



# The Health Effects of Cannabis and Cannabinoids

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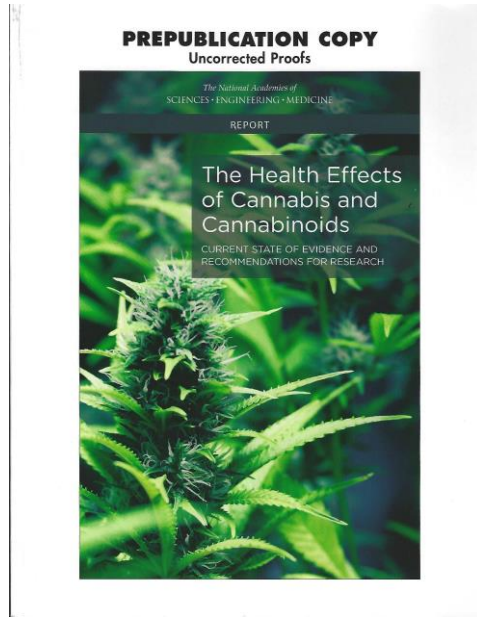
# Disclosures

- In the past three years, Dr. McCarty served as an investigator on a study that received donated medication from Alkermes (i.e. extended-release naltrexone).

# Learning Objectives

- Enhance your comfort addressing patient questions regarding medical use of cannabis
- Describe the quality of evidence for cannabis harms and benefits
- Understand why cannabis research is limited

# National Academy of Medicine (2017)



- Sarah Feldstein Ewing, PhD  
OHSU School of Medicine  
Department of Psychiatry
- Committee Member
- Committee updated the 1999  
Institute of Medicine review  
*Marijuana and Health*
- <https://www.nap.edu/catalog/24625/the-health-effects-of-cannabis-and-cannabinoids-the-current-state>
- PDF can be downloaded at no cost

# Statement of Task: Committee Will

- develop a consensus report assessing a) the health effects of cannabis use and b) potential therapeutic uses
- provide an overview of the cannabinoid & endocannabinoid system, history of use in the US, and describe the regulatory and policy landscape.
- make recommendations for a research agenda.

# Weight of Evidence Categories

- Conclusive: strong evidence from randomized trials
- Substantial: supportive findings from good-quality studies with few credible opposing findings
- Moderate: some evidence from good to fair-quality studies with few credible opposing findings
- Limited: weak evidence from fair quality studies with mixed findings
- Insufficient: insufficient evidence from mixed findings or a single study

# Areas reviewed

- Therapeutic effects
- Cancer
- Cardiometabolic risk
- Respiratory disease
- Immunity
- Injury and death
- Prenatal and neonatal exposure
- Psychosocial
- Mental health
- Problem cannabis use
- Abuse of other substances
- Challenges and barriers in cannabis and cannabinoid research

# Conclusions: Substantial Evidence

- **Substantial evidence** that cannabis is effective for
  - Treatment of chronic pain and as anti-emetics
  - Improving Multiple Sclerosis spasticity symptoms
- **Substantial evidence** that use
  - Increases risk of motor vehicle crashes and schizophrenia
  - While pregnant reduces fetal birth weight



# Conclusions: Therapeutic Effects

- **Moderate evidence** that cannabis is effective for improving short-term sleep outcomes for
  - Obstructive sleep apnea, Fibromyalgia, Chronic pain, Multiple Sclerosis
- **Limited evidence** that cannabis is effective for improved
  - appetite and reduced weight loss in HIV, measures of MS spasticity, Tourette symptoms, anxiety, PTSD

# Conclusions: Therapeutic Effects

- **Limited evidence** of improved outcomes for TBI
- **Limited evidence** that cannabis is ineffective for reducing symptoms of
  - dementia & glaucoma
  - depression associated with chronic pain or MS

# Conclusions: Therapeutic Effects

- **Insufficient evidence** that cannabis is effective for
  - Cancers, IBD, Epilepsy,  
Paralysis spasticity, ALS,  
Huntington's disease, Parkinson's disease,  
Dystonia, Achieving abstinence for SUD  
Mental health outcomes for schizophrenia

# Conclusions: Cancer

- **Moderate evidence** of no statistical association with
  - Lung cancer from cannabis smoking
  - Head and neck cancer
- **Limited evidence** of a statistical association with
  - Testicular germ cell tumors from frequent use
- **Insufficient evidence** to support a statistical assoc with esophageal, prostate, cervical, anal and bladder cancers

# Conclusions: Cardiometabolic risk

- **Limited evidence** of a statistical association with
  - Triggering myocardial infarction, ischemic stroke, decreased risk of metabolic syndrome and diabetes
- **No evidence** of association between chronic use and
  - Increased risk of acute myocardial infarction

# Conclusions: Respiratory Disease

- **No evidence** of an association with worse respiratory symptoms and more bronchitis episodes
- **Moderate evidence** of improved airway dynamics with acute use but not chronic use
- **Moderate evidence** of improved respiratory symptoms when cannabis use stops
- **Limited evidence** of increased risk of COPD
- **No evidence** of an association with increased hospital admits for COPD and development or exacerbation of Asthma

# Conclusions: Immunity

- **Limited evidence** of associations of cannabis smoking with a decrease in inflammatory cytokines
- **Limited evidence** of no association of daily cannabis use with progression of liver fibrosis or hepatic disease in individuals with HCV
- **No evidence** of an association with adverse immune cell response in healthy individuals or with HIV or HPV

# Conclusions: Injury and Death

- **Substantial evidence** of risk of motor vehicle crashes
- **Moderate evidence** of risk of overdose and respiratory problems in pediatric populations in states w/legal use
- **No evidence** of an association with all cause mortality, occupational injury, or death due to cannabis overdose



# Conclusions: Prenatal exposure

- **Substantial evidence** of maternal use & low birth weight
- **Limited evidence** of maternal use and pregnancy complications or admission to neonatal intensive care
- **No evidence** of delayed outcomes in development and maturation.

# Conclusions: Psychosocial

- **Moderate evidence** of association with impaired cognition from acute use.
- **Limited evidence** of association with impaired academic achievement, unemployment, social functioning
- **Limited evidence** of sustained abstinence and impaired cognitive function.

# Conclusions: Mental Health

- **Substantial evidence** of elevated risk of schizophrenia (highest risk among most frequent users)
- **Moderate evidence** of improved cognitive performance in people with psychotic disorders, increased mania and hypomania in people with bipolar disorders, increased risk of depression, suicidal ideation, suicide completion, and increased social anxiety disorder

# Conclusions: Mental Health

- **Moderate evidence** of no association with more negative symptoms of schizophrenia
- **Limited evidence** of increased positive symptoms of schizophrenia, development of bipolar disorder, anxiety disorder, symptoms of anxiety, or more severe PTSD

# Barriers to Research

- Classification as Schedule I impedes research
- Difficult to access the quantity, quality and type of cannabis product for research on health effects of use
- A diverse network of funding sources is required
- Improved and standardization of research methods is required to develop conclusion evidence of positive and negative health effects.

# Research Recommendation 1

- Develop an evidence base on the short-term and long-term health effects of cannabis use
  - Clinical and observational research
  - Health policy and economics research
  - Public health and public safety research

# Research Recommendation 2

- Promote development of research standards to improve the quality of cannabis research
  - An observational and clinical study minimum dataset
  - Uniform terminology for cannabis research
  - Standardized question banks for clinical research

# Research Recommendation 3

- Improve surveillance capacity
  - Develop question banks on beneficial and harmful effects of cannabis use for use in national surveys
  - Assess use of diagnostic codes to monitor health effects
  - Establish standards for testing facilities



# Research Recommendation 4

- Address research barriers
  - Expand access to research-grade marijuana
  - Develop nontraditional funding to support research
  - Improve the quality, diversity and validity of research-grade cannabis products

# Cannabis, opioids and ecological validity

- Studies of opioid mortality suggest reduced death rates in states with medical cannabis (Bachhuber et al, JAMA IM, 2014, 174, 1668 – 1673; Powell et al, Rand working papers)
- A longitudinal study, however, found cannabis use was associated with increased risk of opioid use initiation and greater risk of developing an opioid use disorder with increasing levels of cannabis use (Olfson et al Am. J. of Psychiatry, 2018, 175, 47 – 53)



Thank You