Medical Cannabis 101

The Practical Application of Cannabinoids in Primary Care
Speaker Disclosure

Dr. McKenzie has disclosed that he has no actual or potential conflict of interest in relation to this topic.
Learning Objectives

By the end of this educational activity, the learner should be better able to:

» Discuss the history of cannabis use in medical practice.
» Comprehend the endocannabinoid system and its role in the disease process.
» Appropriately choose the utilization of cannabis and the endocannabinoid System to the outpatient clinical setting.
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- Residency: Univ. of Oklahoma Southwest Oklahoma Family Practice Residency Program Lawton, Oklahoma
- Board Certified Family Physician in Private Practice; Hallandale Beach, Florida
- One of the first Physicians in FL certified to recommend cannabinoids for qualified patients in Florida’s medical cannabis program that began in 2015
- Diplomate of the American Academy of Cannabinoid Medicine
- Member of the Society of Cannabis Clinicians
- Member of the International Cannabinoid Research Society
Definitions and Disclaimers

EVERYTHING I am telling you in this presentation (with the exception of certain FDA-approved medications currently on the market) is OFF-LABEL, i.e. NOT FDA-Approved.
Definitions and Disclaimers

The DEFINITION of Medical Cannabis:
ANY combination/ratio of cannabinoids, terpenes, and flavonoids administered via different delivery methods, the purpose of which is to exert a specific therapeutic effect.

Because of this, we cannot view/treat it the same way as the single-agent therapeutic agents we were trained on.
• Cannabis is NOT a single agent that can be treated in the same way as many of our common medicines that we prescribe (ex. Metformin).

• Its HETEROGENEITY and PLEIOTROPY precludes us from treating it as a single patented molecular entity with a narrow set of defined indications.
Definitions and Disclaimers

**CANNABINOID(S)** can refer to any molecular compound, whether it be plant-based (Phytocannabinoids like THC, CBD, THC-A, CBD-A), endogenously produced (Anandamide, 2-AG), or synthesized (Marinol, Cesamet, Rimonabant) that specifically interact with our **ENDOCANNABINOID SYSTEM**
• Δ-9-Tetrahydrocannabinol (THC)

• Cannabidiol (CBD)

• Tetrahydrocannabinolic Acid (THCA)

• Tetrohydrocannabivarin (THCV) 
  (Currently being studied by GW Pharmaceuticals as an anti-diabetic drug)

• Cannabinol (CBN)

• Cannibigerol (CBG)

• Cannabichromene (CBC)
Definitions and Disclaimers

**Terpenes** are organic compounds produced by the cannabis plant as well as other plant species, that give cannabis its unique smell

• They also act synergistically with cannabinoids for enhanced effect
Myrcene

- Found in high concentrations in mangoes, hops.
- Known for having a sedative effect as well as an analgesic effect.
- Old “hippie trick”: Ingest a ripe mango 45 min prior to cannabis smoking to enhance/prolong the high.
- Indica strains that are more sedating will have more myrcene than sativa strains.
Limonene

- Found in the rinds of citrus fruits.
- Associated with mood elevation, stress relief.
- Gives the cannabis bud a fruity smell.
α-Pinene

• Found in Pine Trees

• Proposed physiologic effects include: alertness, bronchodilation
Linalool

• Found in Lavender, Citrus, and Laurel
• Said to be anxiolytic, sedating
Definitions and Disclaimers

**Flavonoids** are phytonutrients responsible for the unique colors seen in different cannabis strains.

They also exert physiologic action of as part of the “Entourage Effect” with cannabinoids and terpenes.
Examples of Flavonoids

• Cannaflavin A, B, and C (A & B inhibit Prostaglandin E2 in vitro)
• Quercetin - Considered to be an antioxidant
• Kaempferol - Considered an antioxidant
• Apigenin - Currently studied for its effect on neuroinflammation in Alzheimer's.
• Dr. Raphael Mechoulam (b. 1930)

• PhD Biochemist affiliated with Hebrew University in Jerusalem.

• Started doing research on Cannabinoids from confiscated Hashish in the early 1960s.

• 1964 - Isolated the compound we all know as $\Delta^9$-tetrahydrocannabinol (THC) which is the chemical responsible for the “high” in Cannabis

• Elucidated the chemical structure of THC and CBD as well as other cannabinoids.

• Isolated the G-Protein-Coupled receptor to which phytocannabinoids bind to (CB1 in 1990, CB2 in 1993).

• Identified the naturally-occurring cannabinoids produced by the human body (Anandamide and 2-AG) as well as the enzyme that breaks it down (FAAH and MAGL respectively).

• The physiologic system encompassing all these interactions between these different compounds and receptors are what known as the **ENDOCANNABINOID SYSTEM**.
<table>
<thead>
<tr>
<th>Schedule</th>
<th>Definition</th>
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| Schedule I Drugs | - High potential for abuse  
- No currently accepted medical use in the U.S.  
- Lack of accepted safety for use of the drug under medical supervision |
| Schedule II Drugs | - High potential for abuse  
- Currently accepted medical use in the U.S.  
- Abuse may lead to severe psychological or physical dependence |
| Schedule III Drugs | - Potential for abuse less than schedule I and II drugs  
- Currently accepted medical use in the U.S.  
- Abuse may lead to moderate or low physical dependence or high psychological dependence |
| Schedule IV Drugs | - Lower potential for abuse less than schedule III drugs  
- Currently accepted medical use in the U.S.  
- Abuse may lead to limited physical or psychological dependence relative to schedule III substances |
| Schedule V Drugs | - Low potential for abuse relative to schedule IV substances  
- Currently accepted medical use in the U.S.  
- Abuse may lead to limited physical or psychological dependence relative to schedule IV substances |
The Endocannabinoid System (ECS)

• Not taught in medical school physiology.
• We are still finding out new things about this system.
• Receptors and ligands are found in mammals, birds, reptiles, amphibians, fish, and even down to the Sea Squirt.
• No receptors found in insects.
• Purpose of the ECS => MAINTENANCE OF HOMEOSTASIS (i.e. Eat, Sleep, Relax, Protect, Forget)
Naturally Occurring Endogenous Cannabinoids

- **Anandamide (AEA)** - Discovered by Mechoulam, et al. in 1992. Broken down by the enzyme FAAH

- **2-Arachodonyl Glycerol (2-AG)** - Discovered by Mechoulam, et al. in 1995. Broken down by the enzyme MAGL

- Human beings first exposure to exogenous cannabinoid compounds occur during BREASTFEEDING, as breast milk has 2-AG
Cannabinoid Receptors

CB1

• Isolated and cloned in 1990
• Expressed mainly in the central nervous system
• Found presynaptically in both GABAergic and Glutaminergic interneurons
• Serves as neuromodulator to inhibit the release of Glutamate and GABA
Cannabinoid Receptors (Cont.)

CB2

- Isolated and cloned in 1993

- Expressed mainly in the peripheral tissue, CNS, immune system (mediates cytokine release)
Cannabinoid Receptors (Cont.)

TRPV1 Receptor (CB3 ??)

- Transient Receptor Potential Cation Channel Subfamily V member 1

- Purpose if this receptor:
  - Detect and regulate body temperature
  - Nociception
  - Sensation of heat and pain
  - This is NOT constant/static
  - Sensitivity is ↑ by tissue damage and subsequent cytokine-mediated inflammation (PGs and Bradykinin)
  - Sensitivity is ↓ by prolonged exposure to agonists such as Capsaicin, Anandamide, and Cannabidiol (CBD)

- Plays role in neuropathic pain
Anatomy, Physiology, Biochemistry, and Therapeutics of Cannabis
The Female Cannabis Plant

- node
- stem
- fan leaves

- cola
- pistils
- calyx
- sugar leaf
- seed
- stem
The Male Cannabis Plant
3 Basic Phenotypes of Cannabis

- Tend to grow quite tall (5’-20’)
- Leaves tend to be long and thin
- More suitable for outdoor grow
- Effects are generally characterized as: stimulating, uplifting
- Very potent strains can also be associated with increased anxiety, paranoia, and in some cases psychosis
- Therapeutic Benefit: Depression, ADHD, Fatigue
• Tend to grow shorter than Sativas
• Leaves tend to be short and fat
• More suitable for indoor grow
• Effects are generally characterized as: sedating, relaxing, hence the nickname (Indica=“In da couch”)
• Therapeutic benefit: Anxiety, Insomnia, PTSD
• Genetic mixture between Indica and Sativa

• Can have Indica-Dominant or Sativa-Dominant Hybrids

• Effects on patients can vary
How Does THC Work??

• THC is a partial agonist of the CB1 and CB2 receptor

• Decreases concentration of second messenger molecule cAMP via inhibition of Adenylate Cyclase

• Alters intracellular signaling which have multiple sequelae:
  • Alters neurotransmitter, interleukin, and cytokine production/release
  • Alters the cellular reproduction cycle which in SOME cases can result in cellular APOPTOSIS (Programmed cell death/suicide) - Important when dealing with malignancies
How Does Cannabidiol (CBD) Work??

- CBD has a WEAK affinity for the CB1 and CB2 receptors
- Antagonizes GPR55 Receptor
- Partial Agonist of 5HT1a Receptor (accounts for antidepressant, anxiolytic, and neuroprotective properties of CBD)
- Allosteric modulator of $\mu$ and $\delta$ opioid receptors (accounts for CBDs role in pain treatment)
- Agonist to the PPAR-$\gamma$ receptor (partially accounts for its role in treating different tumors)
- Inhibits FAAH (the enzyme that breaks down Anandamide)
- Activates and desensitizes TRPV1 receptor (accounts for its role in neuropathy and seizures)
- Inhibits transmission of glutamate in glutaminergic neurons (Accounts for its role in seizure treatment)
How Does Cannabidiol (CBD) Work??

• The first major clinical trial involving CBD (Epidiolex-99% CBD) has been done by Dr. Orin Devinsky at NYU (sponsored by GW Pharmaceuticals)

• In an open label study of 214 patients, seizures decreased on average of 54%

• Double-Blind Placebo-Controlled Study using Epidiolex for patients with Lennox-Gasteau Syndrome showed seizure reduction of over 40% compared to 20% for placebo

• Double-Blind Placebo-Controlled Study using Epidiolex for patients with Dravet’s Syndrome showed seizure reduction of over 40% compared to 17% for placebo

• Epidiolex is approved by the FDA at an estimated cost of $32,000 per year

• It is made of 99% plant-derived CBD with alcohol, sesame oil, sucralose, and strawberry flavor. No other cannabinoids. Terpenes, or flavonoids.

• One challenge is the “Honeymoon Period” where seizures do decrease, however, after a period of time, the effects wane, and the seizures start coming back
Therapeutic Application of Cannabinoid Therapy

Nausea in Chemotherapy

• 2 phases: A) Immediate Phase
  B) Delayed Phase

• Involve multiple neurotransmitters in BOTH the brainstem and GI tract
  • Dopamine (Via D2 Receptors) (Associated drug: Compazine)
  • Serotonin (5-HT3 receptors) (Associated drug: Zofran)
  • Substance P - Binds to Neurokinin 1, 2, and 3 receptors (NK-1, NK-2, NK-3) (Associated drug: Aprepitant)
  • Prostaglandins (associated drug: Dexamethasone)
  • Arachidonic Acid-Derived Metabolites
Therapeutic Application of Cannabinoids

Nausea in Chemotherapy (Cont.)

- Current FDA-Approved Cannabinoids in use:
  - Marinol (Dronabinol)
    - Synthetic THC
    - Available as capsules
    - VERY expensive (> $200 per month)
  - Cesamet (Nabilone)
    - Synthetic ANALOGUE of THC
    - 10x MORE expensive than Marinol
  - Syndros (Dronabinol) - Newly approved drug by Insys Pharmaceuticals
    - Synthetic THC in liquid form (5mg/ml)
    - VERY Expensive (60ml bottle = $2100.00)
Therapeutic Application of Cannabinoids - Seizure Disorder

- Use of Cannabis to treat seizure disorder goes all the way back to ancient times.

- Gained worldwide attention a few years ago with the CNN special documentary “Weed” by Sanjay Gupta.

- The attention garnered by the segment resulted in a mass migration of sorts to Colorado of desperate families who have tried and failed multiple prescription drugs for epilepsy.

- Many states have passed CBD-Only laws allowing for oil that has <0.8% THC and >10% CBD to be recommended by physicians to treat seizure disorder.

- These laws, although well-intentioned, is quite limiting to patients as there are cases that require increased amounts of THC.
Therapeutic Application of Cannabinoids - PAIN

• CB1 and CB2 receptors are found along the pain circuit from the sensory nerve endings, along the spinothalamic tract, the periaqueductal gray matter, and up to the brain.

• CB1 and CB2 receptors are also found on non-neuronal cells (ex. Mast Cells). These cells play a role in pain by releasing pro-inflammatory factors.

• Cannabinoids modulate pain by inhibiting neurotransmission along the pain tracts.

• BOTH THC and CBD are used in pain control. Ratios and doses WILL vary with each patient depending on factors such as: Age, prior exposure, genetics, etc.
Therapeutic Application of Cannabinoids - Autoimmune Disorders

(ex. Multiple Sclerosis, Inflammatory Bowel Disease)

• Mostly related to Cannabinoids action on CB2 receptors found on immune cells

• Main actions of cannabinoids:
  1- Inhibit proliferation of Leukocytes
  2- Induce cellular apoptosis of T-Cells and Macrophages
  3- Inhibit production of pro-inflammatory cytokines
  4- Induction of regulatory T-Cells
  5- Modulating cytokine release
Cancer/Malignancies

- NOT a single solitary entity but a FAMILY of disease states
- The FIRST published study that showed antitumor effects of THC was in 1974 at the Medical College of Virginia using in vitro and in vivo (mice) techniques.
- Lewis Lung Adenocarcinoma growth was inhibited by oral administration of THC, but NOT Cannabidiol (CBD)
  - Main mechanisms elucidated by numerous studies:
    - Induction of cellular apoptosis
    - Interrupting key parts of the cellular reproduction cycle
    - Acts on the genes by inhibiting transcription of certain proteins vital for cellular proliferation
    - Inhibiting angiogenesis
Therapeutic Application of Cannabinoids - Malignancies

Cancer/Malignancies (CONT)

- Dr. Sean McAllister at the California Pacific Research Institute (CPRI) has been doing research on cannabinoids and different tumor lines, mainly Breast and Glioma

- A couple of studies focus on ID1 (Inhibitor of DNA Binding-1) which is a protein whose function is to inhibit the helix-loop-helix transcription factors.

- ID1 also plays a role in the metastatic potential of breast and glioma cells

- CBD DOWNREGULATES ID1 expression in Aggressive breast cancer cells and glioma cells

- Fact of the matter is that we still do NOT have any good quality clinical trials to show that Cannabinoids reduce morbidity and mortality in patients with malignancies

- The ultimate challenge before us is how do we PROPERLY WEAPONIZE cannabinoids to achieve the best outcome for patients.
Dosing Strategies and Therapeutic Approaches

Delivery Methods: SMOKING/VAPORIZATION

Pros: Fast Acting, good bioavailability

Cons: Not very efficient, Short duration, respiratory irritant

Vaporization:
Pros: Fast Acting, more efficient, Micro-dosing

Cons: Short duration, respiratory irritant, oil can gum up
  • Additives (Vit E Acetate) can cause pulmonary injury
Dosing Strategies and Therapeutic Approaches

Delivery Methods: VAPORIZATION via VOLCANO

Pros-Can vaporize cannabinoids, terpenes, and flavonoids for the full entourage effect at a lower temperature

Cons-EXPENSIVE. Avg cost is approx $500-$600
Dosing Strategies and Therapeutic Approaches

Capsules:

Pro-easy to take, longer acting

Con-Bioavailability - Generally low (approx. 20%), but may have advantage in IBD
Dosing Strategies and Therapeutic Approaches

Sublingual Oil/Tinctures:

Pro-Greater Bioavailability, Easy to dose

Con-Takes longer to kick in, Taste
Dosing Strategies and Therapeutic Approaches

Suppositories:

Pro - May be able to act locally on the rectal mucosa (ex. Proctitis)
  • Can also be formulated for intravaginal use (ex. Pelvic pain, Dysmenorrhea)

Con - POOR Bioavailability in the rectum
Dosing Strategies and Therapeutic Approaches

Concentrates:

Pro - Can deliver a higher dose for patients needing it
  - Can also be dissolved in coconut oil and made into edibles

Con - Very strong and should only be used by experienced users
  - Risk of taking too much if not careful (esp. elderly patients)
Dosing Strategies and Therapeutic Approaches

Edibles:

Pro - Easier to consume due to better taste

Con - Variable/Low Bioavailability
- Inconsistent distribution of the cannabis/butter/oil combination
- Caution in elderly (Δ-9-THC → 11-OH-THC in liver)
Dosing Strategies and Therapeutic Approaches

Topical:

Pro - Can act directly on the site of pain without much systemic absorption

Con - Doesn’t work for everyone
Dosing Considerations:

- Age of the patient
- Prior cannabis experience of the patient ("Doobie Scale" rating of 1-4)
- Condition you are treating
- Treatment Goals
- Vehicle/Delivery Method

The Doobie Scale (credited to Dr. Barry Gordon, Compassionate Cannabis Clinic, Venice, FL)

- Doobie-1 = Inexperienced, naive user. Never been exposed to it.
- Doobie-2 = Used it back in High School/College, but not since.
- Doobie-3 = Weekend Warrior. Does not use during work week, only on weekends to relax.
- Doobie-4 = Chronic DAILY user.
Sample Clinical Cases in Cannabinoid Therapeutics

Patient-1: Miss Oleta (The Church Mother)

- 80 y/o Female with DMII and Diabetic Neuropathy affecting her legs and feet
- On Metformin and Insulin for Diabetes and has tried the conventional therapies for neuropathy (Gabapentin, Lyrica, Cymbalta etc.) which have not helped

- Doobie-1

- My approach would be to start with 2.5mg of a 1:1 THC:CBD oil/tincture (INDICA) SUBLINGUAL TID and titrate up to effect.

- Also OK to use a topical THC cream applied to the legs and feet
Sample Clinical Cases in Cannabinoid Therapeutics (Cont.)

Patient-2: Rita M. (Paralegal)

- 45 y/o female with chronic pain “all over” for the past 2 years
- After a thorough workup to rule out various pathologies, she is diagnosed with Fibromyalgia
- Has been tried on Gabapentin, Cymbalta, Lyrica, and Savella with no relief.
- Eagerly wants to avoid narcotics because of fear of addiction.
- She also has insomnia, and the chronic pain has made her depressed
- Doobie-2 (Tried it in high school, but has not used it since)

- My approach would be to start with 5-10mg of a THC oil/tincture (INDICA) at NIGHT to assist with sleep then 5-10mg of a THC oil/tincture (SATIVA or Hybrid) for daytime use.
- Also OK to use a vaporization pen (Sativa or Hybrid) to microdose for breakthrough pain.
- Maintaining a pain journal is an important component of treatment follow-up.
Sample Clinical Cases in Cannabinoid Therapeutics (Cont.)

Patient-3: Joe B. (Military Veteran)

- 42 y/o Army Iraq/Afghanistan Vet with PTSD, Anxiety, Insomnia
- Has been tried on Benzodiazepines, SSRIs, Lunesta, and Ambien by the VA, but it is not helping him.
- Doobie-4 (Been using cannabis daily ever since he got out of the army)
- My approach would be to start with 10-20mg of a THC oil/tincture (INDIC NO SATIVA) TID
- Titrate up/down to effect.
- Also OK to use a vaporizer with THC Oil (Indica) to microdose for breakthrough anxiety and to aid in sleep
Sample Clinical Cases in Cannabinoid Therapeutics (Cont.)

Patient-4: Sasha D (17-month old child)

- Diagnosed with NF-Type-1 and Bilateral Optic Glioma
- Receiving Chemotherapy WITHOUT radiation
- Doobie-1
- Goals of treatment discussed with parents

- My approach would be to start with a tiny drop of a 1:1 THC:CBD concentrate about the size of a grain of rice and SLOWLY (over a 2-3-month period) titrate upward to achieve a goal daily dose of 300mg of BOTH THC and CBD in divided doses.

- Obtain MRI of the brain every 3 months and maintain lines of communication with her Pediatric Oncologist
Sample Clinical Cases in Cannabinoid Therapeutics (Cont.)

Patient-5: Billie W (5-year-old child)

- Diagnosed with seizure disorder at age 3
- Has approx 20-30 seizures/day
- Has been on Valproic Acid, Phenytoin previously and is now on Clobazam with only partial success
- Parents are concerned because nothing seemed to work well, and they are afraid of SUDEP which claimed the life of an acquaintance’s child who had similar seizures as well
- Doobie-1

My approach: Start CBD Sublingual oil/tincture at 5mg/kg/d in divided doses X 1 week
- Then increase to 10mg/kg/d in divided doses
- Increase by 5mg/Kg/day each week to a max of 20mg/kg/day in divided doses.
- Monitor seizure frequency
- Check serum levels of co-administered AEDs like Valproic Acid and Clobazam as well as LFTs
- If not achieving the desired results, or if the effects start to wane, one can add in small doses of THC or THCA and titrate upward to effect.
Warnings/Adverse Effects/Contraindications/Precautions

• Psychomotor impairment - DO NOT DRIVE or operate heavy machinery if impaired

• Worsening Anxiety (possible psychosis). Usually seen with high dose of SATIVAS.
  • Remedy- Stick to Indicas, Balance it with CBD

• Cannabis Hyperemesis Syndrome
  • Remedy- HOT shower/bath. Discontinue cannabis usage.

• “Overdose”/Accidental ingestion
  • Reason for ER visits, especially by youth, and sometimes elderly
  • Usually involves edibles
  • Failure to gauge dose properly
  • Main symptom = altered Mental Status, hallucinations, euphoria
  • Risk of respiratory depression/death...ZERO!!!
  • Remedy - Place the patient in a room. Feed & hydrate. Wait for it to wear off.
  • To accelerate the process of the patient “coming down” from their high, give the patient some BLACK PEPPER (either peppercorns to chew on) or dissolve some black pepper in a cup of water, then swish/swallow.
Warnings/Adverse Effects/Contraindications/Precautions

- “Addiction”/”Dependency”/Abuse/Cannabis Use Disorder (CUD)
  - Controversial issue and somewhat polarizing.
  - The answer is based on where someone’s vested interest lies.
  - If youth use is found, get to the ROOT of the matter as to WHY this youth chose to “self-treat” before labeling them as an “addict” with CUD
  - Psychiatric pathologies CAN exist in young kids and often go undetected
  - We all know that ACCESS to mental health care, esp. for children is quite challenging throughout the US IRRESPECTIVE of insurance status (COVERAGE ≠ ACCESS)
  - Lack of access results in children/adolescents SELF-TREATING with BLACK MARKET products.
  - Important to be vigilant and use the proper screening tools (PHQ9) at each school physical
  - If you detect anything, initiate the proper referral to the appropriate specialist.
Warnings/Adverse Effects/Contraindications/Precautions

• Immunotherapy for certain malignancies:
  • Cannabinoids CAN interfere with immunotherapy
  • AVOID cannabinoids if the patient is using immunotherapy.

• Cytochrome P450 issues:
  • Cannabinoids like THC and CBD CAN interact with our CYP450 system especially if taken ORALLY
  • Can affect the metabolism of AEDs like Depakote, Clobazam, etc.
  • If patient is taking AEDs and starts cannabinoids, GET DRUG LEVELS, and adjust dose of AED accordingly.

• Allergies:
  • Some patient can have allergies to the many terpenes found in cannabis.
  • Ex: Pine tree allergy may produce a reaction to cannabis containing α-Pinene

• Remedy - KNOW the content of what you are buying. Check Labels.
Current Challenges

Cannabis’ Schedule I Status

• Huge impediment to research outside of a very narrow scope
• Prevents cannabinoids from being researched.
• ALL major medical societies (AMA, AAP, AAFP) call for a DESCHEDULING of Cannabis so that more research can be done and so we can get higher quality clinical trials.
Current Challenges (Cont.)

Industries with a vested interest in the status quo:
• Certain Pharmaceutical companies (ex. Insys, Purdue, GW) [a.k.a. OLD money]
  Alcohol & Beverage Industry [a.k.a. LONG money]
• The Private Prison industry and LEOs [a.k.a. BIG money]
• The Narcotic Rehab Industry [a.k.a. NEW money]

The ULTIMATE Catch-22
• As long as Cannabis is Schedule I, we cannot conduct good clinical trials or get FDA approval
• Pharmaceutical companies generally want to research patentable isolated single agent compounds. Cannabis does not fit that mold. How can you patent a 5000-year-old plant that has thousands of strains? (Remember HETEROGENEITY & PLEIOTROPY)
• Medications that are far more abused, habit-forming and have resulted in PATIENT DEATHS are categorized at lower schedules (Xanax C-IV, Adderall C-II, Oxycontin CII, Percocet C-II, Methamphetamine (Dezoxyn) C-II) than Cannabis.

• Number of deaths attributed to Cannabis...ZERO!!
Current Challenges (Cont.)

The ONDCP Reauthorization Act of 1998

TITLE VII OFFICE OF NATIONAL DRUG CONTROL POLICY REAUTHORIZATION ACT
OF 1998: H11225

(b) Responsibilities. - The Director - (A.K.A. the “Drug Czar”)

(12) shall ensure that no Federal funds appropriated to the Office of National
Drug Control Policy shall be expended for any study or contract relating to the
legalization (for a medical use or any other use) of a substance listed in
schedule I of section 202 of the Controlled Substances Act (21 U.S.C. 812) and
take such actions as necessary to oppose any attempt to legalize the use of a
substance (in any form) that-- (A) is listed in schedule I of section 202 of the
Controlled Substances Act (21 U.S.C. 812); and (B) has not been approved for
use for medical purposes by the Food and Drug Administration
Surprising factoids about Cannabis that you may not be aware of
Coy Waller Laboratory Complex at the University of Mississippi

- The Federal Governments only cannabis farm
- Started in 1968
The Compassionate Investigation New Drug Program

- Existed from 1978-1992
- Started as a lawsuit Randall vs. US
- Robert Randall was a glaucoma patient who was growing cannabis for his own use.
- At its peak, the government had 30 active patients.
- Of the original patients, 3 are still alive, but only 2 of the 3 continue to get cannabis cigarettes from the US government every month.
Irvin Rosenfeld

Diagnosis: Multiple Congenital Cartilaginous Exostoses

Elvy Musikka

Diagnosis: Glaucoma
George McMahon

Diagnosis: Nail Patella Syndrome
The US government has a PATENT (since 2001) on Cannabinoids as "Neuroprotectants and Antioxidants", yet still lists cannabis as "Schedule I" meaning no acceptable medical use and high potential for abuse. 

**Patent # 6630507**
Recommended Reading

Cannabis Pharmacy
The Practical Guide to Medical Marijuana
Authoritative, evidence-based information, plus advice on treating dozens of ailments and conditions
Michael Backes
Foreword by Andrew Weil, M.D.

Medical Cannabis
What Clinicians Need to Know and Why
GREGORY L. SMITH, MD, MPH

Handbook of Cannabis Therapeutics
From Bench To Bedside
ETHAN B. RUSSO, MD
FRANJO Grotenhermen, MD
Editors
Supportive Organizations

The American Academy of Cannabinoid Medicine
http://www.aacmsite.org

The Society of Cannabis Clinicians
http://www.cannabisclinicians.org

The International Cannabinoid Research Society
http://icrs.co
The End