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

![Graph showing the rise in e-cigarette use](https://www.fda.gov/tobacco-products/products-ingredients-components/vaporizers-e-cigarettes-and-other-electronic-nicotine-delivery-systems-ends)

**Electronic cigarettes**

- E-cigarette (e-cig)
- E-hookahs
- E-cigars
- Vape sticks
- Vape pens
- Vaping devices

Electronic Nicotine Delivery System (ENDS)

E-cigarette Components

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


E-cigarette Devices

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

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

Legend
Number of lung injury cases per state
- 0 cases
- 1-9 cases
- 10-49 cases
- 50-99 cases
- 100-149 cases
- 150-199 cases
# EVALI Symptoms

<table>
<thead>
<tr>
<th>Constitutional:</th>
<th>Respiratory:</th>
<th>GI:</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Fever</td>
<td>- Cough</td>
<td>- Abdominal Pain</td>
</tr>
<tr>
<td>- Chills</td>
<td>- Shortness of Breath</td>
<td>- Nausea/vomiting</td>
</tr>
<tr>
<td>- Weight Loss</td>
<td>- Chest Pain</td>
<td>- Diarrhea</td>
</tr>
</tbody>
</table>

## 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

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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

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.

## 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


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

<table>
<thead>
<tr>
<th>Benefits</th>
<th>Concerns</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Lower exposure to carcinogens</td>
<td>- No evidence of safety of long term use</td>
</tr>
<tr>
<td>- Second hand smoke exposure</td>
<td>- No convincing evidence of efficacy as aid to quitting over approved methods</td>
</tr>
<tr>
<td>- May help smokers to quit smoking.</td>
<td>- Inconsistent levels of nicotine aerosol delivery and nicotine blood levels</td>
</tr>
<tr>
<td></td>
<td>- Impurities in solutions</td>
</tr>
</tbody>
</table>
### 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

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# 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
RECOMMENDATIONS FOR HELPING SMOKERS QUIT

The 5 A’s of Treating Tobacco Use

### 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.*

<table>
<thead>
<tr>
<th>Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>I have quit smoking.</td>
</tr>
<tr>
<td>9</td>
<td>I have quit smoking, but I still worry about slipping back, so I need to keep working on living smoke free.</td>
</tr>
<tr>
<td>8</td>
<td>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.</td>
</tr>
<tr>
<td>7</td>
<td>I definitely plan to quit smoking in the next 30 days.</td>
</tr>
<tr>
<td>6</td>
<td>I definitely plan to quit smoking in the next 6 months.</td>
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<tr>
<td>5</td>
<td>I often think about quitting smoking, but I have no plans to quit.</td>
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<tr>
<td>4</td>
<td>I sometimes think about quitting smoking, but I have no plans to quit.</td>
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<tr>
<td>3</td>
<td>I rarely think about quitting smoking, and I have no plans to quit.</td>
</tr>
<tr>
<td>2</td>
<td>I never think about quitting smoking, and I have no plans to quit.</td>
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<tr>
<td>1</td>
<td>I have decided not to quit smoking for my lifetime. I have no interest in quitting.</td>
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</table>
Stages of change

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

Process of Nicotine addiction
### Triggers and Action Plan

<table>
<thead>
<tr>
<th>Trigger Strength (0-4)</th>
<th>When do I smoke</th>
<th>What is my routine</th>
<th>New strategies for dealing with each trigger</th>
</tr>
</thead>
</table>
| 3                      | During Breakfast| Wake up, drink coffee, smoke | 1. Switch to drinking tea.  
2. Eat in different room.  
3. Water flowers |

### Self Monitoring Log

<table>
<thead>
<tr>
<th>Day</th>
<th>Date/Time Notes</th>
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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”);