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Psychiatry and Addictions Case Conference
UW Medicine | Psychiatry and Behavioral Sciences

HOW MUCH CANNABIS IS TOO MUCH?

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project ECHO

SPEAKER DISCLOSURES

I have no actual or potential conflict of interest in relation to this program/presentation.

Planner disclosures

The following series planners have no relevant conflicts of interest to disclose; other disclosures have been mitigated.

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OBJECTIVES

1. What medical providers should know about cannabis
2. Asking patients about cannabis
3. Diagnosing cannabis use disorder *or* how much is too much
4. Treatment approach

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WHY CARE ABOUT CANNABIS?

- Most common illicit drug in USA (#3 substance overall)
  - 20% have used once
  - 30% of those used develop use disorder

- Dangerous for some populations

- Once of two substances most likely to cause psychosis and lead to schizophrenia among other health risks

https://www.nccih.nih.gov/health/cannabis-marijuana-and-cannabinoids-what-you-need-to-know

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CASE

- 40-year-old male presents to your office for follow up after recent discharge from inpatient psychiatric hospitalization for suicidal and homicidal ideation. He denies any of these thoughts today and hopes to continue getting help for his anxiety and depression. He has been dealing with these symptoms for years since getting out of the military and has a historical diagnosis of PTSD and OCD. He mentions that the only thing that seems to help with his anxiety and negative thoughts is cannabis. He mentions his cannabis use has gone up since he stopped drinking alcohol a few months ago.

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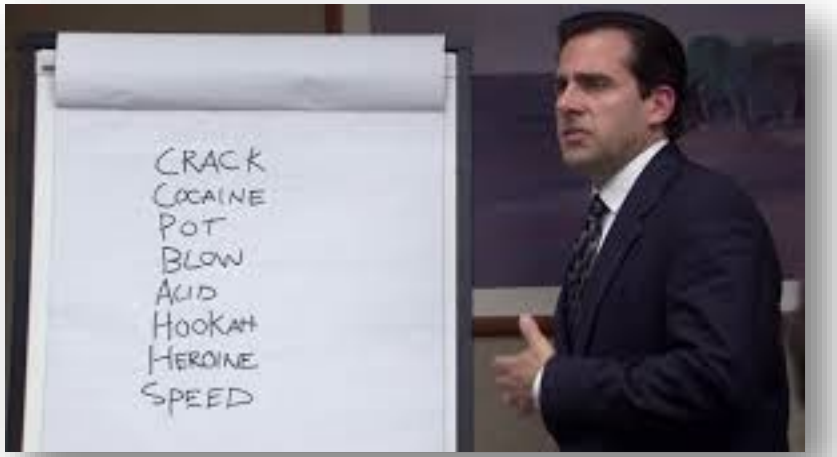
WHAT IS CANNABIS?

- "marijuana, weed, pot, ganja, 420, Mary Jane, reefer, kush, grass, green, doobie, joint, skunk, space cake"

- Cannabis is genus of flowering plant
  - C. indica, C. sativa, C. ruderalis



- Contains 100+ cannabinoids
  - Tetrahydrocannabinol (THC) and cannabidiol (CBD)

https://www.nccih.nih.gov/health/cannabis-marijuana-and-cannabinoids-what-you-need-to-know
https://www.sydney.edu.au/lambert/medicinal-cannabis/history-of-cannabis.html

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THC

- Primary psychoactive cannabinoid (chemical) of cannabis plant
  - Highly concentrated in flower/bud (female plants only)

- Multiple tetrahydrocannabinoids
  - Delta-9 most abundant and most potent
  - Delta-8 is derived from oxidation of D9 and is less potent

- Binds to CB1 receptor in brain and CNS as agonist
  - analog to anandamide, an endocannabinoid
  - cognition, memory, reward, anxiety, pain, motor, cardiac, and endocrine function

https://pmc.ncbi.nlm.nih.gov/articles/PMC3570572/

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HOW DOES CANNABIS WORK?

- Binds CB1 and CB2 receptors
  - frontal cortex, hippocampus, basal ganglia, hypothalamus, cerebellum, spinal cord, and peripheral nervous system especially cardiovascular system
  - Excitatory glutamate and inhibitory GABA neurons
  - Other G protein receptors like serotonin, dopamine, norepinephrine

- TL;DR…we don't entirely know

https://pmc.ncbi.nlm.nih.gov/articles/PMC3570572/

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THC CONTAINING PRODUCTS

- Plant (buds/flowers)
  - 15-20% THC concentration
  - Ex: 20% = 200mg THC per 1g cannabis bud
  - Smoked: joint, blunt, pipe, bong (measured in gram or oz and %)
  - Edibles: gummies, brownies, drinks (measured in mg THC per serving)

https://www.verywellmind.com/types-of-marijuana-22323

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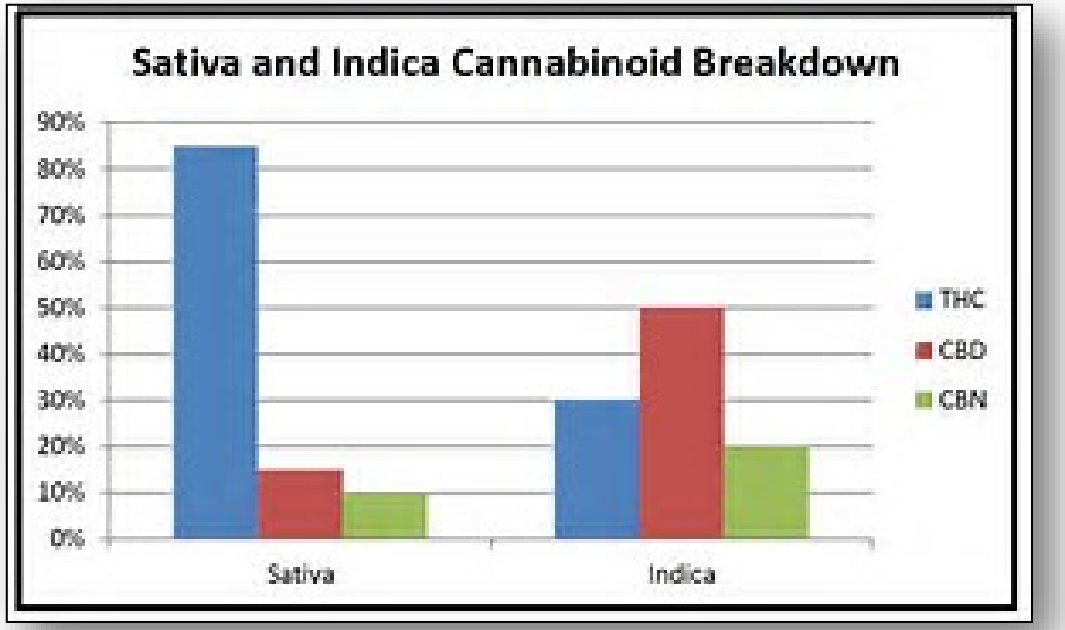
STRAINS OF CANNABIS

- Three primary categories:
  - Sativa: more energetic
  - Indica: more relaxing
  - Ruderalis: low THC, high CBD
  - Hybrids: various effects



https://www.verywellmind.com/types-of-marijuana-22323

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CANNABIS PRODUCTS

- Extracts and concentrates
  - up to **65-95+% THC concentration**
  - Heat, chemicals, pressure
  - Dabs, waxes, shatter, oil, hash
  - Vapes, pipes, edibles

https://www.verywellmind.com/types-of-marijuana-22323

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CANNABIS PRODUCTS

- Synthetic Cannabis
  - Illicit substances (Spice and K2)
  - FDA approved medications (dronabinol and nabilone)
  - Manufactured to be like THC acting as CB1 full agonists
  - SC is less expensive, more potent, and undetectable by UDS
  - High risk of toxicity

https://www.verywellmind.com/types-of-marijuana-22323
https://pmc.ncbi.nlm.nih.gov/articles/PMC4048873/

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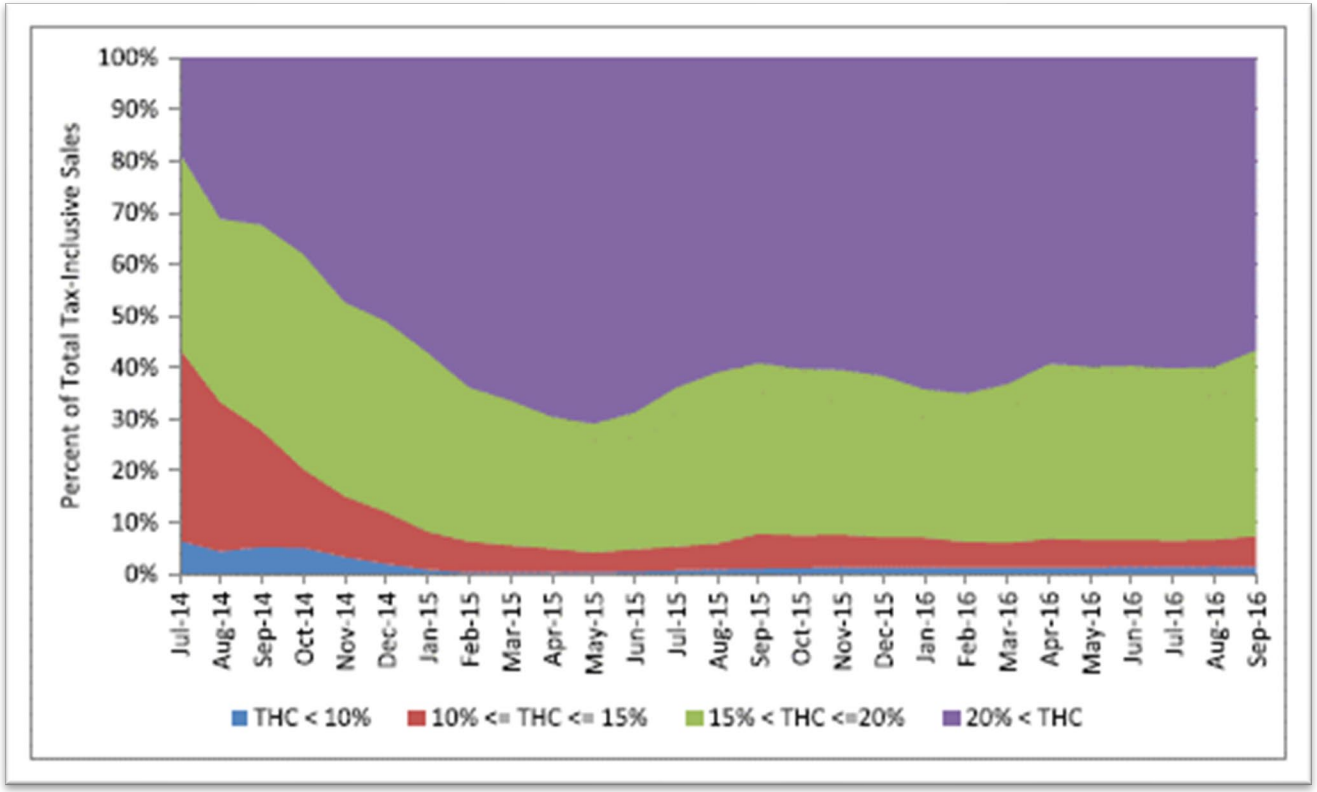
WASHINGTON STATE

- 10% cap on edibles
- 30% cap on flower
- No cap on concentrate



- Concentrate on the rise
  - 10-fold increase in sales
  - Easy and inexpensive to produce
  - Long shelf life

https://app.leg.wa.gov/Wac/default.aspx?cite=314-55-095

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CASE CONTINUED

- He describes his cannabis use as non-problematic denying side effects, cravings, or withdrawal. He reports starting use in 2016 after he left the military primarily using edibles and flower though has progressed to concentrates including dabs and vape. His current use includes dabbing 1g per day and going through a 1g vape pen per week. He uses both daily and multiple times per day from waking up to before bed. Both the dabs and pen are 96 and 92% THC respectively. He admits that the frequency and potency has gradually gone up over the years and doesn't smoke flower or use edibles anymore because they do nothing for him.

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GOALS FOR INTERVIEW

- Establish a baseline for current use
- Determine what it is helping with (or not helping)
- Evaluate for potential health effects
- Screen for possible use disorder

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TIPS FOR INTERVIEW

- Avoid questions that can answered “yes” or “no”
- Open ended questions
  - Provides more information
- Gentle assumptions
  - Less judgmental
  - Reduces defenses
- Recognize but avoid use of colloquialisms
  - Maintain neutral, objective stance
  - Prevents misunderstandings

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ASKING ABOUT CANNABIS

- What form do you use?
  - Flower, edible, concentrate
  - Smoked, vaped, inhaled
- How much do you use?
  - Expressed in grams, oz, mg, or $
- What is the potency?
  - Try to find out the concentration of THC or look up the strain

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ASKING ABOUT CANNABIS

- How often do you use?
  - How many times per week? How many times per day?
  - How many hours per day spend on cannabis?
- How long have you used?
- Have you ever tried quitting or going without?
- How has your use changed?
  - Amount, potency, frequency

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ASKING ABOUT CANNABIS

- What are the good things?
  - Socializing (42%), experimenting (29%), feels good (24%), anxiolytic (12%)

- What are the not so good things?
  - Mental: Anxiety, depression, paranoia, hallucinations, suicidality
  - CNS: memory loss, ataxia, sedation
  - HEENT: dry mouth, conjunctival injection, nystagmus
  - CV: tachycardia, hypertension
  - GI: increased appetite, nausea, vomiting (hyperemesis syndrome)
  - Social/Occupational/Legal issues

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SCREENING TOOLS

- Single item screen for cannabis (SIS-C)
  - <u>How often in the past year did you use marijuana?</u>
    - never, less than monthly, monthly, weekly, daily or almost daily
  - High false positive, better negative predictive value

https://attcnetwork.org/asme_articles/single-item-measure-helps-providers-screen-for-cannabis-use-disorder/

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SEVERITY FOR DEPENDENCE SCALE (SDS)

1. Did you think your use of cannabis was out of control?
2. Did the prospect of missing a dose of cannabis make you anxious or worried?
3. Did you worry about your use of cannabis?
4. Did you wish you could stop the use of cannabis?
5. How difficult did you find it to stop, or go without cannabis?

https://pmc.ncbi.nlm.nih.gov/articles/PMC6878253/

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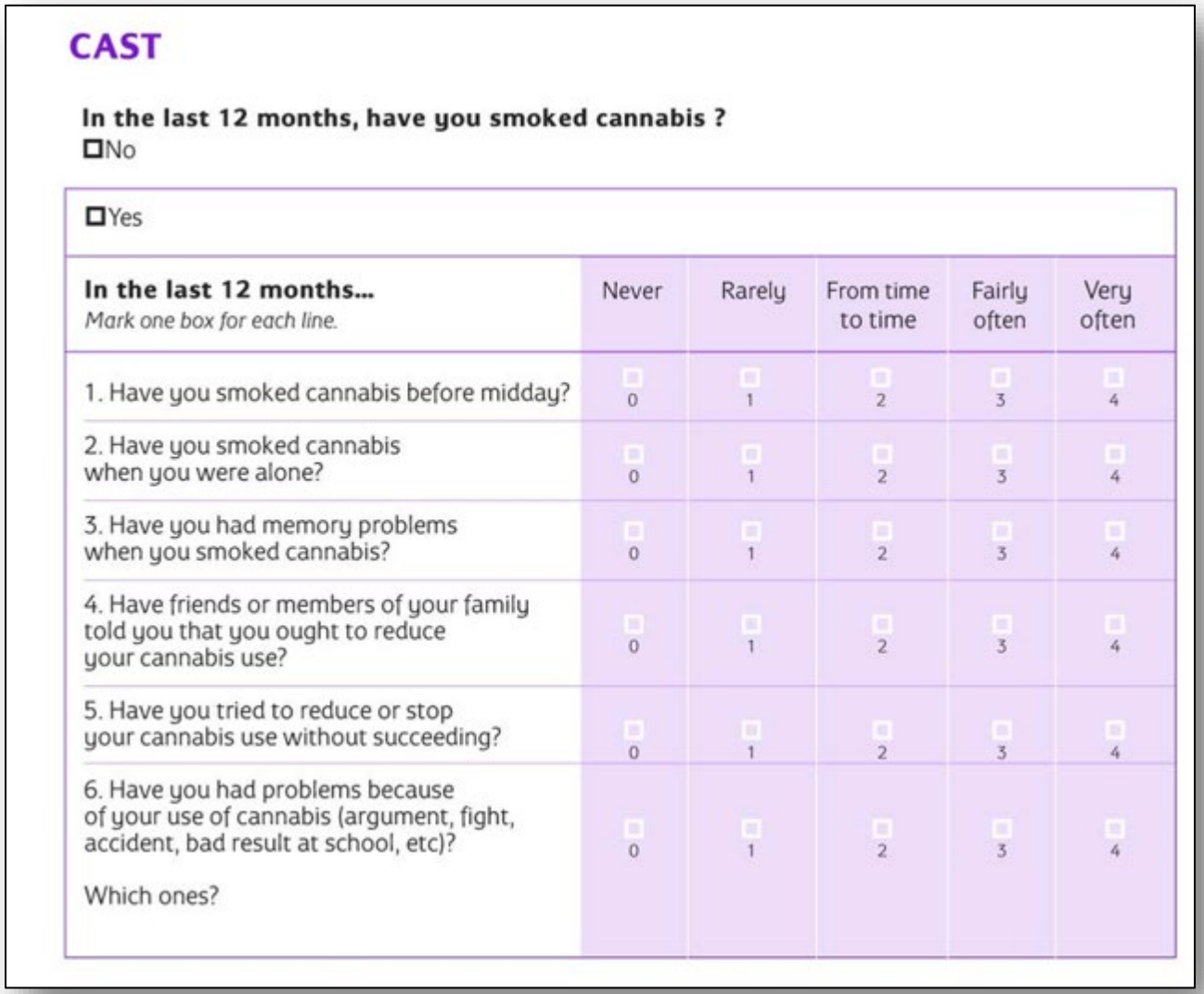
CANNABIS ABUSE SCREENING TEST (CAST)



CAST

In the last 12 months, have you smoked cannabis ?
☐No

☐Yes

In the last 12 months... *Mark one box for each line.*	Never	Rarely	From time to time	Fairly often	Very often
1. Have you smoked cannabis before midday?	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4
2. Have you smoked cannabis when you were alone?	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4
3. Have you had memory problems when you smoked cannabis?	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4
4. Have friends or members of your family told you that you ought to reduce your cannabis use?	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4
5. Have you tried to reduce or stop your cannabis use without succeeding?	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4
6. Have you had problems because of your use of cannabis (argument, fight, accident, bad result at school, etc)? Which ones?	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4

- Score of <3 no addiction risk
- Score of 3-7 low addiction risk
- Score >7 high addiction risk

https://pmc.ncbi.nlm.nih.gov/articles/PMC6877270/#:~:text=The%20CAST%20thresholds%20for%20screening,specificity%20%3D%2086.7%25)%2C%20respectively.

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The Cannabis Use Disorder Identification Test - Revised (CUDIT-R)

Have you used any cannabis over the past six months? Yes_____ No _____

If you answered "Yes" to the previous question, 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?

Never	Monthly or less	2-4 times a month	2-3 times a week	4+ times a week
0	1	2	3	4

2. How many hours were you "stoned" on a typical day when you had been using cannabis?

Less than 1	1 or 2	3 or 4	5 or 6	7 or more
0	1	2	3	4

3. How often during the past 6 months did you find that you were not able to stop using cannabis once you had started?

Never	Less than monthly	Monthly	Weekly	Daily/almost daily
0	1	2	3	4

4. How often during the past 6 months did you fail to do what was normally expected from you because of using cannabis?

Never	Less than monthly	Monthly	Weekly	Daily or almost daily
0	1	2	3	4

5. How often in the past 6 months have you devoted a great deal of your time to getting, using, or recovering from cannabis?

Never	Less than monthly	Monthly	Weekly	Daily/almost daily
0	1	2	3	4

6. How often in the past 6 months have you had a problem with your memory or concentration after using cannabis?

Never	Less than monthly	Monthly	Weekly	Daily or almost daily
0	1	2	3	4

7. How often do you use cannabis in situations that could be physically hazardous, such as driving, operating machinery, or caring for children?

Never	Less than monthly	Monthly	Weekly	Daily/almost daily
0	1	2	3	4

8. Have you ever thought about cutting down, or stopping, your use of cannabis?

Never	Yes, but not in the past 6 months	Yes, during the past 6 months
0	2	4

This questionnaire was designed for self-administration and is scored by adding each of the 8 items:

Question 1-7 are scored on a 0-4 scale
Question 8 is scored 0,2, or 4

Score: _____

Scores of 8 or more indicate hazardous cannabis use, while scores of 12 or more indicate a possible cannabis use disorder for which further intervention may be required.

https://adai.uw.edu/pubs/pdf/2016marijuanascreenassess.pdf

https://pubmed.ncbi.nlm.nih.gov/20347232/

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FOCUS AREAS FOR INTERVIEW

- Frequency of use/time consumed
- Worried about how much you used
- Difficulty stopping
- Memory problems
- Problems related to cannabis

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CASE CONTINUED

- After discussing his use pattern, he admits that he needs cannabis to feel normal and achieves very little high anymore. When he isn't using cannabis, his anxiety and mood are intolerable described as daily irritability, low mood, low appetite with weight loss of 20 lbs in last few months, and insomnia. He also has bursts of anxiety and anger that have gotten him in trouble at college and with his friends and family. You mention that this may actually be withdrawal from cannabis which he agrees is likely the case. He is open to discussing treatment options to help reduce his use.

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HOW MUCH IS TOO MUCH?

- DSM-5-TR remains gold standard for determining use disorder
  - Cannabis is taken in larger amounts or used over a longer period than intended
  - Persistent desire to cut down with unsuccessful attempts
  - Excessive time spent acquiring cannabis, using cannabis, or recovering from its effects
  - Cravings for cannabis use
  - Recurrent use resulting in neglect of social obligations
  - Continued use despite social or interpersonal problems
  - Important social, occupational, or recreational activities foregone to be able to use cannabis
  - Continued use despite physical harm
  - Continued use despite physical or psychological problems associated with cannabis use
  - Tolerance
  - Withdrawal symptoms when not using cannabis

https://www.ncbi.nlm.nih.gov/books/NBK538131/

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INTOXICATION

- Two signs within two hours
  - conjunctival injection, increased appetite, dry mouth, tachycardia

- The "high"
  - euphoria, anxiety, uncontrollable laughter, inattentiveness, forgetfulness, restlessness, hallucinations, delirium

https://www.ncbi.nlm.nih.gov/books/NBK538131/

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LAB TESTING

- Urine, blood, saliva, hair

- Assays usually detect Delta-9 THC

- Detectable up to 7 days, up to 30 days for heavy users

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WITHDRAWAL

- Three or more of the following signs and symptoms develop within 1 week after cessation of heavy, prolonged use:
  - Irritability, anger, or aggression
  - Nervousness or anxiety
  - Sleep difficulty
  - Decreased appetite or weight loss
  - Restlessness
  - Depressed mood

- At least 1 of the following physical symptoms are causing significant discomfort: abdominal pain, shakiness or tremors, sweating, fever, chills, or a headache.

https://www.ncbi.nlm.nih.gov/books/NBK538131/

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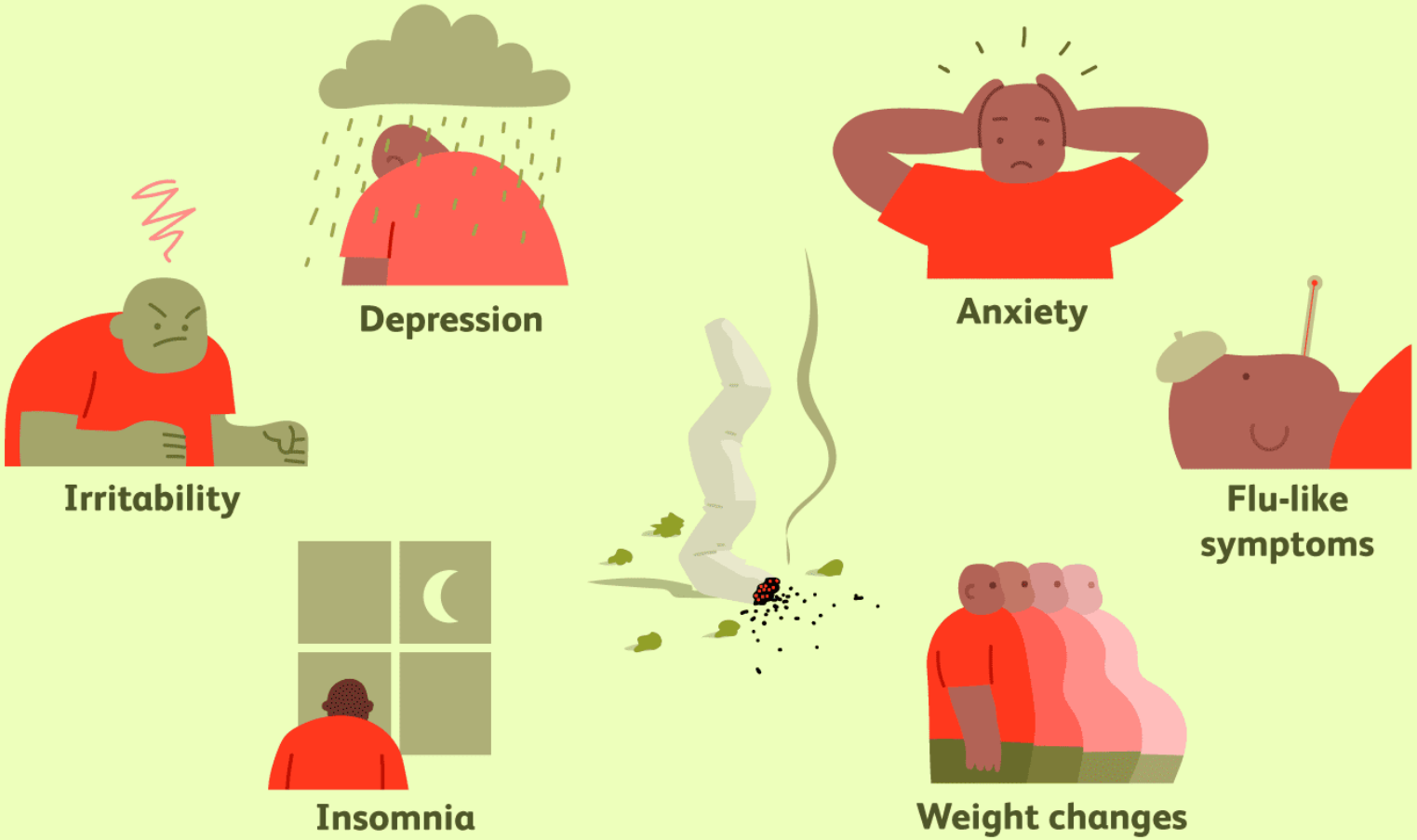
Common Symptoms of Cannabis Withdrawal



verywell

*Withdrawal symptoms typically last for 1 to 2 weeks

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CHRONIC USE

- Reduced hippocampal and pre-frontal cortex volume
- Impairment in learning, attention, and memory
- Development of cravings
- Psychiatric comorbidity
  - Direct: Anxiety, panic attacks, positive psychotic symptoms
  - Indirect: depression, bipolar, PTSD, SUD

https://pmc.ncbi.nlm.nih.gov/articles/PMC7027478/

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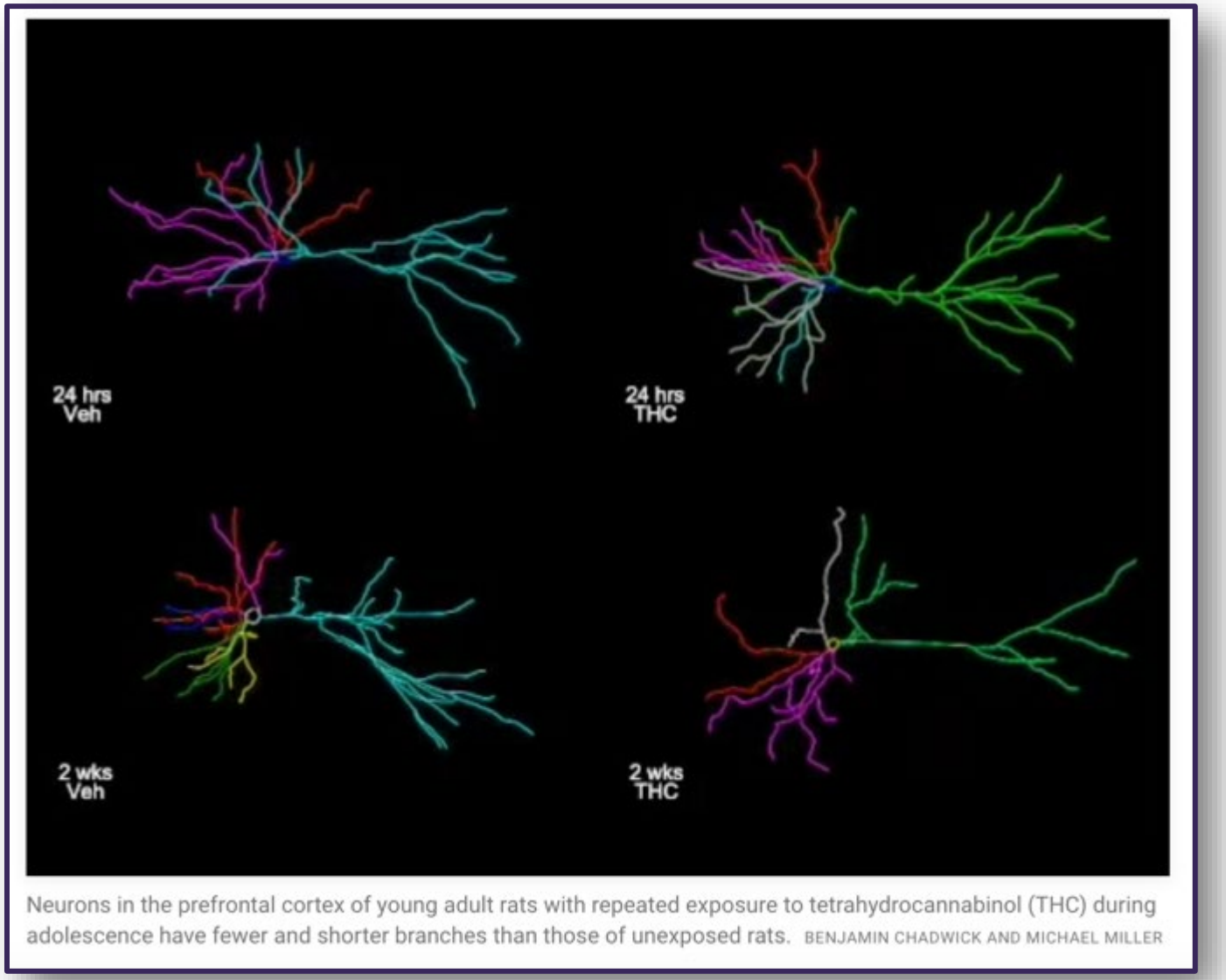

Neurons in the prefrontal cortex of young adult rats with repeated exposure to tetrahydrocannabinol (THC) during adolescence have fewer and shorter branches than those of unexposed rats. BENJAMIN CHADWICK AND MICHAEL MILLER

https://www.science.org/content/article/cannabis-laws-relax-neuroscientist-warns-its-dangers-developing-brain

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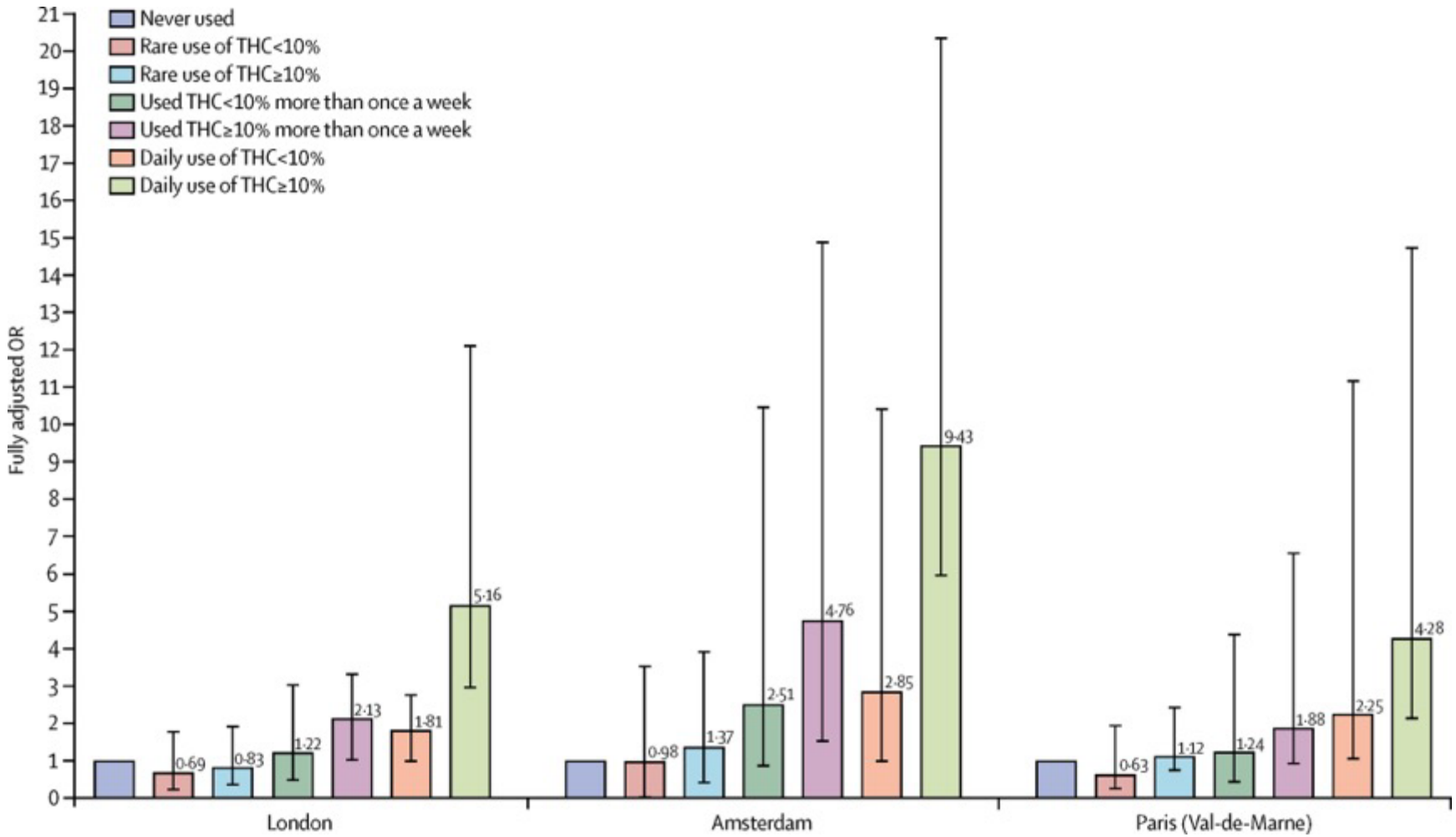

https://pubmed.ncbi.nlm.nih.gov/30902669/

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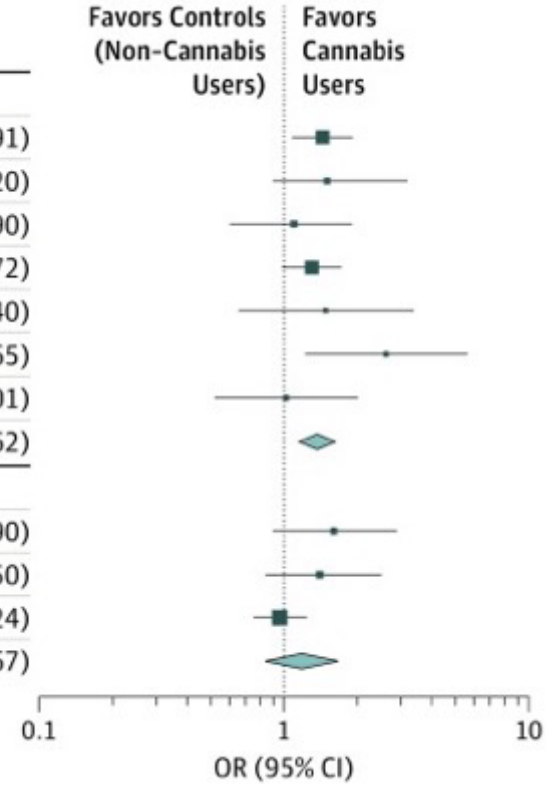
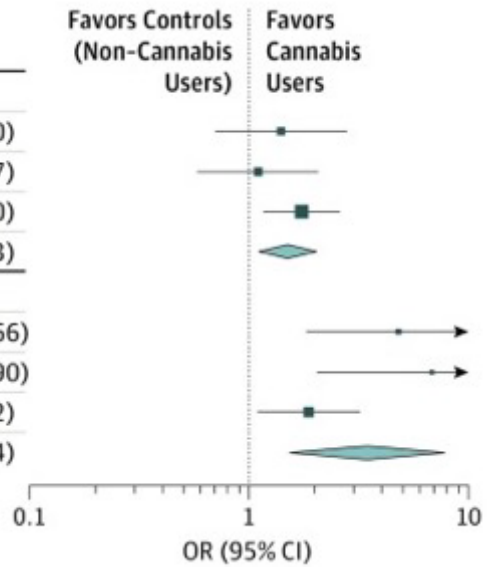
Study	OR (95% CI)
Depression in young adulthood	
Brook et al,[34] 2002, United States	1.44 (1.08 to 1.91)
Brook et al,[16] 2011, United States and Puerto Rico	1.50 (0.90 to 3.20)
Degenhardt et al,[38] 2013, Australia	1.10 (0.60 to 1.90)
Gage et al,[44] 2015, United Kingdom	1.30 (0.98 to 1.72)
Georgiades and Boyle,[45] 2007, Canada	1.48 (0.65 to 3.40)
Marmorstein and Iacono,[46] 2011, USA	2.62 (1.22 to 5.65)
Silins et al,[10] 2014, Australia and New Zealand	1.02 (0.52 to 2.01)
Pooled OR for all studies: Q = 3.26, *df* = 6 (*P* = .62); I^2 = 0%	1.37 (1.16 to 1.62)
Anxiety in young adulthood	
Brook et al,[16] 2011, United States and Puerto Rico	1.60 (0.90 to 2.90)
Degenhardt et al,[38] 2013, Australia	1.40 (0.84 to 2.50)
Gage et al,[44] 2015, United Kingdom	0.96 (0.75 to 1.24)
Pooled OR for all studies: Q = 3.26, *df* = 2 (*P* = .20); I^2 = 42%	1.18 (0.84 to 1.67)



Study	OR (95% CI)
Suicide ideations	
Fergusson et al,[41] 1996, New Zealand	1.40 (0.70 to 2.80)
McGee et al,[47] 2005, New Zealand	1.10 (0.58 to 2.07)
Weeks and Colman,[57] 2016, Canada	1.74 (1.16 to 2.60)
Pooled OR for all studies: Q = 1.49, *df* = 2 (*P* = .48); I^2 = 0%	1.50 (1.11 to 2.03)
Suicide attempts	
Roberts et al,[54] 2010, United States	4.81 (1.82 to 12.66)
Silins et al,[10] 2014, Australia and New Zealand	6.83 (2.04 to 22.90)
Weeks and Colman,[57] 2016, Canada	1.87 (1.09 to 3.22)
Pooled OR for all studies: Q = 5.38, *df* = 2 (*P* = .07); I^2 = 61.3%	3.46 (1.53 to 7.84)



https://pubmed.ncbi.nlm.nih.gov/30758486/

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CASE CONTINUED

- You provide a brief education on effect of THC on mental health and he agrees he needs to cut down considerably. You develop a plan together to reduce both the frequency of use and potency of THC. He plans by the next visit to reduce his THC vape to 86% and stop use of dabs. To aid this, he agrees to start mirtazapine for sleep and appetite and pregabalin for anxiety and pain having previously trialed gabapentin which he found side effects too burdensome. He also agrees to continue his current medications hydroxyzine for anxiety and desvenlafaxine for anxiety and mood. He is offered and declines any psychosocial interventions. He agrees to see you in 2 weeks.

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TREATMENT GOALS

- Brief education on harm of excessive cannabis use
- Develop treatment goal with patient
- Offer both pharmacologic and non-pharmacologic options
- Monitor response with regular follow ups

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MYTH VS FACT

- Cannabis is non-addictive
  - Research shows that 9% of adults and 17% of adolescent users become addicted. Daily use* risk is as high as 50%

- Cannabis is safe in pregnancy
  - Can lead to low birth weight, preterm birth, and prolonged hospital stay
  - Affects fetal brain development with possible affects on attention and mood in future
  - Can be 8x higher in breastmilk than mother's serum concentration

https://sonomacounty.ca.gov/health-and-human-services/health-services/marijuana-public-health-and-safety/myths-and-facts-about-marijuana-use

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MYTH VS FACT

- Marijuana doesn't affect driving ability
  - Impairs motor coordination, reaction time, and judgement
  - Doubles risk of being in an accident and 3-7x more likely to be at fault for accident

- Marijuana smoke is non-cancerous
  - Not only does it significantly damage lungs, marijuana smoke contains similar carcinogens to tobacco and wood burning smoke

https://sonomacounty.ca.gov/health-and-human-services/health-services/marijuana-public-health-and-safety/myths-and-facts-about-marijuana-use

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MYTH VS FACT

- Cannabis can treat multiple health conditions
  - Efficacy in treatment refractory epilepsy, nausea/vomiting related to chemotherapy, and appetite/weight loss related to HIV/AIDS
  - Some evidence for use in chronic pain and MS
  - Does not help with glaucoma
  - Much research is pending

https://www.nccih.nih.gov/health/cannabis-marijuana-and-cannabinoids-what-you-need-to-know

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MYTH VS FACT

- Marijuana helps my mental health
  - Increases risk of developing and/or worsening depression, anxiety, insomnia, and psychosis
  - Risk for psychosis associated with potency and frequency of use
  - May lead to relapse of previously remitted psychosis or other conditions
  - Worsens PTSD symptom severity and related violence
  - Clear link with worsening suicidal ideation and attempts

https://sonomacounty.ca.gov/health-and-human-services/health-services/marijuana-public-health-and-safety/myths-and-facts-about-marijuana-use

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ADDITIONAL EDUCATION

- Lock up cannabis out of reach of children and pets
- Caution about physical health problems
  - Lung, cardiac, GI
  - Immunocompromised individuals
  - Falls, injury to older adults
- Avoid behavior that may be high risk (driving, swimming, sports)
- Use with those you trust and do not share paraphernalia
- Labeling can be inaccurate

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TREATMENT GOALS

- SMART Goal
  - Specific, measurable, achievable, relevant, time bound
- Abstinence or reduced use?
  - Adolescents
  - Severe mental health illness
  - Immunocompromised
  - Pregnant/breastfeeding
  - Occupational (government, drivers, pilots, health care)
- Therapy, medications, both?

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PHARMACOLOGIC OPTIONS

- No FDA approved therapies

- Withdrawal
  - Treating anxiety, insomnia, poor appetite, GI sx, and headaches
  - Gabapentin
  - Mirtazapine
  - Quetiapine
  - Zolpidem
  - Benzodiazepines in severe cases (https://www.racgp.org.au/getattachment/7b300b00-74ad-4ce1-a4b7-2204cef214fb/attachment.aspx)

https://pmc.ncbi.nlm.nih.gov/articles/PMC5811668/
https://pmc.ncbi.nlm.nih.gov/articles/PMC3171994/
https://link.springer.com/article/10.1007/s40138-019-00178-1#:~:text=Lorazepam%20is%20the%20most%20common,%2C%2023%E2%80%A2%2C%2024%5D.

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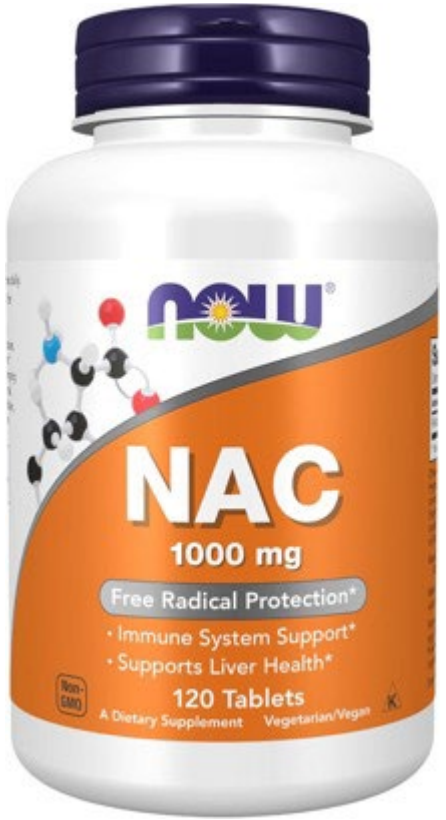
PHARMACOLOGIC OPTIONS

- Cravings/Use disorder
  - Gabapentin 900-1800mg/day
  - Naltrexone
  - N-acetyl cysteine 3g/day
  - Dronabinol and Nabilone



https://pmc.ncbi.nlm.nih.gov/articles/PMC5811668/

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PSYCHOSOCIAL OPTIONS

- Motivational Enhancement Therapy
- Contingency Management
- Cognitive Behavioral Therapy

https://pmc.ncbi.nlm.nih.gov/articles/PMC5811668/
https://pmc.ncbi.nlm.nih.gov/articles/PMC3171994/

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SUMMARY AND KEY TAKE AWAYS

- Binds CB1 receptors and releases dopamine
  - Higher potency = stronger and longer effects
  - Concentrates > flower > edibles

- Frequency and potency most important data points

- Tolerance, withdrawal, cravings, and psychosocial impairment are symptoms of use disorder

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SUMMARY AND KEY TAKE AWAYS

- Counsel patients in risks and safe use
  - Avoid in pregnancy and when driving
  - Can cause and worsen mental health conditions
  - Adolescent use is especially problematic
  - Potential health considerations including carcinogens when smoked

- Pharmacologic and psychosocial treatments for CUD
  - Gabapentin
  - MET, CM, CBT

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THANK YOU!

QUESTIONS?

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