Cannabis Therapeutics

Advising Patients on Safe and Effective Use

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Conflict of Interest Disclosure Information

- Speaker bureau for Nevro: neuromodulation/ spinal cord stimulation for chronic pain

- *All relevant financial relationships have been mitigated*

Objectives

List 3 potential risks with use of cannabis products.

Identify 4 components that a patient should look for on packaging to assess product safety.

Describe the mechanism by which cannabis may interact with other medications.

Discuss how a patient should initiate use of cannabis and guidelines for safe titration.

Why We Care

45-80% of people seeking medical cannabis are seeking it for pain

39% of long-term opioid users are also using cannabis [1]

5.5 million people in the US are using Cannabis as of July 2021 [3]

We are underprepared

- Study of medical residents and fellows in 2017 [2]
- 89.5% felt unprepared to prescribe
- Only 35.3% felt prepared to answer cannabis questions
- Only 9% of medical schools documented cannabis clinical content in curriculum

1. Nugent, Morasco, O'Neil et al, 2017. 2. Evanoff, Quan, Dufault et al., 2017. 3 Boehnke et al, 2024

Potential Benefits

- Decrease reliance on other medications
- Decrease pain
- Improvement of function
- Improvement of sleep
- Decrease reported spasticity
- Similarly effective and fewer discontinuations than opioids for chronic non-cancer pain.

Positive effects of cannabis on patient use of other medications
(correlational results)

Study looking at the Impact on Executive Function[1]

Gruber et al. 2016

- Decrease in opiates: 42.88%
- Decrease in antidepressants: 17-64%
- Decrease in mood stabilizers: 33.33%
- Decrease in benzodiazepines: 38.89%

Study on Medical Cannabis and Opiate use[2]

- 20% use BID, 42% use TID to QID, 20% use>5 times
- Self reported decrease in opioid use (64% average change)
- Decrease amount of adverse medication side effects
- Improved quality of life

1. Gruber et al, 2016. 2. Boehnke, Litinas, & Clauw, 2016

What is the endocannabinoid system?

Widespread neuromodulatory system.

Plays an important role in CNS development, synaptic plasticity and the response to endogenous and environmental insults

Maintains homeostasis

Cannabinoids promote the release of neurotransmitters

- regulate sleep, mood, pain perception, appetite, memory

3 types of cannabinoids: endogenous, plant derived and synthetic

Plant derived/ phytocannabinoids

- THC is delta-9-tetrahydrocannabinol
- CBD is cannabidiol

Theisen & Konieczny, 2019

Cannabinoid Receptors

CB1

Location:

central and peripheral nervous system, heart, lungs, adrenal glands, kidneys, pancreas, testes, liver, colon, prostate

Mitigates:

anxiety, stress, pain and inflammation, depression, PTSD, MS symptoms, neurogenerative disorder symptoms

CB2

Location:

brain, peripheral nervous system, peripheral immune cells, lungs, uterus, brainstem neurons, microglia

Mitigates:

inflammation, mental health disorders (depression, bipolar, schizophrenia, eating disorders), neurological disease (Alzheimer's, Parkinson's, Huntington's, MS

Risks: very few receptors in brainstem or cardiorespiratory system

Theisen & Konieczny, 2019

Benefits supported by evidence

- Chemotherapy-induced nausea and vomiting: oral cannabinoids are effective antiemetics.
- AIDS Anorexia: Appetite stimulant
- Chronic pain: clinically significant reduction in pain symptoms.
- Multiple sclerosis-related spasticity: short-term use of oral cannabinoids improves patient-reported spasticity symptoms
- Lennox-Gestaut syndrome or Dravet syndrome :Cannabidiol (brand name Epidiolex): FDA approved for children over 2yrs old

Inadequate evidence to assess the effects of cannabinoids in other conditions.

Qualifying conditions without clinical evidence

(may have shared symptom with an evidence-based qualifying condition)

- Painful peripheral neuropathy
- Spinal cord injury
- Neurofibromatosis
- Sjogren's syndrome
- Spastic quadriplegia
- Chronic traumatic encephalopathy
- Tourette’s syndrome
- Arnold-chiari malformation
- Severe psoriasis
- Complex regional pain syndrome
- Cystic fibrosis
- Anorexia
- Chronic pancreatitis
- Nail-patella syndrome
- Huntington's disease
- Post-concussive syndrome
- ALS
- Alzheimer’s disease
- Ulcerative colitis
- Migraine
- Lupus
- Myasthenia gravis
- Sickle Cell Disease
- Psoriatic Arthritis
- Interstitial cystitis
- Cerebral palsy
- Fibromyalgia

Canadian Guidelines for Use in Chronic Pain (no U.S. guidelines available)

- for mobility in those not achieving adequate response to other modalities. *Weak Recommendation, Low-Quality Evidence*
- muscular and neuropathic pain in people living with HIV who are not achieving adequate response, or those experiencing adverse effects to other treatment modalities. *Strong Recommendation, Moderate-Quality Evidence*
- HIV-related symptoms, including nausea, anxiety, depression, lack of appetite, and weight loss- for symptom management only and not in place of antiretrovirals. *Strong Recommendation, Low-Quality Evidence*
- pain management in people with MS not achieving adequate response to other modalities. *Strong Recommendation, Moderate-Quality Evidence*
- muscle spasm in people living with MS in those not achieving adequate response to other modalities. *Strong Recommendation, Moderate-Quality Evidence*
- sleep disorder in people living with MS in those not achieving adequate response to other modalities. *Strong Recommendation, Low-Quality Evidence*
- chronic pain in people living with arthritic conditions in those not achieving adequate response to other modalities. *Strong Recommendation, Low-Quality Evidence*
- back pain, fibromyalgia pain, or other chronic pain in people with fibromyalgia who are not achieving an adequate response to standard analgesics. *Strong Recommendation, Low-Quality Evidence*

(Bell et al, 2024)

Canadian Guidelines Continued

- for central and/or peripheral neuropathic pain to improve pain outcomes. *Strong Recommendation, Moderate-Quality Evidence*
- in chronic migraine or chronic headache, in those not achieving adequate response to other modalities. *Weak Recommendation, Low-Quality evidence*
- to reduce nausea in people living with chronic pain as monotherapy or adjunct treatment for those not achieving adequate response to other treatment modalities. *Weak Recommendation, Low-Quality Evidence*
- improve sleep and symptoms of sleep deprivation in people living with chronic pain not responsive to, or intolerant of, other modalities or pharmacologic treatment. *Strong Recommendation, Moderate-Quality Evidence*
- THC-dominant cannabis for people with problematic loss of appetite in association with chronic pain, over no treatment. *Strong Recommendation, Low-Quality evidence*
- improve PTSD symptoms in people living with chronic pain not responsive to, or intolerant of, non-pharmacologic treatment. *Weak Recommendation, Low-Quality Evidence*
- for symptoms of anxiety in people living with chronic pain not responsive to, or intolerant of, non-pharmacologic treatment. *Strong Recommendation, Moderate-Quality Evidence*
- for symptoms of depression in people living with chronic pain experiencing unsatisfactory results from standard treatment. *Weak Recommendation, Moderate-Quality Evidence*

Bell et al, 2024

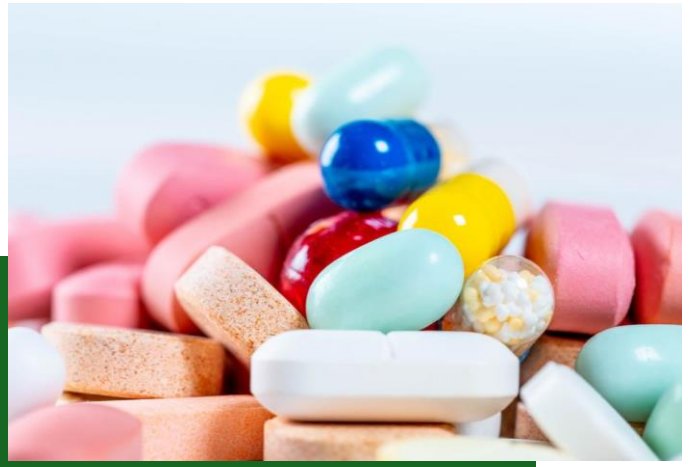
Canadian Recommendations for patients with chronic pain *on opioid therapy*

Pot and Pills?

- As an **adjunctive treatment to opioids**, for the management of chronic pain in those experiencing unsatisfactory analgesia from opioid treatment. *Strong Recommendation, Moderate-Quality Evidence*
- As **adjunct treatment among people using moderate/high doses of opioids** (>50 morphine equivalent) for the management of chronic pain and/or to increase opioid sparing. *Strong Recommendation, Moderate-Quality Evidence*
- As **adjunct treatment for chronic pain among people using any dose of opioids** who are not reaching chronic pain goals, are experiencing opioid-related adverse events, or display risk factors for opioid-related harm. *Strong Recommendation, Low-Quality Evidence*

Bell et al, 2024

Pot and Pills?



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Barriers to Safety

LACK OF PRODUCT STANDARDIZATION

VARIETY OF TERMINOLOGY AND JARGON USED

IE: CHEMOVAR VS. STRAIN

DIFFERENCE IN PACKAGING REQUIREMENTS BETWEEN REGULATORY BODIES

PATIENT BELIEF THAT “NATURAL” EQUATES “SAFE”

LACK OF PROVIDER KNOWLEDGE ON HOW TO EVALUATE PRODUCT QUALITY AND SAFETY.

MacCullem, Lo, Pistawka & Boivin, 2022

But it’s natural! What are the risks?

- Drug interactions
- Inherent product risks: contamination/ pesticides
- Side effects
- Cancers?

Drug interactions/ CYP450

THC/CBD metabolized by CYP450
- can inhibit or induce medications metabolized by this system

>50% of pharmaceuticals metabolized via CYP450
- many by more than one CYP450 enzyme

Can have effects on opioid levels/analgesia
- codeine, hydrocodone, oxycodone, methadone, tramadol, and fentanyl

Interactions does not equal absolute contraindication
- Proceed with caution and increase monitoring for adverse effects

Clinically relevant changes seen with high doses of pure CBD

Devit-Lee, 2017

Enzyme	Inducers	Inhibitors	Substrates
3A4	may decrease THC and/or CBD •Carbamazepine, phenobarbital, phenytoin, rifampin, St. John's wort	may increase THC and/or CBD Azole antifungals, clarithromycin, diltiazem, erythromycin, grapefruit, HIV protease inhibitors, macrolides, mifepristone, verapamil	CBD is potential inhibitor of CYP3A4 and could increase 3A4 substrates. Caution with medications with smaller therapeutic index (e.g. tacrolimus). •Alprazolam, atorvastatin, carbamazepine, clobazam, cyclosporine, diltiazem, HIV protease inhibitors, buprenorphine, tacrolimus, cyclosporine, phenytoin, sildenafil, simvastatin, sirolimus, verapamil, zopiclone Unlikely to have effect on THC
2D9	▪may decrease THC concentration. Unlikely to have effect on CBD ▪Amiodarone, fluconazole, fluoxetine, metronidazole, valproic acid, sulfamethoxazole	▪may increase THC concentration. Unlikely to have effect on CBD ▪Carbamazepine, rifampin	▪THC and/or CBD may increase drug levels, should monitor for toxicity ▪Warfarin, rosuvastatin, phenytoin
2C19	▪may decrease CBD and THC ▪Carbamazepine, rifampin, St. John's wort	▪may increase CBD and THC ▪cimetidine, omeprazole, esomeprazole, ticlopidine, fluconazole, fluoxetine, isoniazid	▪CBD may increase the level of medications metabolized by 2C19 such as norclobazam (active metabolite in clobazam). ▪CBD may also prevent clopidogrel from being activated. ▪Unlikely to have effect on THC ▪aripiprazole, citalopram, clopidogrel, diazepam, escitalopram, moclobemide, norclobazam, omeprazole, pantoprazole, sertraline

CYP 1A1 and 1A2

Substrates:

- Smoking cannabis can stimulate these isoenzymes and increase the metabolism of these. medications.
- Amitriptyline, caffeine, clozapine, duloxetine, estrogens, fluvoxamine, imipramine, melatonin, mirtazapine, olanzapine, theophylline

p-glycoprotein

Substrates:

- CBD may inhibit p-glycoprotein drug transport. Should monitor for toxicity.
- No effect from use of THC
- Dabigatran, digoxin, loperamide

Product Risk

Contaminants: microorganisms or pesticides

- more common in unregulated dispensaries vs. regulated dispensaries
- Pesticides (found in unregulated and regulated products).
- 25 samples of products tested from regulated dispensaries in Washington: 22 (86%) were found to contain pesticides. Many exceeded the upper allowable limit.

Confirmation of third-party product testing

- evaluate the absence of harmful contaminants
- evaluate the accuracy of labeled cannabinoid content.

While dispensaries may be regulated at a state level, the lack of federal regulation in the United States causes difficulty in ensuring product quality.

Decontamination

Pesticide-free cannabis

- best choice

Gamma radiation

- uses ionizing radiation exposure to kill pathogens and maintain a low microbial contamination level.
- evidence supports irradiated cannabis is safe and does not alter THC or CBD content.
- considered the best method of decontamination
- Look for indication gamma radiation decontamination processes either the label or company's website (may be depicted by the gamma symbol (γ).

Cardiovascular risks with cannabis

In pts <50 yrs old with no history of cardiovascular disease

- 6x increased risk of MI
- 4x increased risk of ischemic stroke
- 2x risk of heart failure
- 3x risk of cardiovascular death, MI or stroke

Past 30 day use associated with MI, Stroke, CHF

- when controlling for tobacco smoking status, age race, ethnicity, BMI, DM, ETOH, educational status and physical activity

Surgical Considerations

Pre-op:

Impaired cognitive function to sign consent

Restored cognitive function 5 hours after inhalation, longer after oral

Recommendation: no cannabis after midnight

Intra-op:

Increased rates of myocardial ischemia

higher tolerance to standard anesthesia

Prolonged sedation: potent inhibitor of enzymes involved in metabolism of propofol, morphine, lorazepam

Post-op:

Linked to increased post-op pain, sedation and prolonged ventilatory support

May increase post-op nausea

What if I overdose?

There are effectively no cannabinoid receptors in the brainstem cardiorespiratory center.

This is believed to be the reason there is no evidence of fatal overdose from cannabinoid intake.

But you can have toxic effects.

Is it going to give me cancer? Or other bad things?

Recommendation: The Health Effects of Cannabis and Cannabinoids: The Current State of Evidence and Recommendations for Research. https://doi.org/10.17226/24625.

Lung Cancer

no statistically significant difference in risk of lung cancer for habitual cannabis smokers vs. non-habitual smokers[1]

no conclusive evidence that cannabis smoking is associated with an increased incidence of lung cancer. [1] [2]

data pooled analysis of 6 case-control studies with a total of 2159 cancers and 2985 controls[2]

Other Cancers

Head and Neck

no statistical association between cannabis use and the incidence of head and neck cancers (moderate evidence)

Testicular

There is modest evidence that cannabis use is associated with one subtype of testicular cancer: non-seminoma type testicular germ cell tumors

Compared to participants who had never smoked cannabis, heavy users who had smoked one or more times per day or week and chronic users who had smoked for 10 years or longer had a statistically significant risk of developing testicular cancer.

National Academies of Sciences, Engineering, and Medicine, 2017

Insufficient evidence to support or refute a statistical association between cannabis use and the incidence of

Prostate cancer	Esophageal cancer	Malignant gliomas	Non-Hodgkin's Lymphoma
Penile cancer	Anal Cancer	Bladder Cancer	Kaposi's Sarcoma

National Academies of Sciences, Engineering, and Medicine. 2017

Immunocompromised patients

Higher infection risk when exposed to contaminated cannabis (microorganisms)

- Products from a regulated source preferred

Possibility of drug interactions

- caution when used with a calcineurin inhibitor (e.g. tacrolimus): CBD may increase toxicity
- CBD may also worsen the efficacy of programmed cell death protein 1 (PD1) inhibitors, also known as immune checkpoint inhibitors

Preliminary evidence THC could inhibit the proliferation of lymphocytes and suppress CD8 T-cell and cytotoxic T lymphocyte cytolytic activity

CBD and THC could potentially interfere with immunotherapy in cancer patients.

- Interactions between monoclonal antibody therapies (e.g. TNF-alpha inhibitors) are unlikely
- no formal drug interaction trials have been done.

Risk in Adolescence

Endocannabinoids are key in neuronal development of the adolescent brain

- Decreased ability to learn
- Decreased ability to remember new information
- Impaired verbal and visual recall [1]

Adults who smoked regularly during adolescence

- Impaired learning and memory [3]
- Impaired neural connectivity involved “in functions that require a high degree of integration (ie. alertness and self-conscious awareness) [2]

1. Schuster, Hoeppner, Evins & Gilman, 2016 2. Smith, 2015 3. Yucel et al., 2008

Cannabis Hyperemesis

Diagnostic Criteria: Rome IV Criteria

1. Criteria fulfilled for at minimum three months, with symptomatic onset occurring at least six months before diagnosis
2. Stereotypical episodic vomiting resembling cyclical vomiting syndrome in onset, duration, and frequency
3. Presentation after prolonged, excessive cannabis use
4. Relief of vomiting by a sustained cessation of cannabis use
5. May be associated with “pathologic” bathing behavior, e.g., prolonged hot baths and showers.

How to treat it

- Cessation of marijuana
- Antiemetics not effective ie: ondansetron, prochlorperazine
- Topical capsaicin 1% to epigastric area TID (mostly case studies but includes peds

Cannabis Hyperemesis

What is it?

- Cyclical pattern of hyperemesis every few weeks to months
- Months/years of cannabis use prior to onset and resolution with discontinuation
- Differential dx: Cyclical Vomiting Syndrome AKA Abdominal Migraine
- Distinguishing factor: symptoms relieved by hot bath or shower

What is the Pathophysiology

- Hypothesis: chronic overstimulation of the endocannabinoid receptors leading to alteration in the body's intrinsic control of nausea and vomiting
- May be related to its action on the TRPV-1 receptors in the periphery
- Change in composition of the plant over last 30 years could contribute: higher THC and lower CBD

Vulnerable populations

Mania/ Predisposition to mania	• significant relationship between cannabis use and exacerbation or onset of bipolar disorder manic symptoms • 3-fold increased risk of new onset manic symptoms
Seizures	• High concentrations of THC may increase seizures in patients who have seizures.
Severe kidney/liver disease	• caution in use/ metabolic breakdown of cannabinoids
Suicidal Patients	• contradictory findings • use with caution with concurrent mental health issues

NCSBN, 2018

Fertility and Pregnancy

Fertility

- endogenous cannabinoids may increase chances of failed embryo implantation
- Cannabinoids can contribute to hormone dysregulation with may affect spermatogenesis.

Pregnancy

- THC crosses the placenta
- endocannabinoids involved in critical neurodevelopmental processes
- There is an association between cannabis and birth defects: causation has not been established
- Linked to low birth weight
    - Increases in carbon monoxide with elevated carboxyhemoglobin blood levels up to 5x higher after marijuana vs. cigarettes
    - Fetal growth restriction proposed to be secondary to fetal hypoxia due to the elevated carbon monoxide

Breastfeeding

- THC is secreted in breast milk, detectable up to 6 days: can accumulate to high concentrations

Effects of **paternal** use of cannabis

Cannabis use decreases sperm concentration

Affects DNA methylation in sperm

- These effects MAY be passed to the fetus (may see hereditary effects)
- More research is needed on the effects that this carries after fertilization
- May be associated with behavioral issues of the child

Men use cannabis products more so than women

Men are more likely to develop cannabis use disorders

(Schrott & Murphy 2020)

OTHER RISKS

Use prior to driving increases the risk of motor vehicle accident.

- Duration of impairment: within 4 hours of inhalation and 6-8 hours of oral ingestion, medical marijuana users were no longer impaired[1]

Use increases risk of developing substance dependence of substances other than cannabis

Recent cannabis use

(within 24 hours)

impairs performance in cognitive domains of learning, memory, and attention[2]

Chronic use is associated with chronic cough and phlegm production

- Insufficient evidence regarding COPD, Asthma or worsening lung function

1. MacCullum, Lo, Biovin, 2021 2. National Academies of Sciences, Engineering, and Medicine, 2017.

How do I get the good stuff? What kind should I take?

READ THE LABEL

- Company website
- Regulatory status (i.e., licensed cannabis producer or retailer)
- Local regulatory and product testing guidelines should be verified
- Optimal storage requirements to protect quality
- THC/CBD content (flower)
- THC/CBD content (edible)
- Packaging date
- Expiration date
- Lot number
- Net weight
- Non-cannabis ingredients (for oil, edible, vape)
- Third-party testing: Certificate of Analysis
- Security feature (sealed)
- Child-resistant packaging
- Packaging with/without child appeal.
- Health warning logo: Although the presence of health warnings does not confirm whether a product is regulated, the absence of health warnings is a strong indicator the product is not regulated.

MacCullem, Lo, Pistawka & Boivin, 2022

What forms are available?

Oral oil formulation: mg/ml	Edible products: mg/serving	Concentrates	Dried Cannabis Flower	Look at the cannabinoid content
• regulated extracts, topicals, and oils generally max THC content of 1000 mg per container	• Caution: may list the mg per total number of servings in package	• not for medical use • Often use solvents such as alcohol • higher risk • Dabs/waxes/ shatters	• Regulated conc. Range: 0.01% to 30% THC and/or CBD • >30% not recommended: >adverse effects and dependence	• Higher potency=higher risk • which component is listed first: not consistent ie: THC%/CBD% or CBD%/THC% • Allowable content varies by region

But I don’t want to get high…

- No real recommendations regarding dosage
- Start low and go slow (will minimize side effects)
- Cannabis has a biphasic effect.
- Daytime use: higher CBD component may be better
- Nighttime use: higher THC may be better, can be more sedating
- THC is the psychoactive component: keep this in mind when choosing a product.

Do not drive or partake in safety-sensitive activities

- 4hours after inhalation
- 6 hours after ingestion
- 8 hours if euphoria is experienced

Smoking (most common but not recommended)

- Onset 5-10 minutes, Duration 2-4hours
- Initial dosing (suggestions per evidence):
  - Start with 1 inhalation and wait 15 minutes, then increase by 1 inh every 15-30 min until symptom control
  - Consider higher CBD for daytime use, higher THC for nighttime use
- Pro: rapid onset: advantage for acute symptoms ie: nausea or pain
- Cons:
  - Combustion at 600-900 degrees produces toxic byproducts (tar, carbon monoxide, ammonia, polycyclic aromatic hydrocarbons/PAH)
  - 30-50% of cannabis lost to “side-stream” smoke
  - Respiratory symptoms of chronic cough and phlegm

MacCallum & Russo, 2017

Vaporization (good for acute or breakthrough symptoms)

- Onset 5-10 minutes, Duration 2-4hours (same as smoking)
- Initial dosing (suggestions per evidence):
  - Start with 1 inhalation and wait 15 minutes, then increase by 1 inh every 15-30 min until symptom control
  - Consider higher CBD for daytime use, higher THC for nighttime use
- Pro:
  - rapid onset: advantage for acute symptoms ie: nausea or pain
  - Heats at much lower temp of 120-230° C (decreased CO_2 but does not eliminate PAH)
  - Decreased pulmonary symptoms
- Cons:
  - Cost of vaporizers
  - Not all are portable

MacCallum & Russo, 2017

Oral route (good for treatment of chronic conditions)

Onset 60-180 minutes, Duration 6-8 hours

Initial dosing (suggestions per evidence):

- Consider higher CBD for daytime use, higher THC for nighttime use
- Start with nighttime dosing
- For daytime use, may need 2-3 doses per day

Pros:

- Less odor/ more discrete
- Improved accuracy of dosing for packaged products (ie. gummies)
- Long duration of action for chronic symptoms

Cons:

- More difficult to titrate due to delayed onset
- More variability/difficulty in dosing for DIY edibles (ie. brownies)
- Juicing and teas do not allow for adequate decarboxylation of raw plant

Days 1-2: 1.25-2.5mg at bedtime
Days 3-4: increase by 1.25-2.5 qhs
Days 5-6: increase by 1.25-2.5mg at hs as tolerated

If daytime dosing needed, same mg titration as above

Day1-2: qd dosing
Day 3-4: BID dosing
Day 5-6: TID dosing

Then may increase the dose as tolerated to 15mg THC equivalent in divided doses.

Doses > 20-30mg = increase side effects without increase efficacy

MacCullum & Russo, 2017

Topical formulations

- Onset variable but as quick as 10 minutes, Duration: 2-3 hours
- Pros:
  - Localized effect
  - CBD has documented anti-inflammatory benefits
- Cons:
  - Localized effect

Theisen & Konieczny, 2019

Is it working?

Do not drive/do safety-sensitive activities
- 4 hours after inhalation
- 6 hours after ingestion
- 8 hours if euphoria is experienced

Trial and error: the patient should keep records/ symptom chart

Determine how success will be measured: Function? Sleep? Pain? Use of other meds?

Assess for any adverse effects

Attainment of euphoria is not necessary to achieve therapeutic effect

Tolerance does not seem to develop to the benefits

Typical use1-3 grams of herbal cannabis per day[1]
- 1-3gm of herbal cannabis per day[1] - dosing starts in milligram
- <5% of patients use >5 grams per day

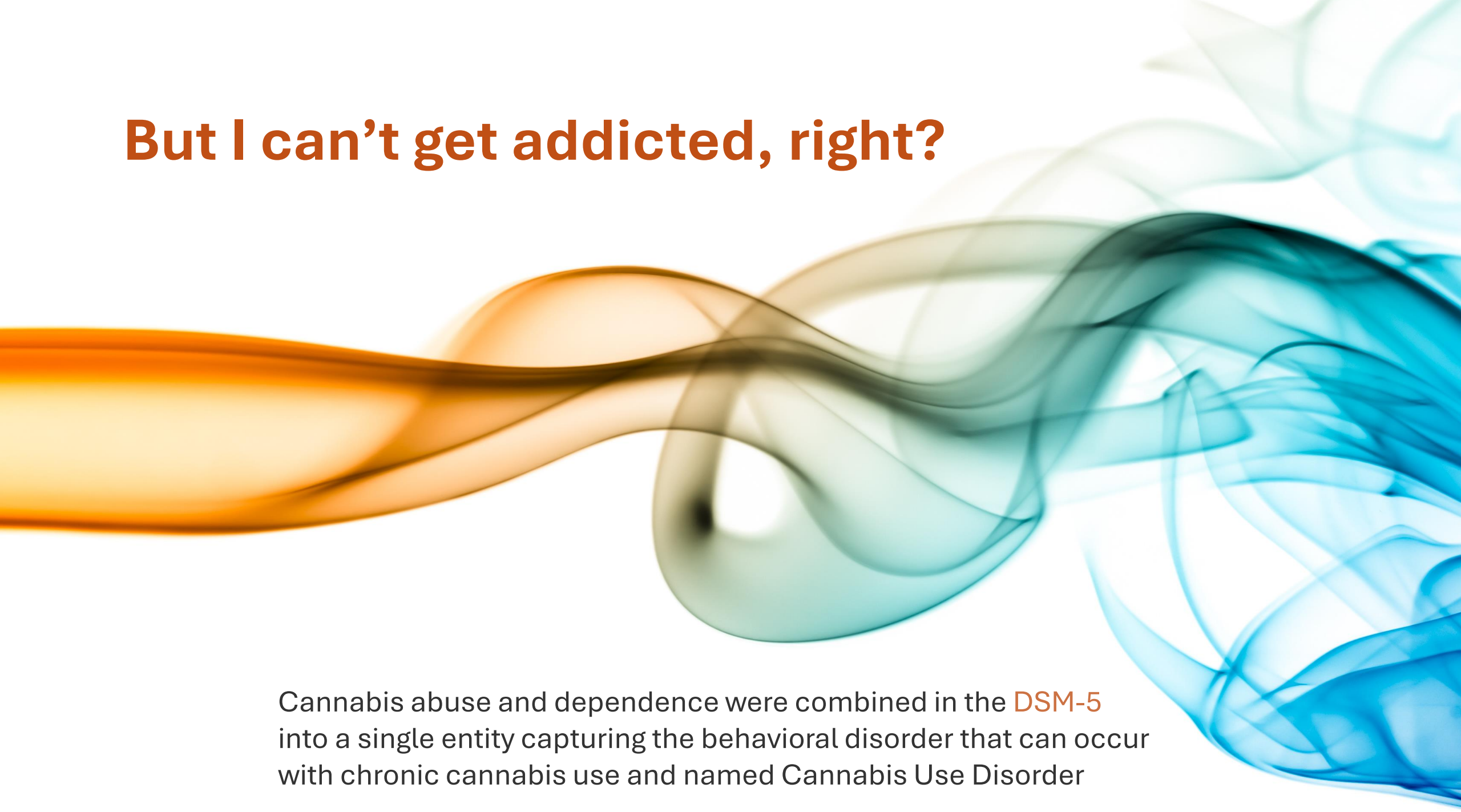
MacCullum & Russo, 2017

Know your state regulations

https://www.ncsl.org/research/health/state-medical-marijuana-laws.aspx

- Each state has different approved conditions: may be based on promising preclinical research rather than strong evidence
- Some states allow APRNs to certify, some must be physicians
- Patients must register with the Medical Marijuana Program (unless available for recreational use)
- Marijuana must be obtained from a certified dispensary
- Some states are limited to the patient receiving the Marijuana: others allow a caregiver

But I can’t get addicted, right?



Cannabis abuse and dependence were combined in the DSM-5 into a single entity capturing the behavioral disorder that can occur with chronic cannabis use and named Cannabis Use Disorder

Cannabis Use Disorder Definition DSM-V

A problematic pattern of cannabis use leading to clinically significant impairment or distress, as manifested by at least two of the following, occurring within a 12-month period

1. Cannabis is often taken in larger amounts or over a longer period than was intended.
2. There is a persistent desire or unsuccessful efforts to cut down or control cannabis use.
3. A great deal of time is spent in activities necessary to obtain cannabis, use cannabis, or recover from its effects.
4. Craving, or a strong desire or urge to use cannabis.
5. Recurrent cannabis use results in failure to fulfill role obligations at work, school, or home.
6. Continued cannabis use despite having persistent or recurrent social or interpersonal problems caused or exacerbated by the effects of cannabis.
7. Important social, occupational, or recreational activities are given up or reduced because of cannabis use.
8. Recurrent cannabis use in situations in which it is physically hazardous.
9. Cannabis use continues despite knowledge of having a persistent or recurrent physical or psychological problem that is likely to have been caused or exacerbated by cannabis.
10. Tolerance, as defined by either: (1) a need for markedly increased cannabis to achieve intoxication or desired effect or (2) a markedly diminished effect with continued use of the same amount of the substance.
11. Withdrawal, as manifested by either (1) the characteristic withdrawal syndrome for cannabis or (2) cannabis is taken to relieve or avoid withdrawal symptoms.

long term use can lead to addiction

Psychosis, hallucinations, paranoia, delusions, confusion

9% of people who try are at risk for addiction

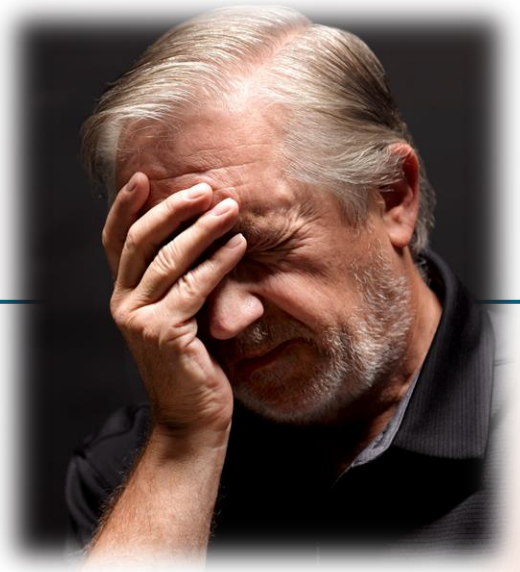
16% in adults who used as adolescents

25-50% addiction rate in adults who use daily

Cannabis Use Disorder: "Problematic pattern of cannabis use leading to clinically significant impairment or distress"

NCSBN 2018, S16

Cannabis Withdrawal



Poorly understood

Symptoms in less than 7 days with 20mg of THC every 3-4 hours

Symptoms: irritability, nervousness, sleeping difficulties, dysphoria, decreased appetite, strange and vivid dreams, craving, depressed mood, anxiety

To sum it up

The research on marijuana is still in the early stages.

Evidence supports therapeutic benefits in Chronic Pain, MS spasticity, Dravet's and Lennox-Gestaut Syndromes, Chemo-induced nausea and vomiting, AIDS Anorexia.

Guiding principle: Start low and go slow. Top dose typically around 15-20mg/day in divided doses.

Reading the label can give information regarding the potential safety of the product.

THC is the psychoactive component: higher CBD may be more effective for daytime use and for use in chronic pain.

Cannabis can interact with other drugs: use with caution in polypharmacy

Let’s Connect

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