

PHAR449

Combatting Chemical Dependency: A Community Effort

Marijuana Legalization: Is the Grass Really Greener on the Other Side?
September 9, 2015

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Co-founder Ohio Hemp Chamber of Commerce & the Ohio Hemp Industries Association State Chapter.
Serves on Cannabinoid Committee of the Hemp Industries Association

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Objectives

By the end of the class, participants will be able to

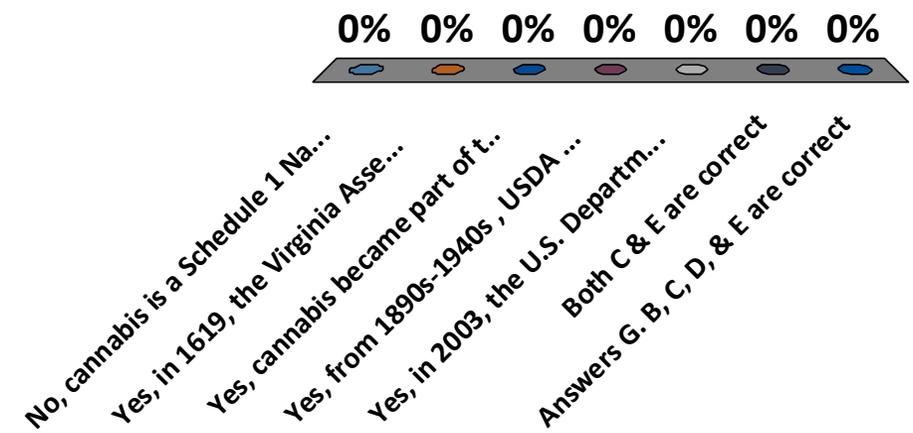
- Understand the historical context of cannabis prohibition in the U.S.
- Understand the root causes of addictive behavior.
- Identify at least three primary responsibilities of the state-appointed Marijuana Control Commission if Issue 3 were to pass.
- Compare and contrast each presenter's perspective on substance abuse, especially as it relates to medical and recreational cannabis/marijuana use.
- Identify conditions for which medical cannabis may be used, as defined by existing state laws.
- Discuss at least three issues faced by patients, prescribers, the public and law enforcement as they relate to use of medical cannabis.
- Discuss at least one reason for opposition to Issue 3.
- Provide at least two local implications that may arise should Issue 3 pass in November.
- Describe at least three goals of Issue 3.

Pre-Survey

- Get your clickers ready!

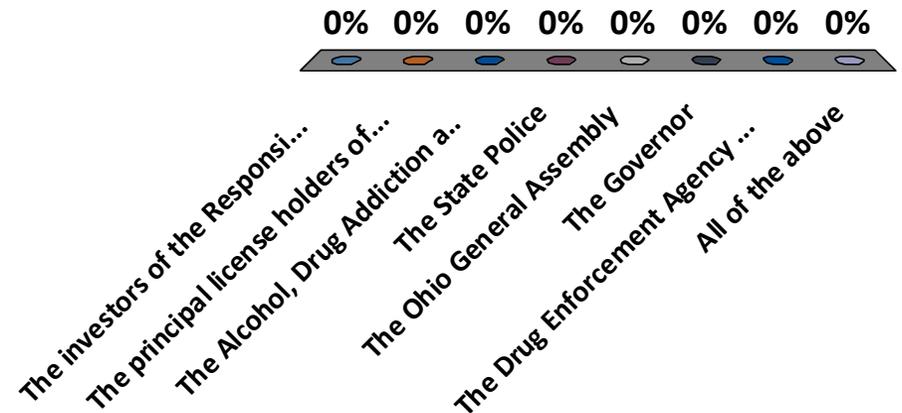
Has the U.S. government ever acknowledged the benefits of cannabis?

- A. No, cannabis is a Schedule 1 Narcotic and has no accepted medical use.
- B. Yes, in 1619, the Virginia Assembly passed a law ordering every colonist to grow cannabis as a valuable resource for the colonies and for export.
- C. Yes, cannabis became part of the United States Pharmacopoeia (U.S.P.) in 1851 but was removed after its prohibition began mid-20th Century.
- D. Yes, from 1890s-1940s , USDA Chief Botanist Lyster Dewey grew cannabis at the current site of the Pentagon and concluded its importance as a renewable resource for paper instead of using wood pulp.
- E. Yes, in 2003, the U.S. Department of Health & Human Services was issued the Patent 6630507: Cannabinoids (found in the cannabis plant) as antioxidants and neuroprotectants.
- F. Both C & E are correct
- G. Answers G. B, C, D, & E are correct



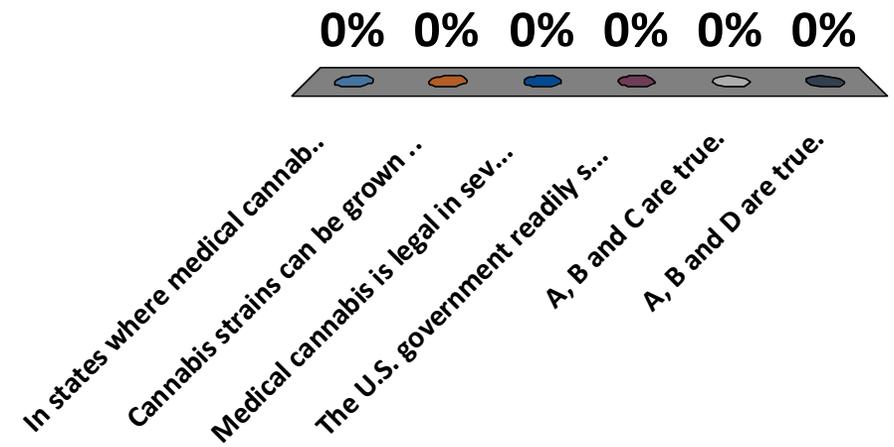
If Issue 3 were to pass, who appoints the regulatory commission to oversee implementation of the law?

- A. The investors of the ResponsibleOhio campaign
- B. The principal license holders of the initial 10 commercial production facilities
- C. The Alcohol, Drug Addiction and Mental Health Services Board
- D. The State Police
- E. The Ohio General Assembly
- F. The Governor
- G. The Drug Enforcement Agency (DEA)
- H. All of the above



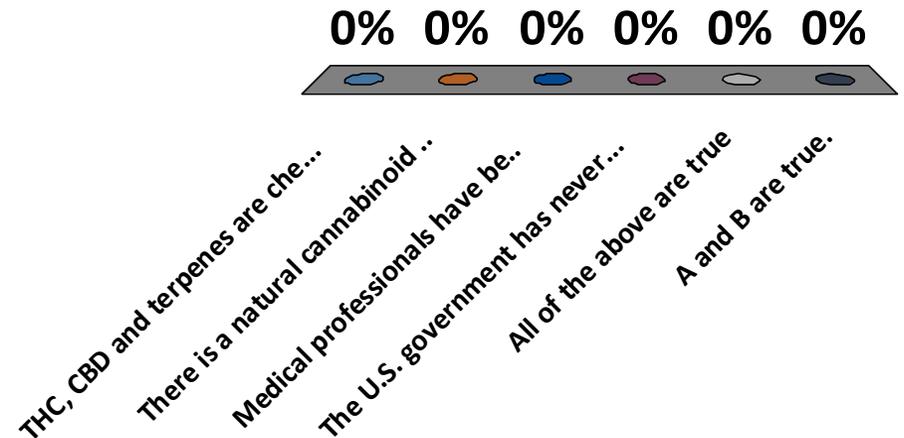
Which of the following statements is/are TRUE?

- A. In states where medical cannabis has been legalized, doctors who recommend or prescribe it are currently breaking federal law.
- B. Cannabis strains can be grown to produce low THC content, which reduce the “high” side effects for patients.
- C. Medical cannabis is legal in several non-U.S. countries, including Israel, Canada, France, Spain and Germany.
- D. The U.S. government readily supports research and well controlled studies of cannabis.
- E. A, B and C are true.
- F. A, B and D are true.



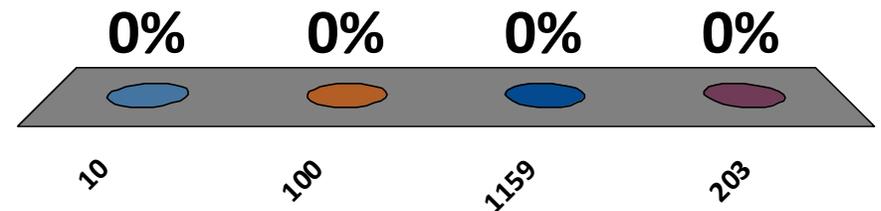
Which of the following statements is/are TRUE?

- A. THC, CBD and terpenes are chemicals in the cannabis plant that have been shown to be medically useful.
- B. There is a natural cannabinoid in humans called anandamide that has effects that are similar to THC.
- C. Medical professionals have been extensively trained about the endocannabinoid system in humans, which was discovered by Mechoulam in the 1980's.
- D. The U.S. government has never endorsed the use of smoking cannabis for medical treatment.
- E. All of the above are true
- F. A and B are true.



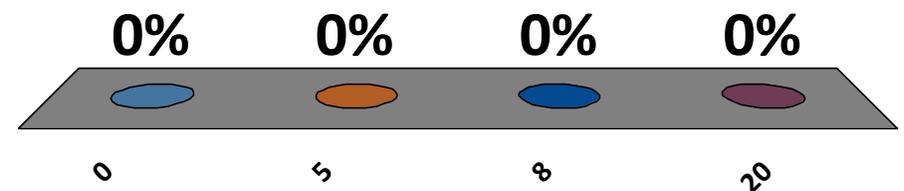
If marijuana becomes legal in Ohio, what is the number of retail marijuana outlet stores that would be permitted to be open for business?

- A. 10
- B. 100
- C. 1159
- D. 203



Consistent use of marijuana during adolescence can cause a reduction in IQ by how many points?

- A. 0
- B. 5
- C. 8
- D. 20



The Compassionate
Truth
About Cannabis

Lauren Berlekamp

Legal difference between Medical Cannabis & Industrial Hemp: THC Content

- Medical Cannabis refers to the use of the cannabis plant and its cannabinoids to treat disease or improve symptoms. Plants are grown horticulturally for the flower and vegetation.
- Industrial Hemp refers to varieties of the cannabis plant and its products, which include fiber (stalk), oil, and seed. Varieties legally required to have <0.3% Tetrahydrocannabinol (THC). Plants grown agriculturally for stalk and seed.
- Both are species *Cannabis Sativa*; Different varieties of subspecies have different cannabinoid profiles. Level of THC determines whether it is considered hemp.

The United States' History of Cannabis

- Hemp Law of 1619 – The Virginia Company, by decree of King James I, ordered every American colonist to grow 100 plants for fiber.*
- In 1776, the Declaration of Independence is drafted on hemp paper.*
- George Washington, Thomas Jefferson and John Adams, our founding fathers, grew hemp and promote its benefits.*
- Based on findings by William O'Shaughnessy, Cannabis enters U.S. Pharmacopoeia, 1851.**
- From 1890s-1940s, USDA Chief Botanist, Lyster Dewey, grows five varieties of hemp at Arlington Farms in Virginia, the current site of the Pentagon. In 1916, published USDA Bulletin No. 404 with findings that hemp produces four times more paper per acre than do trees.

The United States' History of Cannabis

- From 1942-1946, American farmers from Kentucky to Maine to Wisconsin harvest over 150,000 acres of hemp through the USDA's Hemp for Victory program for resources used in WW2.
- In 2003, the United States of America, as represented by the Department of Health and Human Services, was assigned Patent #6630507: Cannabinoids as antioxidants and neuroprotectants.

* <http://hemphistoryweek.com/about/what-is-hemp/>

** <http://antiquecannabisbook.com/Appendix/AppendixC.htm>

*** [USPTO Patent Full Text & Image Database](#)

Prohibition Begins: Marijuana Tax Act of 1937

- President Franklin Roosevelt signed federal legislation that banned cannabis use, production and sales; including for industrial hemp.
- American Medical Association wasn't consulted prior to decision

The Emperor Wears No Clothes, Jack Herer, 12th Edition 2010

Criminalization of Cannabis Highly Politicized

- Hearst
- Anslinger
- Roosevelt
- Nixon
- Reagan
- Bush
- Clinton
- Mandatory minimums, mass incarceration
- Law Enforcement Against Prohibition

Criminalization of Cannabis

Highly Politicized

- William Randolph Hearst – Hearst Paper Manufacturing (Timber, paper, newspaper holdings); Yellow Journalism drove racist fears; *Reefer Madness*
- Harry Anslinger – Chosen to be the first to head the Federal Bureau of Narcotics by Secretary of the Treasury Andrew Mellon under President Herbert Hoover. Held office 1930-1962. Perpetuated racist fears and forbid medical cannabis research.
- Dupont – Nylon, Sulfate/Sulfite Papermaking, Plastics
- F. D. Roosevelt Administration – Marijuana Stamp Act; Hemp For Victory

Criminalization of Cannabis

Highly Politicized

- 1942 – Last time cannabis appears in the U.S.P. (12th Edition)
- Boggs Act of 1951 - first time cannabis possession offense a minimum of two to ten years with a fine up to \$20,000
- Nixon Administration – Controlled Substances Act of 1970 makes cannabis a Sched. 1; Shafer Commission studies cannabis, conclusions ignored
- Ford Administration – Ford, NIDA & DEA banned federal cannabis research; Only pharmaceutical companies allowed to research
- Reagan Administration – Vice President Bush lobbied IRS for tax breaks for pharmaceuticals; Administration sought to destroy all federal cannabis research from 1966-76; DEA Judge Francis Young rules cannabis has medical value. DEA Director John Lawn orders that cannabis remain a Sched. 1; Nancy Reagan's "Just Say No"

Criminalization of Cannabis

Highly Politicized

- H.W. Bush Administration – “War on Drugs” 1989
- Clinton Administration – “Tough on Crime” campaign; Ignores mandatory minimum policy reform recommendations
- The number of people behind bars for nonviolent drug law offenses increased from 50,000 in 1980 to over 400,000 by 1997.

The Emperor Wears No Clothes, Jack Herer, 12th Edition, 2010

<http://www.pbs.org/wgbh/pages/frontline/shows/drugs/cron/>

Law Enforcement Against Prohibition (LEAP)

- Law Enforcement Against Prohibition is an international 501(c) 3 nonprofit organization of criminal justice professionals who bear personal witness to the wasteful futility and harms of our current drug policies.
- LEAP envisions a world in which drug policies work for the benefit of society and keep our communities safer. A system of legalization and regulation will end the violence, better protect human rights, safeguard our children, reduce crime and disease, treat drug abusers as patients, reduce addiction, use tax dollars more efficiently, and restore the public's respect and trust in law enforcement.

Law Enforcement Against Prohibition (LEAP)

- Howard Rahtz has a dual background in drug treatment and drug interdiction, providing him first hand experience with drug enforcement policy. His career in law enforcement spanned 18 years where he rose to the rank of police captain in the Cincinnati police department. His journey in law enforcement and drug rehabilitation is an interesting parallel to the 40 years of the Drug War.

<http://www.leap.cc/about/vision-mission/>

The Likely Cause of Addiction

- *Chasing the Scream: The First and Last Days of the War on Drugs*, Johann Hari
- Sobriety isn't the opposite of addiction. Meaningful human connection is the opposite of addiction. One's quality of life is the determining factor on whether that person feels a need to fill the void with a chemical substance or a habit that triggers a dopamine response. The number of traumatic experiences a person experiences dramatically increases their likelihood of addiction.
- Harm reduction

New Scientific Breakthrough: Endocannabinoid System Discovered

- 1990 - Lisa Matsuda announces that she and her colleagues at the National Institute of Mental Health (NIMH) had pinpointed the exact DNA sequence that encodes a THC-sensitive receptor in the brain.
- During the 1990s, there would be more advances in neuroscience than in all previous years combined.

<http://www.beyondthc.com/wp-content/uploads/2012/07/eCBSystemLee.pdf>

Patent #6630507 - Issued 2003

Assignee: The United States of America as represented by the Department of Health and Human Services

- Cannabinoids as antioxidants and neuroprotectants.
- Cannabinoids have been found to have antioxidant properties, unrelated to NMDA receptor antagonism. This new found property makes cannabinoids useful in the treatment and prophylaxis of wide variety of oxidation associated diseases, such as ischemic, age-related, inflammatory and autoimmune diseases. The cannabinoids are found to have particular application as neuroprotectants, for example in limiting neurological damage following ischemic insults, such as stroke and trauma, or in the treatment of neurodegenerative diseases, such as Alzheimer's disease, Parkinson's disease and HIV dementia. Nonpsychoactive cannabinoids, such as cannabidoil, are particularly advantageous to use because they avoid toxicity that is encountered with psychoactive cannabinoids at high doses useful in the method of the present invention. A particular disclosed class of cannabinoids useful as neuroprotective antioxidants is formula (I) wherein the R group is independently selected from the group consisting of H, CH.sub.3, and COCH.sub.3. ##STR1##

[USPTO Patent Full Text and Image Database](#)

Cannabidiol (CBD)

- Cannabidiol—CBD—is a cannabis compound that has significant medical benefits, but does not make people feel “stoned” and can actually counteract the psychoactivity of THC. The fact that CBD-rich cannabis is non-psychoactive or less psychoactive than THC-dominant strains makes it an appealing option for patients looking for relief from inflammation, pain, anxiety, psychosis, seizures, spasms, and other conditions without disconcerting feelings of lethargy or dysphoria.

Cannabidiol (CBD)

- Scientific and clinical research—much of it sponsored by the US government—underscores CBD’s potential as a treatment for a wide range of conditions, including arthritis, diabetes, alcoholism, MS, chronic pain, schizophrenia, PTSD, depression, antibiotic-resistant infections, epilepsy, and other neurological disorders. CBD has demonstrable neuroprotective and neurogenic effects, and its anti-cancer properties are currently being investigated at several academic research centers in the United States and elsewhere.

<https://www.projectcbd.org/what-cbd>

Oath of a Pharmacist

“At this time, I vow to devote my professional life to the service of all humankind through the profession of pharmacy.

- I will consider the welfare of humanity and relief of human suffering my primary concerns.
- I will apply my knowledge, experience and skills to the best of my ability to assure optimal drug therapy outcomes for the patients I serve.
- I will keep abreast of developments and maintain professional competency in my profession of pharmacy.
- I will maintain the highest principles of moral, ethical and legal conduct.
- I will embrace and advocate change in the profession of pharmacy that improves patient care.

I take these vows voluntarily with the full realization of the responsibility with which I am entrusted by the public.”

American Pharmacy Association (APhA) Policy Statements on Medical Cannabis

- **1. APhA supports regulatory changes to further facilitate clinical research** related to the clinical efficacy and safety associated with the use of cannabis and its various components.
- **2. APhA encourages health care provider education** related to the clinical efficacy, safety, and management of patients using cannabis and its various components.
- **3. APhA advocates that the pharmacist collect and document information** in the pharmacy patient profile about patient use of cannabis and its various components and **provide appropriate patient counseling.**
- **4. APhA supports pharmacist participation in furnishing cannabis** and its various components when scientific data support the legitimate medical use of the products and delivery mechanisms, and federal, state, or territory laws or regulations permit pharmacists to furnish them.
- **5. APhA opposes pharmacist involvement in furnishing cannabis and its various components for recreational use.**

Compassionate Caregivers and the need for Pharmacists

- Compassion Club - Compassion Clubs are simply community-based support groups of patients, caregivers, families and loved ones, local caregiver groups, and the public, who meet regularly to learn and provide mutual support. Compassion Clubs discuss issues effecting medical cannabis community, and promote the open exchange of ideas and information.
- Compassion Collective – Grower groups serving patient members
- Phoenix Tears – Rick Simpson’s Oil

<http://cureyourowncancer.org>

James M. Cole Memorandum, 2013 on State Laws

- Preventing the distribution of marijuana to minors
- Preventing revenue from the sale of marijuana from going to criminal enterprises
- Preventing the diversion of marijuana from states which have legalized its use to those which have not
- Preventing marijuana transactions from being used as cover or pretext for other illegal activities

James M. Cole Memorandum, 2013 on State Laws

- Preventing violence and the use of firearms in cultivation and distribution
- Preventing drugged driving and other adverse public health consequences
- Preventing cultivation on public lands and the attendant public safety and environmental concerns
- Preventing marijuana possession or use on federal property

<http://www.justice.gov/iso/opa/resources/3052013829132756857467.pdf>

Issue 3: Marijuana Control Commission Responsibilities

- 7 member regulatory commission appointed by the governor; must be Ohio residents
- Must establish a system for real-time tracking of all medical marijuana, marijuana and marijuana-infused products from initial germination and/or extraction through the final consumer transaction.
(BioTrackTHC)
- Must serve as a clearing house for scientific and medical research on medical marijuana, marijuana and marijuana-infused products.

Issue 3: Marijuana Control Commission Responsibilities

- Would be required to employ necessary and qualified persons, including enforcement agents, and retain services of qualified third parties, including experts, to perform its duties.
- Must regulate the chemical content and potency of marijuana-infused products
- Must create a special division within the Commission to assist in promulgation of standards regulating the manufacture, packaging and advertising of marijuana-infused products, including ensuring that the products are not manufactured, packaged or advertised in ways that create a substantial risk of attractiveness to children.

<http://yeson3ohio.com/the-amendment/>

Issue 3: Taxes

- License holders for production facilities taxed at 15% to a Marijuana Control Commission Fund with 100% of such funds being distributed in the following order for:
 - (a) the operating costs of the Commission;
 - (b) to the extent the Commission so elects, the reasonable and necessary operating costs of the not-for-profit medical marijuana dispensaries established under this section,
 - (c) addiction prevention and treatment programs and services;
 - (d) research by Ohio's public universities and Ohio not-for-profit institutions on marijuana, medical marijuana and marijuana-infused products, including but not limited to, the medical and public policy implications related to legalized marijuana; and
 - (e) to the extent the Commission so elects, a program to provide low-cost medical marijuana to qualifying patients who are unable to afford the full cost.

<http://yeson3ohio.com/the-amendment/>

Issue 3:
Non-Profit Medical Marijuana Dispensary System

- The Amendment will establish a Non-Profit Medical Marijuana Dispensary system to provide access to compassionate care for patients who have obtained a recommendation from their current treating physician. The Marijuana Control Commission will have the flexibility of providing a needs-based fee system based upon the patient's ability to pay (i.e. sliding scale), and medical marijuana shall be provided without taxation. Any person who provides medical marijuana to another person, other than the person for whom a medical marijuana permit was issued, will be subject to a jail sentence.

<http://yeson3ohio.com/the-amendment/>

Issue 3: Homegrow

- Allows Ohioans over 21 to home grow.
- Up to 4 plants per license (there is no set limit on how many non-flowering plants a.k.a. vegetation) and 8 ounces of useable product at a time.
- The grow area must be in an enclosed locked space inaccessible to those under 21.
- License costs \$50
- The Commission is tasked with implementing the finer details, so that they can create a flexible system that can be responsive to problems or societal changes as they arise. Commission specifically prohibited in the amendment from implementing rules that make it impractical to homegrow.

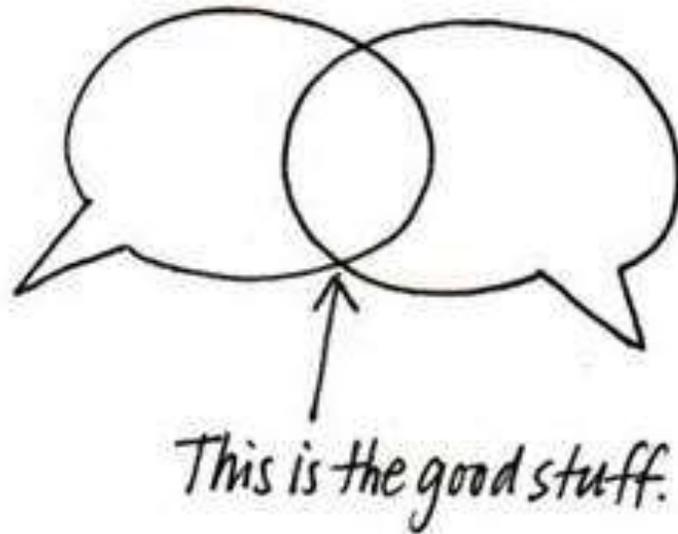
<http://yeson3ohio.com/the-amendment/>

Issue 2 (HJR4) and the Citizen Initiative Process

- Requires additional review hoops for Citizen Initiative process keep special interest out of lawmaking; neglects to do the same for Legislative process or Executive Orders.
 - SB315 Passed in 2012 – Medical Gag Order protecting proprietary chemical information for the Fracking Industry
 - Renewable Energy Standards “Freeze”
- From Introduction on June 16, 2015 to adoption on June 30, 2015, HJR4 took a two weeks to pass both chambers. Ohio’s sick, dying and disabled have watched 18 years go by as six medical marijuana bills have been introduced, most receiving little more than sponsor testimony, all dying in committee. Four other active initiatives and patient lobby Ohio Families Cann weren’t even considered.
- Legal monopolies for utilities already exist with state oversight i.e. electricity & natural gas

Be a Part of the Conversation

Yes, it is Complicated

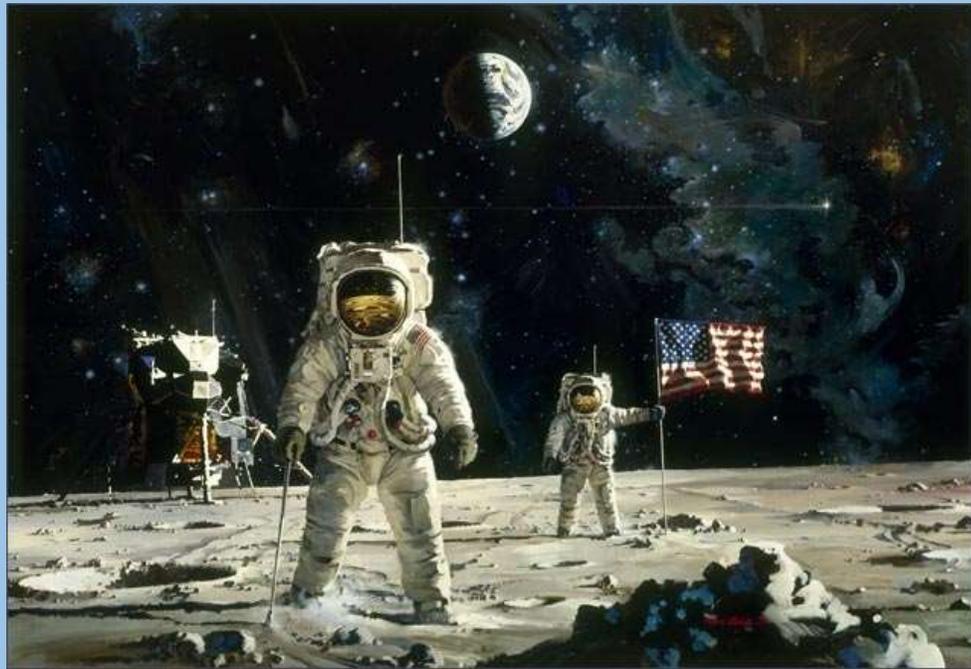


Be a Part of the Conversation

Pharmacists are needed to help develop
best practices
for patient care within the current and
potential legal framework.

Be a Part of the Conversation

But, if we can put a man on the moon, we can figure out a sensible, science-based cannabis policy.



Healthcare Professional & Mom in the Middle

Deborah Berlekamp, RPh, PharmD, BCPS, Assistant Professor of Pharmacy Practice,
University of Findlay





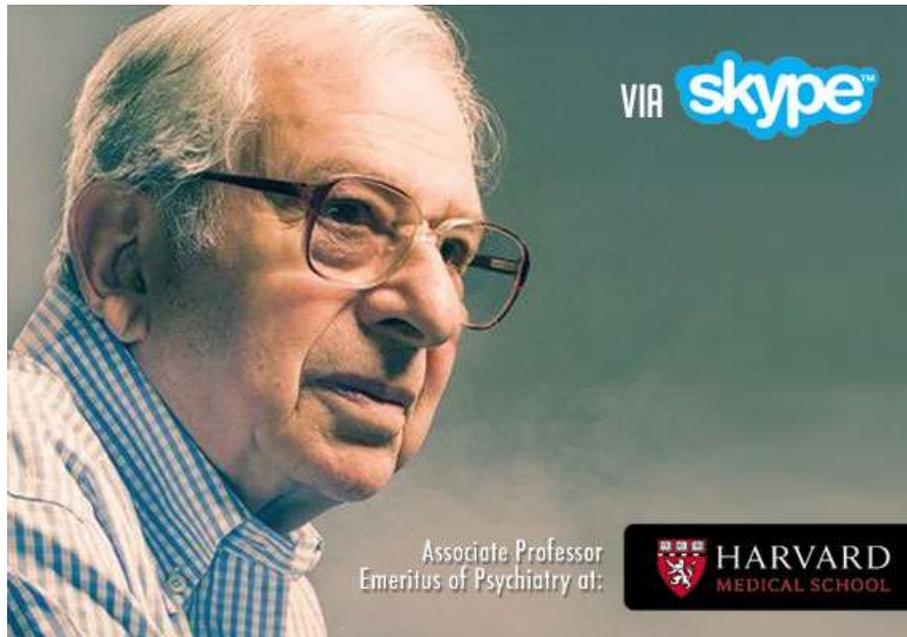
OATH OF A PHARMACIST

- I promise to devote myself to a lifetime of service to others through the profession of pharmacy. In fulfilling this vow:
- **I will consider the welfare of humanity and relief of suffering my primary concerns.**
- **I will apply my knowledge, experience, and skills to the best of my ability to assure optimal outcomes for my patients.**
- I will respect and protect all personal and health information entrusted to me.
- **I will accept the lifelong obligation to improve my professional knowledge and competence.**
- I will hold myself and my colleagues to the highest principles of our profession's moral, ethical and legal conduct.
- **I WILL EMBRACE AND ADVOCATE CHANGES that improve patient care.**
- I will utilize my knowledge, skills, experiences, and values to prepare the next generation of pharmacists.

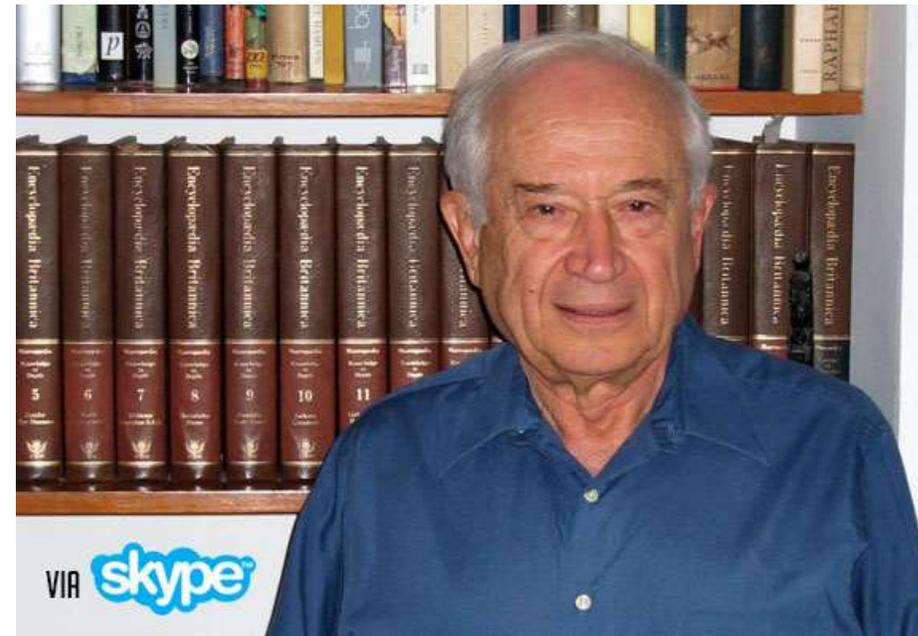
The Ninth National Clinical Conference on Cannabis Therapeutics

CELEBRATING THE PAST  EMBRACING THE FUTURE
20TH ANNIVERSARY
MAY 21-23, 2015 • PALM BEACH COUNTY CONVENTION CENTER

Lester Grinspoon and Raphael Mechoulam



Psychiatrist
Harvard Medical School



Raphael Mechoulam, PhD
Lionel Jacobsen Professor of Chemistry Endowed Chair
Hebrew University

<http://patientsoutoftime.org/florida-2015/>

Donald Abrams, MD
Denis Petro, MD
Ethan Russo, MD



Professor of Clinical Medicine
University of California San Francisco
Chief of Hematology/Oncology
San Francisco General Hospital
Cancer and Integrative Medicine Specialist



Practicing Neurologist and Drug Researcher,
Founding Director of Patients Out of Time
Expert Medical Witness for Cannabis Use



Past President of The
International Cannabinoid
Research Society

Sue Sisley, MD Dustin Sulak, MD

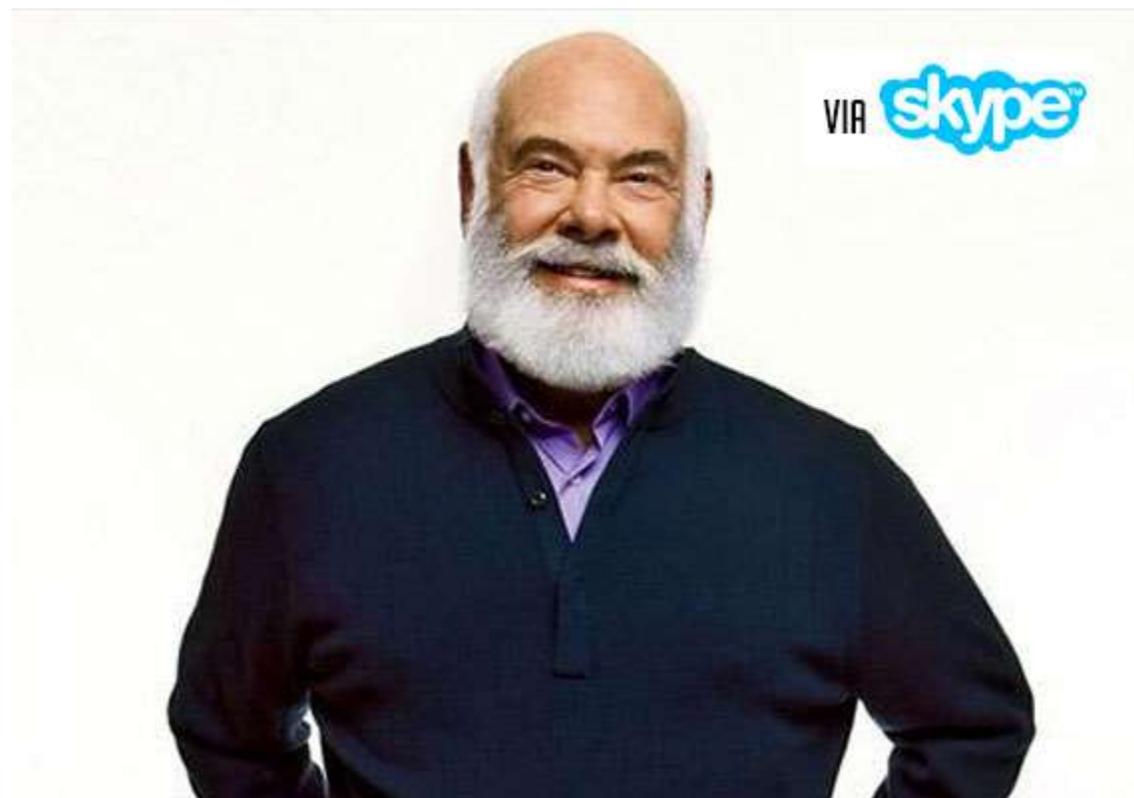


Cannabis Researcher, Physician
practicing Internal Medicine &
Psychiatry



Founder and Director, Integr8 Health, Falmouth, ME

Andrew Weil, PhD



Mary Lynn Mathre, RN, MSN, CARN Al Byrne, Veteran



President and Co-founder, Patients Out of Time
President and Founding member, American Cannabis Nurses
Association



Founding Director & Director
Emeritus, Lcdr, SC, USN (ret).

<http://www.medicalcannabis.com/>

<https://youtu.be/yJAZvQVshfk>

“What if? The Potential Impact of Marijuana Legalization”

- Hosted by ADAMHS Board for Montgomery County in Dayton, Ohio on September 3, 2015s
- Great overview of impacts of legalization (recreational and medical) on:
 - Law Enforcement
 - Communities
 - Youth
 - Medical
 - Business

Where is Medical MJ Legal?

- 24 states and Washington DC have legalized the use of medical marijuana
- Responsible Ohio has received enough signatures to place an initiative on the ballot for the election November 1, 2015
 - Issue 3
- Ms. Lauren Berlekamp and Mr. Thomas will have discussed the details and implications of this initiative

Legal for Medical Use in These States

- Alaska
- Arkansas
- California
- Colorado
- Connecticut
- Delaware
- DC
- Hawaii
- Illinois
- **Louisiana**
- Maine
- Maryland
- Massachusetts
- Michigan
- Minnesota
- Montana
- Nevada
- New Hampshire
- New Jersey
- New Mexico
- New York
- Oregon
- Rhode Island
- Vermont
- Washington

Combined List of Accepted Medical Uses in Medically Legal States

- Seizures/epilepsy
- Pain
- Multiple Sclerosis
- Muscle Spasms
- Parkinson's Disease
- Traumatic Brain Injury
- Post Traumatic Stress Disorder
- Agitation of Alzheimer's Disease
- Tourette's Disorder
- ALS
- Cancer
- Nausea
- Glaucoma
- Crohn's Disease
- Cachexia
- Rheumatoid Arthritis
- AIDs symptoms (wasting, pain, etc.)
- Lupus
- Myasthenia Gravis
- Neurofibromatosis
- Many others

Other Points about Laws for Medical Cannabis

- Laws vary from state to state; each state's law must be followed in that particular state.
- Not all states accept all of the medical uses that are accepted in other states
- Many states have provisions that allow additional conditions to be added if needed
- Recommendations for use of medical cannabis must come from a physician
- These are not “prescriptions” because it is illegal to prescribe it (terminology)
- It is still illegal to use cannabis according to Federal Law

States with Pharmacy Control over Dispensing

- Only two states have pharmacists involved in dispensing medical marijuana
 - Connecticut
 - Louisiana in process

Connecticut

- Patients are monitored in the same way as if being treated with prescription medication
 - Treatment goals
 - Side effects
 - Drug Interactions
 - Must have same pharmacist to technician ratios
- Only physicians may grant patients a medical marijuana license
- Patients may receive up to 2.5 ounces/month & is tracked
- Doses are titrated based on product
- Pharmacists may not tamper with products from growers

<http://www.pharmacist.com/connecticut-medical-cannabis-must-be-dispensed-pharmacists>

Louisiana Legalized Medical Use in Summer 2015

- Louisiana Board of Pharmacy (LBP) in charge of establishing rules for dispensing medical marijuana prescriptions
- Louisiana State Board of Medical Examiners to create rules for prescribing
- Allows for no more than 10 pharmacies in the state for dispensing medical marijuana, and will establish rules for their locations.
- LBP will consider security, safety, and health requirements for dispensers and pharmacists' financial abilities to operate as a dispenser.
- The board has until December 1, 2016, to develop rules for dispensing medical marijuana.

<http://www.pharmacist.com/louisiana-pharmacists-await-details-about-dispensing-marijuana>

How Does Cannabis Exert Medical Effects?

- All drugs (including prescription and non-prescription) are chemicals that react with receptors in the body
- Humans have many different kinds of receptors
 - “puzzle pieces”
- Endocannabinoid receptors discovered in 1989
 - Receptors found in the human body and in all animals except insects
 - Analogous to the endorphin system humans have
 - The human body has natural (endogenous) endocannabinoids
 - Anandamide (discovered by Hanus and Devane at Hebrew Univ. of Jerusalem in 1992)
 - Is a neurotransmitter structurally similar to THC
 - www.chm.bris.ac.uk/motm/anandamide/ananh.htm
 - Maintains homeostasis through a feedback mechanism
 - Most medical professionals have not been educated about this system

CB1, CB2 Receptors; Endo - and Phyto - Cannabinoids

- Humans have CB1 and CB2 receptors that receive cannabinoids
 - Located mostly in nervous system; also in gut, uterus, testes, adipose tissue, and elsewhere
- In the post synaptic cell, influx of calcium and up-regulation of neuro-receptors cause enzymes to synthesize 2-AG
- 2-AG moves retrograde across synapse to the CB1 on the presynaptic cell, closes the channel, and halts glutamate release
- THC works similarly

Ref: McPartland, John, Slides Patient Out of Time Conference, May 20-23, 2015

Chemicals in the Cannabis Plant

- **Phytocannabinoids:** Substances in the cannabis plant that stimulate endogenous endocannabinoid receptors
 - THC “psychoactive”
 - Tetrahydrocannabinol
 - Produces the “high”
 - Medically active
 - CBD “non-psychoactive”
 - Cannabidiol and others
 - Medically active
- **Terpenes:** cause the ‘smell’; may be medically significant

<http://www.medicalcannabis.com/about/health-care-professionals/>

INDICA

Fat Leaves and Short Bush = INDICA

It is a short plant, generally between 3 and 6 feet, and its leaves have short broad fingers. The leaves are generally dark green sometimes tinged with purple. As they near maturity, the leaves may become significantly more purple. It is a strong smelling plant with a "stinky" or "skunky" smell. The smoke of indicas is generally thick and more prone to cause coughing when inhaled. Indicas are the traditional source of hashish. Higher CBD than THC equals heavier, sleepy type of high.



SATIVA

Thin Leaves and Tall Bush = SATIVA

A tall plant, generally between 8 and 12 feet. The leaves have long thin fingers and are light green. The more equatorial varieties have more yellow pigments to protect the plant from intense light. Sativa buds are long and thin and turn red as they mature in a warm environment. In cooler environments the buds may be slightly purple. Sativa plants smell sweet and fruity and the smoke is generally quite mild. Higher THC than CBD equals cerebral, soaring type of high, more energetic.



THC vs CBD

- Different strains have different ratios of THC to CBD
 - Ex. Charlotte's Web reportedly around 30:1, fluctuates
- Plants higher in CBD will produce less CNS side effects
- *Cannabis indica* is higher in CBD
 - Products high in CBD tend to be more sedating
- *Cannabis sativa* is higher in THC
 - Products high in THC tend to cause more stimulation and anxiety
- Some people do not like or want the "high"; can use higher CBD varieties

Amount of THC

- THC levels much higher than in the 1960's
 - Less than 1% in the age of Rock and Roll
 - 1990's 3-4%
 - Seized marijuana average 8.5% (5.62% domestic, 9.57 non-domestic)
 - Up to 13% (or higher) currently
 - Medical may be even higher
 - Web search showed 16-25%
 - If the strain is high in CBD's, THC would be lower
 - Amounts consumed may be lower than it was 'back then'

Ref: slides from "What if? The Potential Impact of Marijuana Legalization, Sept 4, 2015, Dayton, Ohio, and ProCon.org

THC vs CBD

- Many Different Strains;
 - Can be customized or 'bred'
- Issues
 - Standardization
 - Consistency
 - Laboratory measurements

Quality Control

- Growers attempt to maintain uniform conditions – not always possible
- Levels of THC and CBD are tested in designated labs
- Standardization is desirable but not always attainable
 - Strains may be similar
 - Patients and physicians may need to locate a similar strain in another area if needed or re –titrate with another strain
- Marijuana from the black market may be tainted with toxic chemicals
 - Herbicides, pesticides, nickel
 - May be something else entirely (synthetic marijuana, K-2/Spice)

Federal Law: Cannabis is a C-I Controlled Substance

- The drug or other substance has a high potential for abuse.
- The drug or other substance has no currently accepted medical use for treatment in the United States.
 - May not be prescribed
- There is a lack of accepted safety for use of the drug or other substance under medical supervision.

How is Medical Cannabis Administered?

- Vaporized
- Oils
- Tinctures
- Edibles
- Smoking
 - Conflicting evidence regarding whether cancer-causing if smoked

Vaporized



Tinctures and Oils



Smoking – Not Ideal



Irvin Rosenfeld

User since 1982

***The longest surviving Federal Medical Cannabis Patient in the
United States***

<http://irvinrosenfeld.com/>

Edibles

Level of THC can be highly concentrated

Leads to increased problems, especially in infants and children



Marketing – **NO!**



Common Side Effects and ADRs

- Anxiety
- Panic
- Dry mouth
- Euphoria
- Confusion
- Drowsiness
- Time distortion
- Tachycardia (increased heart rate)
- Hallucinations
- Motor impairment
- Dystonia (decreased muscle tone)
- Hypoxia (decreased oxygen levels)
- Depression
- Amotivational syndrome
- Nausea

Other Consequences

- Possibly associated with decreased development of areas in the brain with use in children under 15 years old
 - Associated but not proven to be causal
- May induce schizophrenia earlier in life in those who are already at risk/family history
- Motor vehicle accidents/death, suicide, ER visits, burns, diversion
- Similar to excessive alcohol use
- Increased problems for law enforcement

Other Points

- Cannabis is legal medically in many countries (Spain, Portugal, Germany, Czech Republic, Wales, Austria, Canada, Israel, Poland, France, Finland, Italy, Netherlands)
- Israel under controlled circumstances
 - Hebrew University of Jerusalem
 - Raphael Mechoulam – Father of Marijuana Research, pharmacologist, Chair of Medicinal Chemistry; since 1963; identified THC and CBD
 - Treats young and old
 - Variety of conditions, including treatment of Alzheimer's and cancer pain
 - Grown in highly controlled government facilities
 - Cost is \$100 per person regardless of amount needed
 - Recreational is illegal

Other Points – Study of Cannabis is Difficult

- Different Types of Studies
 - Best types, versus least reliable
 - Randomized, controlled, blinded, large, expensive
 - Observational
 - Cohort studies, prospective and retrospective
 - Case control
 - Anecdotal
- Barriers to Research
 - Federal Classification is a C-I controlled substance.
 - This means there is no accepted medical use; but is this true?
 - Federal vs state laws conflict

Other Points - Study of Cannabis is Difficult

- Barriers to research include
 - Application process
 - Must go through FDA, National Institutes of Health (NIH), National Institute Against Drug Abuse (NIDA)
 - Until recently, the Public Health Service (PHS)
 - Researchers complain that it takes many years to get one study approved
 - Researchers and physicians fear repercussions from the Federal government and places of employment for exchange of information when discussing cannabis

Other Points – Call for Research

- The American Medical Association (AMA) called for further adequate and well controlled research, as well as the movement of marijuana to C-II status to facilitate research

www.ama-assn.org&uri=/resources/html/PolicyFinder/policyfiles/HnE/H-95.952.HTM

- July 2015: “House Republicans voted against a bill that would have encouraged NIH and DEA to work together to allow studies of benefits and risks of marijuana to treat cancer, epilepsy, glaucoma, PTSD, among other conditions.” (Washington Post Online July 9,. 2015)

Other Points – FDA Approved Medications

- Marinol[®] (dronabinol) “man made” THC
 - Anorexia, AIDS
 - Severe N&V of chemotherapy
- Cesamet[®] (nabilone) synthetic marijuana similar to THC
 - Severe N&V of chemotherapy
- Sativex[®] (nabiximols) (GW Pharmaceuticals)
 - Combination of THC and CBD ~ 1:1 ratio
 - Mouth Spray, 2.7 mg THC and 2.5 mg CBD/dose
 - approved in US (and 24 other countries) for treatment of spasticity in multiple sclerosis

www.drugs.com

Other Points - Epidiolex[®]

- CBD (cannabidiol)
- Investigational, orphan drug designation
- Dravet and Lennox-Gastaut initially, may expand to other seizure disorders

Charlotte's Web

- An oil that was developed for then 5-year old Charlotte Figi
 - Dravet's Syndrome; SCN1A gene mutation
 - 300 grand mal seizures per week, some lasting 30 minutes or more
 - Did not respond to traditional epilepsy drugs (AEDs)
 - Cognitive decline at age 2 due to AEDs and # of seizures
 - Seizures decreased to 2 or 3 per month
- High in CBD's, low in THC
 - Produced by Realm of Caring Foundation
- Promising results for some, but may be false hope for others
 - Desperate parents moving to states that offer medical marijuana to children
- Video:
 - <https://search.yahoo.com/yhs/search?p=youtube+charlottes+web+epilepsy&ei=UTF-8&hspart=mozilla&hsimp=yhs-002>
- Story:
 - www.cnn.com/2013/08/07/health/charlotte-child-medical-marijuana/

Medical Cannabis Institute

- <http://themedicalcannabisinstitute.org/catalog>
- Comprehensive online curriculum for physicians, nurses, pharmacists, and other healthcare professionals
- Covers research and clinical practice
- CME certified

Dr. Berlekamp's Summary

- Medical cannabis
 - is legal in many civilized societies
 - is tested for levels of CBD and THC
 - may be recommended (not prescribed) for patients in 24 states and Washington D.C.; patients must have a certificate or recommendation from the physician
 - is not “safe” to use recreationally and should not be distributed to or used by anyone who has not been certified for use by a qualified physician
 - is difficult to study and has not been studied in many good, well controlled studies due to its C-I classification and multiple barriers
 - laws vary from state to state; each state's law must be followed in that particular state
 - potential use should be investigated and discussed by health care professionals

Dr. Berlekamp's Summary

- It is still illegal to prescribe or use marijuana according to Federal law, which leads to complications for patients, prescribers and law enforcement
- Without a sensible conversation, many people are suffering
 - Fear tactics
 - Misinformation
 - Pressures from all sides

Ohio Needs a Sensible Law that:

Allows research,

Helps patients,

AND

Protects children and communities

Zach Thomas

Director of Wellness & Education, Hancock County Alcohol, Drug
Addiction & Mental Health Services

Responsible Ohio – Issue 3

- Statewide political action committee proposing legalization and commercialization of marijuana for both medical and recreational use.
- First ballot initiative to legalize marijuana for *both* medical and recreational use at the same time.

Responsible Ohio – Issue 3

- Authorizes privatization of marijuana growing sites – 10 sites throughout Ohio, owned by multi-millionaire investors.
- Creates a constitutionally sanctioned monopoly (cartel).
- Establishes a state appointed control board that oversees all aspects of marijuana industry – from seed to consumption.

Responsible Ohio – Issue 3: Local Implications

- Allowances for medical use carry broad interpretation.
- Unlimited number of medical marijuana dispensaries allowed.
- Hancock County permitted up to 7 recreational marijuana stores.
- Exponentially increases access to marijuana by youth, particularly through marijuana-infused products.
- Complicates drug-free work place rules.

Facts About Issue 3

- Issue 3 will create an Ohio constitutional amendment that allows a marijuana monopoly, with 10 marijuana growing sites for all marijuana to be sold for recreational and medical use in Ohio.
- Under the amendment, tax rates on marijuana – dictated by Responsible Ohio PAC, its investors, and business associates – will be lower than those on beer, wine, and tobacco products. These rates may only be changed by passing another constitutional amendment.

Facts About Issue 3

- The amendment will allow for 1,159 retail marijuana outlets in Ohio – more locations than Starbucks and McDonald's, and nearly three times the number of state liquor stores.
- Convicted felons may be allowed to own marijuana establishments.
- Municipalities may not prohibit marijuana stores from locating within their jurisdictions.

Facts About Issue 3

- The amendment restricts marijuana outlets from being located near schools, playgrounds, day care centers, houses of worship, residential neighborhoods, and certain other locations, but only if those locations were in existence on or before January 1, 2015, or when the marijuana outlet first applies for a license to operate.
- Medical marijuana use and possession by adults and children may be permitted in the workplace, including schools, day care centers, public places, and prisons.

Facts About Issue 3

- Use of medical marijuana must be accommodated by employers.
- The amendment conflicts with the Americans With Disabilities Act, which does not protect current users of illicit drugs. Marijuana use and possession remains illegal under federal law.
- It may be impossible to distinguish between homegrown marijuana and commercially purchased marijuana, making the amendment's purported limits on possession of each nearly impossible to enforce.

Responsible Ohio – Issue 3

The amount of marijuana allowed for possession would provide an opportunity for an individual to be

**continuously intoxicated,
twenty-four hours a day for 108 days.**

Responsible Ohio – Issue 3

LEGAL MARIJUANA OPPORTUNITIES FOR OHIOANS



Ohioans will have many opportunities to take part in this new industry. For example, they can own and operate retail stores; make marijuana-infused products like sprays, drinks and baked goods; design product packaging; and transport products between facilities. This open market will **create new businesses and thousands of new jobs**. The possibilities will be limited only by Ohioans' creativity.



Indicates new jobs and opportunities for entrepreneurs.



House Joint Resolution 4 – Issue 2

- Legislation that would make it more difficult for monopolies and special interests to insert themselves and their business interests into Ohio's Constitution.
- Creates first step asking voters to approve monopoly; second step asking voters to approve subject matter.
- Since introduction, Responsible Ohio has changed campaign strategy to address denial of voter rights.

Impact of the Legalization of Marijuana for Medical and Recreational Purposes In Colorado



Medical marijuana legalized in 2000.

- Colorado has two primary medical marijuana laws. Colorado's first and oldest medical marijuana law is a constitutional amendment passed by voters in 2000 authorizing patients and their caregivers to possess, cultivate, and use medical marijuana. Colorado's second medical marijuana law enacted in the summer of 2010 established the Colorado Medical Marijuana Code, C.R.S. 12-43.3-101 *et seq.*, which creates a dual licensing scheme that regulates medical marijuana businesses at both the state and local level.

Recreational use of marijuana was legalized in 2012.

- You must be 21 years old to purchase, possess, or use marijuana or marijuana products. It is illegal to give or sell retail marijuana to minors.

Marijuana is not just about smoking. 2.85 million units of marijuana-infused foods and beverages were sold in Colorado in 2014.

Source: Colorado Department of Revenue.

The marijuana-focused private equity firm, Privateer Holdings, in partnership with the descendants of Bob Marley, have created a multinational cannabis brand named “Marley Natural.”

There was no mention of these branded marijuana products, candies, beverages, or advertising practice in the course of the political campaigns to legalize marijuana.

Source: Smart Approaches to Marijuana, Lessons After Two Years of Marijuana Legalization (Short Report issued January 5, 2015).

Marijuana Use

- 85,000 – number of Colorado adults who are 21 and older using marijuana regularly (at least once a month) = 9% of Colorado population.
- 23% of the marijuana users in Colorado consume marijuana daily.
- 19,550 stoned Coloradans each day.

Source: The Cannabist.com: \$573 million in pot sales: Here are 12 stats that define the year in marijuana, accessed June 2015,
Published: December 26, 2014, 3:29 PM.

Marijuana Use

- 103,918 – number of medical marijuana patients reporting “severe pain” as their condition for a license – or 94% of the state’s total patients.

Source: The Cannabist.com: \$573 million in pot sales:
Here are 12 stats that define the year in marijuana,
accessed June 2015, Published: December 26, 2014,
3:29 PM.

Tax Revenue

- Tax revenue from legal recreational marijuana may be far less than anticipated. In Colorado, tax revenues from legal recreational marijuana sales were anticipated to be 70 – 100 million dollars with the first 40 million designated for the rebuilding of Colorado's schools.

Source: Thomas Halleck, "Colorado's Tax Income from Legalizing Marijuana is Less Than Expected, It Still Might Have to Give it Back," International Business Times, Feb. 11, 2015 and Tony Nitti, "Understanding the Impact of Legalized Recreational Marijuana on State Tax Revenue," Forbes, Sept. 24, 2015.

Tax Revenue

- In reality, Colorado collected only \$44 million.
- Less than 1% of the State's \$20.5 Billion state budget for 2014.
- It is also expected that the high water mark for tax revenue would be in the first initial years of legalization because after the “wow” factor of legal recreational marijuana wears off, use and tax revenue may decline.

Tax Revenue

- Illegal marijuana is still cheaper than legal marijuana sold at a dispensary which is taxed at more than 27%.
- About 23% of the estimated marijuana users in Colorado have a medical card. Claims vary weather this number is growing or remaining steady. It is believed the reason this number is so high is because the cost of a medical card is \$15 and, unlike recreational marijuana's high tax rate, the tax on medical marijuana is only 2.9%.

Crime

- Though there has been no pot-fueled crime wave, some marijuana related crimes have increased in Denver: Pot-related burglaries increased 32%, and unsurprisingly, citations for using marijuana in public shot up 245% (Smoking in public can still result in a \$100 fine or 15 days in jail)

Source: Mother Jones: A Year After Legalizing Weed, Colorado Hasn't Gone to Pot, accessed June, 2015, citing data from the Denver Department of Safety.

Crime

- Overall, traffic fatalities in Colorado decreased 14.8% from 2007 through 2012. During the same five years in Colorado, traffic fatalities involving operator's testing positive for marijuana increased 100%.

Source: National Highway Transportation Safety Administration, Fatality Analysis Reporting System (FARS), 2006-2001 and Rocky Mountain HIDTA 2012.

Marijuana and Children

- There was a 32% increase in drug-related suspensions and expulsions in Colorado for academic school years 2008/2009 to 2012/2013

Source: Colorado Department of Education, Suspension/Expulsion Statistics (School Years 2005-2013). Accessed July 2014.

Marijuana and Children

- Arrests for marijuana use in Denver public schools increased by 6% between 2013 and 2014.
- Teen admission to treatment for marijuana use at the Arapahoe House treatment network in Colorado increased by 66 % between 2011 and 2014.

Source: Smart Approaches to Marijuana, Lessons After Two Years of Marijuana Legalization. (Short report issued January 5, 2015).

Marijuana and Children

- A study from the University of Colorado Anschutz Medical Campus in Aurora, Colorado revealed that 74% of teens in treatment for substance abuse were using someone else's diverted medical marijuana.

Source: Journal of the American Academy of Child and Adolescent Psychiatry, July 31, 2012 new release, "Diverted Medical Marijuana Use Common Amount Teens: Study," accessed August 3, 2013.

Ten Reasons to Vote NO on Issue 3

- Issue 3 will create a billion-dollar marijuana monopoly.
- Issue 3 will flood Ohio with marijuana.
- Issue 3 will allow more marijuana stores than liquor stores.
- Issue 3 will expose Ohio's children to marijuana and marijuana edibles.
- Issue 3 will make access to marijuana by children inevitable.

Ten Reasons to Vote NO on Issue 3

- Issue 3 will increase the marijuana black market.
- Issue 3 will create restrictions on home-grown marijuana, but will be nearly impossible to enforce.
- Issue 3 will set a sweetheart tax rate for the marijuana monopoly.
- Issue 3 will complicate employment law.
- Marijuana can open the door to more serious drug use.



www.noissue3.com

Q&A

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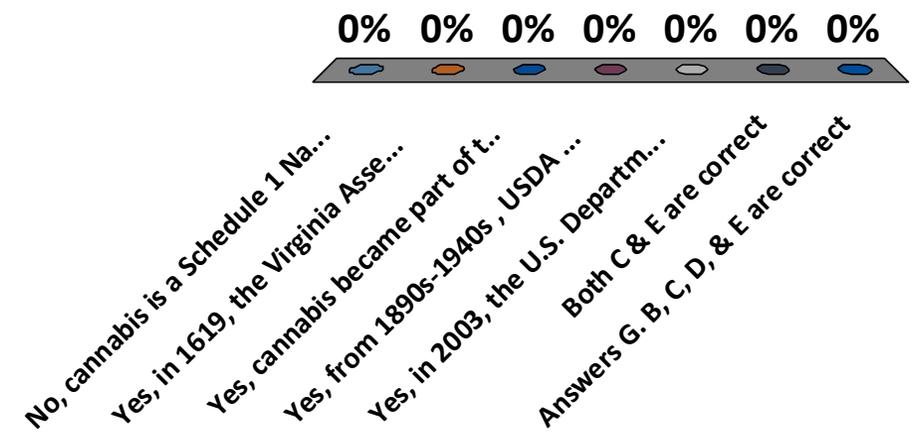


Post-Survey

- Get your clickers ready!

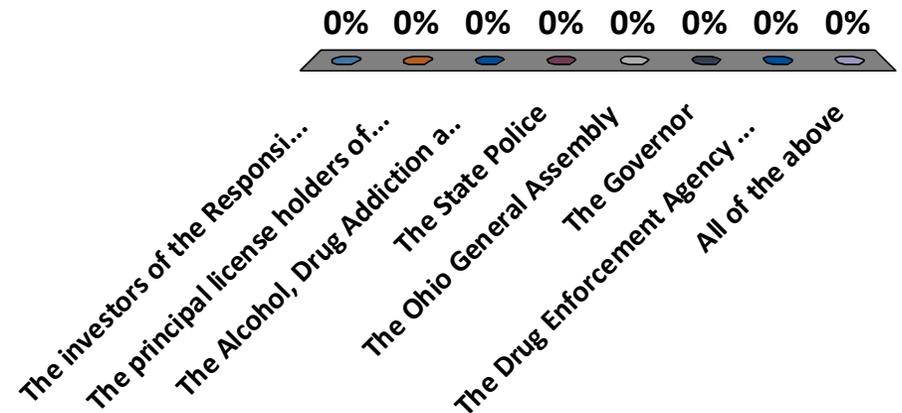
Has the U.S. government ever acknowledged the benefits of cannabis?

- A. No, cannabis is a Schedule 1 Narcotic and has no accepted medical use.
- B. Yes, in 1619, the Virginia Assembly passed a law ordering every colonist to grow cannabis as a valuable resource for the colonies and for export.
- C. Yes, cannabis became part of the United States Pharmacopoeia (U.S.P.) in 1851 but was removed after its prohibition began mid-20th Century.
- D. Yes, from 1890s-1940s , USDA Chief Botanist Lyster Dewey grew cannabis at the current site of the Pentagon and concluded its importance as a renewable resource for paper instead of using wood pulp.
- E. Yes, in 2003, the U.S. Department of Health & Human Services was issued the Patent 6630507: Cannabinoids (found in the cannabis plant) as antioxidants and neuroprotectants.
- F. Both C & E are correct
- G. Answers G. B, C, D, & E are correct



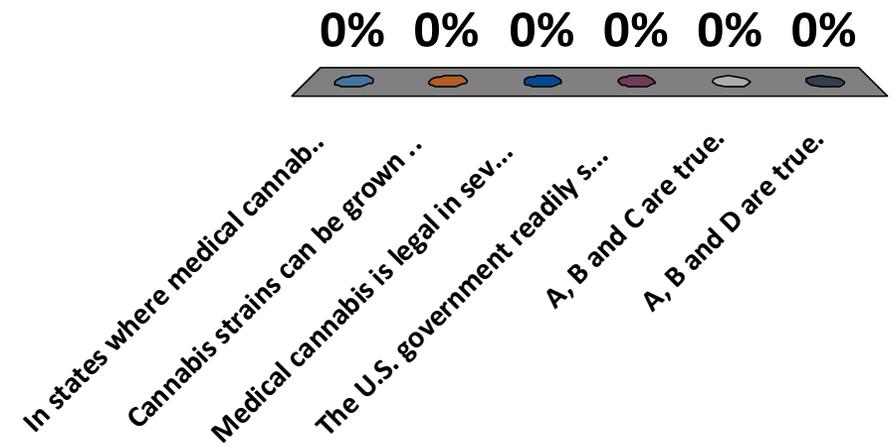
If Issue 3 were to pass, who appoints the regulatory commission to oversee implementation of the law?

- A. The investors of the ResponsibleOhio campaign
- B. The principal license holders of the initial 10 commercial production facilities
- C. The Alcohol, Drug Addiction and Mental Health Services Board
- D. The State Police
- E. The Ohio General Assembly
- F. The Governor
- G. The Drug Enforcement Agency (DEA)
- H. All of the above



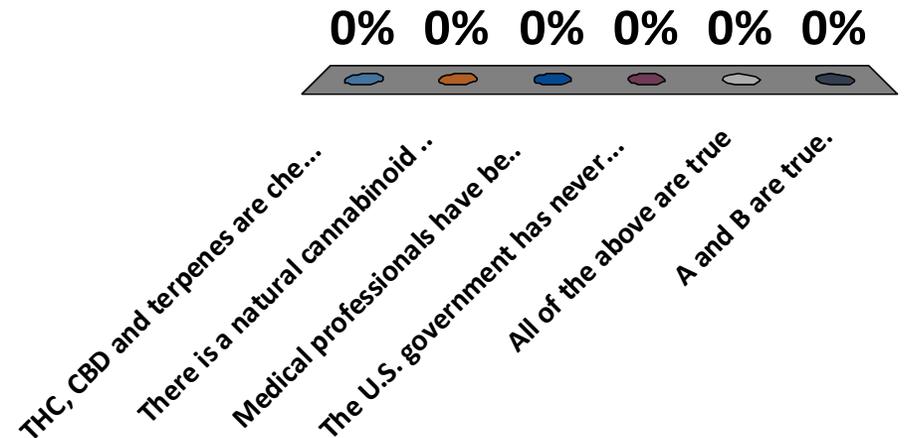
Which of the following statements is/are TRUE?

- A. In states where medical cannabis has been legalized, doctors who recommend or prescribe it are currently breaking federal law.
- B. Cannabis strains can be grown to produce low THC content, which reduce the “high” side effects for patients.
- C. Medical cannabis is legal in several non-U.S. countries, including Israel, Canada, France, Spain and Germany.
- D. The U.S. government readily supports research and well controlled studies of cannabis.
- E. A, B and C are true.
- F. A, B and D are true.



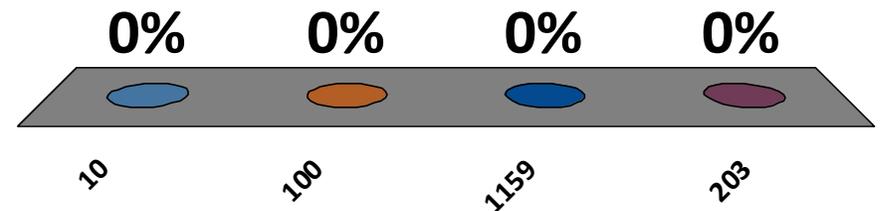
Which of the following statements is/are TRUE?

- A. THC, CBD and terpenes are chemicals in the cannabis plant that have been shown to be medically useful.
- B. There is a natural cannabinoid in humans called anandamide that has effects that are similar to THC.
- C. Medical professionals have been extensively trained about the endocannabinoid system in humans, which was discovered by Mechoulam in the 1980's.
- D. The U.S. government has never endorsed the use of smoking cannabis for medical treatment.
- E. All of the above are true
- F. A and B are true.



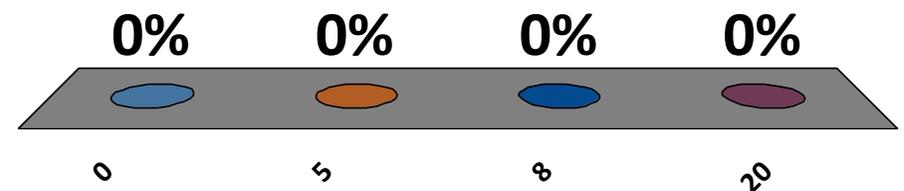
If marijuana becomes legal in Ohio, what is the number of retail marijuana outlet stores that would be permitted to be open for business?

- A. 10
- B. 100
- C. 1159
- D. 203



Consistent use of marijuana during adolescence can cause a reduction in IQ by how many points?

- A. 0
- B. 5
- C. 8
- D. 20



Thank You!

*Discuss the above issues
with thoughtful respect
and consideration for future generations.*