

Facts about Cannabis and “Medical Marijuana” for Youth

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Disclosure Information

I have no relevant financial relationships with the manufacturer(s) of any commercial product(s) and/or provider of commercial services discussed in this CME activity

I will mention clinical trials involving the following:

- Cannabidiol (Epidiolex)
- Nabiximols (Sativex)



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Objectives

- Name key **adverse effects** of cannabis use by youth
- Enhanced ability to provide **psychoeducation to parents** regarding cannabis
- Increased ability and comfort with providing **psychoeducation and anticipatory guidance** to **teens** about cannabis
- Be able to explain **physician role and responsibilities** in “medical marijuana” programs

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What does one mean by "Marijuana"?

- **Marijuana**: non-scientific name for *Cannabis sativa*
- **Cannabis**: more scientific, clinical/research term used for *C sativa*
- Delta-9-tetrahydrocannabinol (**THC**): the main psychoactive component of *C sativa*
- THC is a **Cannabinoid**
- **Synthetic cannabinoid analog**: JWH-018, dronabinol



What does one mean by "Marijuana"?

- Cannabis ≠ THC
- Cannabinoid ≠ Marijuana
- Dronabinol & Nabilone ≠ "Medical marijuana"
- Nabiximols ≠ "medical marijuana"
- Cannabidiol ≠ "cannabis oil"
- Endocannabinoid system ≠ endo-THC system



How many?

- Over 60 cannabinoids in cannabis sativa plant
- Most of which have *not* been characterized, let alone effects of combination

Brenneisen R (2007) *Chemistry and Analysis of Phytocannabinoids and Other Cannabis Constituents in Forensic Science and Medicine: Marijuana and the Cannabinoids* M. A. ElSohly ed., Humana Press, Totowa, New Jersey



Cannabis IS addictive

8000 subjects, age 15-64 years

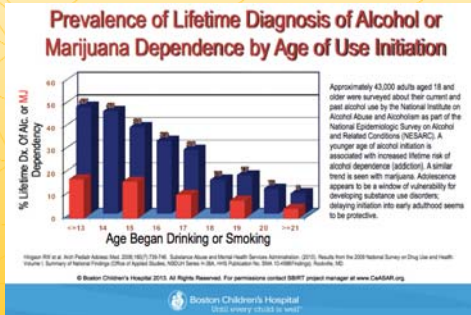
Of those who endorsed at least one time cannabis use, about **9 percent** eventually developed dependence

Compared to alcohol 15 percent
 cocaine 17 percent
 heroin 23 percent

Anthony JC, Warner LA, and Kessler RC (1994). Comparative Epidemiology of Dependence on Tobacco, Alcohol, Controlled Substances, and Inhalants: Basic Findings from the National Comorbidity Survey. *Exp. and Clin. Psychopharmacol* 2(3): 244-268

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Cannabis IS Addictive



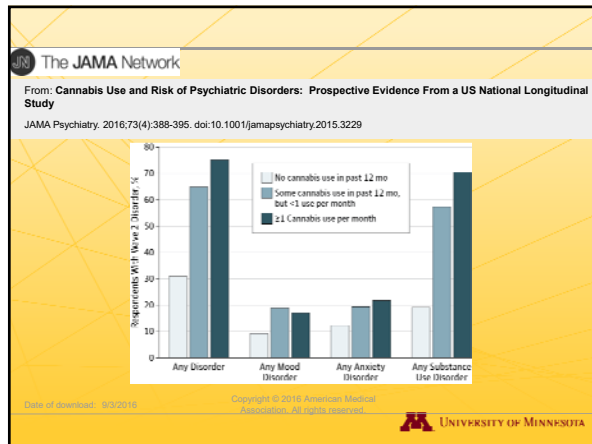
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Cannabis: Changes in Potency

- Tested product seized by DEA from 1995 to 2014
- 2010-2014: Shift from marijuana to more **sinsemilla**
- **THC** potency **tripled** from ~4 to ~12 %
- **CBD** content **halved** (~.28% to <.15%)
- **THC:CBD** increased from **14 to 80**

ElSohly MA, Mehmedic Z, Foster S, Gon C, Chandra S, and Church JC (2016). Changes in Cannabis Potency Over the Last 2 Decades (1995-2014): Analysis of Current Data in the United States. *Biol Psychiatry* 79(7): 613-9.

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Cannabis Use Increases the Risk of Substance Use Disorder

Past year cannabis use associated with:

Dx	Prevalence OR	Incidence OR
alcohol use disorder	2.5	2.7
cannabis use disorder	12.4	9.5
other drug use disorder	3.1	2.6
nicotine dependence	1.5	1.7

Blanco et al. (2016) Cannabis Use and Risk of Psychiatric Disorders. JAMA Psychiatry 73(4): 388-395. UNIVERSITY OF MINNESOTA

Cannabis and Psychosis: How Much Proof Do We Need?

“It has been almost 30 years since Andreasson...demonstrated an association between cannabis use and subsequent onset of schizophrenia.”

Gage SH, Hickman M, Zammi S (2015). Association Between Cannabis and Psychosis: Epidemiologic Evidence. *Biol. Psychiatr.* 9: 549-556


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Cannabis Use IS Marker of Other Substance Use

Kids who report past year cannabis use
need to be screened for all other
substance use


JAMA Pediatr. 2014 Sep;168(9):822-8. doi: 10.1001/jamapediatrics.2014.774.

An electronic screen for triaging adolescent substance use by risk levels.
Levy S¹, Weiss R², Sherritt L³, Ziemnik R⁴, Spalding A⁵, Van Hook S⁶, Shrier LA⁷.

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Cannabis and Other Substance Use

- Child/adolescent cannabis use is a marker for other substance use. Period.
- Child/adolescent cannabis use is neither normal nor normative. Period.
- There is no “healthy use” in children/teens. Period.

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Cannabis and Cars Don't Mix

- Cannabis intoxication impairs driving
 - Reaction time, attention, lane tracking
- Driving under the influence of cannabis
doubles MVC risk

R.L. Hartman, M.A. Huestis, (2013), Cannabis effects on driving skills. Clinical Chemistry, 59 (3) pp. 478–492

G. Battistella, E. Fornari, A. Thomas, J.F. Mall, H. Chtioui, M. Appenzeller, J.M. Annoni, B. Favrat, P. Maeder, C. Giroud (2013) Weed or wheel? fMRI, behavioral and toxicological investigations of how cannabis smoking affects skills necessary for driving PLoS ONE 8(1): e52545

Ramaekers, J.G., Moeller, M., van Ruitenbeek, P., Theunissen, E., Schneider, E., & Kauert, G. (2006). Cognition and motor control as a function of Delta -sup-9-THC concentration in serum and oral fluid: Limits of impairment. Drug and Alcohol Dependence 85, 114-122.

Li, M.C., Brady, J.E., DiMaggio, C.J. et al. (2012) Marijuana use and motor vehicle crashes. Epidemiologic Reviews, 34, 65–72.

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**"Weed" Does Make You Dumber:
How would you like to shave off 6 IQ
points?**

Current Issue > vol. 109 no. 40 > Madeline H. Meier, E2657-E2664, doi: 10.1073/pnas.1206820109

CrossMark
Click for updates

**Persistent cannabis users show neuropsychological decline
from childhood to midlife**

Madeline H. Meier^{a,b,1}, Avshalom Caspi^{a,b,c,d,e}, Antony Ambler^{a,f}, HonaLee Harrington^{b,c,d},
Renate Houts^{b,c,d}, Richard S. E. Keefe^d, Kay McDonald^f, Aimee Ward^f, Richie Poulton^f, and
Terrie E. Moffitt^{a,b,c,d,e}

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Teens Are Not Little Adults

16-17 year-old vs 24-28 year-old

↓ subjective, memory,
physiological and
psychotomimetic effects


⊘ satiety
↓ inhibitory processes


Mokrysz C, Freeman TP, Korkki S, Griffiths K, and Curran HV (2016).
*Are adolescents more vulnerable to the harmful effects of cannabis
than adults? A placebo-controlled study in human males. Transl
Psychiatry 6(11): e961.*

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Legislation: DEA Scheduling

Bippity-Boppity-Boo,
Put it in Schedule II



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FDA Approved Medications

- **Nabilone** (synthetic delta-9-THC)
 - Indication:
 - N/V associated with cancer chemotherapy in patients who have failed to respond adequately to conventional antiemetic treatments (adult)
- **Dronabinol** (synthetic delta-9-THC analog)
 - Indications:
 - anorexia associated with weight loss in patients with AIDS (adults); and
 - N/V associated with cancer chemotherapy in patients who have failed to respond adequately to conventional antiemetic treatments (adult)

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FDA Investigational Medications

- **Epidiolex** - plant-derived cannabidiol [**CBD**]
- **Sativex** – nabiximols; plant-derived **CBD+THC**
(GW Pharmaceuticals)

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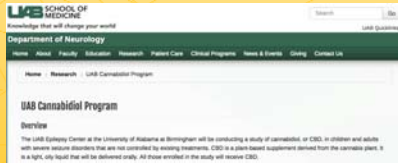
Variable “Programs” and Products

- Raw plant, smokeable product for “medicinal” use (CA, IL) +/- retail recreational market, including edibles (CO, WA)
- Oral “Cannabis Oil” only (AL*, GA, IA*)
- Non-smokeable *C. sativa* plant extracts (MN)

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University of Alabama at Birmingham Cannabidiol Highlights

- Must be Alabama resident
- Specific and complex medical record requirements
- Neurologist referral



<http://www.uab.edu/medicine/neurology/research/uab-cannabidiol-program>



UAB CBD Preliminary

<http://www.uab.edu/medicine/neurology/research/uab-cannabidiol-program>



UAB CBD Preliminary

- "...many patients do have a reduction in seizure activity, and we hope our efforts will further define how to best utilize CBD oil for **maximum benefit to the appropriate patient population.**"
- Martina Bebin, M.D., professor of neurology and principal investigator for the pediatric study



Variable Compound Source and Scrutiny

- GW Pharmaceuticals ≠ “Medical Marijuana”
- GW FDA scrutinized trials and regulation
 - Orphan Drug status for CBD in Dravet, Lennox-Gastaut, neonatal HIE
- “Medical Marijuana” no current GMP, or surveillance



How is a plant to be “dosed”?

Example: Trimethoprim/Sulfamethoxazole

- We dose TMP/SMX in mg amounts of TMP component
- When “dosing” cannabis, milligrams of what?
- What about the hundreds of other potentially active compounds?
- How is a pharmacist to check our Rx?
- How is a nurse to check dose accuracy before administering?

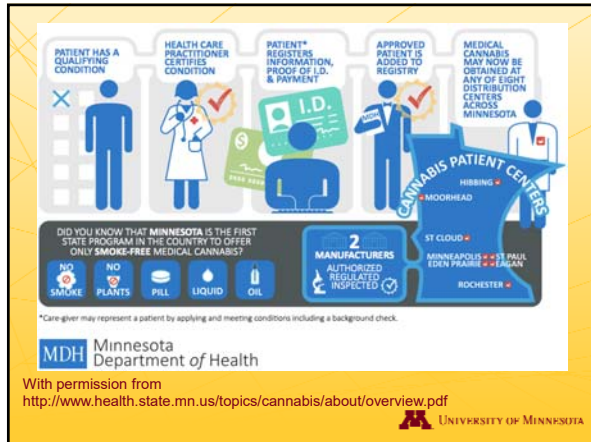


I’ll just leave these here...

Geffrey AL, Pollack SF, Bruno PL, and Thiele EA (2015). *Drug-drug interaction between clobazam and cannabidiol in children with refractory epilepsy*. Epilepsia 56(8): 1246-51.

Freisthler B, Gruenewald PJ, Wolf JP (2015). *Examining the relationship between marijuana use, medical marijuana dispensaries, and abusive and neglectful parenting*. Child Abuse Negl 48: 170-8.





Qualifying Conditions

- Cancer associated with severe/chronic pain, nausea or severe vomiting, or cachexia or severe wasting
- Glaucoma
- HIV/AIDS
- Tourette Syndrome
- Amyotrophic Lateral Sclerosis (ALS)
- Seizures, including those characteristic of Epilepsy

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Qualifying Conditions

- Severe and persistent muscle spasms, including those characteristic of Multiple Sclerosis
- Inflammatory bowel disease, including Crohn's disease
- Terminal illness, with a probable life expectancy of less than one year
- "Intractable" pain
- Posttraumatic stress disorder

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Practitioner Experience So Far: Seizures

- Cost and no reduction in seizures
- Unwillingness to try other proven therapies
- Some seizures improved and others worsened
- Diazepam has been lowered due to somnolence
- We did see some AED level changes
- Has had just 1 follow up appointment with me since starting cannabis



Practitioner Experience So Far: Seizures

- Neurologist who has prescribed anti-seizure medications has threatened to discontinue prescribing due to use of medical marijuana because of concerns for interactions



Minnesota Possession Laws

Offense	Penalty	Incarceration	Max. Fine
Possession			
42.5 g or less*	Misdemeanor	N/A	\$ 200
More than 42.5 g - less than 10 kg	Felony	5 years	\$ 10,000
10 - less than 50 kg	Felony	20 years	\$ 250,000
50 - less than 100 kg	Felony	25 years	\$ 500,000
100 kg or more	Felony	30 years	\$ 1,000,000
More than 1.4 grams inside one's vehicle (except the trunk)	Misdemeanor	90 days	\$ 1,000

* A conditional discharge is possible for first time offenders.
* There is a possible drug education course requirement.



Kansas Possession Laws

It is a crime to possess any amount of marijuana (including small amounts for personal use) in Kansas.

(Kan. Stat. Ann. § 21-5706(b)(3).)



Kansas Proposed Legislation

SB 151, would allow medical professionals to prescribe and dispense "non-intoxicating cannabinoid medicine."



Practitioner Liability

"Policy makers often make decisions based on the majority will of the electorate, but physicians and other healthcare practitioners do not."

http://www.americanbar.org/content/dam/aba/administrative/healthlaw/health_mo_premium_hl_healthlawyer_v29_2802.authcheckdam.pdf



Practitioner Liability

"The dispositive question in malpractice cases is not whether the physician's actions were legally authorized but whether they were performed in accordance with professional standards of care."

http://www.americanbar.org/content/dam/aba/administrative/healthlaw/health_mo_premium_hl_healthlawyer_v29_2802.authcheckdam.pdf



If pediatricians don't initiate the conversation
and provide reliable information...



Someone else will provide propaganda



Someone else will provide propaganda

[illegible]

www.coloradopotguide.com



Quick Facts to Keep Straight

- Cannabis is NOT medication
- Today's marijuana is VERY different from 20 years ago
- Cannabis IS addictive
- Youth cannabis use IS a marker of other substance use



Areas to Cover in Parent Discussion

- Today's marijuana is NOT the same
 - Increasing cannabis THC potency
 - Decreasing cannabis CBD content
- Cannabis is risk for other substance use
- Routes of use and speed of CNS delivery
- Complicated, real relationship with psychosis
- High risk sexual activity, injuries, driving
- Most kids AREN'T using it
- Lack of regulation as pharmaceutical



Tips for Speaking with Kids

- Speak early and often
- Reminder of confidentiality and its limits
- Make it safe to talk about
- Remember they respect us for being knowledgeable, not cool
- Focus on patient strengths
- Encourage parent/caregiver involvement in discussion



Questions?