



The Vaping Epidemic

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Overview

- Vaping statistics locally and nationally
- E-cigarette basics: Devices, how they work
- Composition of Vape juices and aerosols
- Lung Inhalation injury (EVALI)
- Health risks of Vaping, and Nicotine
- Nicotine withdrawal and quitting
- Advocacy

What caused the Vaping epidemic?

- 2009 FDA passed the Family Smoking Prevention and Tobacco Control Act. This did NOT include E- cigarettes!!
- Subsequently, tobacco companies switched product development
- Developed Electronic Nicotine Delivery Systems (ENDS): e-cigarette
- Developed fruit and candy flavored e-juices
- Relied on products easy access within stores
- Developed youth targeted marketing: Used celebrity endorsements, music and sports sponsorships
- By 2013: TV ads targeting teens increased 256%
- By 2014: 400 brands e-juice: 84% offered fruit and 80% offered candy flavors
- 2014: National Tobacco Youth Survey:
 - 7 in 10 middle and high school students report exposure to ads
 - Online, mobile ads, smart phone and websites
- 2015: JUUL enters the market



Overview

154%

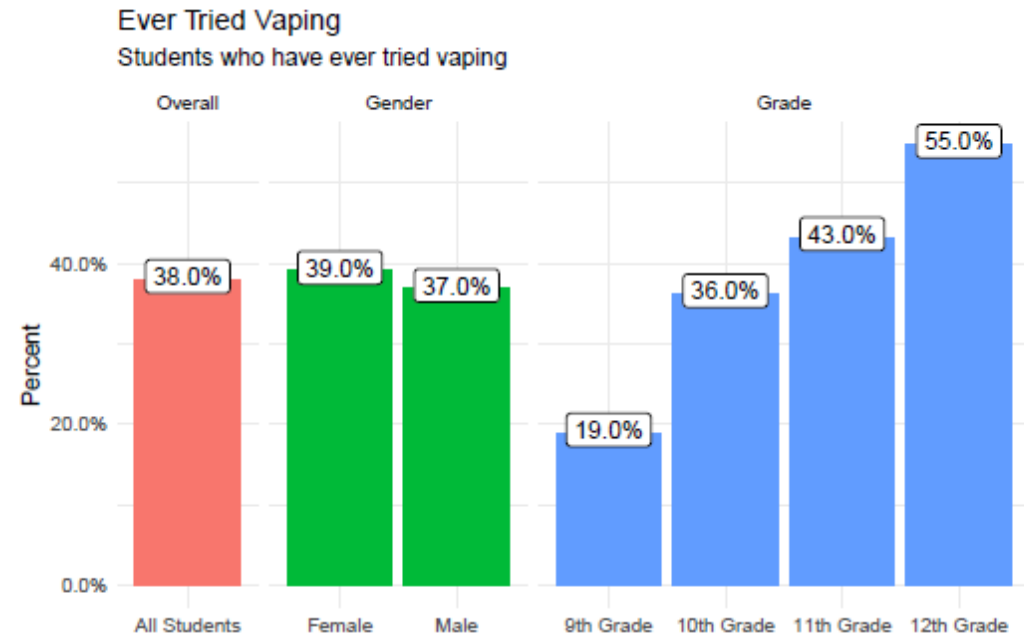
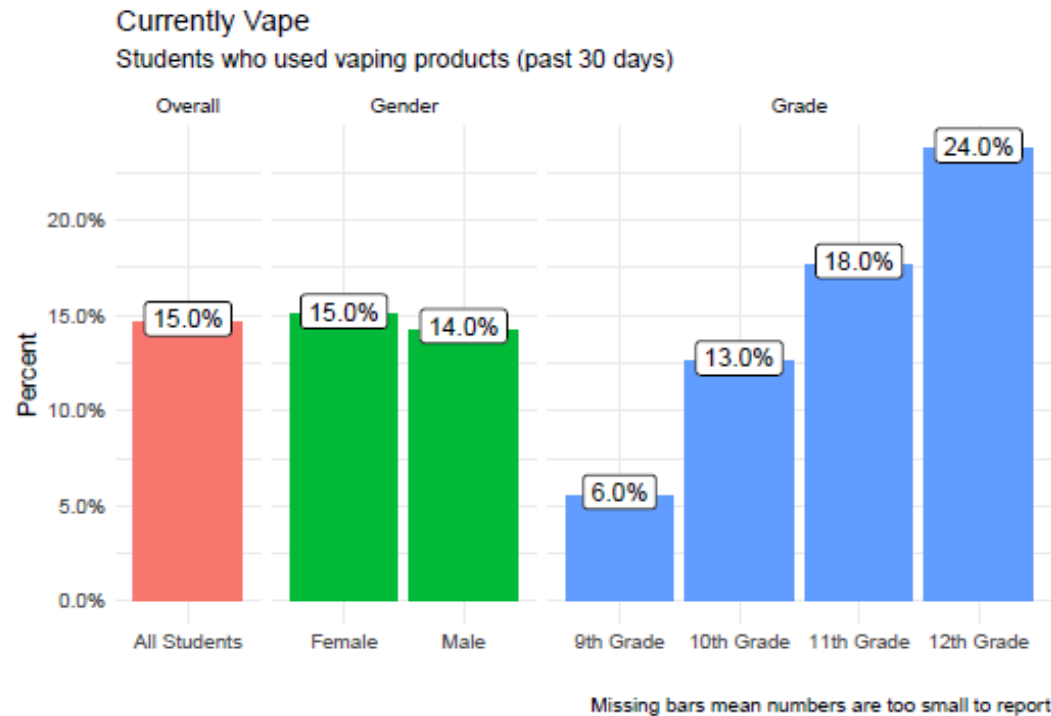
**Increase Among
High
School Students
2014-2018**

272%

**Increase
Among Middle
School
Students
2014-2018**

How does this affect me?

Elmbrook Schools 2019 Statistics

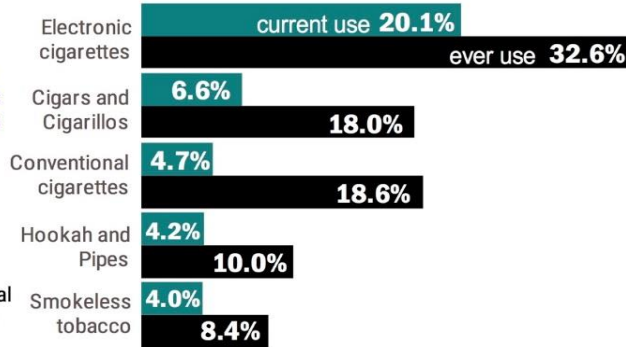
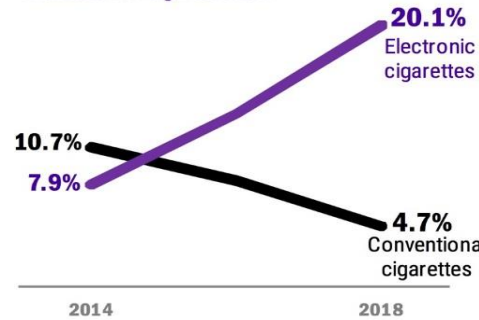


High School Snapshot

Youth Tobacco Survey 2018

As conventional cigarette use is declining, e-cigarette use is rising.

From 2014 to 2018, there was a **154% increase** in e-cigarette use.



1 in 5

Wisconsin high schoolers use e-cigarettes.

1 in 4

of those who have ever used e-cigarettes first tried an e-cigarette before age 16.



16%

of e-cigarette users also smoke conventional cigarettes.



89%

would not use unflavored tobacco products.



more than **half**

of current smokers usually smoke menthol-flavored cigarettes.



19% live in homes where others smoke.



24% rode in vehicles where others smoked in the last week.



76%
of high schoolers said it is easy to get tobacco products.

15%

of high schoolers have never seen a warning label on a cigarette pack.

88%

of high schoolers agree all tobacco products are dangerous.

40%

of high school tobacco users want to quit using all tobacco products.



2019 NATIONAL YOUTH TOBACCO SURVEY SHOWS YOUTH e-cigarette use at ALARMING LEVELS

OVER 5 Million
youth are currently using e-cigarettes



NEARLY 1 Million
used the product daily



ABOUT 1.6 MILLION
youth used the product frequently
(on 20 or more days per month)

MAJORITY of the current
e-cigarette users reported



Current e-cigarette use has **INCREASED DRAMATICALLY**, while current cigarette use has dropped, **UNDERMINING PROGRESS** toward reducing overall tobacco use



Why is this concerning?

The use of e-cigarettes, particularly those with high levels of nicotine, places youth at risk for developing nicotine addiction. Nicotine exposure during adolescence could harm brain development. Additionally, youth who use e-cigarettes are more likely to start smoking cigarettes. Further, e-cigarette aerosol may expose users to other harmful substances such as heavy metals, volatile organic compounds, and ultrafine particles that could harm the lungs.

CENTER FOR TOBACCO PRODUCTS

Source: 1) Cullen KA, Gentzke AS, Sawley MD, et al. E-cigarette Use Among Youth in the United States, 2019. JAMA. 2019; 321(25):2564-2572. 2) Gentzke AS, Creamer M, Cullen KA, et al. Vital Signs: Tobacco Product Use Among Middle and High School Students — United States, 2011–2018. MMWR Morbidity and Mortality Weekly Report. 2019; 68(10):265-272.

Note: All numbers presented here are estimates.

CTP-136

www.fda.gov/tobacco



@FDATobacco



facebook.com/fda



**Children's
Wisconsin**

No FDA-authorized or FDA-approved products

- There are NO FDA-approved E-Cigarette products (both device or E-Cigarette juice) on the market!
- E-cigarettes are NOT FDA approved smoking cessation devices



What are e-cigarettes?

- Vape pens
- Hookah
- Box mods
- Sourin Drop
- Dab pens



The JUUL

- Most popular e-cigarette
- 3 years post-release: 76% market share
- Teens refer to use as “juuling”
 - Easy to hide and discretely use
 - Looks like USB flash drive and can charge via USB port
 - Pods in appealing flavors
 - Higher nicotine delivery
 - Low cost
 - 1 pod = approx. 1 pack cigarettes





Vaping accessories

Change Your Style Anytime

Super easy to remove.
No sticky residue after.



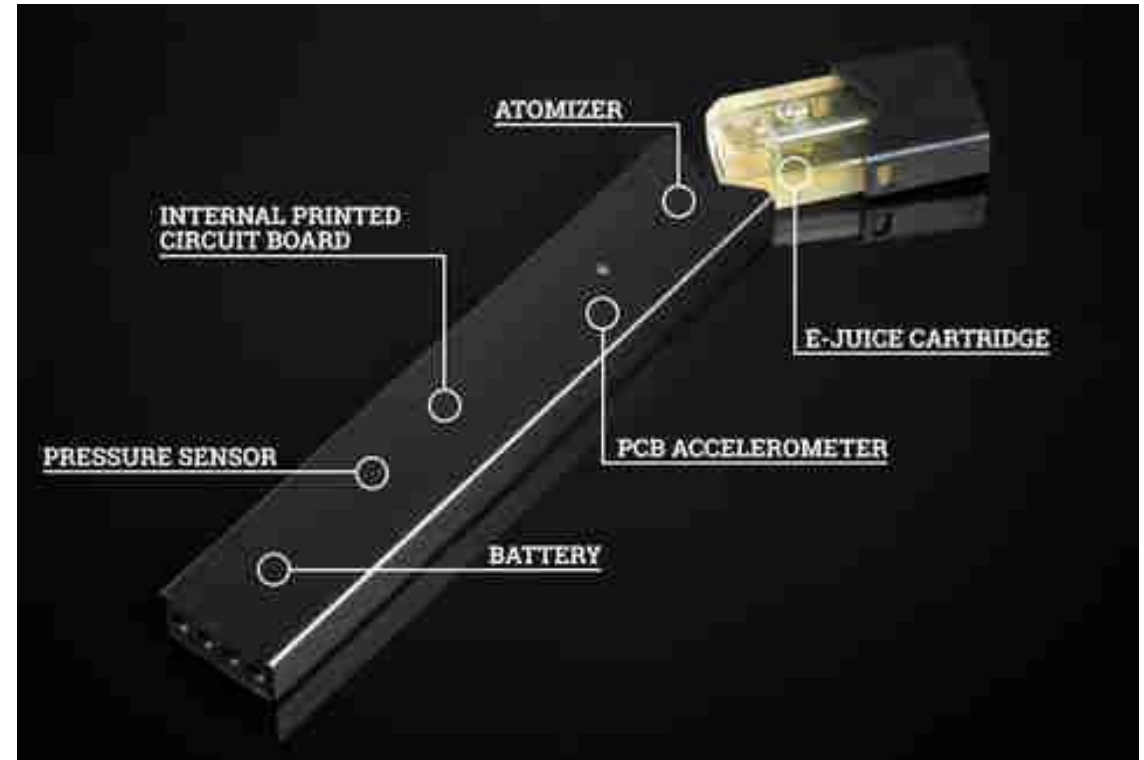
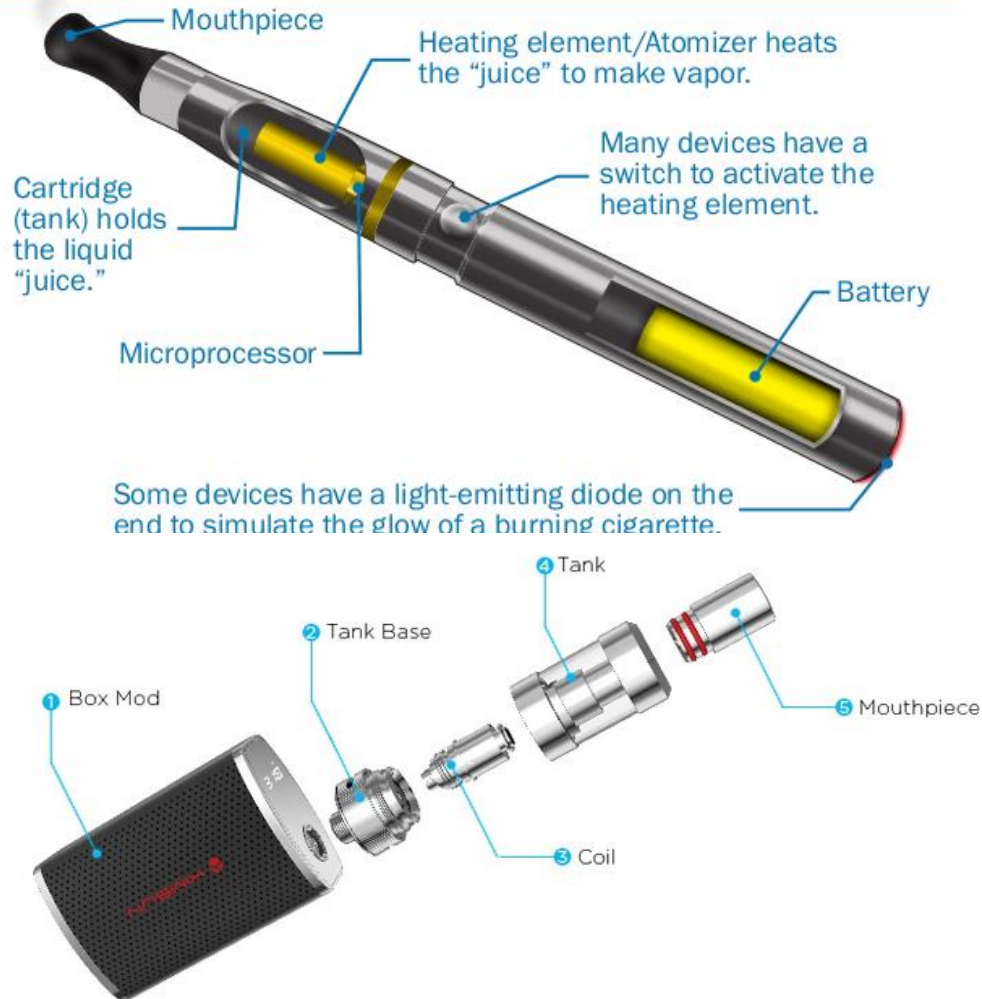
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 **Children's**
Wisconsin

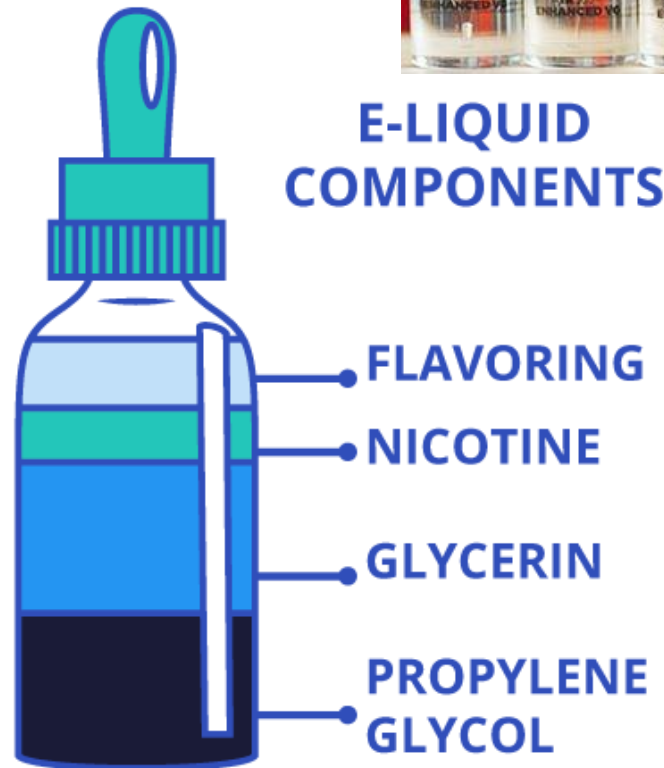
How do vape devices work?

Parts of an Electronic Cigarette



What is in the vape juices

- Propylene glycol
- Glycerin
- Flavorings
- Nicotine
- THC or CBD
- NOT WATER!





What is in the vape clouds?

The Aerosol: Its not just Water Vapor

- E-Cigarette Aerosol Vapor Contains:
 - **Propylene glycol, glycerol, flavorings, and nicotine**, which are found in the e-liquid, are also found in the e-vapor
 - **Propylene oxide**
 - **Volatile Organic Compounds:** Benzene and Toluene
 - **Carbonyl Compounds:** Formaldehyde, acetaldehyde, and acrolein
 - **Metals:** tin, silver, iron, nickel aluminum, sodium, chromium, copper, magnesium, manganese, lead, potassium and silicate nanoparticles
 - **Tobacco specific nitrosamines (TSNAs)** carcinogenic compounds found in tobacco and tobacco smoke.
 - (Schripp et al, 2012; Westenberger 2009; Goniewicz et al, 2013; Williams et al, 2013; Henderson, 1981)



VAPING. Don't Get Taken In.

Ads claim e-cigarettes emit only harmless water vapor. **NOT true!**

PROPYLENE GLYCOL

Commonly used in theatrical fog. It is considered safe when ingested, but little is known about long-term health effects when inhaled.

LEAD

Used in car batteries. It is highly toxic and has been banned from paint products. Lead poisoning stunts growth, causes nausea and vomiting and damages the brain.

ACETALDEHYDE

Carcinogen found in cigarette smoke. It irritates the skin, eyes, mucous membranes, throat, and respiratory tract.

FORMALDEHYDE

Embalmers use it to preserve dead bodies. It causes cancer and can damage your lungs, skin and digestive system.

TOLUENE

Commonly used ingredient in paint thinner. It is highly toxic. Exposure to even low levels can cause headache, nausea and wheezing.

CADMIUM

Commonly used in batteries. It causes damage to the liver, kidneys and brain and stays in the body for years.

ACETONE

Commonly used in nail polish remover. It can irritate the eyes and may depress the central nervous system.

ACROLEIN

Used as an herbicide to control weeds and algae. It is a toxic irritant for skin, eyes and nasal passages.

NICKEL

Commonly used in stainless steel, magnets and batteries. It causes cancer and can damage your lungs and immune system.

LIQUID NICOTINE

The most dangerous part of an e-cigarette might be the liquid nicotine.

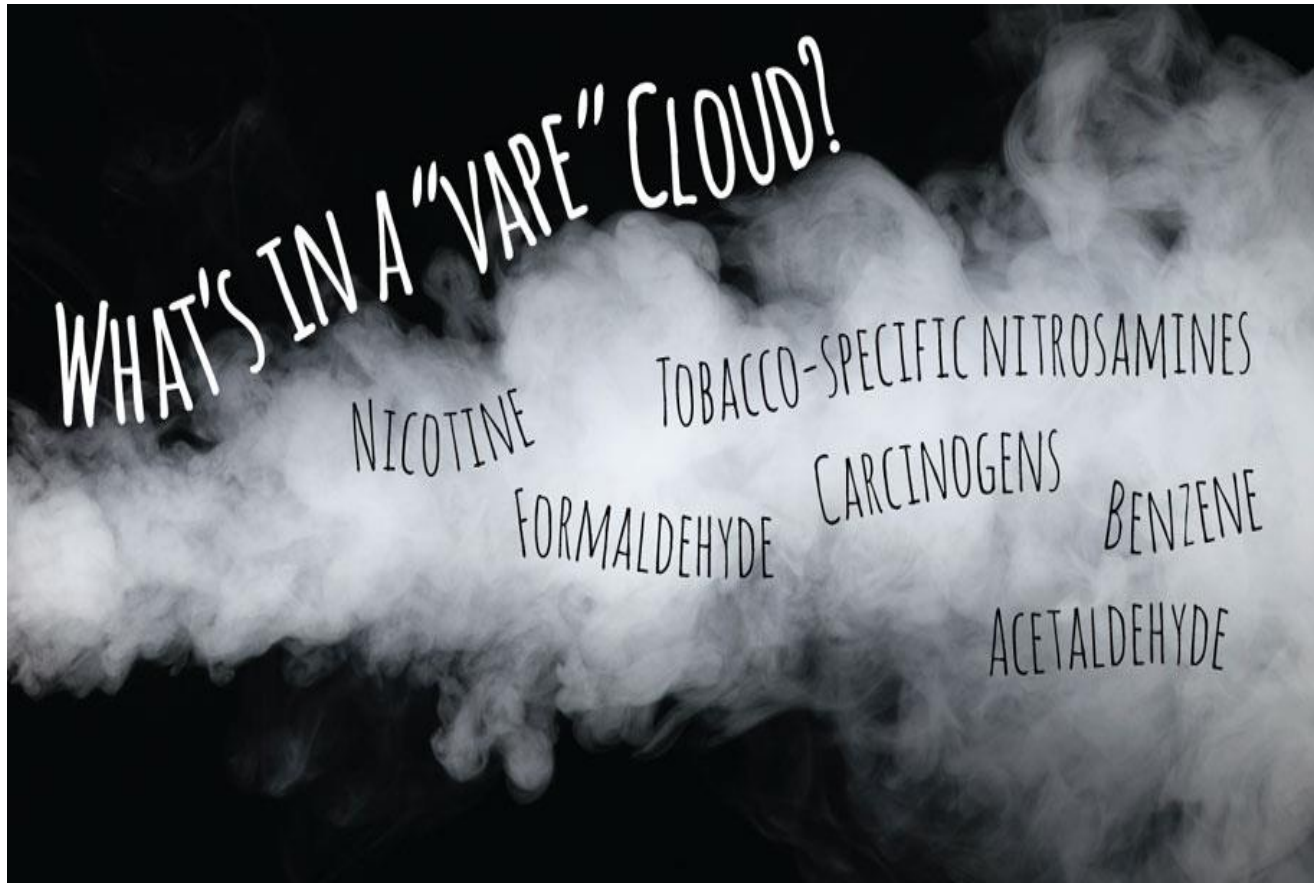
It is highly addictive and toxic. Even small amounts of liquid nicotine absorbed through the skin or swallowed can cause vomiting and seizures, and could be fatal for a child.

The refill containers aren't childproof. AND "e-juice" comes in candy flavors and bright colors that kids are going to love.

The products shown contain chemicals found in e-cigarettes. The products themselves are not added to e-cigarettes and are used for illustrative purposes only.



What about secondhand vapor?



What attracts teens to use e-cigarettes?

- Fruit and candy flavors
- Easy to access
 - Convenience store placement in store
 - Online purchase: often no true age verification
- Easy to conceal
 - Smoke anywhere
 - No residual odor
- Friends and family use and provide
- Gives kids an adrenaline rush
- Decreases anxiety
- Believe safer than cigarettes
- Believe products are nicotine-free
- Influence of social media

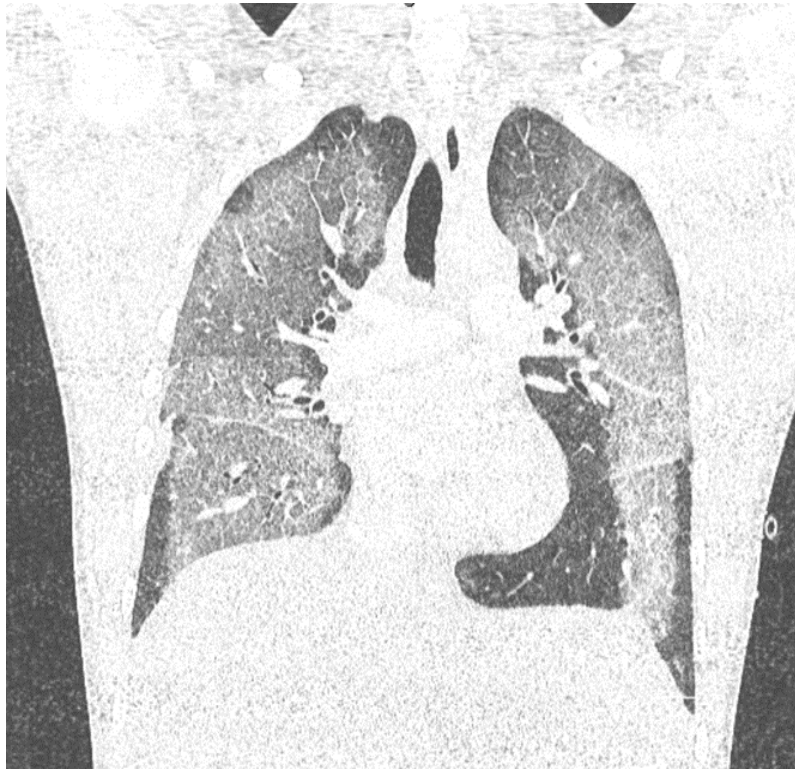


Outbreak of vaping-related lung injury & illness (EVALI)

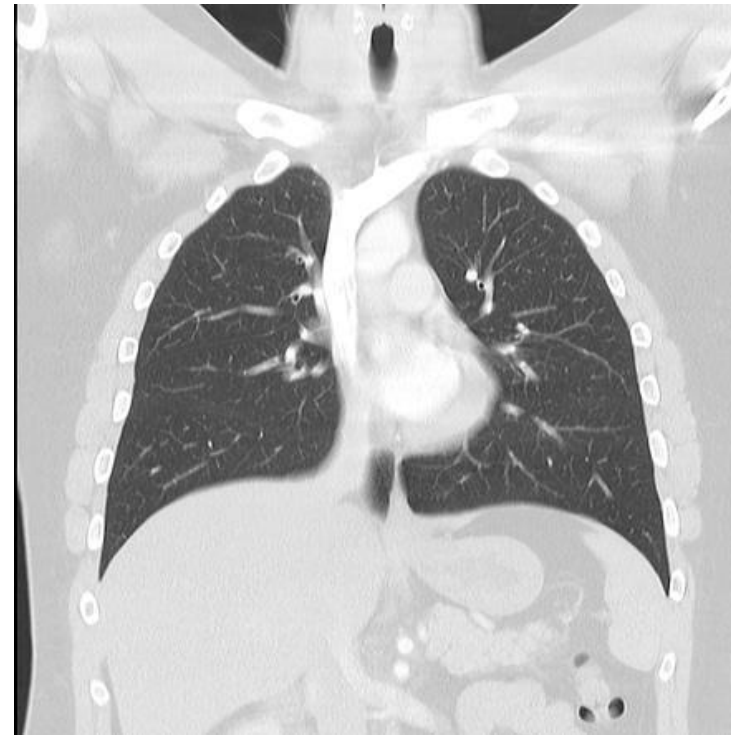
- In July, Children's reported that 8 initial patients had been hospitalized over a 4-week period.
 - Initial symptoms:
 - Fevers, night sweats, fatigue
 - Abdominal pain, nausea, vomiting, diarrhea, weight loss
 - Shortness of breath, cough, chest pain, exercise intolerance, low oxygen levels
 - Lack of infection
 - Reported e-cigarette use
 - Hospitalizations & ventilator support
 - Ongoing symptoms & follow-up care
- Collaborated with Wisconsin Department of Health Services and local health departments to alert clinicians and encourage public health reporting
- Media & increased awareness spread across the country and led to nationwide response
- Children's continues to see patients in the hospital (approximately 20 patients thus far) and continues to see many patients in the clinic setting

Vaping inhalation injury

Inhalation injury

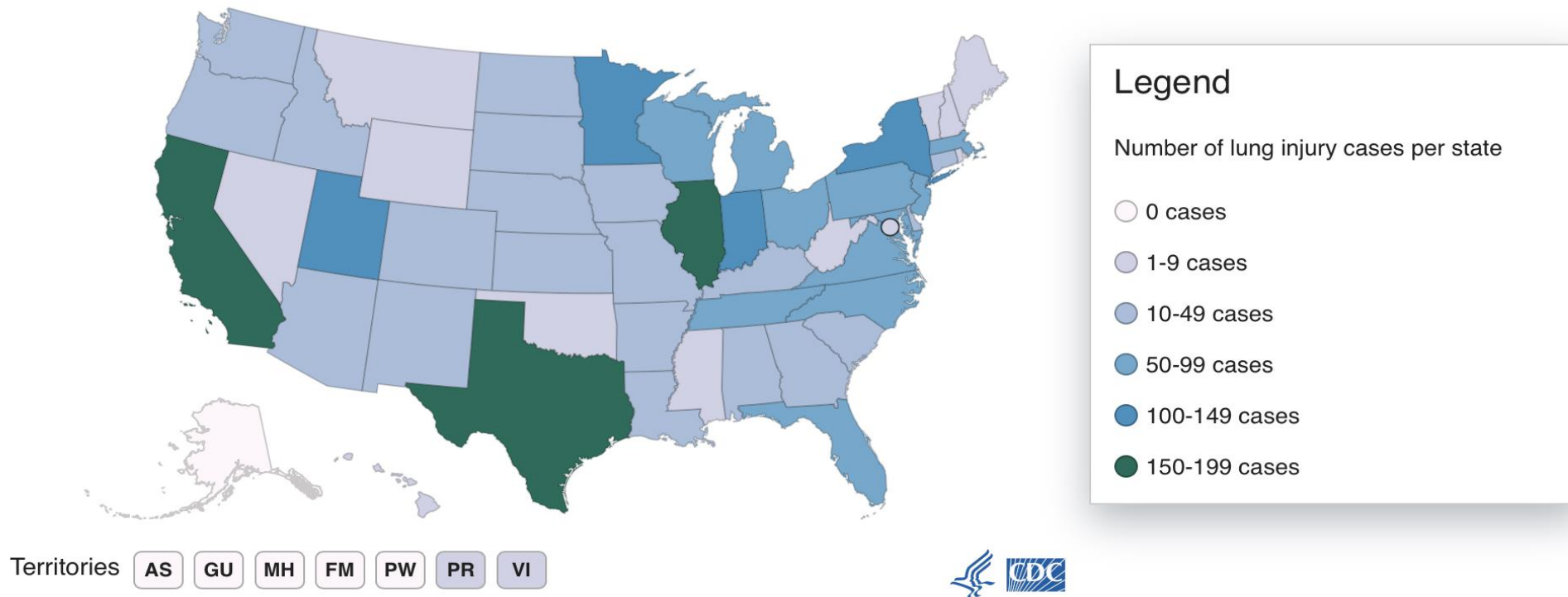


Normal lungs



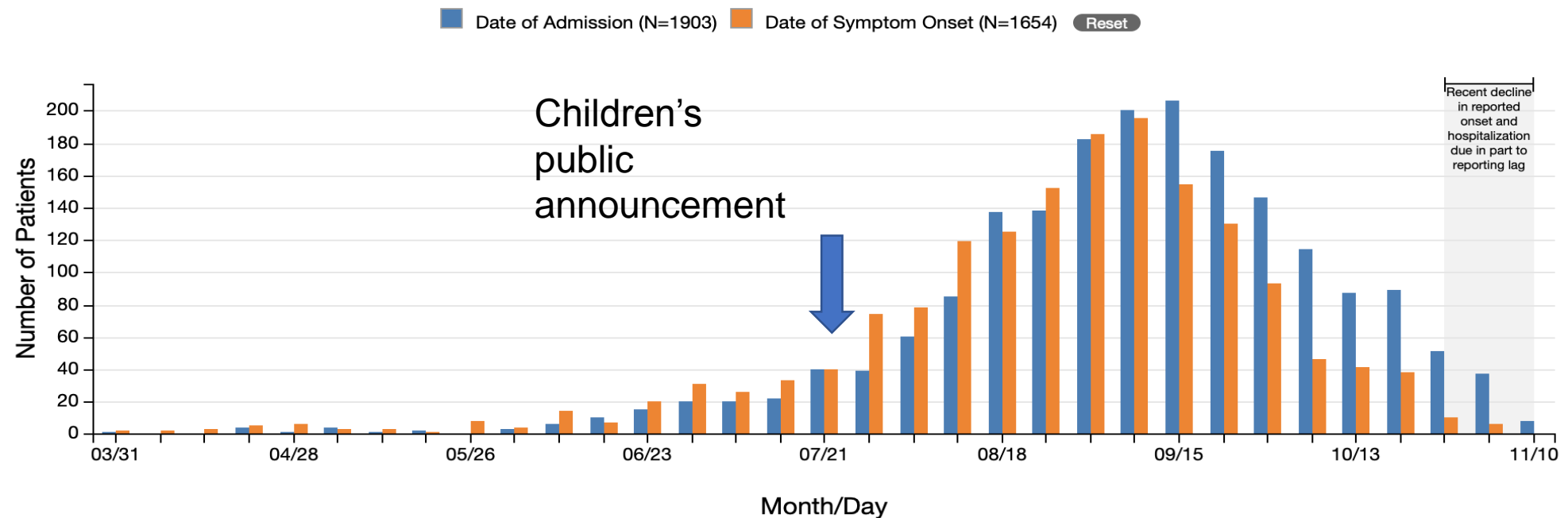
U.S. lung injury cases reported to CDC

Number of Lung Injury Cases Reported to CDC as of November 19, 2019



U.S. lung injury cases reported to CDC

Dates of symptom onset and hospital admission for patients with lung injury associated with e-cigarette use, or vaping — United States, March 31–November 16, 2019



CDC November 20, 2019 Update

- **2,290 lung injury cases** associated with the use of e-cigarette, or vaping, products have been reported to CDC from 49 states (all except Alaska), the District of Columbia, and 1 U.S. territory
- **47 deaths** have been confirmed in 25 states
- Overall:
 - 68% of patients are male
 - Median age is 24 (ranges from 13 to 75 years old)
 - **15% of patients are under age 18**; 80% are under age 35
- All patients have reported vaping or e-cigarette or use
 - About 83% report using THC-containing products (34% exclusive THC)
 - About 61% report using nicotine-containing products (13% exclusive nicotine)
- The CDC has identified Vitamin E acetate as a chemical of concern

Health effects of nicotine

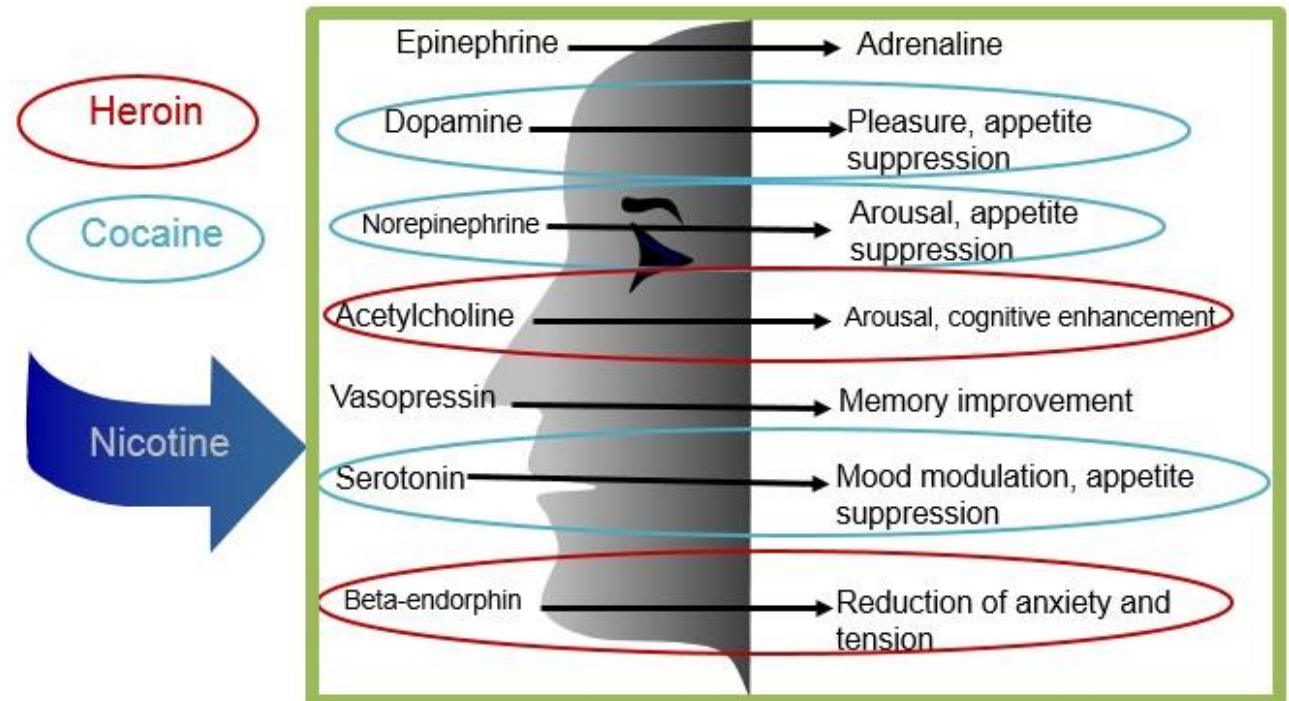
- One of the most addictive substances known
- Rapid absorption
- Teen brain more susceptible and responsive to nicotine

Nicotine

reaches the brain

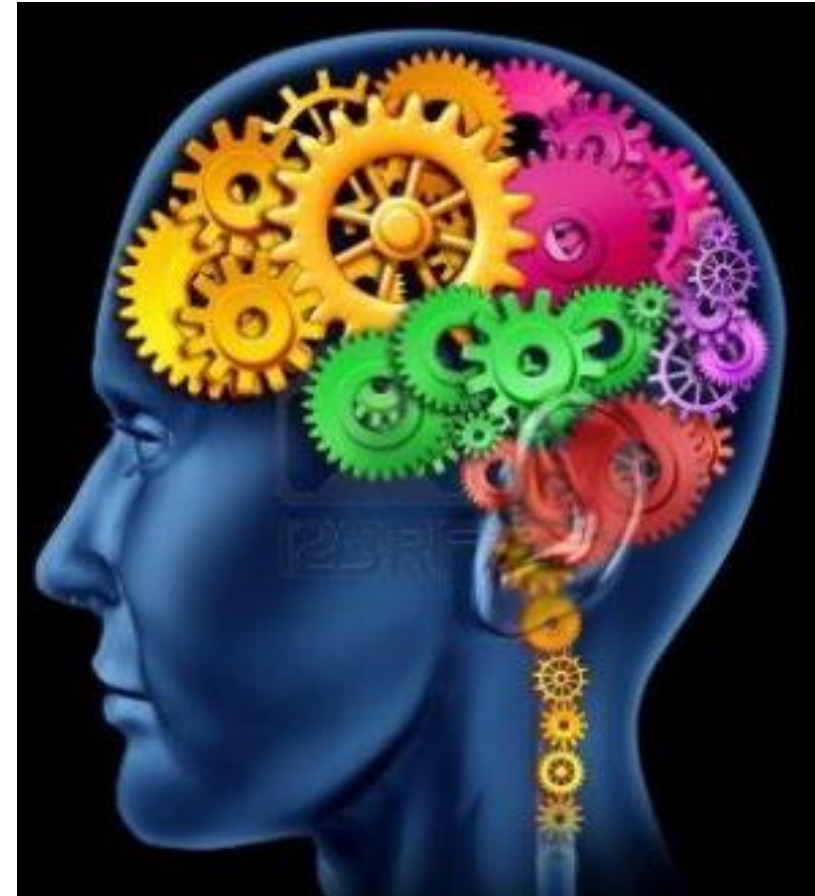
10-20 seconds

after smoke is inhaled.

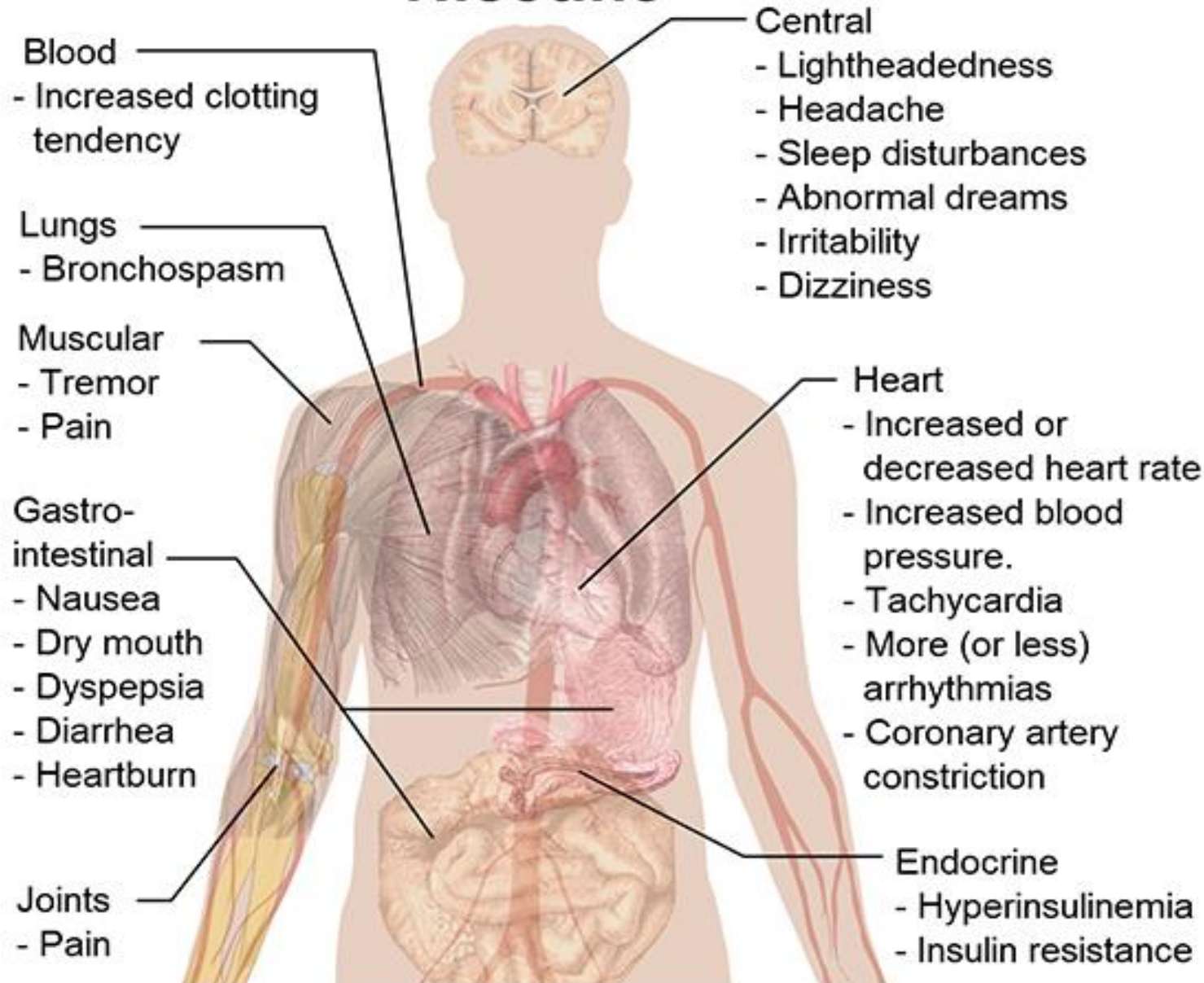


Nicotine impact on developing teen brain

- Teen brain more susceptible and responsive to nicotine
- Primed system increases risk of nicotine addiction and other drug addictions
- Nicotine disrupts attention, learning and memory brain circuits
- Nicotine is associated with long lasting behavioral impairments (anxiety, depression)



Side effects of **Nicotine**



When should I worry? Symptoms of nicotine withdrawal

- Headaches
- Anxiety, irritability
- Difficulty Concentrating
- Restlessness
- Hunger
- Tremor
- Sweating
- Dizziness



Vaping marijuana: what should you know

- **Vape Pens for Dry Herbs**

- Dried and ground marijuana are put into the specialized chamber of a vape pen that turns the herbs into the vapor. It is very small, easy to conceal, and can easily fit into a pocket.

- **Vape pens for Waxes/Dabs**

- Dabs are concentrated doses of marijuana that are made by extracting THC using a solvent like butane or carbon dioxide, resulting in sticky oils also commonly referred to as wax, shatter, budder and butane hash oil (BHO). Regular marijuana contains about 20% THC; dabs can contain up to 90% pure THC.

- **Vape Cartridges**

- Vape cartridges (often called carts) are small attachments to a marijuana e-cigarette or vape pen. These cartridges are pre-filled with marijuana concentrates. Most vape carts contain high amounts of THC (the mood-altering ingredient). They can be sold in states where marijuana is legal and brought into other states illegally.



Risks of vaping marijuana



Other adverse effects of vaping

1. Consider using vapes with safety features

such as firing button locks, vent holes, and protection against overcharging.



2. Keep your vape covered.

Don't let it come into contact with coins or loose batteries in your pocket.

3. Never charge your vape with a phone or tablet charger.

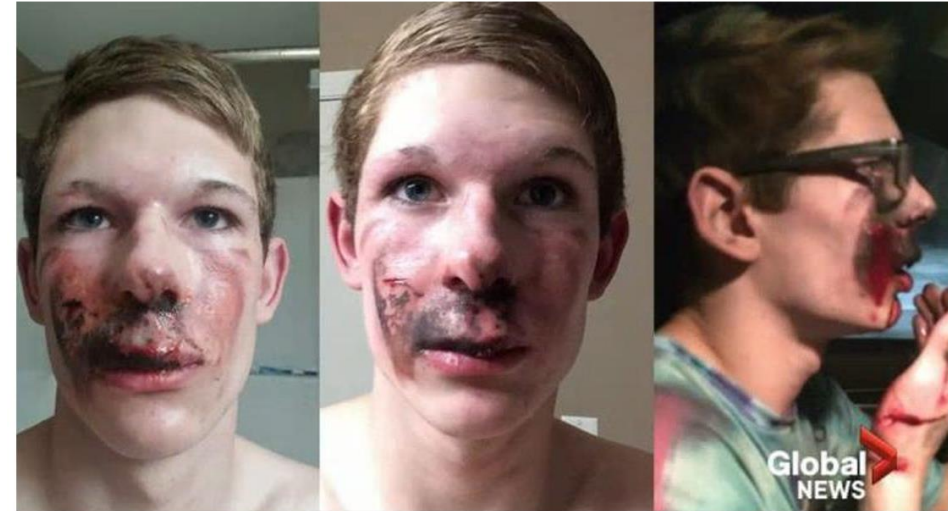
Always use the charger that came with it.

4. Don't charge your vape overnight

or leave it charging unattended.

5. Replace the batteries if they get damaged or wet.

If your vape gets damaged and the batteries are not replaceable, contact the manufacturer.



Poisonings in young children



E-CIGARETTE POISONING

E-cigarettes contain a liquid nicotine solution that can be poisonous. These products come in bright colors and appealing flavors and scents, making them particularly attractive to young children.

Lethality¹

Nicotine is an **acute toxin**



Liquid nicotine can be harmful if **swallowed** or **absorbed through the skin**

Symptoms include:

Nausea
Vomiting
Increased heart rate
Increased blood pressure
Seizures
Death



Just a few drops of liquid nicotine could result in a **trip to the ER**



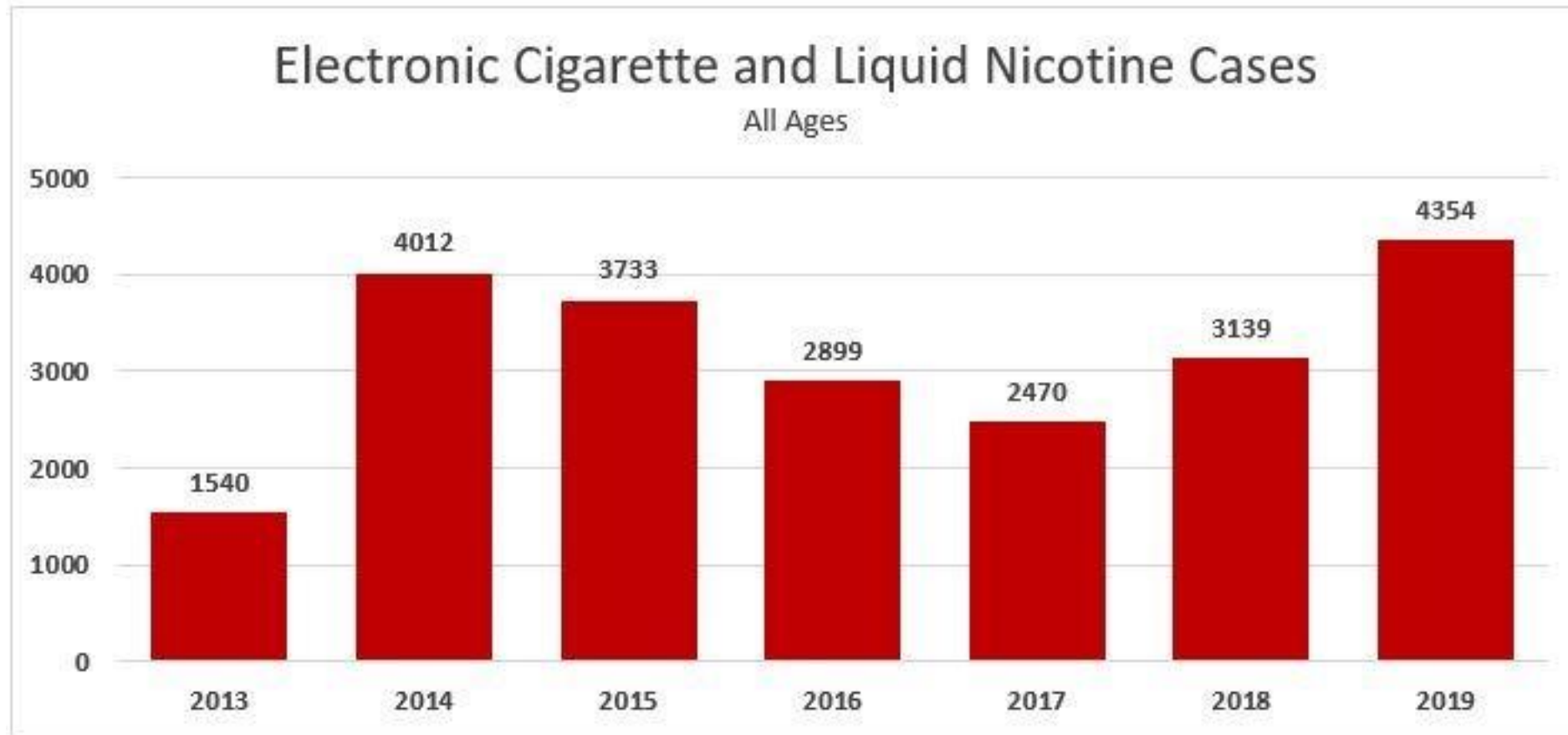
Lethality depends on the **weight** of the child and the **concentration** of the liquid nicotine



Ingesting less than **1/4 of a teaspoon** of 1.8% concentrated liquid nicotine can be fatal to a 50 pound child



Poison Control Statistics



How can I help my teen?

- **Start early. Talk with your child about e-cigarettes.**
 - Know the facts
 - Avoid criticism and encourage open dialogue
 - Have a conversation, try not to deliver a lecture
 - Conversation may occur piecemeal, in bits and pieces
 - Set an example by being tobacco-free – or work with your own tobacco cessation while your child also works on quitting
 - Find the right moment to have the conversation
 - Your child may need to talk to other trusted adults



How can I help my child? Resources for quitting

- Wisconsin Quit Line
 - 24/7 phone call or via web
 - Free coach and medications
 - <http://www.wiquitline.org/>
- Teen.smokefree.gov
 - Information for teens who use tobacco products, including tips on how to quit
- Yourchoice-live.org
 - Provide awareness, prevention education, resources and support to youth, parents, schools and communities in regard to alcohol and drug use
 - Joined forces with Rosecrance, a provider of comprehensive treatment, counseling and recovery for addiction



How can I help my child? Resources for quitting

- Truth Initiative/This is Quitting
 - Established Tobacco settlement
 - Information on cessation
 - Free ap: BecomeANEX
 - Tailored based on age (13-24 years old)
 - Free text messaging. Text QUIT” to (202) 804-9884. free text message program.
 - <https://truthinitiative.org/>
- American Lung Association
 - Quitting Information
 - <https://www.lung.org>



FDA response to the vaping epidemic

- In May 2016, the Deeming Rule went into effect, extending the FDA's authority over all tobacco products to include e-cigarettes
- Established a minimum age of 18 for sales
- Required age verification
- Required ingredient reporting
- Subjected products on the market and new products to FDA review
- Restricted vending machine sales
- Required health warnings



More response to the vaping epidemic

- **September 2018:** the FDA commissioner declared youth e-cigarette use an epidemic
- **December 2018** the US Surgeon General issues a health advisory on the negative effects of e-cigarettes on children, and declared youth e-cigarette use an “Epidemic”
- **January 2019** the WI Department of Health issued a public health advisory indicating 1 in 5 Wisconsin high school students are using e-cigarettes.
- **May 2019** the American Heart Association issued a Presidential Advisory, addressing the urgent need for FDA regulation e-cigarettes, as well as research of long term effects on health

Milestones of FDA's Comprehensive Plan for Tobacco and Nicotine Regulation

SEPTEMBER 2018

- Launching full scale e-cigarette messaging effort under “The Real Cost” campaign brand

MAY 2018

- Sent warning letters to companies misleading kids with e-liquids that resemble children’s food products
- Requested critical product information from companies about the youth-appeal of their e-cigarettes

APRIL 2018

- Unveiled Youth Tobacco Prevention Plan
- Sent warning letters to retailers who illegally sold JUUL to underage youth
- Requested critical information from JUUL Labs on marketing and research related to youth initiation and use
- Provided update on provisional substantial equivalence review process

MARCH 2018

- Published three advance notices of proposed rulemaking for public comment:
 - Tobacco Product Standard for Nicotine Level of Combusted Cigarettes
 - Regulation of Flavors in Tobacco Products
 - Regulation of Premium Cigars

DECEMBER 2017

- Launched “Every Try Counts” public education campaign to encourage adult smokers trying to quit cigarettes

NOVEMBER 2017

- Launched “This Is Our Watch” program to educate retailers

SEPTEMBER 2017

- Expanded “The Real Cost” campaign to include messaging on e-cigarettes

JULY 2017

- Announced FDA’s Comprehensive Plan for Tobacco and Nicotine Regulation



Tobacco 21 bill in Wisconsin



How can you advocate?

- American Heart Association: Tobacco 21, Remove Flavored E-Cigarettes from the market
- American Lung Association: Clean Indoor Air bill, Tobacco 21
- Children's Wisconsin Advocacy: Tobacco 21

Contributions

- Dr Louella Amos, Pediatric Pulmonologist, Children's Wisconsin
- Dr Charlene Gaebler-Uhing, Teen Clinic, Children's Wisconsin
- Children's Advocacy Network
- American Lung Association Wisconsin and the Tobacco Free Coalition

Questions?

