

Cannabis and Health: Overview and Considerations in a Changing Policy Environment

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What is Cannabis/Marij(h)uana?

Cannabis sativa, indica, ruderalis

- ▶ Drug Enforcement Agency - Schedule I 1970
 - ▶ High potential for abuse
 - ▶ No currently accepted medical use
 - ▶ Lack of accepted safety
- ▶ >500 phytochemicals, 104 cannabinoids
 - ▶ **Δ^9 tetrahydrocannabinol (THC)**
 - ▶ **Cannabidiol**
 - ▶ Cannabinol
 - ▶ Δ^8 THC
 - ▶ Cannabigerol
 - ▶ Cannabichromene



Cannabis/Marijuana

- ▶ Legal status varies
 - ▶ Federal statutes (DEA, FDA) illicit/illegal drug
 - ▶ Various states - Medical and Recreational Use
- ▶ Most popular “illegal” drug (on a par with cigarettes)
- ▶ Used by most (76% in 2004) illicit drug users (57% used MJ only)

Natural Cannabis/Cannabinoid Products

- ▶ Smoked MJ is least effective way of delivering health benefits; also delivers other harmful substances
- ▶ Cannabis - multiple non-smoked forms
- ▶ Cannabidoil (CBD) - oral capsule, oil, spray
- ▶ Nabiximol/*Sativex*® (THC+CBD) - spray - used in Europe and Canada, FDA approved
- ▶ Tetrahydrocannabinol (THC) - oral capsule, spray
- ▶ *Epidolex*® (98% CBD) - oil, FDA approved

Synthetic Cannabis/Cannabinoid Compounds

- ▶ FDA licensed drugs - used to treat nausea vomiting from chemotherapy and anorexia/wasting related to AIDS
 - ▶ Dronabinol/*Marinol*® (synthetic THC) - oral capsule, FDA approved since 1985
 - ▶ Dronabinol/*Syndros*® (synthetic THC)-liquid,
 - ▶ Nabilone/*Casamet*® (synthetic cannabinoid/THC)-oral
- Synthetic cannabinoids (140+) added to “herbs” and sold for recreational use (e.g., *Spice*)

National Academies of Science Review of Health Effects (2017)



Rating the Research Evidence

- ▶ ***Conclusive Evidence (CE)*** - Many supportive findings from good quality studies, no credible opposing findings
- ▶ ***Substantial Evidence (SE)*** - Several supportive findings from good quality studies, few or no credible opposing findings
- ▶ ***Moderate Evidence (ME)*** - Several supportive findings, but research has limitations (e.g., bias, confounds) that cannot be ruled out

Health Benefits - Substantial Evidence

Cannabis products effective for:

- Chronic Pain - Significant reductions in symptoms
- Chemotherapy Nausea - Oral cannabinoids are antiemetic
- Spasticity related to Multiple Sclerosis - Oral cannabinoids improve symptoms

Health Benefits - Moderate Evidence

Cannabis products effective for:

- ▶ Improving short-term sleep related to obstructive sleep apnea
- ▶ Fibromyalgia
- ▶ Chronic pain
- ▶ Multiple Sclerosis - (e.g., Nabiximol- FDA approved but not marketed due to limited effects)

Health Benefits - Limited Evidence

Cannabis products effective for:

- ▶ Increasing appetite and decreasing weight loss related to HIV/AIDS
- ▶ Improving symptoms of Tourette syndrome (THC capsules)
- ▶ Improving anxiety symptoms related to social anxiety disorders
- ▶ Improving symptoms of PTSD (Nabilone, 1 study)

Health Benefits - Limited Evidence

Cannabis products **NOT** effective for:

- ▶ Improving symptoms of dementia
- ▶ Improving glaucoma-related intraocular pressure
- ▶ Reducing symptoms of depression related to chronic pain or multiple sclerosis

Health Benefits - Insufficient Evidence

- ▶ Cancers*
- ▶ Epilepsy*
- ▶ Parkinson's disease motor symptoms*
(cannabinoids)
- ▶ Spasticity in spinal cord injury
- ▶ Amyotrophic lateral sclerosis/ALS* (cannabinoids)

*Conditions mentioned in NY State Medical MJ law

Health Harms of Cannabis

- ▶ Respiratory diseases - **SE** for chronic bronchitis linked to smoking
- ▶ Injury and death - **SE** for motor vehicle crashes
- ▶ Prenatal Exposure - **SE** for lower birth weight
- ▶ Cancers - **ME** for lung, head + neck cancers
- ▶ Cognition, memory, and attention - **ME** for impairment

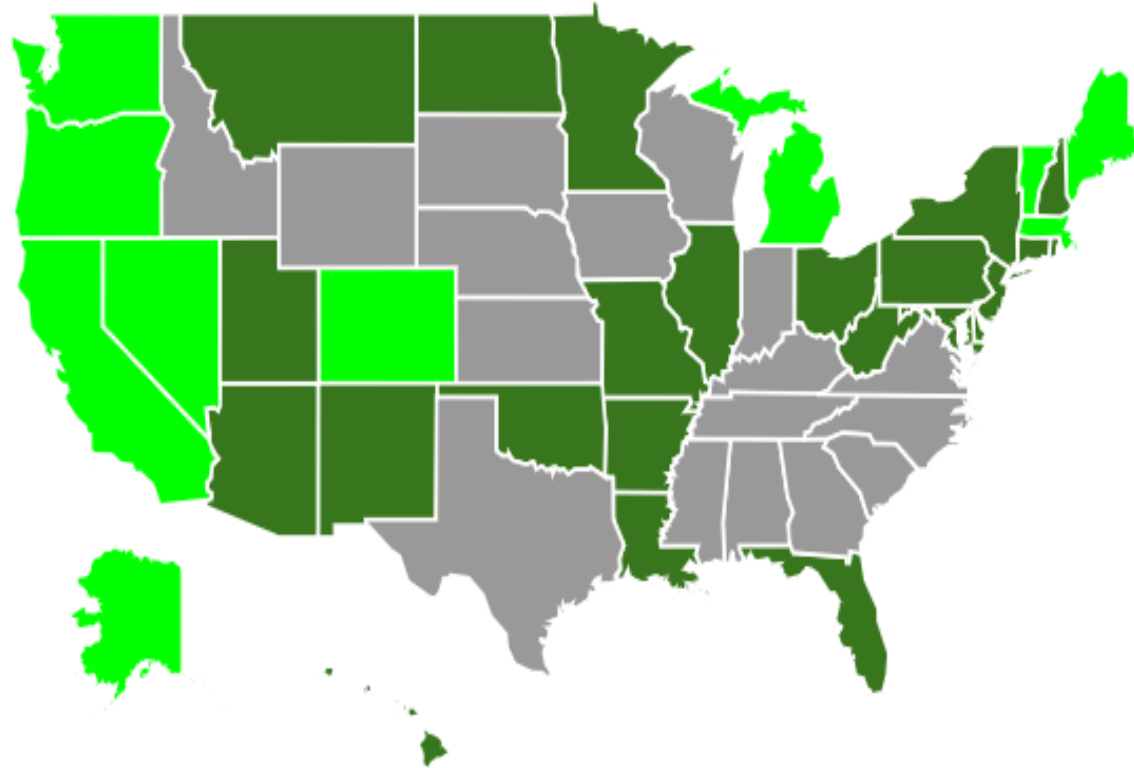
Mental Health Harms of Cannabis

- ▶ **SE** for development of schizophrenia, psychoses
- ▶ **ME** for increased mania in bipolar disorders
- ▶ **ME** for increased risk of depressive disorders
- ▶ **ME** for increased incidence of suicidal ideation, suicide attempts, and suicide completion
- ▶ **ME** for increased social anxiety
- ▶ **ME** for problem MJ use increasing severity of PTSD

Risk Factors for Cannabis Problems

- ▶ **SE** for earlier age of initiation, being male, and smoking tobacco
- ▶ **SE** for increasing frequency and/or quantity of MJ use
- ▶ **ME** for depressive disorders, combined use of abused drugs
- ▶ **ME** for deviance proneness during adolescents (e.g., oppositional behavior, antisocial, childhood sexual abuse, poor school performance)

Information is current as of Nov. 7, 2018.



Marijuana Legalization Status

- Medical marijuana broadly legalized
- Marijuana legalized for recreational use
- No broad laws legalizing marijuana

Medical Cannabis Policies

- ▶ 1996, Prop 215 passed in CA - allowed whole plant cannabis for “medical” conditions
- ▶ Currently, medical cannabis in 28 states + DC
- ▶ Policies vary as to components of cannabis that are allowed - various potencies/ratios of THC and CBD
- ▶ Laws vary as to conditions for which cannabis can be prescribed (e.g., pain, nausea)

Recreational Cannabis Policies

- ▶ 10 states - AK, CA, CO, MA, ME, MI, NV, OR, VT, WA, + DC
- ▶ Most laws based on propositions/ballot measures
- ▶ MI - most recent to pass a ballot measure
- ▶ Vermont
 - ▶ first state to approve by legislation
 - ▶ Can grow and possess small amounts, no sale

Hemp and CBD

- ▶ Dec. 20, 2018 - Agricultural Improvement Act of 2018 (Farm Bill) is signed
- ▶ Act appears to permit the sale of CBD derived from hemp, which is a low THC cannabis plant - Hemp is no longer a Schedule 1 drug
- ▶ Mentions “all derivatives, extracts, cannabinoids, isomers, acids, salts and salts of isomers” with THC of not more than 0.3% THC, dry weight

Hemp and CBD (contd.)

- ▶ May 31, 2019 - Food and Drug Administration (FDA) holds hearing titled, *Scientific Data and Information about Products Containing Cannabis and Cannabis-derived Compounds*
- ▶ FDA designated 3 hemp seed ingredients as Generally Recognized as Safe (GRAS)
- ▶ Question re safety of CBD in foods, dietary supplements, cosmetics
- ▶ Needs research to provide evidence; What is the cumulative impact of using CBD in multiple forms (e.g., lotion, candy, oil, drink) in one day

Need for Research on Cannabis

- ▶ Many unsubstantiated claims and research gaps
- ▶ Regulatory barriers - Schedule 1 designation means cannabis administration (e.g., for DUI studies) requires approval from DEA, FDA, and NIDA (time consuming)
- ▶ Cannabis supply - No access to retail cannabis products (NIDA is only source)
- ▶ Issues and questions related to:
 - ▶ Cognitive and behavioral effects of different potencies, modes of use, ratios of THC:CBD
 - ▶ Understanding short and long-term benefits/therapeutic uses; placebo effects
 - ▶ Understanding short and long-term harms (e.g., CUD)
 - ▶ Impact of different regulatory, social, economic policies

Clinical/Observational Research

- ▶ Examine health effect of cannabis use in at-risk and under-studied populations
 - ▶ Children and adolescents
 - ▶ Older (> age 50 years) populations
 - ▶ Pregnant and breast-feeding women
- Pharmacokinetics and pharmacodynamics
 - ▶ Different modes of use and products
 - ▶ Dose-response relationships of cannabis and THC to other cannabinoids - short and long-term effects

Clinical/Observational Research

- ▶ Well-controlled clinical trials on:
 - ▶ potential benefits/harms of different modes (oral, inhaled, whole plant, components)
 - ▶ potential benefits/harms of acute and chronic use X mode X potency
 - ▶ understudied conditions (e.g., pediatric epilepsy, PTSD, cancers)
- ▶ Polysubstance Use (e.g., cannabis + alcohol)
 - ▶ short- and long-term effects on range of outcomes

Public Health and Public Safety

- ▶ Broaden knowledge about benefits and harms of cannabis among the general population, health and public health professionals
- ▶ Evaluate/regulate and create standards for recreational and medicinal cannabis products (i.e., quality, safety, packaging)
- ▶ Noninvasive diagnostic technologies to assess cannabis exposure and impairment
- ▶ Broaden access to harm-reduction strategies

“Big Marijuana” is Here!

- ▶ For-profit cannabis (*Big Marijuana*) likely to be similar to *Big Tobacco*
 - ▶ focus on profits
 - ▶ marketing to specific audiences
 - ▶ highlight benefits while downplaying harms
 - ▶ limited sense of corporate responsibility
 - ▶ resist public health regulations