Medical THC: Risks and Benefits For

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DISCLOSURE

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Conundrum

- Cannabis is labeled as a Schedule I drug
- Medical/recreational marijuana is approved in 29 states
- Inadequate scientific evidence exists for rational of medical marijuana use
- Hotly contested issue – more political/sociocultural than medical?
Public Opinion

• Gallup Poll shows that in 1977, 28% thought “use of cannabis should be made legal”. In 2015, that number grew to 58%!

• Quinnipiac 2016 poll showed 89% of respondents supported medical marijuana – no distinction made
FDA Determines Medicine

• The FDA has reviewed policy on marijuana multiple times; most recently in 2011. In 2006, they said:
  • “No sound scientific studies supported medical use of marijuana for treatment in the United States, and no animal or human data supported the safety or efficacy of marijuana for general medical use. There are alternative FDA-approved medications in existence for treatment of many of the proposed uses of smoked marijuana.”
Medications

• Are standardized by identity, purity, potency, and quality
• Are accompanied by adequate directions for use in the approved medical indication
• Have risk/benefit profiles that have been defined in well-controlled clinical trials
Botanically Derived Medication

- Botanical Raw Material (BRM) – fresh or processed (e.g., cleaned, frozen, dried, etc.) part of a single species of plant alga or fungus.
- Botanical Drug Substance (BDS) – prepared from BRM materials by pulverization, aqueous extraction, ethanol extraction, or other similar process. Can be powder, paste, concentrated liquid, juice, gum, syrup, or oil.
- Botanical Drug Product (BDP) – finished product from BDS. Can be solutions, powders, capsules, elixirs, and topicals.
FDA Approval Process

• It takes, on average, 12 years and over $350 million to get a new drug from the laboratory onto the pharmacy shelf

• Once a drug is developed, it undergoes around 3 ½ years before an application is made to the FDA for human testing. Only 1 in 1000 compounds that enter laboratory testing ever make it to human testing.
FDA Phases

- Phase 1 uses 20-80 health volunteers to establish a drug’s safety and profile. (1 year)
- Phase 2 employs 100-300 patient volunteers to assess the drug’s effectiveness (2 years)
- Phase 3 involves 100—3000 patients in clinics and hospitals who are monitored carefully to determine effectiveness and identify adverse reactions (3 years)
- The company then submits an application (usually about 100,000 pages) to the FDA for approval.
Cannabis Chemistry

• Ever changing as research increases
• THC, CBD, CBN (cannabinol): now over 100 identified cannabinoids
• Chemical elements have increased from 400 to between 650 and 750
• Potency (THC levels) increasing - some preparations have 80-90% THC
• In unregulated environments, different percentages of microbials (fungi, bacteria, and algae), pesticides, soil, animal waste, heavy metals, etc., can be found
Entourage Effect

- Refers to a concept that the compounds present in cannabis interact synergistically in such a way that smoking the whole plant is of greater therapeutic benefit than use of any of the isolated compounds.
- Taken root in cannabis industry without any scientific merit.
Marijuana - Potency
D.E.A. Seizure Data

1987-2017

% of THC Found in Seized Marijuana
FIGURE 3-4 Number of medical cannabis patients in Colorado and Oregon in July 2016.  
NOTE: Patients may report multiple qualifying ailments  
SOURCES: Adapted from CDPHE, 2016; OHA, 2016.
WHEN I WAS YOUR AGE, I HAD TO WALK SIX MILES THROUGH SNOW TO BUY POT.
Addiction Liability

• ~10% of those who use marijuana become daily users
• Conditional dependence – risk of dependence of those who use substance
  • Marijuana  9%
  • Ethanol    15%
  • Cocaine    17%
  • Heroin     23%
  • Tobacco    32%
Cannabinoids for Medical Use

• JAMA Systematic Review of Meta-analysis. Whiting et al. 2015.
• 79 trials – nausea and vomiting secondary to chemotherapy, appetite stimulation in HIV/AIDS, chronic pain, spasticity due to MS, depression, anxiety and/or sleep disorder, psychosis, glaucoma, or Tourette syndrome.
• Moderate quality evidence for treatment of chronic pain and spasticity. Low evidence for improvement in nausea or vomiting secondary to chemotherapy, weight gain in HIV, sleep disorder, and Tourette syndrome. Increased risk of adverse effects.
The Health Effects of Cannabis and Cannabinoids

Authors
Committee on the Health Effects of Marijuana: An Evidence Review and Research Agenda; Board on Population Health and Public Health Practice; Health and Medicine Division; National Academies of Sciences, Engineering, and Medicine

PDF Available at:
http://www.nap.edu/24625
Study Approach

• Literature Search: 19,189 articles on health effects of cannabis and cannabinoids between 1999 and 2016
• Systematic Review: Identification, Quality Review
• Primary Literature Review: Identification, Quality Review
• Data Synthesis and Weight of Evidence Assessment (conclusive, substantial, moderate, limited, none)
Therapeutic Effects of Cannabis: Key Points

Illnesses studied include:

- Chronic pain
- Chemotherapy-induced nausea & vomiting
- IBS
- Spasticity r/t MS
- ALS
- Parkinson’s Disease
- Alzheimer's/ Dementia
- TBI/ Spinal Cord Injury
- Anxiety
- Sleep Disorders
- Schizophrenia
- Cancer
- Appetite and weight loss
- Epilepsy
- Tourette's Syndrome
- Huntington’s Disease
- Dystonia
- Glaucoma
- Addiction
- Depression
- PTSD
Therapeutic Effects of Cannabis: Key Points

• In adults with chemotherapy-induced nausea & vomiting, oral cannabinoids are effective anti-emetics. Evidence is conclusive

• In adults with chronic pain, cannabis treated patients were more likely to experience a clinically significant reduction in pain symptoms. Better results with neuropathic pain. Evidence is substantial

• In adults with MS-related spasticity, short-term use of oral cannabinoids improves spasticity symptoms. Evidence is substantial

• For these conditions, results were modest. For all other conditions, there is inadequate information to assess effects. This includes disorders that cannabinoids have been used extensively
FIGURE 3-4 Number of medical cannabis patients in Colorado and Oregon in July 2016.

NOTE: Patients may report multiple qualifying ailments.

SOURCES: Adapted from CDPHE, 2016; OHA, 2016.
Non-Therapeutic Effects/Risks

- Respiratory problems
- Infectious (*Aspergillus*)
- MVA (Substantial)
- Overdose injuries in children
- Cognitive impairment (acute & chronic)
- Increased risk of psychosis/Schizophrenia
- Worsening of Bipolar Disorder
- Increased suicidal ideations & increased rate of suicide completion in users vs non-users
- Increased incidence of Social Anxiety Disorder
- Addiction
  - increased risk of Cannabis Use Disorders (increases with more frequent use and younger age)
  - Increased risk of SUD other than Cannabis Use Disorders
Cannabis Use and Opioids

Olfson et al. American Journal of Psychiatry. 2018
- Cannabis use increased risk of developing opiate use disorder

National Epidemiological Survey on Alcohol and Related Conditions (NESARC)
- Data showed MJ users greater than 2x more likely to meet criteria for OUD

A number of recent papers have suggested MJ may reduce risk of opiate overdose. However that this may be as much related to other factors such as the use of Narcan rescue in “progressive” states as opposed to MJ use.
“Ok, I’m going to prescribe marijuana. But you have to promise not to enjoy it.”
Conclusions

- There is evidence of efficacy for cannabinoids in treatment of certain medical conditions (such as neuropathic pain, MS, spasticity, nausea/vomiting secondary to chemotherapy). Although these efficacies are not superior to existing FDA approved medications.

- There are numerous significant risks associated with smoked marijuana, including addiction, psychiatric disorders, motor vehicle accidents, cognitive deficits, etc.

- Movement to revive cannabis as a medicine is driven by many factors other than science.

Source: Market Watch
Thank you