Electronic Nicotine Delivery Systems: What Clinicians Need to Know

Electronic Nicotine Delivery Systems (ENDS):
- Are also called e-cigarettes, personal vaporizers, vape pens, e-cigars, e-hookah, or vaping devices
- Produce an aerosolized mixture containing flavored solution and nicotine that is inhaled by the user. The solution can contain 0-36mg/mL of nicotine.
- Are battery-powered; can be disposable (~$10) or rechargeable via a USB port (~$35)
- Can resemble combustible cigarettes, cigars, pipes, flashlights, flash drives or pens
- Contain a liquid solution that is often flavored. Flavors, which are usually made to be appealing to children, include peach schnapps, piña colada, peppermint, bubble gum, chocolate and many others

Anatomy of an ENDS device:

Are They Safe?
- ENDS solutions contain harmful chemicals and carcinogens
- The nicotine in ENDS is addictive and has neurotoxic effects on developing brains
- Animal data shows that exposure to secondhand ENDS vapor harms lung growth and function
- Long-term health effects on users and bystanders are still unknown
- These products can also be used to smoke or “vape” marijuana, herbs, waxes, and oils

Danger to Youth:
- ENDS are the most commonly-used tobacco product among teens: 24% of high school students reported current e-cigarette use in the CDC 2015 Youth Risk Behavior Survey
- ENDS use among youth increases their risk of becoming a cigarette smoker
- Children are exposed to ENDS marketing on TV, radio, magazines, billboards, and social media
- These devices mimic combustible cigarette use and help re-normalize smoking behaviors
- ENDS have been marketed as a way to smoke in places where cigarettes are prohibited, and also as a way to quit smoking. However, most users are less likely to quit if they are using ENDS

How to Ask about ENDS use with Patients and Families:
- ENDS use is often not considered smoking. Asking “Do you smoke?” may not help you identify patients and families who use ENDS products
- Instead, combine broad screening questions with specific examples, such as: “Do you use any kind of tobacco like cigarettes or dip? What about electronic smoking devices like e-cigarettes or vape pens? ”
- Do not recommend ENDS for smoking cessation. If a patient is using ENDS to try to quit smoking, suggest proven smoking cessation techniques, including Nicotine Replacement Therapy (NRT) and refer to national quitline or online help (call 1-800-QUIT NOW or online at www.smokefree.gov).

Image courtesy of Truth Initiative
**Regulatory Issues:**

- In 2016, the Food & Drug Administration (FDA) expanded its regulatory authority to include the manufacture, import, packaging, labeling, advertising, promotion, sale and distribution of all tobacco products, including ENDS.
- Under this new law, often called "Deeming," the FDA:
  - Requires health warnings on ENDS and other tobacco products
  - Prohibits the sales of ENDS to youth under the age of 18
  - Bans free samples and prohibits the sale of ENDS in vending machines
  - Requires that ENDS manufacturers receive marketing authorization from FDA
  - Requires vape shops that mix e-liquids to comply with legal requirements for tobacco manufacturers
- If you suspect a retailer is violating the FDA rules, you can report them to FDA: [http://bit.ly/2bewrVh](http://bit.ly/2bewrVh)
- AAP Policy recommends prohibiting the sale of ENDS to youth under age 21, banning ENDS use in workplaces and public spaces, prohibiting flavors in ENDS liquids, and banning advertising of ENDS where youth may see it. The AAP Division of State Government Affairs has created a resource to help you understand and track ENDS-related legislation in your state: [http://bit.ly/2bevPPA](http://bit.ly/2bevPPA)

**Risk of Poisoning**

- ENDS solutions can poison children and adults through ingestion or skin absorption
- Calls to poison control centers related to ENDS skyrocketed from 1 per month in 2010 to 215 per month in 2015; half of these calls involve children under 5 years old
- Less than half a teaspoon of liquid nicotine can be fatal to a toddler
- The Child Nicotine Poisoning Prevention Act was signed into law in 2016, requiring that liquid nicotine used for ENDS refills be sold in childproof packaging

**What to Watch For: Nicotine Poisoning**

- Initial symptoms of nicotine poisoning include emesis, sweating, and dizziness
- Can progress to tachycardia, hypertension, lethargy, seizures, and respiratory muscle weakness

**Recommendations for ENDS Users (Courtesy of the American Association of Poison Control Centers)**

- Protect your skin when handling the products
- Always keep e-cigarettes and liquid nicotine locked up and out of the reach of children
- Follow the specific disposal instructions on the label
- If exposure to liquid nicotine occurs, call the local poison center at 1-800-222-1222

For more information about these devices, including statistics and citations, please visit [http://www2.aap.org/richmondcenter/ENDS.html](http://www2.aap.org/richmondcenter/ENDS.html)

Visit the AAP Richmond Center online at: [www.richmondcenter.org](http://www.richmondcenter.org)