

Therapeutic Considerations:

Cannabis and Maine's Aging Population

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Disclosures

- ▶ Becky DeKeuster is employed by the Wellness Connection of Maine (WCM), which operates four of Maine's eight state-licensed and regulated medical marijuana dispensaries.

Therapeutic Considerations: Cannabis and Maine's Aging Population

Overview

- ▶ History and national-policy overview
- ▶ Therapeutic and palliative effects
- ▶ Risk/benefit analysis of therapeutic cannabis use by elders
- ▶ Practical policy & procedure recommendations for care providers

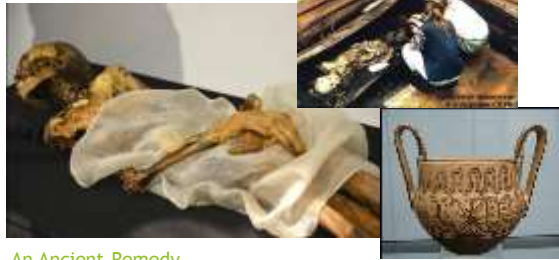


History and Policy Overview

Evolving approaches to the cannabis plant

Historical Overview

- ▶ Asia 6,000 years ago: cannabis used as potent drug, cooking oil, animal fodder, hempen fibers for rope and clothing.
- ▶ USA early 1900's doctors were using cannabis for about 100 ailments, from asthma to childbirth pains to pain and inflammation.
- ▶ Increase in "recreational use" with influx of Mexican and South American people coming to US for work.
- ▶ By the mid 1930's, the criminalization and stigmatization of cannabis ("marihuana") creates an illicit "Black Market" that expands over the next seven decades.



An Ancient Remedy

Earliest Chinese pharmacopoeia; archeological & written evidence of use in many ancient cultures; first appears in U.S. pharmacopoeia 1850.

Medical Cannabis in the United States

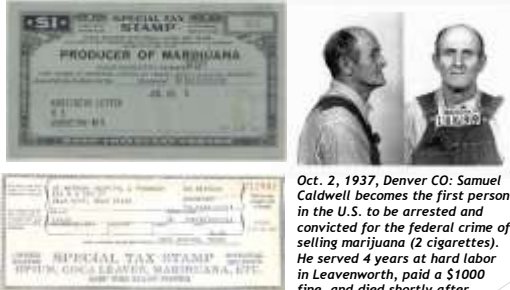


Tincture of cannabis, circa 1910



Tincture of cannabis, April 14, 1928

Shifting Perceptions: The Marihuana Tax Act (1937)



Oct. 2, 1937, Denver CO: Samuel Caldwell becomes the first person in the U.S. to be arrested and convicted for the federal crime of selling marijuana (2 cigarettes). He served 4 years at hard labor in Leavenworth, paid a \$1000 fine, and died shortly after his release.

Shifting Perceptions: The Controlled Substances Act (1970)

Schedule I

LSD
Ecstasy
Heroin
Psilocybin
Peyote
Marijuana

Schedule II

Cocaine
Methamphetamine
Fentanyl
Methadone
Oxycodone
Ritalin

Schedule III

Vicodin
Tylenol
w/codeine
Ketamine
Anabolic
steroids

Schedule IV

Xanax, Ambien
Viagra

Schedule V

Robitussin AC
Lyrica

Alcohol, Tobacco, Coffee

- ▶ Three psychoactive, plant based products
- ▶ Socially acceptable around the globe
- ▶ Taxed, age use limits

Opium, Cannabis, Coca

- ▶ Three psychoactive plant-based products
- ▶ Restricted or prohibited around the globe
- ▶ Highly profitable, untaxed, no age limits

Federal Catch-22: "It's illegal, but..."

- ▶ Compassionate Investigational New Drug Program, 1978-1992
- ▶ Patent # 6630507



Elvy Musikka. Photo: Paul Wellman

United States Patent
6630507 A1

Abstract
A method for the treatment of a patient with a chronic pain condition, comprising: (a) providing a patient with a medical cannabis product; (b) administering the medical cannabis product to the patient; and (c) monitoring the patient's response to the medical cannabis product.

Claims
1. A method for the treatment of a patient with a chronic pain condition, comprising: (a) providing a patient with a medical cannabis product; (b) administering the medical cannabis product to the patient; and (c) monitoring the patient's response to the medical cannabis product.

References
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U.S. Pat. No. 8,000,000 (2004)
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U.S. Pat. No. 12,500,000 (2013)
U.S. Pat. No. 13,000,000 (2014)
U.S. Pat. No. 13,500,000 (2015)

Recent Federal Memoranda: Signs of Evolution

- ▶ 2011 VA Memo and 2013 Guidance to States
- ▶ Veterans will not lose benefits if they use cannabis medicinally in states where it is legal
 - ▶ Often lose access to pain clinics/opioid medications
- ▶ 2013 "Cole Memorandum" indicates no federal interference in well-regulated medical or legal cannabis states

Status of marijuana laws in the United States

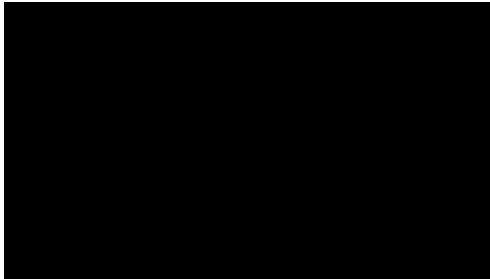


Medical Cannabis in the U.S. Today
23 states and the District of Columbia, 13 "CBD-only" states, Federal memos.

Cannabis in Other Countries NOW

- ▶ Most countries state that cannabis is either illegal or it has been decriminalized.
- ▶ Most countries state you can grow it in your backyard and not share it.
- ▶ Netherlands, Canada, Spain, Israel, China, Japan, Uruguay, USA

Lessons from Israel



Therapeutic and Palliative Effects

Cannabis and common conditions or diseases of aging

Endo and Exo

- ▶ Endogenous is made by our body and used by our body.
- ▶ Exogenous is used by our body but is from outside of our body.
- ▶ Our body seeks homeostasis endogenously. Medications, trauma, illness can sometimes require exogenous intervention.
- ▶ Hospice care, surgery, brain trauma are examples of needed exogenous intervention.



The Endocannabinoid System

- CB1 and CB2 receptors
- Most abundant neurotransmitter receptors in the brain
- Two-way: they both up- and downregulate systems
- CB1: Particularly abundant in frontal cortex & hippocampus—few in brainstem, also in periphery (spleen; gastrointestinal, reproductive, urinary tracts; hematopoietic or “stem” cells)
- CB2: White blood cells; tonsils; spleen

Maine's Qualifying Conditions

- Cancer
- Glaucoma
- HIV+/AIDS
- Hepatitis C
- ALS
- Crohn's disease/Inflammatory bowel
- Agitation of Alzheimer's
- Nail-patella syndrome
- Intractable pain
- Post-traumatic Stress
- Severe symptoms such as cachexia, muscle spasm

- ▶ Estimated number of registered patients in the state of Maine as of May 1, 2015: 17,000
- ▶ Average age of 8,000+ members of the Wellness Connection of Maine: 45.5
- ▶ Certification vs. prescription
- ▶ Patients may grow own; choose a dispensary; choose a caregiver
- ▶ 6 flowering plants per patient
- ▶ Purchase limit: 2.5 oz every 15 days

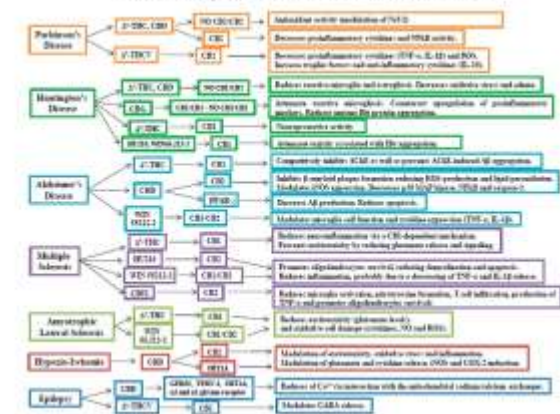
Functions of the Endocannabinoid System

- ▶ Neuro- and cellular protectant
- ▶ Aids rest & relaxation
- ▶ Modulates appetite
- ▶ Affects short-term memory

Neuro & Cellular Protection

- ▶ Significance for dementia/Alzheimer's, Parkinson's, ALS, cancer
- ▶ Numerous *in vitro* research studies
- ▶ Decrease in Aβ production; inhibits plaque formations
- ▶ Induces apoptosis in various types of cancer cells
- ▶ Anti-inflammatory and anti-oxidant effects

Figure 4. Cannabinoid-induced cellular signaling in neurologic disease



Source:
Giacoppo et al.
"Cannabinoids:
New Promising
Agents in the
Treatment of
Neurological
Disease."
Molecule, 2014.

Promising Studies

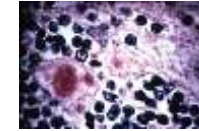


2006: Eubanks *et al*
In vitro study

“ $\Delta 9$ -tetrahydrocannabinol (THC) is a considerably more effective inhibitor of AChE-induced beta amyloid deposition than the FDA-approved drugs for Alzheimer’s disease treatment, donepezil and tacrine.”

- Prevents neurotransmitter degradation
- Reduces AB protein aggregation, treating both symptoms and progression of AD

Promising Studies



2014: Cao *et al*
In vitro study

“THC (is) effective at lowering AB levels... at extremely low concentrations in a dose-dependent manner.”

- THC interacts directly with AB peptide to inhibit protein buildup
- No toxicity was observed
- Low doses of THC also enhance mitochondria function

Aids rest & relaxation

- Significant for PTS, insomnia, “sundowning” or agitation of dementia/Alzheimer’s
- Lowers blood pressure over time (increases in first 10-15 min.)
- Relaxes smooth muscle cells
- Calms tics and spasms

Modulates Appetite

- Significance for maintaining healthy weight/appetite loss due to pain or apathy
- Generally an appetite stimulant
- Abundant endocannabinoids in human milk
- Leptin regulated endocannabinoids involved in maintaining food intake
- Reports of weight loss not uncommon

Affects Short-Term Memory

- ▶ Significance for PTS, early onset dementia
- ▶ Desrosiers et al: "Cannabis smoking did not elicit session × group effects on the n-back [working memory] or BART [risk-taking]." Impairment was more significant for occasional, rather than frequent, users.
- ▶ Development of new memories
- ▶ Does not appear to impact long-term recall

Risk/Benefit Analysis of Cannabis Use by Elders

Side Effects, Contra-indications, Successful Titration

Common Side Effects of Cannabis

Euphoria
 Anxiety/paranoia
 Increased heart rate
 Dizziness (low b.p.)
 Impaired motor control
 Impaired short term memory
 Dry mouth
 Red eyes

- ▶ No LD50
- ▶ Does not damage liver/kidneys
- ▶ No known negative drug interactions
- ▶ Easily self-titrated, even at higher potencies

Possible Contra-indications

- ▶ Potentiates sedation (alcohol)
- ▶ Low blood pressure/dizziness
- ▶ Benzodiazepenes & SSRIs need more study
- ▶ Unknown if potentiates mental disorders

Common Hospice Medications, S/E, Contraindications

- ▶ Acetaminophen
- ▶ Morphine
- ▶ Haloperidol
- ▶ Lorazepam
- ▶ Prochlorperazine
- ▶ Atropine

Commonly Used LTC Meds

- ▶ Cardiovascular meds
- ▶ Diabetes meds
- ▶ GI meds
- ▶ Pain meds
- ▶ CNS meds
- ▶ Sleep aids

Comparing side effects

Hydrocodone (i.e. Vicodin®)

- ▶ Difficulty having a bowel movement; nausea; abdominal or stomach pain or discomfort; back pain; bladder pain; bloody or cloudy urine; difficult, burning, or painful urination; dry mouth; frequent urge to urinate; heartburn; itching skin; lower back or side pain; muscle spasms; vomiting
- ▶ *Contact physician immediately:* Blue lips and fingernails; blurred vision; change in consciousness; chest pain or discomfort; cold and clammy skin; confusion; constricted pupil (black part of the eye); coughing that sometimes produces a pink frothy sputum; decreased awareness or responsiveness; difficult, fast, noisy breathing, sometimes with wheezing; dizziness, faintness, or lightheadedness when getting up suddenly from a lying or sitting position; increased sweating; irregular, fast or slow, or shallow breathing; lightheadedness, dizziness, or fainting; loss of consciousness; no muscle tone or movement; pale skin; severe sleepiness; sleepiness or unusual drowsiness; slow or irregular heartbeat

Cannabis

- ▶ Euphoria
- ▶ Anxiety/paranoia
- ▶ Increased heart rate
- ▶ Dizziness (low b.p.)
- ▶ Impaired motor control
- ▶ Impaired short term memory
- ▶ Dry mouth
- ▶ Red eyes

Comparing side effects

Aripiprazole (Abilify®)

- ▶ Difficulty with speaking; drooling; loss of balance control; muscle trembling, jerking, or stiffness; restlessness; shuffling walk; stiffness of the limbs; twisting movements of the body; uncontrolled movements, especially of the face, neck, and back
- ▶ *Less common* Blurred vision; dizziness; headache; inability to move the eyes; increased blinking or spasms of the eyelid; nervousness; pounding in the ears; slow or fast heartbeat; sticking out the tongue; trouble with breathing or swallowing; unusual facial expressions; *Rare* Convulsions; fast heartbeat; high fever; high or low blood pressure; increased sweating; lip smacking or puckering; loss of bladder control; muscle spasm or jerking of all extremities; puffing of the cheeks; rapid or worm-like movements of the tongue; severe muscle stiffness; sudden loss of consciousness; tiredness; uncontrolled chewing movements; uncontrolled movements of the arms and legs; unusually pale skin

Cannabis

- ▶ Euphoria
- ▶ Anxiety/paranoia
- ▶ Increased heart rate
- ▶ Dizziness (low b.p.)
- ▶ Impaired motor control
- ▶ Impaired short term memory
- ▶ Dry mouth
- ▶ Red eyes

Comparing side effects

Sildenafil (Viagra®)

- ▶ *Call physician immediately:* Bladder pain; burning feeling in the chest or stomach; burning, crawling, itching, numbness, prickling, "pins and needles", or tingling feelings; cloudy or bloody urine; dizziness; increased frequency of urination; indigestion; pain on urination; stomach upset; tenderness in the stomach area
- ▶ Aches or pains in the muscles; bloody nose; diarrhea; difficult or labored breathing; flushing; headache; pain or tenderness around the eyes and cheekbones; redness of the skin; sneezing; stomach discomfort following meals; stuffy or runny nose; trouble sleeping; unusually warm skin
- ▶ *Rare:* Abdominal or stomach pain; abnormal dreams; anxiety; clumsiness or unsteadiness; cough; diarrhea or stomach cramps (severe or continuing); difficulty in swallowing; ear pain; increased amount of saliva; increased skin sensitivity; lack of coordination; loss of bladder control; mental depression; nausea; numbness or tingling of the hands, legs, or feet; rectal bleeding; redness or irritation of the tongue; redness, soreness, swelling, or bleeding of the gums; ringing or buzzing in the ears; sensation of motion, usually whirling, either of one's self or of one's surroundings; sexual problems in men (continuing), including failure to experience a sexual orgasm; sleepiness; sores in the mouth and on the lips; tense muscles; trembling and shaking; vomiting; waking to urinate at night; worsening of asthma

Cannabis

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Using Cannabis: Methods & Duration



Onset: 0-10 minutes; Duration: 1-4 hours

Benefits: Vaporizing; easy to self-titrate; immediate relief. Concerns: Odor; throat/lung irritation (smoking); short duration.



Onset: 30-120 minutes; Duration: 4-10 hours

Benefits: Discreet; variety of forms/flavors; long-lasting relief. Concerns: Determining appropriate dosage; easy to overdo.



Onset: 10-45 minutes; Duration: 2-6 hours

Benefits: Non-psychoactive; discreet. Concerns: Placebo effect.

Policy & Practice Recommendations

Considerations and suggestions for care providers

Considerations for Care Providers

- ▶ Stigma and stereotypes
- ▶ Incoming resident who already uses medical cannabis
- ▶ Existing resident who wishes to become certified
- ▶ Non-verbal patients
- ▶ Self-titration
- ▶ Storage
- ▶ Administration
- ▶ Record-keeping
- ▶ No insurance coverage
- ▶ Fear of federal interference



Step 1: Therapeutic Cannabis Fits Your Mission Statement

Safe, natural, palliative, empowering, and already in wide use. Begin with a statement that affirms this, removes stigma.



Inexpensive storage boxes with bicycle-chain-style anchor lanyard.

Step 2: Address Storage and Administrative Tracking

Although Schedule I, much closer to Schedule V or OTC drugs. Storage and tracking requirements should reflect this.



Israeli nursing home patient Pahiya Tacho shows the cannabis capsules she takes for chronic pain.

Step 3: Determine Approved Methods and Location of Use

Facility may allow non-smoked forms. Where can a patient vaporize?



A caregiver injects cannabis tincture into the feeding tube of an Israeli nursing home resident, 2011. Source: www.examiner.com

Step 4: Plan for Special Circumstances

What is policy for non-responsive patient? Who can a patient or family member speak with about concerns or program suggestions?

Policy and Practice

- ▶ Goal - Address one major symptom at a time and minimize drug-drug interactions and side effects.
- ▶ Strategy - Choose a symptom (agitation), choose a delivery mode of cannabis, storage, dispensing, dosing process.
- ▶ Operation - Record, review, assess, adapt, compare.
- ▶ Outcome - Knowledge, skill, social/medical advancement.

Looking back...

- ▶ Reviewed history of cannabis
- ▶ Reviewed therapeutic usefulness
- ▶ Explored other countries and their social/political issues
- ▶ Reviewed Risk/Benefits
- ▶ Reviewed Maine Laws and evolving changes in US
- ▶ Reviewed strategy and plan for applying this presentation



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Thank you for your valuable
time and attention!

Any questions?