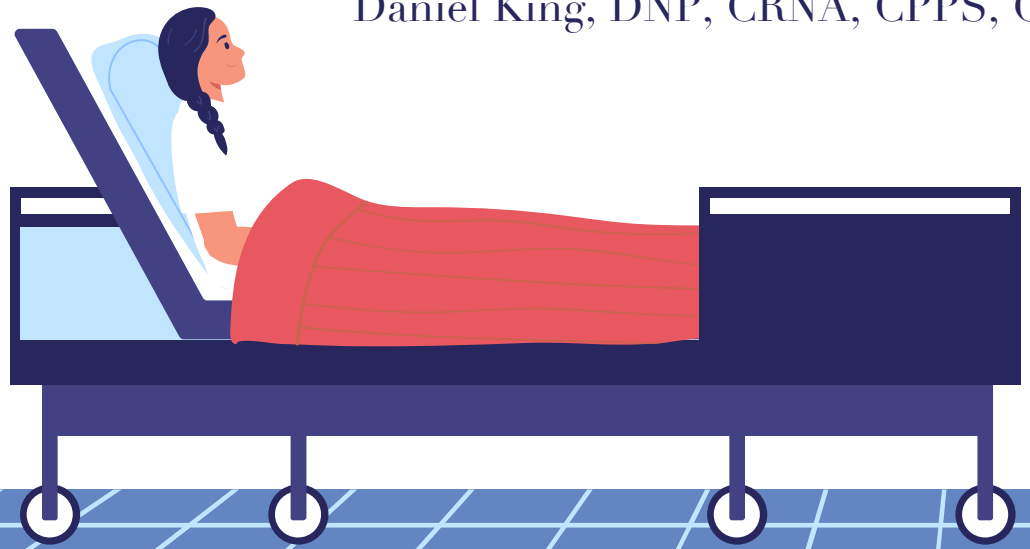
Seeing Through the Smoke: Cannabis Care in Nurse Anesthesiology

Daniel King, DNP, CRNA, CPPS, CNE



Objectives

01 Describe the role of stigmatization as a barrier to providing informative anesthesia care to patients who use cannabis.

02 Understand how to implement the anesthesia-specific, consensus-developed Cannabis Use and Behaviors Assessment Tool (CUBAT).

03 Stratify risks and evidence-based considerations for the anesthesia care of patients who use cannabis.

Overview

01

Prevalence

Current trends and expected incidence in our patient population

02

Stigmatization

Anticipated stigma as a major contributor to non-disclosure

03

Screening

Meeting formal recommendations to screen all patients with CUBAT

04

Informed Practice

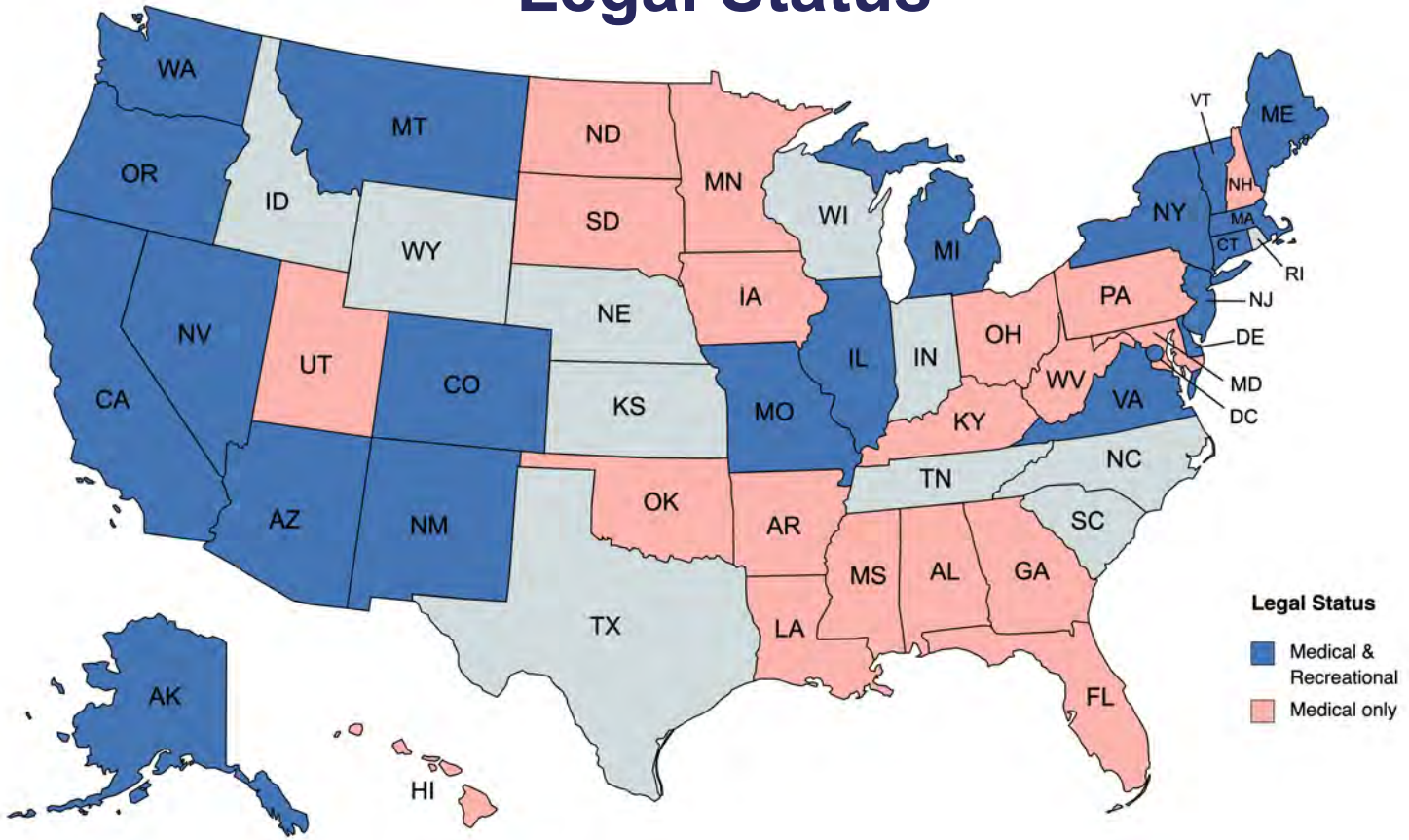
How learned assessment guides informative interventions in anesthesiology

01

Prevalence

Current trends and expected incidence in our patient population

Legal Status



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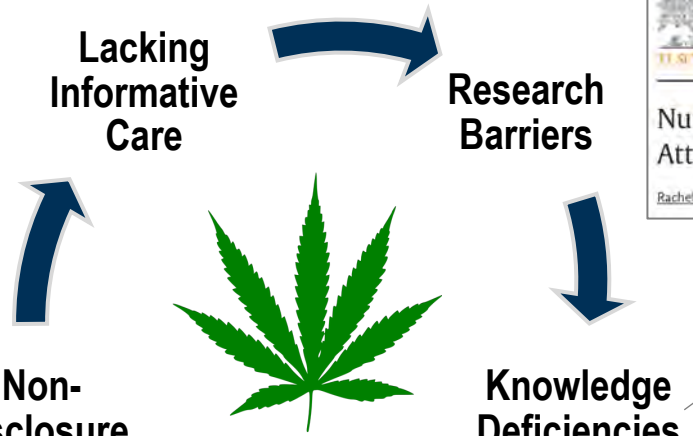
FDA Schedule I Drug Status



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Nursing Students' Knowledge, Skills, and Attitudes Regarding Medicinal Cannabis Care

Rachel A. Parmelee MSN, RN, CNE, AHN-BC, Carey S. Clark PhD, RN, AHN-BC, FAAN

Anesthesia for Patients Who Self-Report Cannabis (Marijuana) Use Before Esophagogastroduodenoscopy: A Retrospective Review

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Scott A. Stewart, MD
Angela Collins-Yoder, PhD, RN, CCNS, ACNS-BC
Tara Fleckner, MPH
Lori Lyn Price, MAS, MLA

Cannabis Patients in Healthcare (N=249)

Mean Age: 50.2 (± 13.2) years

Gender Identity

Female: n=176 **(70.7%)**

Male: n=68 **(27.3%)**

Transgender male: n=1 **(0.4%)**

Ethnicity

White: n=207 **(83.1%)**

Black/African American: n=15 **(6%)**

Asian: n=6 **(2.4%)**

American Indiana/Alaska Native: n=2 **(0.8%)**

Other: n=14 **(5.6%)**

King, D.D., Gill, C.J., Cadieux, C.S. *et al.* The role of stigma in cannabis use disclosure: an exploratory study. *Harm Reduct J* **21**, 21 (2024). https://doi.org/10.1186/s12954-024-00929-8

Patient Demographics

Highest Level of Education

< Bachelor's: n=88 **(35.3%)**

Bachelor's: n=84 **(33.7%)**

> Bachelor's: n=73 **(29.3%)**

Annual Household Income

< $35,000: n=58 **(23.3%)**

$35-70,000: n=42 **(16.9%)**

$70-105,000: n=47 **(18.9%)**

> $105,000: n=89 **(35.7%)**

Marital Status

Married: n=130 **(52.2%)**

Widowed/separated/divorced: n=68 **(27.3%)**

Never married: n=44 **(17.7%)**

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Legal Status in State of Residence

Legalized: N=152 **(61%)**

Medical and Decriminalized: N=36 **(14.5%)**

Medical: N=36 **(14.5%)**

Decriminalized: N=5 **(2%)**

CBD Oil with THC as an Ingredient Only: N=13 **(5.2%)**

Fully Illegal: N=3 **(1.2%)**

Outside USA: N=4 **(1.6%)**

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Cannabis Use Characteristics

Route most often used

1. Smoking: n=106 **(42.6%)**
2. Vape: n=52 **(20.9%)**
3. Edible: n=35 **(14.1%)**
4. Tincture: n=21 **(8.4%)**
5. Oil: n=12 **(4.8%)**
6. Capsule: n=9 **(3.6%)**
7. Topical: n=5 **(2%)**
8. Lozenge: n=1 **(0.4%)**
9. Other: n=8 **(3.2%)**

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Cannabis Use Characteristics

Known THC/CBD amount(s)?

- Yes: n=196 **(78.7%)**
- No: n=53 **(21.3%)**

CBD Amount (mg/day)

- 5-20: n=106 **(52.4%)**
- 21-29: n=29 **(14.9%)**
- > 30: n=32 **(16.4%)**

THC Amount: variable

Duration of Use

- < 1 year: n=20 **(8.1%)**
- 1-5 years: n=65 **(26.2%)**
- 5-10 years: n=43 **(17.3%)**
- > 10 years: n=120 **(48.4%)**

Frequency in last 30 days

- 21 days or more: n=176 **(71%)**

Times per day

- Once: n=66 **(26.6%);** Twice: n=50 **(20.2%);** Three: n=42 **(16.9%)**
- > Three: n=82 **(33%)**

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Cannabis Use Characteristics

Reasons for use

1. Anxiety: n=161 **(64.7%)**
2. Pain: n=157 **(63.1%)**
3. Sleep: n=141 **(56.5%)**
4. Depression: n=109 **(43.8%)**
5. Recreation/leisure: n=88 **(35.3%)**
6. Arthritis: n=73 **(29.3%)**
7. PTSD: n=68 **(27.3%)**
8. Headache/migraine: n=61 **(24.5%)**
9. Muscle spam: n=62 **(24.9%)**
10. Neuropathy: n=49 **(19.7%)**

Others: N/V, appetite, autoimmune disease, neuromuscular diseasebowel disease, cancer, glaucoma, seizure, spinal cord disease, brain disorder, kidney disease, hepatitis, terminal illness, bladder disorder

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02

Stigmatization

Anticipated stigma as a major contributor to non-disclosure

Stigma Domains

Perceived

Enacted

Internalized

Anticipated

King, D.D., Gill, C.J., Cadieux, C.S. *et al.* The role of stigma in cannabis use disclosure: an exploratory study. *Harm Reduct J* **21**, 21 (2024). https://doi.org/10.1186/s12954-024-00929-8

Stigma Scores

Adapted SU-SMS and SASSS scales for cannabis use

Range: 1-5 (item) 6-30 (category); Higher score is correlated with greater stigma

Internalized: 8.62 ± 4.37 (*p = 0.15)*

Perceived: 12.09 ± 5.87 (*p = 0.07)*

Enacted: 12.58 ± 6.78 (*p = 0.46)*

King, D.D., Gill, C.J., Cadieux, C.S. *et al.* The role of stigma in cannabis use disclosure: an exploratory study. *Harm Reduct J* **21**, 21 (2024). https://doi.org/10.1186/s12954-024-00929-8

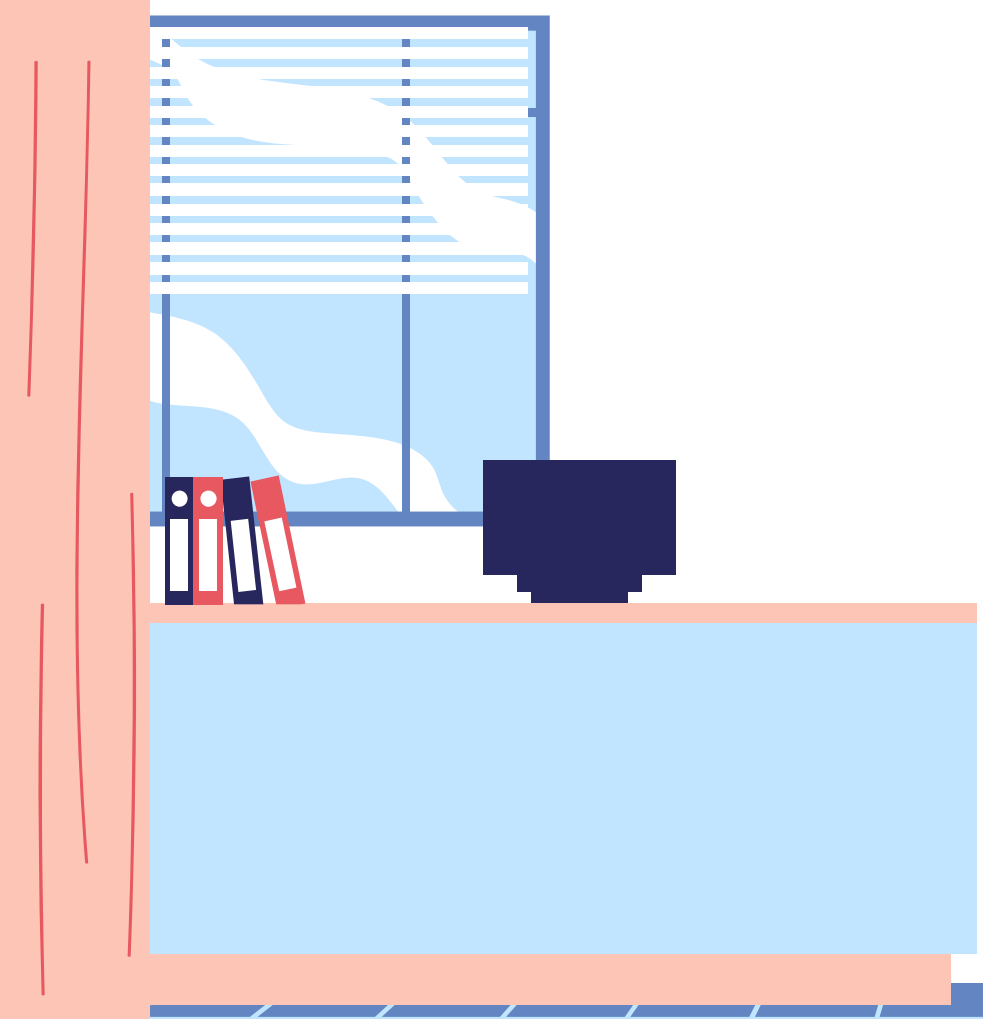
Stigma Scores

Anticipated: 14.8 ± 7.06 (*p = 0.0015)*

All Responses

1. *Healthcare workers will treat me differently (2.67 ± 1.35)*
2. *Healthcare workers will not listen to my concerns (2.56 ± 1.28)*
3. *Healthcare workers will look down on me (2.52 ± 1.33)*
4. *Healthcare workers will give me poor care (2.38 ± 1.23)*
5. *Healthcare workers will think that I cannot be trusted (2.39 ± 1.25)*
6. *Healthcare workers will think that I'm pill shopping, or trying to con them into giving me prescription medications to get high or sell (2.29 ± 1.34)*

King, D.D., Gill, C.J., Cadieux, C.S. *et al.* The role of stigma in cannabis use disclosure: an exploratory study. *Harm Reduct J* **21**, 21 (2024). https://doi.org/10.1186/s12954-024-00929-8



48.09

± 19.91 (*p=0.0489)*

Total stigma score

out of possible 120

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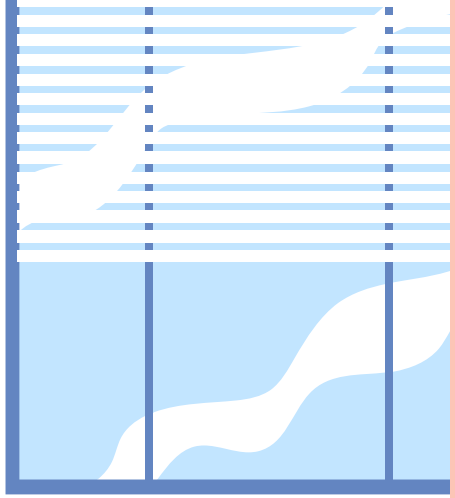


03

Screening

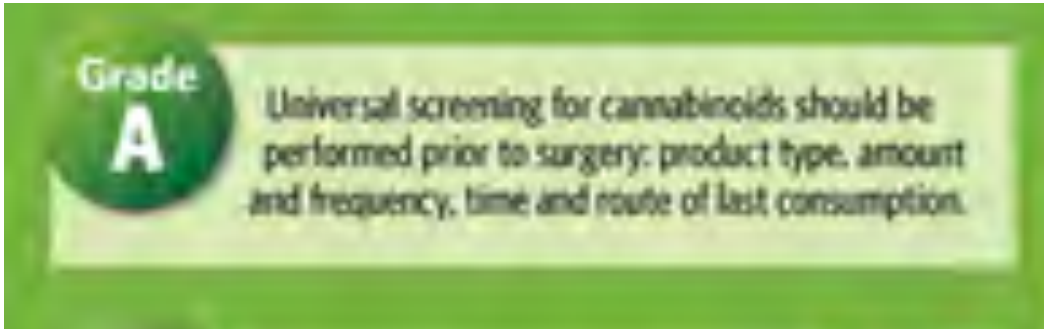
Meeting formal recommendations to screen all patients with CUBAT

It starts with us.

Anesthesia professionals are uniquely positioned to establish rapport and drive informative patient care through assessment.

Why does it matter?

- **ASRA Pain Medicine consensus guidelines, supported by AANA Professional Practice, call for universal cannabis screening for <u>ALL</u> patients**



King D, Greenier E, Caballero M, Morgan B. Integrating the ASRA Cannabis Consensus Guideline into CRNA Clinical Practice. *AANA J.* 2023;*91*(4).

Shah S, Schwenk ES, Sondekoppam RV, et al. ASRA Pain Medicine consensus guidelines on the management of the perioperative patient on cannabis and cannabinoids. *Reg Anesth Pain Med*. 2023;48(3):97-117. doi:10.1136/rapm-2022-104013

Disclosure Patterns with Healthcare Providers

How often do you make your cannabis use known to healthcare providers?

- Always: n=113 **(46.1%)**
- Sometimes: n=80 **(32.7%)**
- Never: n=52 **(21.2%)**

Who initiates discussion of your cannabis use?

- Myself: n=140 **(57.1%)**
- Healthcare provider: n=37 **(15.1%)**
- Neither myself nor healthcare provider: n=68 **(27.8%)**

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Frequency of Cannabis Use Disclosure

Variables	*P*	Significant	Test
Age	.1047	No	Chi-square
Gender	.3237	No	Chi-square
Race	.7887	No	Chi-square
Highest education level achieved	.3130	No	Chi-square
Annual household income	.0389	Yes	Chi-square
Marital status	.8490	No	Chi-square
Legal status in state of residence	.2387	No	Fisher's Exact
Frequency of use (days per month)	.0169	Yes	Fisher's Exact
Duration of use	.0344	Yes	Chi-square
Known amount of CBD per day	.0137	Yes	Chi-square
Known amount of THC per day	.5379	No	Chi-square

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Disclosure Patterns with Healthcare Providers

What most influences your desire to disclose your cannabis use?

- Comfort level with healthcare provider: n=104 **(42.5%)**
- I do not disclose my cannabis use: n=41 **(16.7%)**
- Healthcare provider asks: n=28 **(11.4%)**
- Unknown/other: n=72 **(28.9%)**

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Thematic Analysis – Reasons for Disclosure

Theme	Quotes
Transparency	"They are there to help me, so I disclose everything." "To make sure my HCP has knowledge…and can make a plan for me."
Drug-Drug Interactions	"I want my doctors to know I use it as medicine so that they don't prescribe me other…things I use the medical cannabis for."
Patient Educating the Provider	"To teach them that it helps me." "They are too judgmental." "Definitely could use better professional training on their part."
Patient Empowerment	"I proudly announce it." "To act as an advocate." "Reversing the stigma with lack of understanding from the medical community…"

King, D.D., Gill, C.J., Cadieux, C.S. *et al.* The role of stigma in cannabis use disclosure: an exploratory study. *Harm Reduct J* **21**, 21 (2024). https://doi.org/10.1186/s12954-024-00929-8

Reluctance to Disclose

- Universal screening is recommended
- Patients most commonly initiate discussion
- Greatest influencer is ***comfortability with healthcare provider***
- Providers lack knowledge, tools and resources

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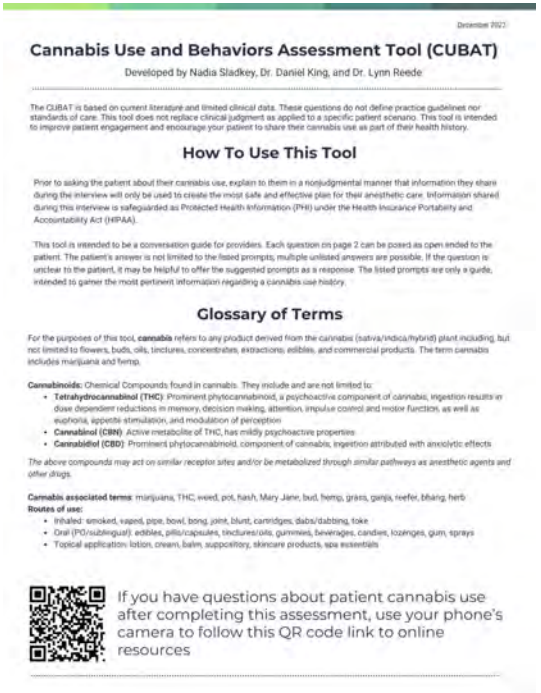
04

Informed Practice

How learned assessment guides informative interventions in anesthesiology

Introducing the Cannabis Use and Behaviors Assessment Tool (CUBAT)



December 2023

Cannabis Use and Behaviors Assessment Tool (CUBAT)

Developed by Nadia Sladkey, Dr. Daniel King, and Dr. Lynn Reede

The CUBAT is based on current literature and limited clinical data. These questions do not define practice guidelines nor standards of care. This tool does not replace clinical judgment as applied to a specific patient scenario. This tool is intended to improve patient engagement and encourage your patient to share their cannabis use as part of their health history.

How To Use This Tool

Prior to asking the patient about their cannabis use, explain to them in a nonjudgmental manner that information they share during the interview will only be used to create the most safe and effective plan for their anesthetic care. Information shared during this interview is safeguarded as Protected Health Information (PHI) under the Health Insurance Portability and Accountability Act (HIPAA).

This tool is intended to be a conversation guide for providers. Each question on page 2 can be posed as open ended to the patient. The patient's answer is not limited to the listed prompts; multiple unlisted answers are possible. If the question is unclear to the patient, it may be helpful to offer the suggested prompts as a response. The listed prompts are only a guide, intended to garner the most pertinent information regarding a cannabis use history.

Glossary of Terms

For the purposes of this tool, **cannabis** refers to any product derived from the cannabis (sativa/indica/hybrid) plant including, but not limited to flowers, buds, oils, tinctures, concentrates, extractions, edibles, and commercial products. The term cannabis includes marijuana and hemp.

Cannabinoids: Chemical Compounds found in cannabis. They include and are not limited to:

- **Tetrahydrocannabinol (THC):** Prominent phytocannabinoid, a psychoactive component of cannabis; ingestion results in dose dependent reductions in memory, decision making, attention, impulse control and motor function, as well as euphoria, appetite stimulation, and modulation of perception
- **Cannabinol (CBN):** Active metabolite of THC, has mildly psychoactive properties
- **Cannabidiol (CBD):** Prominent phytocannabinoid, component of cannabis, ingestion attributed with anxiolytic effects

The above compounds may act on similar receptor sites and/or be metabolized through similar pathways as anesthetic agents and other drugs.

Cannabis associated terms: marijuana, THC, weed, pot, hash, Mary Jane, bud, hemp, grass, ganja, reefer, bhang, herb

Routes of use:

- Inhaled: smoked, vaped, pipe, bowl, bong, joint, blunt, cartridges, dabs/dabbing, toke
- Oral (PO/sublingual): edibles, pills/capsules, tinctures/oils, gummies, beverages, candies, lozenges, gum, sprays
- Topical application: lotion, cream, balm, suppository, skincare products, spa essentials

If you have questions about patient cannabis use after completing this assessment, use your phone's camera to follow this QR code link to online resources

1 Have you used cannabis, in any form, within the last month?

- Yes
- No
- Prefer not to answer

2 How often do you use cannabis?

Frequency per:

- Day
- Week
- Month

3 What are the primary ways you consume cannabis?

- Inhaled (smoke/vape)
- Oral (edibles/sublingual)
- Topical
- Other: ____

4 When was the last time you used cannabis?

Within the last:

- Six hours
- 12 to 24 hours
- Week
- Month

5 Can you describe the concentration/contents of the cannabis you consume?

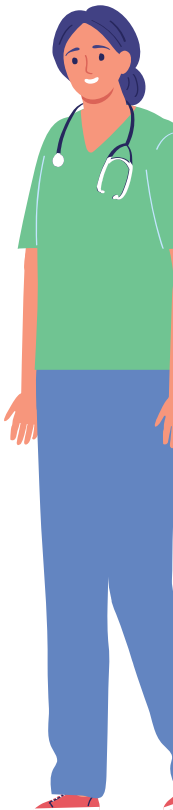
- Percent THC/CBD
- Milligrams per serving
- Grams/ounces of flower
- Other amount

6 Are there any specific reasons you use cannabis? If so, what are they?

- Reduce anxiety
- Nausea/Vomiting
- Pain
- Lack of appetite
- Seizures
- Sleep aid
- Relaxation
- Recreation
- Cancer
- Other

7 Have you ever experienced a bad reaction/withdrawal from cannabis?

- **Bad reaction**: experienced undesirable side effects such as anxiety, paranoia, tachycardia, hallucinations, severe nausea and vomiting, an allergic reaction, breathing difficulties, or heart problems shortly after ingesting cannabis.
- **Withdrawal**: experienced 3 or more of the following undesirable side effects within 1 week of abruptly stopping cannabis use: mood changes, irritability, sleeping problems, loss of appetite, or other physical symptoms (i.e., headaches, chills, abdominal pain).



Sladkey, N., King, D., Reede, L. (2024). Enhancing the preanesthesia evaluation: consensus development of the Cannabis Use and Behaviors Assessment Tool (CUBAT). *JOPAN.* In press.

Have you used cannabis, in any form, within the last month?

Urine/Serum Testing

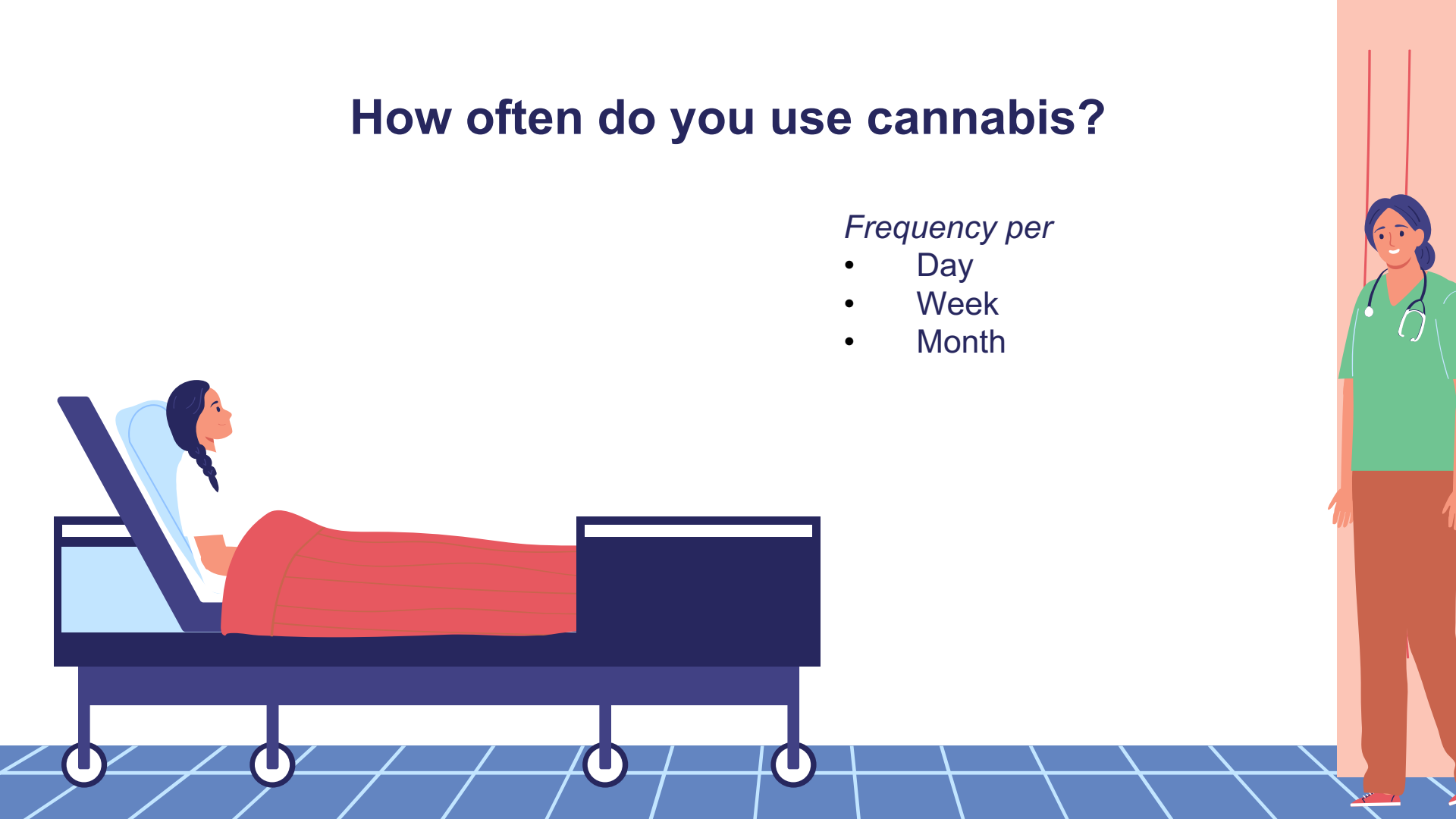
- Not useful nor recommended for routine screening
- Detects only THC or carboxy-THC
- Positive result *does not* correlate with poor surgical outcomes
- Highly lipid soluble/protein bound

Elimination time is 7-10 days,
longer for chronic users (30 days)

How often do you use cannabis?

Frequency per

- Day
- Week
- Month



Cannabinoid Hyperemesis Syndrome

- Characteristic of **long-term, high frequency** users
- Vanishes after 5-20 days of abstinence
- Symptoms relieved with hot showers/baths and cessation of use

Difficulty eating, weight loss

Nausea, Vomiting, Diarrhea

Abdominal pain, bloating

Compulsory hot showers/baths

What are the primary ways you use cannabis?

- Inhaled (smoke/vape)
- Oral (edibles/sublingual)
- Topical
- Other

Many Routes

Traditional rolled cigarette

Beverages

Edible forms

Gummies

Chewing gum

Lozenges

Vaping pens

Dog treats

Oral sprays

Tinctures

Capsules

Oils

Spa Essentials

Pharmacokinetics

Peak onset of action:

Rectal (15 mins) < Inhalation (15-22 mins) < Sublingual (30 mins) < Oral (15-120 mins) < Transdermal (120 mins)

Duration of action:

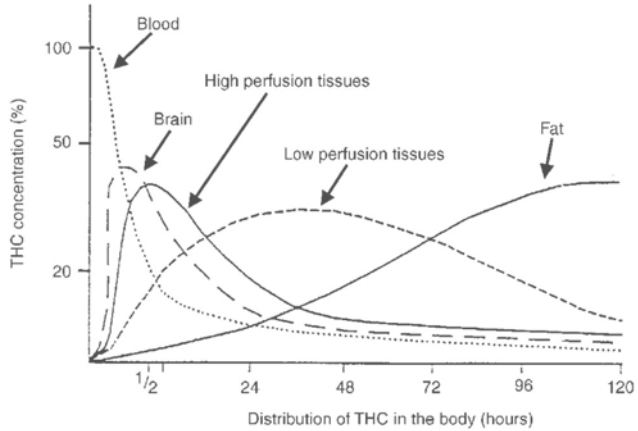
Inhaled = 2-4 hrs (dose-dependent)

Ingested = 4-6 hrs

*Regardless of route, cognitive/psychomotor impairment can last up to 24 hrs

Half-Life: 20-30 hrs (1-2 wks in chronic use)

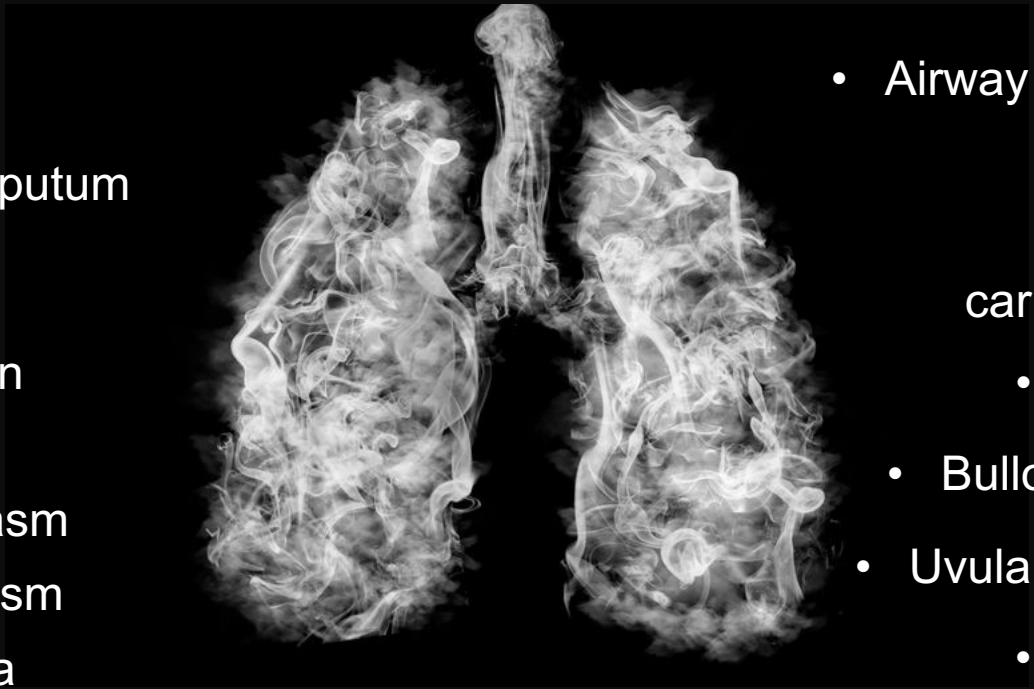
Elimination: 25-30 days



Ashton, C.H. (2001). Pharmacology and effects of cannabis: a brief review. *The British Journal of Psychiatry: The Journal of Mental Science, 178, 101-106*

Respiratory Effects

- Coughing
- Wheezing
- Bronchitis
- Increased sputum production
- Asthma exacerbation
- URI
- Bronchospasm
- Laryngospasm
- Emphysema



- Airway edema
- Airway irritability/hyper-reactivity
- Increased carboxyhemoglobin
- Pneumothorax
- Bullous lung disease
- Uvular edema, uvulitis
- Oropharyngitis

Worse than Cigarettes?

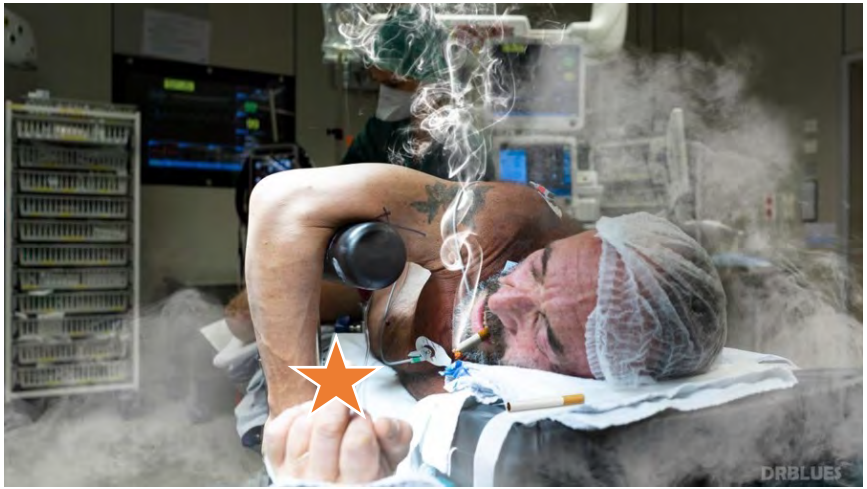
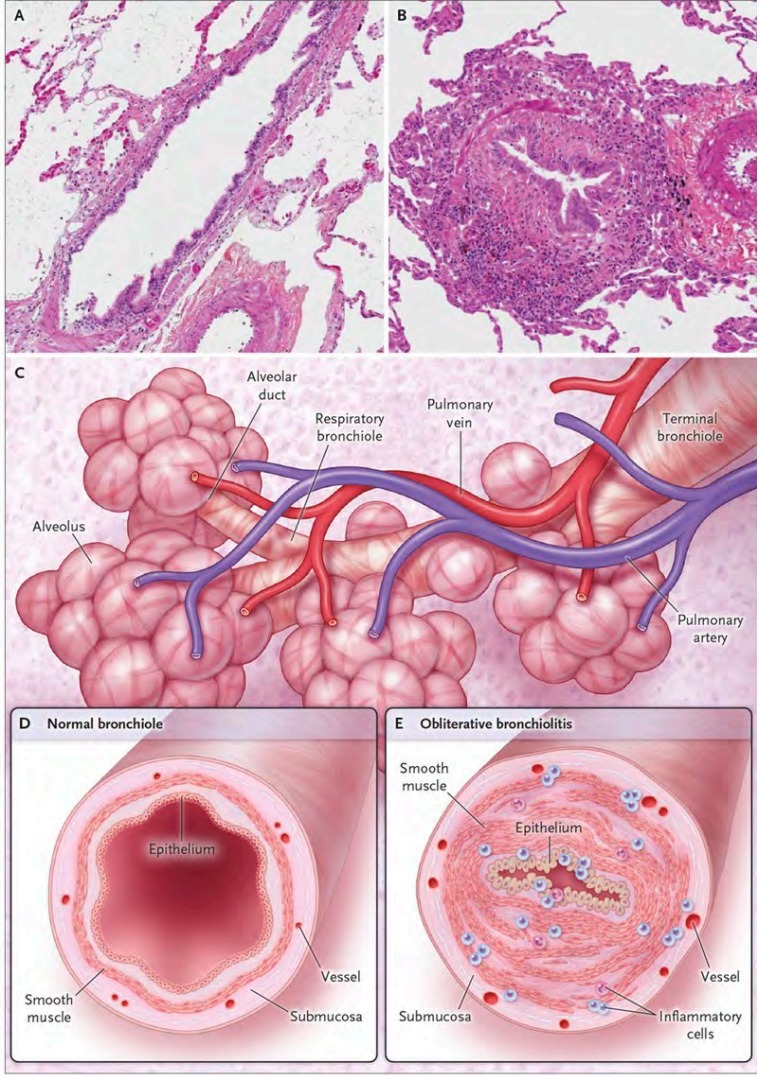


Photo credit: Admir Hadzic, used with permission

- **Unfiltered**
- **Higher tar burden (3-4X) and retention (1.3X)**
- **Deep, breath-holding techniques utilized**
- **Higher carboxyhemoglobin levels (5X)**
- **Burns at higher temperature**
- **Chronic bronchitis symptoms occur 10 years earlier**
- ***Cannabis use outpaces tobacco cigarettes for the first time in history (Gallup, 2022)***

3-4 cannabis cigarettes daily = 20 tobacco cigarettes (Wu et al, 1988)

“POPCORN LUNG”



TOP: vapingmedia.com

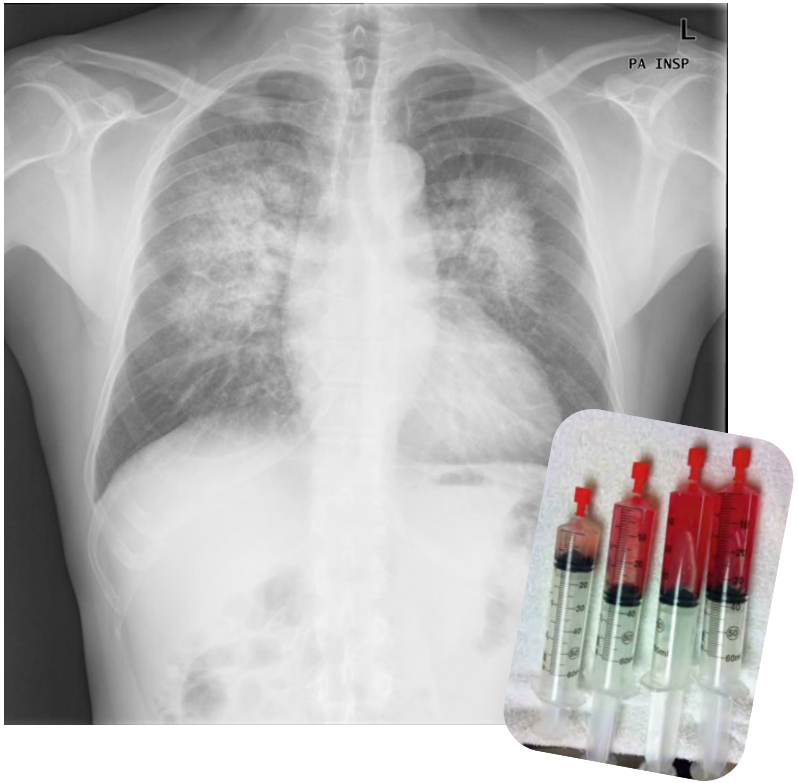
RIGHT: N Engl J Med 2014; 370:1820-1828

DOI: 10.1056/NEJMra1204664

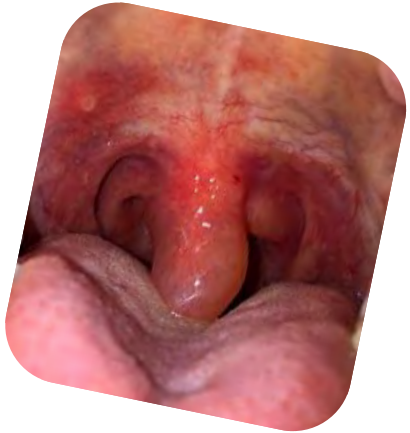
Diffuse Alveolar Hemorrhage

Case Reports:

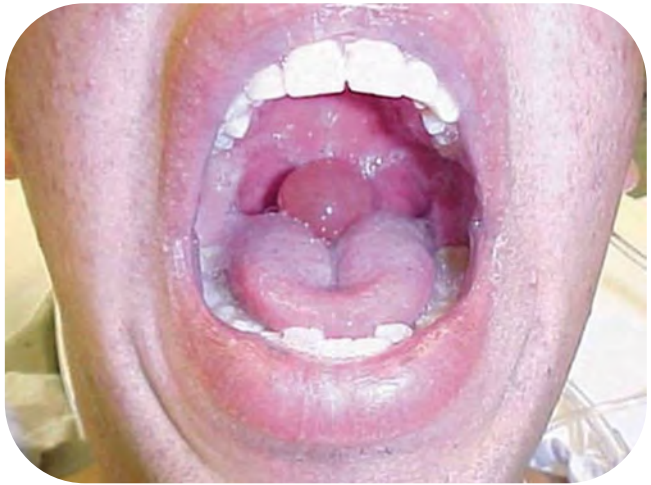
- 31yo male developed pulmonary edema and hemoptysis 45 minutes after pilonidal cyst excision *(Murray, Smith & Ibinson, 2014)*
- 16yo male developed hemoptysis, dyspnea, and acute respiratory failure 30 minutes after laparoscopic varicocele repair *(Bucchino et al., 2019)*



Uvular Edema

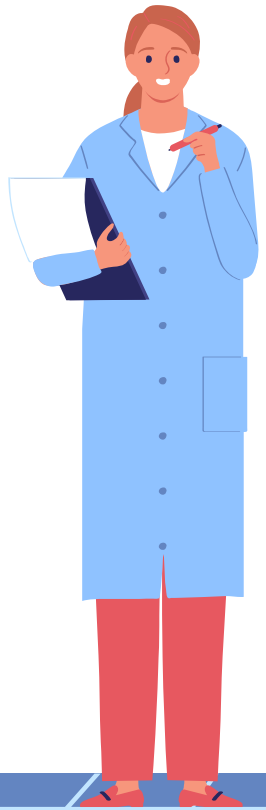


- Multiple isolated case reports
- Typically occurs within 4-12 hrs. of inhaled, large quantities of smoke
- More susceptible with intubation?
- Has led to airway obstruction and need for definitive management



Treatment: 10mg dexamethasone IV (0.1mg/kg every 6-12 hours x 1-2 days)
Also consider methylprednisolone and albuterol

Image: healthjade.org



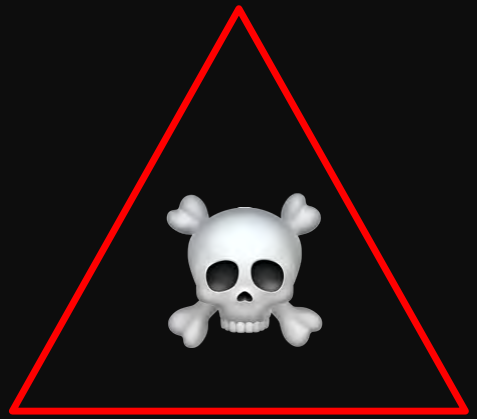
When was the last time you used cannabis?

Within the last:

- 2-6 hours
- 12-24 hours
- Week
- Month

Increased Myocardial Demand

↑CARBOXYHEMOGLOBIN



↑PLATELET AGGREGATION

↓OXYGEN SUPPLY

4.8x risk of myocardial infarction within first hour (Mittelman et al.);
If prior MI, risk of death increases **2.5-4x** (Pacher et al., 2018)

Myocardial Risk

Delay elective cases for *smoking* < 2 hours prior

- MI risk elevation 1 hour after smoking
  (OR of 1.88 (95% CI 1.31 to 2.69))

- Abstinence (≥ 24-72 hours) is associated with better surgical outcomes, overall

Shah S, Schwenk ES, Sondekoppam RV, et al. ASRA Pain Medicine consensus guidelines on the management of the perioperative patient on cannabis and cannabinoids. *Reg Anesth Pain Med*. 2023;48(3):97-117. doi:10.1136/rapm-2022-104013

Informed Consent

Delay elective cases for altered mental status or impaired decision-making capacity

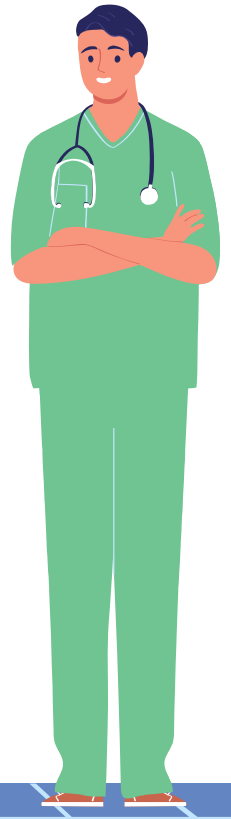
American Surgical Association:

“If a patient appears intoxicated and incompetent or unable to sign consent, then he/she is unable”

DO: Discuss cannabis-related considerations and inform perioperative risks

Can you describe the concentration/contents of the cannabis you consume?

- Percent THC/CBD
- Milligrams per serving
- Grams/ounces of flower
- Other amount



CBD			THC
+/-	CB1R	++	
+/-	CB2R	+	
++	Anticonvulsant	+	
+	Muscle Relaxant	++	
++	Anxiolytic	+/-	
-	Psychotropic	++	
++	Antipsychotic	-	
-	Short-term memory	+	
-	problems	++	
-	Distortion of perception of time	+	
-	Sedation	+	

Adapted from: Atakan Z. Cannabis, a complex plant: different compounds and different effects on individuals. *Ther Adv Psychopharmacol*. 2012;2(6):241-254.

CBD		THC
+	Bradycardia	-
-	Tachycardia	+
-	Hypertension	+
+	Hypotension	-
-	Appetite	+
+	Slowed GI motility	++
+	Reduced IOP	++

Adapted from: Atakan Z. Cannabis, a complex plant: different compounds and different effects on individuals. *Ther Adv Psychopharmacol*. 2012;2(6):241-254.

Proposed Enzymatic Mechanism for Cross-Tolerance

CYP450:	2C9	3A4	2C19	2B6	UDP-G 1A9
THC	X	X	X		
CBD	?	X	X		
Propofol	X			X	X
Ketamine		X		X	
Fentanyl		X			
Midazolam		X			
Oxycodone, Codeine		X			
Celecoxib, NSAIDs	X				
Warfarin, Clopidogrel	X				

Enzyme Inhibition

THC

CYP3A4
CYP2D6

CBD

CYP3A4
CYP2D6

Potent Inhibitor: CYP1A1, CYP1A2, CYP1B1, CYP2B6, CYP2C8, CYP2C9*, CYP2D6, CYP3A4, UGT1A9^, UGT2B7>

*propofol
^warfarin
>lamotrigine, morphine, lorazepam

Are there any specific reasons you use cannabis? If so, what are they?

- Reduce anxiety
- Nausea/vomiting
- Pain
- Lack of appetite
- Seizures
- Sleep aid
- Relaxation
- Recreation
- Cancer
- Other

Pre-Admission Dose Tapering

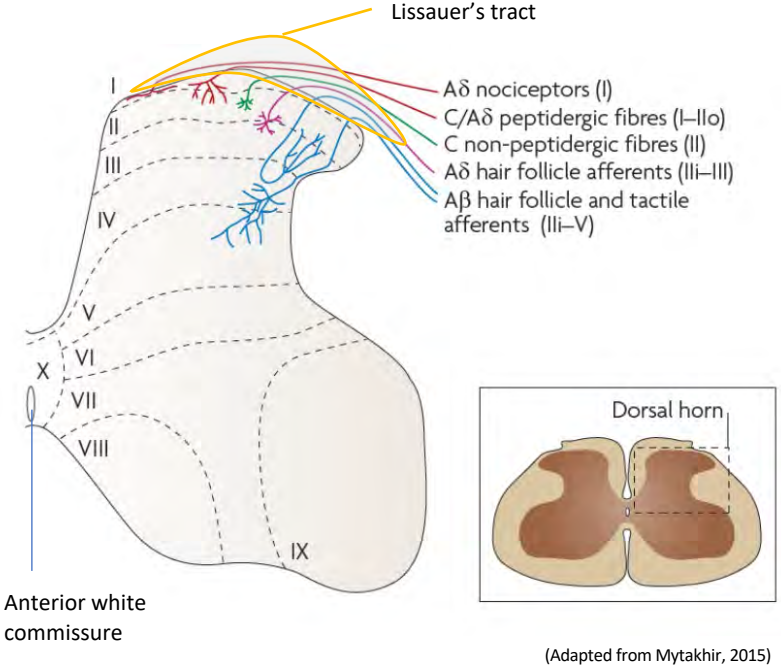
- Safety data are lacking
- Abrupt cessation discouraged for chronic conditions

Perioperative Pain and Addiction Interdisciplinary Network (PAIN) Consensus Recommendations (2021):

- *Consider* weaning high dose users > 7 days preop
  - > 1.5g/day smoked
  - > 300mg/day CBD oil
  - > 20mg/day THC or unknown dose >2-3x/day
- Do not substitute without expert guidance

Ladha KS, McLaren-Blades A, Goel A, et al. Perioperative Pain and Addiction Interdisciplinary Network (PAIN): consensus recommendations for perioperative management of cannabis and cannabinoid-based medicine users by a modified Delphi process. *Br J Anaesth*. 2021;126(1):304-318. doi:10.1016/j.bja.2020.09.026

Pain



(Adapted from Mytakhir, 2015)

- Dose-dependent hyperalgesia
  - TRPV1 modulation?
- Regular use associated with:
  - **Higher postoperative pain scores**
  - **Higher *inpatient* opioid use (25-37%)**
  - **Lower *outpatient* opioid use**

Have you ever experienced a bad reaction/withdrawal from cannabis?

Cannabis Withdrawal Syndrome

- Risk greatest with high/unknown THC concentrations
- Monitor with a validated **CWS scale**
- DSM-5 criteria are met within 1 week of abrupt discontinuation

Proposed Treatments:

- **Gabapentin**
- **Dronabinol (low dose)**
- **Nabiximols**
- **Zolpidem**
- **Mirtazapine**

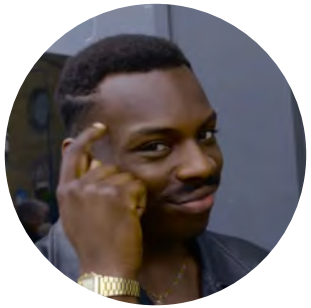
Headache

Depression

Insomnia

Use Your Clinical Judgment

Remember: Patients initiate disclosure, but are reluctant



Consider last dose and route to determine onset/duration

Evaluate/Assess:

- **Cardiac:** **Risk profile, EKG, BP**
- **Coagulation:** **Platelets (count and function), PT/PTT, INR**
- **Respiratory:** **auscultate, prevent irritability/obstruction, PFT**
- **Neuro:** **THC dose and timing determines psychosis risk; assess for seizure hx**
- **Pain:** **get ahead of it**

FDA SCHEDULE I DRUG CLASSIFICATION

“No accepted medical value, lack of accepted safety for use, and high potential for abuse”

On Oct. 6, 2022, President Joe Biden called for “marijuana reform” and requested the AG and Secretary of HHS to expeditiously review this schedule

In Sept. 2023, the Dept. Health and Human Services (DHHS) recommended move to Schedule III

ANA Officially Recognizes Cannabis Nursing as a Specialty Nursing Practice

September 27th, 2023

ACNA
American Cannabis Nurses Association

ANA
AMERICAN NURSES ASSOCIATION

Thanks!

Do you have any questions?

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