

E-cigarette Use & Treatment

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Overview

- Introduction to e-cigarettes
- Health concerns
- Argument for harm reduction
- Use among adolescents & young adults
- Regulation
- Assessment & intervention
- Resources

Introduction to E-cigarettes

What Are E-cigarettes?

- Battery-operated devices that heat a liquid solution into an aerosol
- Different names: "e-cigs," "mods," "vape pens," "vapes," "tank systems," and "electronic nicotine delivery systems" (ENDS)
- Different styles: shaped like cigarettes, cigars, pipes, pens, USB sticks, and other items





Evolution of the e-cigarette

Generic combustible tobacco cigarette

First generation e-cigarette

Second generation e-cigarette

Third generation e-cigarette

Shown to demonstrate approximate scale

Source: National Academies of Sciences, Engineering and Medicine, Public Health Consequences of E-Cigarettes

1st generation – disposable, closely resemble combustible tobacco cigarettes

2nd generation – larger, rechargeable, pen-shaped devices with transparent cartridges

3rd generation – refillable, have customizable and rebuildable atomizers and batteries

- Today's e-cigarettes have a sleek, high-tech design and easily rechargeable batteries

Current generation of e-cigarettes



JUUL




Suorin Drop

myblu™

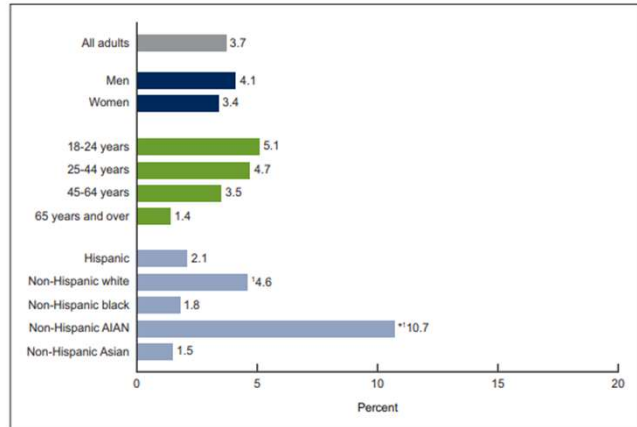
How Do E-cigarettes Work?

- Most e-cigarettes consist of 4 different components:
 - Cartridge or 'tank', which holds a liquid solution (*e-liquid*) containing varying amounts of nicotine, flavorings, and other chemicals
 - Heating element (atomizer)
 - Power source
 - Mouthpiece used to inhale
- Puffing activates the battery-powered heating device, which vaporizes the liquid in the cartridge. The person then inhales ("vapes") the resulting aerosol or vapor



Demographics of E-cigarette Use

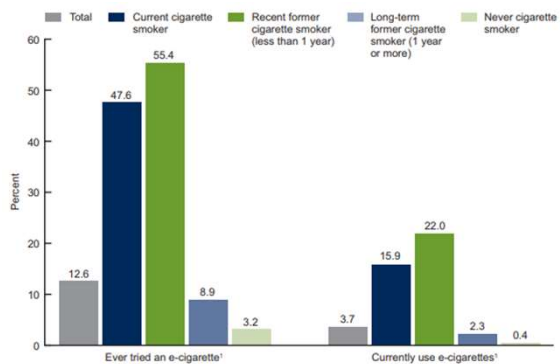
- Current use of e-cigarettes was about the same for men and women
- Use was higher among non-Hispanic AIAN adults (10.7%) and non-Hispanic white adults (4.6%)



Percentage of adults who currently use e-cigarettes, by sex, age, and race and Hispanic, or Latino origin, United States 2014 (CDC, 2015)

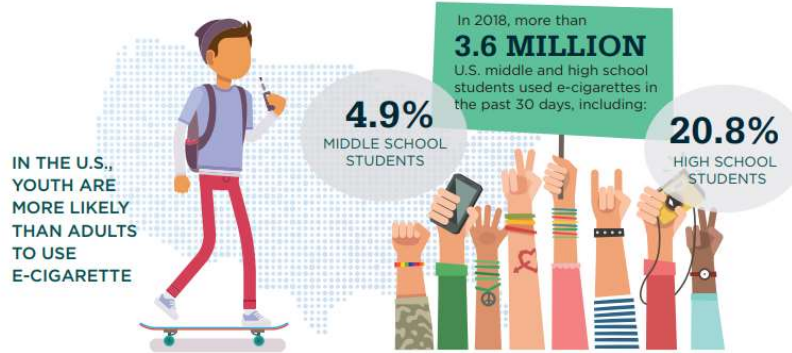
Demographics of E-cigarette Use

- Adults who currently smoke and those who recently quit were more likely to use e-cigarettes
- Speaks to the advertisement of e-cigarettes as a smoking cessation tool or a more socially acceptable way to obtain nicotine



Percentage of adults who had ever tried and percentage who currently use e-cigarettes, by cigarette smoking status (CDC, 2015)

Demographics of E-cigarette Use



CDC, 2018

Marketing



Health Concerns

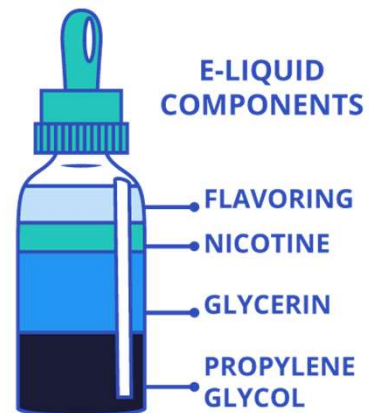
Components of E-Liquid or E-Juice

Propylene Glycol: primary ingredient and contributes to "throat hit", dry mouth, and upper respiratory infections

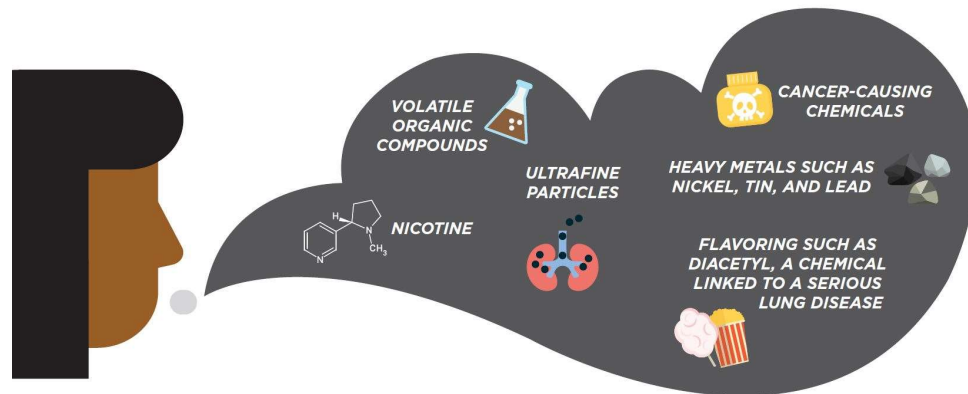
Vegetable Glycerine: food additive that produces smoke-like vapor when exhaled

Vape Flavoring: many flavorings contain chemicals that are known to be respiratory irritants, with some flavors being more toxic than others

Nicotine: nicotine content on e-liquid bottles is typically listed in one of two formats: percentage, and by volume

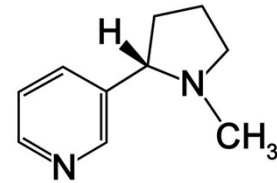


Components of Aerosol



Nicotine Content and Delivery

- 99% of products sold in brick-and-mortar stores contain nicotine
- Puff duration, interpuff interval, device features, and liquid nicotine concentration can influence nicotine yield
 - Encourages self-titration
- Concentrations of nicotine in e-cigarettes are more variable than those found in conventional cigarettes



Dual Use

IN 2015, AMONG ADULT E-CIGARETTE USERS OVERALL:

29.8%

were former regular cigarette smokers

11.4%

had never been regular cigarette smokers



58.8%

were current regular cigarette smokers

- Most people who use e-cigarettes also smoke cigarettes
 - Supplementing combustible tobacco
- Increased cardiovascular health risks

Lung Injury

CDC and FDA are currently investigating “outbreak of lung injury associated with use of e-cigarette or vaping products”

As of January 14, 2020:

- 2,668 lung injury cases identified
- 60 confirmed deaths

Most patients used THC-containing products

- Vitamin E acetate
- Cannot rule out the contribution of other chemicals of concern

Cases of vaping-related pneumonia at UNC

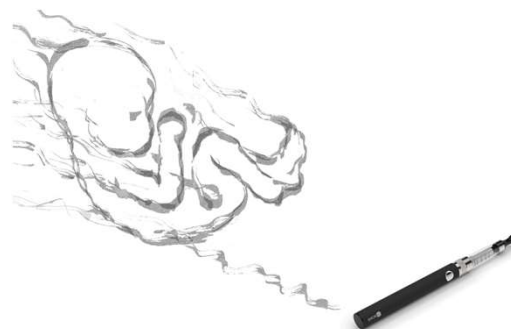


Battery Explosions



E-cigarettes & Fetal Development

- Intrauterine growth restriction
- Low birth weight
- Poor fetal lung development
- Increased risk of SIDS
- Effects on CNS



E-liquid Poisonings

- Ingestion of liquid nicotine can cause acute toxicity and possible death
- 2014: 1 year old child dies after ingesting liquid nicotine
- 2015: federal government requires liquid nicotine to be sold in childproof packaging
- Poisoning symptoms:
 - Vomiting
 - Fast heartbeat
 - Jittery and unsteady appearance
 - Difficulty breathing
 - Increased saliva



The Other Side of the Argument

E-cigarettes and Smoking Cessation

- Similar effect on quit rates as nicotine replacement therapy
- Nicotine vs. non-nicotine e-cigarettes
- 2019 study
 - E-cigarettes more effective for smoking cessation than NRT, when both products were accompanied by behavioral support
 - Throat or mouth irritation reported more frequently in e-cigarette group
 - Greater declines in cough and phlegm production in e-cigarette group
 - Nausea reported more frequently in NRT group

Our Take

- While some studies suggest that e-cigarettes may lead to a decline in the use of more dangerous forms of nicotine delivery, there is not enough data to support this
- Has expanded the number of youth exposed to nicotine, which may lead to future use of conventional cigarettes
- Given increasing number of e-cigarette related lung injuries and deaths, we cannot safely recommend these products as harm-reduction tools
- Limited evidence exists on actual long-term health risks

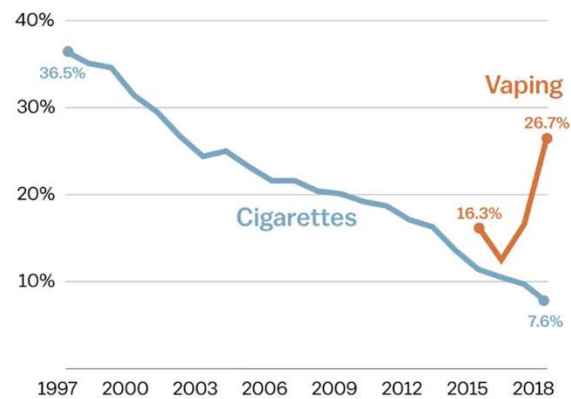


Adolescents & Young Adults

Trends in the U.S.

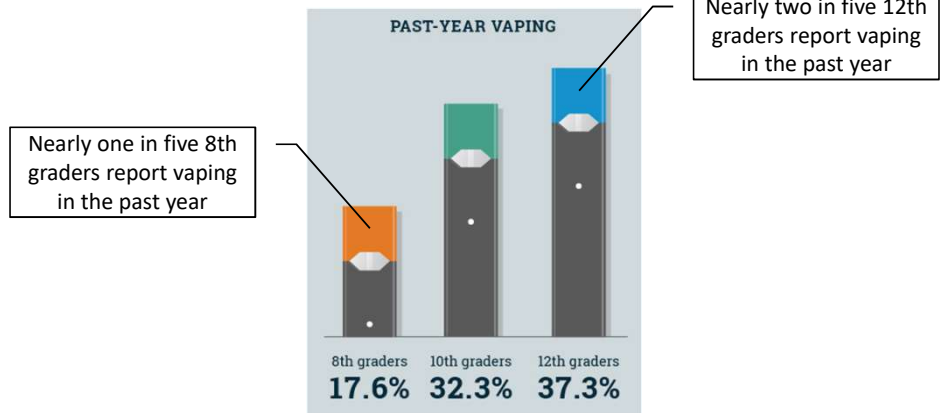
- E-cigarettes are the most commonly used tobacco product among middle- and high-school students

Current Use of Cigarettes and E-cigarettes Among 12th Graders



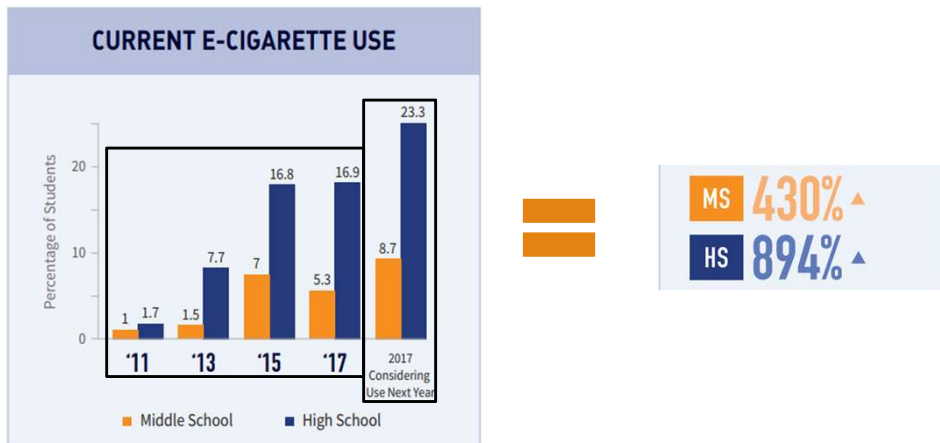
National Adolescent Drug Trends in 2018, *New England Journal of Medicine*

Use by Age in the U.S.



Monitoring the Future 2018, National Institute on Drug Abuse

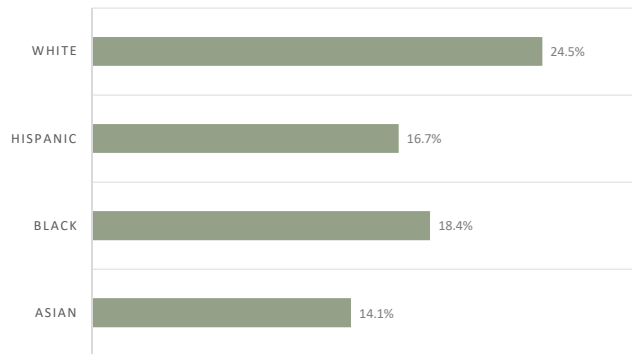
Trend in North Carolina



NC Youth Tobacco Survey, 2017

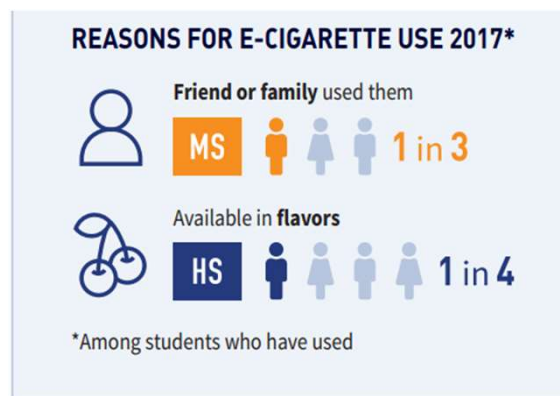
Use by Race in North Carolina

CURRENT USE OF E-CIGARETTES BY RACE



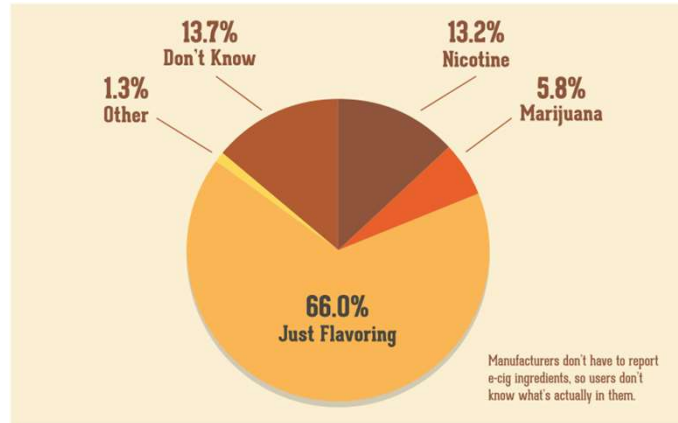
Youth Risk Behavior Surveillance, 2017

Reasons for Use in North Carolina



NC Youth Tobacco Survey, 2017

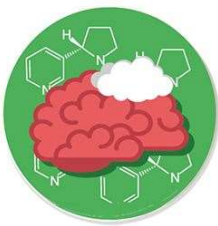
Misperceptions about Contents



Monitoring the Future 2015, National Institute on Drug Abuse

Youth Nicotine Exposure

- Young people are especially at risk of harm caused by nicotine exposure
- Can disrupt brain circuits that control attention, learning, and impulse control
- Increases risk of mood disorders, such as anxiety and depression
- Increases risk of addiction to other substances by impacting development of brain's reward system
- Young people are more likely to become addicted to nicotine and have more difficulty quitting



Youth Nicotine Initiation

- 40% of young people, aged 18-24, who currently use e-cigarettes have *never* smoked cigarettes regularly
- In NC, almost 14% of high school students who have tried e-cigarettes have *never* smoked a cigarette
- Youth who use e-cigarettes are 4X more likely to begin smoking conventional cigarettes than peers who do not use e-cigarettes
- 63% of youth who used e-cigarettes in the past month also report using another tobacco product



Regulation

Current Policies

- 2016: FDA finalized a rule to extend its regulatory authority to all tobacco products, including e-cigarettes
- December 2019: Federal minimum age of sale raised from 18 to 21
- February 1, 2020: Prohibition on production, distribution and sale of all flavored cartridge-based e-cigarettes, with the exception of menthol and tobacco flavors

Assessment & Intervention

5 A's of Tobacco Use Treatment

- ✓ Ask
 - Identify & document for every patient at every visit
- ✓ Advise
 - Urge every tobacco user to quit in a clear, strong, and personalized manner
- ✓ Assess
 - Is the tobacco user willing to make a quit attempt at this time?
- ✓ Assist
 - For patients willing to make a quit attempt, use counseling and medications to help patient quit
- ✓ Arrange
 - Schedule follow-up contact OR refer to an appropriate resource

Ask

Be straightforward and non-judgmental

- “Have you ever used e-cigarettes, vaped, or JUULed?”

If YES

- “Do you use e-cigarettes/vape/JUUL every day, some days, or not at all?”

If NOT AT ALL

- “When did you last use e-cigarettes/vape/JUUL?” (date or number of years)



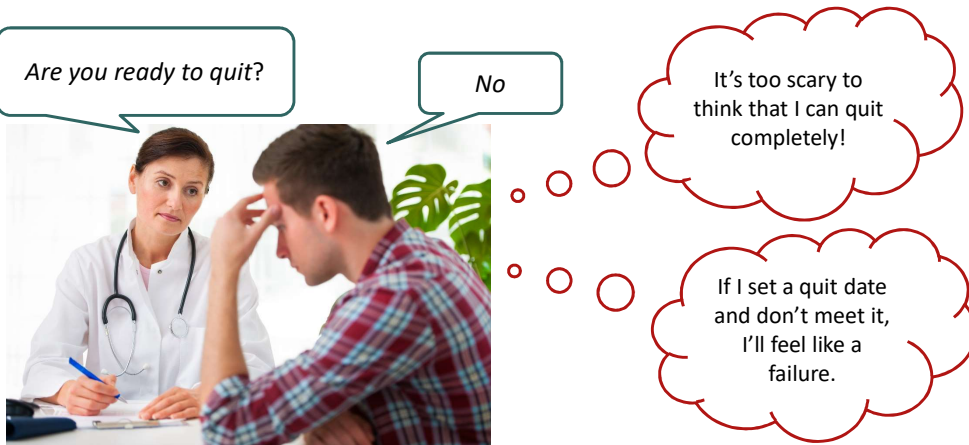
Advise

- Help patients understand the risks of e-cigarette use
- If trying to quit smoking combustible tobacco products, advise patients of safe & effective alternatives to e-cigarette use

HOW TO ADVISE:

Quitting vaping is important for your health. I understand that quitting can be difficult, and I am here to support you. We have effective resources such as medications and the Quitline to help you succeed. I'd like to hear your thoughts about quitting or cutting back on vaping.

Assess



Assess

What are your thoughts about stopping or cutting down?

What do you not like about vaping?

What do you enjoy about vaping?

What would be different in your life if you no longer vaped?

Assist: Counseling

- Challenges
 - Most people see vaping as a low-risk habit, which decreases interest and motivation to quit
 - There are no evidence-based behavioral interventions at this time
- Strategies
 - Counsel about the risks of e-cigarette use
 - Identify triggers for use and link with skills
 - Refer to trained specialists



Assist: Pharmacotherapy



- Challenges
 - Appropriate dosing is difficult
 - For adolescents, medications have been less studied and show limited efficacy
- Strategies
 - Recommend nicotine replacement therapy
 - Experiment with correct dosing for nicotine replacement therapy

Arrange



NC Quitline

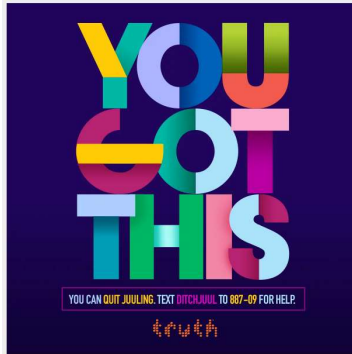
Offers free phone counseling and sometimes free medications



Smokefree.gov

Free online and text programs

Arrange



This is Quitting

Text-to-quit program



UNC Tobacco Treatment Program

www.ttp.unc.edu

984-974-4976

Resources

General Resources

- CDC – Electronic Cigarettes
 - https://www.cdc.gov/tobacco/basic_information/e-cigarettes/index.htm
- Know the Risks: E-cigarettes & Young People (Surgeon General)
 - <https://e-cigarettes.surgeongeneral.gov/default.htm>
- NCDHHS Tobacco Prevention & Control Branch
 - <https://www.tobaccopreventionandcontrol.ncdhhs.gov/>
- Truth Initiative
 - www.truthinitiative.org

Become a Tobacco Treatment Specialist



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Questions?

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