behavioral therapy (CBT)

- Drug testing
  - Providers CANNOT drug test your child unless child gives permission (sensitive service laws)
  - You can test at home
    - Subject to false positives and false negatives

- Talk!
  - See our discussion guides
Starting the Conversation

- Goal: to have a conversation, not a lecture
  - Find the “right time”
  - Be patient and ready to listen
  - Avoid criticism and encourage open dialogue

- Avoid “we need to talk,” instead “What do you think about…”
- Avoid “you don’t vape, right…”
- Use the right words! (vaping, Juuling)
- Continue the conversation
  - In-person, or via text/email, etc.
    - Sharing articles is a great way to stay engaged
Q&A: Parent Strategies
Further Resources

- **FCD Prevention Works**
  - Find us on Facebook
  - [www.fcd.org; schools@fcd.org](http://www.fcd.org; schools@fcd.org)

- **Stanford Tobacco Prevention Toolkit**
  - [https://med.stanford.edu/tobacco preventiontoolkit.html](https://med.stanford.edu/tobacco preventiontoolkit.html)

- **National Institute on Drug Abuse**

- **Campaign for Tobacco-Free Kids**
  - [https://www.tobaccofreekids.org/](https://www.tobaccofreekids.org/)

- **Parents Against Vaping**
  - [https://www.parentsagainstvaping.org/](https://www.parentsagainstvaping.org/)
THANK YOU FOR JOINING US!

WWW.FCD.ORG
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FCD PREVENTION WORKS