



TBI-BH ECHO

Traumatic Brain Injury – Behavioral Health ECHO
UW Medicine | Psychiatry and Behavioral Sciences

Cannabis and TBI

Charles H. Bombardier, PhD
Professor, Rehabilitation Medicine
University of Washington

Jesse R. Fann, MD, MPH
Professor, Department of Psychiatry and Behavioral Sciences
Adjunct Professor, Rehabilitation Medicine & Epidemiology
University of Washington



Objectives

1. Provide an overview of cannabis
2. Describe the evidence for the therapeutic and harmful health effects of cannabis
3. Describe the limited evidence related to the health effects of cannabis in TBI
4. Describe approaches to treating cannabis use disorder
5. Questions

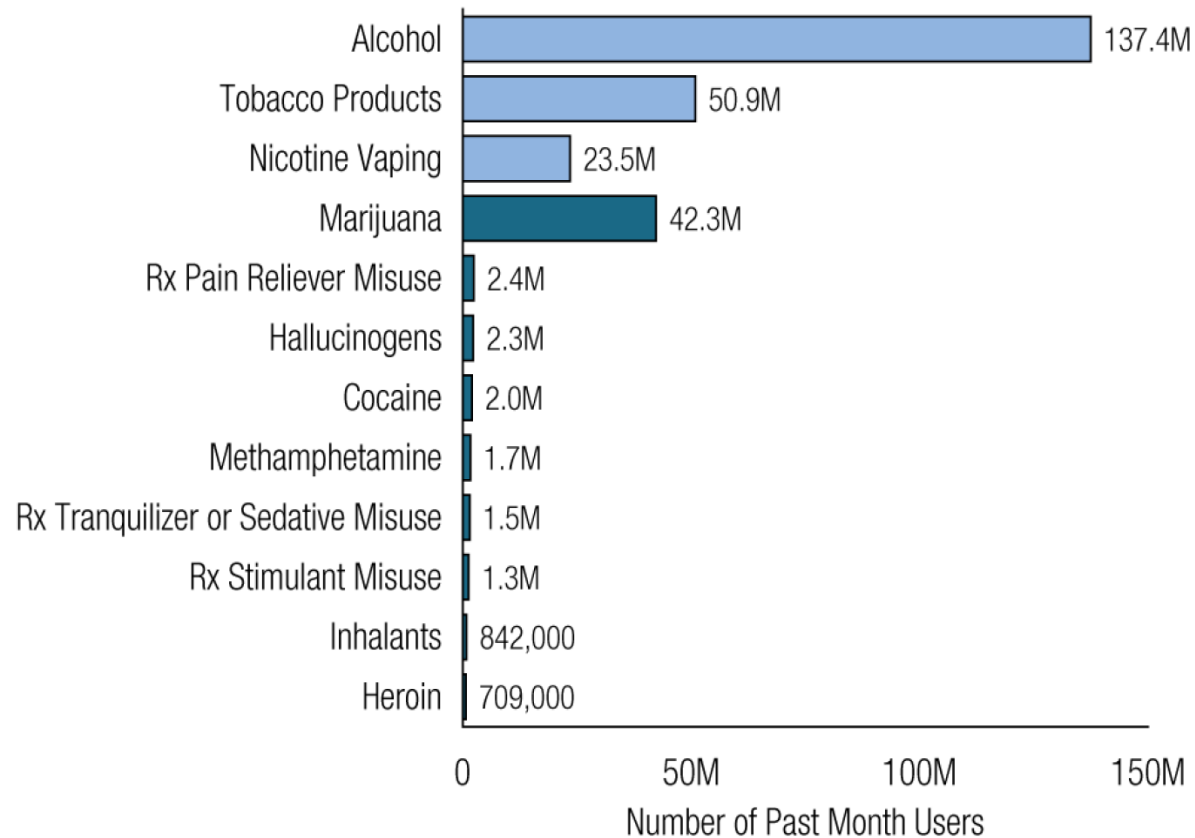


Cannabis Use and Patterns



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Marijuana is the third highest used substance in the U.S. (2022)

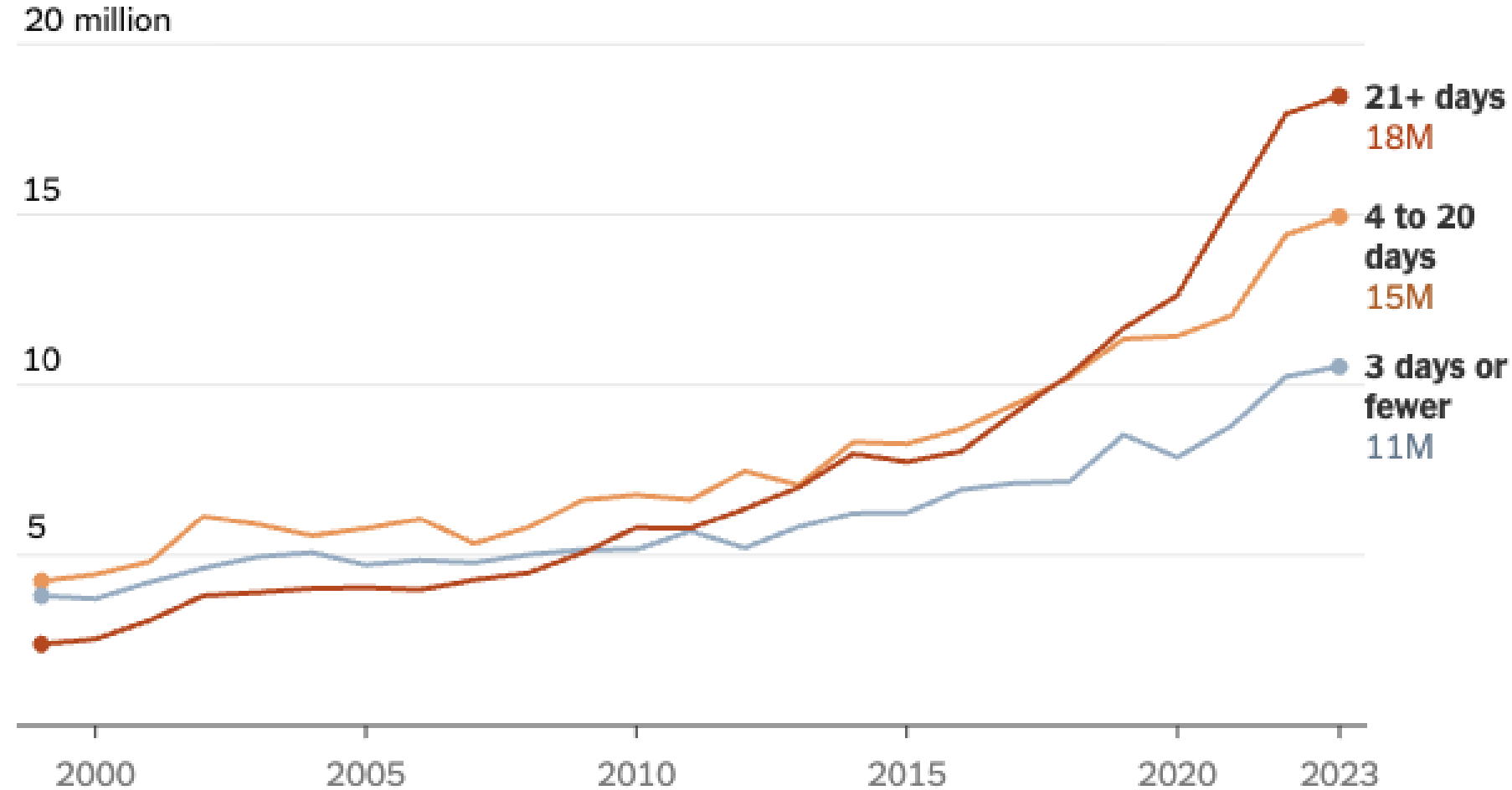


Rx = prescription.

Note: The estimated numbers of current users of different substances are not mutually exclusive because people could have used more than one type of substance in the past month.

Surging pot use

Number of U.S. residents consuming marijuana, by frequency of use per month

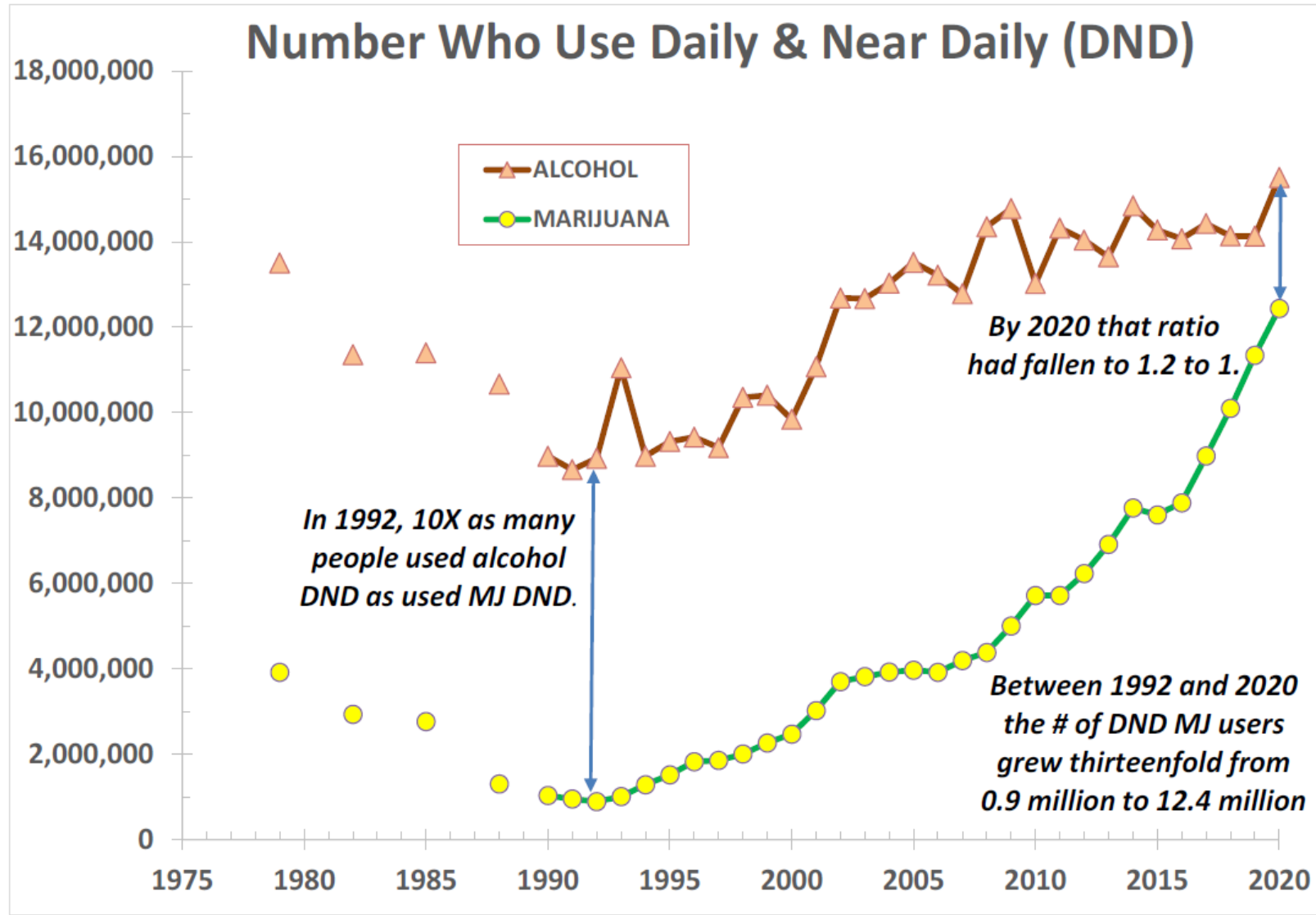


Source: Jonathan Caulkins (Carnegie Mellon), based on National Survey on Drug Use and Health By THE NEW YORK TIMES Feb 9, 2026



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High-Frequency Use Approaching that of Alcohol

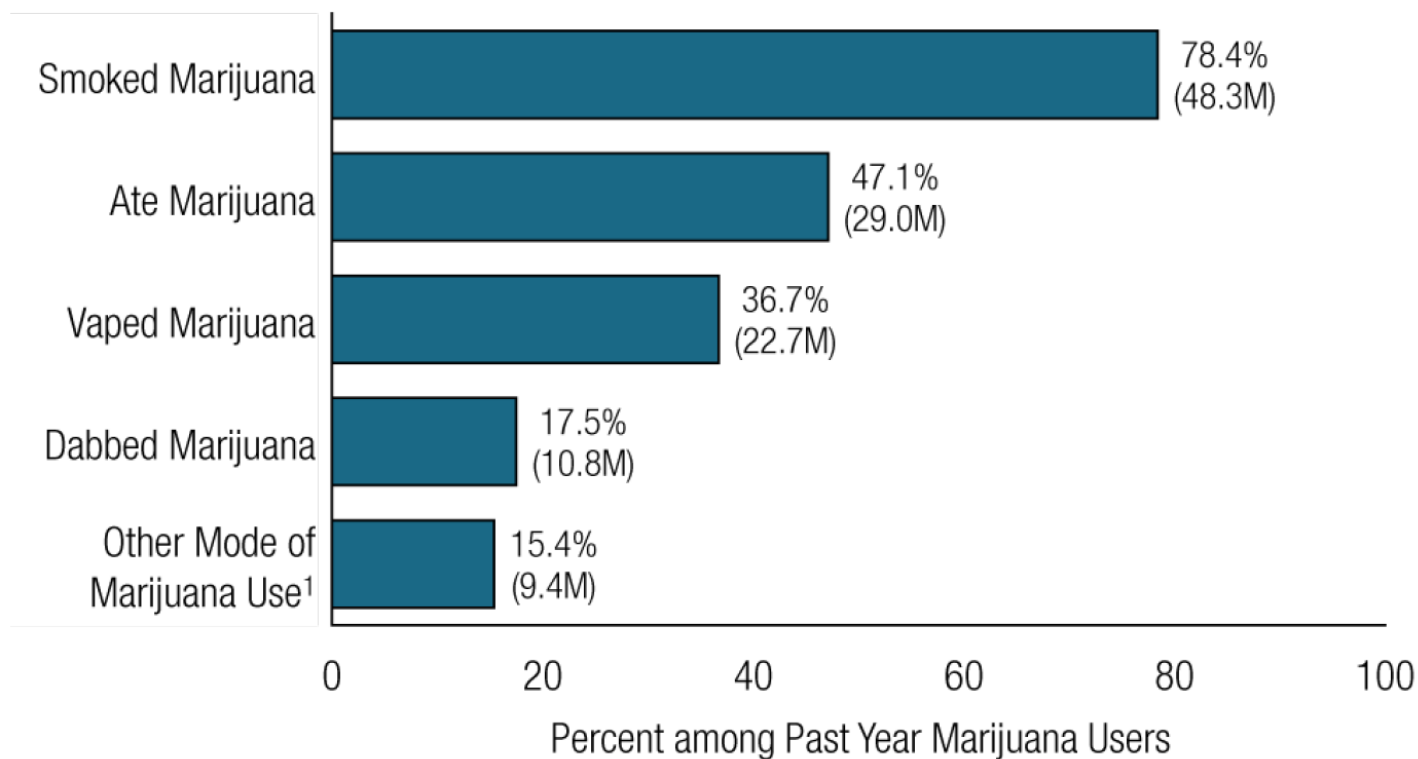


~80% of MJ consumption is now by daily or near daily users (Caulkins J, 2022)



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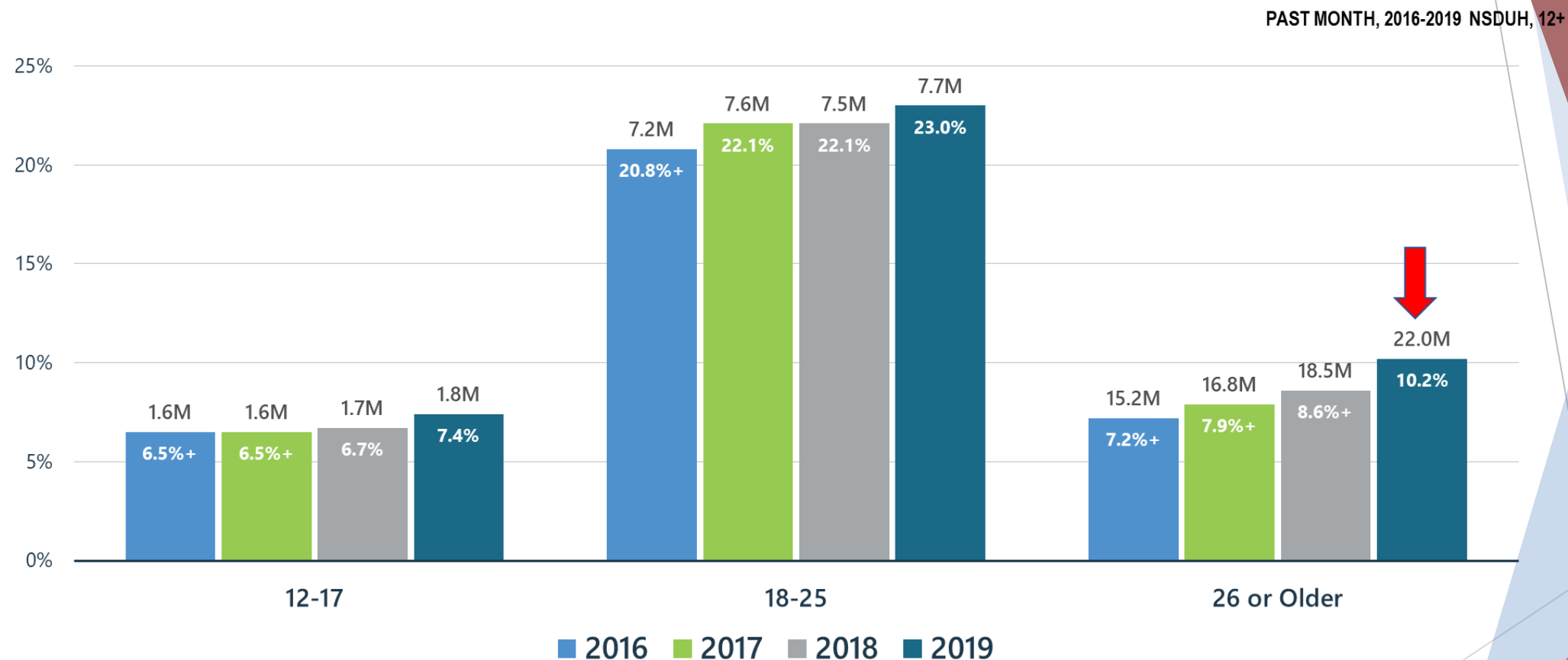
Modes of Past Year Marijuana Use - 12 or older who used in past year (2022)



Note: Respondents could indicate multiple modes of marijuana use; thus, these response categories are not mutually exclusive.

¹ Includes applying lotion, cream, or patches to skin; putting drops, strips, lozenges, or sprays in mouth or under tongue; taking pills; or some other way not already listed in this figure.

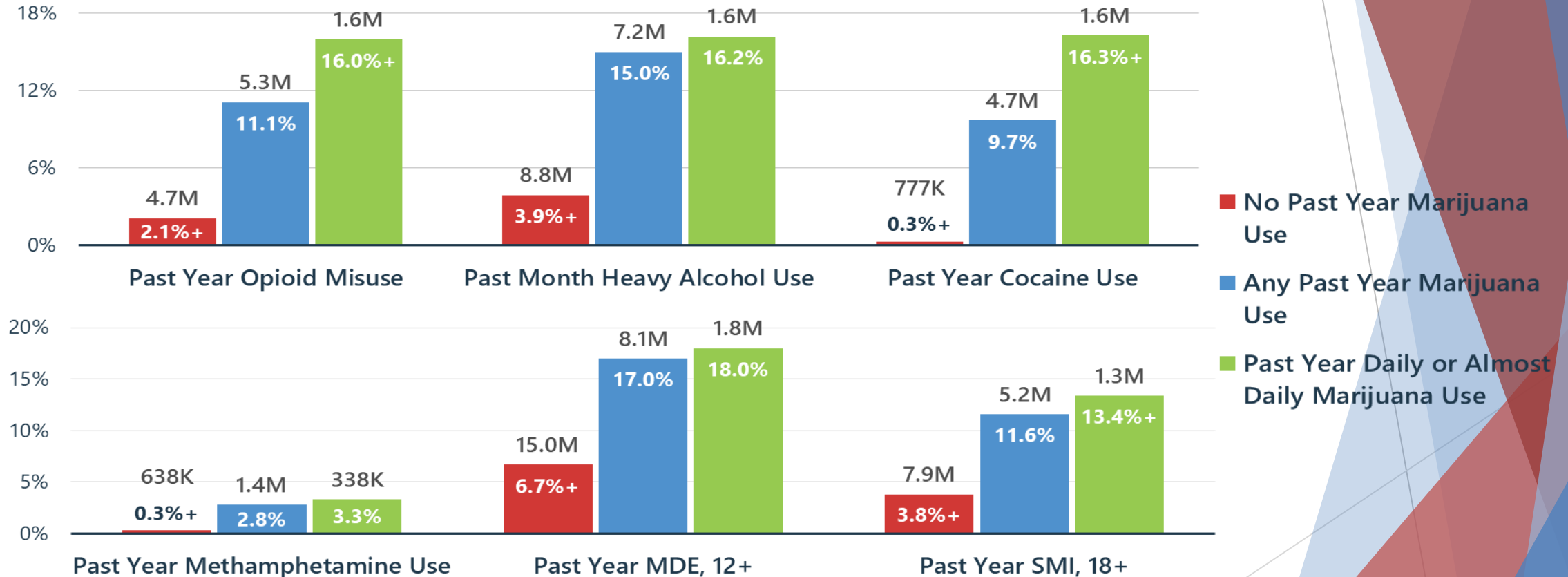
Marijuana use is increasing in all age groups



+ Difference between this estimate and the 2019 estimate is statistically significant at the .05 level.

Marijuana Use Related to Other SUD, MDE and SMI

PAST YEAR/MONTH, 2019 NSDUH, 12+



MDE = Major Depressive Episode
SMI = Serious Mental Illness

+ Difference between this estimate and the estimate for people with past year marijuana use is statistically significant at the .05 level.

Background on Cannabis and Cannabinoids



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Cannabis versus cannabinoids

- ▶ Cannabis refers to the unprocessed or minimally processed products derived from the flowering parts of the plant genus Cannabis.
- ▶ These products contain a complex mixture of biologically active compounds, including more than 100 phytocannabinoids, terpenes, and flavonoids
- ▶ Cannabinoids, such as Δ^9 -tetrahydrocannabinol (THC) and cannabidiol (CBD), are chemical constituents of the cannabis plant that interact with the body's endocannabinoid system to produce physiological effects.



Cannabinoids

- ▶ **Phytocannabinoids** - plant-based cannabinoids from the flowering parts of the plant genus Cannabis including sativa, indica and hybrid types (>100 cannabinoids)
 - **Tetrahydrocannabinol (THC)** - psychoactive, analgesic, anti-spasmodic, muscle relaxant, appetite stimulant, antiemetic properties
 - **Cannabidiol (CBD)** - no 'high', neuroprotective, anti-inflammatory, analgesic, anticonvulsant, buffers THC effects
- ▶ **Endocannabinoids** - naturally occurring (CB1, CB2 receptors, help regulate stress, pain, immunity)
- ▶ **Synthetic cannabinoids** - e.g., Dronabinol (synthetic THC) indicated to treat HIV/AIDS anorexia and chemotherapy related nausea and vomiting



Cannabis Plant Types

SATIVA



HIGH THC LEVEL

Energizing
Stimulating
Reduce anxiety
Increase creativity
Increase focus



INDICA



HIGH CBD LEVEL

Relaxing
Relief of pain
Decreases nausea
Increases appetite
Better sleep



HYBRID



MIX

Sativa and indica
effects depending
on the traits
from both
parent strains

Many strains / “chemovars” / cannabinoid profiles ...

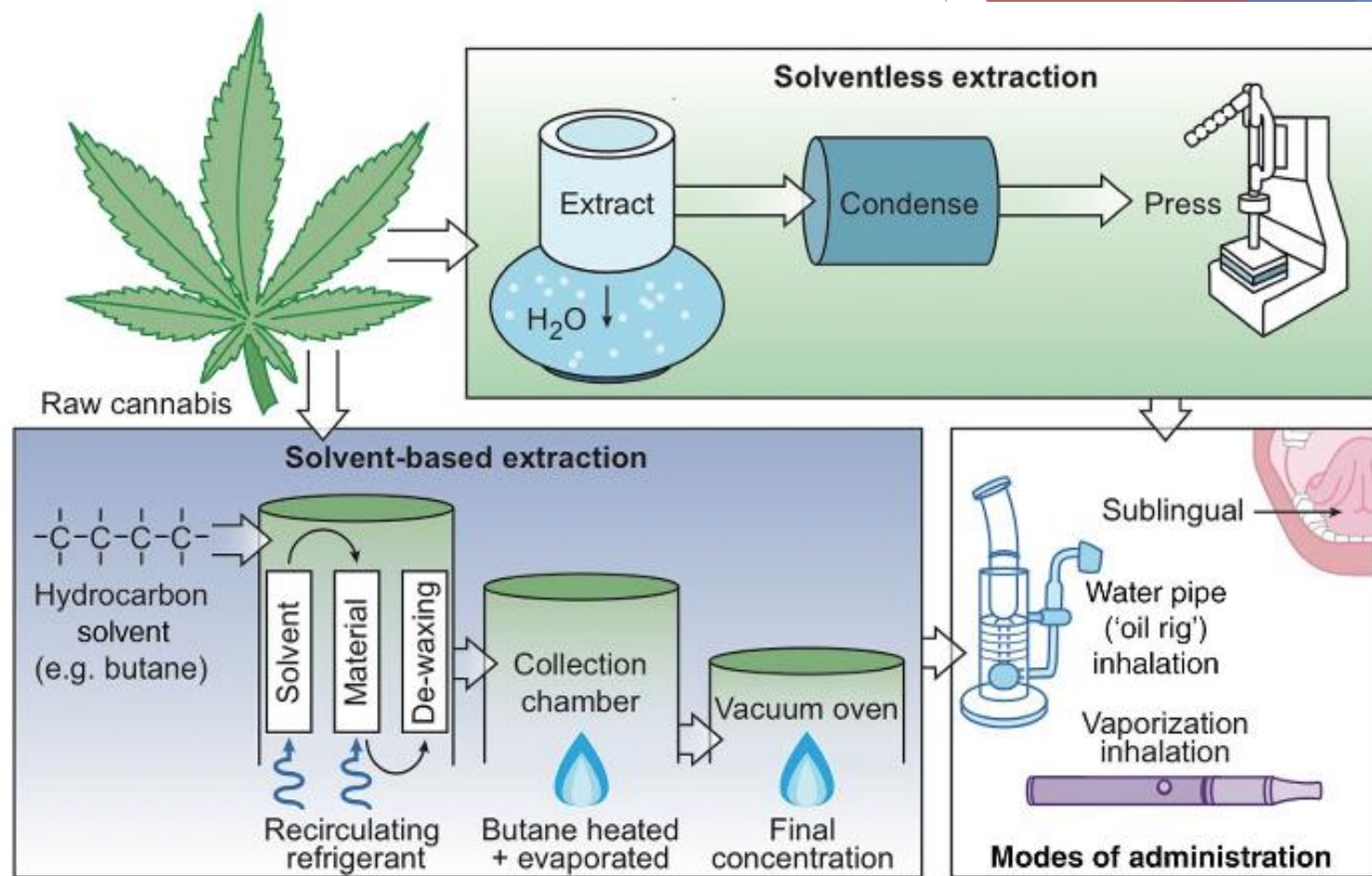
Cannabis products and routes of delivery

- ▶ Rolled cigarette “joint”, blunt
 - With or without tobacco
- ▶ Water pipe “bong”
- ▶ Concentrates (>60-90%+ THC)
- ▶ Vaporizers (Vapes)
- ▶ Edibles - slow, prolonged effects
 - ▶ Oils
 - ▶ Baked goods
 - ▶ Candy
 - ▶ Drinks
- ▶ Tinctures, lozenges
- ▶ Lotions, creams, Rick Simpson Oil
- ▶ Synthetic THC preparations



Concentrates

Concentrates
e.g., Butane hash
oil, wax, live
resin, shatter,
hash, and bubble
oil are extracted
via **solvent-based**
and **solvent-less**
methods



Concentrates

- ▶ Concentrate potency usually ranges from 52-69% but can be as high as 90-95% whereas potency of flower products is typically 16-21% THC
- ▶ Contaminants are more of an issue in concentrates
- ▶ Solven-based concentrates have been found to contain residual solvents (isopentane), pesticides (paclobutrazol), methacrolein, and benzene.
- ▶ A review of concentrate studies found unsafe levels of fungi, mold, and bacteria, as well as heavy metals, pesticides, and fertilizers



Timing of effects by administration route

- ▶ Oral-edibles, teas effects peak 1-3 hours after consumption
 - ▶ higher risk of over-consumption leading to ED visits,
 - ▶ acute psychosis (18%), intoxication (48%), cardiovascular symptoms such as tachycardia and hypertension 8%)
- ▶ Inhalation-effects peak about 30 minutes post use
 - ▶ Smoking, combustion of phytocannabinoids
 - ▶ Vaping, heating (but not burning) dried cannabis or concentrates; may reduce exposure to combustion related toxins
 - ▶ Dabbing method of vaporizing and inhaling cannabis concentrates such as butane, hash oil using a specialized heating surface, delivers high doses of delta-9 THC



Potential Risks of Concentrate Use

- ▶ Higher rate of reported **cannabis use disorder (CUD)**
- ▶ Increase in **tolerance** and **withdrawal**
- ▶ Stronger **cognitive effects**
- ▶ More severe **psychosis**, especially in youth
- ▶ Orthostatic hypotension and **falls**
- ▶ More likely to use **other substances**
- ▶ More likely to have a **mental health diagnosis**



FDA Approved Uses of Synthetic Cannabinoids

- ▶ Chemotherapy induced vomiting (Dronabinol, Nabilone)
- ▶ Appetite stimulation in HIV/AIDS for those with persistent weight loss (Dronabinol)
- ▶ Seizures due to Dravet syndrome and Lennox-Gastaut syndrome and tuberous sclerosis complex in children
- ▶ Multiple sclerosis related spasticity (not FDA approved but approved in the UK, Spain, Germany)



Potential adverse medical effects of cannabis

- ▶ Cardiovascular
 - ▶ Acute tachycardia, orthostatic hypotension, increased risk of MI and stroke in at-risk populations
 - ▶ Increased risk of coronary artery disease, MI, and stroke with chronic and/or heavy use
- ▶ Respiratory effects with inhaled formulations
 - ▶ Acute bronchial irritation, increased phlegm production, acute bronchitis chronic bronchitis, cough, wheezing, phlegm production, asthma
- ▶ Pregnancy and breastfeeding
 - ▶ Δ 9-THC and CBD cross the placenta and concentrate in breast milk due to their lipophilicity, exposing the fetus and infant to cannabinoids



Cannabis induced syndromes

- ▶ **Cannabis hyperemesis syndrome.** Recurrent episodes of intractable, nausea, vomiting, and abdominal pain in individuals with chronic heavy cannabis use (**prevalence 32.9% among those who smoked cannabis > 20 days/month**)
- ▶ **Cannabis withdrawal syndrome.** For example, irritability, anxiety, sleep disturbance develop within approximately one week or heavy, sustained cannabis use (**17% in those with CUD**)
- ▶ **Cannabis use disorder.** Found in 29% of those who report medicinal cannabis use within the past 6-12 months. (UW ADAI site reports that **33-50% of daily users become addicted**)



Cannabis Related to TBI



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Cannabis Use after TBI

- ▶ Survey of 65 people with moderate to severe TBI
 - 74% used before TBI, 45% used after
 - **Reasons for use:**
 - 72% for Recreation
 - 62% to Reduce Stress / Anxiety
 - 55% to Improve Sleep
 - **Among those with Negative Side Effects (n=29)**
 - 28% had Decreased Motivation
 - 21% had Paranoia
 - 21% felt Hazy or Dull
 - 21% felt Fatigued

Hawley et al, 2018



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Case Study

- ▶ 43 y.o. married, White, male, web-designer
- ▶ Hospitalized on inpatient rehabilitation 5 days after he sustained mod-severe TBI in single EV (scooter) crash on his way to work at noon. No recall of crash.
- ▶ Positive toxicology screen for THC.
- ▶ Poor awareness of impairment. Wants to return home and return to work ASAP despite mild to moderate impairments in attention, concentration, memory, problem-solving, and thinking flexibility
- ▶ What questions do you have about how THC may relate to this case in terms of causation, prognosis, patient education, etc?



The patient's urine toxicology result was positive for THC
which indicates acute intoxication at the time of injury



True



False



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The patient's urine toxicology result was positive for THC which indicates acute intoxication at the time of injury



True



False



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Cannabis use screening

Depending on the type of test and other parameters, THC can be detected for the past few hours to the past few months

- ▶ Blood tests detect THC for a few hours
- ▶ Saliva tests can detect THC for up to 24 hours
- ▶ Hair tests can detect THC for up to 90 days
- ▶ Urine test (most common) can detect THC for up to 30 days
 - ▶ THC is sequestered in fat cells so people with higher body fat will metabolize THC more slowly; for the same reason females may metabolize THC more slowly
 - ▶ In first time user, test may detect THC for up to 3 days
 - ▶ In someone who uses 3-4 times per week, detection window is 5-7 days
 - ▶ In daily or more users, THC may be detectable for 30 days or longer

The patient vaped cannabis oil at 8:00 AM and was injured at noon. Did he decide to ride his EV scooter sooner than he should have?



Yes



No



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The patient vaped cannabis oil at 8:00 AM and was injured at noon. Did he decide to ride his EV scooter sooner than he should have?



Yes



No



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Cannabis effects on cognition and driving

- ▶ There is a “**window of impairment**” **lasting 3-10 hours** after THC use with the duration dependent on dose, route, and usual use of cannabis
 - ▶ Higher THC doses produced longer lasting impairment
 - ▶ Oral THC produced longer lasting impairment than inhaled, up to 12 hours
 - ▶ Occasional users were more impaired than regular users; behavioral tolerance?
- ▶ Short term negative effects of cannabis on cognition were observed for: divided attention, tracking performance, conflict control, fluid intelligence, information processing speed, reaction time, fine and gross motor function, sustained attention, and working memory.
- ▶ **Short term negative effects of cannabis on driving were found on lateral control, standard deviation of lane position, and reaction time**
- ▶ **Recommend waiting at least 5 hours following inhaled cannabis before performing safety sensitive tasks and longer after using edibles**



Cannabis and Pregnancy, Driving and Psychosis

Author, year	Cannabinoid specific exposure	Outcome	Studies		CE/CES		eOR (95% CI)	eOR (95% CI)
			(k)	n/No				
Pregnant women								
Marchant 2022	Marijuana use	Small for gestational age	6	2078/22 921	I/I		◆	1.61 (1.41 to 1.83)
Conner 2016	Marijuana use	Low birth weight	12	6204/57 438	I/I		◆	1.43 (1.27 to 1.62)
Marchant 2022	Marijuana use	Neonatal ICU admission	6	1315/18 615	III/III		◆	1.41 (1.15 to 1.71)
Conner 2016	Marijuana use	Pre-term delivery	14	8060/81 326	III/III		◆	1.32 (1.14 to 1.54)
Drivers								
Rogeberg 2019	THC positive	Car crash, culpability	13	NR/78 025	IV/I		◆	1.53 (1.39 to 1.67)
Rogeberg 2019	THC positive	Car crash	13	NR/78 025	IV/I		◆	1.27 (1.21 to 1.34)
Hostiuc 2018	Cannabis use	Car unfavourable traffic events	23	NR/245 021	IV/II		◆	1.89 (1.58 to 2.26)
Hostiuc 2018	Cannabis use	Car death after car crash	5	NR/66 705	IV/II		◆	1.72 (1.40 to 2.10)
Hostiuc 2018	Cannabis use	Car injury	12	NR/95 441	IV/III		◆	2.15 (1.42 to 3.28)
Hostiuc 2018	Cannabis use	Car collision	6	NR/82 875	IV/III		◆	1.91 (1.34 to 2.72)
Psychosis								
Foglia 2017	Cannabis current use	Adherence to antipsychotic treatment	3	NR/259	IV/III		◆	5.78 (2.68 to 12.46)
Foglia 2017	Cannabis any use	Adherence to antipsychotic treatment	11	NR/3055	IV/III		◆	2.46 (1.97 to 3.07)
Bogaty 2018	Cannabis current use	Premorbid IQ	7	NR/515	IV/III		◆	1.99 (1.34 to 2.96)
Schoeler 2016	Cannabis continued use	Psychosis relapse	24	NR/16 257	IV/III		◆	1.88 (1.34 to 2.71)
Schoeler 2016	Cannabis use	Working memory	19	NR/2468	IV/III		◆	1.44 (1.21 to 1.71)
						0.0625	1	16
						Beneficial		Harmful

Solmi et al [BMJ 2023;382:e072348](#)

Next-day effects of cannabis on cognition

- ▶ Systematic review of 20 studies, n=458 participants (cannabis users), 345 performance tests administered **12-24 hours post-dosing**.
- ▶ **No next day effects found in 16 studies**, tended to be higher quality, though only 20% of studies also found acute effects (short-term impairment); no effects found on : executive functioning, information processing, tracking performance, reaction time, motor function, sustained attention, working memory, perception, learning/memory, and simulated driving.
- ▶ **Next day effects were found on 10 neuropsychological tests from 5 studies in which testing was conducted 8-12 hours after dosing** including: learning/memory, perception, working memory, divided attention, simulated flying

Chronic effects of cannabis on cognition

- ▶ National survey (n=36,309) found that current and former users of cannabis reported significantly worse cognitive functioning than never users; cognition in former users was in-between that of never and current users (note potential self-selection bias)
- ▶ Meta-analysis of 30 studies (n=849 users and n=764 controls) on cognition in long term (> 2 years), regular (>3 days/week) recreational cannabis users during abstinence (m=12 hours)
 - ▶ **moderate deficits in decision making**
 - ▶ as well as statistically significant **but small decreases in executive functioning, learning and memory, and global cognition.**
 - ▶ Information processing speed, working memory and attention were not consistently affected



The patient reports vaping cannabis oil daily to help his depression and anxiety. Is that a good idea?



YES



NO



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The patient reports using daily cannabis to help his depression and anxiety. Is that a good idea?



YES



NO



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Harmful Psychological Effects of Cannabis

► **There is Moderate evidence that cannabis use is related to**

- Increased **depression**
- Increased **social anxiety** disorder
- Increased **suicide** ideation, attempts, completion
- Increased **mania** among bipolar patients
- Development of **schizophrenia / psychosis**
- Increased **abuse** of alcohol, tobacco, other drugs
- **Cannabis overdose** among children
- **Problem cannabis use** associated with **severe PTSD**

National Academies of Science, 2017; *Swetlik et al J Addict Med 2022



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He complains of pain that seems neuropathic in nature.

- ▶ If that pain becomes chronic, might cannabis be an option to treat it?



YES



NO



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He complains of pain that seems neuropathic in nature.

- ▶ If that pain becomes chronic, might cannabis be an option to treat it?



YES



NO



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Cannabis and pain

- ▶ Headache (no level or grade) lower pain intensity and lower analgesic use observed in people with intractable medication overuse headache treated with nabilone (synthetic cannabinoid) vs. ibuprofen. However, greater medication overuse headache found in 81% of cannabis users vs 41% of non-users
- ▶ Musculoskeletal (no level or grade) some evidence that medical cannabis is effective for MSK pain, especially nabiximols (1:1 THC:CBD)
- ▶ Cancer (level II, conflicting) two RCTs showed nabiximols were more effective than placebo for cancer pain that was refractory to opioid treatment; one RCT showed nabiximols not effective for chemotherapy-induced peripheral neuropathy
- ▶ Neuropathic pain (level I, weak) multiple small RCTs report improved pain in HIV- and diabetes-related neuropathic pain
- ▶ Safety
 - ▶ Cannabis may potentiate antinociceptive effects of opioids possibly leading to reduced opioid dosing
 - ▶ Cannabis alone or in combination with opioids is associated with increased risk of opioid misuse especially by persons with SUD



For a few years he has also been using cannabis before bed to help him sleep

- ▶ Does long term cannabis use improve sleep?



YES



NO



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For a few years he has also been using cannabis before bed to help him sleep

- ▶ Does long term cannabis use improve sleep?



YES



NO



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Cannabis and sleep

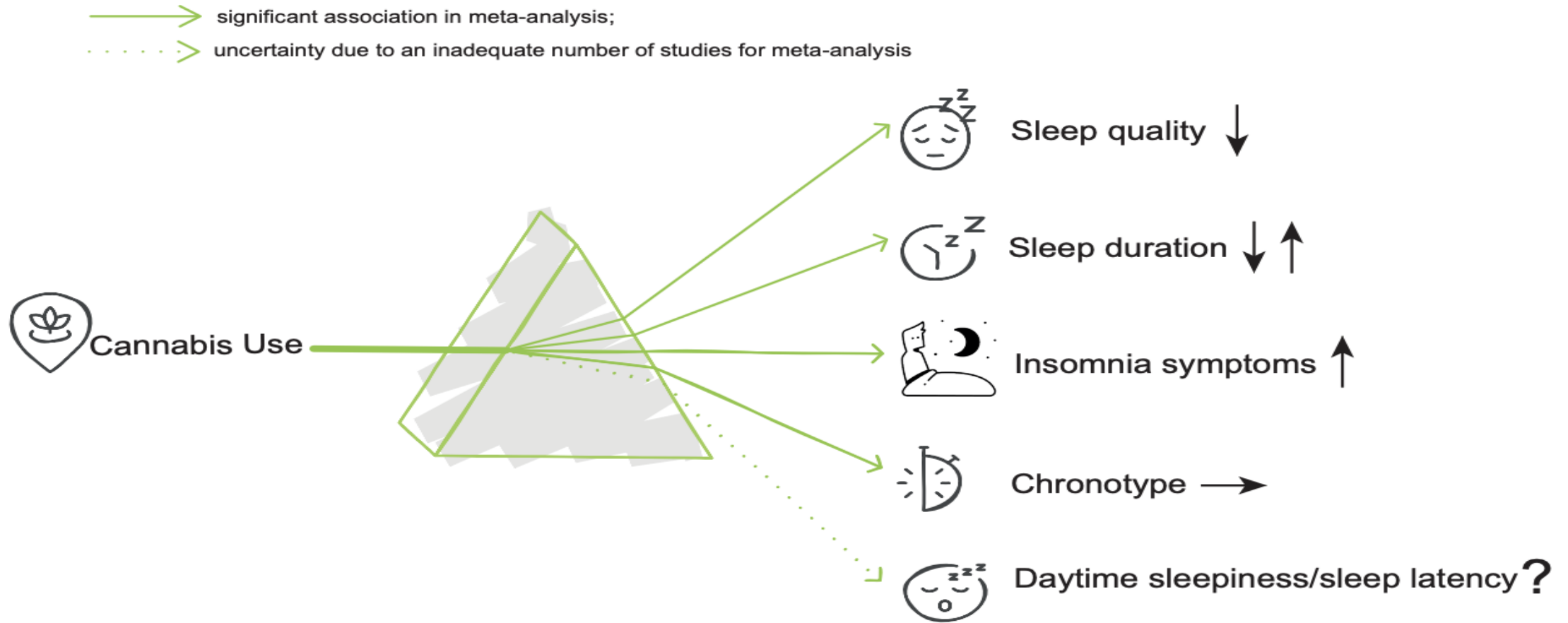


Fig. S3 Visualization of meta-analysis findings

Cannabis and Sleep

- ▶ Cannabis may improve sleep temporarily by reducing physical discomfort such as nerve pain
- ▶ However, long term regular cannabis use leads to dependence and tolerance to sleep-inducing effects
- ▶ Chronic use of cannabis is associated with sleep deficits such as poor sleep quality, sleep disturbances, delayed sleep onset, reduced sleep duration, and more insomnia symptoms
- ▶ The 2022 World Sleep Society and Kaiser Permanente Insomnia Guidelines do not recommend use of cannabis or cannabinoids for treatment of insomnia



He is wondering whether using cannabis before and after his TBI might have beneficial effects

- ▶ There is no evidence that cannabis use before and after TBI might lead to improved outcomes



TRUE



FALSE



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He is wondering whether using cannabis before and after his TBI might have beneficial effects

- ▶ There is no evidence that cannabis use before and after TBI might lead to improved outcomes



TRUE



FALSE



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Can Cannabinoids Improve TBI Outcomes?

- ▶ Potential mechanisms found in **animal studies**
 - Neurogenesis, neuroplasticity, anti-inflammation
- ▶ Conflicting human neuroimaging studies
- ▶ 2 observational **human studies** suggest a possible association between cannabis and:
 - Higher TBI survival (Nguyen et al, 2014)
 - Lower disability after intracranial hemorrhage (di Napoli 2016)
- ▶ However, a large (N=861) randomized placebo-controlled trial of dexamabinol (a synthetic cannabinoid) within 6 hrs after severe TBI showed no improvement in 6-month functional outcomes, survival, or quality of life (Maas 2005)



Cannabis use disorder and cognitive dysfunction in Veterans with TBI

- ▶ Retrospective cohort study of 1,560,556 Veterans with either 1) no CUD or TBI (control group), (2) CUD only, (3) TBI only, and (4) comorbid TBI+CUD.
- ▶ Examined incidence of cognitive disorder diagnosis at 5, 10, 15 years
- ▶ Incidence of cognitive disorder diagnosis (per 10,000 person months) was 0.30 (95% CI, 0.29,0.31) for controls, 0.68 (95% CI, 0.62, 0.75) for CUD only, 1.03 (95% CI, 1.00, 1.06) for TBI only and in 1.83 (95% CI, 1.72, 1.95) for participants with TBI+CUD
- ▶ **Relative to controls, the incidence of cognitive disorder diagnosis was 3.6 times higher in the TBI+CUD group, 2.32 times higher in the TBI only group, and 1.79 higher in the CUD only group**
- ▶ The types of cognitive disorder diagnoses associated with CUD tended not to be Alzheimer's dementia or frontotemporal dementia.



Effects of cannabis on PTSD

- ▶ Systematic review of effects of cannabis and cannabinoids on PTSD
- ▶ 14 studies were included; 3 with comorbid CUD and PTSD and 10 on non-CUD cannabis use and PTSD
- ▶ 5 studies suggested benefits of cannabis use in PTSD
- ▶ 5 suggested no benefits or worsening of PTSD symptoms
- ▶ Benefits were in clusters B (re-experiencing) and E (trauma related arousal and reactivity) in non-CUD samples
- ▶ All 3 studies of CUD and PTSD suggested worsening of PTSD outcomes

How much is too much?

- ▶ **Daily or near daily use**
- ▶ Daily use leads to:
 - ▶ Increase risk of **other illicit drug use**, $RR > 50\%$
 - ▶ More likely to be involved in **MVAs**
 - ▶ Increase risk of developing a **cannabis use disorder**
 - ▶ Daily: 75% had a CUD
 - ▶ 2x/wk or less: 13% had a CUD
 - ▶ Increase in **cognitive problems**
 - ▶ Increase in **mental and physical health problems**

Takeaways

- Cannabis has some benefits (esp. neuropathic pain) and several potential harms in **non-TBI individuals**
- **Individuals with TBI are likely more vulnerable** to the adverse effects of cannabis, including repeat injury, cognitive impairment, depression, anxiety, substance use, psychotic disorders, and early cognitive disorder diagnoses
- Before using cannabis, people with TBI should **discuss with their health care providers** individual potential risks & benefits of cannabis, particularly regarding frequency & concentrates
- **More quality research is needed** on potential neuroprotective, therapeutic (e.g., headache), & harmful properties of cannabis after TBI



Cannabis use disorder screening and diagnosis



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Preconditions For Effective Screening

- Empathy
- Nonjudgemental attitude
- Assurances of Confidentiality



Substance Use Screening

- Self-report SUD screening is reliable/valid
- Screen everyone (avoids implicit biases)
- Imbed SUD screening within general health screening
- Frame as part of health and recovery
- Expand to cannabis and prescription misuse
- Screening alone can trigger change

Cannabis Use Disorder Screening

- ▶ Cannabis Use Disorder Identification Test - revised (CUDIT-R)
 - ▶ Eight items covering DSM-5 categories (see next slide)
 - ▶ Add a point of nine or higher the sensitivity was 87.8%, and the specificity was 70.4% compared to a structured clinical interview for DSM five diagnosis.
- ▶ Cannabis use disorder, identification test - short form (CUDIT-SF)
 - ▶ Three item measure (see next slide)
 - ▶ In two Internet-based survey studies of cannabis users from the United States and Australia, using a cut score of two or higher the sensitivity is 78% and the specificity is 77-78% compared to DSM-IV diagnostic questionnaires



Have you used cannabis over the past six months?				Yes / No		
If YES , please answer the following questions about your cannabis use. Circle the response that is most correct for you in relation to your cannabis use over the past six months						
1	How often do you use cannabis?	0 Never	1 Monthly or less	2 2-4 times a month	3 2-3 times a week	4 4 or more times a week
2	How many hours were you "stoned" on a typical day when you had been using cannabis?	0 Less than one	1 1 or 2	2 3 or 4	3 5 or 6	4 7 or more
3	How often during the past 6 months did you find that you were not able to stop using cannabis once you had started?	0 Never	1 Less than monthly	2 Monthly	3 Weekly	4 Daily or almost daily
4	How often during the past 6 months did you fail to do what was normally expected from you because of using cannabis?	0 Never	1 Less than monthly	2 Monthly	3 Weekly	4 Daily or almost daily
5	How often in the past six months have you devoted a great deal of your time to getting, using, or recovering from cannabis?	0 Never	1 Less than monthly	2 Monthly	3 Weekly	4 Daily or almost daily
6	How often in the past 6 months have you had a problem with your memory or concentration after using cannabis?	0 Never	1 Less than monthly	2 Monthly	3 Weekly	4 Daily or almost daily
7	How often do you use cannabis in situations that could be physically hazardous, such as driving, operating machinery, or caring for children?	0 Never	1 Less than monthly	2 Monthly	3 Weekly	4 Daily or almost daily
8	Have you ever thought about cutting down, or stopping, your use of cannabis?	0 Never		2 Yes, but not in the past six months		4 Yes, during the past six months

Scores

8+: hazardous use

12+: consider cannabis use disorder

CUDIT-Short Form Items

Total CUDIT-R
Score:

--

Intervention Options



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Evidence-based Interventions

- ▶ 57 studies available for network meta-analysis of psychotherapy and pharmacotherapy interventions
- ▶ For reducing cannabis use
 - ▶ The effects of pharmacological interventions were very uncertain while DBT/ACT and MET-CBT+CM reduced use frequency
- ▶ For achieving abstinence
 - ▶ Cannabidiol, N-acetylcysteine, and varenicline promoted abstinence with limited very low certainty evidence, while mixed action antidepressants, benzodiazepines, bupropion, and buspirone had more adverse events than placebo and no efficacy
 - ▶ Interventions that used CM supported abstinence with very low certainty
- ▶ For treatment completion
 - ▶ DBT/ACT and CM improved treatment completion; MET-CBT reduced completion
 - ▶ N-acetylcysteine and THC increased completion, while fatty acid amide hydrolase inhibitor and SSRIs reduced treatment completion

Evidence-based Intervention Descriptions

- ▶ Contingency management (CM) based on abstinence: Participants received lottery draws or vouchers for providing cannabinoid-negative urine specimens, usually starting from week 2 of treatment (allowing for a sufficient wash-out period). The value of potential rewards varied from approximately \$1 to \$100, and typically increased over the duration of the study, according to the length of continuous abstinence. Providing a urine test positive for cannabinoids reset the rewards to the baseline level. Interventions were delivered in an individual format. A combination of independent CM-abstinence and CM-attendance was also categorised as CM-abstinence, as this was considered the main therapeutic component (1 study)

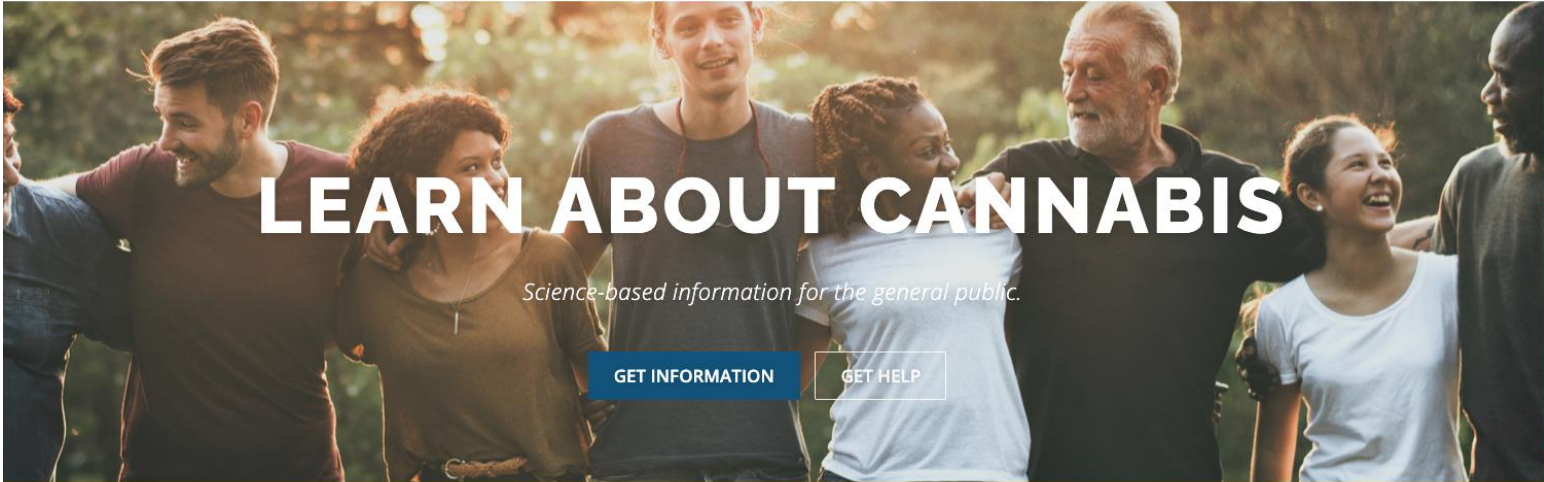
Evidence-based Intervention Descriptions

- ▶ Dialectical behavioural therapy (DBT) and acceptance and commitment therapy (ACT): Third-/fourth-wave psychotherapies, including DBT, ACT and mindfulness-based psychoeducation. These interventions included elements of cannabis use-focused psychoeducation as well as training in mindfulness, emotion regulation, distress tolerance, interpersonal skills, problem solving and acceptance. All were delivered in a group format.

Education

LEARN ABOUT CANNABIS
Science-based information for the general public.

TOPICS PARENTS TEENS CONSUMER FAQ VIDEO EDUCATION GET HELP



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Why we changed "marijuana" to "cannabis" on our website. [READ MORE](#)

GET INFORMATION



Topics



Consumer FAQ



Video Education



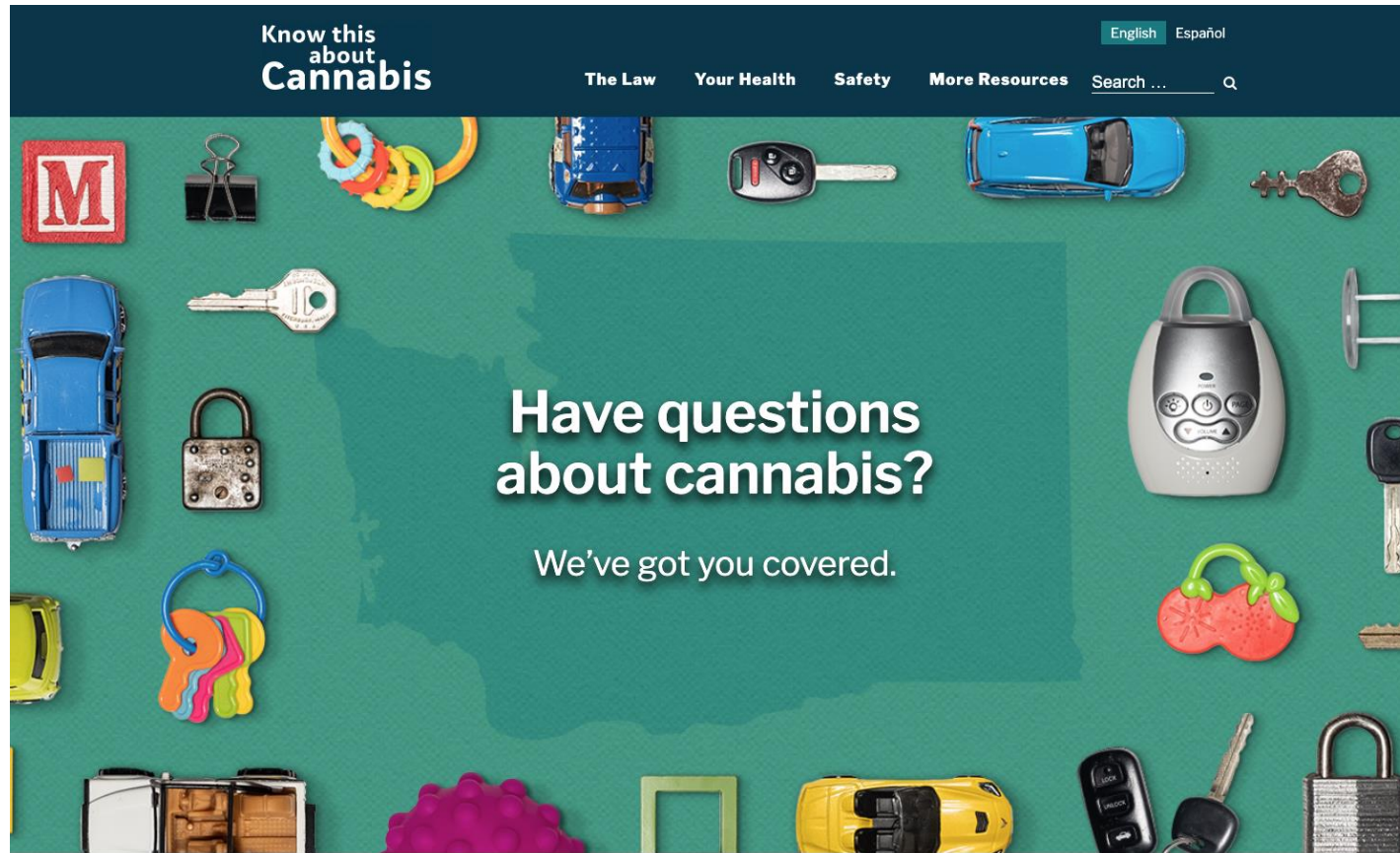
Medicinal Cannabis Online Training

<https://www.learnaboutcannabiswa.org/>



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Education



What we're talking about.

Washington state legalized retail—sometimes called recreational or non-medical—cannabis for adults 21 and over.

[Learn more about this campaign >](#)

The Law

When it comes to retail—or non-medical—cannabis in our state, there's a lot to know.

[Learn more about the law >](#)

<https://www.knowthisaboutcannabis.org/>



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Stepped Treatment

Step 1: Treatment engagement

- ▶ Motivational interviewing
- ▶ Elicit pros and cons of cannabis use
- ▶ Provide information with permission, if needed

Step 2: Goals setting

- ▶ Menu of options e.g., small reduction in frequency of use; small reduction in amount used; limit use to low-risk situations; mitigate psychological, social or occupational impairment from use

Stepped Treatment

Step 3: Cognitive behavioral strategies

- ▶ Identify triggers for use
- ▶ Develop skills to avoid or cope with triggers
- ▶ Learn strategies to manage negative mood
- ▶ Engage in pleasant/meaningful activities
- ▶ Identify and challenge depressive thinking
- ▶ Learn assertiveness (refusal) skills to deal with people who offer cannabis



Marijuana Check-up

- ▶ Brief intervention designed to attract users who would not seek treatment
- ▶ Advertised as an opportunity to receive objective feedback about marijuana use; not offered as treatment.
- ▶ Successful studies have involved 1-6 sessions of assessment, *personalized* feedback, and motivational interviewing (no pressure, no judgement)



Treatment efficacy

- ▶ **Interventions in non-treatment seeking persons**
- ▶ Meta-analysis of 26 studies in 15-30 year-olds comparing brief interventions to passive controls showed that treatment increased the odds of abstinence 1-3 months later (odds ratio 1.73, 95% CI 1.13-2.66) and significantly reduced symptoms of CUD (Halladay et al *Drug Alcohol Depend* 2019)
- ▶ **Interventions in treatment seeking persons**
- ▶ Meta-analysis of 7 controlled trials of people with CUD, those receiving treatment were twice as likely to be abstinent (21% vs.10%) (Patnode et al *JAMA* 2020)



T-BREAK

A T-break generally involves a self-directed process of abstaining from cannabis for a predetermined amount of time, with the aim of using less cannabis after the break and developing a balance in cannabis use. A break from cannabis use may also comprise a “practice quit attempt” identified in tobacco literature as a key pre-cessation target to increase coping skills and self-efficacy for future quit success.



T-BREAK Pilot results

- ▶ Results: Compared to non-Guide users, participants who used the Guide “a lot” were more likely to complete the 21-day abstinence break (84% vs. 57%), revise their personal definition of balance to mean less cannabis (84% vs. 62%) and plan a future break (32% vs. 11%).
- ▶ Conclusion: Use of this self-directed T-Break Guide may help young adults take a break from cannabis use and reduce future use. Further research using more rigorous designs to test the Guide’s efficacy and assess longer-term maintenance of effects is needed.



Thank you

► chb@uw.edu



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