New and Emerging Tobacco Products: Considerations for Epidemiology and Surveillance

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2018 Surveillance and Evaluation Webinar Series | June 28, 2018
Heated Tobacco Products: Considerations for Epidemiology and Surveillance

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What are heated tobacco products?

Products that heat tobacco leaf to deliver an inhaled aerosol

Technology first introduced in the 1980s and 1990s — two primary formats:

1) Carbon-tipped tobacco sticks lit with a lighter
2) Electronic devices that heat tobacco sticks or capsules

Unclear whether combustion actually occurs; thus, use of the term “heated tobacco products” (HTPs) rather than industry term “heat-not-burn”
# Crosswalking HTPs, E-cigarettes, and Cigarettes

<table>
<thead>
<tr>
<th>Characteristics*</th>
<th>HTPs</th>
<th>E-cigarettes</th>
<th>Manufactured Cigarettes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electronic</td>
<td>✔</td>
<td>✔</td>
<td>☒</td>
</tr>
<tr>
<td>Flame-activated</td>
<td>✔</td>
<td>☒</td>
<td>✔</td>
</tr>
<tr>
<td>Contain tobacco leaf</td>
<td>✔</td>
<td>☒</td>
<td>✔</td>
</tr>
<tr>
<td>Can deliver nicotine</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Produce secondhand emissions</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Produce smoke</td>
<td>☟</td>
<td>☒</td>
<td>✔</td>
</tr>
<tr>
<td>Can deliver marijuana</td>
<td>✔</td>
<td>✔</td>
<td>☒</td>
</tr>
</tbody>
</table>

*Sometimes or always
Flame-activated HTPs

Typically employ a carbon tip lit with a lighter

User inhales until the tip glows red and product is activated; stick is disposed after use

Packs of 20, similar size and shape of cigarette

3 iterations have been tested in U.S. (1989 Premier, 1994-2005 Eclipse, 2015 Revo)
HTPs pending FDA pre-market approval

IQOS: Umbrella brand for PMI’s multiple “reduced risk product” (RRP) platforms

Compressed tobacco stick inserted into device, discarded after use.

Flavors – Regular, Balanced, Mint, Menthol

14 “drags” per stick, 6 minute heat time before automatic shut-off, 1 stick per charge

“HeatSticks” are sold in packs of 20, priced comparably to cigarettes

7/2/2018
HTPs available outside the U.S. — Part 1

JTI PloomTECH heats “capsules filled with granulated tobacco leaves”

Regular (“Balanced”) and menthol (“Cool Purple”) flavors

Capsules sold in packs of 5; recharge every 5 capsules

Activated by inhaling “making it possible to enjoy the experience immediately and at anytime”

Capsule can be used several occasions before disposal.

7/2/2018
HTPs available outside the U.S. – Part 2

BAT glo heats tobacco “NeoStiks,” packs of 20

glo iFuse is a “hybrid” that heats liquid and tobacco

20 sticks per battery charge

Flavors: Bright Tobacco, Fresh Mix (mint), Zest Mix (citrus)

“NeoStiks” are priced 2x higher than cigarettes and have an approx. 45% lower tax rate in Japan because they are lighter and taxes are applied by weight.

7/2/2018
Surveying the new landscape of HTPs
SummerStyles 2017 Survey
Web-based, cross-sectional survey of U.S. adults aged ≥18 years

Online panel from GFK’s KnowledgePanel®
- Address-based probability sampling
- Weighted to U.S. Current Population Survey proportions

Fielded by Porter Novelli during June-July 2017
- 4,107 respondents completed SummerStyles
- 74% response rate
Measuring Awareness of Heated Tobacco Products

Survey Question:

‘Heat-not-burn’ tobacco products heat tobacco sticks or capsules to produce an aerosol or ‘vapor.’ They are different from electronic vapor products such as e-cigarettes, which heat a liquid to produce an aerosol or ‘vapor.’ Some brands of ‘heat-not-burn’ tobacco products include iQOS, glo, Ploom TECH, and Revo. Before today, have you heard of ‘heat-not-burn’ tobacco products?

Response Options:

- Yes
- No
- Don’t know/not sure
Measuring Ever Use of Heated Tobacco Products

Have you ever tried a “heat-not-burn” tobacco product, even just one time?

Response Options:

- Yes
- No
- Don’t know/not sure
Awareness of Heated Tobacco Product Use Among U.S. Adults, 2017

Source: SummerStyles 2017.
Marynak, K et al. Awareness and ever use of "heat-not-burn" tobacco products among U.S. adults, 2017. Accepted by AJPM.
Adult E-cigarette Use

Ever Use of Heated Tobacco Products Among U.S. Adults, 2017

<table>
<thead>
<tr>
<th>Group</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall</td>
<td>0.7</td>
</tr>
<tr>
<td>Men</td>
<td>0.8</td>
</tr>
<tr>
<td>Women</td>
<td>0.6</td>
</tr>
<tr>
<td>&lt;30 years</td>
<td>1.6</td>
</tr>
<tr>
<td>≥30 years</td>
<td>0.5</td>
</tr>
<tr>
<td>Non-Hispanic, White</td>
<td>0.5</td>
</tr>
<tr>
<td>Other</td>
<td>1.0</td>
</tr>
<tr>
<td>Current smoker</td>
<td>2.7</td>
</tr>
<tr>
<td>Former smoker</td>
<td>Relative standard error &gt;40%</td>
</tr>
<tr>
<td>Never smoker</td>
<td>0.5</td>
</tr>
</tbody>
</table>

Source: SummerStyles 2017.
Marynak, K et al. Awareness and ever use of "heat-not-burn" tobacco products among U.S. adults, 2017. Accepted by AJPM.
Potential future steps

Include illustrated images in future surveys to assist respondents

Revise questions to reflect current brands as needed

Potentially revise “heat-not-burn” terminology in future survey questions

As products become available, potentially add related questions to large nationally representative surveys
Key takeaways

The landscape of tobacco products is continually changing

By being proactive and looking at new product offerings outside the U.S., we can prepare our surveillance systems to track changes in tobacco use

Probability-based samples can inform larger surveillance systems down the road

Understanding unique properties and health implications of each tobacco product can inform public health planning, policy, and practice
Contact:
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770.488.6196

For more information, contact CDC
1-800-CDC-INFO (232-4636)

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.
JUUL-related studies

ALISON CUCCIA, MSPH
What is JUUL?

- Electronic nicotine delivery system with sleek design that looks like USB flash drive
- Promoted as a “satisfying alternative to cigarettes”
- “By accommodating cigarette-like nicotine levels, JUUL provides satisfaction to meet the standards of smokers looking to switch from smoking cigarettes.”

www.juul.com, accessed June 21, 2018
JUUL pods

- Detachable pods through which aerosol is inhaled
- Available in tobacco, fruit, mint and other flavors
- Uses nicotine salts
- Every JUUL pod contains nicotine
- Among highest nicotine concentration on the market
In May, 2018, JUUL represented 64.0% dollar share and 45.7% unit share of the e-cigarette traditional retail market. (Herzog & Kanada, 2018)

On April 24, 2018, the FDA requested that JUUL Labs, Inc. submit documents relating to marketing practices and research on marketing, effects of product design, public health impact, and adverse experiences and complaints related to JUUL.

JUUL use among youth
Purpose of Truth Initiative

JUUL studies: To learn more about JUUL awareness, use, perceptions and terminology
JUUL Studies

Utilized online convenience panel sample weighted to national population.

Two Surveys Conducted:

- First Survey
  - Age: 15-24
  - N=1,012
  - Data collected 11/22/17 – 11/28/17. During this period, JUUL represented 40% of e-cig dollar share.

- Second Survey
  - Age: 12-44
  - N=2,575
  - Data collected online, 4/3/18 to 4/9/18. During this time, JUUL represented 60% of e-cig dollar share.
Recognition, use and perceptions of JUUL among youth and young adults

BACKGROUND
In recent years, use of electronic nicotine delivery systems (ENDS) has drastically increased, exceeding the prevalence of combustible tobacco use among youth in the USA. ENDS products are heavily salts extracted from tobacco leaves, rather than the “freebase formulations” of nicotine used in other ENDS, PAX Labs claims JUUL provides a nicotine concentration comparable with a traditional cigarette and delivers nicotine 1.25–2.7 times faster than competing ENDS. Since its introduction in early 2015, JUUL has experienced tremendous growth in market share. As of 24 February 2018, JUUL represented an astonishing 49.6% dollar share and 31.1% unit share of the ENDS market. With such rapid emergence into the ENDS market, for those who responded affirmatively, asked what people their age call the device and how they describe the use of the device. Respondents who recognised JUUL were also asked about their ever and past 30-day use. Survey items also assessed respondents’ perceptions regarding the nicotine content of JUUL. The following demographic characteristics were also measured: age, gender, race/ethnicity and perceived financial situation (live comfortably, meet needs with a little left over, just meet basic expenses, don’t meet basic

November 2017 JUUL study findings

- 25% of **15-24 year olds** recognized JUUL
- 10% had ever used a JUUL; 8% used in past 30 days
- Use significantly higher for males, higher SES and 18-24 year olds
- 25% of those who recognized JUUL referred to use as “JUULing”
- Most were not aware that JUUL pods always contain nicotine.

April Survey Findings
Ever and Past 30-Day Use of JUUL

Among entire sample, N=2,575 12 to 44 year olds
Past 30-Day Use of JUUL

Among entire sample, N= 2,575 12 to 44 year olds
Where users get JUUL

Weighted proportions among past 30 day users, N= 57 12 to 17 year olds

YOUTH WHO USED JUUL FLAVOR PODS IN THE PAST 30 DAYS SAID THEY OBTAINED THE DEVICE IN THE FOLLOWING WAYS.

74% PHYSICAL RETAIL LOCATION

52% SOCIAL SOURCE

6% INTERNET

*youth could select multiple answers

truthinitiative.org
Where users get JUUL – stores

Weighted proportions among past 30 day users, N= 239 12 to 44 year olds
What did you use with JUUL

Weighted proportions among past 30 day users, N= 239 12 to 44 year olds

- 62.1% used a JUUL flavor pod
- 28.8% used a pod that has been refilled with liquid nicotine
- 18.4% used a pod that has been refilled with marijuana
- 7.6% said they don't know
JUUL flavors most recently used

Weighted proportions among current JUUL users, N=287 12-44 year olds
Ever used marijuana with JUUL

Weighted proportions among ever JUUL users, n=295 12-44 year olds
Have youth seen JUUL use in their school

Weighted proportions among youth, n=1024 of 12-17 year olds

- Total (n=1024): 17.8%
- 12 to 14 (n=500): 10.5%
- 15 to 17 (n=524): 24.3%
Perceived harm compared to cigarettes

Weighted proportions among respondents who recognize JUUL, N=1059 12 to 44 year olds
Perceived Addictiveness – compared to cigarettes

Weighted proportions among respondents who recognize JUUL, N=1059 12 to 44 year olds
Reasons for first trying JUUL

Weighted proportions among current JUUL users, n=300 of 12-44 year olds

- Trying to quit smoking: 18.5%
- High nicotine content: 10.6%
- Appealing flavors: 26.0%
- Product design: 20.0%
- Friends/family using: 49.5%
- Other: 3.5%
First trying JUUL to quit smoking

Weighted proportions among current JUUL users, N=230 of 18-44 year olds
JUUL use during cessation attempts

Weighted proportions among those who have made a cessation attempt, N=246 25-44 year olds
Thank you!

acuccia@truthinitiative.org
E-Cigarette Use Among U.S. Adults and Youth: Considerations for Epidemiology and Surveillance

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E-cigarette Use Among U.S. Adults
E-cigarette Use Among U.S. Adults

In 2015, among adult e-cigarette users overall:

- 29.8% were former regular smokers
- 11.4% had never been regular cigarette smokers
- 58.8% were current regular cigarette smokers

In 2016, 3.2% of U.S. adults were current e-cigarette users

Timeline of CDC E-cigarette Surveillance Activities Among U.S. Adults

Year


BRFSS

NHIS

NHANES

NATS

Styles
Percentage of U.S. Adults Aged ≥18 Who Reported E-cigarette Use “Every Day” or “Some Days”, 2015

Ever Use of E-cigarettes Among U.S. Adults
By Cigarette Smoking Status, 2010-2017

Source: Summer Styles. 2010-2017; Current smokers are defined as adults who reported smoking at least 100 cigarettes in their lifetime, and currently “some days” or “every day”; Former smokers are defined as adults who reported smoking at least 100 cigarettes in their lifetime, and currently “not at all”; Never smokers are defined as adults who reported smoking less than 100 cigarettes in their lifetime.
Cigarette Smoking Status Among Current Adult E-cigarette Users
By Age Group, 2015

Current E-cigarette Use Among U.S. Adults
BRFSS 2017 Preliminary Data (January – September)

Current e-cigarette users: Persons who reported using e-cigarettes or some other electronic “vaping” product “some days” or “every day”
Primary Reasons for Using E-cigarettes Among Current U.S. Adult Users, 2014

- Cessation/Health: 24%
- Consideration of Others: 16%
- Convenience: 20%
- Cost: 13%
- Curiosity: 9%
- Flavoring: 10%
- Simulation of Cigarettes: 8%

E-cigarette Use Among U.S. Youth
E-cigarette Use Among U.S. Youth

E-CIGARETTES ARE NOW THE MOST COMMONLY USED TOBACCO PRODUCT AMONG U.S. YOUTH.

In 2017, more than 2 MILLION U.S. middle and high school students used e-cigarettes in the past 30 days, including:

- 3.3% MIDDLE SCHOOL STUDENTS
- 11.7% HIGH SCHOOL STUDENTS

In the U.S., youth are more likely than adults to use e-cigarettes

Prevalence of Current E-cigarette Use* Among U.S. Middle and High School Students — NYTS 2011-2017

*At least one time in the past 30 days

Prevalence of current tobacco product use among U.S. high school students, by tobacco product — NYTS 2011-2017

Reasons for Youth E-cigarette Use among U.S. Middle and High School Students

- Friend or family member used them: 39.0%
- Some other reason: 31.6%
- They are available in flavors, such as mint, candy, fruit, or chocolate: 31.0%
- They are less harmful than other forms of tobacco, such as cigarettes: 17.1%
- To try to quit using tobacco products such as cigarettes: 7.8%
- They can be used in areas where other tobacco products, such as cigarettes are not allowed: 7.0%
- They are easier to get than other tobacco products such as cigarettes: 4.8%
- They cost less than other tobacco products such as cigarettes: 3.2%
- Famous people on TV or in movies use them: 1.5%

Youth E-cigarette Use by Type and Brand, 2015

Use by Type

- Only disposable: 53.4%
- Only rechargeable/refillable: 32.1%
- Both: 14.5%

Use by Brand

- VUSE: 12.2%
- NJOY, MARKTEN, LOGIC, FINITI, STARBUZZ, AND/OR FANTASIA: 14.9%
- OTHER BRAND NOT LISTED ON QUESTIONNAIRE: 24.2%
- BLU: 26.4%
- DID NOT KNOW THE BRAND NAME: 50.7%

Ongoing considerations for e-cigarette surveillance among U.S. youth

• Updating e-cigarette brand lists (e.g. based on market share data)
• E-cigarette types (e.g. disposables, pre-filled pods or cartridges)
• Youth access (e.g. how, where)
• Reasons for use
• Use of e-cigarettes for substances other than nicotine
Key Takeaways

The next generation of tobacco products, including novel e-cigarettes, have important implications for tobacco control surveillance and practice.

In 2016, about 3.2% of U.S. adults currently used e-cigarettes “some days” or “every day”. Considerable variations exist by sex, race/ethnicity, age, and region.

Since 2014, e-cigarettes have been the most commonly used tobacco product among U.S. youth; in 2017, about 2.1 million middle and high school students reported using e-cigarettes in the past 30 days.

The next generation of tobacco products, including novel e-cigarettes, have important implications for tobacco control surveillance and practice.
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