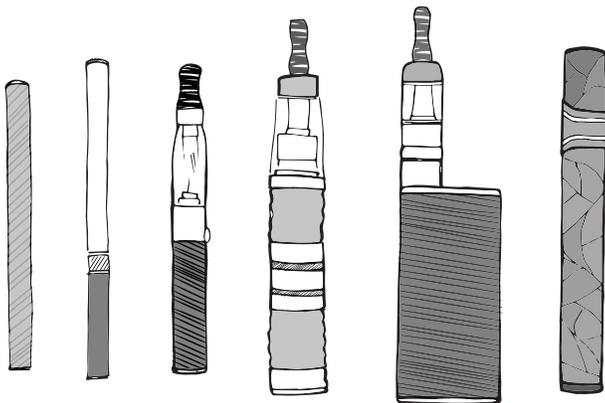




Teenagers are more likely to get information on health issues from their parents and their *health care providers* than from peers, the internet, or social media. Findings from a 2015 Northwestern University study confirm that the internet is a supplement—not a replacement—for parents, teachers, and 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

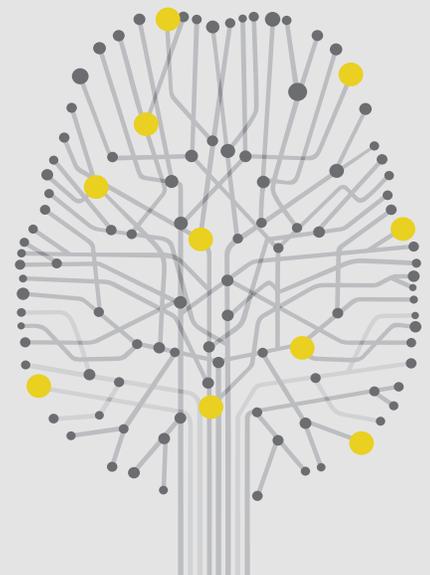
As a health care provider, you have unique opportunities to reach youth and their parents with credible, correct information about e-cigarettes. The following are comments you might hear when you have a conversation with your patients about e-cigarettes, and potential responses.

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.



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