FREQUENTLY ASKED QUESTIONS

Q: What are e-cigarettes?

- E-cigarettes come in many forms and are known by different names, including “e-cigs,” “e-hookahs,” “mods,” “vape pens,” “vapes,” “tank systems,” and “electronic nicotine delivery systems” (ENDS). These products are battery-operated devices designed to deliver nicotine, flavorings and other chemicals in the form of an aerosol that users inhale.

Q: What are the major conclusions of the 2016 Surgeon General’s Report, Electronic Cigarette Use Among Youth and Young Adults?

- E-cigarettes are a rapidly emerging and diversified product class. These devices typically deliver nicotine, flavorings, and other additives to users via an inhaled aerosol. These devices are referred to by a variety of names, including “e-cigs,” “e-hookahs,” “mods,” “vape pens,” “vapes,” and “tank systems.”

- E-cigarettes are now the most commonly used tobacco product among youth, surpassing conventional cigarettes in 2014. E-cigarette use is strongly associated with the use of other tobacco products among youth and young adults, including combustible tobacco products.

- E-cigarette use among youth and young adults has become a public health concern. In 2014, current use of e-cigarettes by young adults 18-24 years of age surpassed that of adults 25 years of age and older.

- The use of products containing nicotine poses dangers to youth, pregnant women, and fetuses. The use of products containing nicotine in any form among youth, including in e-cigarettes, is unsafe.

- E-cigarette aerosol is not harmless. It can contain harmful and potentially harmful constituents including nicotine. Nicotine exposure during adolescence can cause addiction and can harm the developing adolescent brain.

- E-cigarettes are marketed by promoting flavors and using a wide variety of media channels and approaches that have been used in the past for marketing conventional tobacco products to youth and young adults.

- Action can be taken at the national, state, and local levels to address e-cigarette use among youth and young adults. Actions could include incorporating e-cigarettes into smokefree policies, preventing access to e-cigarettes by youth, price and tax policies, retail licensure, regulation of e-cigarette marketing likely to attract youth, and educational initiatives targeting youth and young adults.

Q: Why does this report focus on youth and young adults?

- This report focuses on e-cigarette use among youth and young adults because research indicates that this is a critical period for influencing tobacco use and related behaviors.

- Nearly all adult tobacco users first initiated tobacco use in youth or young adulthood.

- Previous Surgeon General’s Reports (1994 and 2012) have highlighted the effectiveness and importance of interventions to prevent and reduce tobacco use among youth and young adults.

- This is the first Surgeon General’s Report focused on the issue of e-cigarettes and young people.
Q: What is the composition of editors and contributors to this report and how were they selected?

- The Surgeon General’s Report on E-cigarette Use Among Youth and Young Adults was written and reviewed by more than 150 experts. The compilation of the report was led by a senior scientific editorial team of experts internal and external to government, and peer-reviewed by leading scientific and public health experts from the U.S. and abroad.

- This is the 33rd Report of the Surgeon General on tobacco, and it continues these reports’ tradition of considering the most rigorous evidence to inform conclusions and leveraging subject matter experts from a range of disciplines and with a range of perspectives as authors, editors, and reviewers.

Q: Are e-cigarettes tobacco products?

- E-cigarettes typically contain nicotine derived from tobacco.

- Generally, e-cigarettes that contain nicotine that comes from tobacco meet the definition of a “tobacco product” under the Federal Food, Drug, and Cosmetic Act.

- A federal appellate court decision (Sottera, Inc. v. Food & Drug Administration, 2010) ruled that FDA must regulate e-cigarettes and other products made or derived from tobacco as tobacco products under the Family Smoking Prevention and Tobacco Control Act (2009), unless they are marketed for therapeutic purposes (e.g., marketed as products that help smokers quit).

Q: Are e-cigarettes regulated at the federal level?

- Yes. In August 2016, the regulatory authority of the Food and Drug Administration was extended to cover e-cigarettes through the agency’s “deeming rule.”

- FDA currently enforces a ban on sales to minors, free samples, and vending machine sales of e-cigarettes except in adult-only facilities.

- Additional provisions of the FDA “deeming rule” will phase in over the coming months and years.

- Through authority granted by the Family Smoking Prevention and Tobacco Control Act, FDA has authority to develop regulations that address the manufacture, import, packaging, labeling, advertising, promotion, sale, and distribution of e-cigarettes.

Q: Is e-cigarette use by young people similar across age, gender, and racial/ethnic groups?

- Among youth ages 12-17: older students, Hispanics, and Whites are more likely to use e-cigarettes than younger students and Blacks.

- Among young adults ages 18-25: males, Hispanics, Whites, and those with lower levels of education are more likely to use e-cigarettes than females, Blacks, and those with higher levels of education.

- Prevalence of current e-cigarette use among high school students and young adults is similar, with 16% of high school students and 13.6% of young adults being past-30-day users.

- Middle school students use e-cigarettes at about the same rate as adults age 25 and older, with 5.3% of middle school students and 5.7% of adults age 25 and older being past-30-day users.

Q: Why are e-cigarettes so popular with young people?

- Youth and young adults say they use e-cigarettes for a variety of reasons, including:

  - Curiosity. Young people say they are curious about the products and are interested in trying them.
Flavors. E-cigarettes are available in hundreds of flavors, and both youth and young adult e-cigarette users overwhelmingly select flavored e-cigarettes over unflavored ones. About 9 out of 10 young adult and 8 out of 10 youth e-cigarette users used flavored e-cigarettes in 2014 and 2015, respectively. In addition, according to the Population Assessment of Tobacco and Health (PATH) study, the primary reason that youth ages 12-17 reported they used e-cigarettes was because “they come in flavors I like” (81.5%).

Belief that e-cigarettes are safer than other tobacco products, especially conventional cigarettes. More than 3 of 5 American teens believe that e-cigarettes cause little or only some harm as long as they are used sometimes but not every day. Nearly 1 of 5 young adults believe e-cigarettes cause no harm.

Q: What are the report’s findings regarding the health effects of e-cigarette aerosol?

- E-cigarette aerosol is not harmless. It can contain harmful and potentially harmful constituents, including nicotine.
- Nicotine exposure during adolescence can cause addiction and can harm the developing adolescent brain.
- E-cigarettes typically contain nicotine, a highly addictive drug that is proven to harm brain development; chemicals such as diacetyl, a flavoring agent that can cause a serious lung disease when inhaled; ultrafine particles that can be inhaled deep into the lungs; heavy metals such as nickel, lead, and tin; and other chemicals such as volatile organic compounds that can be harmful to health.

Q: How do e-cigarettes harm brain development?

- The brain is the last organ in the human body to develop fully. Brain development continues to about the early to mid-20s.
- E-cigarettes typically contain nicotine. Nicotine disrupts the development of brain circuits that control attention and learning, and young people who use e-cigarettes and other tobacco products are at risk for deficits in these areas.
- Adolescence is a critical period for brain development, and brain development continues into young adulthood. Young people who use e-cigarettes and other tobacco products are uniquely at risk for long-term, long-lasting effects of exposing their developing brains to nicotine. In addition to learning and cognitive deficits, and susceptibility to addiction, these risks include mood disorders and permanent lowering of impulse control.
- The nicotine in e-cigarettes and other tobacco products can also affect the development of the brain’s reward system, priming the adolescent brain for addiction to other drugs such as cocaine and methamphetamine.

Q: What is the impact of nicotine use during pregnancy on fetal development?

- Based on a comprehensive review of the existing scientific literature, the 2014 Surgeon General’s Report concluded that “the evidence is sufficient to infer that at high-enough doses, nicotine has acute toxicity,” and that “the evidence is sufficient to infer that nicotine adversely affects maternal and fetal health during pregnancy.”
- Research shows that adults who use e-cigarettes can achieve plasma nicotine concentrations similar to those found among smokers of equivalent amounts of conventional cigarettes.
Nicotine has been shown to cross the placenta and has been found in placental tissue as early as 7 weeks of embryonic gestation, and nicotine concentrations are higher in fetal fluids than in maternal fluids.

This report concludes that “Nicotine can cross the placenta and has known effects on fetal and postnatal development. Therefore, nicotine delivered by e-cigarettes during pregnancy can result in multiple adverse consequences, including SIDS, and could result in altered corpus callosum, deficits in auditory processing, and obesity.”

Q: What are the report’s findings regarding e-cigarette aerosol?

- E-cigarette aerosol is not harmless. It can contain harmful and potentially harmful constituents including nicotine. Nicotine exposure during adolescence can cause addiction and can harm the developing adolescent brain.

- Scientists are still working to understand more fully the health effects and harmful doses of the contents of e-cigarettes when they are heated into an aerosol. However, e-cigarette aerosol generally contains fewer toxicants than smoke from combustible tobacco products.

- Given the existing science on e-cigarette aerosol, the Call to Action in this report includes diverse actions, modeled after evidence-based tobacco control strategies that can be taken at the state, local, tribal, and territorial levels to address e-cigarette use among youth and young adults, including incorporating e-cigarettes into smoke-free policies.

Q: Are e-cigarettes less harmful than cigarettes?

- Cigarettes and other combusted tobacco products are the leading cause of preventable death and disease in the U.S. and the world; they kill half of all long-term users.

- The 2014 Surgeon General’s Report on the Health Consequences of Smoking, and this report, note that, based on current understanding, noncombustible tobacco products including e-cigarettes are less dangerous than continued smoking if used by combustible tobacco smokers as a complete substitute for all combustible tobacco products.

- However, e-cigarette aerosol is not harmless. It can contain harmful and potentially harmful constituents, including nicotine. Nicotine exposure during adolescence can harm the developing adolescent brain.

- A major conclusion of this report is that the use of products containing nicotine in any form among youth, including in e-cigarettes, is unsafe. Therefore, young people should be strongly discouraged from using any type of tobacco product, including e-cigarettes.

Q: FDA-approved medications for quitting smoking contain nicotine. Is it harmful for youth and young adults to use any product containing nicotine, including nicotine replacement therapy (NRT)?

- The brain is still developing into early adulthood and doesn’t complete until the early to mid-20’s. Nicotine exposure during this period of growth can disrupt the formation of brain circuits that control learning, memory, and attention.

- Over-the-counter nicotine replacement products, such as the nicotine patch and gum, are approved for sale to persons 18 years of age and older.

  - Youth who smoke should consult with their health care professional for assistance with quitting.

  - Young adults who smoke should consult with their health care professional for assistance with quitting and the use of proven quit aids.

  - In addition, https://teen.smokefree.gov walks young people through the steps to quit and also offers a free texting program to provide continued encouragement along the way.
• There are seven FDA-approved quit aids, including both nicotine replacement therapy and non-nicotine containing medications, that are proven safe and effective when used as directed. The use of nicotine in the context of nicotine replacement therapy is therapeutic and intended for short term use to treat tobacco dependence in smokers as a means of weaning one from nicotine dependence.

Q: Do all e-cigarettes contain nicotine?
• E-cigarettes are designed to deliver nicotine and other additives to the user in the form of an aerosol. Many but not all e-cigarettes contain nicotine.
• Until recently, e-cigarettes have not been regulated at the federal level, and there have not been requirements for ingredient testing or disclosure. Some e-cigarette labels do not disclose that they contain nicotine, and some e-cigarettes marketed as containing zero percent nicotine have been found to contain nicotine.
• Young people have been found to believe that e-cigarettes deliver “harmless water vapor” and may not realize the products can contain nicotine.
• According to the 2015 and 2016 Monitoring the Future studies, the majority of teens who use e-cigarettes think there is “just flavoring” in them. However, many e-cigarettes on the market contain both nicotine and flavoring, and no studies have investigated how many youth use e-cigarettes that contain both flavors and nicotine.
• In addition, this report identifies that there are harmful elements in e-cigarettes besides nicotine. E-cigarette aerosol can contain heavy metals, volatile organic compounds, and cancer causing agents like acrolein. It also finds that e-cigarettes are being used to deliver illicit substances such as marijuana.

Q: Does this report investigate whether e-cigarettes help adult smokers quit?
• There are important issues related to e-cigarette use among adult smokers, including their potential for use as a smoking cessation tool. However, given that the report focuses on youth and young adults, those issues are not addressed in this report.
• E-cigarettes are not an FDA-approved quit aid and there is no conclusive scientific evidence on the effectiveness of e-cigarettes for long-term smoking cessation. However, there are seven FDA approved quit aids that are proven safe and effective when used as directed.
• To date, the few studies on the issue are mixed. A Cochrane Review found evidence from two randomized controlled trials that e-cigarettes with nicotine can help smokers to stop smoking in the long term compared with placebo e-cigarettes. However, existing research is subject to some limitations, including the small number of trials, small sample sizes, and wide margins of error around the estimates.
• More research is needed to explore this issue, and several efforts are underway at the Federal level to help answer this important question. For example, the FDA and NIH are fielding the Population Assessment of Tobacco and Health, or PATH, study. Additionally, NIH and FDA are funding Tobacco Centers of Regulatory Science, or TCORS, across the country who are working to study many topics related to tobacco regulatory science, including the effects of e-cigarettes on cessation among adult smokers.
• Any e-cigarette manufacturer who wants to market the products as a cessation aid (e.g., as a product that helps smokers quit) can submit an application, with supporting data, to FDA asking for approval.
Battery
The battery is the energy source of the device and powers the atomizer.

Atomizer
The atomizer is the heating element that heats the e-liquid and is often coil shaped.

E-Liquid
Sometimes called e-juice, this is put into the device and often contains flavors and nicotine.

Cartridge
The cartridge (tank) holds the e-liquid and may also hold the atomizer.

Aerosol
Heating e-liquid inside the device creates an aerosol that is inhaled into the body and out into the air.

For more information go to: www.tobaccopreventiontoolkit.stanford.edu
Electronic cigarettes (e-cigarettes) are battery-powered devices that can deliver nicotine and flavorings to the user in the form of an aerosol. E-cigarettes come in many shapes and sizes.

**WHAT’S THE BOTTOM LINE?**

A new e-cigarette shaped like a **USB** flash drive is being used by students in schools.

Nicotine is highly addictive and can **harm brain development**, which continues until about age 25.

The use of any tobacco product — including e-cigarettes—is **unsafe** for young people.

**Parents, educators, & health care providers** can help prevent and reduce the use of all tobacco products, including e-cigarettes, by young people.

>> **Learn HOW** in this fact sheet.
AN INCREASINGLY POPULAR E-CIGARETTE DEVICE, CALLED JUUL, IS SHAPED LIKE A USB FLASH DRIVE.

Use of JUUL is sometimes called “JUULing.”

JUUL’s nicotine liquid refills are called “pods.” JUUL is available in several flavors such as Cool Cucumber, Fruit Medley, Mango, and Mint.

All JUUL e-cigarettes have a high level of nicotine. According to the manufacturer, a single JUUL pod contains as much nicotine as a pack of 20 regular cigarettes.

JUUL became available for sale in the United States in 2015. As of December 2017, JUUL is the top-selling e-cigarette brand in the United States. News outlets and social media sites report widespread use of JUUL by students in schools, including in classrooms and bathrooms.

Other devices are becoming available that look like USB flash drives. Examples include the MarkTen Elite, a nicotine delivery device, and the PAX Era, a marijuana delivery device that looks like JUUL.
E-cigarette aerosol is not harmless. It can contain harmful ingredients. However, e-cigarette aerosol generally contains fewer harmful chemicals than smoke from burned tobacco products, like regular cigarettes.

Most e-cigarettes contain **nicotine**, which is highly addictive and can **harm brain development**, which continues until about **age 25**.

**E-CIGARETTE USE IS NOT SAFE FOR YOUNG PEOPLE.**

**YOUNG PEOPLE WHO USE E-CIGARETTES MAY BE MORE LIKELY TO GO ON TO USE REGULAR CIGARETTES.**
PARENTS, EDUCATORS, AND HEALTH CARE PROVIDERS CAN HELP PREVENT AND REDUCE THE USE OF E-CIGARETTES BY YOUNG PEOPLE.

PARENTS CAN:

» Learn about the different shapes and types of e-cigarettes and the risks of all forms of e-cigarette use for young people.

» Talk to their children about the risks of e-cigarette use among young people. Express firm expectations that their children remain tobacco-free.

» Set a positive example by being tobacco-free.

EDUCATORS CAN:

» Learn about the different shapes and types of e-cigarettes and the risks of all forms of e-cigarette use for young people.

» Develop, implement, and enforce tobacco-free school policies.

» Reject youth tobacco prevention programs sponsored by the tobacco industry. These programs have been found to be ineffective for preventing youth tobacco use.

PEDIATRIC HEALTH CARE PROVIDERS CAN:

» Ask about e-cigarettes, including devices shaped like USB flash drives, when screening patients for the use of any tobacco products.

» Warn patients about the risks of all forms of tobacco product use, including e-cigarettes, for young people.
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.

WHAT ARE E-CIGARETTES?

E-cigarettes are known by many different names. They are sometimes called “e-cigs,” “e-hookahs,” “mods,” “vape pens,” “vapes,” “tank systems,” and “electronic nicotine delivery systems.”

Some e-cigarettes are made to look like regular cigarettes, cigars, or pipes. Some resemble pens, USB sticks, and other everyday items.

E-cigarettes produce an aerosol by heating a liquid that usually contains nicotine—the addictive drug in regular cigarettes, cigars, and other tobacco products—flavorings, and other chemicals that help to make the aerosol. Users inhale this aerosol into their lungs. Bystanders can also breathe in this aerosol when the user exhales into the air.

E-cigarettes can be used to deliver marijuana and other drugs.
WHAT IS IN E-CIGARETTE AEROSOL?

The e-cigarette aerosol that users breathe from the device and exhale can contain harmful and potentially harmful substances:

- Nicotine
- Ulrafine particles
- Flavoring such as diacetyl, a chemical linked to a serious lung disease
- Cancer-causing chemicals
- Volatile organic compounds
- Heavy metals such as nickel, tin, and lead

It is difficult for consumers to know what e-cigarette products contain. For example, some e-cigarettes marketed as containing zero percent nicotine have been found to contain nicotine.

ARE E-CIGARETTES LESS HARMFUL THAN REGULAR CIGARETTES?

Yes, but that doesn’t mean e-cigarettes are safe.

E-cigarette aerosol generally contains fewer toxic chemicals than the deadly mix of 7,000 chemicals in smoke from regular cigarettes. However, e-cigarette aerosol is not harmless. It can contain harmful and potentially harmful substances, including nicotine, heavy metals like lead, volatile organic compounds, and cancer-causing agents.
WHAT ARE THE HEALTH EFFECTS OF USING E-CIGARETTES?

SCIENTISTS ARE STILL LEARNING ABOUT THE LONG-TERM HEALTH EFFECTS OF E-CIGARETTES. HERE IS WHAT WE KNOW NOW.

1. Most e-cigarettes contain nicotine, which has known health effects
   - Nicotine is highly addictive.
   - Nicotine is toxic to developing fetuses.
   - Nicotine can harm adolescent brain development, which continues into the early to mid-20s.
   - Nicotine is a health danger for pregnant women and their developing babies.

2. Besides nicotine, e-cigarette aerosol can contain substances that harm the body.
   - This includes cancer-causing chemicals and tiny particles that reach deep into lungs. However, e-cigarette aerosol generally contains fewer harmful chemicals than smoke from burned tobacco products.

3. E-cigarettes can cause unintended injuries.
   - Defective e-cigarette batteries have caused fires and explosions, some of which have resulted in serious injuries.
   - In addition, acute nicotine exposure can be toxic. Children and adults have been poisoned by swallowing, breathing, or absorbing e-cigarette liquid.
E-CIGARETTES ARE NOT CURRENTLY APPROVED BY THE FDA AS A QUIT SMOKING AID.

The U.S. Preventive Services Task Force, a group of health experts that makes recommendations about preventive health care, concluded that the evidence is insufficient to recommend e-cigarettes for smoking cessation in adults, including pregnant women.

HOWEVER, e-cigarettes may help non-pregnant adult smokers if used as a complete substitute for all cigarettes and other smoked tobacco products.

TO DATE, THE FEW STUDIES ON THE ISSUE ARE MIXED.

Evidence from two randomized controlled trials found that e-cigarettes with nicotine can help smokers stop smoking in the long term compared with placebo (non-nicotine) e-cigarettes.

A recent CDC study found that many adults are using e-cigarettes in an attempt to quit smoking. However, most adult e-cigarette users do not stop smoking cigarettes and are instead continuing to use both products ("dual use"). Because smoking even a few cigarettes a day can be dangerous, quitting smoking completely is very important to protect your health.
WHO IS USING E-CIGARETTE?

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

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

In 2016, more than 2 million U.S. middle and high school students used e-cigarettes in the past 30 days, including:

- 4.3% middle school students
- 11.3% high school students

Among current e-cigarette users aged 18-24 years, 40.0% had never been cigarette smokers.

In 2015, among adult e-cigarette users overall:

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

In 2016, 3.2% of U.S. adults were current e-cigarette users.
TEACHERS AND PARENTS: That USB Stick Might Be an E-cigarette

Some e-cigarettes don’t look like tobacco products, so some kids use them unnoticed in schools, including in classrooms and bathrooms.

E-cigarettes are the most commonly used tobacco product among U.S. middle and high school students.

An increasingly popular e-cigarette, called JUUL, is shaped like a USB flash drive.

JUUL delivers a high dose of nicotine. Nicotine is highly addictive and can harm adolescent brain development.

TOBACCO PRODUCT USE IN ANY FORM, INCLUDING E-CIGARETTES, IS UNSAFE FOR YOUTH.

LEARN MORE about the risks of e-cigarettes for youth and access tips for talking to youth at:
https://e-cigarettes.surgeongeneral.gov/resources.html
Risks of E-Cigarette and Vape Pen Use

Although the overwhelming majority of young people do not use e-cigarettes, the recent increase in use among adolescent is concerning to health professionals.

- Nicotine use in early adolescence causes changes in the brain that make life-long addiction much more likely for young e-cig/vape users.
- Ear, eye and throat Irritation is common among e-cigarette/vape pen users.
- The aerosols produced by the chemicals in e-juice, enter into the user's lungs unfiltered and leave chemical residue behind.
- Nicotine is known to have effects on the cardiovascular system. Some recent studies show that acute use of e-cigarette impaired flow-mediated dilation, this suggests that e-cigarettes can lead to cardiovascular diseases.
- Recent studies show that e-cigarette/vape pen use is associated with the use of other tobacco products that are known to cause further health issues, including cancer and heart disease.
- Many people incorrectly believe that these devices produce a water vapor when in fact they create aerosols that contain harmful chemicals, and ultra-fine particles that are inhaled into the lungs and out into the environment, making them harmful to the user and other nearby.
- These devices are still very new so many of the long-term health consequences of their use is still not known. Even still, the mounting evidence shows that these devices are not harmless.
Teenagers are more likely to get information on health issues from their parents and their health care providers than from peers, the internet, or social media. Findings from a 2015 Northwestern University study confirm that the internet is a supplement—not a replacement—for parents, teachers, and doctors as sources of credible health information.

What Are E-cigarettes?

E-cigarettes are known by a variety of names, including vape pens, e-hookahs, mods, tank systems, and e-cigs. E-cigarettes are electronic devices that use a battery to aerosolize a liquid, usually containing nicotine, flavoring, and other additives, which is inhaled by the user through a mouthpiece. They can also be used to deliver marijuana and other substances. E-cigarette use among young people has increased over the last five years, and the use of these devices is now more common than the use of regular cigarettes among middle and high school students.

Many of your patients and their parents are unaware that nicotine is a common ingredient in e-cigarettes. Nicotine in any form, including from e-cigarettes, is unsafe for youth. Nicotine is highly addictive and can harm the developing adolescent brain.
What Are the Risks of E-cigarettes for Young People?

- The brain continues to develop through the early to mid-twenties. Because the adolescent brain is still developing, nicotine use during this critical period can disrupt the formation of brain circuits that control attention, learning, and susceptibility to addiction.
- Young people are uniquely at risk for long-term effects of exposing their developing brains to nicotine, including mood disorders and permanent lowering of impulse control.
- Nicotine activates the limbic system more strongly in the adolescent brain than in the adult brain, making addiction a greater risk for youth who use nicotine.
- E-cigarette use is strongly associated with other tobacco product use, including regular cigarettes.
- Besides nicotine, e-cigarettes can contain harmful and potentially harmful ingredients, including:
  - **ultrafine particles** that can be inhaled deep into the lungs
  - Flavorants such as **diacetyl**, a chemical linked to bronchiolitis obliterans (“popcorn lung,” so identified because of the incidence of the disease in workers at plants that used flavorants containing diacetyl in microwave popcorn)
  - **volatile organic compounds**
  - **heavy metals**, including nickel, tin, chromium, and lead.
- The aerosol from e-cigarettes is not harmless, either for users or for others who are exposed to secondhand aerosol. It can contain harmful and potentially harmful ingredients, including nicotine.

Information for Educating Young Patients

As a health care provider, you have unique opportunities to reach youth and their parents with credible, correct information about e-cigarettes. The following are comments you might hear when you have a conversation with your patients about e-cigarettes, and potential responses.

**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.

**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.

E-cigarettes don’t contain as many dangerous chemicals as regular cigarettes, but that doesn’t mean they are safe for young people to use.

• E-cigarettes can contain harmful and potentially harmful ingredients, including nicotine.

• Some of the other chemicals in e-liquids and in the aerosol from e-cigarettes are known to cause cancer in humans.

• Heavy metals such as lead and cadmium that have been found in e-cigarette aerosol can cause respiratory distress and disease.

• Some of the chemicals that flavor e-cigarettes are harmful when they are inhaled, even though they’ve been approved for ingestion. One of them, diacetyl, is used to produce a buttery flavor but has been linked to a serious and permanent lung disease called “popcorn lung.”

Patient: There’s no smoke from e-cigarettes—just harmless water vapor.

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.
Patient: I've heard there are other risks from e-cigarettes.

- Nicotine found in many e-cigarettes is unsafe for pregnant women and fetuses. It can complicate pregnancy and cause health issues for the baby. Nicotine is known as a cause of sudden infant death syndrome.
- The liquid for e-cigarettes can contain high enough levels of nicotine to cause nicotine poisoning if it’s ingested or absorbed through the skin. It’s especially dangerous for young children, who may be attracted to the liquid because of the flavors and bright colors.
- E-cigarette batteries have been known to explode and cause burns and other injuries.
- The heating element in e-cigarettes can cause burns.

Resources

The Surgeon General’s Report on e-cigarette use among youth and young adults is a comprehensive review of existing research on this subject. The report website E-cigarettes.SurgeonGeneral.gov is a resource for both health care providers and for patients and their families.

The website contains plain-language information specifically designed to help parents and other adults educate young people on the risks of e-cigarette use. One plain-language resource available on the website is a Parent Tip Sheet.

The website also contains links to the full report, the Executive Summary, and other useful resources including videos and a fact sheet. The American Academy of Pediatrics has produced a fact sheet on the Surgeon General’s Report that is available on their website at www2.aap.org/richmondcenter/pdfs/Understanding_the_2016_SGR_Fact_Sheet.pdf.
BEFORE THE TALK

Know the facts.


Be patient and ready to listen.

• Avoid criticism and encourage an open dialogue.

• Remember, your goal is to have a conversation, not to deliver a lecture.

• It’s OK for your conversation to take place over time, in bits and pieces.

Set a positive example by being tobacco-free.

• If you use tobacco, it’s never too late to quit. For free help, visit smokefree.gov or call 1-800-QUIT-NOW.
START THE CONVERSATION

Find the right moment.

- A more natural discussion will increase the likelihood that your teen will listen. Rather than saying “we need to talk,” you might ask your teen what he or she thinks about a situation you witness together, such as:
  - Seeing someone use an e-cigarette in person or in a video.
  - Passing an e-cigarette shop when you are walking or driving.
  - Seeing an e-cigarette advertisement in a store or magazine or on the internet.

Ask for support.

- Not sure where to begin? Ask your health care provider to talk to your teen about the risks of e-cigarettes.
- You might also suggest that your teen talk with other trusted adults, such as relatives, teachers, faith leaders, coaches, or counselors whom you know are aware of the risks of e-cigarettes.
- These supportive adults can help reinforce your message as a parent.

ANSWER THEIR QUESTIONS

Here are some questions and comments you might get from your teen about e-cigarettes and some ideas about how you can answer them.

**Why don’t you want me to use e-cigarettes?**

- Science shows that e-cigarettes contain ingredients that are addictive and could harm different parts of your body.
- Right now, your brain is still developing, which means you are more vulnerable to addiction. Many e-cigarettes contain nicotine, and using nicotine can change your brain to make you crave more nicotine. It can also affect your memory and concentration. I don't want that for you!
- E-cigarettes contain chemicals that are harmful. When people use e-cigarettes, they breathe in tiny particles that can harm their lungs.
- The cloud that people exhale from e-cigarettes can expose you to chemicals that are not safe to breathe.

**What's the big deal about nicotine?**

- Your brain is still developing until about age 25. The Surgeon General reported that nicotine is addictive and can harm your brain development.
- Using nicotine at your age may make it harder for you to concentrate, learn, or control your impulses.
- Nicotine can even train your brain to be more easily addicted to other drugs like meth and cocaine.
I don’t say this to scare you, but I want you to have the facts because nothing is more important to me than your health and safety.

 Aren’t e-cigarettes safer than conventional cigarettes?

• Because your brain is still developing, scientific studies show that it isn’t safe for you to use any tobacco product that contains nicotine, including e-cigarettes.
• Whether you get nicotine from an e-cigarette or a cigarette, it’s still risky.
• Some e-cigarette batteries have even exploded and hurt people.

I thought e-cigarettes didn’t have nicotine—just water and flavoring?

• I used to think that too. But many e-cigarettes have nicotine. There are also other chemicals in them that can be harmful.

• Let’s look at the Surgeon General’s website on e-cigarettes (E-cigarettes.SurgeonGeneral.gov) together so you can see for yourself.

I (or my friends) have tried e-cigarettes and it was no big deal.

• I appreciate your honesty. In the future, I hope you (or your friends) will stay away from e-cigarettes and other tobacco products, including cigarettes. Science shows that e-cigarettes contain ingredients that are addictive and could harm different parts of your body.
• Next time we go to the doctor, let’s ask about the risks of nicotine, e-cigarettes, and other tobacco products.

You used tobacco, so why shouldn’t I?

• If I could live my life over again, I never would have started smoking. I learned that people who smoke cigarettes are much more likely to develop, and die from, certain diseases than people who don’t smoke. This was really scary, so I quit smoking.
• Quitting was really hard, and I don’t want you to go through that. The best thing is to not start at all.
KEEP THE CONVERSATION GOING

Many parents find that texting is a great way to reach their teens. Here are some suggestions for text messages that might catch your teen’s attention. And, you can easily share pages of the website (E-cigarettes.SurgeonGeneral.gov) with your teen.

Look for this symbol, click it, type in the message you want or use the message provided, and share with your teen via Facebook, Twitter, or email.

Connect and encourage.

• You always liked science. Check out the science about e-cigarettes and young people: E-cigarettes.SurgeonGeneral.gov

• Getting off nicotine is hard but I’m so happy I quit. Don’t make that mistake and get addicted. Smoking and tobacco use, including using e-cigarettes, are unsafe for young people.

Remind and repeat.

• Most teenagers don’t use e-cigarettes. E-cigarettes with nicotine can mess with your brain, and your brain is still developing until you are at least 25.

• You might be tempted by e-cigarette flavors, but inhaling certain flavorings that have been found in some e-cigarettes can be harmful.

Share facts and resources.

• Just learned that many e-cigarettes have nicotine in them. That’s the drug that makes cigarettes so addictive. Nicotine can also mess with your brain development.

• Just saw a report from the Surgeon General that e-cigarettes can mess with how your brain develops and might even affect your mood and focus. Please don’t use any products that contain nicotine.

• Hope none of your friends use e-cigarettes around you. Even breathing the cloud they exhale can expose you to nicotine and chemicals that can be dangerous to your health.