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Medical Management Meeting

3rd Quarter of ACHN

Northeast Region

Vaping and Its Effects

June 11, June 18, June 25

Vaping

- Types of Vaping through Electronic cigarettes are collectively known as ENDS – electronic nicotine delivery systems
  - E-pens
  - E-pipes
  - E-hookah
  - E-cigars

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E-CIGARETTE, OR VAPING, PRODUCTS VISUAL DICTIONARY

U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

Vaping Devices

E-Cigarette, or Vaping, Products

E-cigarette, or vaping, products can be used to deliver nicotine, cannabis (THC, CBD), flavorings, chemicals, and other substances.

They are known by many different names and come in many shapes, sizes and device types. Devices may be referred to as

- E-cigs
- Vapes
- Vape pens, dab pens, and dab rigs
- Tanks
- Mods
- Pod-Mods
- Electronic nicotine delivery systems (ENDS)

Use of e-cigarette, or vaping, products is sometimes referred to as "vaping" or "juuling." E-cigarette, or vaping, products used for dabbing are sometimes called "dab" pens.

First Generation

Disposable E-cigarettes

- A type of e-cigarette designed to be used one time, only.
- These devices are not rechargeable or refillable.
- They are discarded when it runs out of charge or e-liquid.
- They are designed to mimic the look and feel of combustible cigarettes. These are sometimes referred to as “cigalikes”

Second Generation

E-Cigarettes with Prefilled or Refillable Cartridge

- A type of rechargeable e-cigarette, or vaping, product designed to be used multiple times.
- E-liquid comes in prefilled or refillable cartridges. Substances may include nicotine, cannabis (THC, CBD), flavoring, solvents, or other substances.
- The cartridge is attached to a battery pen—which contains the battery.
- Cartridge and battery pen are typically purchased separately. They can be bought in starter packs.

Third Generation

Tanks or Mods

- A type of rechargeable e-cigarette, or vaping, product designed to be used multiple times.
- They are modifiable devices ("mods"), allowing users to customize the substances in the device.

Fourth Generation

Pod Mods

- Pod Mod is an e-cigarette, or vaping, product with a prefilled or refillable "pod" or pod cartridge with a modifiable (mod) system ("Pod-Mods")
- These are other examples of fourth generation devices. Pod Mods come in many shapes, sizes, and colors.
- Common Pod Mod brands include JUUL® and Suorin ®
- There are compatible prefilled pod cartridges that contain nicotine, THC, or CBD with or without flavoring.

Vaporizers

Vaporizers

- An inhalation device used to release the active substances of organic or inorganic materials in the form of an aerosol through the application of non-combusting heat
- Vaporizers can be used to aerosolize dry herbs, wax, and oil. For example, vaporizers are used to heat marijuana to a point where its active ingredients (e.g., THC) are released in an aerosol and inhaled.

History of Vaping

- Vaping has been around about 10 years and the mid-to-long term consequences are not yet known.
- Most popular with kids – but significant in the College Age population and young adults
- Marijuana is also used with these devices

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Primary Ingredients used in the devices

- Propylene glycol
- Vegetable glycerin

Inhaling these are toxic to cells and that the more ingredients in an e-liquid, the greater the toxicity sites a NC study. *Sassano MF, Davis ES, Keating JE, Zorn BT, Kochar TK, Wolfgang MC, et al. (2018) Evaluation of e-liquid toxicity using an open-source high-throughput screening assay. PLoS Biol 16(3): e2003904. https://doi.org/10.1371/journal.pbio.2003904*

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Secondhand Effects

- In 2016, the Surgeon General concluded that secondhand emissions contain, "nicotine; ultrafine particles; flavorings such as diacetyl, a chemical linked to serious lung disease; volatile organic compounds such as benzene, which is found in car exhaust; and heavy metals, such as nickel, tin, and lead.

- According to Ogunwale E-cigarettes produce a number of dangerous chemicals including acetaldehyde, acrolein, and formaldehyde. These aldehydes can cause lung disease, as well as cardiovascular (heart) disease. *Ogunwale, Mumiye A et al. (2017) Aldehyde Detection in Electronic Cigarette Aerosols. ACS omega 2(3): 1207-1214. doi: 10.1021/acsomega.6b00489].*

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Secondhand Effects

- E-cigarettes also contain acrolein, a herbicide primarily used to kill weeds. It can cause acute lung injury and COPD and may cause asthma and lung cancer. *Bein K, Leikauf GD. (2011) Acrolein - a pulmonary hazard. Mol Nutr Food Res 55(9):1342-60. doi: 10.1002/mnfr.201100279.*

- The Food and Drug Administration has not found any e-cigarette to be safe and effective in helping smokers quit.

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Lung Injury

EVALI remains a diagnosis of exclusion because, at present, no specific test or marker exists for its diagnosis, and evaluation should be guided by clinical judgment. Because patients with EVALI can present with symptoms similar to influenza or other respiratory infections (e.g., fever, cough, headache, myalgias, or fatigue), it might be difficult to differentiate EVALI from influenza or CAP (community-acquired pneumonia) on initial presentation, and EVALI may cooccur with respiratory infections. Many patients will be presenting to healthcare facilities with respiratory symptoms during the winter season who may not meet criteria for hospital admission, and this will be happening in the context of a national outbreak of EVALI.

Lung Injury

- As of February 2020, a total of 2807 cases and 68 deaths related to EVALI from all 50 states.

- Emergency departments visits are starting to decline after a peak in September 2019
  - Increased public awareness
  - Removal of vitamin E acetate from some products
  - Law enforcement actions related to illicit products

CDC Recommendations

- CDC and FDA recommend that people not use THC-containing e-cigarette, or vaping, products particularly from informal sources like friends, family, or in-person or online dealers.

- Vitamin E acetate should not be added to any e-cigarette, or vaping, products. Additionally, people should not add any other substances not intended by the manufacturer to products, including products purchased through retail establishments.

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CDC Recommendations

- Adults using nicotine-containing e-cigarette, or vaping, products as an alternative to cigarettes should not go back to smoking. They should weigh all available information and consider using FDA approved smoking cessation medications.

- If those adults choose to use e-cigarettes as and alternative to cigarettes, they should completely switch from cigarettes to e-cigarettes and not partake in an extended period of dual use as this just delays quitting smoking completely.

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CDC Recommendations

- E-cigarette, or vaping, products (nicotine or THC) should never be used by youths, young adults, or women who are pregnant.

- Adults who do not currently use tobacco products should not start using e-cigarette, or vaping, products

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Available Resources for your Patients

Krames

E-Cigarettes: What You Should Know

With e-cigarette use on the rise, and the common belief that they offer a safe alternative to traditional cigarettes, it's important to know the truth about these devices. Here are answers to some common questions.

What are e-cigarettes?

E-cigarettes (electronic cigarettes), are one type of a group of devices known as ENDS—electronic nicotine delivery systems. Other ENDS include e-pens, e-pipes, e-hookahs and e-cigars. E-cigarettes and other ENDS are usually battery-operated. They use heat to turn e-liquid into an aerosol for the user to inhale. The information in this brochure applies to all ENDs products.

E-cigarettes may not always look like traditional cigarettes, but they **are** a tobacco product. Nearly all of them contain nicotine.

What is vaping?

Vaping is another term for inhaling e-cigarette aerosol, also known as vapor.

What is in e-liquid?

Because e-cigarettes are not yet regulated, makers do not need to reveal all of the ingredients the e-liquids contain. But we do know this: Almost all e-liquids have nicotine, an addictive substance—including some that claim not to have any. Many e-liquids have flavorings and colorings that are meant to boost their appeal. The FDA has also found cancer-causing chemicals in tested products.

Are e-cigarettes safe?

E-cigarettes don't just release "harmless water vapor" as the makers would have you believe. The 2016 Surgeon General's Report found that e-cigarettes can expose users to chemicals known to have bad health effects. And there are other reasons to be concerned:

- None of the nearly 500 brands of e-cigarettes have been fully evaluated for safety.
- No one yet knows what the long-term health effects of using e-cigarettes, or being exposed to secondhand aerosol, may be.
- Nicotine, which is found in nearly all e-cigarettes, has been shown to harm health. The more nicotine a person uses, the more likely they will become addicted as well.
- E-liquids themselves are toxic and lead to thousands of calls to poison control centers each year.

According to early studies, the aerosol given off by e-cigarettes and exhaled by users can contain carcinogens, such as formaldehyde.

Available Resources for your Patients

Surgeon General

E-Cigarette Use Among Youth and Young Adults

A Report of the Surgeon General

Fact Sheet

This Surgeon General's report comprehensively reviews the public health issue of e-cigarettes and their impact on U.S. youth and young adults. Studies highlighted in the report cover young adolescents (11-14 years of age); adolescents (15-17 years of age); and/or young adults (18-25 years of age). Scientific evidence contained in this report supports the following facts:

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 battery-powered devices that heat a liquid into an aerosol that the user inhales.
- The liquid usually has nicotine, which comes from tobacco; flavoring; and other additives.
- E-cigarette products can also be used as a delivery system for marijuana and other illicit drugs.

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 cigarettes and other burned tobacco products.

- In 2015, more than 3 million youth in middle and high school, including about 1 of every 6 high school students, used e-cigarettes in the past month. More than a quarter of youth in middle and high school have tried e-cigarettes.
- Among high school students, e-cigarette use is higher among males, whites, and Hispanics than among females and African-Americans.
- There is a strong association between the use of e-cigarettes, cigarettes, and the use of other burned tobacco products by young people. In 2015, for example, nearly 6 of 10 high school cigarette smokers also used e-cigarettes.
- Research has found that youth who use a tobacco product, such as e-cigarettes, are more likely to go on to use other tobacco products like cigarettes.

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.

- Among young adults 18-24 years of age, e-cigarette use more than doubled from 2013 to 2014. As of 2014, more than one-third of young adults had tried e-cigarettes.
- The most recent data available show that the prevalence of past 30-day use of e-cigarettes was 13.6% among young adults (2014) and 16.0% among high school students (2015).
- The most recent data available show that the prevalence of past 30-day use of e-cigarettes is similar among middle school students (5.3%) and adults 25 years of age and older (5.7%).
- Among young adults, e-cigarette use is higher among males, whites and Hispanics, and those with less education.

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.

- Many e-cigarettes contain nicotine, which is highly addictive.
- The brain is the last organ in the human body to develop fully. Brain development continues until the early to mid-20s. Nicotine exposure during periods of significant brain development, such as adolescence, can disrupt the growth of brain circuits that control attention, learning, and susceptibility to addiction.
- The effects of nicotine exposure during youth and young adulthood can be long-lasting and can include lower impulse control and mood disorders.
- The nicotine in e-cigarettes and other tobacco products can prime young brains for addiction to other drugs, such as cocaine and methamphetamine.

Available Resources for your Patients

CMS