


Medical Marijuana

A 10,000 foot overview

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I have no financial disclosure

**This talk does not represent the
views of UNMC.**



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Objectives

- ❖ Review basic definitions with medical marijuana (MM)
- ❖ Review cannabinoid properties and how they work to achieve their effect
- ❖ Review the current legal considerations around medical marijuana and cannabinoids
- ❖ Review the literature around common uses for cannabinoids
- ❖ Discuss practical considerations regarding cannabinoid products



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Cannabinoid Lingo



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Definitions

Cannabis: The genus that includes 3 plant species: *Cannabis sativa*, *Cannabis indica*, *Cannabis ruderalis*.

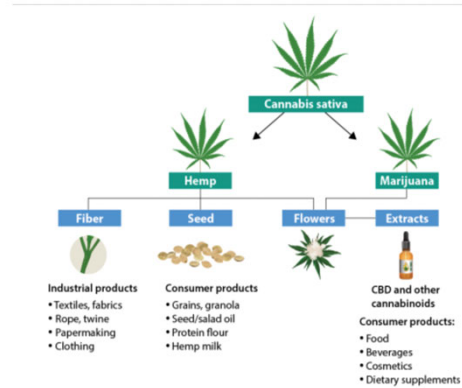
- Source of fiber, food, oil, and medicine

Hemp: Stalks, stems and sterilized seeds of *Cannabis sativa*

- Very low concentration of THC, <1%
- Non-medicinal part of the plant

Marijuana: Leaves, flowers and viable seeds of *Cannabis sativa*

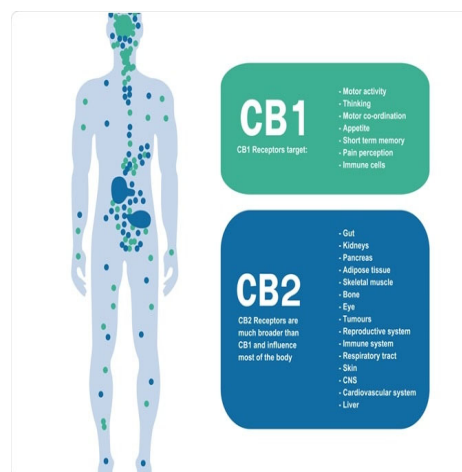
- (Higher concentration of psychoactive THC, 5-25%)
- Medicinal part of the plant



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Endocannabinoid System

- Naturally occurring signaling system in all animals
- Cannabinoids trigger many on/off switches in the body
- There are receptors throughout the entire body



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Endocannabinoids

- 2-arachidonoylglycerol (**2-AG**)
- Anandamide (**AEA**)

Phytocannabinoids

- Delta 9- Tetrahydrocannabinol (**THC**)
- Cannabidiol (**CBD**)
- > 100 known cannabinoids in cannabis

Pharmaceutical Cannabinoids


- *Plant derived*
 - **Nabiximols** (Sativex): oral spray **CBD:THC 1:1**. Not FDA-approved.
 - **Cannabidiol** (Epidolex): **CBD**. FDA-approved for seizures in Lennox-Gastaut and Dravet Syndromes. De-scheduled in 2020.
- *Synthetic*
 - **Dronabinol** (Marinol gel caps & Syndros liquid): **THC**. FDA-approved for chemo-induced N/V & HIV-assoc anorexia. Schedule II.

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Terpenes


A-PINENE
ANTI-INFLAMMATORY
BRONCHODILATOR
AIDS MEMORY
ANTI-BACTERIAL

also found in pine needles




LINALOOL
ANESTHETIC
ANTI-CONVULSANT
ANALGESIC
ANTI-ANXIETY

also found in lavender




BETA CARYOPHYLLENE
ANTI-INFLAMMATORY
ANALGESIC
PROTECTS CELLS LINING THE GI TRACT

also found in black pepper




MYRCENE
SLEEP AID
MUSCLE RELAXANT
SEDATIVE EFFECTS

also found in hops



LIMONENE
TREATS ACID REFLUX
ANTI-ANXIETY
ANTIDEPRESSANT

also found in citrus



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Legal Considerations

Disclaimer: I'm not a lawyer, this is not legal advice, and its complicated



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History of Cannabis Laws

- Pre 1850s- US was growing cannabis for hemp
- 1850s- More uptake in medicinal uses
- 1906- Pure Food and Drug Act
- 1937- Marijuana Tax Act
- 1960-70s war on drugs
- 1970- Controlled substance act. Made MM schedule 1
- 1971- Nixon war on drugs
- 1972: Schaffer Report
- 1972: California was first to have MM
- 1973: Start to see sweeping decriminalization laws
- 2012: Colorado first to have recreational marijuana
- 2018: Federal Farm Bill



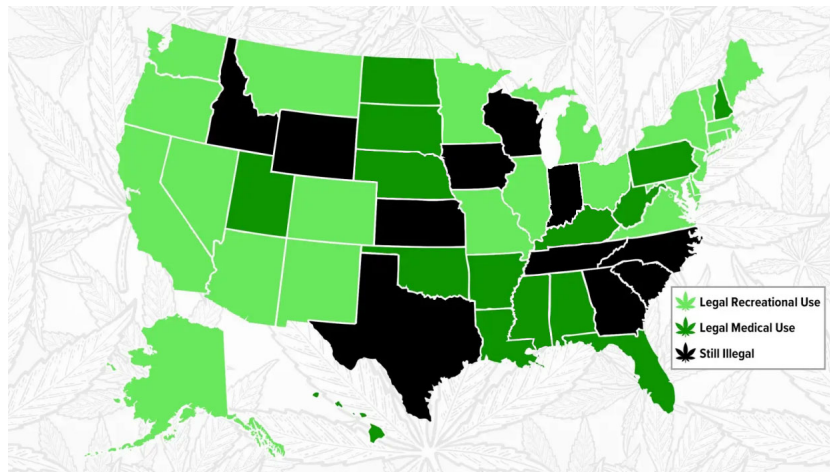
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U.S. DEA DRUG SCHEDULING

Schedule	Definition	Examples
I	Drugs, substances, or chemicals are defined as drugs with no currently accepted medical use and a high potential for abuse.	Cannabis Heroin LSD
II	Drugs, substances, or chemicals are defined as drugs with a high potential for abuse, with use potentially leading to severe psychological or physical dependence.	Vicodin Cocaine Methamphetamine
III	Drugs, substances, or chemicals are defined as drugs with a moderate to low potential for physical and psychological dependence. Schedule III drug abuse potential is less than Schedule I and Schedule II drugs but more than Schedule IV.	Ketamine Anabolic steroids Testosterone
IV	Drugs, substances, or chemicals are defined as drugs with a low potential for abuse and low risk of dependence.	Xanax Ambien Valium
V	Drugs, substances, or chemicals are defined as drugs with lower potential for abuse than Schedule IV and consist of preparations containing limited quantities of certain narcotics. Schedule V drugs are generally used for antidiarrheal, antitussive, and analgesic purposes.	Robitussin A-C Motofen Lyrica

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Elena Scotti-


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Legal but illegal at the same time

Cannabis remains **ILLEGAL** at the Federal level, BUT the Federal government has not formally challenged State laws regulating Cannabis, citing the supremacy clause of the 10th Amendment:

“Federal government cannot force a state to criminalize an act that is legal under state law”


Powers that aren't mentioned in the Constitution as belonging to the federal government belong to the States themselves.



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State Laws

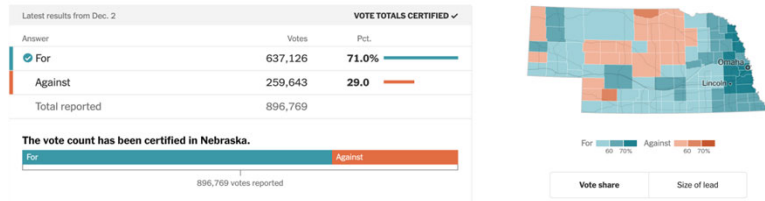
Vary greatly from State to State

- Some Restrictive- for certain illnesses
 - Some Restrict production & distribution
 - Some Protect & regulate dispensaries
 - Some restrict to non-smokable forms (e.g. NY)
 - Some require registration with State & source ID
 - Some allow for local bans & municipal ordinances
- 

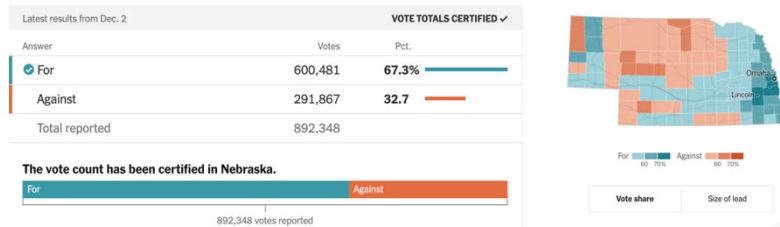
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Nebraska Ballot– Nov 2024

Initiative 437: Allows for use and procession of up to 5 oz of cannabis by patients and caregivers for medical purposes



Initiative 438: Establishes a govt board to regulate the medical cannabis



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Nebraska Medical Marijuana

- **Initiative 437 does not require any implementation.**
 - Certified patients can possess up to five ounces of cannabis
 - To qualify, the patient must have a "valid signed and dated declaration" from a licensed MD, DO, physician's assistant, or nurse practitioner.
 - "The potential benefits of cannabis outweigh the potential harms for the alleviation of a patient's medical condition, its symptoms, or side effects of the condition's treatment."
- **Initiative 438 will take time to implement**
 - Creating the Nebraska Medical Cannabis Council
 - License and regulate private businesses that provide medical cannabis to qualified patients
 - Regulations are due on July 1 and begin granting licenses no later than Oct 1 2025

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Legislative Session

- LB677- legislative bill to help implement medical cannabis in Nebraska
- Current amendments
 - Only 2oz at a time to be sold
 - Change wording from health care practitioner to physician, PA or NP
 - Medical providers need to have a 6-month relationship with the patient
 - Acceptable forms: edibles, concentrates, ointments, patches, nebulizers. No smoking products ie joints, pipes
- Qualifying medical conditions (Deleted PTSD)

• ALS,	• Spinal cord injury or disease w/ residual neurological deficits
• Autism w/self-injury or aggressive behavior	• Terminal illnesses w/ life expectancy less than 1 year
• Crohn's or Ulcerative colitis	• Tourette's Syndrome
• Cancer	• Disease associated with severe nausea/vomiting
• Epilepsy	• Severe persistent muscle spasm due to injury, MS or muscular dystrophy
• Hep C or HIV w/ cachexia or nausea	• Severe chronic pain refractory to conventional meds
• Huntington's disease	
• Parkinson's disease	
- Did not pass
 - Does not mean that medical marijuana commission won't determine their regulations. It just won't be regulated by state legislation at this time.



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The Farm Act "Loop Hole" Delta 8

- Delta 9 THC is the typical psychoactive cannabinoid extracted from cannabis plants.
- Delta 8 THC is less psychoactive and found in small quantities in cannabis.
- Most Delta 8 THC is being synthesized via conversion using chemicals to convert federally legal hemp derived CBD into delta 8 THC.
 - which is why it is currently sold in many states where cannabis is illegal



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Evidenced Based Medicine for Cannabinoid Use



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Cannabinoid Uses

- As many as 24% to 40% of cancer patients in USA use cannabis
- Most common reported reasons for use of medicinal cannabis in cancer care:
 - Refractory nausea and vomiting
 - Complementary pain medication
 - Improving appetite
 - Promoting sleep, treating insomnia
 - Recreational use
 - Improving sexual function
 - Stimulating social interactions



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CONTRIBUTORS

Committee on the Health Effects of Marijuana: An Evidence Review and Research Agenda; Board on Population Health and Public Health Practice; Health and Medicine Division; National Academies of Sciences, Engineering, and Medicine

SUGGESTED CITATION

National Academies of Sciences, Engineering, and Medicine. 2017. *The Health Effects of Cannabis and Cannabinoids: The Current State of Evidence and Recommendations for Research*. Washington, DC: The National Academies Press. <https://doi.org/10.17226/24625>.

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Overview

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Substantial evidence:

- Pain in adults
- Chemotherapy-induced nausea and vomiting (CINV)
- Spasticity associated with multiple sclerosis

Moderate evidence:

- Secondary sleep disturbances

Limited, insufficient or absent evidence:

- Appetite
- Anxiety/Posttraumatic stress disorder
- Cancer

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Using THC and CBD to treat cancer

Several studies have investigated the effectiveness of cannabis use and its anti-tumor properties with specific cancer cell lines.

There has been conflicting results in studies with significant variations in outcomes.

Some promising results of these studies have found evidence for inhibition of tumor cell proliferation and invasion, induction of apoptosis, and enhancement of the body's immune surveillance of tumor cells.

However, it is critical to note that despite the promising results found in such studies, the outcomes should not be interpreted to hold true for every cancer cell line, most studies are using varying types of cannabinoids, and all are at best done in cells and not translated to human studies.



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Practical Considerations and Concerns



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Labeling Accuracy of Online CBD Products

- 69% of products tested had mislabeled cannabinoid content
- THC was detected in 18 “CBD Only” samples
- Suggest need for regulation to ensure accurate testing and labeling of cannabis products

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Possible Effects of Cannabis Overdose

Hyperemesis - Cannabinoid Hyperemesis Syndrome (CHS)

- Rare – limited evidence
- Seen in habitual users

Psychiatric symptoms

- Anxiety
- Depression

Cannabinoid Catatonia

- Typically seen in older patients with acute excessive ingestion
- Can be mistaken as stroke
- More likely to happen with edibles

ACS and Acute Pericarditis

- Cannabis can elevate BP, cause tachycardia, peripheral vasodilation

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Contraindications

Absolute Contraindications

- Acute psychosis
- Other unstable psychiatric conditions

Relative Contraindications

- Severe cardiovascular, immunological, liver, or kidney disease, especially in acute illness
- May exacerbate arrhythmia or a history of arrhythmias
- Concurrent use with drugs metabolized via CYP3A4, CYP2D6 and CYP1A2 pathway



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Drug Interactions

Drug Pathways

- THC induces **CYP1A2**
- CBD inhibits **CYP3A4** (which metabolizes 25% of all drugs) and **CYP2D6**

Anti-epileptic drugs – increased effectiveness and serum levels

Warfarin – may increase bruising/bleeding

Enhances CNS depressant effects of alcohol, barbiturates, and benzodiazepines

Recent prospective observational study on 68 patients (users and non-users of Cannabis) with metastatic disease beginning immunotherapy

- Cannabis use from 9 months to 2 weeks prior to immunotherapy
- Non-small cell lung cancer and melanoma were most frequent diagnoses
- Cannabis users had less immune-related adverse events

Anti-inflammatory effect of cannabis may have dampened effectiveness of immunotherapy

Concluded that "cannabis consumption should be carefully considered in patients with advanced malignancies treated with immunotherapy."



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Acknowledgements



Sandy Trieu, MD
 Eloise Theisen, NP, AGPCNP-BC
 Lindsay Brubaker, MD
 Diana English, MD
 Al Pisani, MD

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