DELTA CARE
INNOVATION IN HOSPICE & SERIOUS ILLNESS

Medical Marijuana FOR SYMPTOM MANAGEMENT

PRESENTER: HAYLEY E. KAY MS, PHARMD, BCPS

1

OBJECTIVES

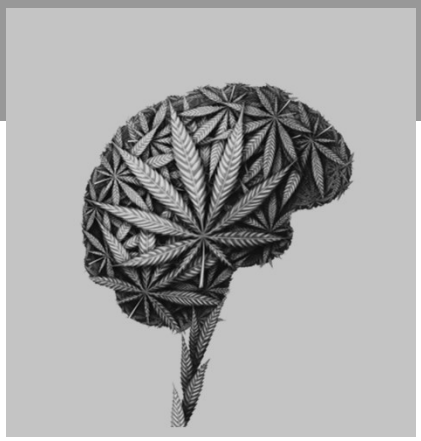
- Recognize the necessity of providing cannabis education to nursing professionals
- Establish nursing's role within the realm of medical cannabis
- Explain the legal framework concerning medical marijuana (MMJ) at both the state and federal levels
- Identify key components of the cannabis plant and their respective effects within the body
- Describe the Endocannabinoid System and its relation to cannabis
- Understand formulations, basic dosing, and routes of administration
- Participate in an open and candid conversations regarding the therapeutic applications of cannabis
- Distinguish medications used in hospice that are at risk for drug-drug interactions with cannabis and other related products

2

2

Cannabis Education

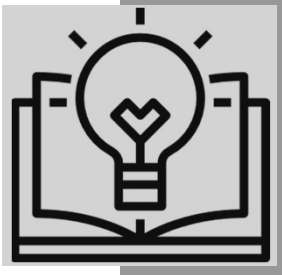
A GROWING BODY OF KNOWLEDGE



Barriers to Medical

CANNABIS EDUCATION

- Legal and Regulatory
- Lack of Research
- Stigma and Misinformation
- Medical Curriculum Gaps
- Limited Continuing Education
- Lack of Standardization
- Patient Education
- Safety Concerns
- Cultural and Regional Differences
- Limited Access



Rolling out the Green Carpet FOR NURSING EDUCATION

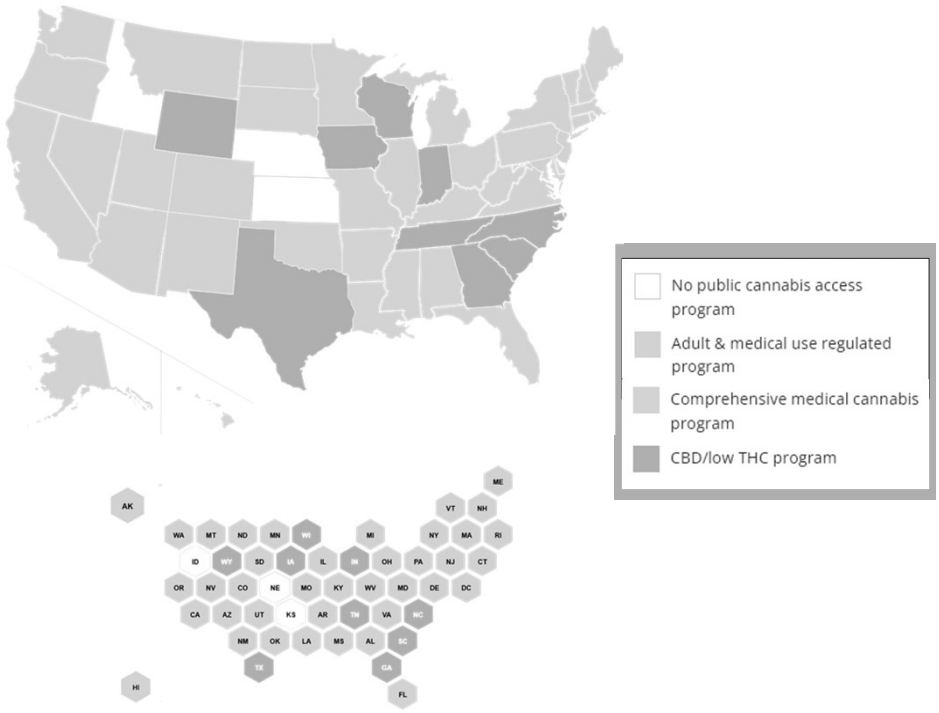
- Healthcare trainees in general lack sufficient knowledge about medical cannabis & do not feel prepared to speak with patients on this topic
- As a nurse, you'll regularly come across patients using cannabis, regardless of whether you practice in a state where cannabis is fully legal for recreational use or in a region where medical cannabis is a viable option

- National Council of State Boards of Nursing (NCSBN) states that nursing professionals and students should be educated on six principles of essential knowledge about cannabis:
  - Current state of legalization and of medical and recreational cannabis use
  - Federal laws and current legislation around patient use of medical cannabis
  - The endocannabinoid system
  - Cannabis pharmacology and the research associated with the medical use
  - Safety considerations
  - Ways to approach patients without judgment regarding the patient's choice of treatment

Laws & REGULATIONS

Cannabis at the STATE AND FEDERAL LEVEL

*The federal government classifies cannabis as a Schedule I drug with a high potential for abuse and little to no medical benefit



7

- No technical difference between marijuana used for medical or recreational purposes
- Purchased for the purpose of experiencing the psychoactive effects and enjoyment vs. Used to alleviate medical symptoms, such as pain, nausea, or seizures
- Similar THC concentration in both types
- Key distinction lies in how they are sold
- MMJ requires authorization from a healthcare provider and state approval
  - Access typically granted through state-approved medical programs or dispensaries.
- Recreational marijuana available to anyone over the age of 21 in qualifying states
- Recreational purchases may be exempt from sales and use tax
- MMJ establishments may be exempt from specific cannabis business taxes
- MMJ may require annual certification fees and payment to secure an identification card

Recreational vs. MEDICAL CANNABIS

8

Dope Plant DETAILS

9

Terminology

Cannabis vs Marijuana vs Hemp

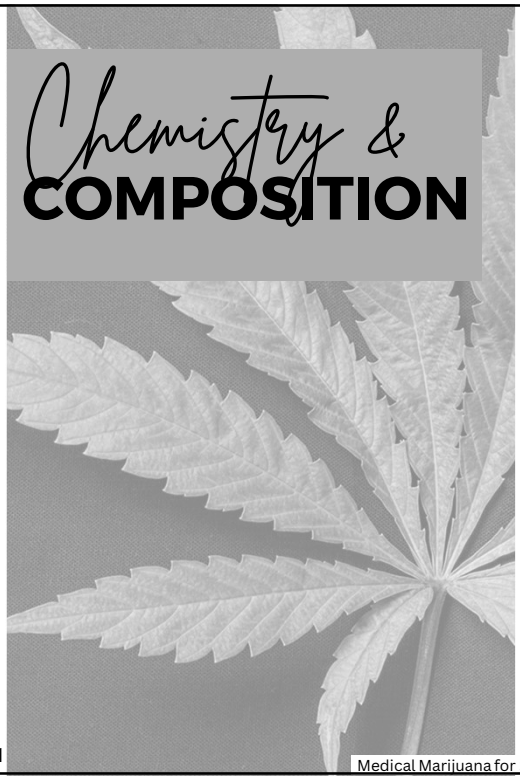
Cannabaceae Family → Genus: Cannabis → Species: Cannabis sativa, Cannabis indica, and Cannabis ruderalis

Cannabis
- A plant with many names - marijuana, weed, pot, cannabis, hash, etc.
- Consumed for medical and non-medical (recreational) purposes
- Has hundreds of chemical compounds, including cannabinoids and terpenes
- A broader classification that contains both hemp plants and marijuana plants

Hemp
- Refers to varieties of cannabis that contain 0.3% or less delta-9 THC
- Textiles, biofuels, seeds, oils, skin care products, beverages

Marijuana
- Refers to parts of or products from the plant Cannabis sativa that contain substantial amounts of tetrahydrocannabinol (THC)

10



Chemistry & COMPOSITION

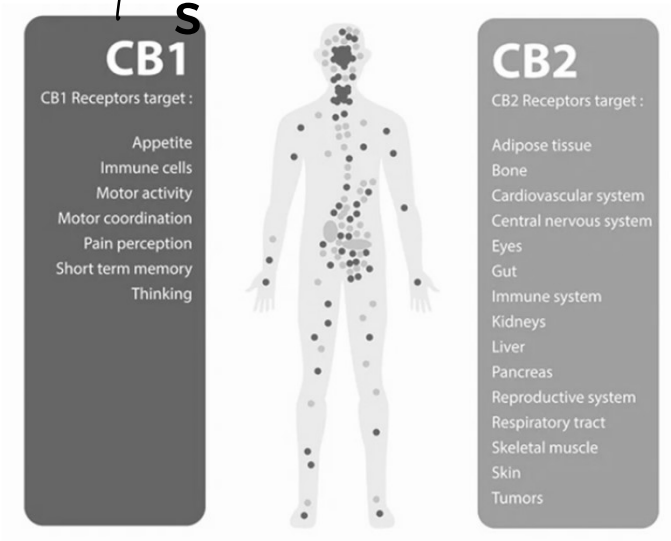
Cannabinoids
THC and Δ9 – THC
Cannabinol
Cannabidiol
Nitrogenous Compounds
Amino Acids
Proteins
Enzymes
Glycoproteins
Hydrocarbons
Simple Alcohols
Aldehyde
Ketones and Acids
Fatty Acids
Simple Esters and Lactones
Steroids
Terpenes
Non-cannabinoid Phenols
Flavonoids
Vitamins
Pigments

CANNABINOIDS

Cannabinoids encompass any compound capable of influencing the body's endocannabinoid system (EC system)

- The EC System works by regulating the flow of signals that are being sent between cells
  - EC system is the most widespread receptor system in the human body
  - Connected to almost every major organ system in our bodies
- When the EC system is not functioning properly due to lack or abundance of endogenous cannabinoids, phytocannabinoids consumed may help restore balance
- Everybody's EC system is different
  - Consumers have different experiences when using Cannabis even if it is the same dose, product or strain

Cannabinoid Receptors



Two major cannabinoid receptors: CB1 and CB2:

- CB1: expressed in the brain, adipocytes, hepatocytes, and musculoskeletal tissues
  - Psychoactive, neuromodulatory, and analgesic effects
- CB2: more abundant outside of the nervous system, immune system
  - Anti-inflammatory and immunomodulatory effects but little to no psychoactive effects

CB1

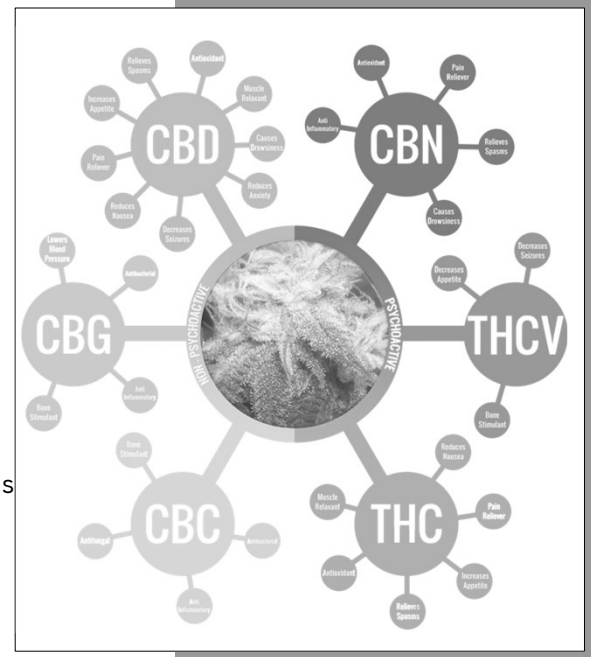
CB1 Receptors are primarily found in the brain and central nervous system, and to a lesser extent in the other tissues.

CB2

CB2 Receptors are mostly in the peripheral organs especially cells associated with the immune system.

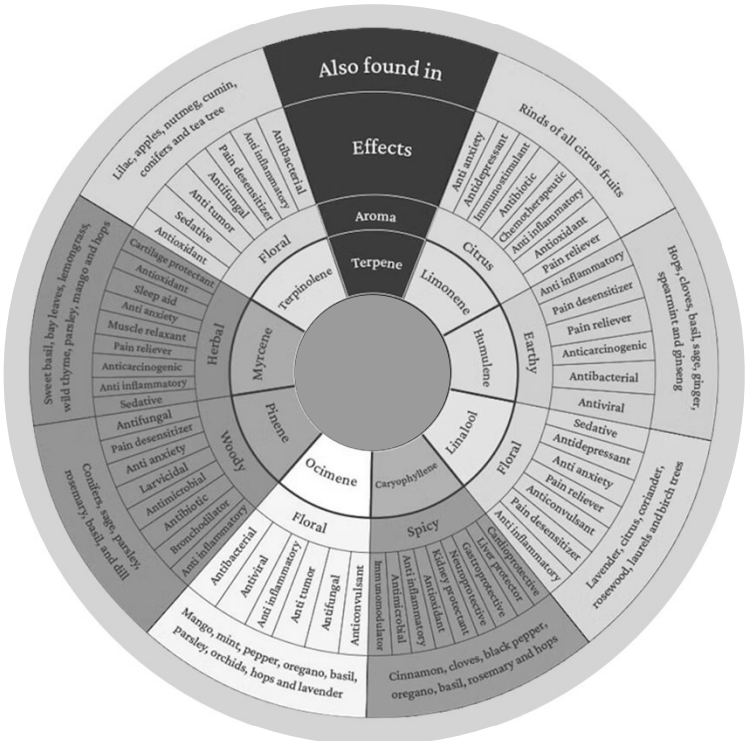
Phytocannabinoids

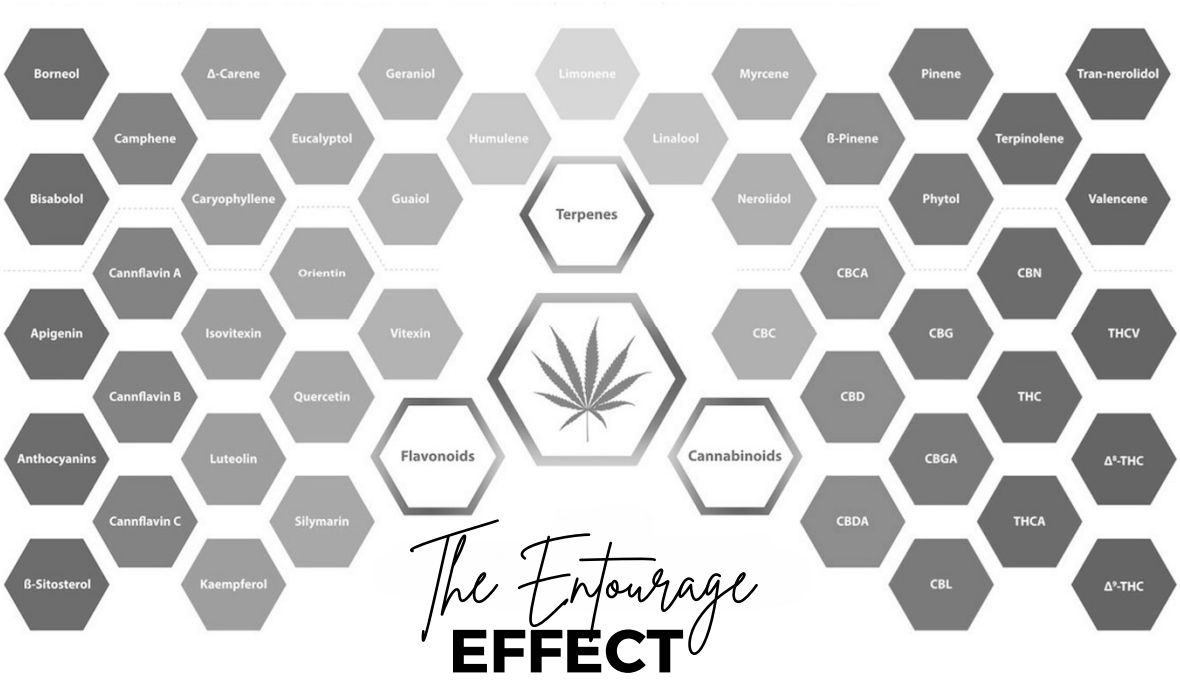
- Cannabis plant produces between 80 and 100 cannabinoids
  - Enormous variation in quantitative ratios
  - Two main cannabinoids are THC and CBD
- THC has strong psychoactive effects ('high')
  - Primarily binds with CB1 receptors
  - Partial agonist activity at CB1 and CB2
- CBD has an anti-psychoactive effect that controls or moderates the 'high'
  - Partial agonist of the CB2 receptor and non-cannabinoid receptors
  - Helps regulate how these CBs and cannabinoids interact
- Others remain largely understudied
  - Biological activity remains unknown



Terpenes

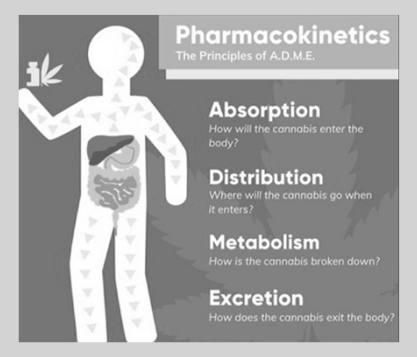
Common Cannabis-derived TERPENES





GETTING TO KNOW *Mary Jane*

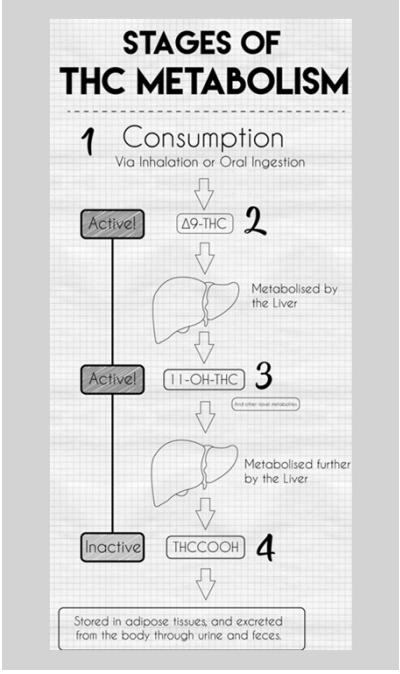
Pharmacokinetics OF CANNABIS



- Absorption: variability of absorption can depend on cannabis use pattern, genetics, and administration route
- Distribution: 90% of THC binds to plasma proteins; 10% remains unbound and can bind to CB1 receptors
- Metabolism: mainly in the liver when consumed orally; CYP450 enzyme system
- Elimination: 30% in urine, 70% in feces

Metabolism OF CANNABIS

- Major Active Metabolites: Δ9 THC, 11-hydroxy-TCH, 11-carboxy-THC
- 11-OH-THC: ~3 to 7 times more potency at CB1 receptor sites vs. THC; smaller amounts needed for effect
- Smoked THC: 10 to 1 ratio of THC to 11-OH-THC
  Orally THC: 1 to 1 ratio of THC to 11-OH-THC
- Psychoactive effects of THC and 11-OF-THC last longer and fade slower in oral consumption



Dosing OVERVIEW

- Common Strategy: 'Start low and go slow'
  - Use the minimally effective dose require to address a patient's medical needs
  - Repeated high doses and exposure can cause the brain to reduce the density of CBRs in the body
- Typical dosing is between 2.5 to 10 mg of THC
  - Address a wide range of patient symptoms
- Inter-individual variability vs. Intra-individual variability

21

21

Available PRODUCTS

- Different strains of dried cannabis flower (smokeable medical cannabis), pre-rolled joints, & blunts
- Oils, tinctures
- Concentrates, waxes, budder, shatter, kief, Rick Simpson Oil (RSO)
- Capsules, tablets
- Topicals: ointments, lotions, patches, salves
- Suppositories
- Edible products, drinks, drink mixes

22

22

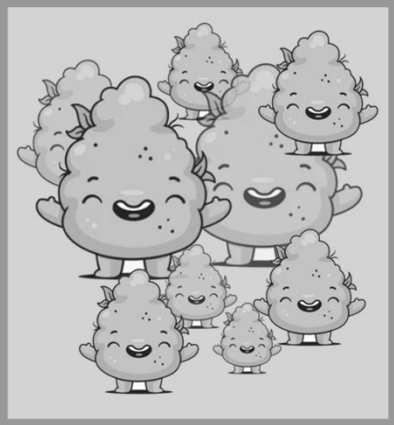
Delivery SYSTEMS

- Smoking/Vaporizing:
  - Most common method of consumption
  - Rapid elevation of THC in the bloodstream
    - Rapid delivery of cannabinoids and terpenes
  - Patients can control dosing one inhalation at a time
  - Peak blood plasma concentrations within 5 to 10 minutes
- Sublingual, Buccal
  - Better delivery of terpenes (heat in above method breaks these down)
  - Given under the tongue or side pocket of mouth near cheek
  - Absorbed directly into bloodstream; onset 5-15 minutes, peak 45 minutes to 2 hours

23

23

Delivery SYSTEMS (CONTINUED)



- Oral
  - Slow and inconsistent absorption and onset; onset 30 minutes to 2 hours, peak 2 to 7 hours
  - Increased duration of effect; may be 2x as long as inhalation
- Topical
  - May help with skin or superficial conditions
    - Localized or larger areas
  - Effect is typically quick; systemic onset is difficult to predict
  - Inefficiencies of absorption through the skin
  - Transdermal preparations; cross skin with intent to be absorbed and exert a systemic effect
- Rectal, Vaginal
  - Bypasses liver metabolism and digestive tract
  - Onset similar to sublingual and buccal administration

24

24

Adverse Effects & SAFETY CONCERNS

Short-term effects:
- Coughing (inhaled), dry mouth/throat
- Red, irritated eyes
- Dizziness, lightheadedness, drowsiness
- Tachycardia, hypotension, palpitations
- Confusion, anxiety
- Nausea

Long-term effects:
- Bronchitis in long-term smokers
- Cognitive deficits in long-term, heavy consumers
- Cannabis hyperemesis syndrome

Disease state concerns:
- Schizophrenia, bi-polar disorder, severe depression
- Heart disease, hypertension
- Angina, arrhythmias. h/o stroke

Special populations:
- Elderly
- Pregnant & Lactating patients
- Pediatrics

Other safety concerns:
- Store in a safe and secure place

Dependence

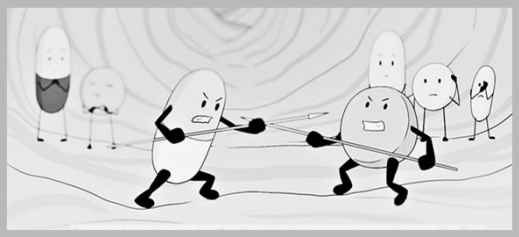
Symptoms of Dependency
- Excessive, regular (daily) use of cannabis
- Tolerance that requires increased dosing to achieve effect(s)
- Compulsion to use cannabis whenever available or offered
- Excessive time and resources spent on cannabis
  - Acquisition, possession, and intake
- Use resulting in a failure to fulfill major role obligations
- Important activities are given up or reduced because of cannabis use
- Use in hazardous situations

Withdrawal

Symptoms of Withdrawal

- Irritability, anger, or aggression
- Nervousness or anxiety
- Sleep difficulty (i.e., insomnia, disturbing dreams)
- Decreased appetite or weight loss
- Restlessness
- Depressed mood
- Physical symptoms: abdominal pain, shakiness/tremors, sweating, fever, chills, or headache
- Peak intensity on day 4 (range day 1 to 8)

Drug Interactions



Cannabis is metabolized by the Cytochrome P450 enzyme system

- Substrate of CYP2C9 (major), CYP3A4 (major)
- Cannabinoids either activate or inhibit the activity of liver enzymes
- CYP450 enzyme system is responsible of metabolism of many medications; interactions can increase or decrease the effect

Cannabis can potentiate the effects of alcohol, benzodiazepines, and opiates

Drug Interactions (continued)

Medications that can **INCREASE** the effects of cannabis:

- Clarithromycin, erythromycin
- Fluconazole, itraconazole, ketoconazole
- Verapamil, diltiazem, amiodarone
- Ritonavir, atazanavir

Medications that can **DECREASE** the effects of cannabis :

- Phenobarbital, phenytoin, carbamazepine
- Rifampin, rifabutin
- St. John's Wort
- Ritonavir

Cannabinoids can affect levels of other drugs:

- Increased levels of clobazam, warfarin, tacrolimus
- Increased clearance of theophylline, olanzapine

Evidence Supporting Cannabis FOR MEDICAL CONDITIONS

Moderate- to high-quality evidence is available for effective treatment with cannabis for the following conditions:

- Cachexia
- Chemotherapy-induced nausea and vomiting
- Pain (resulting from cancer or rheumatoid arthritis)
- Chronic pain (resulting from fibromyalgia)
- Neuropathies (resulting from HIV/AIDS, MS, or diabetes)
- Spasticity (from MS or spinal cord injury)

Single moderate- to high-quality clinical study:

- Reduction of seizure frequency (Dravet syndrome and Lennox-Gastaut syndrome)
- Reduction of posttraumatic stress disorder (PTSD) nightmares
- Improvement in tics (Tourette syndrome)

Clinical APPLICATIONS

Chronic Pain:

- Most well-researched indication for MMJ
- Most common condition for which patients are certified for medical cannabis
- Many studies exist: low or moderate quality due to small sample size, short follow-up periods, and nonblinded or unrandomized study design
  - No standardized dose or route of administration
  - Pain etiology varies

Palliative care and end-of-life care:

- Cannabis may be used by individuals who are seeking palliative and end-of-life symptom relief
- These symptoms include pain, nausea, insomnia, agitation, or night sweats
- Available studies are limited, utilize a range of products, and report varied outcomes
- Recommended only if other evidence-based treatment options are ineffective or unavailable

EOL Care & MMJ USE

Products have yet to be well-integrated into the health care:

- Conflicting regulations, ongoing stigma, research barriers, and product scarcity
- Poor awareness and knowledge gaps for patients and clinicians

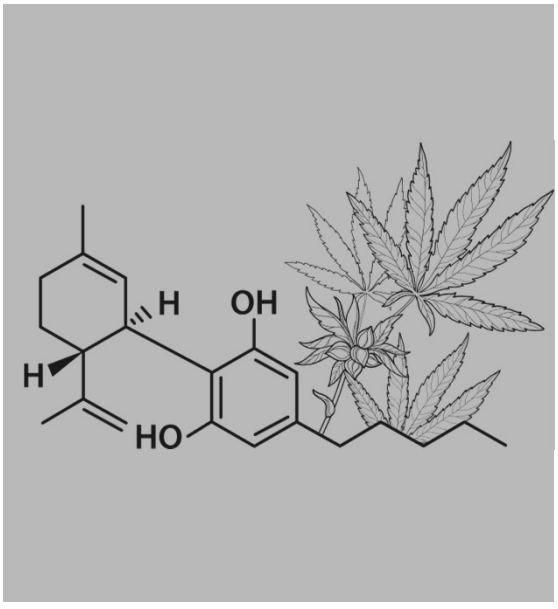
Considerations:

- Physiologic Effects of Cannabis
- Adjunctive Use of Cannabis With Opiates, Antidepressants, and Benzodiazepines
- Neurologic Symptoms
- Subjective Measures vs Objective Measures for Spasticity and Pain

33

33

Another Pot POINT TO PONDER

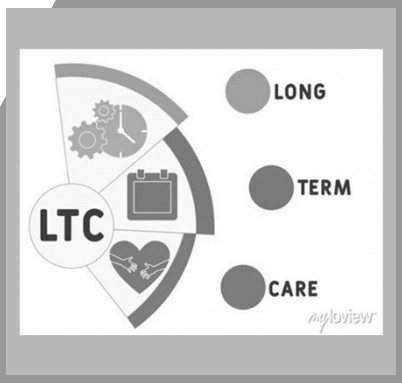


34

34

Practical Considerations FOR LTC

- What does State law permit?
- Can physicians prescribe, recommend or neither?
- Can nurses store on medical carts (or elsewhere)?
- Can nurses administer?
- How is medical marijuana documented on the MAR?
- Are there designated areas for smoking medical marijuana?
- Can a staff member assist a resident who needs supervised smoking?
- How will qualified caregivers be trained to administer the medication?
- What are the implications for SNFs, physicians, nurses, and caregivers if a caregiver transports medical marijuana across state lines?



What's on the Menu?

HYBRID FLOWER

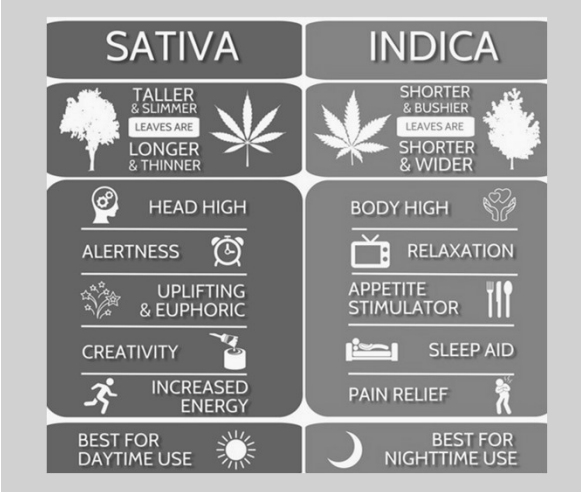
	1/8 gram	1/4 gram	oz
Bonanza Buddy Hybrid THC: 29.78% CBD: 6.54%		6.00	20.00
Garden Giggle Hybrid THC: 38.97% CBD: 3.45%		9.00	27.00
Pirate's Delight Hybrid THC: 27.34% CBD: 1.08%		6.00	18.00
Big Willy Style Hybrid THC: 25.16% CBD: 98%		8.00	20.00
Coughing Cactus Hybrid THC: 17.90% CBD: 4.26%		8.00	25.00
Melon Baller Hybrid THC: 25.12% CBD: 2.31%		8.00	22.00
Uruk High Hybrid THC: 14.78% CBD: 3.41%		12.00	28.00
Order 66 Hybrid THC: 19.23% CBD: 5.67%		9.00	25.00
Zooted! Hybrid THC: 23.21% CBD: 3.72%		11.00	34.00
Pa Powl Hybrid THC: 23.78% CBD 4.8%		10.00	26.00
Brain Wrinkler Hybrid THC: 27.54% CBD: 5.6%		9.00	30.00
Finger Guns Hybrid THC: 17.91% CBD: 6.71%		12.00	34.00
Yellow Vellow Hybrid THC: 23.58% CBD: 2.46%		10.00	28.00

SATIVA

	1/8 gram	1/4 gram	oz
Smoke Monster Sativa THC: 29.81% CBD: 0.51%		7.00	19.00
Odin's Raven Sativa THC: 38.76% CBD: 1.21%		10.00	30.00
Logo Lilly Sativa THC: 29.45% CBD: 1.56%		12.00	32.00
Black Mamba Sativa THC: 19.42% CBD: 0.02%		10.00	32.00
Crazy Chron Sativa THC: 28.23% CBD: 0.32%		11.00	34.00
Sherbert Herbert Sativa THC: 34.87% CBD: 2.45%		6.00	15.00
Purple Punch Sativa THC: 25.34% CBD .75%		11.00	25.00
B-A-N-A-N-A-S Sativa THC: 24.78% CBD 0.0%		11.00	35.00
Lemon Lazer Sativa THC: 24.72% CBD: 0.98%		11.00	30.00
Laughing Storm Sativa THC: 24.87% CBD: 2.21%		9.00	26.00
Fiesty Lettuce Sativa THC: 27.23% CBD: 1.21%		12.00	32.00
Scorpion King Sativa THC: 24.43% CBD: 3.2%		10.00	35.00
The Happening Sativa THC: 28.23% CBD: 0.32%		11.00	35.00

In-Da-Couch or **Sunny Sativa**

- Strains are up into three groups: indica, sativa, and hybrid
- Although not entirely accurate, the cannabis industry is accustomed to this naming system:
  - Sativa's are energetic and will make you productive
  - Indica's are calm and relaxing
  - Hybrid strains offer a mix of indica- and sativa-like effects
- Each strain will still interact differently with each person's body chemistry
- Simple way to communicate that has yet to be replaced



37

Understanding Dosing **and Packaging**

1

Tincture Indica

1:1 Doze CBN:THC [15ml] (3.4mg CBN & THC/ml)

4.5 (239 reviews)

Dr. Solomon's
Tincture

Details
THC 0.36%

Description
Limonene : 5.9390% | Myrcene : 0.3019% | Pinene : 0.1160% |

2

Vape Hybrid

High Country OG [300mg]

3.6 (14 reviews)

Rythm
Full Spectrum Disposable Vape Pen

Details
THC 75.59%

Description
Caryophyllene: 1.704% | Humulene: 0.6510% | Limonene : 2.4689% | Linalool : 0.626% | Myrcene : 1.8819% | Terpinolene : 0.0459% | Bisabolol : 0.3579% | Pinene : 0.2030% | b-Pinene : 0.3970% |

3

Sativa

Jack Herer

4.5 (1199 reviews)

Rythm
Premium Flower

Details
THC 20.09%

Description
Caryophyllene: 0.3920% | Humulene: 0.128% | Limonene : 0.0410% | Linalool : 0.039% | Myrcene : 0.1380% | Terpinolene : 0.8179% | Bisabolol : 0.0350% | Pinene : 0.0589% | b-Pinene : 0.0950% |

38

Epidyolex (cannabidiol)

Indication(s): to treat seizures associated with Lennox-Gastaut syndrome, Dravet syndrome, or tuberous sclerosis complex in patients 1 year of age and older.

Dosing:

- Lennox-Gastaut Syndrome or Dravet Syndrome: Starting dosage is 2.5 mg/kg by mouth twice daily (5 mg/kg/day). After one week, the dosage can be increased to a maintenance dosage of 5 mg/kg twice daily (10 mg/kg/day). Maximum recommended maintenance dosage of 10 mg/kg twice daily (20 mg/kg/day)
- Tuberous Sclerosis Complex: The recommended starting dosage is 2.5 mg/kg by mouth twice daily (5 mg/kg/day). Increase the dose weekly by 2.5 mg/kg twice daily (5 mg/kg/day) as tolerated, to a recommended maintenance dosage of 12.5 mg/kg twice daily (25 mg/kg/day)

Considerations:

- Obtain serum transaminases (ALT and AST) and total bilirubin levels in all patients prior to starting treatment
- EPIDIOLEX can cause transaminase elevations
  - Concomitant use of valproate and higher doses of EPIDIOLEX increase the risk of transaminase elevations
- Serum transaminases and total bilirubin levels should be obtained at 1 month, 3 months, and 6 months after initiation of treatment

Adverse effects: somnolence, decreased appetite, diarrhea, fatigue, malaise, and rash

**Non-preferred hospice medication: considered a last-line, adjunctive agent, and cost-prohibitive

Dronabinol (Marinol)

Indications): Anorexia in patients with AIDS, Chemotherapy-induced nausea and vomiting (CINV), & Obstructive sleep apnea, moderate to severe

Initial: 2.5 mg twice daily (1 hour before lunch and dinner); May increase dose gradually based on response and tolerability (maximum: 20 mg per day [in divided doses])
**For CINV: 5 mg/m2 administered 1 to 3 hours before chemotherapy, then give 5 mg/m2/dose every 2 to 4 hours after chemotherapy for a total of 4 to 6 doses/day; increase dose in increments of 2.5 mg/m2 based on response and tolerability (maximum: 15 mg/m2/dose)

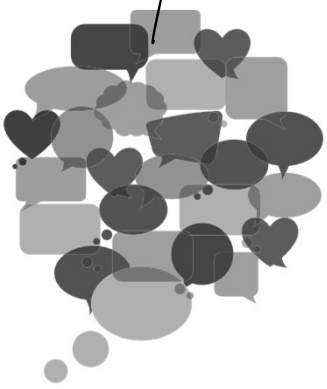
Considerations:
- If unable to tolerate, considering reducing the dose

Adverse effects: >10%: Central nervous system: Euphoria (antiemetic: 24%; appetite stimulant: 8%), hypotension, symptoms similar to cannabinoid hyperemesis syndrome
*Non-preferred hospice medication for nausea, vomiting, and appetite induction (due to cost and lack of studies showing efficacy)

41

41

Fina Thoughts



- Medical cannabis is legal in much of the United States as well as other parts of the world and is increasingly utilized in clinical encounters
  - With rapidly changing laws and increasing access to cannabis, incidence and prevalence of cannabis use has also changed
- There are several formulations of medical cannabis, with different routes of administration. Medical cannabis has varying concentrations and ratios of cannabinoids, and formulations are usually characterized by the ratio of delta-9-tetrahydrocannabinol (THC) and cannabidiol (CBD)
- Chronic pain is one of the most common applications for medical cannabis. Other conditions include, but are not limited to, multiple sclerosis, posttraumatic stress disorder (PTSD), chemotherapy-induced nausea, and seizure disorders.
- Certain co-occurring conditions require caution
- Certain medications have important interactions with cannabis
- Choosing a starting product and route of administration is based on the risks and benefits of each of the available products
- Medical cannabis education among healthcare trainees is lacking for several reasons
  - There is a need for a baseline body of evidence and knowledge for those in roles providing care to patients who use cannabis medicinally

42

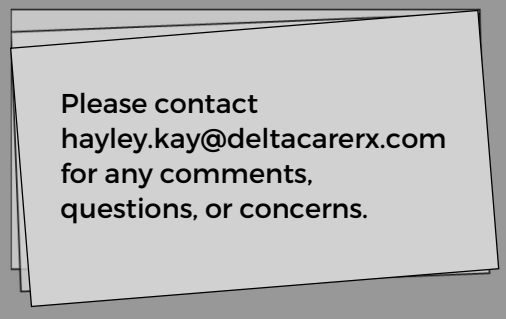
42

References

- Croker JA, Bobitt JL, Arora K, Kaskie B. Assessing health related outcomes of medical cannabis users in older adults: findings from Illinois and Colorado. Clin Gerontol. 2020;44(1):66–79.
- Croker JA, Bobitt J, Arora K, Kaskie B. Medical Cannabis and Utilization of Nonhospice Palliative Care Services: Complements and Alternatives at End of Life. Innov Aging. 2022.
- Costantino RC, Felten N, Todd M Maxwell T, McPherson ML. A survey of hospice professionals regarding medical cannabis practices. J Palliat Med. 2019;22(10):1208–1212.
- Epidiolex (cannabidiol) [prescribing information]. Carlsbad, CA: Greenwich Biosciences LLC; February 2022.
- Jankie S, Sewdass K, Smith W, Naraynsingh C, Johnson J, Farnon N, Mahadeo K, Motilal S. A cross-sectional survey of prospective healthcare professionals' knowledge, attitudes and perceptions of medical Cannabis. Explor Res Clin Soc Pharm. 2023 Apr 21;10:100275. doi: 10.1016/j.rcsop.2023.100275. PMID: 37168830; PMCID: PMC10165452.
- Johannigman S, Eschiti V. Medical use of marijuana in palliative care. Clin J Oncol Nurs. 2013;17(4):360–362.
- Marinol (dronabinol) [prescribing information]. High Point, NC: Patheon Softgels Inc; January 2023.
- Meier EA, Gallegos JV, Thomas LP, Depp CA, Irwin SA, Jeste DV. Defining a good death (successful dying): literature review and a call for research and public dialogue. Am J Geriatr Psychiatry. 2016;24(4):261–271.
- Pereira L, Núñez-Iglesias MJ, Domínguez-Martís EM, López-Ares D, González-Peteiro M, Novío S. Nursing Students' Knowledge and Attitudes Regarding Medical Marijuana: A Descriptive Cross-Sectional Study. Int J Environ Res Public Health. 2020 Apr 6;17(7):2492. doi: 10.3390/ijerph17072492. PMID: 32268474; PMCID: PMC7177422.
- Savage SR, Romero-Sandoval A, Schatman M, et al. Cannabis in pain treatment: clinical and research considerations. J Pain. 2016;17(6):654–668.
- Strouse TB. Pot in palliative care. What we need to know. J Palliat Med. 2015;18(1):7–10.
- Volkert D, Ortelli TA. Medical and Recreational Marijuana. Am J Nurs. 2021 Nov 1;121(11):50-52. doi: 10.1097/01.NAJ.0000799020.78401.5e. PMID: 34673697.
- Zarrabi AJ, Welsh JW, Sniecinski R, Curseen K, Gillespie T, Baer W, McKenzie-Brown AM, Singh V. Perception of Benefits and Harms of Medical Cannabis among Seriously Ill Patients in an Outpatient Palliative Care Practice. J Palliat Med. 2020 Apr;23(4):558-562.

43

THANK YOU FOR ATTENDING



44