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.

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 Muskika. Photo: Paul Wellman

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

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

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

Source:
Promising Studies

2006: Eubanks et al
In vitro study

“Δ9-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 Aβ protein aggregation, treating both symptoms and progression of AD

Promising Studies

2014: Cao et al
In vitro study

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

- THC interacts directly with Aβ 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
- Lows 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

Cannabis

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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; check 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

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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

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Sildenafil (Viagra®)
- Call physician immediately: Bladder pain; burning feeling in the chest or stomach; burning, stinging, or pain when urinating; blood in urine; chest pain or discomfort; chills; coughing up blood; dizziness or fainting; fast heart rate; feeling of短 duration.
- Aches or pains in the muscles; bloody nose; diarrhea; difficulty in swallowing; earache; fever; headache; hives; lightheadedness; loss of appetite; redness of the skin; severe or continuing headache; swelling of the mouth; troubled sleeping; unusual warmth skin
- Rare: Abdominal or stomach pain; abnormal dreams; anxiety; clumsiness or unsteadiness; cough; diarrhea or stomach cramps (severe or continuing); difficulty in swallowing; eye pain; increased appetite; liver function test abnormal; lack of coordination; loss of bladder control; mental depression; nausea; numbness or tingling of the hands, legs, or feet; mental or emotional upset; 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; sleeping problems; trembles or shaking; vomiting; waking to urinate at night; worsening of asthma

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

Policy & Practice Recommendations

Considerations and suggestions 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.

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.

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

Step 3: Determine Approved Methods and Location of Use
Facility may allow non-smoked forms. Where can a patient vaporize?

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

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?

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

References for Further Review


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Thank you for your valuable time and attention!

Any questions?