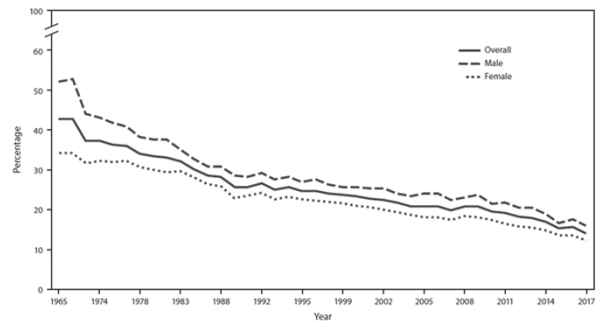


# Electronic cigarettes

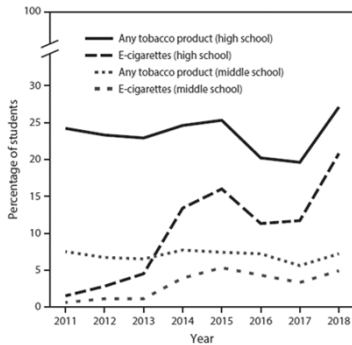
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# Decrease in Cigarette Use in the US



Center for Disease Control and Prevention

# E-cigarette Use on the Rise in Teens and Young Adults



Center for Disease Control and Prevention

# Electronic cigarettes

- E-cigarette (e-cig)
- E-hookahs
- E-cigars
- Vape sticks
- Vape pens
- Vaping devices
- Electronic Nicotine Delivery System (ENDS)



<https://www.fda.gov/tobacco-products/products-ingredients-components/vaporizers-e-cigarettes-and-other-electronic-nicotine-delivery-systems-ends>

## E-cigarette Components

- **E-liquid or e-juice**
  - Propylene glycol
  - Vegetable glycerin
  - Nicotine
  - Flavoring
- **Vaporizing chamber**
- **Power source/Battery**



<https://www.fda.gov/tobacco-products/products-ingredients-components/vaporizers-e-cigarettes-and-other-electronic-nicotine-delivery-systems-ends>

## E-cigarette Devices

- **First generation – “cig-alike”**
- **Second generation – “vape pens”**
- **Third generation – “mods”**
- **Fourth generation - JUUL**



<https://www.fda.gov/tobacco-products/products-ingredients-components/vaporizers-e-cigarettes-and-other-electronic-nicotine-delivery-systems-ends>

## Is it Safe to Vape?

- **E-cig aerosol generally contain fewer toxic chemicals vs traditional smoking**
- **E-cigs contain nicotine and other harmful chemicals**
  - Carcinogens
  - Volatile organic compounds
  - Diacetyl in flavoring – “popcorn lung”
- **Propylene glycol and glycerin in many food products**
  - Safety has not been established for aerosolizing or inhaling them

## Is it Safe to Vape?

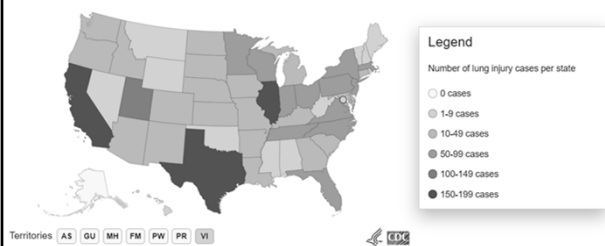
- **Nicotine use during pregnancy can affect fetal development**
- **Nicotine exposure in adolescence can become an addiction**
  - Younger the exposure, stronger the influence
  - Impulse control problems
  - Disruptive behaviors
  - Early engagement with other substances

## Is it Safe to Vape?

- E-liquids are often custom-mixed at home or vape shops
  - 1000s of unique flavoring
  - Marijuana-related products
- No safety regulations
- Some evidence e-cigarette aerosol toxicity
  - Direct toxicity to lung tissue
  - Impair host defense
  - Interfere normal lung development
- Unknown long-term effects

## E-cigarette or vaping associated lung injury (EVALI)

Number of Lung Injury Cases Reported to CDC as of November 5, 2019



## EVALI Symptoms

- |                        |                       |                   |
|------------------------|-----------------------|-------------------|
| <b>Constitutional:</b> | <b>Respiratory:</b>   | <b>GI:</b>        |
| - Fever                | - Cough               | - Abdominal Pain  |
| - Chills               | - Shortness of Breath | - Nausea/vomiting |
| - Weight Loss          | - Chest Pain          | - Diarrhea        |

## Clinical Evaluation

- Inquire about symptoms
- Thorough vaping history
  - Substance used
  - Brand
  - Frequency
  - Time of last use
  - Method of use
- Physical Exam
- Laboratory Testing:
  - CBC with diff
  - Inflammatory markers
  - Urine or serum toxicology screen
  - Rule out infection
- CXR or CT chest
- Consider bronchoscopy

## Management/Treatment

- Supportive care
- +/- Corticosteroids
- Antibiotics

## Quit Smoking Using E-cigs?

- Currently not approved by FDA as a smoking aid
- Mixed studies
  - Some evidence e-cigs with nicotine can help smokers long-term compared to placebo
  - Most adult users do not stop smoking and continue to use both
  - Among quitters, majority were still vaping

## E-cigarette Friend or Foe plus Quit Tips



**Gretchen Whitby, APRN-CNP**  
Division of Pulmonary, Critical Care,  
and Sleep Medicine  
The Ohio State University Wexner Medical Center

## Case Report

- Rebecca is a 56 year old female who has a 40 py history of smoking.
- Quit using regular cigarettes 6 years ago using e-cigarette
- Has continued to use the e-cigarette since quitting.
- She is worried if she quits “vaping”, she will return to smoking regular cigarettes
- Has she gained anything by her switch?

## Who is using E-cigarettes?

- Middle school students
- High School Students
- Adults
  - Current regular cigarette smokers
  - Former smokers
  - Never regular smokers



Source: Fair Expert

Office on Smoking and Health, National Center for Chronic Disease Prevention and Health. MMWR. DEC 6, 2019/vol. 68/SS-12  
 BMJ 2018;360:j5543. 1 Action on Smoking and Health (ASH). Use of e-cigarettes (vaporisers) among adults in Great Britain 2017. <http://ash.org.uk/download/use-of-e-cigarettes-among-adults-in-great-britain-2017>. 2 West R, Beard B, Brown J. Trends in electronic cigarette use in England: Smoking Toolkit Study. [www.smokinginengland.info/latest-statistics](http://www.smokinginengland.info/latest-statistics).

## Risks of E-cigarettes for Kids, Teenagers, and Young Adults?

- Most e-cigarettes contain nicotine.
- Can contain other harmful substances besides nicotine.
- Young people who use e-cigarettes may be more likely to smoke cigarettes in the future
- Increase risk for future addiction to other drugs.

[https://www.cdc.gov/tobacco/basic\\_information/e-cigarettes/pdfs/OSH-E-Cigarettes-and-Youth-What-HCPs-Need-to-Know-20190327-508.pdf](https://www.cdc.gov/tobacco/basic_information/e-cigarettes/pdfs/OSH-E-Cigarettes-and-Youth-What-HCPs-Need-to-Know-20190327-508.pdf)

## Dangers of e-cigarettes

- Can deliver high levels of nicotine – highly addictive
- Health danger to pregnant women and their developing fetuses
- Ingestion has poisoned children and adults
- Difficult for consumers to know what e-cigarette products contain
- Long-term effects on health are still being studied

[https://www.cdc.gov/tobacco/basic\\_information/e-cigarettes/pdfs/OSH-E-Cigarettes-and-Youth-What-HCPs-Need-to-Know-20190327-508.pdf](https://www.cdc.gov/tobacco/basic_information/e-cigarettes/pdfs/OSH-E-Cigarettes-and-Youth-What-HCPs-Need-to-Know-20190327-508.pdf)

## Are E-cigarettes less harmful than regular cigarettes? Yes, but...

### Benefits

- Lower exposure to carcinogens
- Second hand smoke exposure
- May help smokers to quit smoking.

### Concerns

- No evidence of safety of long term use
- No convincing evidence of efficacy as aid to quitting over approved methods
- Inconsistent levels of nicotine aerosol delivery and nicotine blood levels
- Impurities in solutions



## **E-cigarette as quitting aid?**

- Currently insufficient evidence to make recommendation
- Not approved by the FDA
- Use of currently FDA approved methods have a proven track record of success
- Safety concerns
- Most e-cigarette users don't stop but become "dual" users.

## **RECOMMENDATIONS FOR E-CIGARETTE USAGE?**

### **CDC Public Health Recommendations**

**Do not:**

- Use an e-cigarette, or vaping product that contains THC
- Buy any type of e-cigarette, or vaping products, particularly those containing THC, from informal sources (such as family, friends, or in-person or online dealers)
- Modify or add any substances to e-cigarette, or vaping, products that are not recommended by the manufacturer

AAFP Pharmacologic Product Guide of FDA-Approved Medications for Smoking Cessation

### **CDC Public Health Recommendations**

- E-cigarette, or vaping products should never be used by youth, young adults, or pregnant women
- If not currently smoking, do not start using e-cigarette, or vaping
- If using e-cigarettes to quit smoking, consider changing to an FDA-approved nicotine replacement therapy
- People who continue using e-cigarette, or vaping products:
  - Carefully monitor themselves for symptoms
  - See a health care provider immediately, if symptoms develop

AAFP Pharmacologic Product Guide of FDA-Approved Medications for Smoking Cessation

# RECOMMENDATIONS FOR HELPING SMOKERS QUIT

## The 5 A's of Treating Tobacco Use

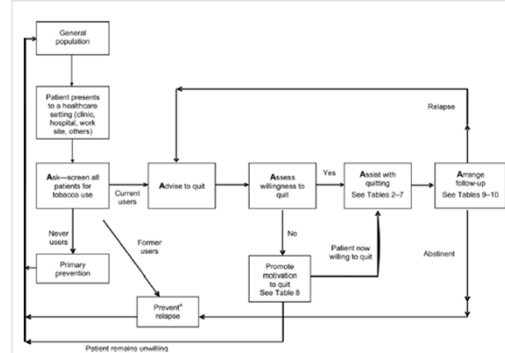


Figure 2. Model for treatment of tobacco use and dependence.

\*Relapse-prevention interventions are not necessary in the case of the adult who has not used tobacco for many years.

Clinical Practice Guideline Treating Tobacco Use and Dependence 2008 Update Panel, Liaisons, and Staff. A clinical practice guideline for treating tobacco use and dependence: 2008 update. A U.S. Public Health Service report. *Am J Prev Med.* 2008;35(2):158-176. doi:10.1016/j.amepre.2008.04.009

## FTND

- How soon after you wake up do you smoke your first cigarette?
  - After 60 minutes (0), 31-60 minutes (1), 6-30 minutes (2), Within 5 minutes (3)
- Do you find it difficult to refrain from smoking in places where it is forbidden?
  - No (0) Yes (1)
- Which cigarette would you hate most to give up?
  - The first in the AM (1) Any other (0)

## FTND

- How many cigarettes per day do you smoke?
  - 10 or less (0), 11-20 (1), 21-30 (2), 31 or more (3)
- Do you smoke more frequently during the first hours after awakening than during the rest of the day?
  - No (0) Yes (1)
- Do you smoke even if you are so ill that you are in bed most of the day?
  - No (0) Yes (1)

## Readiness to Quit Ladder

Circle the one number that shows what you think about quitting. Please read each sentence carefully before deciding.

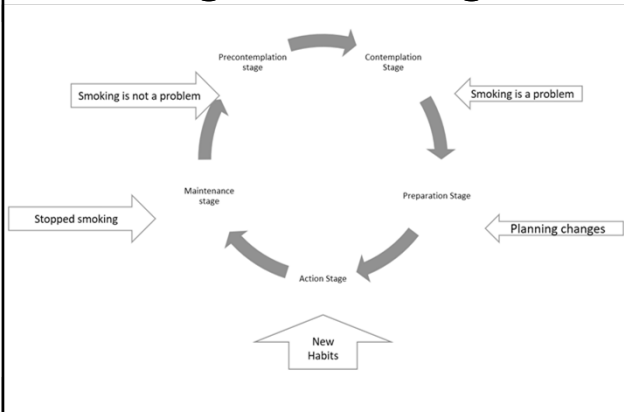
- 10 I have quit smoking.
- 9 I have quit smoking, but I still worry about slipping back, so I need to keep working on living smoke free.
- 8 I still smoke, but I have begun to change, like cutting back on the number of cigarettes I smoke. I am ready to set a quit date.
- 7 I definitely plan to quit smoking in the next 30 days.
- 6 I definitely plan to quit smoking in the next 6 months.
- 5 I often think about quitting smoking, but I have no plans to quit.

## Readiness to Quit Ladder

Circle the one number that shows what you think about quitting. Please read each sentence carefully before deciding.

- 4 I sometimes think about quitting smoking, but I have no plans to quit.
- 3 I rarely think about quitting smoking, and I have no plans to quit.
- 2 I never think about quitting smoking, and I have no plans to quit.
- 1 I have decided not to quit smoking for my lifetime. I have no interest in quitting.

## Stages of change



## Process of Nicotine addiction

- Chemical
  - Medications
- Psychological
  - Develop new coping mechanisms
- Habit or conditioned behavior
  - New habit



## Triggers and Action Plan

Trigger Strength (0-4)	When do I smoke	What is my routine	New strategies for dealing with each trigger
3	During Breakfast	Wake up, drink coffee, smoke	<ol style="list-style-type: none"> <li>1. Switch to drinking tea.</li> <li>2. Eat in different room.</li> <li>3. Water flowers</li> </ol>

## Self Monitoring Log

#Cig.	Date/Time	Notes	#Cig.	Date/Time	Notes	#Cig.	Date/Time	Notes	#Cig.	Date/Time	Notes
1.			1.			1.			1.		
2.			2.			2.			2.		
3.			3.			3.			3.		
4.			4.			4.			4.		
5.			5.			5.			5.		
6.			6.			6.			6.		
7.			7.			7.			7.		
8.			8.			8.			8.		
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15.			15.			15.			15.		
16.			16.			16.			16.		
17.			17.			17.			17.		
18.			18.			18.			18.		
19.			19.			19.			19.		
20.			20.			20.			20.		

## Quit Plan

- **Set a quit date**
  - Start daily medication 1-2 weeks before your quit date
  - Start as needed medication on your quit date
- **Cut back on a regular basis**
  - Eq. cut out 2 cigarettes per week.
  - Use as needed medication to help you cut back
  - Start daily medication 1-2 weeks before you are scheduled to be quit. (if needed)

## Managing Cravings

- Avoid triggers
- Get support
- List reasons for quitting
- Stay busy
- Smoke Free Zone.
- Use approved medications.
- Take it one day at a time.

## Supporting your Quitter

- Emphasize positive outcomes of stopping tobacco, not on just the costs of continued use.
- Do not nag or criticize
- If you are a smoker, do not smoke around them
- Get rid of items that could be a trigger, lighters, ash trays or spit cups.
- Make your home and car a “smoke free” zone.

The Ohio State University Wexner Medical Center, Thinking about Quitting. May 30, 2012.

## Has Rebecca gained anything by switching?



## What's the bottom line?

- E-cigarettes have the potential to benefit adult smokers who are not pregnant if used as a complete substitute for regular cigarettes and other smoked tobacco products.
- E-cigarettes are not safe for youth, young adults, pregnant women, or adults who do not currently use tobacco products.
- While e-cigarettes have the potential to benefit some people and harm others, scientists still have a lot to learn about whether e-cigarettes are effective for quitting smoking.
- If you've never smoked or used other tobacco products or e-cigarettes, don't start.
- Additional research can help understand long-term health effects.

“Source: CDC”; “Materials developed by CDC”;