UTAH SOCIETY OF HEALTH-SYSTEM PHARMACISTS

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Medical Cannabis: Primer for the Pharmacy Provider

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Disclosure

Instructions:

Authors have no conflicts of interest to disclose.

Presentation will include discussion of off-label medication use.

INTERMOUNTAIN HEALTHCARE AND AUTHORS HAVE NOT RESEARCHED OR INDEPENDENTLY VALIDATED ANY ASSERTIONS OR CLAIMS AS TO THE USE OF CANNABIS AS DESCRIBED IN THIS PRESENTATION. AS SUCH, INTERMOUNTAIN HEALTHCARE AND AUTHORS OFFERS NO ASSURANCE AS TO THE CANNABIS INFORMATION DESCRIBED HEREIN, ANY SUCH RELIANCE AND LIABILITY IS SOLELY ON THE INDIVIDUAL REVIEWING AND RELYING UPON ANY USE OF CANNABIS.

USHP

Learning Objectives

At the conclusion of this activity, ***pharmacists*** should be able to successfully:

1. Differentiate between tetrahydrocannabinol (THC) and cannabidiol (CBD)

2. Review available cannabinoid formulations that are allowed in the state of Utah

3. Review available literature for cannabis use in various qualifying conditions

4. Describe key details of the Utah Medical Cannabis Act

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Definitions

Cannabis - generic term for drugs produced from plants of the genus *Cannabis*

Cannabinoid - group of compounds produced by cannabis plant

Cannabidiol (CBD) - a plant-derived cannabinoid

Endocannabinoid - endogenous cannabinoids

Hemp - cannabis plant that contains < 0.3% tetrahydrocannabinol (THC) on a dry-weight basis

- CBD is the predominant cannabinoid
- Traditionally cultivated for fiber and seed oil

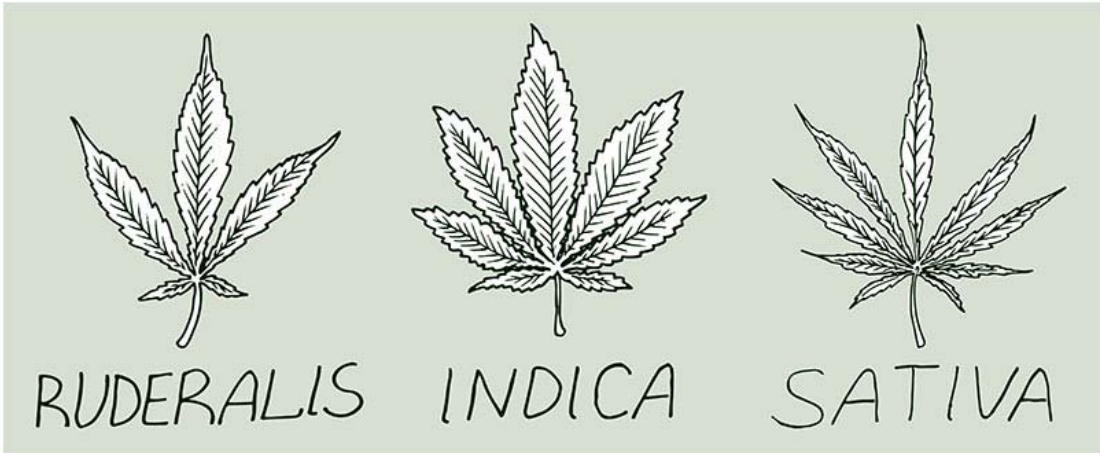
Marijuana - the psychoactive dried resinous flower buds and leaves of the female hemp or cannabis plant (*Cannabis sativa* or *indica*) that contain high levels of THC

Phyto cannabinoid - derived from plant, "natural"

Synthetic cannabinoid - made in laboratories

Tetrahydrocannabinol (THC) - a plant-derived cannabinoid

Cannabis



Cannabis sativa
- Native to Europe
- Most versatile and grows 3 feet tall
- Highest THC content

Cannabis indica
- Native to India
- Short, bushy plant and grows fast with high yield
- High levels of CBD

Cannabis ruderalis
- Native to Siberia and central Asia
- Very small leaves, looks like bush
- Low levels of THC

* Cannabinoids are synthesized within the flowers, leaves, and bracts of the female plant

Named for Greek word hemp Kannabis

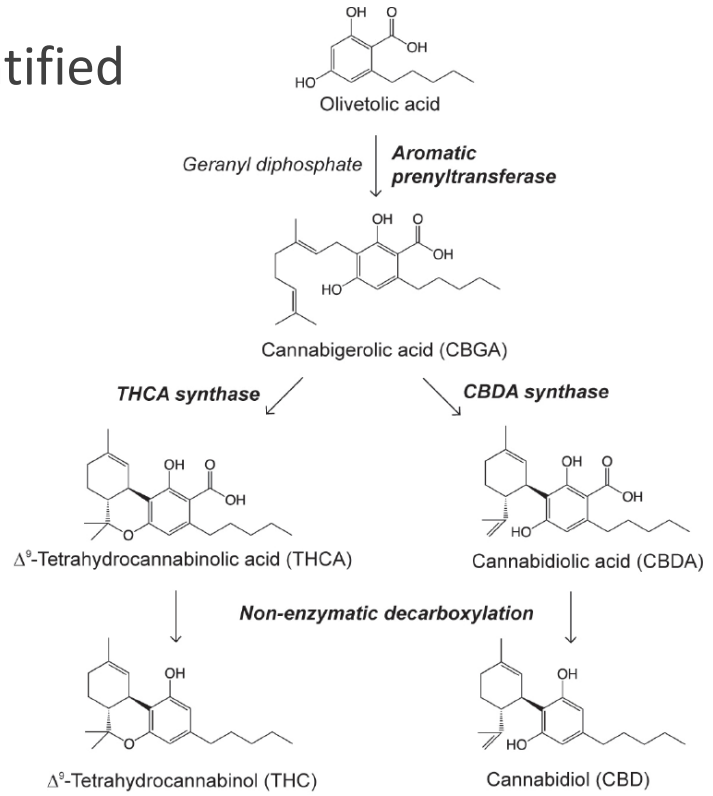
https://www.cannabis.info/en/blog/difference-indica-sativa-ruderalis-hybrid-plants

Chemical Constituents of Cannabis

104 different cannabinoids have been identified

Plant-derived cannabinoids:

- **Δ9 -tetrahydrocannabinol – THC**
- **Cannabidiol – CBD**
- Cannabinol – CBN
- Cannabigerol – CBG
- Cannabichromene – CBC
- Cannabicyclol – CBL
- Cannabielsoin – CBE
- Cannbitriol – CBT
- Cannabinodiol (air-oxidation)



https://www.nap.edu/read/24625/chapter/4

Medicinal Properties of THC and CBD

THC - psychoactive ingredient that causes euphoria ("high")

CBD - does not produce euphoria

*THC:CBD ratio associated with **more psychoactive symptoms***

*THC:CBD ratio associated with **more sedative effects***

https://www.projectcbd.org/how-to/cbd-dosing
https://www.leafly.com/news/health/a-physicians-perspective-on-optimal-cannabis-dosing
National Academies of Sciences, Engineering, and Medicine. 2017. Washington, DC: The National Academies Press. doi:10.17226/24625.

Endogenous Cannabinoid System

https://hempedification.wordpress.com/2017/09/22/copaiba-natural-anti-inflammatory-better-than-cannabidiol/

Endogenous Cannabinoid System

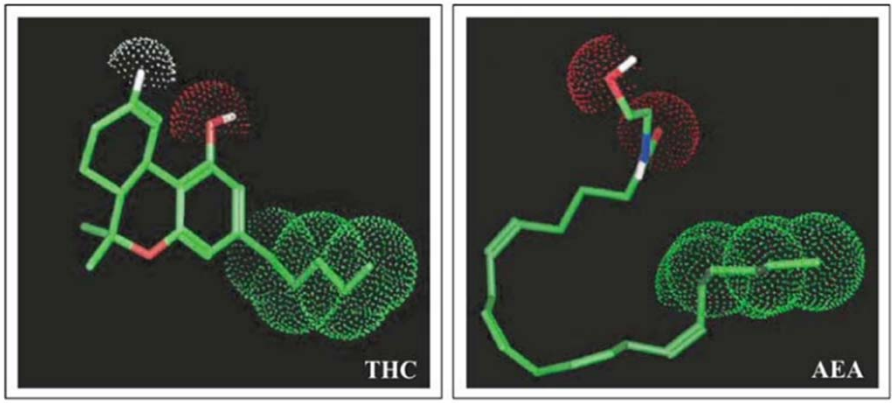
Goal is to maintain **homeostasis**

Endocannabinoids and receptors found throughout body

Activated by transient or chronic perturbation of homeostasis

Most common endocannabinoids

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



National Academies of Sciences, Engineering, and Medicine. 2017. Washington, DC: The National Academies Press. doi:10.17226/24625.
Di Marzo V. Pharmacol Res. 2009 Aug;60(2):77-84.
M Maccarrone. et al. Cell Death and Differentiation (2003) 10, 946–955.

Endogenous Cannabinoid System

Receptors: CB_1 and CB_2

Transducing G-coupled proteins which manipulate a variety of physiological processes

- CB_1 receptors: nervous system, connective tissues, gonads, glands, other organs
- CB_2 receptors: found in immune system and associated structures

National Academies of Sciences, Engineering, and Medicine. 2017. doi:10.17226/24625.
M Maccarrone. et al. Cell Death and Differentiation (2003) 10, 946–955.

Endogenous Cannabinoid System

CNS

Pain initiation/sensitivity

Secretion of pituitary hormones

Wake/sleep cycle

Thermogenesis

Synaptic plasticity

Memory

Dopamine synthesis/release

Gamma-aminobutyric acid (GABA) transmission

Locomotion

Periphery

Decrease blood pressure/heart rate

Reduce sympathetic tone

Vasodilation

Platelet aggregation

Interleukin/tumor necrosis factor/interferon regulation

Reproductive system effects

Inhibit peristalsis

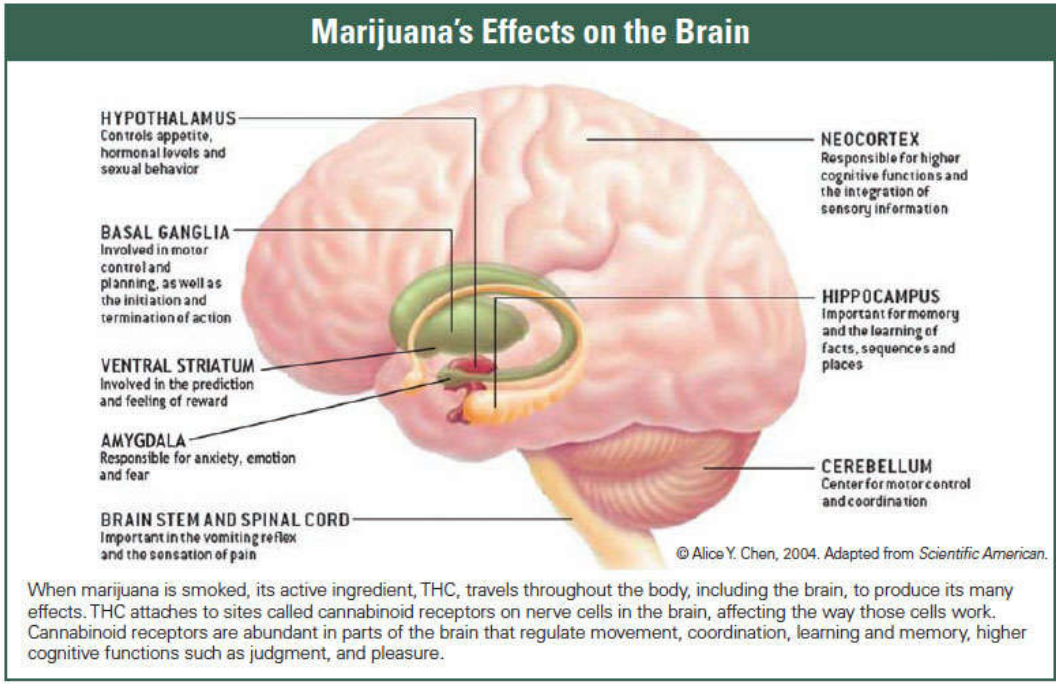
National Academies of Sciences, Engineering, and Medicine. 2017. doi:10.17226/24625.
M Maccarrone. et al. Cell Death and Differentiation (2003) 10, 946–955.

Pharmacology of THC

Partial agonist for CB_1

Effects

- Relaxing “buzz”
- Enhanced sensitivity to certain stimuli (colors, music, etc.)
- Altered perception of time
- Increased appetite
- Decreased short-term memory
- Impaired motor skills
- If high dose, possible panic/hallucinations
- Prolonged use may cause tolerance to effects



National Academies of Sciences, Engineering, and Medicine. 2017. doi:10.17226/24625.
M Maccarrone. et al. Cell Death and Differentiation (2003) 10, 946–955.
National Institute on Drug Abuse. How does marijuana produce its effects? https://www.drugabuse.gov/publications/research-reports/marijuana/how-does-marijuana-produce-its-effects

Pharmacology of CBD

Very low affinity for CB_1 and CB_2

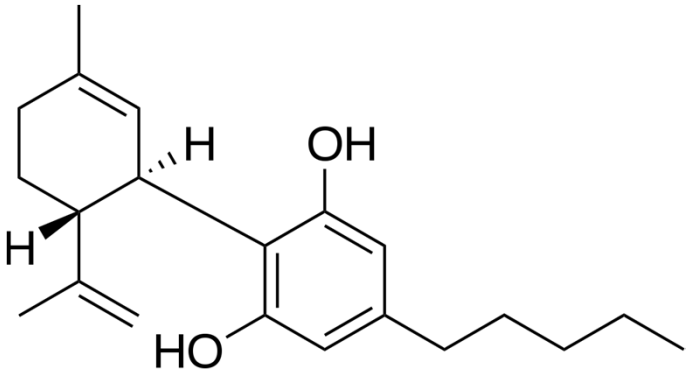
- Might be able to negatively modulate CB_1
- May indirectly activate CB_1 by competitive uptake/degradation of AEA

Effects

- Sedation, lethargy, decreased appetite
- Lacks THC-like intoxicating properties

Also reported to be:

- Serotonin receptor agonist
- Inhibitor of adenosine inactivation
- Antioxidant



National Academies of Sciences, Engineering, and Medicine. 2017. doi:10.17226/24625.
M Maccarrone. et al. Cell Death and Differentiation (2003) 10, 946–955.
https://en.wikipedia.org/wiki/Cannabidiol

Approved Formulations in the US and Canada

Drug	Class	Dosage form	Indication/Use
Dronabinol (Marinol®) DEA Schedule III	Semisynthetic THC	Capsule	Treatment of nausea/vomiting in patients with cancer; stimulate appetite
Dronabinol (Syndros®) DEA Schedule II	Semisynthetic THC	Oral solution	Treatment of nausea/vomiting in patients with cancer; anorexia in patients with AIDS
Nabilone (Cesamet®) DEA Schedule II	Synthetic THC	Capsule	Treatment of nausea/vomiting in patients with cancer; off-label for fibromyalgia
Cannabidiol (Epidiolex®) DEA Schedule V	CBD botanical extract	Oral solution	Dravet and Lennox-Gastaut syndromes
Nabiximols (Sativex®) Not FDA approved; available outside US	THC/CBD	Oral mucosal spray	Multiple sclerosis symptoms and spasticity, neuropathic pain, opioid refractory cancer pain

Micromedex Healthcare Series [database online]. Greenwood Village (CO): Truven Health Analytics; 2019.
http://adai.uw.edu/mcacp/

Formulations of Non-FDA-Approved Cannabis Products

Formulation	Comments
Unprocessed cannabis flower	• Exists in many forms including dry flower, ground power, etc. • Can be ingested, smoked, or incorporated into other edible forms
Tinctures	• Liquid cannabis extract used for dosage control and fast-acting effects • Alcohol, vinegar, or glycerol are used as solvents • Absorbed into the body under tongue (not swallowed and digested)

Concentrated oils	• Liquid cannabis extract used for higher concentrations of cannabinoids
	  • Butane, propane, and CO2 are used as solvents
	• Swallowed and digested
	  • Often incorporated into capsules or edible products (gummies and baked goods)

Others	• Resin/Wax • Concentrated cannabis extract (shatter, budder, or wax)

National Academies of Sciences, Engineering, and Medicine. 2017. doi:10.17226/24625.
https://www.safeaccessnow.org/using_medical_cannabis
https://keytocannabis.com/blogs/cannabis/the-thc-dosage-guide-flower-edibles-concentrates-and-more

Formulations of Non-FDA-Approved Cannabis Products

https://maryjanesdiary.com/smoke-weed-leaves/
https://keytocannabis.com/blogs/cannabis/the-thc-dosage-guide-flower-edibles-concentrates-and-more

How Are the Non-FDA-Approved Products Used?

Inhaled (onset: seconds to minutes; duration: hours)

Smoking

- This delivery method is **not** approved under Utah Medical Cannabis Act
- Utilizes several options for devices, including hand pipes, water pipes, rolling papers, etc.

Vaporizing

- This delivery method is approved under the Utah Medical Cannabis Act
- A vaporizer steadily heats cannabis to a temperature high enough to extract cannabinoids
- Temperature is low enough that harmful toxins are not released
- May minimize health risks associated with smoking

Accessed 3/7/19. https://le.utah.gov/~2018s3/bills/static/HB3001.html
https://health.utah.gov/medical-cannabis
National Academies of Sciences, Engineering, and Medicine. 2017. Washington, DC: The National Academies Press. doi:10.17226/24625.

How Are the Non-FDA-Approved Products Used?

Ingested (onset: minutes to hours; duration: several hours)

- This delivery method is approved under the Utah Medical Cannabis Act (formulations are restricted)
- Multiple formulations exist for oral ingestion: compounded capsules/tablets, oils, suspension, gelatins, or incorporation into baked or cooked foods

Topical (onset: minutes; duration: highly variable)

- This delivery method is approved under the Utah Medical Cannabis Act
- Useful for maintaining stable amounts in body for days (transdermal patches)
- Topical products treat symptoms without psychoactive effects

Accessed 3/7/19: https://le.utah.gov/~2018s3/bills/static/HB3001.html
https://health.utah.gov/medical-cannabis
National Academies of Sciences, Engineering, and Medicine. 2017. Washington, DC: The National Academies Press. doi:10.17226/24625.

How Are the Non-FDA-Approved Products Used?

Dabbing

- This delivery method is **not** approved under the Utah Medical Cannabis Act
- Dabbing is a method of flash-vaporization in which cannabis concentrates are dropped on a heated water-pipe attachment and inhaled for intensely potent effects
- This method is free of plant material
- Produces vapor as opposed to smoke

https://le.utah.gov/~2018s3/bills/static/HB3001.html
https://health.utah.gov/medical-cannabis
National Academies of Sciences, Engineering, and Medicine. 2017. Washington, DC: The National Academies Press. doi:10.17226/24625.

Drug-Drug Interactions

THC and CBD are metabolized by CYP3A4 and CYP2C9

- CYP3A4 inhibitors slightly increase THC levels
- CYP3A4 inducers slightly decrease THC and CBD levels

CBD, **NOT THC**, is metabolized by CYP2C19

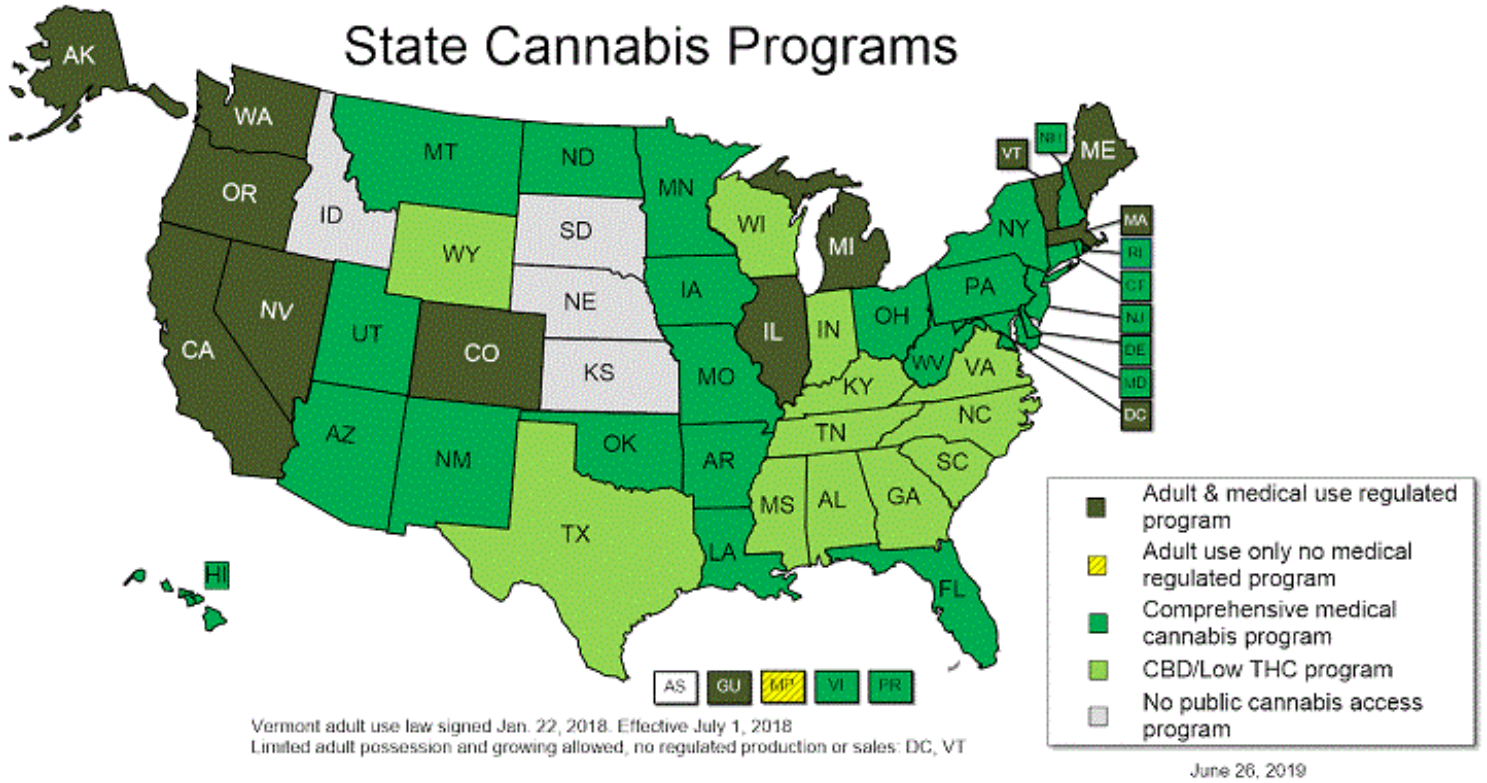
CBD potent inhibitor of CYP3A4 and CYP2D6

Clinically significant interactions include:

- Warfarin – THC & CBD increase warfarin levels (associated with increased INR)
- Alcohol – may increase THC levels
- Theophylline – smoked cannabis may decrease theophylline levels
- CloBAZam – CBD may increase clobazam levels

Medical Cannabis Use

A total of 34 states, District of Columbia, Guam, Puerto Rico, and US Virgin Islands have approved comprehensive, publicly available medical marijuana/cannabis programs



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

Medical Cannabis Use

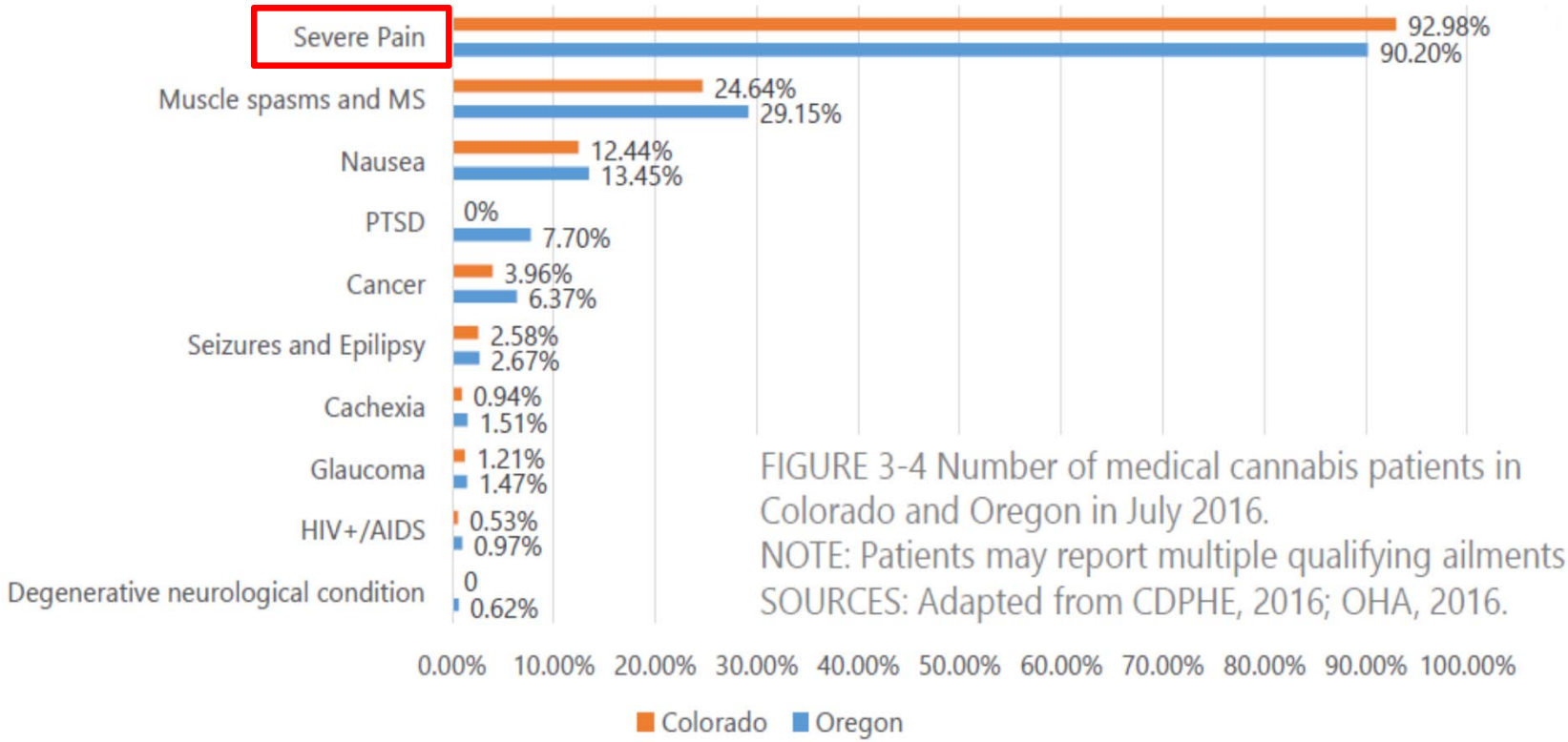


FIGURE 3-4 Number of medical cannabis patients in Colorado and Oregon in July 2016.
NOTE: Patients may report multiple qualifying ailments
SOURCES: Adapted from CDPHE, 2016; OHA, 2016.

https://www.nap.edu/read/24625/chapter/5#76

Utah Medical Cannabis Act

Providers who can recommend medical cannabis:

- Licensed MD, DO, APRN, or PA
- Licensed to prescribe controlled substances
- Registered with the Utah Department of Health (UDOH)
- Completed 4 initial hours and 4 ongoing hours of continuing education

MD: Doctor of Medicine
DO: Doctor of Osteopathic Medicine
APRN: Advanced Practice Registered Nurse
PA: Physician's Assistant

Utah Medical Cannabis Act

Number of patients limitation

- Non-specialist providers
  - May recommend medical cannabis for up to 175 patients
- Specialists
  - May recommend medical cannabis for up to 300 patients with an additional 300 by petition
  - Includes board certification in anesthesiology, gastroenterology, neurology, oncology, pain, hospice, palliative care, psychiatry, physical medicine and rehabilitation, or rheumatology

Accessed 3/7/19: https://le.utah.gov/~2018s3/bills/static/HB3001.html
https://health.utah.gov/medical-cannabis

Utah Medical Cannabis Act

Qualifying conditions

- Neurology/Mental health: autism, Alzheimer's disease, amyotrophic lateral sclerosis (ALS), epilepsy or debilitating seizures, multiple sclerosis (MS), PTSD*
- End of life: terminal illness and hospice care
- GI or related: cachexia, persistent nausea*, Crohn’s disease, ulcerative colitis
- Pain*
- Human immunodeficiency virus (HIV) infection or Acquired Immunodeficiency Syndrome (AIDS)
- Cancer
- Rare condition (< 200,000 in US)

* Conditions with stipulations

Accessed 3/7/19: https://le.utah.gov/~2018s3/bills/static/HB3001.html
https://health.utah.gov/medical-cannabis

Approved Dosage Forms

Medicinal dosage form includes the following:

- A tablet
- A capsule
- A concentrated oil
- A sublingual preparation
- Topical preparation
- Transdermal preparation
- A gelatinous cube, rectangular cuboid, or a lozenge in a cube rectangular cuboid shape
- For use only after individual did not respond to at least two other forms: resin, wax, or unprocessed cannabis flower in an individual blister pack

Accessed 3/7/19: https://le.utah.gov/~2018s3/bills/static/HB3001.html
https://health.utah.gov/medical-cannabis

What About Smoking or Vaping?

Prohibited:

- Smoking
- Edible products (besides gelatinous cubes)
  - Eg, candies, cookies, brownies, and unprocessed flowers outside of blister packs

Allowed:

- Vaping
  - Patients may purchase a medical cannabis device that warms cannabis material into a vapor without use of a flame and delivers cannabis to an individual's respiratory system

Accessed 3/7/19: https://le.utah.gov/~2018s3/bills/static/HB3001.html
https://health.utah.gov/medical-cannabis

Purchase and Possession Restrictions

Cardholder residence < 100 miles from nearest cannabis pharmacy

- In any 12-day period, a medical dosage form up to amount for 14 days of treatment; or 56 grams of unprocessed cannabis; or an amount of cannabis product up to 10 grams of THC

Cardholder residence > 100 miles from nearest cannabis pharmacy

- In any 28-day period, a medical dosage form up to amount 30 days of treatment; or 113 grams of unprocessed cannabis; or an amount of cannabis product up to 20 grams of THC

Accessed 3/7/19: https://le.utah.gov/~2018s3/bills/static/HB3001.html
https://health.utah.gov/medical-cannabis

Purchase and Possession Restrictions

Current allowance (prior to March 2020)

- Individuals can avoid state prosecution for possession/use of medical cannabis if:
  - Diagnosed with approved qualifying condition
  - Pre-existing relationship with MD, DO, APRN, or PA who can prescribe a Schedule II Controlled Substance, who thinks the patient could benefit from treatment with medical cannabis
  - Cannabis is in medicinal dosage form, quantity allowed by Utah law

Accessed 3/7/19: https://le.utah.gov/~2018s3/bills/static/HB3001.html
https://health.utah.gov/medical-cannabis

Medical Cannabis Cards

When will qualifying patients be required to hold a medical cannabis card to use and possess medical cannabis?

- Qualifying patients will have until December 31, 2020 to use and possess medical cannabis without holding a medical cannabis card
- On January 1, 2021, no one without a medical cannabis card can use or possess medical cannabis in Utah

What types of medical cannabis cards will be available?

- Beginning in March 2020, there will be four types of medical cannabis cards: patient cards, guardian cards, provisional patient cards, and caregiver cards

How often will the cards need to be renewed?

- Renewed 30 days after they are originally issued, then once every six months thereafter

Where Can Qualifying Patients Purchase Medical Cannabis in Utah?

Currently, there are no facilities in Utah that are licensed to sell medical cannabis

- By March 2020, the UDOH will have licensed up to seven privately-operated medical cannabis pharmacies
- In addition, the state central fill pharmacy will deliver cannabis to 13 to 18 local health department locations throughout Utah by July 2020

For additional information, may contact medicalcannabis@Utah.gov

What State Agencies Are Involved?

UDOH is in charge of issuing patient medical cannabis cards, registering doctors recommending cannabis, and licensing dispensaries

- Richard Oborn, Center Director Center for Medical Cannabis UDOH

The Utah Department of Agriculture and Food (UDAF) will oversee cannabis cultivation and processing

- Andrew Rigby, Director of Medical Cannabis and Hemp Programs, UDAF

Status Updates in Utah

May 2019

The State of Utah has selected MJ Freeway to develop the EVS/ICS for the medical cannabis program

Key functions include:

- Allowing patients to apply and renew cards
- Registering qualified medical providers
- Ordering medical cannabis from the SCF pharmacy
- Tracking all purchases
- Tracing all cannabis plants from cultivation to point of sale
- Maintaining record of amount of cannabis in all facilities
- Monitoring product testing performs by independent laboratories

EVS= electronic verification system ICS= inventory control system

https://health.utah.gov/featured-news/state-agencies-seeking-vendors-to-build-medical-cannabis-electronic-verification-system

https://www.sltrib.com/news/politics/2019/05/11/utah-picked-tech-company/

Status Updates in Utah

June 2019

Compassionate Use Board

- Power to recommend cannabis for patients who do not have a qualifying condition or less than 21 years of age
- Consists of the following individuals:
  - Dr. Joel Ehrenkranz, internal medicine and expert in the use of medical cannabis
  - Dr. Ed Redd, internal medicine and past member of the Utah State Legislature
  - Dr. Angelo Giardino, pediatrician and chair of the Department of Pediatrics at the University of Utah School of Medicine and Chief Medical Officer of Primary Children's Hospital
  - Dr. Nicholas Whipple, pediatric hematology-oncology at the University of Utah
  - Dr. Meghan Ward, neurology and epilepsy, Intermountain Healthcare
  - Dr. Richard Segal, psychiatrist
  - Dr. Colleen Marty, pediatrician and hospice and palliative medicine

https://health.utah.gov/featured-news/state-appoints-members-of-medical-cannabis-compassionate-use-board

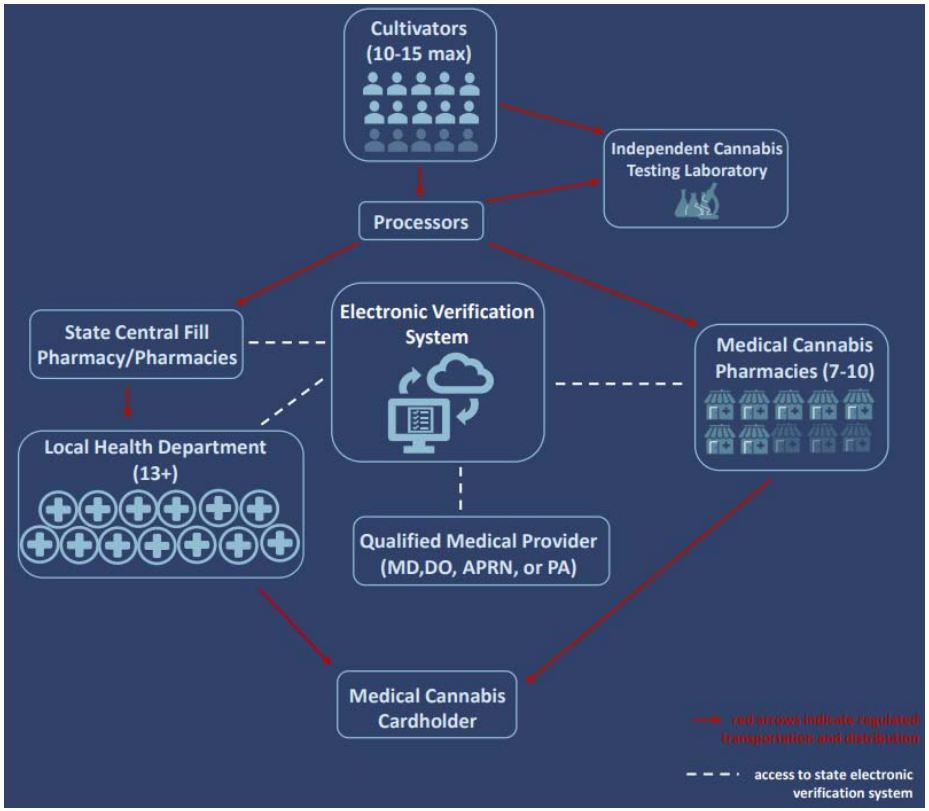
Status Updates in Utah

July 2019

Cultivating cannabis licenses

81 applications (8 outside of the state of Utah)
- Application fee $2500 and $100,000 per year

8 companies selected for cultivation licenses:
- Dragonfly Greenhouse
- Harvest of Utah
- Oakbridge Greenhouses
- Standard Wellness Utah
- True North of Utah
- Tryke Companies Utah
- Wholesome Ag.
- Zion Cultivars



https://health.utah.gov/wp-content/uploads/UMCAOverviewFinal.pdf
https://ag.utah.gov/2019/07/19/medical-cannabis-cultivator-licensees-selected/

Implementation Timeline by UDOH

May 2019	Award RFP for Electronic Verification and Inventory Control System
July 2019	Approved medical provider education courses posted on website
	Administrative rules become effective
Sept 2019	Medical providers begin applying online to become qualified medical providers
	First meeting of Compassionate Use Board
	Award 7 private medical cannabis pharmacy licenses
Nov 2019	Patients begin applying online for medical cannabis registration cards
Dec 2019	Compassionate Use Board begins reviewing patient applications
Jan 2020-Mar 2020	Private pharmacies open and patients begin purchasing medical cannabis in Utah
Apr 2020 - July 2020	State Central Fill Medical Cannabis Pharmacy opens with certain local health department locations acting as distribution points
Jan 2021	Medical cannabis cards required for legal possession of medical cannabis

https://le.utah.gov/interim/2019/pdf/00002756.pdf

What About CBD Products?

Hemp vs Marijuana

Hemp = products from cannabis plants with < 0.3% THC by weight

Marijuana = products from cannabis plants with ≥ 0.3% THC by weight

*It is possible to extract < or > 0.3% from plants with higher or lower amounts of THC

- ie, can produce “CBD products” from marijuana or vice versa

https://www.fda.gov/consumers/consumer-updates/what-you-need-know-and-what-were-working-find-out-about-products-containing-cannabis-or-cannabis

Hemp & CBD Federally

Per Hemp Farming Act of 2018

- Hemp products were removed from Schedule I status
- Allows for states to regulate the production of hemp
- Placed use of hemp products under authority of FDA

Per FDA, as of July 2019

- Only approved CBD product is cannabidiol (Epidiolex®)
- Currently illegal to market CBD containing products as food or dietary supplements or to make therapeutic claims
- Many unknowns about effects and safety
- Held public hearing May 31, 2019 and were accepting public comments through July 16,2019

https://www.congress.gov/bill/115th-congress/house-bill/5485
https://www.fda.gov/consumers/consumer-updates/what-you-need-know-and-what-were-working-find-out-about-products-containing-cannabis-or-cannabis

Hemp & CBD in Utah

Per House Bill 301 passed Dec 2018

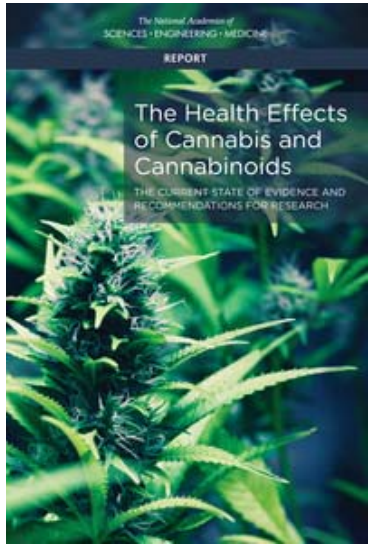
- Possession of hemp extract or CBD oil containing < 0.3% THC is legal
  - No longer requires a registration card
- Those who cultivate, process, or sell must be licensed by the UDAF
  - Meet all testing, labeling, and other rules including a certification of analysis for each batch

Approved products can be accessed at:

https://ag.utah.gov/wp-content/uploads/2019/06/Industrial-Hemp-Product-Registration.pdf

Utah Department of Agriculture and Food

The National Academies of Sciences, Engineering, and Medicine



March 2016

Health consequences of using cannabis

1999 IOM report Marijuana and Medicine

Literature searches: evidence review, grading, synthesis

Risk and benefits of cannabis

January 2017

"Conclusive or substantial evidence"

Treatment of chronic pain

Improving patient reported MS spasticity symptoms

Anti-emetics in the treatment of chemo induced n/v

National Academies of Sciences, Engineering, and Medicine. 2017. Washington, DC: The National Academies Press. doi:10.17226/24625.

Trial Design	Systematic Review and meta-analysis	
Objective	Systematic review of benefits and AEs of cannabinoids	
Study Selection	RCTs of cannabinoids for following indications:	
	CINV Appetite stimulation in HIV/AIDS Chronic pain Spasticity to MS or paraplegia Depression	Anxiety Sleep Disorder Psychosis Glaucoma Tourette Syndrome
Main outcomes and measures	Patient relevant/disease specific outcomes, ADLs, QOL, global impression of change, and AEs	
Results	79 trials (n=6462 participants) included - Most trials showed improvement in symptoms but did not reach statistical significance in all trials - Moderate quality evidence to support use of cannabinoids for treatment of chronic pain and spasticity - Low quality evidence suggesting cannabinoids associated with improvements in CINV, weight gain in HIV, sleep disorders, and Tourette syndrome - Cannabinoids associated with increased risk of short term AEs	

Appetite Stimulation in HIV/AIDS

Studies and number of participants		**4 studies, n= 255**
Intervention	Dronabinol (4 studies)	Comparators: Placebo THC Megestrol
Bias	Not mentioned	
Overall conclusion	Study evaluating marijuana and dronabinol found significantly greater weight gain with both forms of cannabinoid than placebo	

Nausea and Vomiting Due to Chemotherapy

Studies and number of participants		**28 studies, n= 1772**
Intervention	Nabilone (14 studies) Dronabinol (3 studies) Nabiximol (1 studies) Levonantradol (4 studies) THC (6 studies)	Comparators: Prochlorperazine Chlorpromazine Domperidone
Bias	Bias risk: high in 23 and unclear 5 studies	
Overall conclusion	- All studies suggested greater benefit of cannabinoids but did not reach statistical significant - Average number of patients showing complete N/V response greater with cannabinoids than placebo	

Whiting JAMA. 2015 Jun 23-30;313(24):2456-73.

Spasticity Due to MS or Paraplegia

Studies and number of participants		**14 studies, n= 2280 11 with MS and 3 with paraplegia**
Intervention	Nabiximol (6 studies) Dronabinol (3 studies) Nabilone (1 study) THC/CBD (4 studies) Smoke THC (1 study)	Comparators: Placebo
Bias	Bias risk: high in 7 studies, low in 2, and unclear in 5	
Overall conclusion	- Generally suggested cannabinoids associated with improvements in spasticity but failed to reach statistical significance - No clear differences based on type of cannabinoids - Nabiximol, dronabinol, and THC/CBD associated with greater mean improvement on Ashworth scale for spasticity compared with placebo (not statistical significant) WMD, -0.12 [95% CI, -0.24 to 0.01]; 5 trials	

Whiting JAMA. 2015 Jun 23-30;313(24):2456-73.

Chronic Pain

Studies and number of participants		**28 studies, n= 2454**
Intervention	Nabiximol (13 studies) THC smoked (4 studies) Nabilone (5 studies) THC oromuscosal spray (3 studies) Dronabinol (2 studies) Cannabis vaporized (1 study) THC oral (1 study) Other (1 study)	Comparators: Nabilone with amitriptyline (1 study) Placebo
Bias	Bias risk: high in 17 studies, low in 2, and unclear in 9	
Overall conclusion	- Overall reduction in pain at least 30% greater with cannabinoids than placebo (OR, 1.41 [95% CI, 0.99-2]; 8 trials) - Greater average reduction in numerical rating scale pain assessment (on a 0-10 point scale; weighted mean difference, -0.46 [95% CI, -0.80 to -0.11]; 6 trials)	

Whiting JAMA. 2015 Jun 23-30;313(24):2456-73.

UTAH SOCIETY OF HEALTH-SYSTEM PHARMACISTS

Annual Meeting
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Test Questions

The following is a currently legal formulation of THC in the United States:

A. Nabiximols oral mucosal spray

B. Nabilone capsule

C. Cannabidiol oral solution

D. Dronabinol oral mucosal spray

Test Questions

Products with THC can cause the INR of a patient taking warfarin to increase, but CBD-only products would not.

A. True

B. False

Test Questions

A patient presents to you with a qualifying condition and plans to seek treatment with medical cannabis in the coming year, but she wants to know what dosage formulations of medical cannabis will be allowed. Which of the following would be allowed per Utah law?

A. A gummy in the form of a cube

B. An unprocessed flower in an individual blister pack

C. A concentrated oil in a vaporization device

D. All of the above

Test Questions

A patient asks about purchasing a “CBD-only product”. Which of the following is FALSE regarding CBD?

A. Per Hemp Farming Act of 2018, hemp products containing < 0.3% THC are no longer CI substances

B. Per FDA, it is currently illegal to market CBD products as dietary supplements

C. The Utah Department of Health maintains an approved list of products for sale within the state of Utah

D. Utah House Bill 301 decriminalizes the position of CBD products

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