

Youth Vaping

What health care providers need to know
about a rapidly evolving trend

With Dr. Nicholas Chadi
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Thursday, April 15 | 12 - 1:00 pm ET



Presentation of this webinar has been made possible through a financial contribution from the Public Health Agency of Canada. The views expressed herein do not necessarily represent the views of the Public Health Agency of Canada.

Land Acknowledgment

The CPS Office is on the traditional unceded territory of the Algonquin peoples.

All participants from across this beautiful country are resting on traditional lands of many nations and peoples.

We are grateful for the opportunity to gather in this virtual platform together.



Financial contribution from



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**Youth vaping: What health
care providers need to
know about a rapidly
evolving trend**

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April 15, 2021

Disclosures

- None

Objectives

1. Discuss the short- and long-term health effects of e-cigarettes and vaping among youth
2. Apply a youth-centered approach for screening and treatment of vaping and e-cigarette use
3. Describe the importance of reporting illness and adverse events associated with vaping across Canada, and the mechanisms to do so

Jeremy

- 15 years old, high school, soccer player, oldest of three children
- Severe persistent asthma, last hospitalization six months ago
- Caught vaping in the school washroom



Jeremy

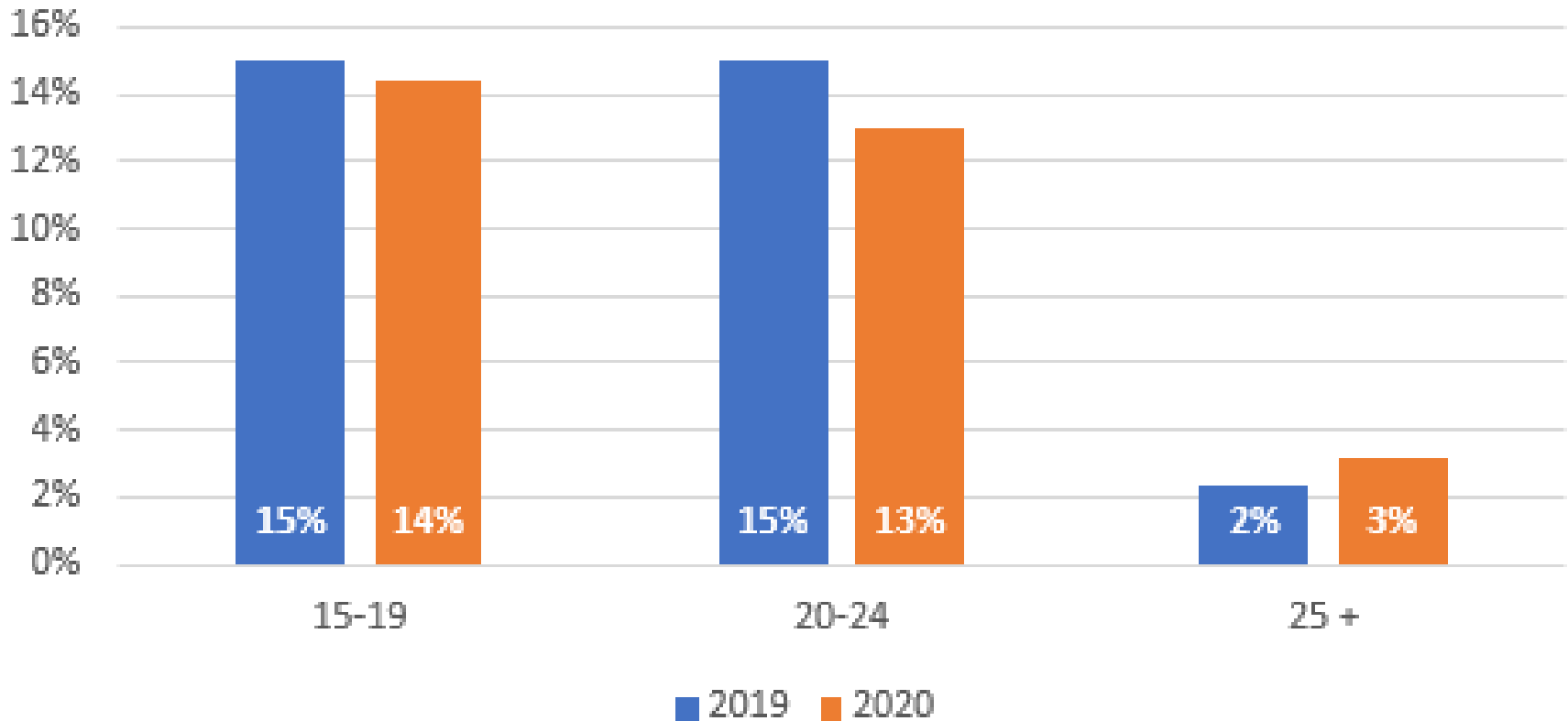
- Uses a “pod-mod” vape, and has recently started smoking a “few cigarettes a week”
- Likes the “head rush” and social aspect of vaping
- Uses high nicotine concentration pods (approximately 1-2 pods per week)
- Says he would quit smoking, but not vaping - “it helps with my anxiety”



Recent trends

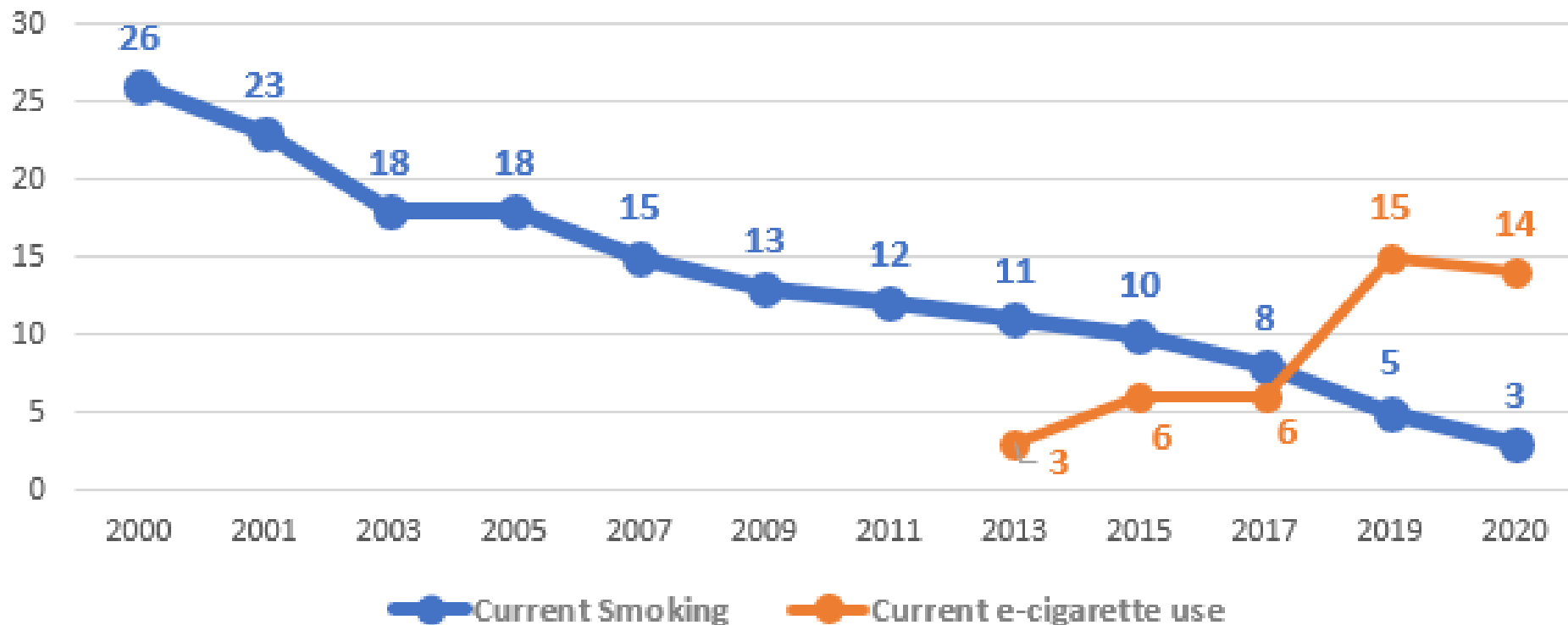


Past 30 day vaping Canadian Tobacco and Nicotine Survey - 2019 and 2020



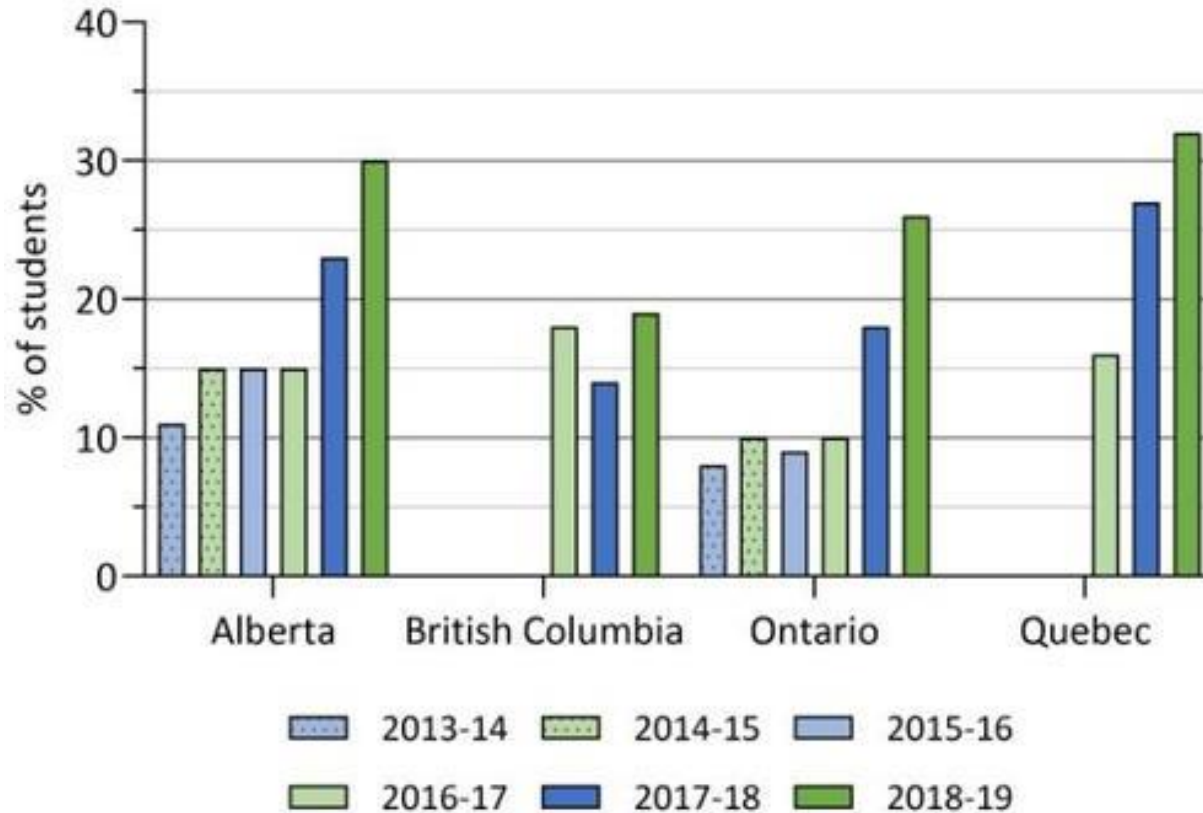
Source: Physicians for Smoke-Free Canada

Prevalence (%) of past 30 day cigarette smoking and e-cigarette use. Canadian youth age 15-19 (CTUMS, CTADS, CTNS)



Source: Physicians for Smoke-Free Canada

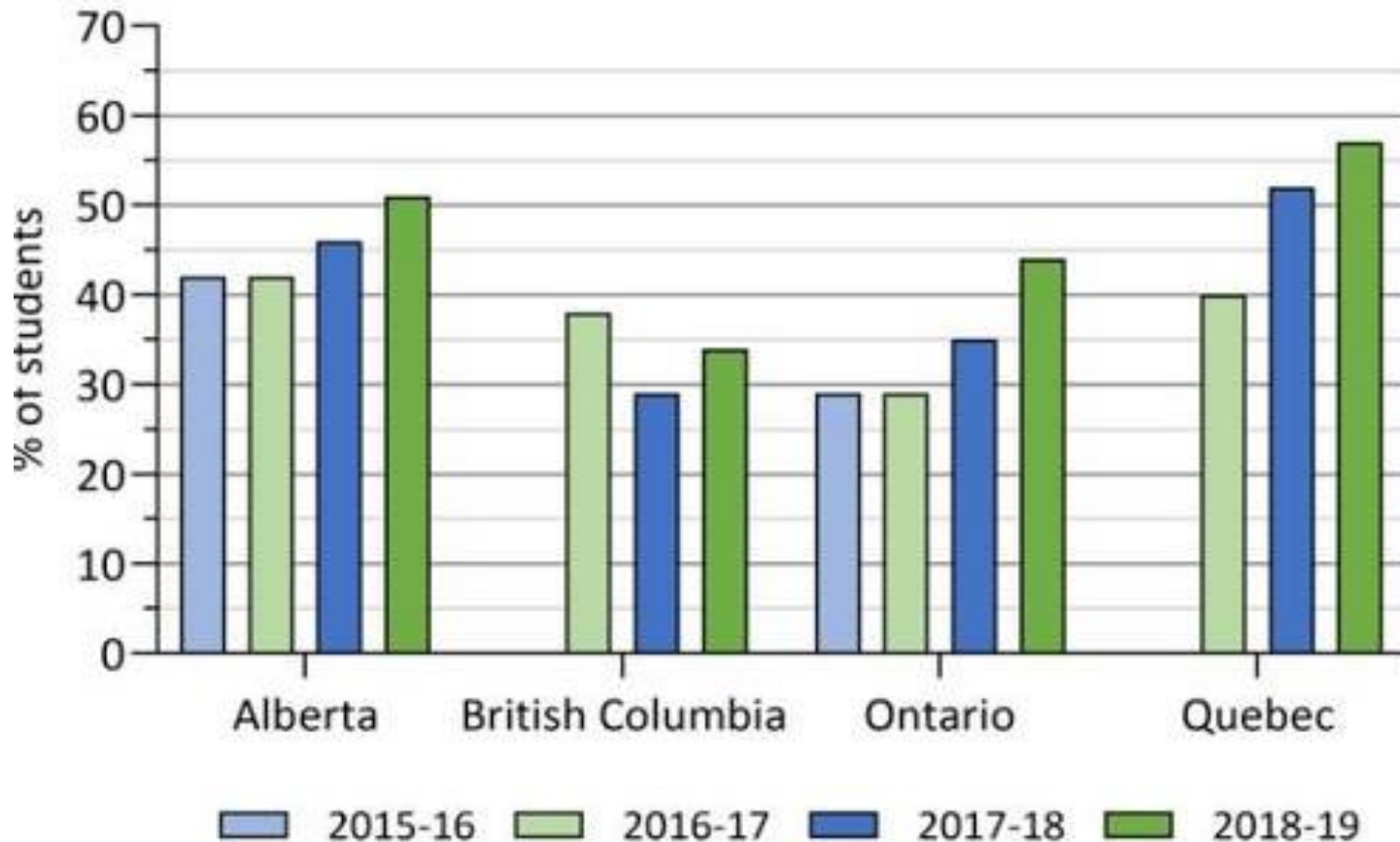
Past 30 day vaping (high school students)



Approximately
5 times higher
than cigarette
smoking

Source: COMPASS study 2013-2019 – University of Waterloo
Available at: <https://uwaterloo.ca/compass-system/sharing-our-knowledge>

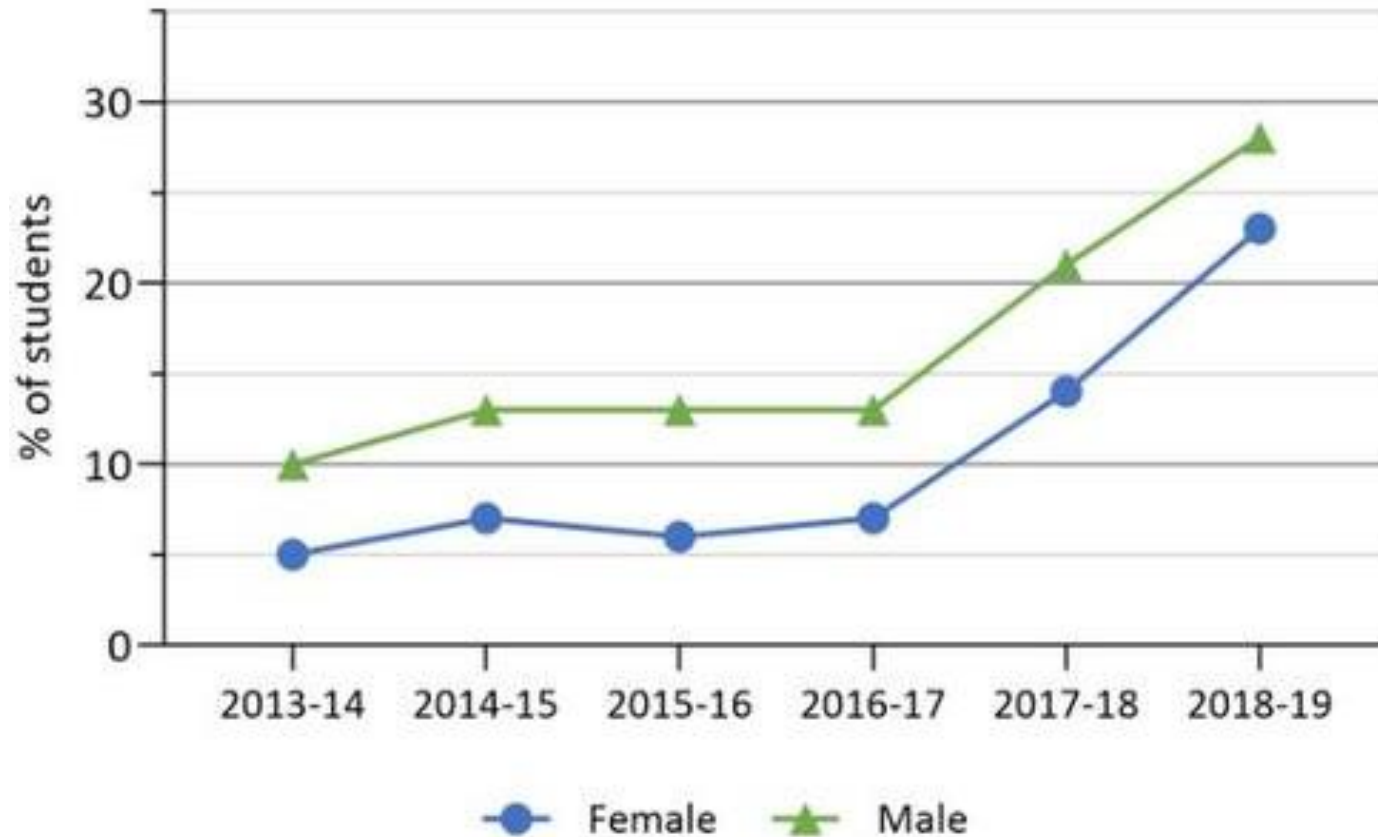
Lifetime vaping (high school students)



Approximately **two times higher** than traditional cigarettes

Source: COMPASS study 2013-2019 – University of Waterloo
Available at: <https://uwaterloo.ca/compass-system/sharing-our-knowledge>

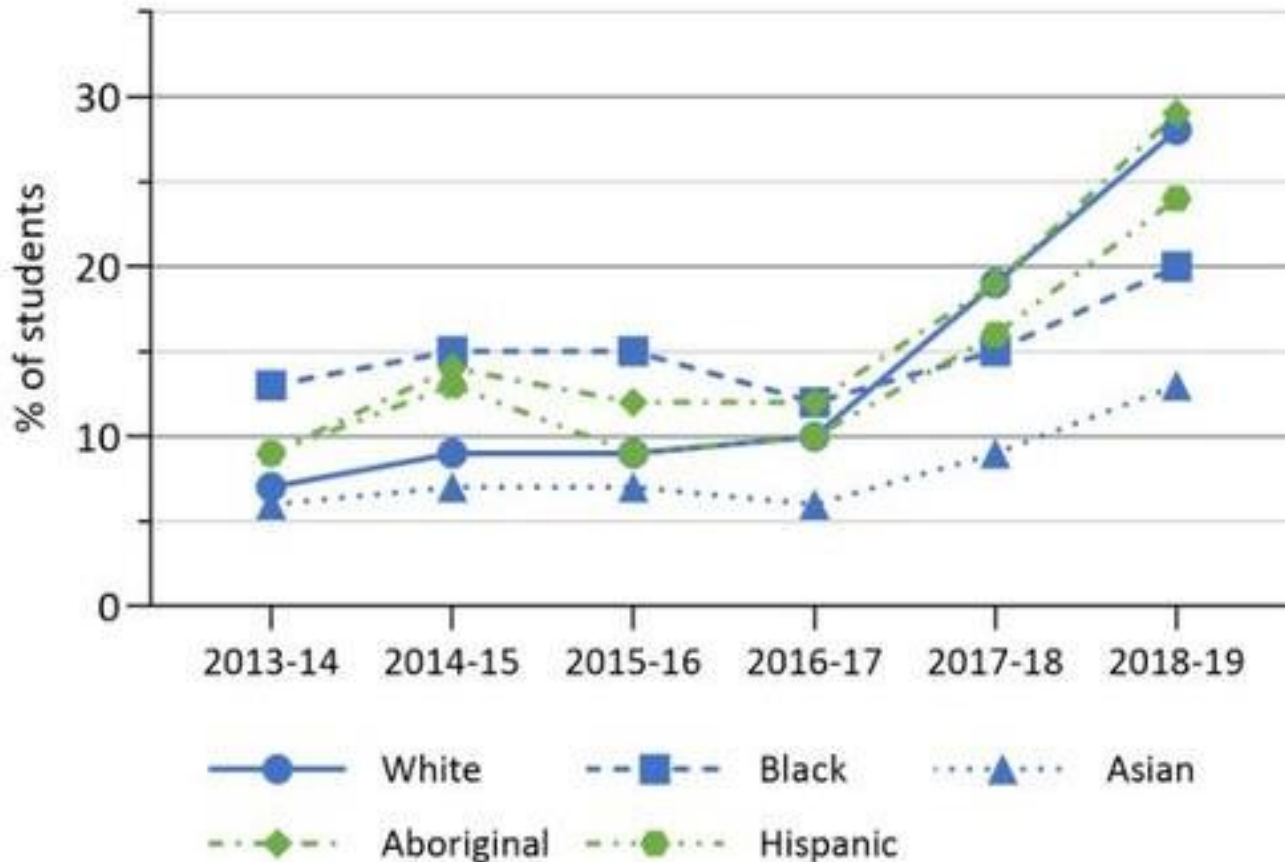
Past 30 day vaping by gender



Slightly
higher
among
males

Source: COMPASS study 2013-2019 – University of Waterloo
Available at: <https://uwaterloo.ca/compass-system/sharing-our-knowledge>

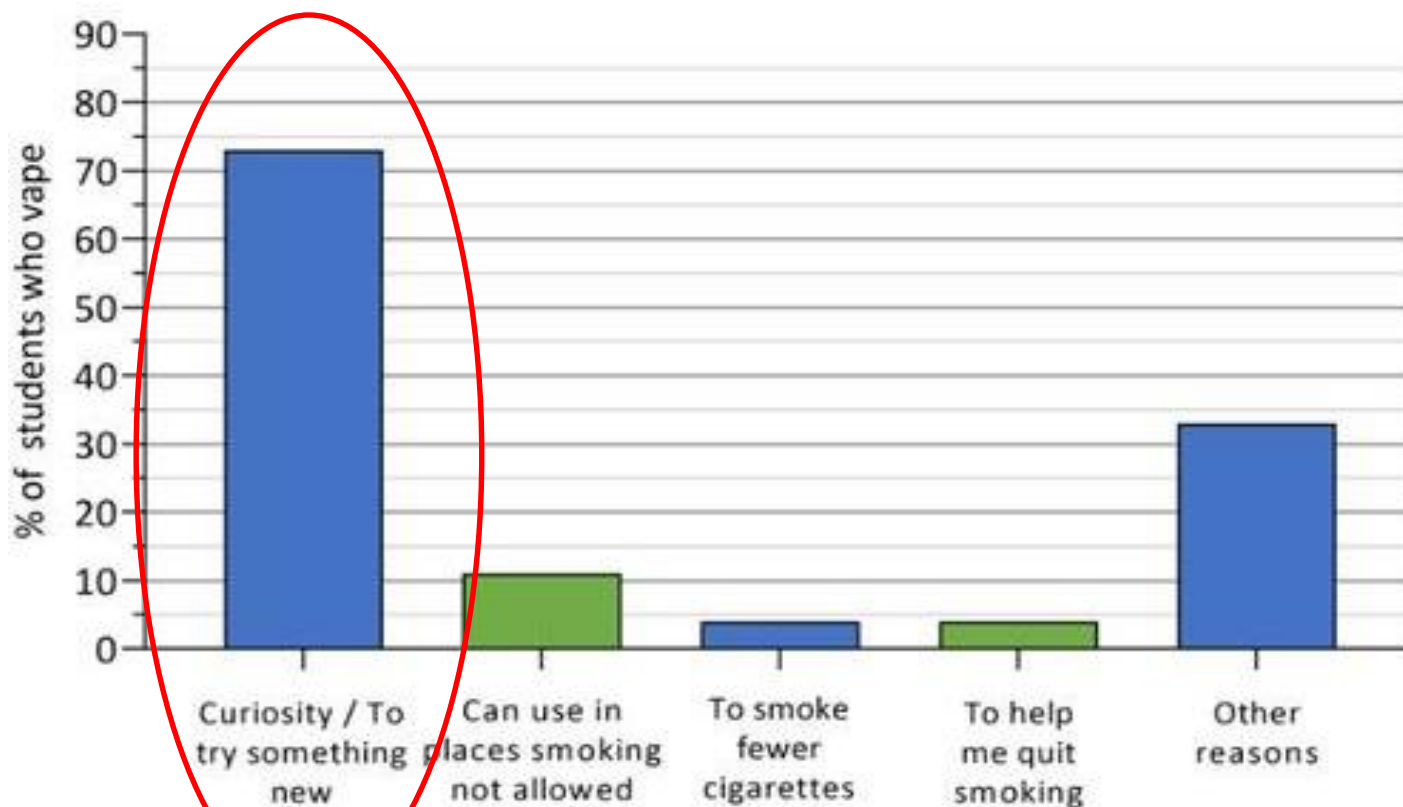
Past 30 day vaping rates by race/ethnicity



White and Indigenous youth have the highest rates

Source: COMPASS study 2013-2019 – University of Waterloo
Available at: <https://uwaterloo.ca/compass-system/sharing-our-knowledge>

Reasons for vaping in 2018-2019 (high school students)



The vast majority of adolescents are NOT vaping to cut down or quit smoking

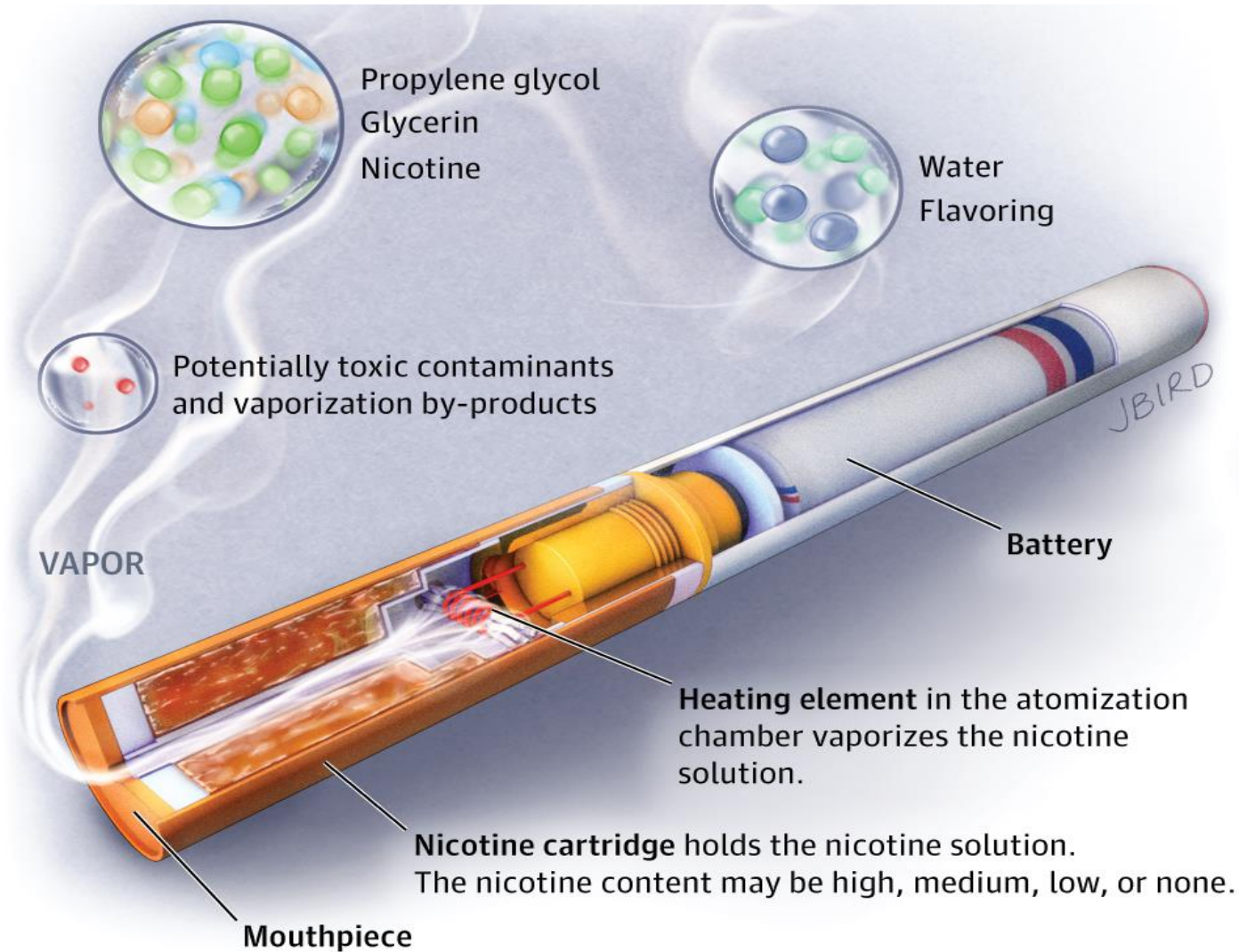
Source: COMPASS study 2013-2019 – University of Waterloo

Available at: <https://uwaterloo.ca/compass-system/sharing-our-knowledge>

Nicotine's new look



Inside the e-cigarette...



Vaping devices/e-cigarettes



Disposable
e-cigarettes



E-cigarettes with
prefilled cartridges



Tanks or Mods
(refillable)



Pod Mods
(pods; nicotine
salts)



Heat-not-burn
(Rarely used by
adolescents)



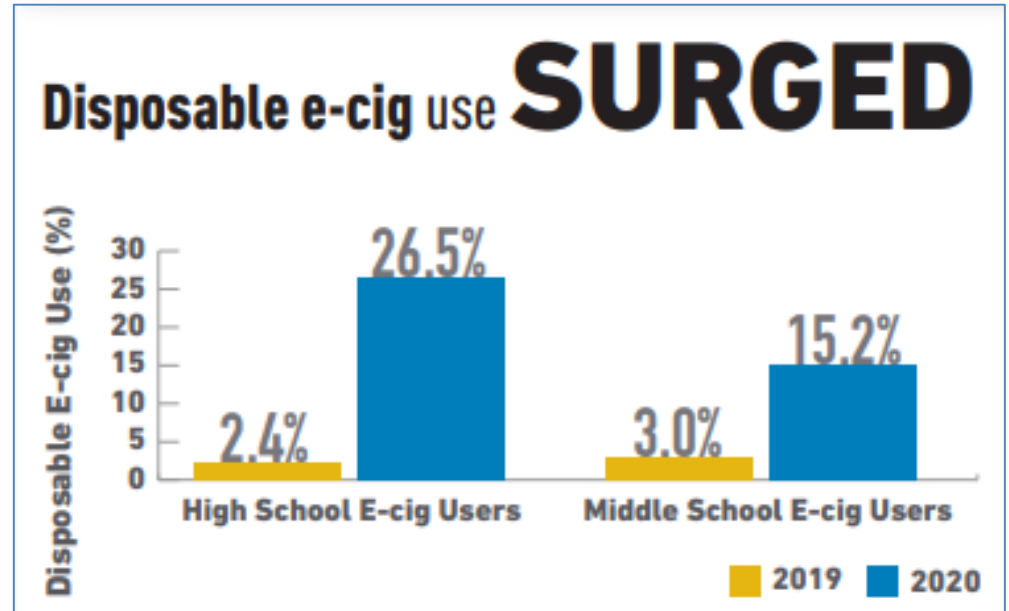
U.S. Department of
Health and Human Services
Centers for Disease
Control and Prevention

Pod Mods

- Pods contain e-liquids with highly absorbable nicotine salts
 - Heated into an aerosol and inhaled
- Typical pod: 0.7-2mL of e-liquid (1.5-5% concentration)
 - 15-100mg of nicotine salts
 - Nicotine equivalent of 1/3-2 packs of cigarettes (\approx 200-400 puffs)
- Youth-friendly flavours:
 - Fruit, dessert and mint flavours preferred by youth



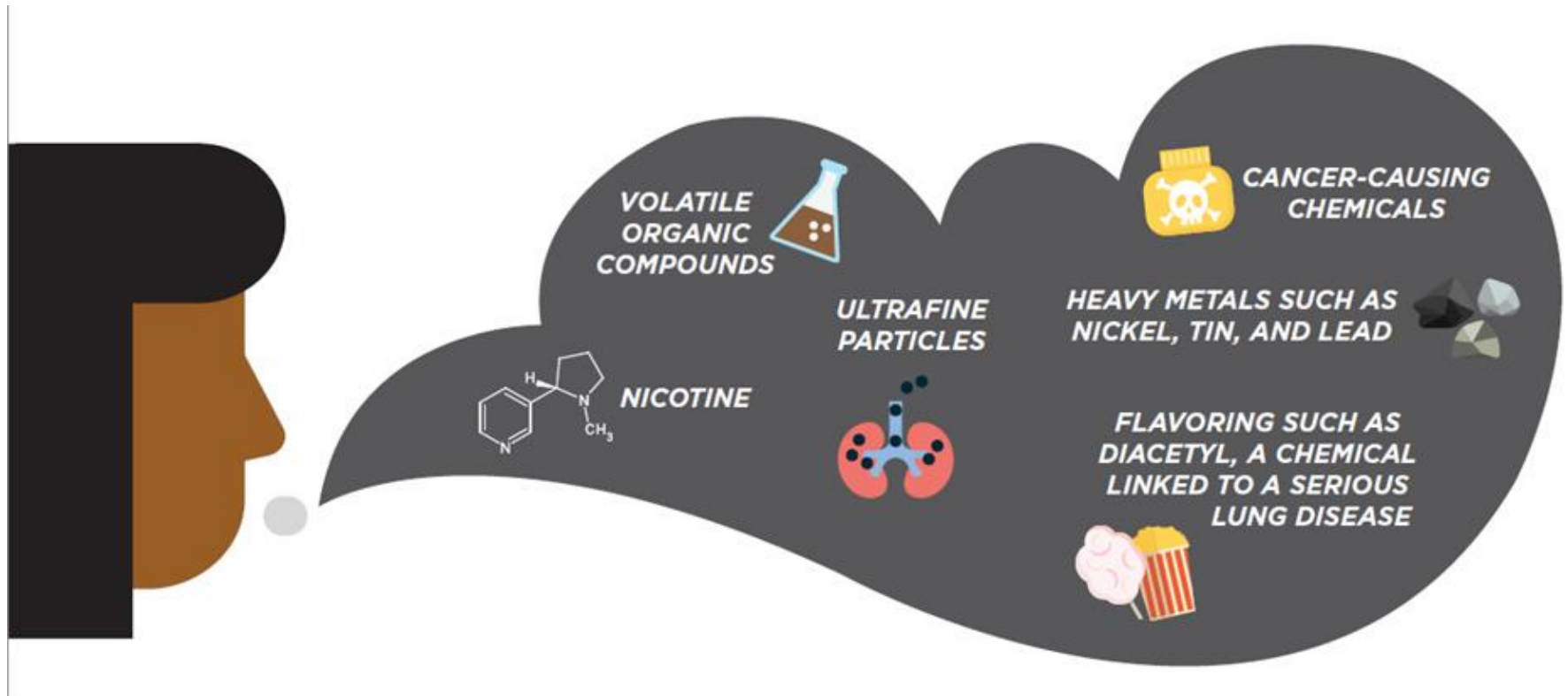
Disposable e-cigarettes



National Youth Tobacco Survey, United States, 2020

Most disposable vaping devices contain high amounts of nicotine, which can be equivalent to 1-2 packs of cigarettes/per disposable e-cigarette

Substances found in vaping aerosols



Source: Centers for Disease Control and Prevention

Vaping marijuana?



Approximately 1/3-1/2 of teen e-cigarette users have tried it



Teens often use **highly concentrated products** (THC/hash oils)



“Dab pens”:
Vaporizers specially designed to vape **cannabis concentrates**

Chadi N et al. Cannabis vaping: Understanding the health risks of a rapidly emerging trend, Paediatrics & Child Health, Volume 25, Issue Supplement_1, June 2020, Pages S16–S20, <https://doi.org/10.1093/pch/pxaa016>

Vaping marijuana



"Premium wax vaporizer"



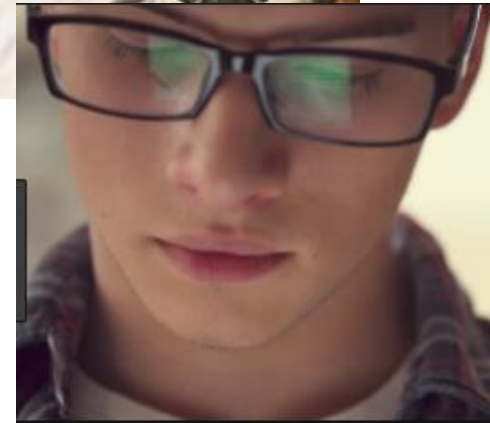
"Liquid shatter" pen

Acute and
long-term
health risks



Jeremy and Zack

- Three weeks after being caught vaping at school, Jeremy returns to your office, this time with his friend Zack
- Jeremy and Zack were “dripping” using a friend’s e-cigarette, when the device suddenly caught fire, burning Zack’s face



Zack

- Zack is in tears and tells you he doesn't want you to call his mother: "I'll be grounded forever!"
- He tells you that he is afraid his mother will confiscate his vape: "I get horrible headaches when I can't vape!"



Vaping: Acute and long-term health risks

- **Acute harms:**
 - Injuries associated with the inhalation, ingestion or dysfunction of vaping products
 - Primary (direct) or secondary exposure
- **Long-term harms (chronic exposure):**
 - Nicotine and cannabis dependence
 - Long-term impacts on brain development
 - Associations with use of other tobacco products, substances and adverse mental health outcomes
 - Pulmonary and cardiovascular risks
 - Cancer risk potential



Canadian Paediatric Surveillance Program: Severe vaping-related illness and injury

- **2015: One-time survey**
 - 35 injuries reported
 - 30 inhalation injuries/5 ingestion cases
- **2019: One-time survey**
 - 88 injuries reported
- **2021-2023: Longitudinal study**
 - Study launched in February 2021

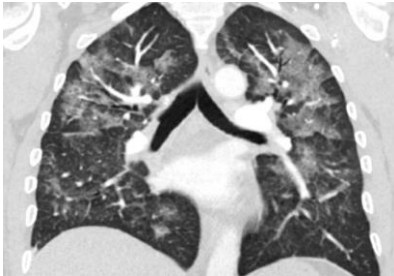


One-time CPSP study 2019

- Cross-sectional survey: 2,693 paediatricians in Canada (42% response rate)
- **88 cases of vaping-related injuries** and illnesses over 12-month period
 - 75 cases of inhalation injuries (more common in adolescents)
 - 13 cases of ingestion injuries (more common in toddlers)
- **Most frequent symptoms**
 - Respiratory distress/lung injury (39 cases)
 - Others: **Nicotine toxicity**, GI symptoms, CNS depression/alteration, burns
- **Treatment/outcomes**
 - 13 ICU admissions, 22 hospitalizations
 - 16 patients with ongoing health issues



Vaping associated lung injury (VALI)



Total cases reported

- **Canada:** 20 cases (5 among youth < 20 years)
- **USA:** 2,807 hospitalized cases (15% < 18 years)

Confirmed case

1. History of vaping in the 90 days prior
2. Pulmonary infiltrate/opacities, on chest X-Ray or ground-glass opacities on chest CT
3. Absence of pulmonary infection on initial work-up (respiratory panel, influenza test, clinically-indicated tests)
4. No evidence of alternative plausible diagnosis

Probable case

- Criteria 1,2 and 4 (above)
- Positive test for pulmonary infection (or minimal testing not available), but infection NOT thought to be the only cause

<https://www.canada.ca/en/public-health/services/diseases/vaping-pulmonary-illness.html>

Nicotine toxicity



Stomach pain



Dizziness



Headaches



Decreased concentration

Accidental ingestions in young children

Healthy Children > Safety & Prevention > At Home > Liquid Nicotine Used in E-Cigarettes Can Kill Children

SAFETY & PREVENTION



Español



healthychildren.org

Powered by pediatricians. Trusted by parents.
from the American Academy of Pediatrics

Liquid Nicotine Used in E-Cigarettes Can Kill Children

Parents who "vape" should be aware that a very small amount of the liquid nicotine used to refill [e-cigarettes](#) can kill a child. The liquid also can be [poisonous](#) within a matter of minutes if spilled on the skin.



A 1-year-old child died from liquid nicotine poisoning in December 2014—the first such death in the United States. The number of calls to poison control centers about liquid nicotine has shot up significantly in recent years. There were 2,452 calls about exposures as of September 30, 2015—many more than the 1,543 exposures reported in 2013.

Burns

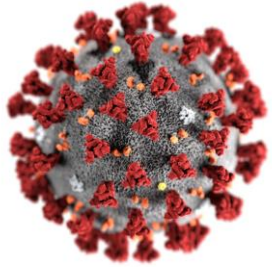


Second-hand aerosols



- Highly heterogeneous findings
- Lack of consensus for comparisons between second-hand smoke (cigarettes) and aerosols (vaping)
- Variation in the size of fine particles
 - Impact on absorption capacity (smaller = higher penetration)
- Second-hand aerosols contain nicotine, variable amounts
- Conclusion: second-hand aerosols associated with *some level of risk*, likely more significant when exposure is in close proximity and more prolonged

Source: Palmisani, et al. (2019). Evaluation of Second-Hand Exposure to Electronic Cigarette Vaping under a Real Scenario: Measurements of Ultrafine Particle Number Concentration and Size Distribution and Comparison with Traditional Tobacco Smoke. *Toxics*, 7(4), 59.



Vaping and COVID-19



- Many studies suggest that cigarette smokers are at higher risk of COVID-19 infection and higher risk of developing complications
- Very limited data for vaping
- Controversial study (Gaiha 2020, J Adol Health):
 - 4,351 youths age 13-24 years
 - Higher risk of developing symptoms of COVID-19 and higher odds of testing positive for the disease when vaping and smoking
- Risks of COVID transmission associated with vaping product use and sharing of vaping products/devices among teens

Reporting vaping-related illnesses and injuries



Government
of Canada

Gouvernement
du Canada

“Health care providers should report any severe lung illness suspected to be related to vaping products to their **local health authority** as soon as possible. You may also report any **adverse reactions** or **incidents** related to vaping products to Health Canada.”

Health Canada website

<https://www.canada.ca/en/public-health/services/diseases/vaping-pulmonary-illness.html>

Canadian Paediatric Surveillance Program: longitudinal study 2021-2023

Monthly reporting for all registered participants



Case definition: any patient less than 18 years of age requiring ED care, hospitalization, or ICU admission due to an illness or injury associated with any of the following:

- 1. Inhalation of aerosol from a vaping device** (e.g., acute pulmonary injury, serious gastrointestinal symptoms, central nervous system activation/depression, acute nicotine toxicity or withdrawal)
- 2. Malfunction of a vaping device** (e.g., burn, trauma to the eye, hand, and/or face)
- 3. Ingestion of a vaping substance** (e.g., e-liquid with or without nicotine and/or flavours, tetrahydrocannabinol [THC] oil, hash oil)

Please help spread the word to your colleagues across Canada!

Vaping: Acute and long-term health risks

- **Acute harms:**
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 - Cancer risk potential

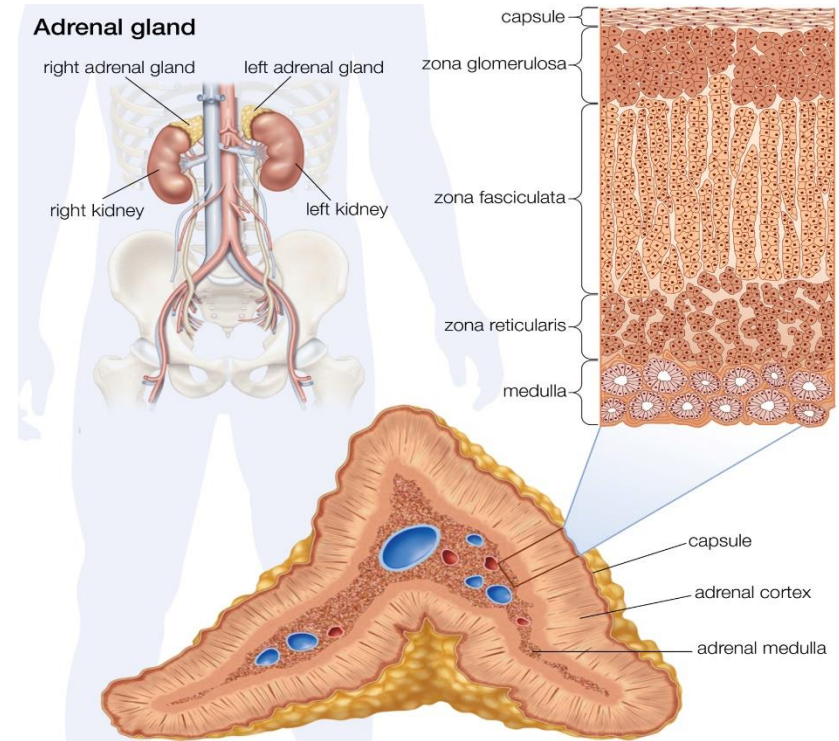
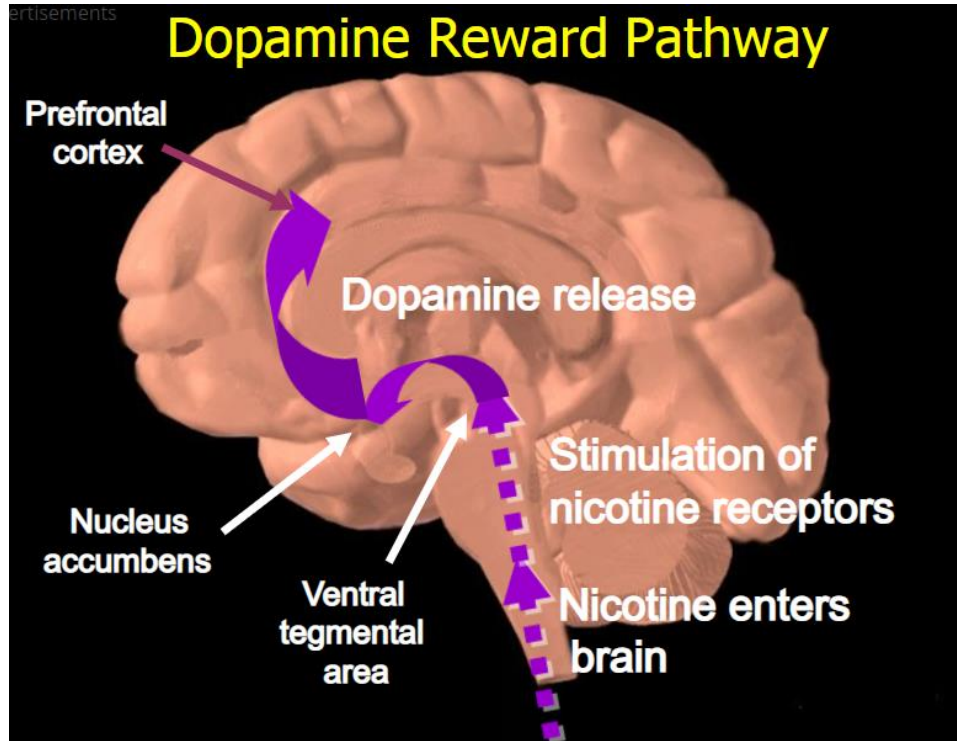


Nicotine: short term effects

- Nicotine takes 10-15 seconds to reach the brain
 - Effects last approximately 30 minutes
- Adrenal glands release **epinephrine**:
 - Increases alertness, BP and HR
- In the brain: activation of Ach receptors
 - Increases **dopamine, serotonin and glutamate**, leading to **pleasure center activation**
- **Highly addictive**: More than alcohol and cannabis; similar to cocaine

Goriounova NA, Mansvelter HD. Short- and long-term consequences of nicotine exposure during adolescence for prefrontal cortex neuronal network function. Cold Spring Harb Perspect Med. 2012;2(12):a012120.

Nicotine: short term effects



Dopamine: Pleasure and reward

Epinephrine: increased alertness
blood pressure and heart rate

Goriounova NA, Mansvelder HD. Short- and long-term consequences of nicotine exposure during adolescence for prefrontal cortex neuronal network function. *Cold Spring Harb Perspect Med.* 2012;2(12):a012120.

Long term effects: insights from animal models

- Nicotine produces persistent **changes in the brain**
- **Long term** impacts:
 - Increased risk for drug addiction
 - including nicotine, marijuana, alcohol and cocaine
 - Impairments in attention capacity and working memory
 - Associated with mood disorders and poor impulse control

Goriounova NA, Mansvelter HD. Nicotine exposure during adolescence alters the rules for prefrontal cortical synaptic plasticity during adulthood. *Front Synaptic Neurosci.* 2012;4:3.

E-cigarettes and...

Those who use only e-cigs are potentially a new group of youth who would not have smoked otherwise
(Dutra, 2017)

E-cigarettes are positively and independently associated with progression to current **established smoking** (Chaffee, 2018)

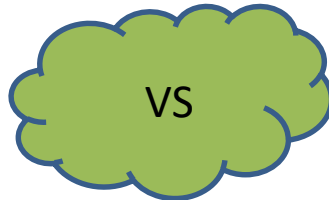
E-cigarette use associated with current and future **marijuana** use in youth
(Chadi, 2019)

E-cigarette use is strongly associated with use of **alcohol and other drugs**
(Curran, 2018)

Nicotine effects vs withdrawal

Nicotine effects

- Alertness (short term)
- Reduced appetite
- Palpitations
- Increased blood pressure and heart rate



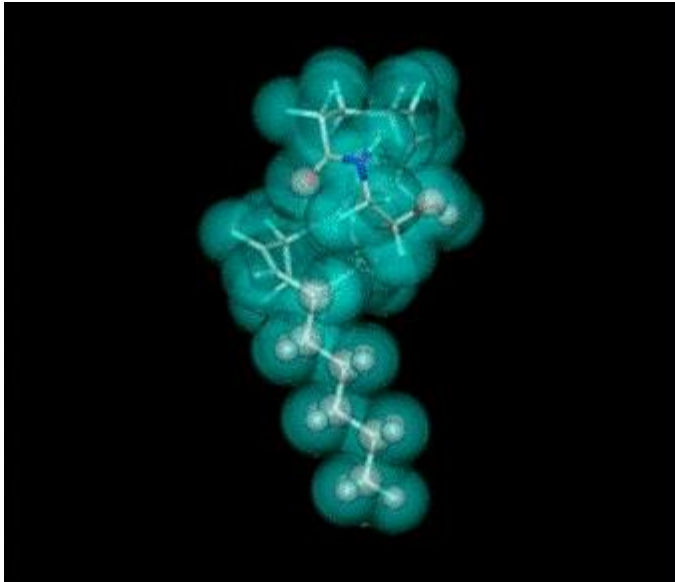
Nicotine withdrawal symptoms

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

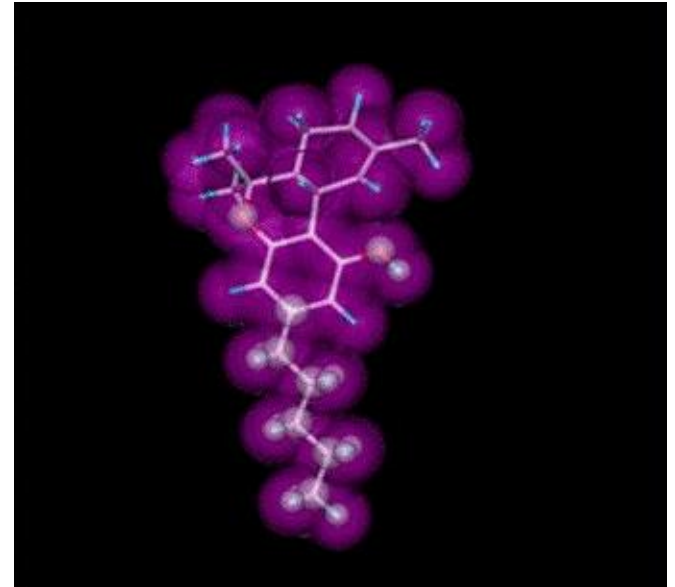
- Withdrawal manifests within 4–24 h following cessation (often less)
- Symptoms peak on approximately the 3rd day and taper off over the course of the following 3–4 weeks.

Harvey J, Chadi N; Canadian Paediatric Society, Adolescent Health Committee. Preventing smoking in children and adolescents: Recommendations for practice and policy. Paediatr Child Health. 2016 May;21(4):209-21. doi: 10.1093/pch/21.4.209.

Anandamide



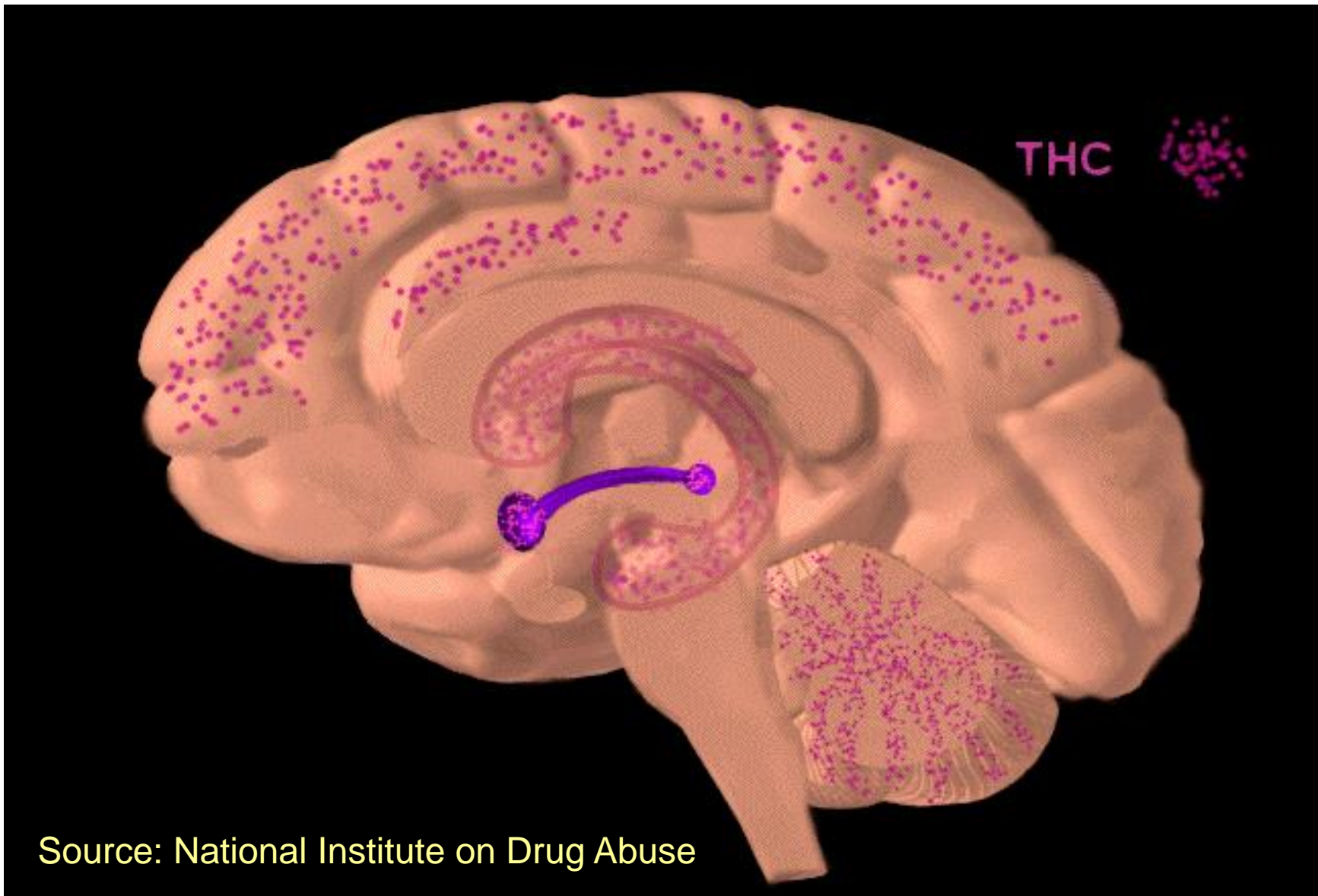
THC



Endocannabinoid System Functions

- The neuron's “volume control” system: dials down brain cell activity when too strong
- Regulates signals affecting pleasure, mood, pain, appetite, motivation, memory (e.g., dopamine, glutamate, endorphins, serotonin)





Source: National Institute on Drug Abuse

Cannabis: Effects vs withdrawal

Effects

- Euphoria
- Increased heart rate
- Hot or cold extremities
- Conjunctival erythema
- Dry mouth
- Increased appetite
- Decreased coordination
- Impaired judgement
- Impaired memory
- Paranoia
- Hallucinations



Withdrawal

- Intense cravings
- Irritability
- Anxiety
- Aggressiveness
- Agitation
- Sleep difficulties
- Low mood
- Decreased appetite
- Diaphoresis
- Tremors
- Headaches
- Abdominal pain
- Nausea

- Withdrawal symptoms appear 12+ hours (often days) after last use
- May last several days/weeks

Effects of long-term use

Table 1. Adverse Effects of Short-Term Use and Long-Term or Heavy Use of Marijuana.

Effects of long-term or heavy use

Addiction (in about 9% of users overall, 17% of those who begin use in adolescence, and 25 to 50% of those who are daily users)*

Altered brain development*

Poor educational outcome, with increased likelihood of dropping out of school*

Cognitive impairment, with lower IQ among those who were frequent users during adolescence*

Diminished life satisfaction and achievement (determined on the basis of subjective and objective measures as compared with such ratings in the general population)*

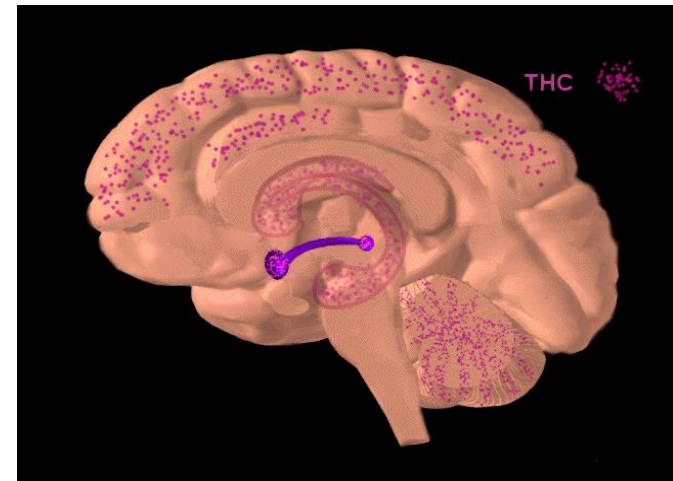
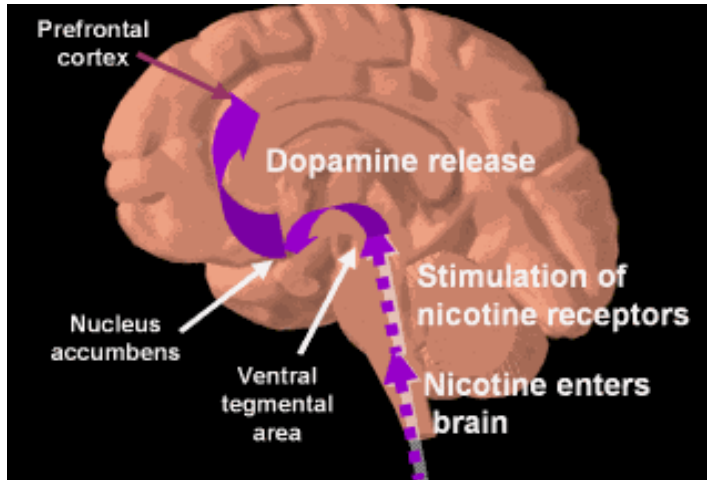
Symptoms of chronic bronchitis

Increased risk of chronic psychosis disorders (including schizophrenia) in persons with a predisposition to such disorders

* The effect is strongly associated with initial marijuana use early in adolescence.

Source: Volkow ND, Baler RD, Compton WM, Weiss SRB. Adverse Health Effects of Marijuana Use. *N Engl J Med.* 2014;370(23):2219-2227

Nicotine + THC = ?



- Nicotine and cannabis co-dependence:
 - Shared genetic/environmental risk factors
- Nicotine can increase THC's addictive potential:
 - Rapid absorption
 - Intense stimulation of the brain's reward system
- Nicotine and cannabis co-use
 - Can increase severity of withdrawal symptoms

Source: Agrawal A, Budney AJ, Lynskey MT. The co-occurring use and misuse of cannabis and tobacco: A review. *Addiction*. 2012;107(7):1221-1233

Long-term health risks of vaping remain mostly unknown

Pulmonary risks

- Asthma
- COPD

Oral health

- Dental caries
- Gingivitis

Cardiovascular risks

- Atherosclerosis
- Coronary disease

Cancer risks

- Lung cancer
- Other cancers



Screening and brief intervention



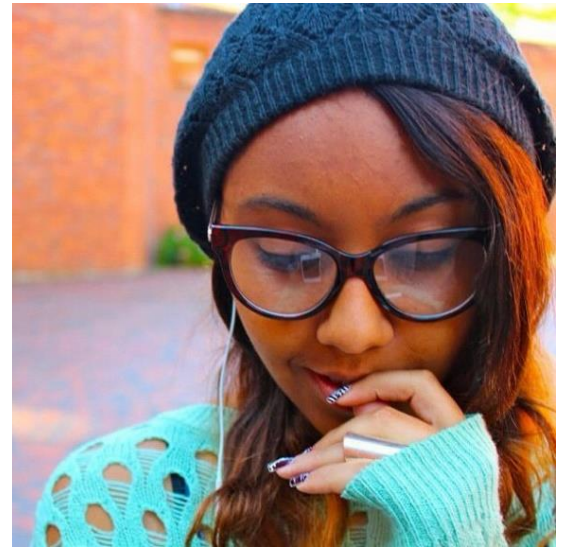
Alexis (Zack's older sister)

- Alexis, 17 years old, grade 12, passionate about dancing and pop music
- Her mother calls you, she is very concerned
- She tells you that she has recently found an electronic cigarette and a device that Alexis called a “dab pen” in Alexis' room
- She is concerned that Alexis' vaping is affecting her grades



Alexis

- You meet with Alexis alone in clinic (you know her well) and share some of her mother's concerns
- Alexis tells you that she used to be a “straight-A student”, but that this year has been “a lot harder, with COVID and everything”



Alexis

- Alexis also tells you that she is having frequent arguments at home “over almost everything”
- She admits to breaking curfew and house rules
- She then blushes and says that she took some money from her mom’s purse to buy dab cards and vaping pods, but “only a few times”

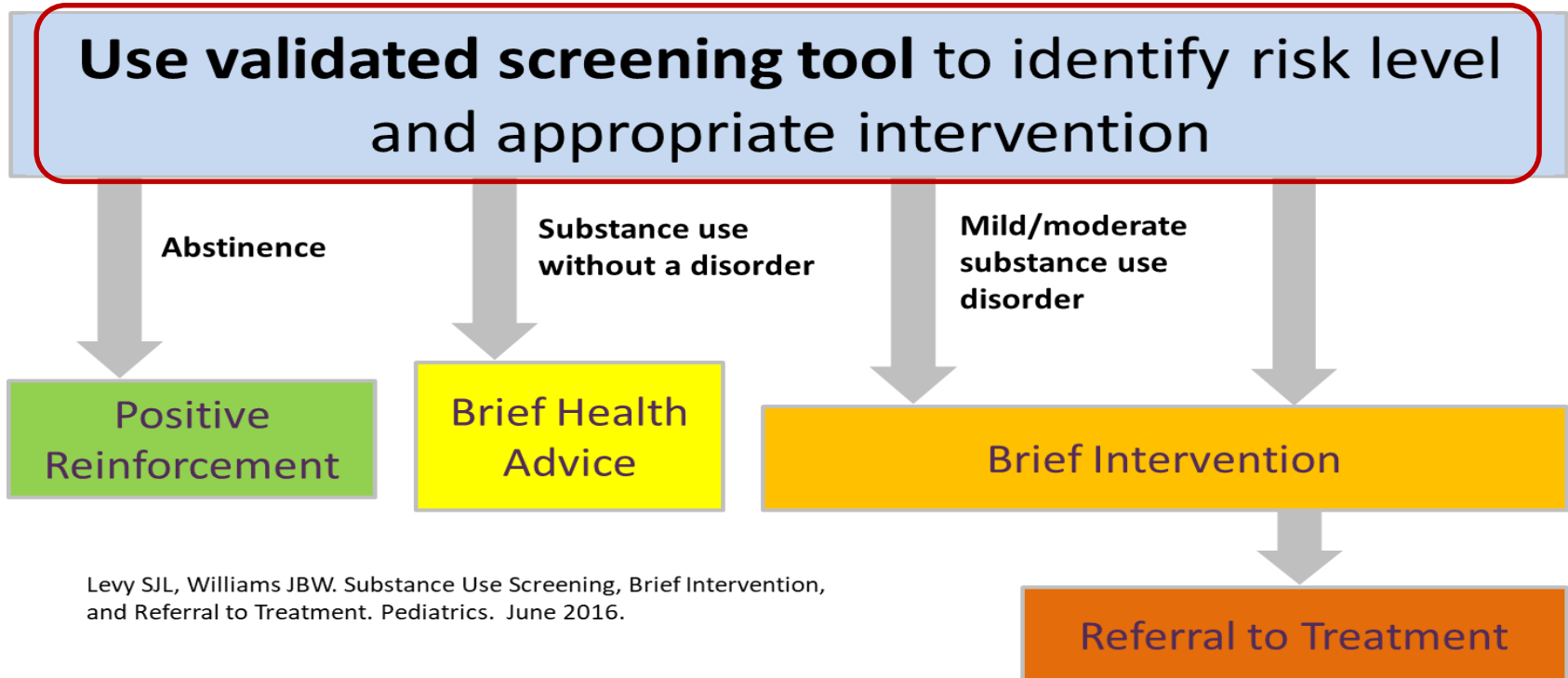


Privacy and confidentiality

- Important to clarify the **limits** of confidentiality
- Should be discussed with **every young person** at the beginning of every visit
- Create a space where the youth will feel comfortable sharing sensitive information
- Encourage the youth to be honest/truthful
- Reasons to **breach confidentiality** (i.e., to parents):
 - Self-harm/suicidality, harm to others, sexual abuse

Chadi N, Bagley SM, Hadland SE. Addressing Adolescents' and Young Adults' Substance Use Disorders. *Med Clin North Am.* 2018 Jul;102(4):603-620. doi: 10.1016/j.mcna.2018.02.015

Screening, Brief Intervention and Referral to Treatment (SBIRT)



Validated substance use screening tools

BSTAD

- Frequency of past-year use
- **Self** or provider administered
- Less than 2 minutes

S2BI

- Frequency of past-year use
- **Self** or provider administered
- Less than 2 minutes

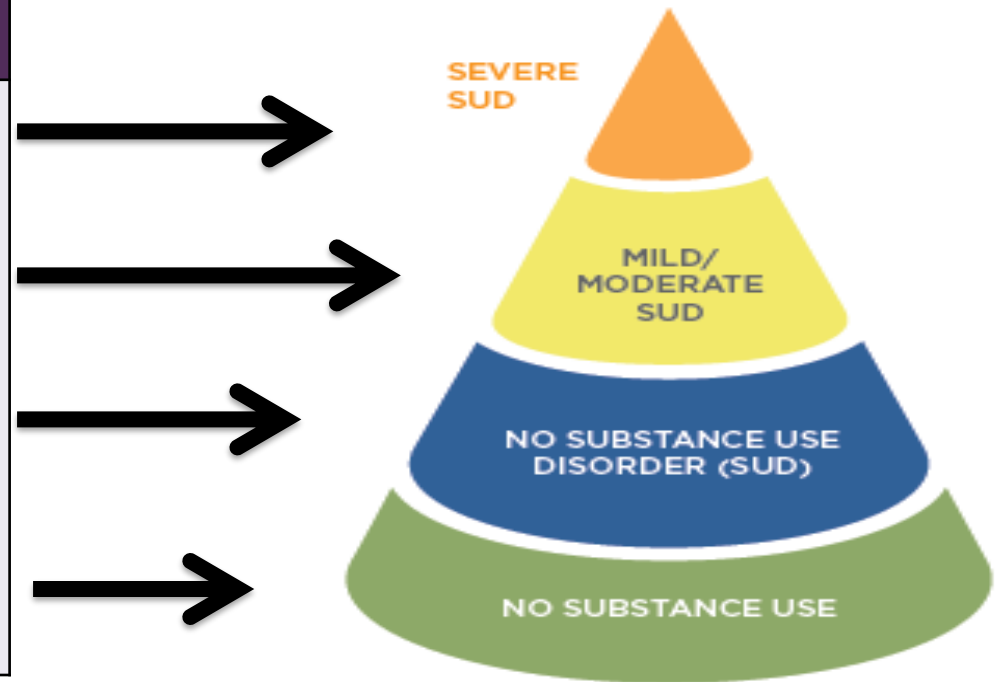
CRAFFT 2.1 + N

- 2-part tool (past year/problem use) – approx. 5 minutes
- **Self** or provider administered
- Available in 20+ languages

Screening to Brief Intervention (S2BI)

Screen all youth for substance use starting at age 12 (or younger if appropriate)

S2BI	
In the past year, how many times have you used:	
<ul style="list-style-type: none">Nicotine/tobacco (including cigarettes, electronic cigarettes, or vapes)?Alcohol?Marijuana?	<ul style="list-style-type: none">Weekly+Weekly/MonthlyOnce or twiceNever



Levy SJL, Williams JBW. Substance Use Screening, Brief Intervention, and Referral to Treatment. Pediatrics. June 2016.

The CRAFFT+N 2.1 Interview

To be orally administered by the clinician

Begin: “I’m going to ask you a few questions that I ask all my patients. Please be honest. I will keep your answers confidential.”

Part A

During the PAST 12 MONTHS, on how many days did you:

1. Drink more than a few sips of beer, wine, or any drink containing **alcohol**? Say “0” if none.

of days

2. Use any **marijuana** (weed, oil, or hash by smoking, vaping, or in food) or “**synthetic marijuana**” (like “K2,” “Spice”)? Say “0” if none.

of days

3. Use **anything else to get high** (like other illegal drugs, prescription or over-the-counter medications, and things that you sniff, huff, or vape)? Say “0” if none.

of days

4. Use any **tobacco or nicotine** products (for example, cigarettes, e-cigarettes, hookahs or smokeless tobacco)?

of days

When possible, consider self-administration using pen/paper or electronic formats to improve response/disclosure rates

Available at:

<https://crafft.org/get-the-crafft/>

Did the patient answer “0” for all questions in Part A?

Yes



No



Ask CAR question only, then stop

Ask all six CRAFFT* questions below

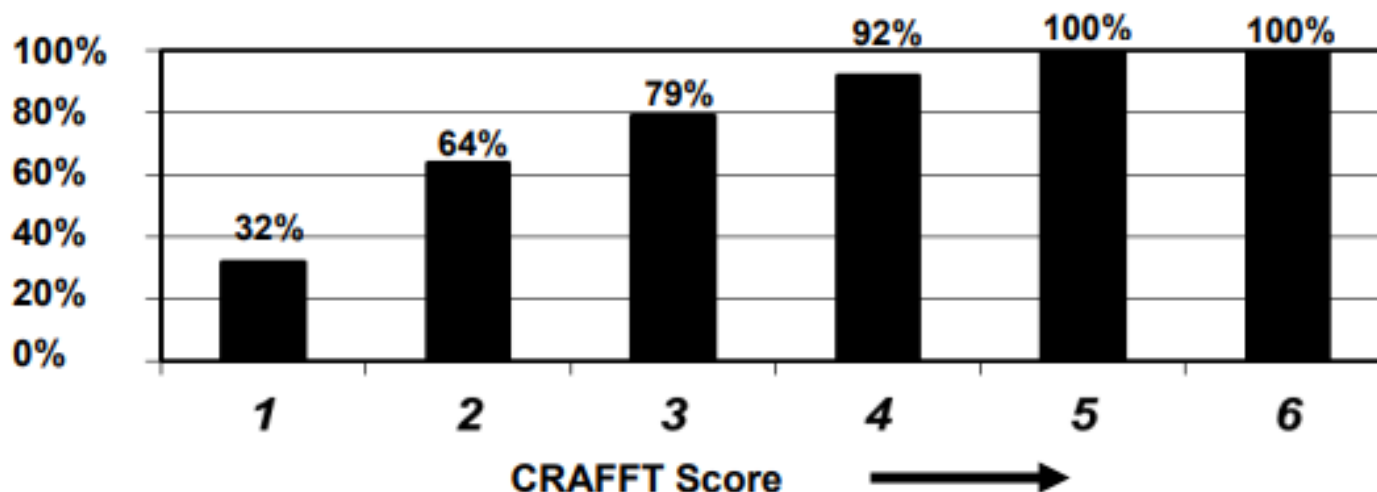
Part B

	No	Yes
C Have you ever ridden in a CAR driven by someone (including yourself) who was “high” or had been using alcohol or drugs?	<input type="checkbox"/>	<input type="checkbox"/>
R Do you ever use alcohol or drugs to RELAX , feel better about yourself, or fit in?	<input type="checkbox"/>	<input type="checkbox"/>
A Do you ever use alcohol or drugs while you are by yourself, or ALONE ?	<input type="checkbox"/>	<input type="checkbox"/>
F Do you ever FORGET things you did while using alcohol or drugs?	<input type="checkbox"/>	<input type="checkbox"/>
F Do your FAMILY or FRIENDS ever tell you that you should cut down on your drinking or drug use?	<input type="checkbox"/>	<input type="checkbox"/>
T Have you ever gotten into TROUBLE while you were using alcohol or drugs?	<input type="checkbox"/>	<input type="checkbox"/>

***Two or more YES answers suggest a serious problem and need for further assessment. See back for further instructions →**

1. Show your patient his/her score on this graph and discuss level of risk for a substance use disorder.

Percent with a DSM-5 Substance Use Disorder by CRAFFT score*



*Data source: Mitchell SG, Kelly SM, Gryczynski J, Myers CP, O'Grady KE, Kirk AS, & Schwartz RP. (2014). The CRAFFT cut-points and DSM-5 criteria for alcohol and other drugs: a reevaluation and reexamination. *Substance Abuse*, 35(4), 376–80.

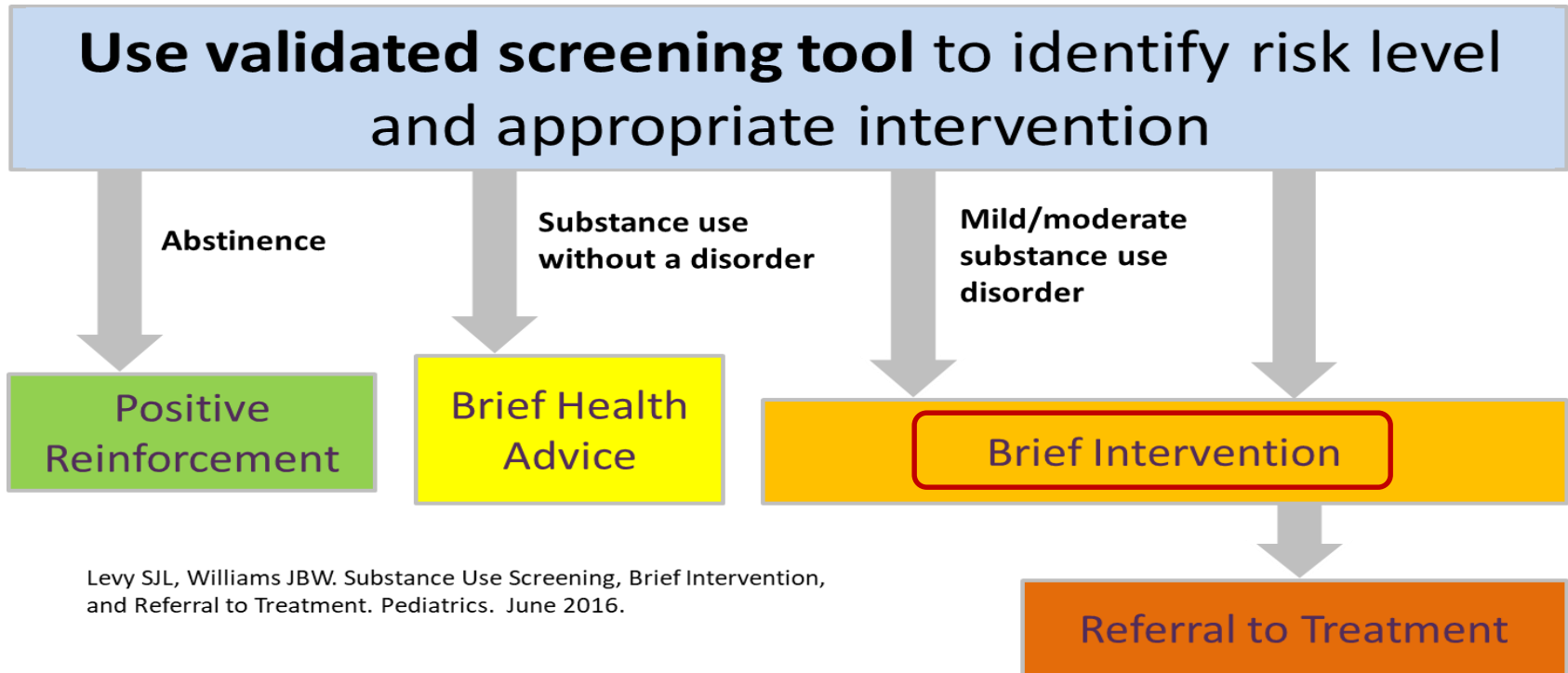
Available at: <https://crafft.org/get-the-crafft/>

Assessment questions

Themes	Examples
Vaping products	<ul style="list-style-type: none">• Type: Pod-based, mods, disposable, dab pens• Commercial brand
Source/Access	<ul style="list-style-type: none">• Social, store, online, legal vs black market
Vaping substance	<ul style="list-style-type: none">• Nicotine: yes/no, concentration (e.g. 1.5%, 3%, 5%)• Flavours: fruit, dessert, mint, menthol• Cannabis
Frequency/Intensity	<ul style="list-style-type: none">• Times/day, days/week• Number of pods, amount of e-liquid
Context	<ul style="list-style-type: none">• Alone, with friends (in person or online)
Dependence	<ul style="list-style-type: none">• Quit attempts, withdrawal symptoms
Functional impacts	<ul style="list-style-type: none">• Conflicts with parents, trouble at school

Adapted from: Hadland SE, Chadi N. Through the Haze: What Clinicians Can Do to Address Youth Vaping. *J Adolesc Health*. 2020 Jan;66(1):10-14.

Screening, Brief Intervention and Referral to Treatment (SBIRT)



Brief intervention



Use a patient-centered strengths-based approach



Advise adolescents to consider cessation



Provide information about health consequences



Use a nonjudgmental approach



Determine readiness or willingness to quit (on a scale from 1 to 10...)

SBIRT

SCREEN



BRIEF INTERVENTION



REFERRAL TO TREATMENT

The 5 As

Ask about use

Advise to quit

Assess readiness to quit

Assist in quit attempt

Arrange follow-up

U.S. Department of Health and Human Services. Treating tobacco use and dependence: 2008 update; Practice guideline executive summary: <http://www.ncbi.nlm.nih.gov/books/NBK63956>

Some terms you might hear...

- **Vaping/e-cigarette products:**

- Brands: JUUL/JUULing, Puff bars, VYPE, VUSE, STLTH, etc.
- E-liquids, e-juice, “juice”
- Dabs, dab pens, dab cards – (cannabis)

- **Techniques:**

- Drip, dripping or juicing – using e-liquids directly on heating coil
- Ghosting – hiding e-cigarette vapor in the mouth/airways
- Dosing – consuming large/fixed amounts of nicotine in a small amount of time to reach a euphoric state

- **Health effects/problems:**

- Getting “nicked” – Euphoria with high doses of nicotine
- Getting “nic sick” (nicotine toxicity) – Heart palpitations, nausea/vomiting, light-headedness

Treatment strategies



Alexis

- One month after your initial visit (during which you had done a brief motivational intervention), Alexis tells you she is still vaping and is unable to cut down
- She continues to vape nicotine and cannabis multiple times daily



Alexis

- She also tells you that she tried to quit “cold turkey” but couldn’t do it for more than one day: “I was shaky, anxious and I was constantly thinking about my vape”
- She also tells you that her sleep and anxiety have both gotten worse...



Treatment strategies for e-cigarette use



How to best assist adolescents

who want to quit vaping is

currently unknown

Smoking prevention/cessation strategies

Paediatrics
Child Health



[Paediatr Child Health](#). 2016 May; 21(4): 209–214.

PMCID: PMC4934164

Preventing smoking in children and adolescents: Recommendations for practice and policy

[Johanne Harvey](#), [Nicholas Chadi](#), and Canadian Paediatric Society, Adolescent Health Committee

Paediatrics
Child Health



[Paediatr Child Health](#). 2016 May; 21(4): 201–204.

PMCID: PMC4934162

Strategies to promote smoking cessation among adolescents

[Johanne Harvey](#) and [Nicholas Chadi](#)

- **Screen** all patients for tobacco exposure
- Advise patients to **abstain** from all forms of tobacco
- Do **not recommend** e-cigarettes for smoking cessation/reduction
- Offer **counselling** for nicotine cessation as a first step
- Consider **pharmacotherapy** for adolescent daily smokers

Promising approaches for vaping cessation based on available literature

- **Motivational interviewing**
- Individual counselling
- Vaping cessation apps and phone/chat lines
- Biofeedback
- Cognitive-behavioural therapy and mindfulness-based strategies
- Nicotine replacement therapy
- Medications
- Switching to lower nicotine concentration products (controversial)

Nicotine Replacement Therapy (NRT)

- Can be used to help teens quit
 - Short-acting: **lozenges/gums** (1-4mg)
 - Long-acting: **patches** (7/14/21mg)
 - Sprays and inhalers not recommended in teens
- Safe and minor side effects
 - Skin irritation, dry mouth
- Consider starting with lower doses for youth <45kg

For guidance on NRT prescription:
[https://downloads.aap.org/RCE/NRT_and Adolescents Pediatrician Guidance factsheet.pdf](https://downloads.aap.org/RCE/NRT_and_Adolescents_Pediatrician_Guidance_factsheet.pdf)



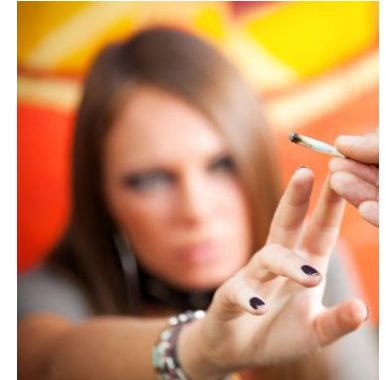
Other medications



- **Bupropion**
 - Limited evidence in youth
 - Best if combined with counseling/NRT
 - Contra-indications: Seizures, eating disorders
- **Varenicline**
 - Highest quit rates in adults
 - Limited evidence in youth; no longer recommended for ≤ 16 y.o.
 - Adverse effects: Possible increase in suicidality, vivid dreams

Treatment of cannabis dependence and withdrawal

No approved medication for treatment of cannabis dependence or withdrawal

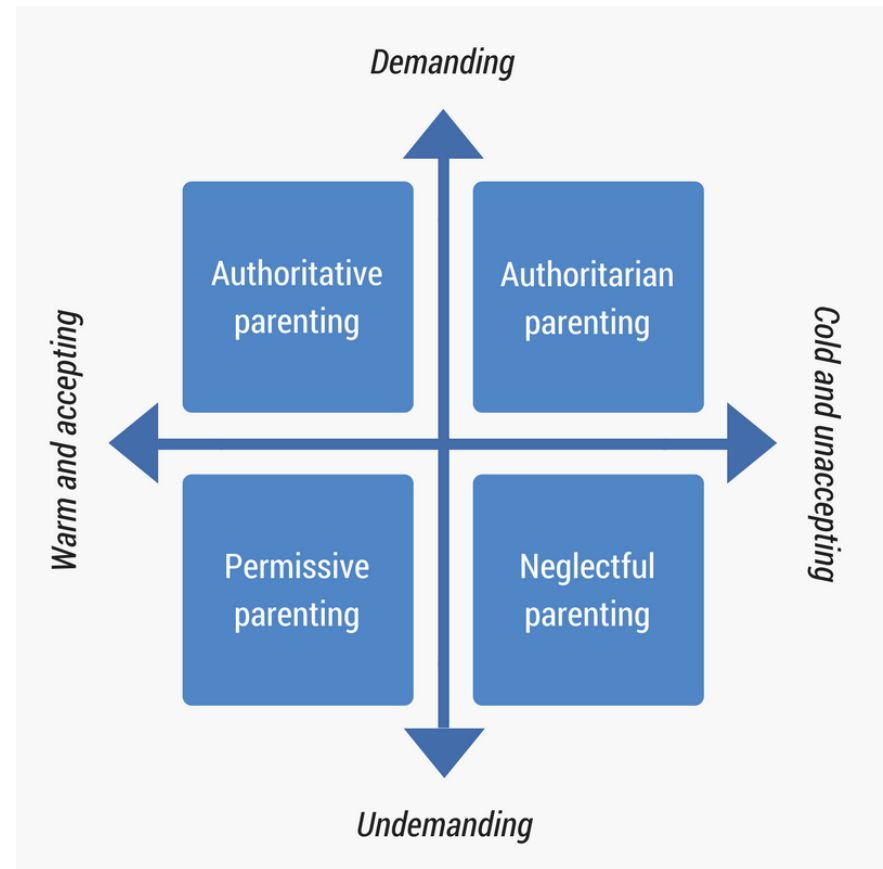


- **First line:** Motivational interviewing/counselling
- **Experimental treatments:**
 - Promising: N-acetylcholine, gabapentin, oxytocin, nabilone (THC tablets)
 - Little/no effects: SSRIs, bupropion, atomoxetine
- **Harm reduction approach:**
 - Medicinal cannabis with low THC: lack of evidence in youth

Source: Nielsen S. Pharmacotherapy for cannabis dependence, Cochrane Database Syst Rev, 2019.

Involving parents

- Parents can play an important role with **vaping prevention**
- Parents should have **open discussions** at home
- Providers should encourage an « **authoritative** » parenting style with a clear rules/boundaries (while remaining warm and accepting)
- Important to maintain consistent rules at home (i.e., curfew, money, driving)
- Parents themselves may need help/support



Resources



New position statement on youth vaping from the Canadian Paediatric Society

POSITION STATEMENT



Protecting children and adolescents against the risks of vaping

Posted: Apr 14, 2021

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Principal author(s)

Nicholas Chadi, Ellie Vyver, Richard E Bélanger; Canadian Paediatric Society, Adolescent Health Committee

Abstract

Youth vaping presents significant risks for the health and safety of Canadian children and adolescents. This statement provides background information about vaping, vaping products, and related devices, discusses the short- and long-term harms known to be associated with their use, and offers prevention and cessation strategies for youth who vape or are at risk for starting. Youth vaping is associated with increased risk for tobacco and other substance use, mental health problems, pulmonary and cardiovascular disease, and unintentional injuries. Vaping should not be used as a smoking cessation tool for youth, due to lack of effectiveness and evidence of harm. Many preventive and treatment strategies used for tobacco cessation, including behavioural and pharmacological options, can be adapted to help youth quit vaping. Recommendations for community stakeholders and policy-makers are included.

Keywords: Adolescent; Cannabis; Injury; Nicotine; Substance use; Vaping

DOCUMENT DE PRINCIPES



La protection des enfants et des adolescents contre les risques du vapotage

Affichage : le 14 avril 2021

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Auteur(s) principal(aux)

Nicholas Chadi, Ellie Vyver, Richard E. Bélanger; Société canadienne de pédiatrie, Comité de la santé de l'adolescent

Résumé

Le vapotage chez les jeunes comporte des risques importants pour la santé et la sécurité des enfants et des adolescents canadiens. Le présent document de principes fournit de l'information générale sur le vapotage et les produits et dispositifs qui y sont liés, traite des méfaits à court et à long terme associés à leur utilisation et propose des stratégies de prévention et d'abandon pour les jeunes vapoteurs ou ceux qui sont à risque de commencer à vapoter. Le vapotage chez les jeunes est associé à un risque accru d'usage de tabac et de substances psychoactives, de troubles de santé mentale, de pneumopathie, de cardiopathie et de blessures accidentelles. Le vapotage ne doit pas servir d'outil d'abandon du tabac chez les jeunes, en raison de son manque d'efficacité et des données probantes sur les méfaits qu'il occasionne. De nombreuses stratégies préventives et thérapeutiques utilisées pour l'abandon du tabac, y compris les stratégies comportementales et pharmacologiques, peuvent être adaptées pour aider les jeunes à arrêter de vapoter. Des recommandations sont formulées pour les intervenants communautaires et les décideurs.

Mots-clés : adolescent; cannabis; usage de substances psychoactives; lésions; nicotine; vapotage

Available at www.cps.ca/en/vaping

Canadian Paediatric Society resource page

HOME / CLINICAL PRACTICE / VAPING

Vaping

Some of the following initiatives have been made possible through a financial contribution from Health Canada.

Position statement

- Protecting children and adolescents against the risks of vaping (April 2021)

Clinical tool



STATEMENTS AND PRACTICE POINTS ↗

PAEDIATRICS & CHILD HEALTH ↗

Available at www.cps.ca/en/vaping

Caring for Kids



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Immunization

Preteens & Teens

HOME / PRETEENS & TEENS / TALKING WITH YOUR TEEN ABOUT VAPING



Talking with your teen about vaping

Before the talk: Get the facts

Vaping is not harmless

- Vaping can increase your exposure to harmful chemicals.



<https://www.caringforkids.cps.ca>

Available at www.caringforkids.cps.ca

Cannabis prevention/treatment resources



POSITION STATEMENT

Cannabis and Canada's children and youth

Principal author(s)

Christina N Grant, Richard E Bélanger; Canadian Paediatric Society, Adolescent Health Committee (<https://www.cps.ca/en/documents/authors-auteurs/adolescent-health-committee>)

Paediatr Child Health 2017;22(2):98-102 (<https://academic.oup.com/pch/article-pdf/22/2/98/23830082/pxx017.pdf>)




PRACTICE POINT

Counselling adolescents and parents about cannabis: A primer for health professionals

Principal author(s)

Richard E Bélanger, Christina N Grant; Canadian Paediatric Society, Cannabis Project Advisory Group (<https://www.cps.ca/en/documents/authors-auteurs/cannabis-project-advisory-group>)

Paediatr Child Health 2020, S34-S40. (https://academic.oup.com/pch/article-pdf/25/Supplement_1/S34/33389881/pxaa048.pdf) Appendix



COUNSELLING ADOLESCENTS & PARENTS ABOUT CANNABIS

A primer for health professionals

Both parents and adolescents want to know about the effects and potential harms of cannabis and other psychoactive substances. Many adolescents consider health professionals reliable sources of information on psychoactive substances and expect them to talk about use or risk during health care visits. As facilitators and knowledge brokers, health care providers can effectively engage with youth and families.

This tool is a companion to a Canadian Paediatric Society guidance document. It will help you provide sound and evidence-based advice about non-medical (recreational) cannabis to adolescents and their parents in your everyday practice.

One of every 6 youth who starts using cannabis will develop problematic use.

1 Assure patient privacy and confidentiality

2 Ask about cannabis use, after obtaining permission to do so

3 Answer all patient questions, and support healthy choices

4 Assess the impacts of cannabis use, by applying a screening tool

5 Appraise patient willingness to change or reduce cannabis use

6 Assist with specific goal-setting and a realistic time frame

7 Arrange for a follow up within weeks, and regularly thereafter

8 Acknowledge parental needs and concerns, when these arise

The 8 As for addressing cannabis use with adolescents

For more information: www.cps.ca/en/cannabis

Available at www.cps.ca/en/cannabis

Additional reading: *Paediatrics & Child Health*

Paediatrics & Child Health, 2020, S16–S20

doi: 10.1093/pch/pxaa016

Review Article

OXFORD

Review Article

Cannabis vaping: Understanding the health risks of a rapidly emerging trend

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Paediatrics & Child Health, 2019, 1–3

doi: 10.1093/pch/pxz137

Commentary

OXFORD

Commentary

Teen vaping: There is no vapour without fire

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Health Canada Resources

TALKING WITH YOUR TEEN ABOUT VAPING

A TIP SHEET FOR PARENTS

BEFORE THE TALK: GET THE FACTS

Vaping is not harmless

- > Vaping can increase your exposure to harmful chemicals.
- > Vaping can lead to nicotine addiction.
- > The long-term consequences of vaping are unknown.

Although not all vaping products contain nicotine, the majority of them do, and the level of nicotine can vary widely. Some vaping liquids have low levels, but many have levels of nicotine similar or higher than in a typical cigarette. Quitting vaping can be challenging once a teen has developed an addiction to nicotine. Nicotine withdrawal symptoms can be unpleasant.

<https://www.canada.ca/en/services/health/publications/healthy-living/talking-teen-vaping-tip-sheet-parents.html>

PARLER DE VAPOTAGE AVEC VOTRE ADOLESCENT

CONSEILS POUR LES PARENTS

AVANT LA DISCUSSION

Le vaping n'est pas inoffensif

Avant votre exposition à la nicotine, le vaping est dangereux. Il peut entraîner une dépendance

dépendance physique. Chez les enfants et les jeunes, la dépendance à la nicotine peut se produire plus rapidement que chez les adultes.

à la nicotine.

- > Les conséquences à long terme du vapotage sont inconnues.
- > Il est rare, mais les produits de vapotage défectueux (surtout les piles) peuvent entraîner des incendies et des explosions, ce qui peut causer des brûlures et des blessures.

Le vapotage avec de la nicotine peut altérer le développement du cerveau chez les adolescents.

Les produits de vapotage ne contiennent pas tous de la nicotine, mais la plupart en contiennent, et la teneur peut

International guidelines

PEDIATRICS®

OFFICIAL JOURNAL OF THE AMERICAN ACADEMY OF PEDIATRICS

This policy is a revision of the policy in [136\(5\):1018](#)

From the American Academy of Pediatrics Policy Statement

E-Cigarettes and Similar Devices

Brian P. Jenssen, Susan C. Walley and SECTION ON TOBACCO CONTROL

Pediatrics February 2019, 143 (2) e20183652; DOI: <https://doi.org/10.1542/peds.2018-3652>

Journal of Adolescent Health 66 (2020) 127–131



ELSEVIER

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JOURNAL OF
ADOLESCENT
HEALTH

www.jahonline.org

Position paper

Protecting Youth From the Risks of Electronic Cigarettes

The Society for Adolescent Health and Medicine



AAP Richmond Center: Nicotine Replacement Fact Sheet

Nicotine Replacement Therapy and Adolescent Patients: Information for Pediatricians

Nicotine Replacement Therapy (NRT) can be an important tool for treating nicotine dependence in youth. Many pediatricians are uncertain about how to use this medication with adolescents, especially those who are under 18 years old. This document is intended to help pediatricians make informed decisions about using NRT with patients who wish to quit smoking or vaping.

What is Nicotine Replacement Therapy (NRT)?

- NRT is a medication that addresses nicotine withdrawal symptoms by providing a controlled amount of nicotine, thus helping reduce the urge to smoke or vape.¹
- NRT is safe and effective in helping adults quit tobacco use.¹
- NRT works best when paired with behavioral counseling interventions.²
- NRT comes in five forms, including gum, patch, lozenge, nasal spray, and inhaler.
- Three forms of NRT (gum, patch, lozenge) are available over-the-counter for adults 18+.



NRT gum, patch, and lozenge

Can Adolescents Use NRT?

- At present, the US Food and Drug Administration (FDA) has approved NRT for use in adolescents.
- Research on the effectiveness of NRT for help studies. Overall efficacy findings have been mixed. There is no evidence of serious harm from use.
- Given the effectiveness of NRT for adults and pediatricians consider off-label NRT for youth.
- Youth under 18 years old need a prescription for NRT.
- Non-adherence and relapse after cessation of NRT are common.

Types of NRT:

Nicotine Transdermal Patch

(OTC for 18+
Rx for <18)

Cost:
Over-the-counter retail cost ranges from \$25-\$70 for 28 patches.

Out-of-pocket prescription costs will vary by insurance plan.

Dosage:

- 21mg, 14mg, 7mg

Use Instructions:

- Apply patch to clean skin, change patch every 24 hours
- 8-10 week treatment regimen:
 - Use first dose for 6 weeks, then "step down" to lower dose
 - Use lower dose for 2 weeks, then "step down" to lowest dose for 2 more weeks
- See package for full details

Side Effects:

- Skin Irritation, sleep disturbance

Advantages:

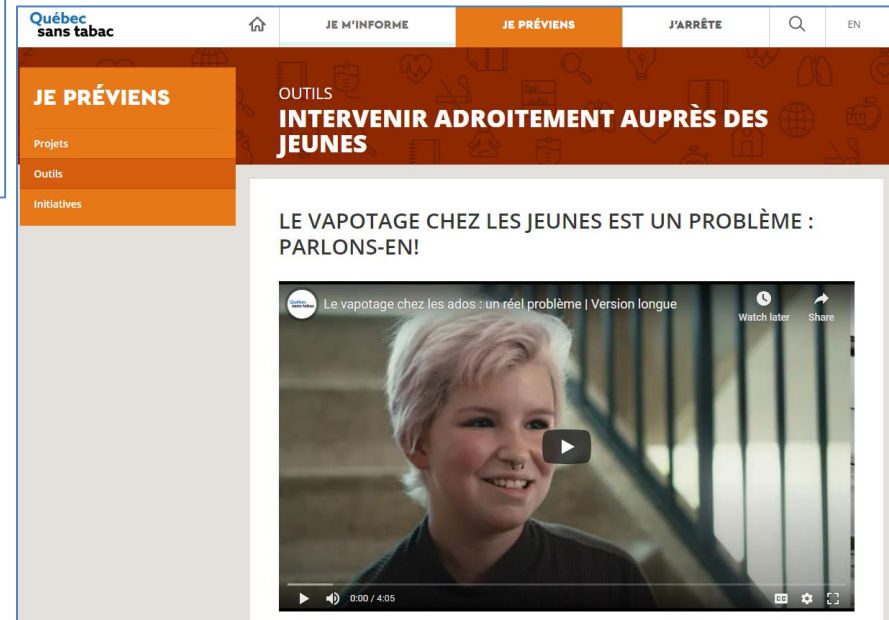
- Sustained blood levels of nicotine, compliance is relatively easy

Available at: [https://downloads.aap.org/RCE/NRT and Adolescents Pediatrician Guidance factsheet.pdf](https://downloads.aap.org/RCE/NRT%20and%20Adolescents%20Pediatrician%20Guidance%20factsheet.pdf)

French language resources



<https://quebecsanstabac.ca/cqts/prevention/inscription/outil-vapotage/intervenants>



<https://quebecsanstabac.ca/je-previens/outils/ressources-parents>

Conclusion



Take home messages

E-cigarettes, most of which contain **nicotine and flavouring agents**, carry **acute and long-term risks** that should be discussed with adolescents

Cannabis vaping is now very common among youth and often involves use of high potency marijuana products

Screening for e-cigarette use with a validated screening tool followed by a brief intervention is **quick and effective**

Treatment approaches that are applicable to cigarette and tobacco use **can be applied and adapted to e-cigarette use**

Health care providers should remember to **report all types** of injuries using public health and CPSP channels to allow tight monitoring of these conditions

Everything on vaping from the
Canadian Paediatric Society can be found at:

www.cps.ca/en/vaping

