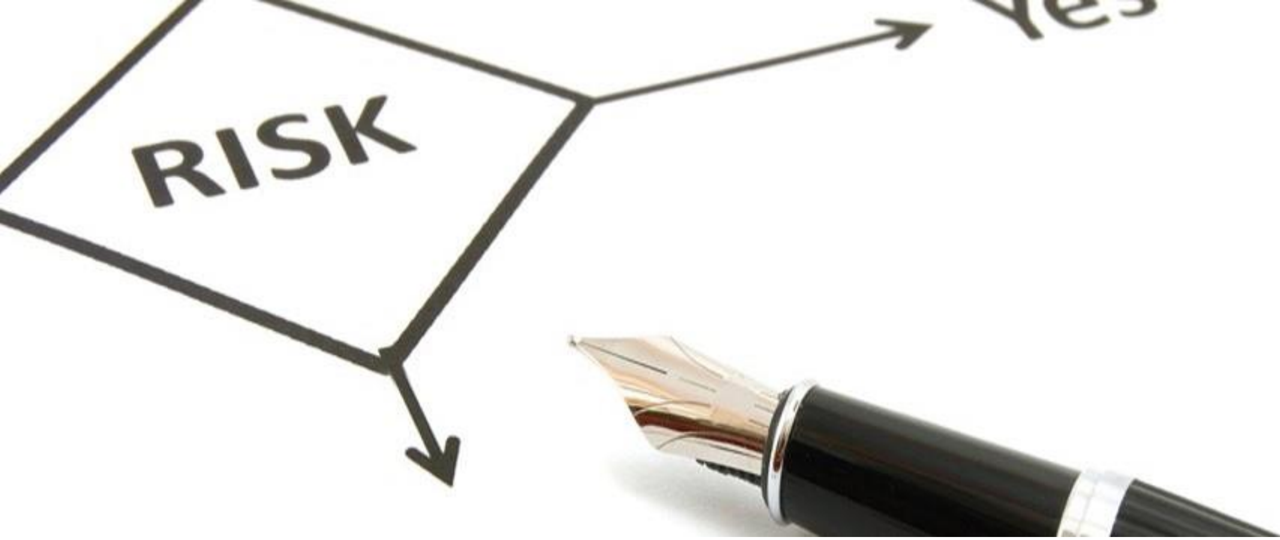

Medical Marijuana

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Munich Re US (Life)

ACSW/SEAC Annual Meeting
17 Nov 2016

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Learning Objectives

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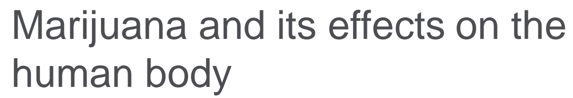
1. Provide an introduction to marijuana and its effects on the human body
2. Discuss the history of medical marijuana
3. Discuss the “marijuana revolution” currently occurring in the USA
4. Share current clinical evidence for use of medical marijuana
5. Discuss implications for the physician and the insurance industry

Marijuana and its effects on the human body



Marijuana = Cannabis

- Generic term for drugs/chemicals from plants in genus *Cannabis*
- *Cannabis sativa*
- Most commonly used illicit drug worldwide
- Hundreds of strains/hybrids
- Active compounds are called cannabinoids
  - THC = delta-9-tetrahydrocannabinol
  - CBD = cannabidiol

Cannabinoid Receptor System
(discovered in 1990)

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CB1 receptor

- Brain and spinal cord (primarily)
- Peripheral nerves
- Muscle, liver, fat

- Inhibits release of several neurotransmitters
- Areas that affect pleasure, memory, pain, thinking, concentration, coordination

- Psychoactive affects
- Binding site for THC

CB2 receptor

- Immune system (mainly)
  - spleen
  - white blood cells

- Regulates immune responses and inflammatory reactions
- Anti-inflammatory, anti-cancer

- No psychoactive affects
- Binding site for CBD

Overall Health Effects of Marijuana

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- Related mostly to THC content and its interaction with CB1 receptor
- Potency determined by THC content
  - THC level
  - THC/CBD ratio
  - CBD may mitigate effects of THC
- Many strains and hybrids have been “engineered” to achieve desired effects
- Limited number of CB1 receptors in the brain stem

Overall Health Effects of Marijuana

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- Central Nervous System
  - Memory loss, learning disability
  - Depression, paranoia, addiction
  - Anxiety
- Cardiovascular system
  - Increased blood pressure and heart rate
  - Increased risk for heart attack
- Digestive system
  - Acute hunger ("munchies")
  - Constipation
- Respiratory (when smoked)
  - Bronchitis
  - Lung cancer

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History of Medical Marijuana

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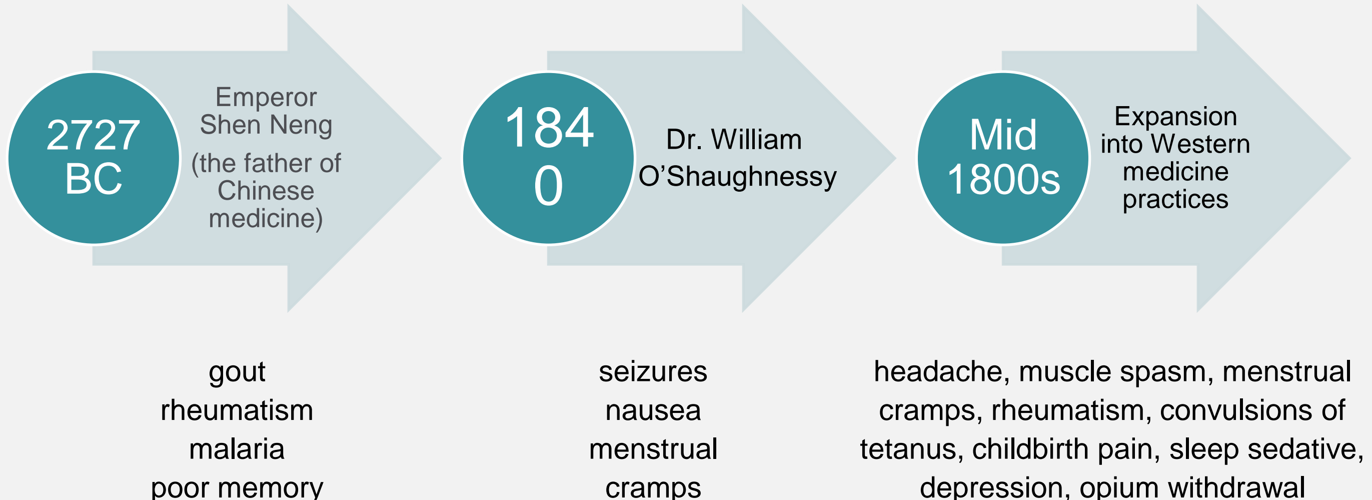
History of Medical Marijuana



gout
rheumatism
malaria
poor memory

seizures
nausea
menstrual
cramps

headache, muscle spasm, menstrual cramps, rheumatism, convulsions of tetanus, childbirth pain, sleep sedative, depression, opium withdrawal

Pure Food and Drug Act of 1906

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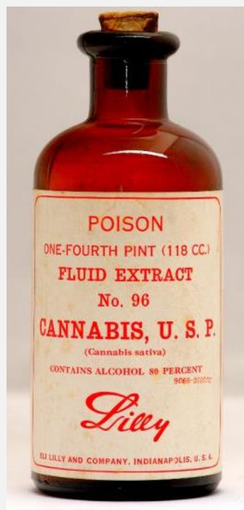
- Consumer protection act to combat “poisonous” foods, drugs, medicines, liquors
- Introduced proper labeling



www.cnn.com The quick hit history of medical marijuana

Marijuana Tax Act of 1937

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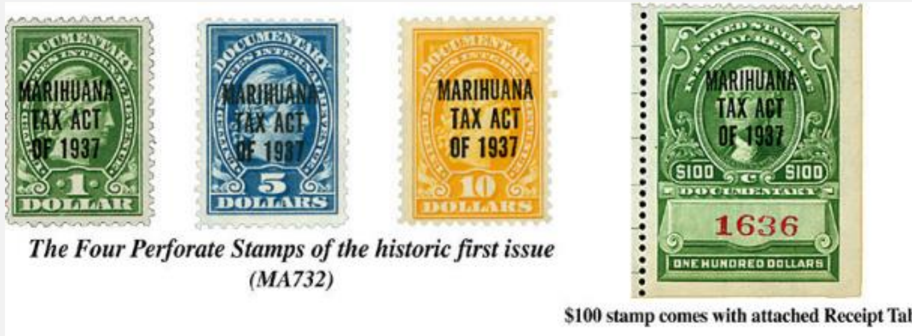
- Made possession and transfer of cannabis illegal in the USA
- Imposed high taxes (occupational excise tax, transfer tax)
- If you wanted to buy marijuana, you needed a stamp



Controlled Substances Act of 1970

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- Five categories based on abuse potential and clinical usefulness
- Schedule 1 drugs
  - No accepted medical use
  - High potential for abuse
  - Lack accepted safety data
  - Cannot be prescribed by physicians
  - Heroin, LSD, **marijuana**
- Comprehensive Drug Abuse Prevention and Control Act

Current Status of Medical Marijuana in the USA

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- Schedule 1 drug (no accepted medical use, high potential for abuse)
- Confirmed 2001 and 2006
- Only two FDA-approved* cannabinoid drugs
  - dronabinol, nabilone – synthetic THC capsules
  - Limited indications (N/V chemotherapy, anorexia AIDS)
  - Not widely used (effectiveness)
- No FDA-approved medications that are smoked

* FDA = Food and Drug Administration (responsible for approval/marketing of drugs in the USA)

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The Marijuana Revolution

Getty Images

Medical Marijuana

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- 1996 – California – Proposition 215 – The Compassionate Use Act of 1996
  - Approved for use by "seriously ill" individuals with MD recommendation
- 2009 – US Attorney General – relaxed federal law enforcement
    - Rapid rise in medical marijuana licenses
    - Colorado: 4819 (12/08) => 116,000 (9/14)
- 2013 – US Department of Justice – advised US attorneys not to pursue action against physicians
- July 2016 – medicinal marijuana legalized in 42 states
  - 25 states, DC, Guam, Puerto Rico – comprehensive public programs
  - 17 additional states – allow low THC (0.8%, 3%. 5%) products for limited situations
- November 2016 – Florida, North Dakota, Arkansas

Recreational Marijuana

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- Nov 2012 – Colorado – Amendment 64 – legalized recreational marijuana
- Jan 2014 – Colorado retail stores opened for business
  - Cash business, some shops > 500 customers/day
  - $53 million in tax revenue in first year (28% tax rate)
- Feb 2016 – recreational marijuana legalized in 4 states and the District of Columbia
  - Colorado (2012), Washington (2012), Alaska (2014), and Oregon (2014)
- Nov 2016 – California, Massachusetts, Nevada, Maine
- In general, these laws treat cannabis similar to alcohol
  - Over 21, No public consumption, cannot transfer out-of-state
  - Highly regulated, heavily taxed

Marijuana Laws in the USA by State

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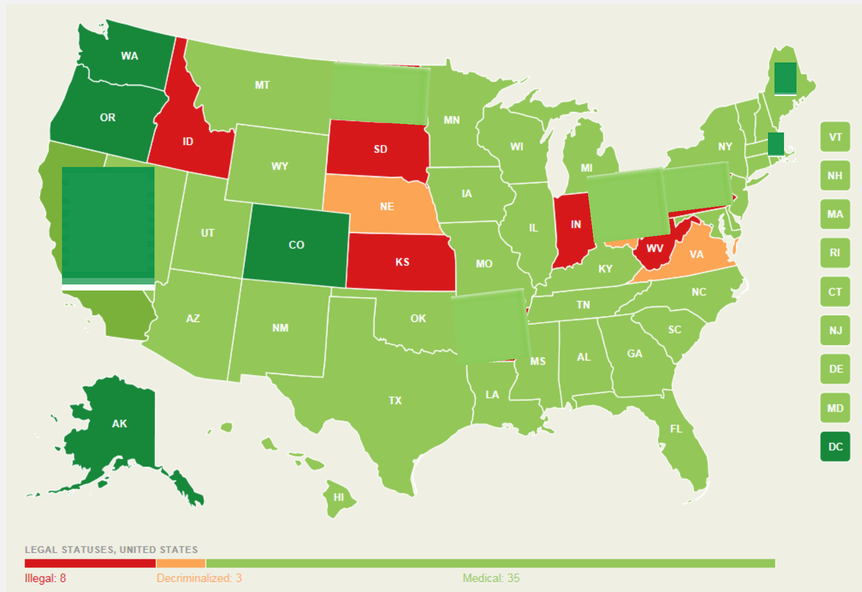

Marijuana Legal Status

- Illegal
- Decriminalized
- Medicinal
- Recreational

4/17/16 PA

6/8/16 OH

11/16 FL, ND, AK
CA, NV, MA, ME

www.leafly.com

February 1, 2016 ==> November 2016

Guzman Medical Marijuana

Patient Access to Medical Marijuana

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While each state has their own specific procedures, in general, this is the process:

1. Visit a physician
2. Obtain physician certification
   - Qualified condition that may benefit from medical marijuana
   - History and Physical
   - Informed consent (risk/benefit ratio)
3. Medical marijuana obtained (dispensary or treatment center)

Physician cannot legally “prescribe” medical marijuana only “certify” potential benefit

Not available from pharmacies because it’s federally illegal

Ann Med 2016 Feb 25:1-14

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Medical Marijuana – clinical evidence

Getty Images

Medical Marijuana

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- Use of marijuana or “marijuana-like” compounds for medicinal purposes
- Efficacy related to cannabinoid involved and receptor interaction (CB1, CB2)
- Includes forms other than smoked herbal marijuana
- “Medical marijuana” can include:
  - Herbal marijuana that is smoked, vaporized, or ingested with variable THC/CBD content
  - Synthetic analogues that mimic THC (e.g. dronabinol, nabilone)
  - THC capsules
  - THC oil
  - Nabiximols oromucosal spray (THC/CBD)
  - CBD only pills

Medical Marijuana

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- Medical research to date has primarily considered oral cannabinoids and not other routes (e.g. inhaled or ingested)
- Limited indications
  - Chronic neuropathic or cancer pain
  - Spasticity due to MS
  - Nausea and vomited due to chemotherapy (low-quality evidence)
- Improvement in symptoms, but not statistically significant
- Poor quality data
- No assessment of long-term side effects
- Limited evidence to support cannabinoids for other medical conditions

JAMA. 2015;313(24):2456-2473. doi:10.1001/jama.2015.6358.

Investigational drugs currently undergoing FDA trials

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Drug name	Forms	Indications	Approval status
delta-9-tetrahydrocannabinol and canabidiol (Sativex®)	cannabis extracts from *Cannabis sativa* (leaf/flower) 2.7 mg THC + 2.5 mg CBD per 100 microliter spray **oromucosal spray**	Spasticity due to Multiple Sclerosis (MS) Neuropathic Pain (in MS) Moderate/Severe Pain in advanced cancer	Approved in 18 European countries + New Zealand Israel Canada Canada FDA - Phase 3 Clinical Trials in USA
cannabidiol (Epidiolex©)	**syrup/oil** **99% CBD (almost no THC)**	Dravet syndrome – rare intractable childhood epilepsy	Very favorable initial results FDA Fast Track approval (pending)

Qualifying Conditions (by state law)

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- Most medical conditions not supported by solid clinical research
- No consistency in the USA
- Wide variability in “approved” conditions (based on low-quality evidence, anecdotal reports, public opinion, advisory board or council)
- Criteria very broad in some states
  - Any “serious medical condition” for which medical use of marijuana (cannabis) is “appropriate”
  - “Chronic Pain”
    - Chronic fibromyalgia
    - Migraine headaches
    - Arthritis

Qualifying Conditions – Colorado

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Colorado Medical Marijuana Registry

Indication

"severe" pain
muscle spasms
severe nausea

www.colorado.gov/cdphe/medicalmarij

January 31, 2016

320,229 patients
107,798 active patients

13.3% have dedicated PCP
232 different physicians

Male

average age 42.5

Chronic Pain

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- 28 studies (2454 patients)
- Only 4 were for smoked THC
  - 1-5 cigs/day (2.5% to 9.4%) vs. placebo
- Conditions
  - Neuropathic Pain
  - Cancer Pain
  - HIV-associated sensory neuropathy
  - Refractory pain due to MS or other neurological conditions
  - Chemotherapy-induced pain
- Research supports compassionate care; increase quality of life

JAMA. 2015;313(24):2456-2473. doi:10.1001/jama.2015.6358.

Risk for Drug Abuse

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- Is nearly all “medical” marijuana use in the USA actually disguised recreational use?
  - Most current users were already regular marijuana users
  - 91% use for “pain”
- 33% increase frequency of use in teens (high risk group)
  - medical marijuana states vs 6% for the rest of the country
- 24.8% lower mean annual opioid mortality rate
  - “direct causal link cannot be established”
- “Medical marijuana got me off narcotic pain pills” - anecdotal case report
  - 100 Percocet pills/month => 1 joint three times/day (AZ)
  - Ex-Chicago Bear, Jim McMahon

Journal of Global Drug Policy and Practice (2014), National Survey on Drug Abuse and Health
JAMA Internal Medicine. Aug 25, 2014, Chicago Tribune, Jan 29, 2016

Medical Marijuana Users – California vs. Netherlands

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	California	Netherlands
Recreational Marijuana	Illegal	1970s (decriminalized)
Medical Marijuana (legalized date)	1996	2003
Date	2005-2010	2005-2010
Annual rates of use	7000 per 100,000	8 -10 per 100,000
Sex	Male (77%)	Male (72.9%)
Average Age	40.7 years	55.6 years
Prior regular cannabis use < 19 y/o	YES – 89%	YES – 67%
Average daily dose	2.4-3.8 grams	0.68 grams
Indications	Pain, insomnia, anxiety	Chronic pain

Hazekamp A, Eur J Clin Pharmacol. 2013;69(8):1575-80

Edible Varieties

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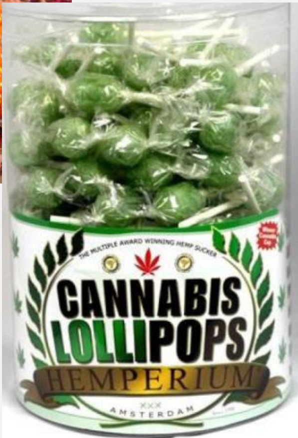

Edible Varieties

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- Estimated 16-26% of medical marijuana users consume edible products
  - Lacks harmful by-products of smoking
  - Delayed effects (peak 30 min – 3 hours; duration 12 hours)
  - Less bioavailability than when smoked
- Manufacturing of edible products is not standardized in the USA
- Labeling is poor
  - Only 17% are labeled correctly
  - 60% at least 10% LOWER (some with negligible amounts!)
  - 23% at least 10% HIGHER
- Risk for unintentional overdose, intoxication, and death

JAMA June 23/30, 2015 Volume 313, Number 24

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Implications for the Physician and the Insurance Industry

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Implications for the Physician in the USA

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- Limited medical evidence to support majority of “qualifying” conditions
- No clear “best practices” (amount, variety, dosing regimen) esp. for smoked marijuana
  - Dosing strategy = “start slow, titrate up”
- Lack of knowledge and comfort level to prescribe
- Ethical dilemma between compassionate care and adverse outcomes
- Risk for arrest and federal prosecution as well as malpractice risk
- Long term risks remain unclear (psychotic disorder, cognitive impairment, drug tolerance, drug dependency)

Marijuana and “Drugged” driving

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- Fatal car crashes involving marijuana have TRIPLED in the USA (1999-2010)
  - California
    - More than 40% increase in drivers killed in crashes who tested positive for drugs (2009-2013)
    - Marijuana-related fatal accidents EQUAL to Alcohol-related fatal accidents (BAC $\geq$ 0.08% legal limit) (Los Angeles and San Francisco)
    - Increase in marijuana-related admissions to emergency rooms
  - Colorado
    - 32% increase in marijuana-related traffic deaths (year after 2013 recreational use law)

Am J Epidemiology

Implications for the Insurance Industry

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- Life/Disability insurance
  - Long term risks remain unclear
    - psychosis/psychiatric impairment
    - cognitive impairment
    - drug tolerance and drug dependence
  - Increase in “drugged” driving and accidents
  - Risk for abuse – substitute for narcotics or alcohol
- Health insurance
  - Increase in health care utilization due to misuse (emergency rooms, poison control)
  - Demand for approval for prescriptions for qualifying conditions
- Property and Casualty (P&C) insurance; Malpractice insurance
  - High value of cannabis plants, growers, processors, dispensaries, liability

Medical Marijuana – Take Home Messages

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- Medical marijuana is not going away
  - Under federal law, marijuana is considered an illegal Schedule 1 drug
  - Not first-line therapy for any medical condition
  - Includes forms other than smoked herbal marijuana
- Clinical research lacking for most “approved” conditions with limited studies on smoked marijuana
- More scientific research is urgently needed specifically on the active components of cannabis in a non-smoked form (e.g. cannabidiol)
- Rapidly evolving landscape
- Ongoing legalization/decriminalization of recreational marijuana only complicates the picture
- As the role of the drug evolves, the insurance industry will be required to respond flexibly

Thank you very much for your attention!

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