E-Cigarettes and College Campuses

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CSU ATOD Educational Conference
April 4, 2014
California Youth Advocacy Network

The California Youth Advocacy Network changes the tobacco use culture in California’s high schools, colleges and universities, military installations, and other youth and young adult communities by providing knowledge, skills, and tools to create local change for healthier communities.

**CYAN offers the following:**

- Technical Assistance
- Trainings
- Statewide Advocacy and Policy Campaigns
- Educational Materials and Publications
- Opportunities for Networking
Presentation Overview

• Overview of e-cigarettes
• Regulation of e-cigarettes
• Use of e-cigarettes
• Summary of science on e-cigarettes
• Discussion on the use of e-cigarettes for cessation
• Policy responses to e-cigarettes
• Concerns about e-cigarettes
Overview of electronic nicotine delivery devices

BACKGROUND
What Are E-Cigarettes?

- Electronic Nicotine Delivery Systems (ENDS), Electronic Smoking Devices, Digital Vapor Cigarette, Vapes, etc.
- ENDS, including electronic cigarettes (e-cigarettes) are novel nicotine delivery devices.
- They do not contain tobacco; however, the nicotine may be derived from tobacco.
- Solution contains 3 main ingredients:
  - Propylene Glycol or Vegetable Glycerin (Humectant)
  - Nicotine
  - Flavor (fruit, candy, tobacco, coffee, bacon, mix and match)
What Do E-Cigarettes Look Like?

- Variety in appearance
- Customizable
- Homemade “mods” with bigger batteries produce more vapor
- Some e-cigarettes are disposable, others are rechargeable/refillable
Sometimes Conventional

May look like regular cigarettes, might come in a “pack” that serves as a storage box and battery charger.
Sometimes Decorative

May come in many different designs. Modern, sleek, clean, fun, personalized.
Current trend: devices look more like electronics that cigarettes.
Sometimes Glamorous

Some are decorative, feminine, and unique.
Sometimes Modern

E-cigarettes often do not look like cigarettes.
Sometimes “Stealth”

E-cigarettes have been fashioned to look like other products such as asthma inhalers, beverage containers, and other common products.
Drip Tips

Hollow tube which attaches to e-cigarette and acts as a mouthpiece. E-liquid is dripped through tube on to atomizer.
E-liquids/ E-solids

Refill cartridges or drop fluid into drip tips.
Refilling an E-Cigarette
Hookah Pen

- Also called a “Shisha Stick” or “Shisha Vape”
- E-Cigarette made with hookah flavor
Current status of e-cigarette regulation at the federal level.

E-CIGARETTE REGULATION
Federal Regulation

• In 2010 it was decided that the FDA could not regulate e-cigarettes as drug delivery devices.
• April 2011, the FDA announced plans to regulate e-cigarettes as a tobacco product under the 2009 Family Smoking Prevention and Tobacco Control Act.
• Not currently regulated by the FDA.
  – FDA has announced its intention to regulate ENDS as tobacco products.
  – More information on regulation was expected from the FDA by the end of October 2013.
  – 40 Attorneys General sent a letter to FDA urging them to regulate e-cigarettes the same way it regulates tobacco products.
Unrestricted Marketing

Watch as blu eCigs and IndyCar make history at Indianapolis Motor Speedway

Click Here To Watch The Video
E-Cigarette Advertising Online

Review of e-cigarette retail websites (Grana and Ling, 2014)

• 95% of websites made explicit or implicit health-related claim
• 64% had a smoking cessation-related claim
• 76% claim e-cigarettes don’t produce secondhand smoke
• 88% state the product can be smoked anywhere
• 73% had youthful appeals including images or claims of modernity
Tobacco Companies and E-Cigarettes

In 2014:
• Altria subsidiary acquiring Green Smoke

In 2013:
• Altria developed and began selling MarkTen (limited market)
• British American Tobacco developed and began selling Vype
• Imperial Tobacco acquired Dragonite International

In 2012:
• Lorillard bought Blu
• RJ Reynolds created Vuse (limited market)
• Swisher Sweets developed e-cigarillos (e-swisher)
# Growth of E-Cigarettes

## Market share projections

The Big 3 tobacco manufacturers — Altria Group Inc., Reynolds American Inc., and Lorillard Inc. — are projected to each hold about a 25 percent market share in the electronic cigarette sector by 2023. Only Lorillard, of the three, currently has national distribution with its blu eCigs product.

### Electronic cigarette market share in percent

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>2013</th>
<th>2015</th>
<th>2017</th>
<th>2019</th>
<th>2021</th>
<th>2023</th>
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<tr>
<td>Altria Group Inc.</td>
<td>0</td>
<td>5</td>
<td>20</td>
<td>20</td>
<td>25</td>
<td>25</td>
</tr>
<tr>
<td>Lorillard Inc.</td>
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<td>28</td>
<td>25</td>
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<td>15</td>
<td>20</td>
<td>20</td>
<td>25</td>
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### Electronic cigarette revenue (in billions)

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>2013</th>
<th>2015</th>
<th>2017</th>
<th>2019</th>
<th>2021</th>
<th>2023</th>
</tr>
</thead>
<tbody>
<tr>
<td>Altria Group Inc.</td>
<td>$0</td>
<td>$0.1</td>
<td>$1.3</td>
<td>$2.1</td>
<td>$4.0</td>
<td>$5.2</td>
</tr>
<tr>
<td>Lorillard Inc.</td>
<td>$0.2</td>
<td>$0.5</td>
<td>$1.8</td>
<td>$2.9</td>
<td>$4.4</td>
<td>$5.8</td>
</tr>
<tr>
<td>Reynolds American Inc.</td>
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<td>$0.2</td>
<td>$1.3</td>
<td>$2.1</td>
<td>$4.0</td>
<td>$5.2</td>
</tr>
</tbody>
</table>

### Traditional cigarette revenue (in billions)

<table>
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<tr>
<th>Manufacturer</th>
<th>2013</th>
<th>2015</th>
<th>2017</th>
<th>2019</th>
<th>2021</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Altria Group Inc.</td>
<td>$14.9</td>
<td>$14.8</td>
<td>$13.1</td>
<td>$11.6</td>
<td>$9.5</td>
<td>$7.4</td>
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<tr>
<td>Lorillard Inc.</td>
<td>$4.7</td>
<td>$4.8</td>
<td>$4.3</td>
<td>$3.8</td>
<td>$3.1</td>
<td>$2.4</td>
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<tr>
<td>Reynolds American Inc.</td>
<td>$6.4</td>
<td>$6.1</td>
<td>$5.4</td>
<td>$4.8</td>
<td>$3.9</td>
<td>$3.1</td>
</tr>
</tbody>
</table>

Source: Wells Fargo Securities

CASSANDRA SHERRILL/JOURNAL
Growth of E-Cigarettes

- Web Searches conducted between 2008-2010 in Australia, Canada, US, UK
  - Compared ENDS searches with Snus, NRT, Chantix, Champix
    - Searches were several hundred-fold greater for ENDS than other products
    - Areas with stronger tobacco laws yielded more ENDS searches
    - 50-75% of searches were for shopping, not information seeking

Use and prevalence of e-cigarettes

USE
Adult Use Estimates

• 2012 National estimates of ENDS:
  – Ever-use prevalence of 11.4% for smokers
  – 2% for former smokers
  – 0.8% for never smokers

• Suggest that in absolute numbers
  – Roughly 5 million smokers and more than 1 million former and never smokers have ever used ENDS

“E-cigarette use is growing rapidly. There is still a lot we don’t know about these products, including whether they will decrease or increase use of traditional cigarettes.”

– CDC Director Tom Frieden, MD, MPH

Use of E-Cigarettes

• E-cigarettes are used predominantly by
  – Smokers
  – Smokers considering cessation
  – Former smokers
  – Young Adults

• It is suggested that use is popular among those with a college degree

• 44% of smokers who used an e-cigarette were Millennials (born between 1977 – 1994 per study)

• Of smokers who use e-cigarettes, 56% are male and 44% are female

• Even though few never-smokers use e-cigarettes, the products may bring them closer to smoking conventional cigarettes
Youth E-Cigarette Use Doubled

• During 2011-2012, among US students in grade 6-12
  – Ever e-cigarette use increased from 3.3% to 6.8%
  – Current e-cigarette use increased from 1.1% to 2.1%
  – Dual use of e-cigarettes and conventional cigarettes increased from 0.3% to 0.7%
  – More than 1.78 million middle and high school students reported trying e-cigarettes in 2012.
Youth E-Cigarette Use

E-CIGARETTE USE AMONG STUDENTS 2011-2012

- **All students**: 3.3% (2011) & 6.8% (2012)
- **Middle School Students**: 1.4% (2011) & 2.7% (2012)
- **High School Students**: 4.7% (2011) & 10% (2012)

Source: CDC, National Youth Tobacco Survey
Youth E-Cigarette Use

• E-cigarettes as a gateway drug? (Dutra and Glantz, 2014)
  – First analysis of relationship between e-cigarette use and youth smoking
  – Ever e-cigarette use was associated with:
    • higher odds of ever cigarette smoking
    • higher odds of established smoking
    • higher odds of planning to quit smoking among current smokers
    • (among experimenters) less likely to abstain from tobacco cigarettes
  – Conclusions:
    • E-cigarettes may contribute to nicotine addiction and are not likely to discourage tobacco cigarette smoking among youth
Willingness to Try E-Cigarettes

• National sample of 11-19 year old males
• Majority of youth had heard about e-cigarettes, even if they hadn’t tried one
• 1 in 5 males were willing to try e-cigarettes
  – Smokers more willing to try e-cigarettes
  – Nonsmokers who had a negative belief about a typical smoker were less willing to try e-cigarettes

A summary of the science on e-cigarettes

RESEARCH
Lack of Standardization

• Consumers do not have reliable information on product quality
  – Poor Quality Control (no manufacturing standards)
  – Technical Flaws (leaking cartridges)
  – Variable Nicotine Delivery (inconsistent dose)

• Also:
  – Unsubstantiated health claims
  – Erroneous nicotine content labeling
May Contain Toxic Contaminants in Fluid and/or Vapor

- Formaldehyde
- Diethylene Glycol
- Nickel
- Chromium
- Cadmium
- Lead
- Fine and Ultrafine Particles
- TSNAs
- VOCs
- Heavy Metals
- Silicate Particles
- Acetaldehyde
- Acrolein
- Benzene
- Isoprene
- Nicotine
- Touline

* Items in RED: On CA prop 65 list of carcinogens and reproductive toxins
Toxicity

• E-cigarette refill fluids vary greatly in toxicity.
• Researchers found that toxicity in e-cigarettes may be due to the chemicals used to flavor the products.
Commonly Reported Health Effects

- Throat Irritation/ Sore Throat
- Mouth Irritation/ Dry Mouth/ Mouth Ulcers
- Dry Cough
- Dizziness
- Headache
- Nausea
- Allergic Reactions

- Long term health effects are unknown
Health Effects – Secondhand Vaping

• The consumption of e-cigarettes causes emissions of aerosols and VOCs, flavoring substances, and nicotine, into indoor air.

• Overall, the e-cigarette is a new source of VOCs and ultrafine/fine particles in the indoor environment.

• Therefore, the question of “passive vaping” can be answered in the affirmative.

• However, with regard to a health-related evaluation of e-cigarette consumption, the impact of vapor inhalation into the human lung should be of primary concern.

Explosions

- Exploding e-cigarette could have killed my dogs and cats, terrified Atlanta woman says

- Man Losses Teeth and Part of Tongue in Electric Cigarette Explosion

- 3-Year-Old Boy Catches Fire When Mom’s E-Cigarette Explodes
Poisonings

Liquid nicotine can poison kids
8:46 AM, Nov 12, 2012 | 29 comments

Electronic Cigarette Kills Toddler in Israel
Posted on May 29, 2013 by Karin Kloosterman in Cities with 24 Comments

"If you look at the container that the liquid is for the electronic cigarettes, it's in a small, almost looks like an eyedropper container or even some of those candies, have you seen, that you drip into your mouth," said Julie Weber, the Missouri Poison Center Director. "And just 1 milliliter is enough to cause a problem in a young child."

Puppy dies from acute nicotine poisoning after chewing up its owner's E-CIGARETTE
Discussion on the use of e-cigarettes for cessation

CESSATION
E-Cigarettes and Cessation
What We Know

• May reduce the number of conventional cigarettes a person uses (switching).
• People may use both e-cigarettes and conventional cigarettes (dual use).
• People may believe that e-cigarettes are healthier than conventional cigarettes, or completely harmless.
• People may believe e-cigarettes are recommended for cessation, or will help them quit.
E-Cigarettes and Cessation

What We Do Not Know

• More research is needed to determine potential benefits and harms of e-cigarette use.

• The efficacy and safety of these products is unknown.

• Whether “mimicking smoking” may help those trying to quit or may make it more difficult to completely quit is unknown.

• The impact on a person’s ability to successfully quit tobacco is unknown.
E-Cigarettes vs. Conventional Cigarettes

• In 2011, researchers at the University of Geneva in Switzerland assessed e-cigarette user satisfaction, found:

  – 89% of the e-cigarette users they questioned said it was easy to abstain from smoking while using an e-cigarette.

  – 79% feared they would relapse to smoking if they stopped using it.
University of Auckland RCT (Lancet)

- Researchers at the University of Auckland, New Zealand studied e-cigarettes for cessation compared with nicotine patch and nicotine-free e-cigarettes
University of Auckland RCT

• **The study actually says:**
  
  – “Achievement of abstinence was substantially lower than we anticipated for the power calculation, thus we had insufficient statistical power to conclude superiority of nicotine e-cigarettes to patches or to placebo e-cigarettes.”

  – No difference in the 6 month quit rates among the three groups

• Measured “quitting/abstinence” as not using “tobacco cigarettes” (switching)

• May have been biased against the patch

• NRT delivers nicotine with much lower levels of accompanying toxins than e-cigarettes
Helpline Study

- Participants from six state quit lines were invited to take a survey about e-cigarette use between June 2011 and March 2012.

- In a survey of callers, those who reported using e-cigarettes in a 7-month follow up survey were significantly less likely to quit than those who hadn’t used e-cigarettes

30-day point prevalence quit rates:
- 21.7% among callers who used on month or longer
- 16.6% among those who used less than one month
- 31.4% among never users
Helpline Study

• The most common reported reason for using e-cigarettes was to cut down on or quit traditional tobacco use.

• People may be looking for a new way of quitting.

• The use of these products may suggest that a person is interested in quitting, and may facilitate a conversation on FDA approved cessation pharmacotherapy, and current best practices for cessation.
Alternative Use and Cessation

• National study investigating the frequency of alternative tobacco/nicotine product use (smokeless, snus, dissolvable, e-cigarettes) and association with quit attempts and intentions.

• Results: Use of alternative products was not associated with successful quit attempts.

• Conclusion: Alternative products attract smokers interested in quitting; however, data did not show products promote cessation.
E-Cigarettes and NRT

• People may use e-cigarettes instead of or in conjunction with NRT and other cessation support.
• Unlike NRT, e-cigarettes do not deliver a standardized dose.
• The FDA does not have the authority to approve e-cigarettes as cessation aids unless an e-cigarette is marketed as a cessation product.
• E-cigarettes are not NRT.
• E-cigarettes can not be recommended as a cessation strategy at the present time.
• Mayo Clinic recommends use of nicotine inhaler over e-cigarettes for help in quitting smoking.
How and why communities and schools are responding to e-cigarettes.

POLICY RESPONSES TO E-CIGARETTES
Current Policy Definitions

• Smoke-Free means the use of cigarettes, pipes, cigars, and other “smoke” emanating products are prohibited on all campus grounds.

• Tobacco-Free means the use of cigarettes, pipes, cigars, smokeless tobacco, snus, and other tobacco products are prohibited on campus.

• Electronic cigarettes are not generally covered by 100% smoke or tobacco-free policy unless explicitly stated in the policy.
E-Cigarette Restrictions in CA

Laws and policies prohibiting use of e-cigarettes:
• State law prohibits the sale of e-cigarettes to minors (California Health and Safety Code § 119405).
• Current state and federal laws do not restrict where people can use e-cigarettes.
  – Over 44 in California prohibit e-cigarette use in certain locations (as of Nov 2013)
    • New ordinances in Los Angeles, Long Beach, Beverly Hills, San Francisco
  – SB 648 (Electronic Cigarettes: Restriction of Use and Advertising) would have prohibited use of e-cigarettes in all areas where cigarette use is prohibited by state law. The bill would enact advertising restrictions on e-cigarettes that are similar to those of tobacco products.

Source: American Lung Association of California
Impact on Educational Institutions

• Use of e-cigarettes on campus is not prohibited by law.
  – E-cigarettes can be used indoors and outdoors on campuses if campus policy does not include language on e-cigarettes.

• Sale of e-cigarettes on campus is not prohibited by law (college campuses only).

• Policy terms such as “smoke” and “tobacco” do not necessarily include e-cigarettes.
E-Cigarette Policies on Campus

• California colleges that include e-cigarette language in policy:
  – University of California system
    • 10 of 10 campuses
  – California State University System
    • 4 of 23 campuses
      – Fullerton, Sacramento*, San Bernardino, San Diego
  – Approximately 12 community colleges
    • 12 of 112 campuses

• A number of colleges include language that may be interpreted to mean e-cigarettes.
Policy Options for Colleges

• Update tobacco use policy to include e-cigarettes
• Broaden policy definitions to include e-cigarettes and other nicotine products not regulated by the FDA for cessation purposes
• Adopt policy specific to e-cigarette
• Classify e-cigarettes as a nuisance or drug paraphernalia
Dialogue on current and potential problems with ENDS

CONCERNS
Concerns

• High-tech image and variety of flavorings may potentially attract youth and young adults.

• ENDS could be a starter/gateway product for combustible tobacco.
  – Dual use is a dominant pattern among US youth. Swedish study of youth followed into late adolescence found dual use of cigarettes and snus predicted progression to current smoking by age 18.

• May serve as a dual use product.

• May lure former tobacco users back to nicotine dependence.

• May delay cessation among current tobacco users.
Concerns

• May enable individuals to avoid smoking restrictions.

• Renormalizes smoking.

• False advertising does not accurately inform consumers.

• Promoted through youth-dominated channels such as online social media and social networking sites, as well as on TV and Radio.

• Even if these products are eventually found to be less harmful than combustible cigarettes, they may still pose a risk to the public's health.

• It has been reported that people use these devices to vaporize other drugs such as marijuana, cocaine, and heroin, or alcohol.
Suggested Reading: Electronic Nicotine Delivery Systems
Also referred to as ENDS, electronic cigarettes, or e-cigarettes

ENDS and Cessation
Although e-cigarette consumption may reduce the number of conventional cigarettes a person uses, the use of these products can not be recommended as a cessation strategy at the present time. The efficacy and safety of ENDS is unknown. Additionally, little is known about their impact on a person's ability to successfully quit tobacco. More research is needed to determine potential benefits and harms of e-cigarette use.

Effect of an Electronic Nicotine Delivery Device (e-cigarette) on Smoking Reduction and Cessation: A Prospective 6-Month Pilot Study (PMCD Public Health, 2011)

Electronic cigarettes for smoking cessation: a randomized controlled trial (The Lancet, 2013)

Use of Electronic Cigarettes Among State Tobacco Cessation Quitline Callers (Nicotine & Tobacco Research, 2013)

Use of ENDS
E-cigarette use is increasing, especially with youth and young adults. Current smokers of conventional cigarettes try and use e-cigarettes, and dual use of conventional cigarettes and e-cigarettes is often seen. Former smokers and those who have never smoked have been found to initiate e-cigarette use as well. Research on the use of electronic cigarettes is sparse and continues to emerge, but certain trends have been identified including high youth and young adult interest in these products. A recent issue of the CDC Morbidity and Mortality Weekly Report, stated that e-cigarette use among middle and high school students in the US doubled between 2011 and 2012.
Questions or Comments?

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