

THC & Vaping

Sarah E. Bauer, MD

Teen Vaping ECHO

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Riley Hospital for Children
Indiana University Health



INDIANA UNIVERSITY
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Disclosures / Conflicts of Interest

- None



Outline

1. Background
2. Trend of use among adolescents
3. Associated risks
4. Recommendations



Cannabinoids

- Biologically active molecules
- Bind to receptors in the brain, nervous system, immune system
- Humans make endocannabinoids
- 3 FDA approved cannabinoids
 - Purified form of CBD for seizures associated with Lennox-Gastau or Dravet syndrome
 - Dronabinol for anorexia associated with weight loss in AIDS patients
 - Nabilone for nausea & vomiting associated with chemotherapy



Terminology

- **Cannabidiol (CBD)** → the major non-psychoactive cannabinoid in cannabis plants
- **Tetrahydrocannabinol (THC)** → the major psychoactive cannabinoid in cannabis plants
- **Hemp** → the stalk, fiber, and sterilized seeds of a cannabis plant; cultivated with low THC content (0.2% - 0.3%)
- **Purified Cannabidiol** → purified 98% oil-based CBD extract; available as FDA approved formula
- **CBD Oil** → concentrated solvent extract made from cannabis flowers or leaves; dissolved in edible oil; contains various levels of THC



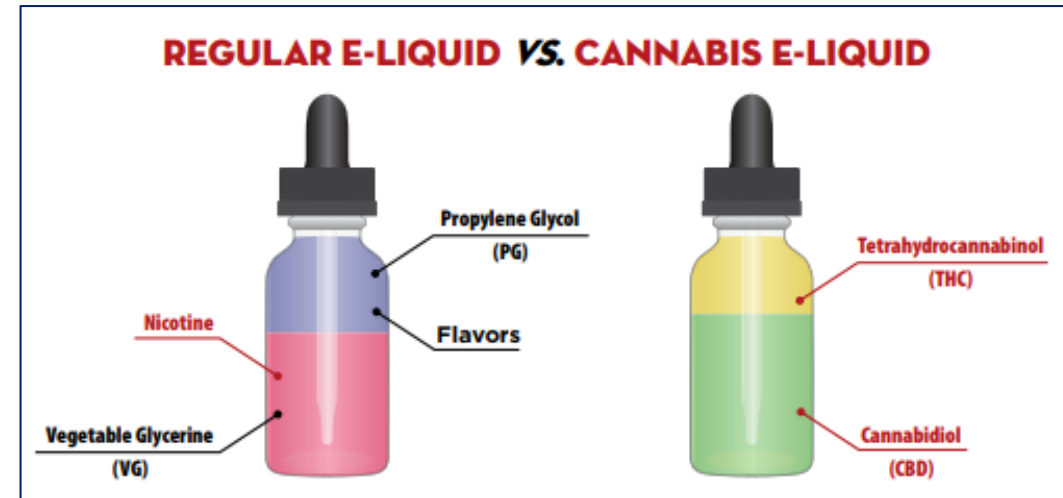
Marijuana Plants

- Contain more than 200 cannabinoids
 - Tetrahydrocannabinol (THC)
 - Cannabidiol (CBD)
- 2 major species
 - Sativa
 - Indica
- Cross breeding can increase cannabinoid concentration



Delta-9-tetrahydrocannabinol (THC)

- Extracted from marijuana as concentrates
- Derived products may contain very high dosages of THC
- Ingested, smoked, aerosolized



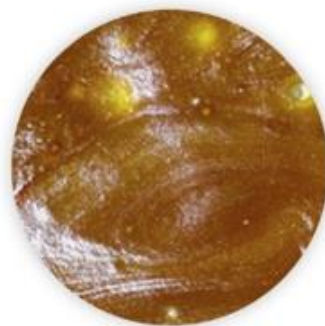
***“Concentrates are very potent,
so a little goes a long way.”***



HASH



BUBBLE HASH



HASH OIL



WAX



SHATTER



LIQUID THC

Composition of THC Vaping Products

- THC concentrations in vaping products can be **4-30x higher** than dried cannabis leaves
 - Marijuana cigarettes: ~15-20% (increasing; 1995: 4%, 2014: 12%)
 - Solvent-based extracts: ~**54-80+**%
 - Non-solvent-extracts: ~39-60%
- Vaping products can contain concentrated levels of solvents, pesticides, toxins
- Overheating of cannabis vaping products can lead to inhalation of carbon-monoxide, tar, and ammonia

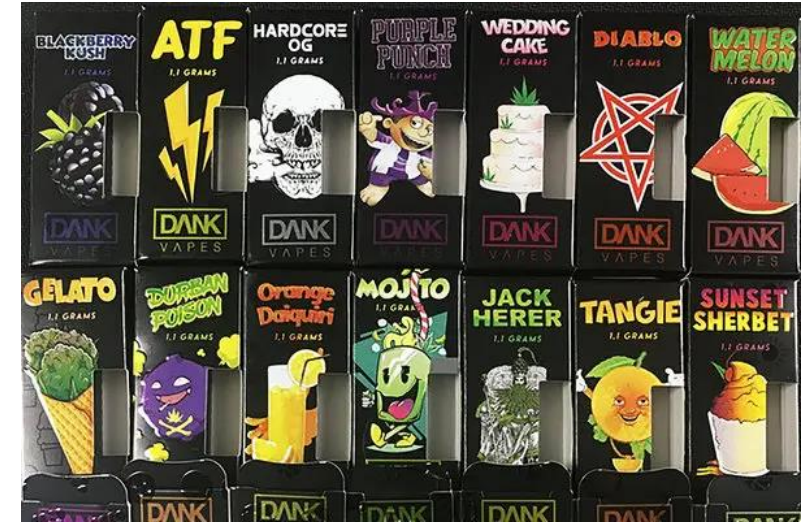


Devices used to aerosolize THC

- Tabletop units
- Disposable vape/dab pens
- Pre-filled cartridges
- Refillable Vaporizers



Torch



Dray Dry Herb Vaporizer



The PAX 2 and 3



Khan Dry Herb Vaporizer



The Crafty Vaporizer



Mig Vapor Sol E-Nectar Collector



DaVinci IQ



Herb-E



Pro 50 Combustor



Mig Vapor - Mig Rig (formerly known as La Queef)



Volcano Vaporizer



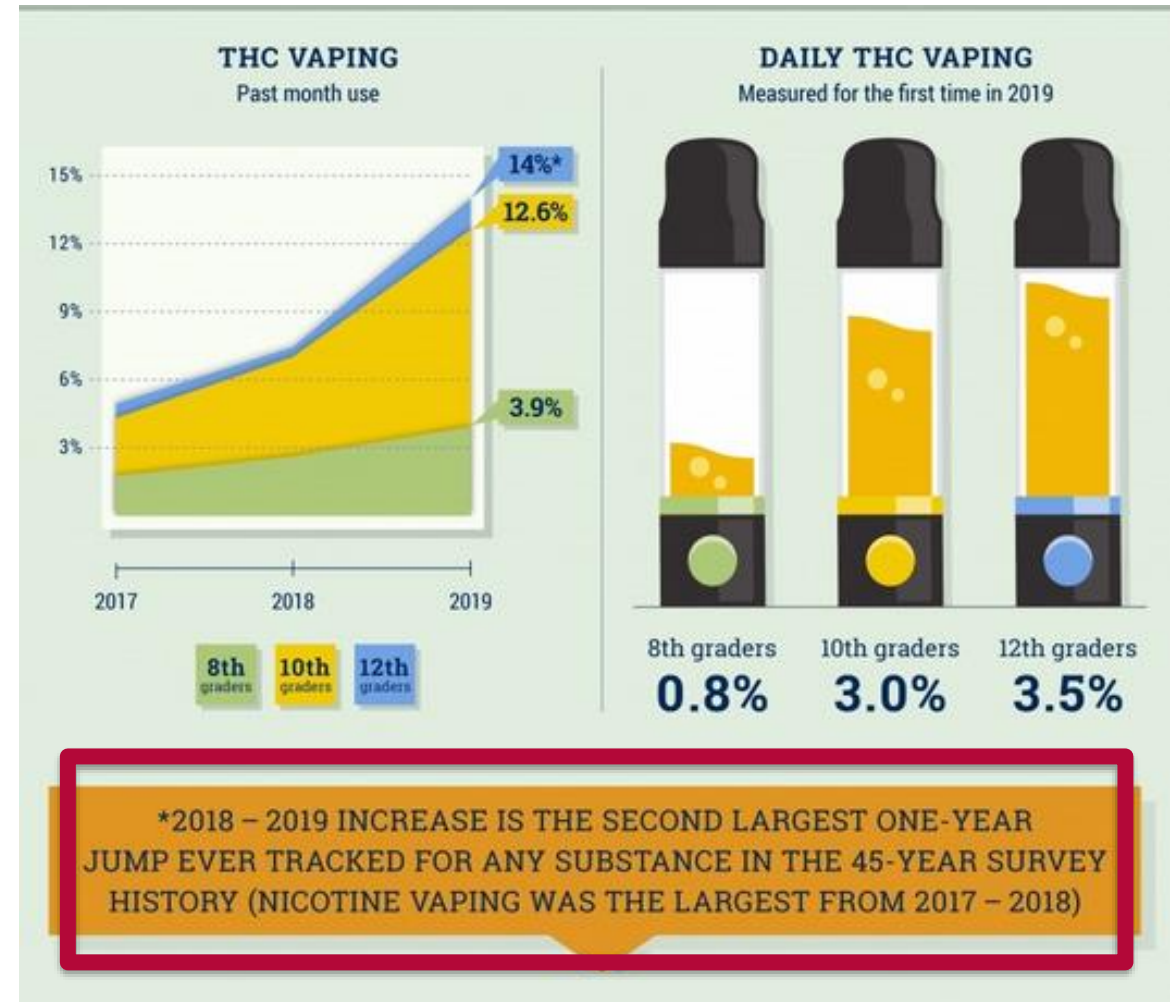
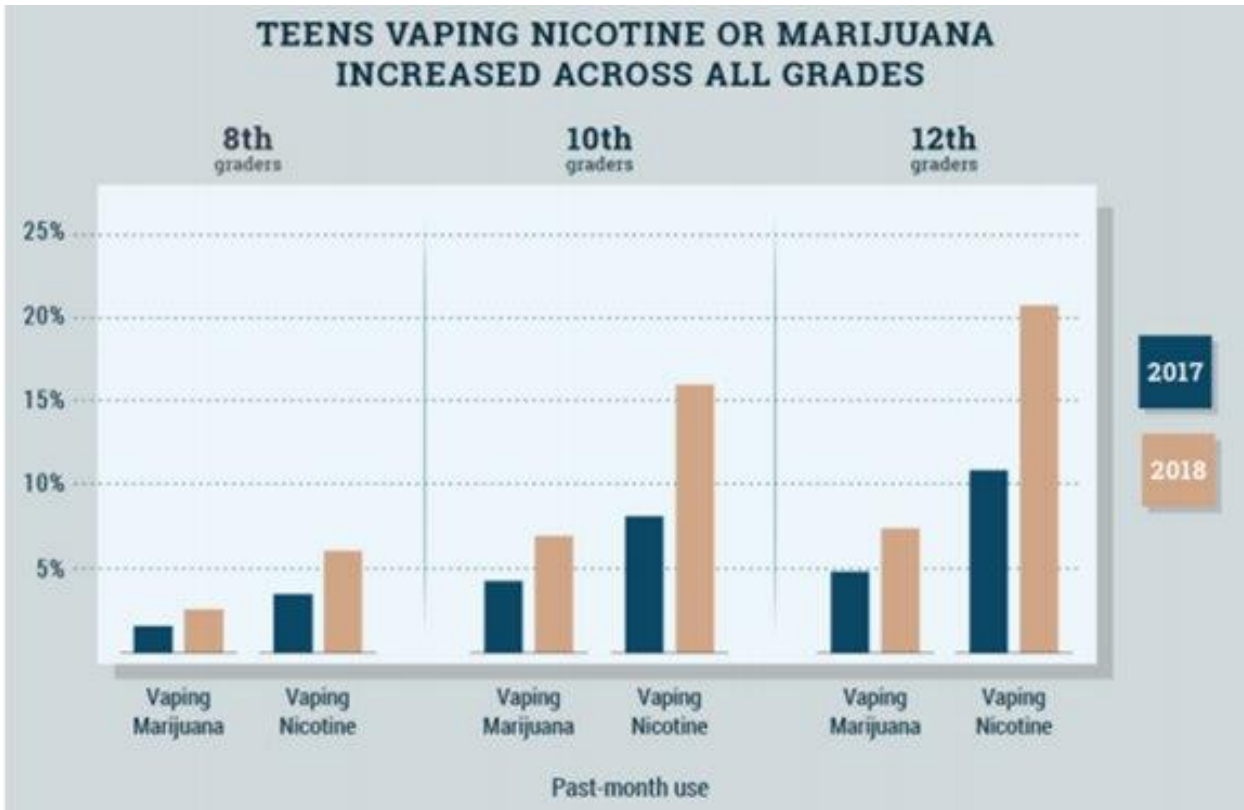
The Dr. Dabber Switch

Vaping THC-containing products

- Results in stronger effects and higher peak concentrations of THC in blood compared with equal doses of smoked cannabis
- Blood THC concentrations peak within 30 minutes and return to baseline within 3 to 4 hours
- However, subjective drug effects such as cognitive and psychomotor impairments persist for up to 6 hours on average



THC Vaping among adolescents increasing

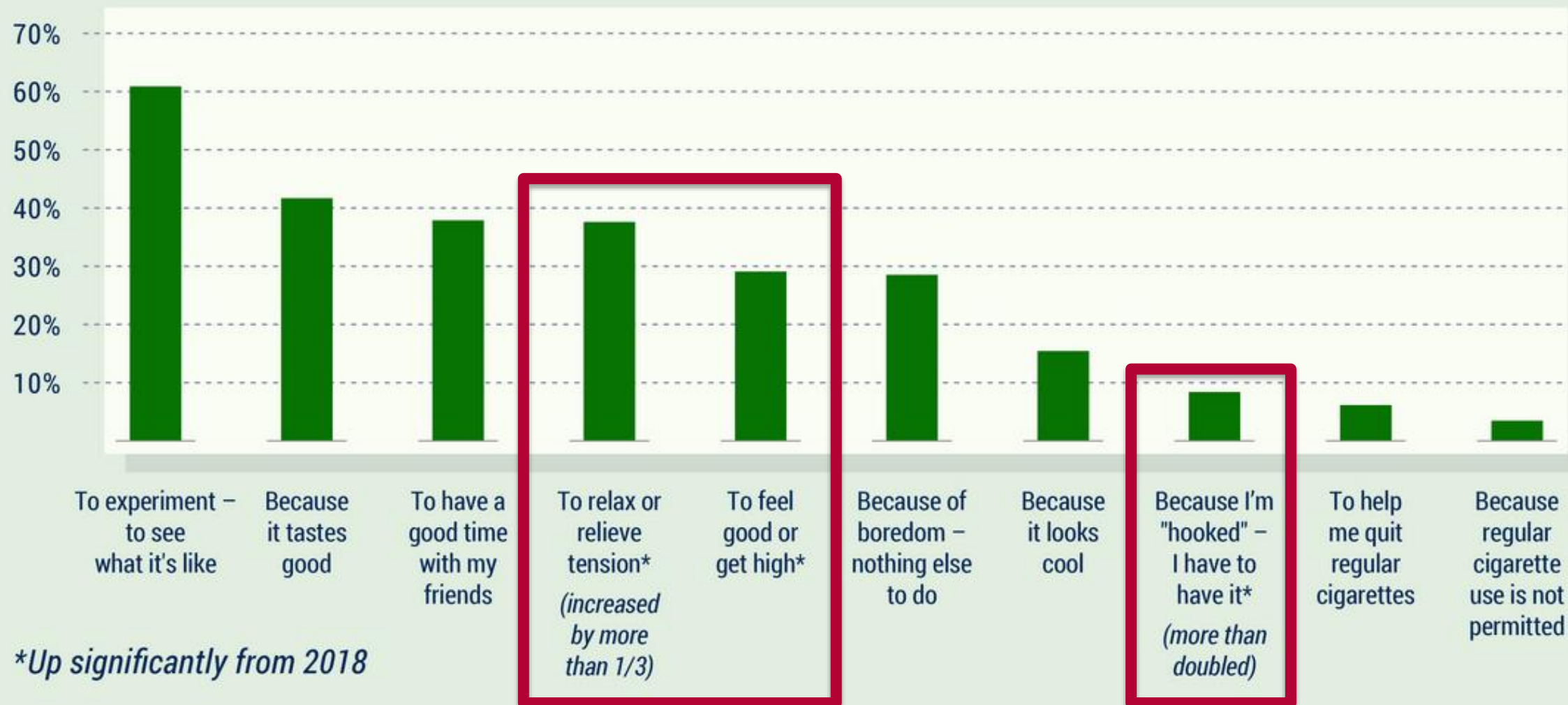


Prevalence of Vaping THC vs. Nicotine/Tobacco Products

Grade	THC Vaping	Nicotine Vaping
8 th	3.9%	9.6%
10 th	12.6%	19.9%
12 th	14%	25.5%



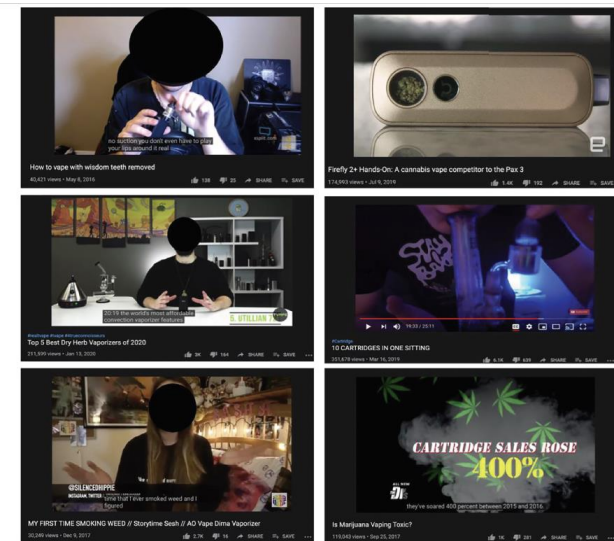
TEENS REPORT REASONS FOR VAPING



Cannabis use marketing & exposure on social media

- A 2018 survey showed 94% of adolescents aged 15-19 years old reported some form of exposure to cannabis marketing¹
- Analysis of survey results showed exposure to cannabis marketing on social media was associated with increased odds of past-year cannabis use¹

- A recent study from Australia analyzing cannabis vaping YouTube videos found²
 - Over half were not age restricted
 - 66% featured someone vaping cannabis
 - Many featured “how-to” instructions & risky behaviors



Video themes from the top left: 'how-to', 'advertisement'; from mid-left: 'product review', 'celebratory'; from bottom left: 'reflective', 'warning'



Associated Risks

- High risk of developing dependence / addiction with exposure to high concentrations of THC
- Higher doses associated with anxiety, agitation, paranoia, psychosis
- Butane extraction – burns, explosions
- Cannabis hyperemesis syndrome



Associated Risks

- THC-containing products, particularly from informal sources linked to most cases of EVALI
- Case reports and series of adolescents with a history of THC containing e-cigarette use and acute respiratory distress / complications
- Odds of reporting wheezing approximately 2 times higher among adolescents who used cannabis e-cigarettes
- Lifetime cannabis use with e-cigarettes associated with higher odds of respiratory symptoms in the past year



Associated Risks

- Difficulty thinking and problem solving
- Problems with memory and learning
- Impaired coordination
- Difficulty maintaining attention
- Decline in school performance
- Increased risk of mental health issues
- Increased likelihood of risk-taking behaviors (e.g. impaired driving)



Recommendations

- Screen and assess for THC use – quantity, frequency, duration, products used, method, dosing; Any friends/peers using?
- Educate adolescents and parents on risks of high potency THC consumption
- Recognize symptoms of cannabis overconsumption (drowsiness, confusion, rapid heart rate, irritability, panic, anxiety, nausea/vomiting, short-term psychosis)
- Treatment for cannabis use disorder, when indicated
- Counsel and encourage cessation or continued avoidance



Summary

1. THC is the psychoactive cannabinoid in marijuana
2. TCH concentrates contain high levels of THC
3. There are many different devices used to vape THC
4. There continues to be a worrisome trend of increasing use of THC vaping among adolescents and young adults
5. Vaping THC is associated with numerous adverse risks
6. Adolescents should be screened for, educated about, and counseled against THC use



Thank you.



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