

POLICYLAB

December 12, 2017

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December 12, 2017

# ADOLESCENTS AND E-CIGARETTES

TRENDS AND WHAT PEDIATRICIANS NEED TO KNOW

**Brian Jenssen, MD, MSHP | PolicyLab Webinar Series**

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## INNOVATING THROUGH POLICYLAB

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Our care for children and families drives our research, informing practice and policy to improve child health in four key areas:



ADOLESCENT HEALTH  
& WELL-BEING



HEALTH CARE COVERAGE,  
ACCESS & QUALITY



HEALTH  
EQUITY



INTERGENERATIONAL  
FAMILY SERVICES

## LEARNING OBJECTIVES

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1. Update participants on trends in child and adolescent e-cigarette use
2. Prepare participants with latest health-related evidence regarding e-cigarettes to help address their use in clinical practice
3. Provide background to enable participants to contribute to policy discussions regarding e-cigarettes



# 1. TOBACCO: BIG PICTURE & ADOLESCENT CIGARETTE USE

2. Rise of E-Cigarettes: Product Description and Marketing
3. Ongoing Research and Communications Gaps
4. Clinical and Policy Recommendations

## FOR ANOTHER TIME

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### What we won't cover:

- Hookah
- Other teen substance use
- Particular harms of mentholated tobacco products



# TOBACCO BIG PICTURE

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Cigarette smoking is the **leading cause** of preventable disease & death in U.S.

- More than 480,000 deaths every year
- 41,000 deaths from secondhand smoke (SHS) exposure
- 1 of every 5 deaths | 1 of every 3 cancer deaths

**15% of US adult population smokes**

- 35 million adults  $\geq 18$  years
- **50 million nonsmokers regularly exposed**

**\$300 billion in tobacco attributable health care costs every year**

**Defective product**

- Addictive by design
- **Kills half its long-term users**

*Source: CDC, Tobacco-Related Mortality, 2017*

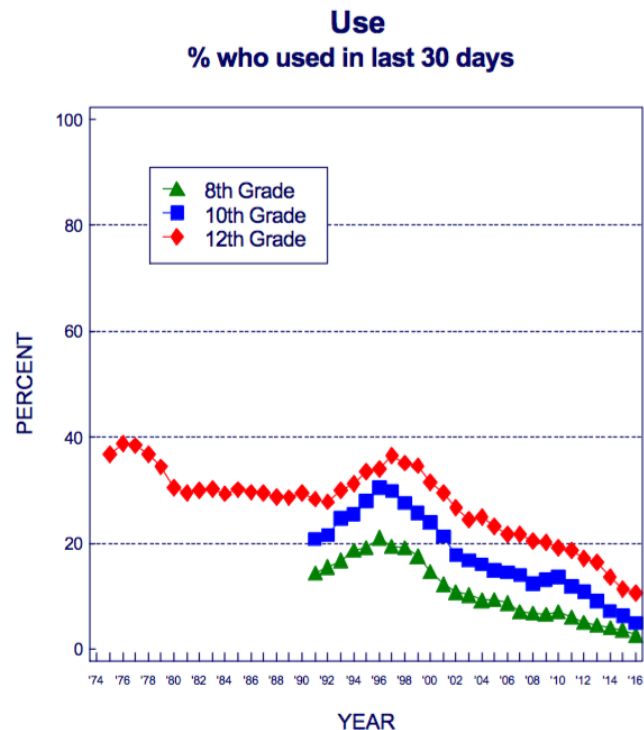
# ADOLESCENTS AND CIGARETTES

## Vast majority of tobacco use starts during adolescence

- More than 90% adult smokers started when under 18 years of age
- Greater than 60% of high school regular users become adult smokers
- Adult smokers **die 10 years earlier** than non-smokers

## Overall **reassuring decline** in use

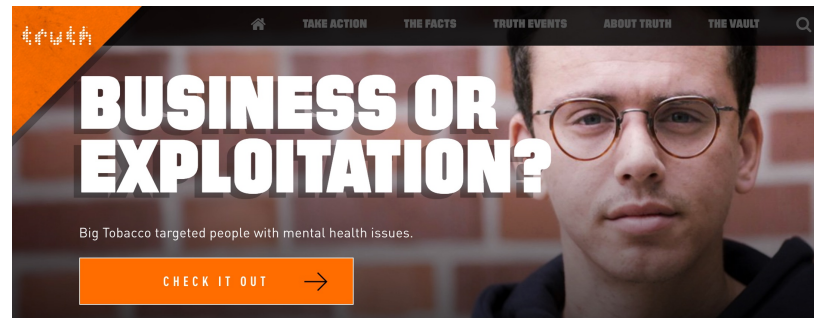
Source: *The Monitoring the Future study, the University of Michigan.*



# WHY THE DECLINE IN ADOLESCENT TOBACCO USE?

## Major Efforts

- U.S. Surgeon General Reports (1964-2016)
- U.S. Master Settlement Agreement (1998)
- U.S. Tobacco Control Act (2009)
- Public education campaigns
- Bans on television advertising
- Restriction on sales & marketing to youth
- State and federal tax laws



# FOOD AND DRUG ADMINISTRATION (FDA) LANDSCAPE

## Center for Tobacco Products

- July 2017 – New approach to addressing enormous toll of smoking
  - Nicotine reduction in cigarettes
  - “Harm reduction” or alternative tobacco products
- Ambitious plan with positives and negatives

“

*Nicotine-while highly addictive-is delivered through products that represent a **continuum of risk** and is most harmful when delivered through smoke particles in combustible cigarette.*

Source: FDA News Release. July 28, 2017 <https://www.fda.gov/newsevents/newsroom/pressannouncements/ucm568923.htm>.

## OVERVIEW

1. Tobacco: Big Picture & Adolescent Cigarette Use

# 2. RISE OF E-CIGARETTES: PRODUCT DESCRIPTION AND MARKETING

3. Ongoing Research and Communications Gaps

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## TOBACCO USE 2016: HIGH SCHOOL STUDENTS

### Preceding 30 Days by Product

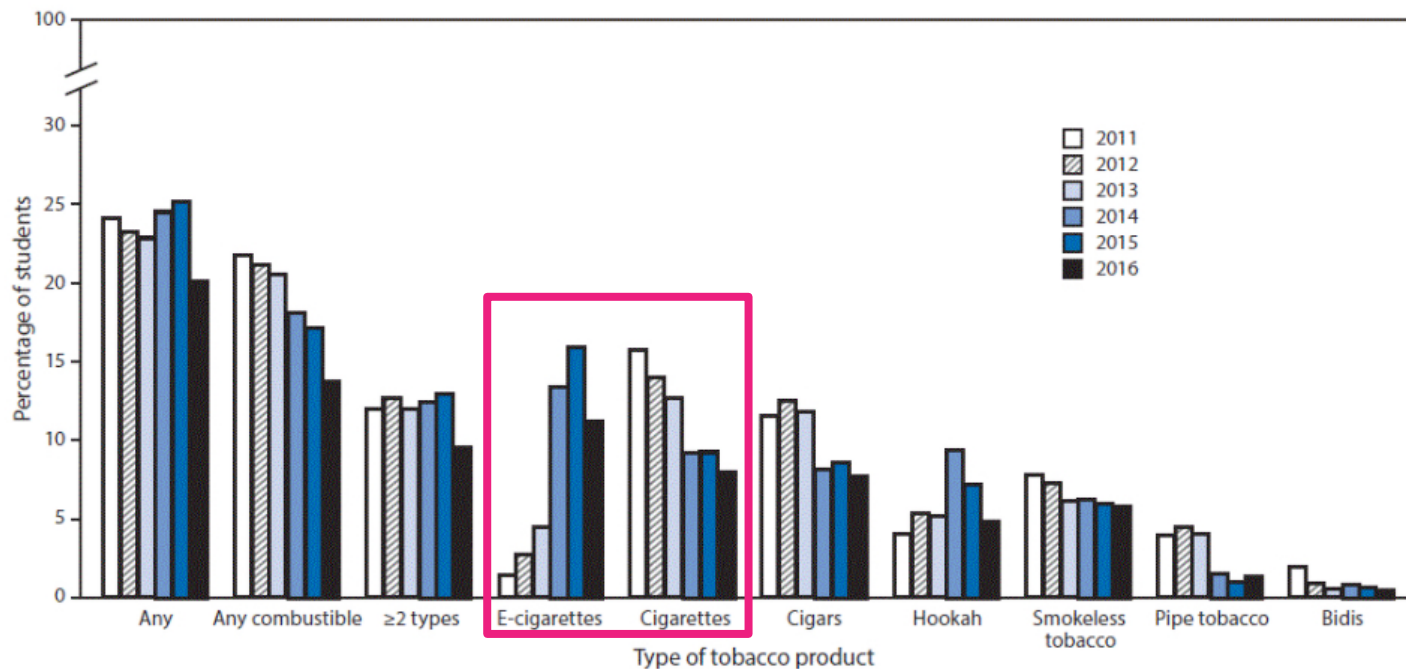
Product	Percent	95% CI	Estimated No. of Users
<b>Electronic Cigarettes</b>	<b>11.3</b>	<b>(9.9-12.9)</b>	<b>1,680,000</b>
<b>Cigarettes</b>	<b>8.0</b>	<b>(6.7-9.6)</b>	<b>1,180,000</b>
Cigars	7.7	(6.6-8.9)	1,130,000
Smokeless	5.8	(4.8-7.0)	860,000
Hookah	4.8	(4.1-5.7)	700,000
Any Tobacco Use	20.2	(18.4-22.3)	3,050,000
> 2 Tobacco Product Use	9.6	(8.3-11.1)	1,440,000

Source: Jamal et al. Tobacco Use Among Middle and High School Students – US, 2011-2016. MMWR. June 16, 2017.



# TOBACCO USE 2011-2016: HIGH SCHOOL STUDENTS

## National Youth Tobacco Survey 2011-2016



Source: Jamal et al. Tobacco Use Among Middle and High School Students – US, 2011–2016. MMWR. June 16, 2017.

## WHAT ARE E-CIGARETTES?

- Handheld devices produce aerosol inhaled by user
- Solution of nicotine, flavoring chemicals, propylene glycol & “other”
- Also called:
  - E-cigs, mods, e-hookah, vape pens, tank systems
  - ENDS, electronic cigars, e-cigars, hookah sticks, vaporizers, & vaping devices



# E-DEVICES



Source: *E-Cigarette Use Among Youth and Young Adults: A Report of the Surgeon General, 2016.*

# E-LIQUID FLAVORS



Source: *E-Cigarette Use Among Youth and Young Adults: A Report of the Surgeon General, 2016.*

## E-LIQUID FLAVORS POURED INTO VARYING DEVICES



Source: *E-Cigarette Use Among Youth and Young Adults: A Report of the Surgeon General, 2016.*



There are **over 120 vape shops** near our patients.



# E-CIGARETTE COMPANIES TARGET CHILDREN AND TEENS

## Youth targeted channels

- Television, point-of-sale, magazines, promotional activities, & social media

## Use of “key” themes

- Known to be effective traditional cigarette advertising & promotion
- Sexual content, “customer satisfaction”, “freedom”

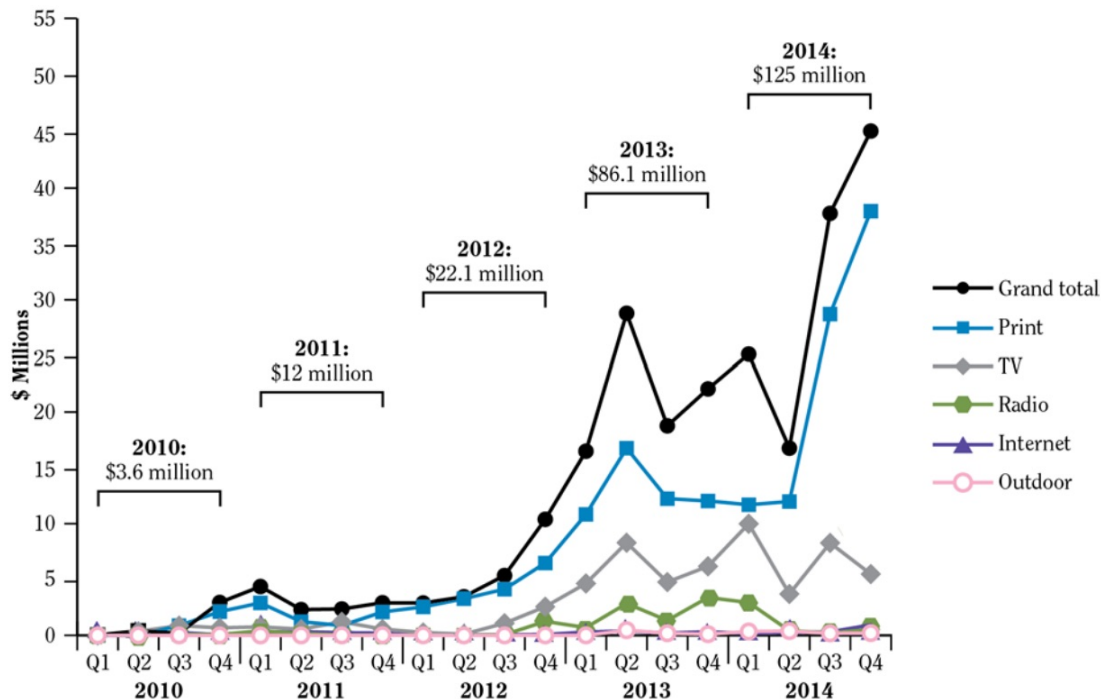
## Unique flavors

- Confectionary in nature
- Shown to encourage youth experimentation, regular use, & addiction



# RAPID RISE IN MARKETING

## Quarterly promotional spending for e-cigarettes, 2010-2014



Source: E-Cigarette Use Among Youth and Young Adults: A Report of the Surgeon General, 2011



# MARKETING CLAIMS AND THEMES

## Freedom



Source: *E-Cigarette Use Among Youth and Young Adults: A Report of the Surgeon General, 2016.*

# MARKETING CLAIMS AND THEMES

Freedom

Romance and sexuality



Source: *E-Cigarette Use Among Youth and Young Adults: A Report of the Surgeon General, 2016.*

# MARKETING CLAIMS AND THEMES

Freedom

Romance and sexuality

Health or smoking cessation



Source: *E-Cigarette Use Among Youth and Young Adults: A Report of the Surgeon General, 2016.*

## Taste



# MARKETING CLAIMS AND THEMES

Freedom

Romance and sexuality

Health or smoking cessation

Taste

Bypassing smokefree laws



Source: *E-Cigarette Use Among Youth and Young Adults: A Report of the Surgeon General, 2016.*

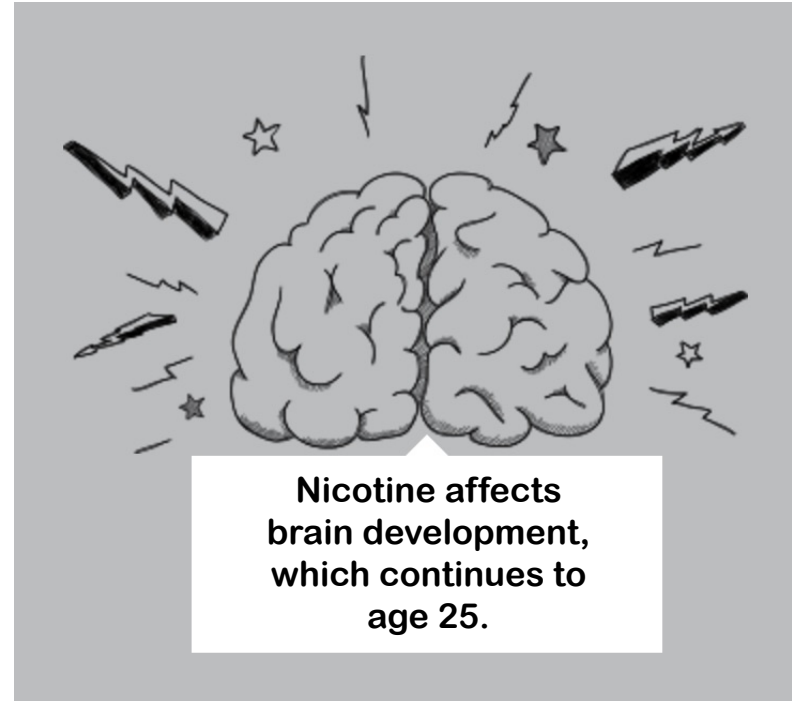
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2. Rise of E-Cigarettes: Product Description and Marketing
3. ONGOING RESEARCH AND COMMUNICATIONS GAPS
4. Clinical and Policy Recommendations

# NICOTINE HARMS THE DEVELOPING BRAIN

## Nicotine exposure

- Regardless of form, highly addictive and harms infants, young adults, and adolescents
- During adolescence: can cause addiction and harm developing adolescent brain
- During infancy: crosses the placenta, known effects on fetal and infant development



Source: *E-Cigarette Use Among Youth and Young Adults: A Report of the Surgeon General, 2016.*

# E-CIGARETTES AND SECONDHAND SMOKE

## Secondhand aerosol

- **NOT** harmless water “vapor”
- Known harmful toxicants & carcinogens found in emissions
- Heavy metals, formaldehyde, & nicotine



Source: Walley SC, Jenssen BP; Section on Tobacco Control. Electronic Nicotine Delivery Systems. *Pediatrics*. 2015 Nov;136(5):1018-26.



## E-CIGARETTES AND ASTHMA

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### Minimal evidence from epidemiological studies on e-cigarette use and adolescent health indices

- Hard to study adolescents
- Time needed to investigate new products

### Growing case e-cigarettes have adverse effects on lung health

- **Odds of asthma increased by about 50%** among adolescent e-cig users
- Controlled for cigarette smoking and other risk factors
- E-cigarettes have their own risk profile on top of cigarettes

*Source: Schweitzer et al. Preventive Medicine, Oct 2017.*

# E-CIGARETTE INITIATION AND SUBSEQUENT CIGARETTE USE

## Progression to traditional tobacco use

- 8 separate, well-designed, long-term studies
- Adolescent e-cigarettes users at higher risk of transitioning to traditional cigarettes compared to non-users
- Otherwise low-risk teens

## Potential to addict new generation to tobacco



Source: Soneji et al. Association Between Initial Use of e-Cigarettes and Subsequent Cigarette Smoking Among Adolescents and Young Adults. JAMA Pediatrics. June 2017

# ROLE IN HELPING ADULT SMOKERS QUIT?

## E-cigarettes as effective smoking cessation **not supported by scientific evidence**

### Studies of the relationship between e-cigarette use & smoking cessation

- 20 showed reduced quitting
- 8 showed improved quitting

### Adult smokers referred to evidence-based options

- Nicotine Replacement Therapy (NRT)
- Pharmacotherapy
- Behavioral counseling (QUITLINE)



# SCREENING FOR ADOLESCENT E-CIGARETTE USE

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## Population Surveys

- “During the past 30 days, on how many days did you use electronic cigarettes or e-cigarettes”
- Preceded by explanatory paragraph

## Clinical Setting

- Conversations/screening is rare
- Pediatricians feel poorly informed/unsure of effectiveness of recommendations
- Barriers include:
  - Lack of systematic screening
  - Competing priorities

## Research Gaps:

- Better understanding of frequency of use
- Teen reason for using?
- Content of vaping/e-cig product?
  - Content known/unknown to user
  - Other substances?

*Sources: Jamal et al. Tobacco Use Among Middle and High School Students – US, 2011-2016. MMWR. June 16, 2017  
Gorzkowski JA et al. Pediatrician Knowledge, Attitudes, and Practice Related to Electronic Cigarettes. J Adolesc Health July 2016*

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# 4. CLINICAL AND POLICY RECOMMENDATIONS

# SURGEON GENERAL REPORT: ROLE OF THE PEDIATRICIAN



get the facts

know the risks

take action

about

resources

## Talk to Your Health Care Provider

A visit to a health care professional is a great chance to educate your child on the potential risks of e-cigarette use. Ask your provider to discuss these health risks, including nicotine addiction, the impact of nicotine on the developing brain, and the dangers of using other substances (like marijuana) in e-cigarette devices.



## CONVERSATIONS WITH PATIENTS

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**Patient: What are the risk of e-cigarettes?**

“*Unknown harmful things in these products, including nicotine. E-cigarette strongly associated with going on to use traditional cigarettes.*”

**Patient: My friends use e-cigarettes that don't have any nicotine in them.**

“*Nicotine is very common in e-cigarettes, and e-cigarettes may not be labeled to accurately show their ingredients. Nicotine is very addictive and can harm your brain.*”

Source: E-Cigarette Use Among Youth and Young Adults: A Report of the Surgeon General, 2016.

## CONVERSATIONS WITH PATIENTS

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**Patient: I thought e-cigarettes were used to help people quit smoking.**

“

*The evidence isn't clear on whether e-cigarettes help people quit smoking regular cigarettes, but we already know that e-cigarette use is a health risk for young people. For example, nicotine can harm brain development, and your brain continues developing until around age 25.*

**Patient: I've heard e-cigarettes are less harmful than regular cigarettes.**

“

*They may not contain as many dangerous chemicals as cigarettes, but that doesn't mean they're safe to use. Many of the chemicals in e-liquids and in the aerosol from e-cigarettes are known to cause cancer in humans.*

Source: E-Cigarette Use Among Youth and Young Adults: A Report of the Surgeon General, 2016.



## CONVERSATIONS WITH PATIENTS

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Patient: There's no smoke from e-cigarettes – just harmless water vapor.

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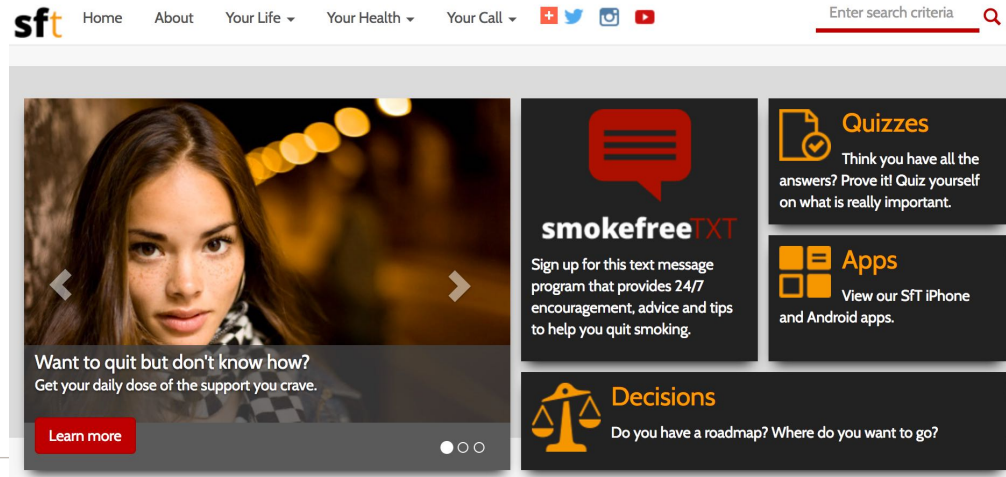
*The aerosol that's created when an e-cigarette heats up the e-liquid is not just water vapor, and is not harmless either for users or for others who are exposed to it secondhand. Besides nicotine, which is harmful to young people's health on its own, heavy metals that can cause respiratory distress and disease have been found in e-cigarette aerosol. Chemicals that are known to cause cancer and that have been linked to lung disease can also be present in e-cigarette aerosol.*

Source: E-Cigarette Use Among Youth and Young Adults: A Report of the Surgeon General, 2016.

# TREATMENT OPTIONS

## Effective prevention & treatment options underutilized

- Educational resources
- Remote counseling
- Text messaging & smartphone apps



# E-CIGARETTE POLICY

## Local and State Level

- Incorporate e-cigarettes into smoke free policies
- Preventing access to e-cigarettes by youth
- Price and tax policies
- Regulation of marketing
- Educational initiatives

## National

- FDA was set to regulate e-cigarettes like other tobacco products from August 2016
- August 2017 – **delayed regulation until 2022**
- Youth Tobacco Prevention Campaign

Jenssen et al. "The FDA Must Continue To Regulate E-Cigarettes To Protect Children" Health Affairs Blog [http://bit.ly/FDA\\_ecigs](http://bit.ly/FDA_ecigs).



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# QUESTIONS AND COMMENTS?

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