



# Medical Marijuana **FOR SYMPTOM MANAGEMENT**

**PRESENTER: HAYLEY E. KAY MS, PHARMD, BCPS**

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## **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

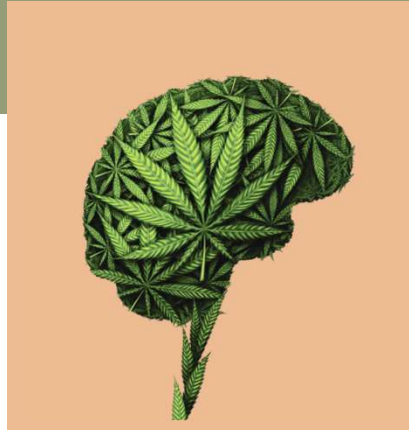
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# *Cannabis Education*

## **A GROWING BODY OF KNOWLEDGE**



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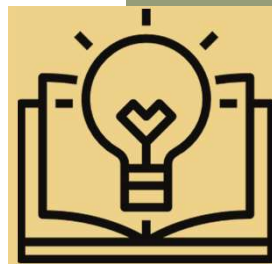
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## *Barriers to Medical*

### **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



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## 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



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## Laws & REGULATIONS



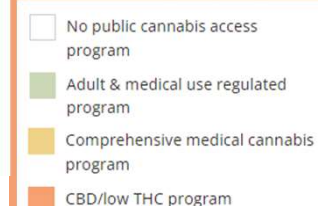
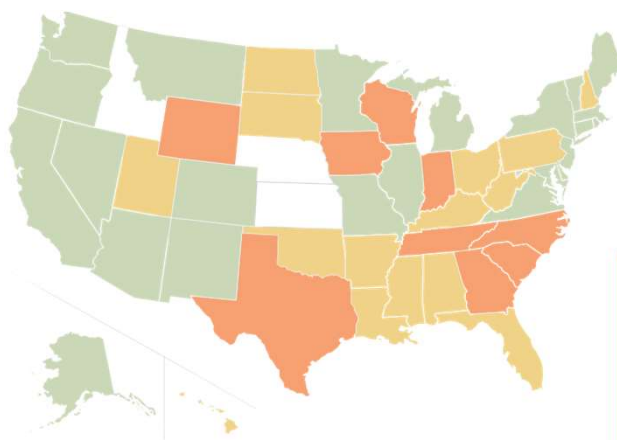
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## Cannabis at STATE AND FEDERAL LEVEL

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



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- 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



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# Dope Plant **DETAILS**

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## Terminology

### Cannabis vs Marijuana vs Hemp

Cannabaceae Family  
and Cannabis ruderalis

Genus: Cannabis

Species: Cannabis sativa, Cannabis indica,



#### 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

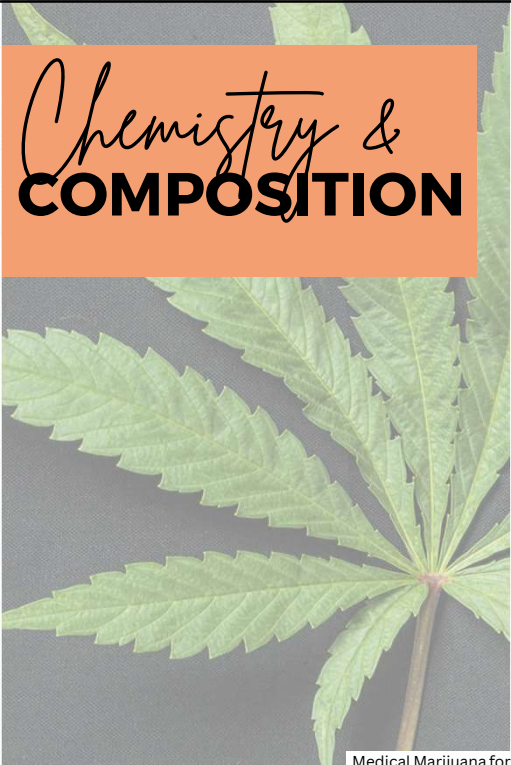
#### Marijuana

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

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## 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

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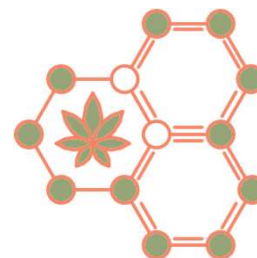
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## CANNABINOIDS

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

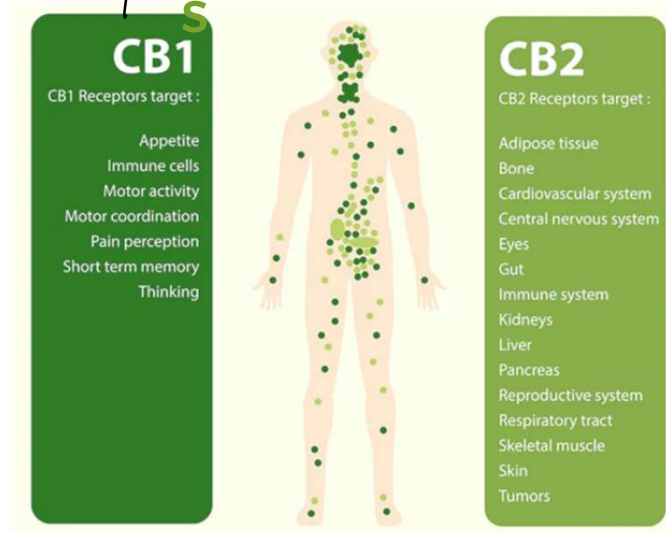


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# Cannabinoid Receptor



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.

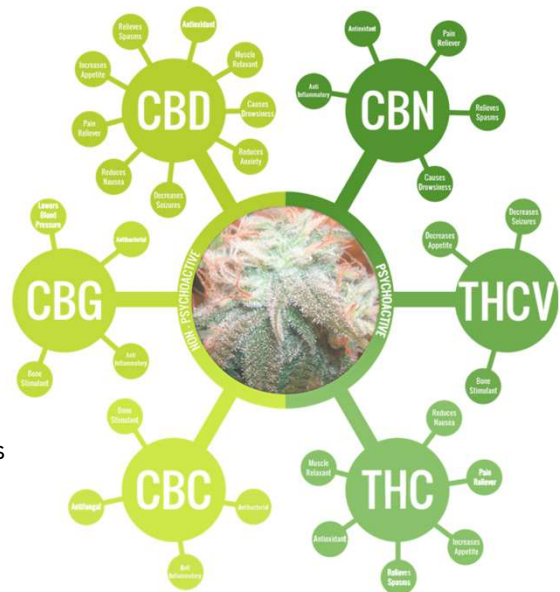
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# Phytocannabinoids

- 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



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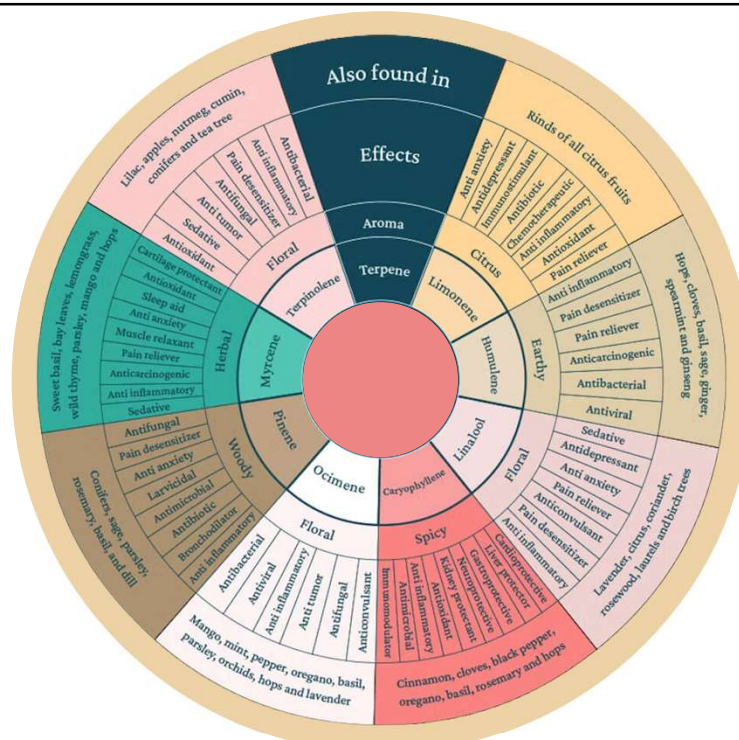
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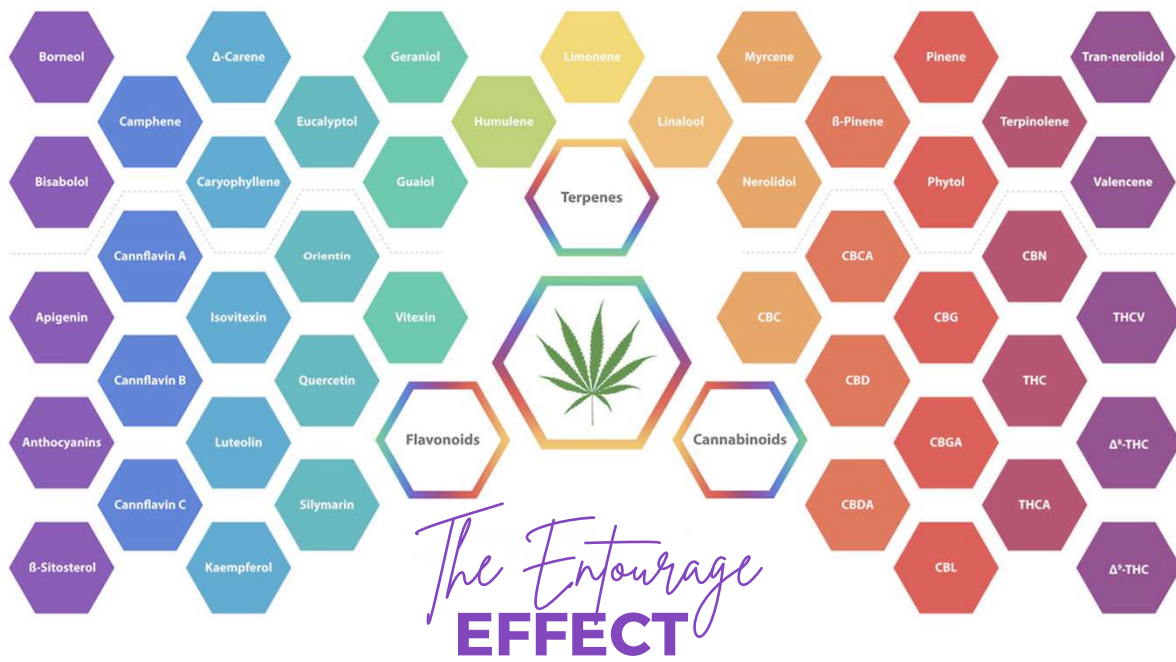




# Common Cannabis-derived TERPENES







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## GETTING TO KNOW *Mary Jane*



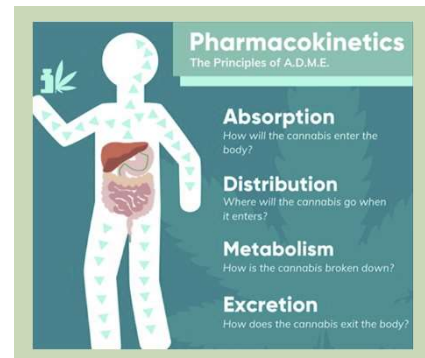
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## Pharmacokinetics OF CANNABIS

- 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



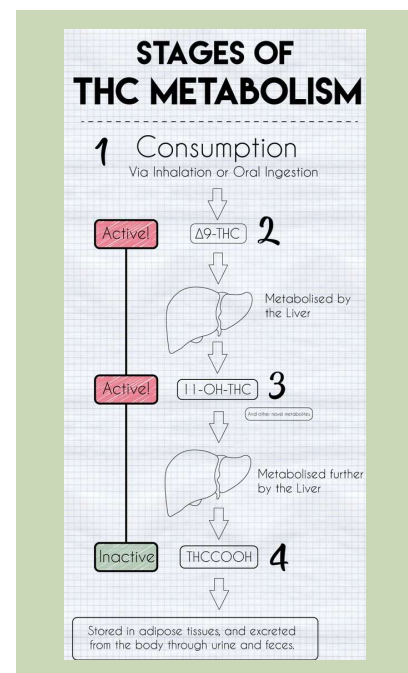
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## Metabolism OF CANNABIS

- Major Active Metabolites:  $\Delta^9$  THC, 11-hydroxy-THC, 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-OH-THC last longer and fade slower in oral consumption



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An illustration of various cannabis products arranged in two rows. The top row features a green tube with a cannabis leaf, a brown bottle with a cannabis leaf, a green container with a cannabis leaf, and a white capsule with a cannabis leaf. The bottom row features a green jar with a cannabis leaf, a white jar with a cannabis leaf, a green syringe, and several pills (one green, one white, one orange, and one white).

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A collection of Ayohuana products is displayed against a light green background. In the background, there are five boxes of Ayohuana. From left to right, the first three boxes are labeled 'AYO RE' and the last two are labeled 'AYO'. The boxes feature the brand name 'AYOHUANA' and 'AYO' prominently. In the foreground, there are several bottles and containers: a small glass bottle with a black cap and a label that says 'AYO WELCA-350', a white plastic jar with a label that says 'AYO WELCA-350', and a white plastic bottle with a black cap and a label that says 'AYO WELCA-350'. There are also two syring-like applicators, one with a green cap and one with a white cap. In the center, there is a pile of dried, green, leafy plant material. To the right of the plant material, there are three small, orange, cube-shaped objects.

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# Delivery SYSTEMS



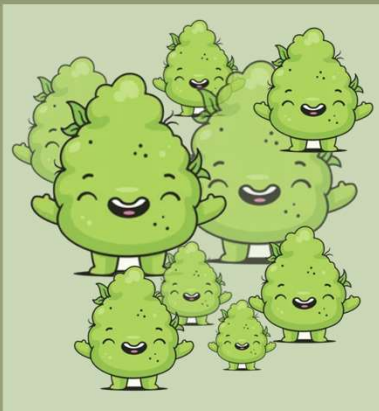
- Smoking/Vaporizing:
  - Most common method of consumption
  - Rapid elevation of THC in the bloodstream
    - Rapid delivery of cannabinoids and terpenes
  - Patients can control dosing one inhalation at a time
  - Peak blood plasma concentrations within 5 to 10 minutes
- Sublingual, Buccal
  - Better 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

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# 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

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## 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

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## 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



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## Withdrawal



### Symptoms of Withdrawal

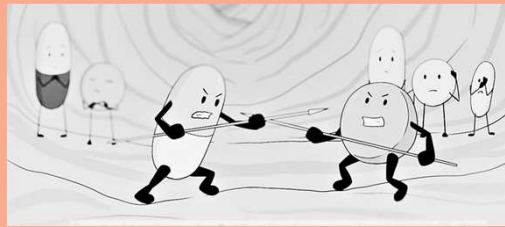
- Irritability, anger, or aggression
- Nervousness or anxiety
- Sleep difficulty (i.e., insomnia, disturbing dreams)
- Decreased appetite or weight loss
- Restlessness
- Depressed mood
- Physical symptoms: abdominal pain, shakiness/tremors, sweating, fever, chills, or headache
- Peak intensity on day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

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## 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

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## 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

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## 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)



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## 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



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## 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

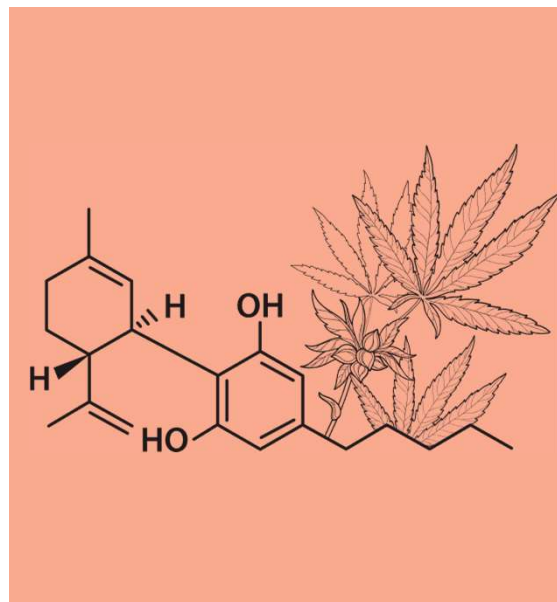


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## Another Pot **POINT TO PONDER**



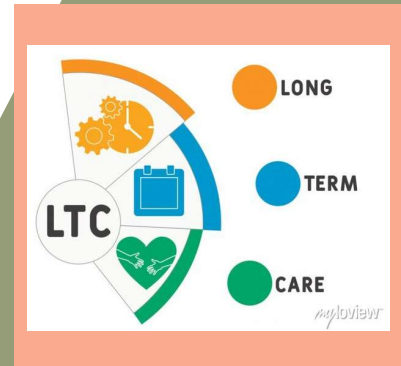
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## Practical Considerations **FOR LTC**

- 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?



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## What's on the Menu?

| HYBRID FLOWER                 |                      | SATIVA                        |                      |
|-------------------------------|----------------------|-------------------------------|----------------------|
|                               | 1/8 gram 1/4 gram oz |                               | 1/8 gram 1/4 gram oz |
| Bonanza Buddy                 | 600 20.00            | Smoke Monster                 | 700 19.00            |
| Hybrid THC: 29.78% CBD: 6.54% |                      | Sativa THC: 29.81% CBD: 0.51% |                      |
| Garden Giggles                | 900 27.00            | Odin's Raven                  | 10.00 30.00          |
| Hybrid THC: 38.97% CBD: 3.45% |                      | Sativa THC: 38.76% CBD: 1.21% |                      |
| Parade's Delight              | 600 18.00            | Logo Lilly                    | 12.00 32.00          |
| Hybrid THC: 27.94% CBD: 1.08% |                      | Sativa THC: 29.45% CBD: 1.56% |                      |
| Big Willy Style               | 800 20.00            | Black Mamba                   | 10.00 32.00          |
| Hybrid THC: 25.16% CBD: .98%  |                      | Sativa THC: 19.42% CBD: 0.02% |                      |
| Coughing Cactus               | 800 25.00            | Crazy Chron                   | 11.00 34.00          |
| Hybrid THC: 17.90% CBD: 4.26% |                      | Sativa THC: 28.23% CBD: 0.32% |                      |
| Melon Baller                  | 800 22.00            | Shenbert Heribert             | 6.00 15.00           |
| Hybrid THC: 25.12% CBD: 2.31% |                      | Sativa THC: 34.87% CBD: 2.45% |                      |
| Drunk High                    | 12.00 28.00          | Purple Punch                  | 11.00 25.00          |
| Hybrid THC: 14.78% CBD: 3.41% |                      | Sativa THC: 23.34% CBD: .75%  |                      |
| Order 66                      | 900 25.00            | B-A-N-A-N-A-S                 | 11.00 35.00          |
| Hybrid THC: 19.23% CBD: 5.67% |                      | Sativa THC: 24.78% CBD: 0.0%  |                      |
| Zoeirell                      | 11.00 34.00          | Lemon Lazer                   | 11.00 30.00          |
| Hybrid THC: 23.21% CBD: 3.72% |                      | Sativa THC: 24.72% CBD: 0.96% |                      |
| Pa Fowl                       | 10.00 26.00          | Laughing Storm                | 9.00 26.00           |
| Hybrid THC: 23.78% CBD: 4.81% |                      | Sativa THC: 24.87% CBD: 2.21% |                      |
| Brain Wrinkler                | 900 30.00            | Pierity Lettuce               | 12.00 32.00          |
| Hybrid THC: 27.54% CBD: 5.6%  |                      | Sativa THC: 22.23% CBD: 1.21% |                      |
| Finger Guns                   | 12.00 34.00          | Scorpion King                 | 10.00 35.00          |
| Hybrid THC: 17.91% CBD: 6.71% |                      | Sativa THC: 24.43% CBD: 3.2%  |                      |
| Yellow Yellow                 | 10.00 28.00          | The Happening                 | 11.00 35.00          |
| Hybrid THC: 23.58% CBD: 2.46% |                      | Sativa THC: 28.23% CBD: 0.32% |                      |

### Types of Marijuana Products at Dispenseries

#### Oils

Cannabidiol oil offers quick relief. It's most commonly used in vaporizers, but can be added to foods as well.

#### Tinctures

One of the most common products, patients consume the liquid by dripping a tincture under the tongue.

#### Topicals

Topicals come in the form of gels and ointments and absorb through the skin. They are non-psychoactive and aid in pain relief.

#### Dry Leaf

Less expensive than the other products, patients are only allowed to vaporize this lower form of marijuana.

#### Liquids

Liquids' side effects last longer than tincture and vaporization, and can be taken alone or combined with other drinks. They should not be relied on for immediate relief.

#### Pills

Pills can take a long time to enter the system, but they can offer hours of relief.

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## 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

| SATIVA   | INDICA   |
|--|--|
| TALLER & SLIMMER<br>LEAVES ARE LONGER & THINNER                                  | SHORTER & BUSHIER<br>LEAVES ARE SHORTER & WIDER                            |
| HEAD HIGH<br>ALERTNESS<br>UPLIFTING & EUPHORIC<br>CREATIVITY<br>INCREASED ENERGY | BODY HIGH<br>RELAXATION<br>APPETITE STIMULATOR<br>SLEEP AID<br>PAIN RELIEF |
| BEST FOR DAYTIME USE   | BEST FOR NIGHTTIME USE   |

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## Understanding Dosing and Packaging

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Tincture Indica

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

4.5 ★ (239 reviews)

Dr. Solomon's  
TinctureDetails  
THC 0.36%Description  
Limonene : 5.9390% | Myrcene : 0.3019% | Pinene : 0.1160%

3



2



Vape Hybrid

**High Country OG [300mg]**

3.6 ★ (14 reviews)

Rythm  
Full Spectrum Disposable Vape PenDetails  
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%

Sativa

**Jack Herer**

4.5 ★ (1199 reviews)

Rythm  
Premium FlowerDetails  
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%

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## 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

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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/m<sup>2</sup> administered 1 to 3 hours before chemotherapy, then give 5 mg/m<sup>2</sup>/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/m<sup>2</sup> based on response and tolerability (maximum: 15 mg/m<sup>2</sup>/dose)

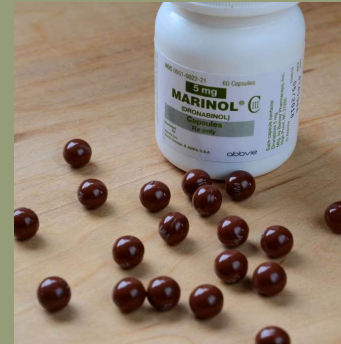
Considerations:

- 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)

## *Dronabinol* (Marinol)



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## *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

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## THANK YOU FOR ATTENDING

Please contact  
hayley.kay@deltacarerx.com  
for any comments,  
questions, or concerns.



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