

Marijuana is Legal- A primer

Alan “Tony” Amberg MSN APRN PMHNP-BC (FPA)

Northwestern Memorial Hospital and Alan Tony Amberg PLLC

Acknowledgement: Caroline Onischak MSN APRN PMHNP-BC

Objectives and Disclosures

- ▶ Understand how Illinois cannabis law has changed
- ▶ Review mechanism and action of cannabis
- ▶ Review evidence for cannabis effectiveness in medical treatment
- ▶ Review how clinical practice is likely to change with the legalization of cannabis
- ▶ Alan Amberg -
 - ▶ Own through IRA small amounts of 3 Canadian Cannabis companies
- ▶ Caroline Onischak -
 - ▶ No conflicts to disclose
- ▶ **SIUE - Edwardsville, College of Nursing is approved as a provider of nursing continuing professional development by the Ohio Nurses Association, an accredited approver by the American Nurses Credentialing Center's Commission on Accreditation. (OBN-001-91)**

Outline:

- ▶ How prevalent is Marijuana and how does it compare to other drugs
- ▶ A brief history: Cannabis vs. Marijuana
- ▶ What is Cannabis and how does the distribution system work?
- ▶ What is “recreational” vs “medical”? We can now write “Confirmation of Diagnosis” letters to help a patient get a card.
- ▶ What is the evidence for treatment?
 - ▶ What has been studied? Is it sufficient for making a decision?
 - ▶ What do we think has evidence of effectiveness?
 - ▶ What don't we think has evidence?
 - ▶ What's interesting but far in the future?

Wow!



CHICAGO (AP) — Marijuana sales in Illinois have totaled more than \$300 million since the start of the year, with July having the most sales of any month, according to state figures.

July cannabis sales hit \$61 million, which is up from \$47.6 million in June and \$44.3 million in May, according to the Illinois Department of Finance and Professional Regulation and New Frontier Data. (August 16, 2020)

We are in a revolution...

And you are on the front line!

How do you feel ▶ about it?

Is this the right thing to do? What's our role in this? How prepared do you feel? HOW MANY PATIENTS ARE ALREADY ASKING FOR LETTERS?

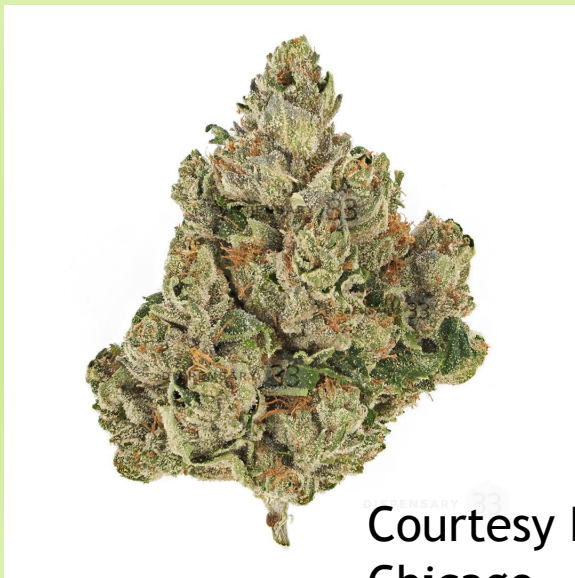
How many patients in your practice use Marijuana?

- ▶ All of them!!!
- ▶ No really...
- ▶ Sample of 83 new patients at intake
 - ▶ 21 patients
 - ▶ 25.30%
- ▶ Vs. Tobacco
 - ▶ $33/83 = 39.76\%$
- ▶ Vs Alcohol
 - ▶ $8/83 = 9.64\%$
(though social hx only - likely actually recorded under dx)

It is the most used illicit substance in the world and the 4th most used overall

Top 3 psychoactive substances (Legal)

- ▶ Caffeine
- ▶ Alcohol
- ▶ Tobacco

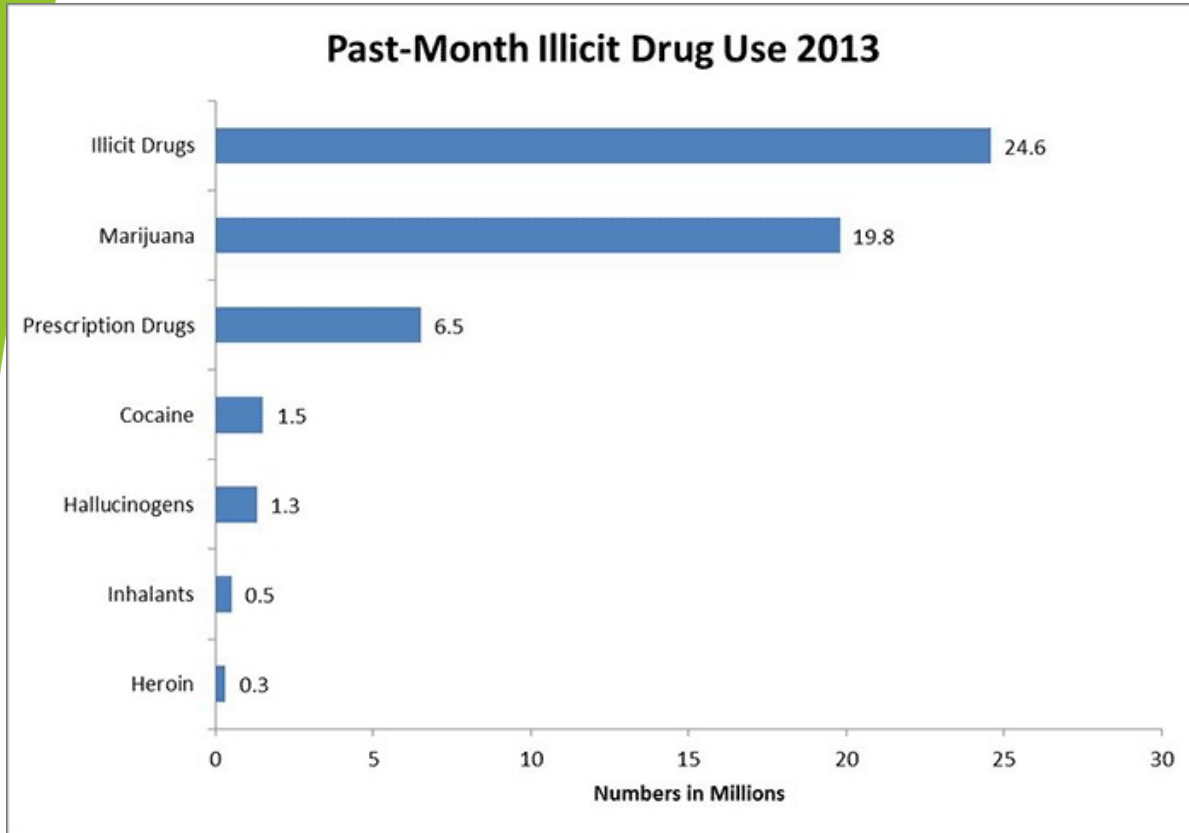


Courtesy Dispensary 33,
Chicago

Marijuana Use

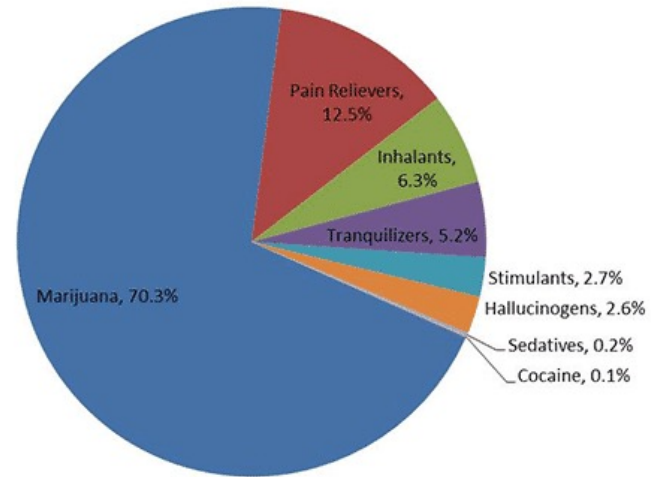
- ▶ When legalized, rates tend not to increase (Kelly Cassidy, personal communication, 10/10/19)
- ▶ 200-300 mm users world-wide
- ▶ Roughly 25 mm illicit users in the US (CDC, 2013), 4.7 mm CUD
- ▶ Now legal for medicinal use in 33 states and DC
- ▶ Recreational use in 10 states and DC
- ▶ Decriminalized in 12 states

NORML, 2019



Illegal Marijuana
- the leading
psychoactive
drug in the US
CDC, NSDUH
(2013)

First Specific Drug Associated with Initiation of Illicit Drug Use 2013



2.8 million initiates of illicit drugs

THE GATEWAY DRUG - or is it?
Note what's not on this slide (CDC, NSDUH 2013)



Compare to...

- ▶ Tobacco is the leading preventable cause of death and mortality in the US
- ▶ 40 million adult users, 4.7 million middle and high school users
- ▶ 16 million people living with chronic tobacco-related disease
- ▶ Roughly half a million Americans die of tobacco-related disease

Compare to...

Alcohol Use Disorder (AUD) in the United States:

Binge Drinking and Heavy Alcohol Use (2015):

Binge Drinking in last month - 26.9 percent of people ages 18 or older reported that they engaged in binge drinking in the past month;

Heavy Alcohol Use in last month - 7.0%

Adults with AUD (ages 18+): 15.1 million adults ages 18 and older³
(men > women almost 2:1)

Youth with AUD (ages 12-17): estimated 623,000 adolescents ages 12-17⁶ (2.5 percent of this age group⁷) had AUD (women > men,

Alcohol-Related Deaths:

Estimated 88,008 people (62,000 men & 26,000 women)

Third leading preventable cause of death in the United States.

Alcohol-impaired driving fatalities accounted for 9,967 deaths (31%)

Cannabis Sativa (subspecies: Sativa, Indica & Ruderalis) = Hemp or Marijuana

Hemp <0.3% THC

- ▶ Known for centuries for fiber (rope, sails, cloth)
- ▶ Seeds, Oil and fruit used for human and animal foods
- ▶ Cultivated with great commercial value in US for large parts of our history
- ▶ Was illegal until 2018 for cultivation because of association with Marijuana

Marijuana 1%< THC

- ▶ Is usually the flower buds, fruit, sometimes leaf
- ▶ 545 different compounds identified, including 100 phytocannabinoids
- ▶ Two major ingredients are in discussion now (THC, CBD) but there are so many more
- ▶ Psychoactive preparations:
 - ▶ Marijuana
 - ▶ Hashish
 - ▶ Charas, dagga, and bhang

A little history...

- ▶ Use of Hemp/Cannabis goes back to 7000 BC
- ▶ Cannabis Sativa grows up to 20 ft high and fiber was valued for paper, rope, cloth
- ▶ Cannabis was used in medicines and the American Medical Association opposed banning it
- ▶ After prohibition, the ATC decided to go after “Marihuana” with a recent surge of Mexican immigrants “Mexican Menace”
- ▶ Also racial stereotypes of African-Americans and their behavior on Cannabis
- ▶ Hemp growing and Marihuana use taxed in 1937
- ▶ Farmers were subsidized to grow millions of acres of it during WWII, then it was banned and farmers had to plow the fields under
- ▶ Marijuana was made Schedule I in the Controlled Substances Act of 1970
- ▶ There continued (as late as 2018) almost 700,000 arrests for Marijuana offenses (more than for violent crime)
- ▶ And in some states studies have shown African-Americans arrested and convicted between 2.7 and 5 times the rate of Caucasians
- ▶ (NORML, 2019)

Everything is changing...

Medical Cannabis

- ▶ The Medical Cannabis “Pilot” is now a permanent Medical Cannabis “Program”
- ▶ More conditions have been added and there is an Opioid Substitution program for pain
- ▶ Patients can possess more and are not subject to special Cannabis taxes
- ▶ APRNs can write confirmation of diagnosis letters so that patients can get Cannabis cards & possess 75 g (bona fide ongoing relationship + reviewed 12 previous months records)
- ▶ APRNs can also write for the Opioid Substitution program that allows patients to have Cannabis instead of Opioids for pain renewed q 90 days
- ▶ Patients can grow 5> plants at home, but you need to go through a training

IDPH, 2019

Recreational Cannabis

- ▶ Illinois residents will be able to possess plant 30g > (non-residents 15g >), infused-products up to 500 mg THC, 5 grams concentrated products.
- ▶ Up to 116,000 thousand convictions were eligible to be immediately vacated
- ▶ Others can to the State’s Attorney to have their records reviewed for vacating those records (potentially 770k total)
- ▶ Taxes will go to Mental Health/Substance Use, Police, Community Reinvestment, Unpaid Bills and 35% to General Revenue
- ▶ Will be taxed up to 39.75%, the tax increases as THC increases - estimated at \$525mm + \$18mm less in incarceration and legal costs, Cook County adds 3%

MPP (2019) &
IELPI-PMCR (2018)



Courtesy Dispensary 33,
Chicago



▶ Cannabinoids

▶ Endogenous: “in us”

- ▶ Anandamide best known

▶ Phytocannabinoids: plant-based: from Cannabis

▶ Synthetics

- ▶ Dronabinol - THC

- ▶ Nabilone - THC

- ▶ Nabiximols- THC:CBD

- ▶ Cannabidiol - Rx

Active ingredients - Hemp oil, rope, fiber, foodstuffs have no CBD nor THC

THC - psychoactive

- ▶ Trans Δ^9 - tetrahydrocannabinol
 - ▶ (THC naturally occurring)
- ▶ Trans Δ^9 - THC
- ▶ Trans Δ^{11} - THC
- ▶ ALSO
- ▶ (Δ^9 -tetrahydrocannabinol-2-oic acid and Δ^9 -tetrahydrocannabinol-4-oic acid - THCA) - partially converted to THC when smoked)
- ▶ Affects CB1 and CB2 receptors

CBD - non-psychoactive

- ▶ Cannabidiol (CBD)
- ▶ Cannabinol (CBN)
- ▶ Affects non-CBD receptors
- ▶ Legal in almost every state, Puerto Rico and DC

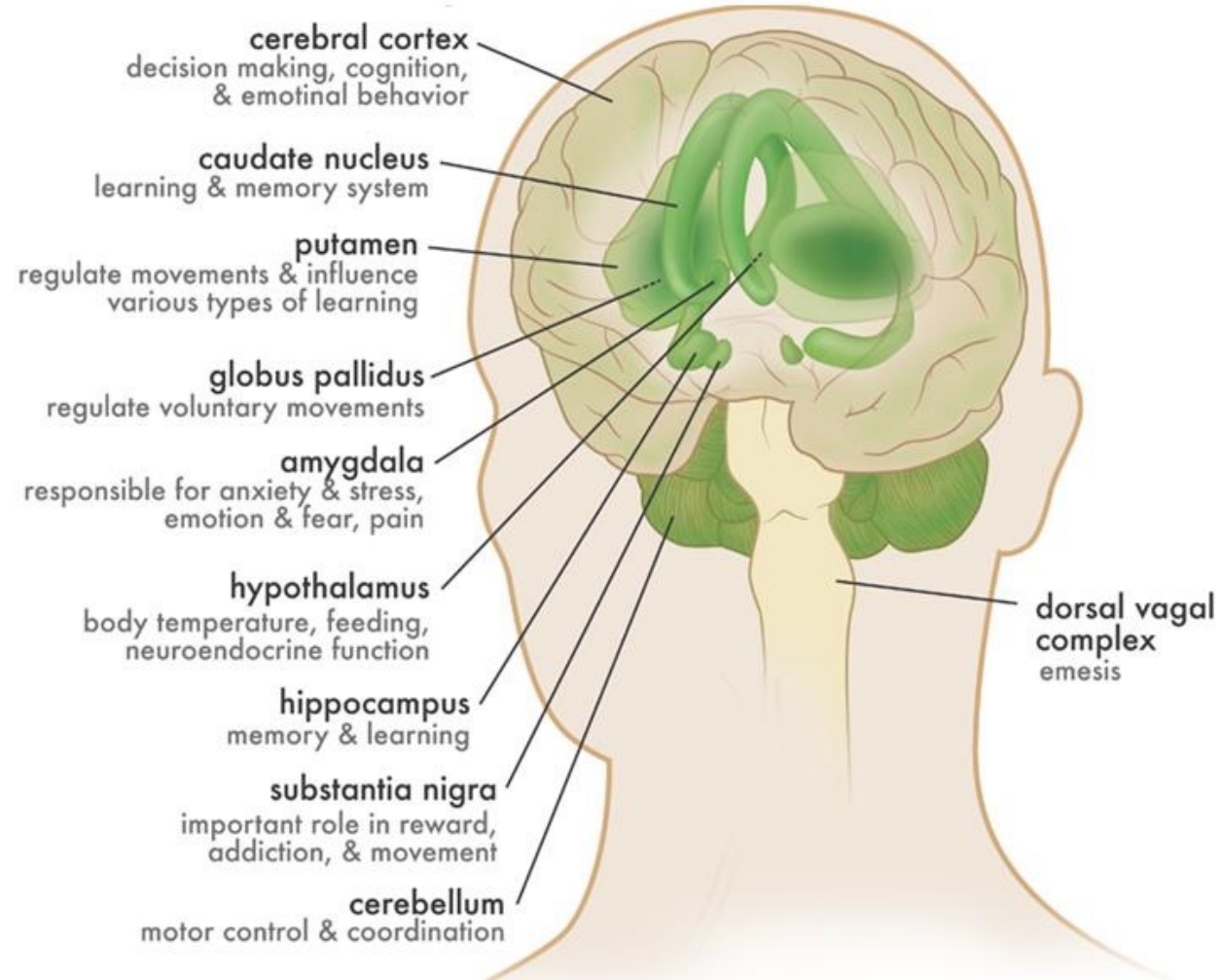
(Goncalves et al, 2019)

THC:

- ▶ Δ^9 - trans THC is the main psychoactive ingredient
- ▶ Illinois has the toughest lab testing requirements in the country
 - ▶ Toxins, Pesticides, Molds, Adulterants (Paul Lee, personal communication, 10/11/19)
- ▶ FDA approved versions:
 - ▶ Marinol (Dronabinol) - approved for nausea/vomiting/wasting - now just for HIV or “THC patch”
 - ▶ Nabilone (Cesamet) - also for N/V
 - ▶ Nabiximols (Sativex) - 1:1 THC/CBD in some EU countries - most studies on this med
 - ▶ (Judith Paice, personal communication, 10/8/19)



Distribution of CB1 Receptors



CBD

- ▶ Unregulated as it is a “supplement” - FDA has been trying to get suppliers to stop making health claims for it
- ▶ Unclear that what is on the label is in the bottle
- ▶ Doses in the bottle, a small fraction of what has been tested for Medicinal Purposes
- ▶ Legal medication form only for specific seizures
 - ▶ Gannon-Lescout
 - ▶ Dravet Syndrome

(Judith Paice, personal communication, 10/8/19)



Administration

▶ Route varies

- ▶ Inhaled
- ▶ Edible
- ▶ Topical oils
- ▶ Sublingual
- ▶ Transdermal
- ▶ Rectal
- ▶ Ophthalmic



Courtesy Dispensary 33,
Chicago

- ▶ Inhalation produces rapid response (3-10 minutes)
- ▶ Edibles can take up to 3 hours to work (setting up the person to OD as they take more to feel something)
- ▶ Topicals show little evidence of working (Judith Paice and Paul Lee, personal communications)
- ▶ Bioavailability of CBD Smoked \approx 31%
- ▶ Bioavailability of THC Smoked \approx 10-35%
- ▶ UNREGULATED WHEN ILLEGAL (Goncalves et al, 2019)

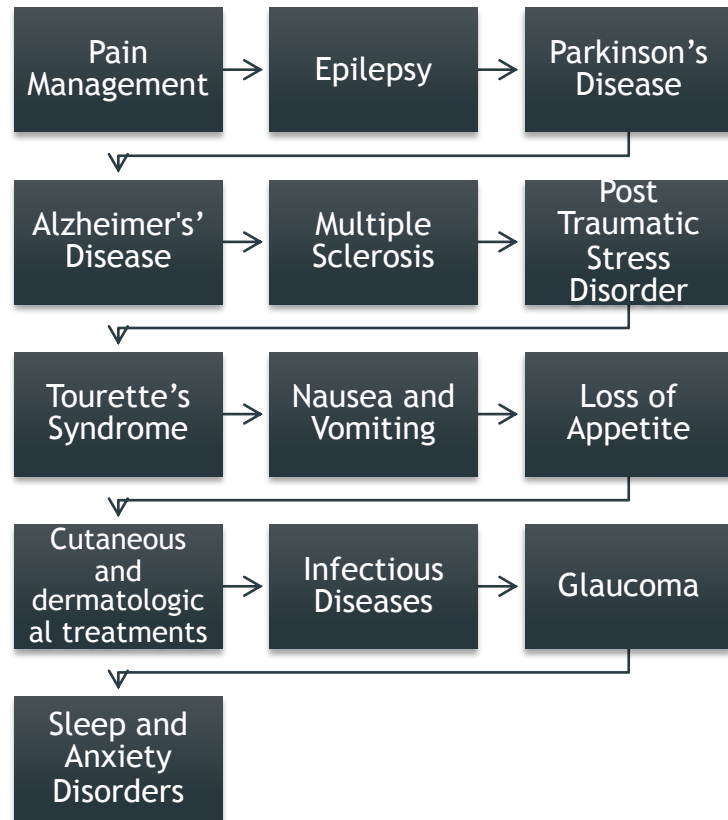
Endogenous Cannabinoid System - Retrograde Signaling

Involved in:

- ▶ Development of CNS
- ▶ Synaptic Plasticity
- ▶ Response to aggressions
- ▶ Cognition
- ▶ Memory
- ▶ Pain
- ▶ Sleep
- ▶ Immune functioning



Potential Uses that have been posited:



Courtesy Dispensary 33,
Chicago

What do we think we know?

Let's look at the current recommendations

Marijuana can help...

- ▶ Pain (though just “anxiety, hunger, sleep?”)
- ▶ MS Spacity
- ▶ N/V/appetite

(NASEM, 2017) & (Judith Paice, 10/08/19)

Marijuana can hurt...

- ▶ Brings on psychosis harder/faster
- ▶ At high doses, can bring on paranoia, anxiety, panic

(NASEM, 2017)

- ▶ Claim that EtOH + THC has raised traffic fatalities

How do you know if a person is intoxicated? - You can't

CBD or THC? Common Drug Test Can't Tell the Difference

Those cannabidiol-laced gummy bears may be entirely legal, but they could still get you arrested on marijuana possession charges.

New York Times, 10/15/19



Courtesy Dispensary 33,
Chicago

Effects of Cannabis w/THC Ingestion

- ▶ Not the Cannabis of the 70s and 80s (3-5% THC) now up to 35% THC)
- ▶ Euphoria
- ▶ Perceptual changes
- ▶ Decreases in memory and cognition, motor function, reaction time and psychomotor performance
- ▶ Physical inertia with ataxia, dysarthria and incoordination can last for hours
- ▶ Increased speed of thought
- ▶ Body systems affected after chronic use:
 - ▶ Cardiovascular
 - ▶ Immune
 - ▶ Respiratory
 - ▶ Gastrointestinal
 - ▶ Reproductive
 - ▶ CNS

Potential addiction cycle of marijuana?

- ▶ Center of hedonic pleasure in the brain is mesolimbic dopamine pathway
 - ▶ Ventral tegmental area releases surge of dopamine that reaches the nucleus accumbens
 - ▶ Amygdala and hippocampus register the impulse as pleasant and remember it
- ▶ Brain's endogenous cannabinoid: anandamide - is one of the mediators of the mesolimbic dopamine pathway
- ▶ Exogenous marijuana can lead to a dopamine spike higher than endogenous cannabinoids and is thus more addictive.
- ▶ Rapid drug delivery by smoking triggers phasic dopamine firing = strong reinforcing effect
- ▶ Remember: A use disorder or “addiction” requires increasing use, tolerance, **cravings, substantial amount of energy devoted to finding the substance, use despite risk or negative consequences.**

Withdrawal Symptoms

(Unpleasant, but not a risk for serious morbidity or death)

- ▶ Irritability
- ▶ Anger
- ▶ Anxiety
- ▶ Depression
- ▶ Restlessness
- ▶ Sleep difficulty (insomnia, vivid or disturbing dreams)
- ▶ Decreased appetite/weight loss
- ▶ Abdominal pain
- ▶ Shakiness or tremors
- ▶ Sweating
- ▶ Fever or chills
- ▶ Headache
- ▶ **NO RISK OF RESPIRATORY DEPRESSION**

What's the process for a Medical Cannabis letter?

We are not prescribing!

Two programs - allows patients to choose to “self-medicate” with Cannabis

Medical Marijuana Program

- ▶ APRN writes a letter (form found on IDPH Website)
- ▶ The letter confirms the presence of a qualifying diagnosis
- ▶ Must be a provider that has a “bona fide” relationship with the patient
- ▶ Apply for a card (photo, ID, no longer need fingerprints - \$100 per year)
- ▶ Used to take 8 weeks, much faster now
- ▶ Patient works with Dispensary staff

Opioid Assistance Program

- ▶ APRN goes online to register the patient, patient cannot register without it
- ▶ Cards must be renewed q 90 days
- ▶ Can immediately get temporary cards to buy
- ▶ Hope is to reduce opioids
- ▶ Some studies suggest a reduction of 5-6% in Opioid Rxs
- ▶ Both programs, authorization can be revoked

Qualifying Conditions for a Medical Cannabis Card - I

- ▶ Autism
- ▶ Agitation of Alzheimer's disease
- ▶ HIV/AIDS
- ▶ Amyotrophic lateral sclerosis (ALS)
- ▶ Anorexia nervosa
- ▶ Arnold-Chiari malformation
- ▶ Cancer
- ▶ Cachexia/wasting syndrome
- ▶ Causalgia
- ▶ Chronic inflammatory demyelinating polyneuropathy
- ▶ Chronic pain
- ▶ Crohn's disease
- ▶ CRPS (complex regional pain syndrome Type II)
- ▶ Dystonia
- ▶ Ehlers-Danlos syndrome
- ▶ Fibrous Dysplasia
- ▶ Glaucoma
- ▶ Hepatitis C

Qualifying Conditions for a Medical Cannabis Card - II

- ▶ Hydrocephalus
- ▶ Hydromyelia
- ▶ Interstitial cystitis
- ▶ Irritable bowel syndrome
- ▶ Lupus
- ▶ Migraines
- ▶ Multiple Sclerosis
- ▶ Muscular Dystrophy
- ▶ Myasthenia Gravis
- ▶ Myoclonus
- ▶ Nail-patella syndrome
- ▶ Neuro-Bechet's autoimmune disease
- ▶ Neurofibromatosis
- ▶ Neuropathy
- ▶ Osteoarthritis
- ▶ Parkinson's disease
- ▶ Polycystic kidney disease (PKD)
- ▶ Post-Concussion Syndrome

Qualifying Conditions for a Medical Cannabis Card - III

- ▶ Post-Traumatic Stress Disorder (PTSD)
- ▶ Reflex sympathetic dystrophy
- ▶ Residual limb pain
- ▶ Rheumatoid arthritis
- ▶ Seizures (including those characteristic of Epilepsy)
- ▶ Severe fibromyalgia
- ▶ Sjogren's syndrome
- ▶ Spinal cord disease (including but not limited to arachnoiditis)
- ▶ Spinal cord injury is damage to the nervous tissue of the spinal cord with objective neurological indication of intractable spasticity
- ▶ Spinocerebellar ataxia
- ▶ Superior canal dehiscence syndrome
- ▶ Syringomyelia
- ▶ Tarlov cysts
- ▶ Tourette syndrome
- ▶ Traumatic brain injury
- ▶ Ulcerative colitis

(IDPH, 2019)

“Just say no?” or “What’s the best way to say yes?”

Illegality has not worked...

- ▶ We are not creating a new problem; however we finally have the way to work on it
- ▶ Institutions that take federal money may still be concerned about offering it
- ▶ If we don’t know the answers, does that mean we should not have an informed opinion?
- ▶ Who’s going to be at the table to help craft institutional policies?

The future...

- ▶ How many DNP researchers are here?
- ▶ How many can become knowledgeable and partner with patients?
- ▶ How many can become legitimate practices that use marijuana as part of the medicine?
- ▶ How can we share our experience with each other?



Thank you very much!

Alan “Tony” Amberg - alan.amberg@nm.org - 312-926-4228

Thanks to Caroline Onischak, MSN APRN PMHNP-BC

References

- ▶ Goncalves, J., Rosado, T., Soares, S., Simao, A.Y., Caramelo, D., Luis, A., ... Duarte, A.P. (2019). Cannabis and its secondary metabolites: Their use as therapeutic drugs, toxicological aspects, and analytical determination. *Medicines (Basel, Switzerland)*, 6(1), 31. doi:10.3390/medicines6010031.
- ▶ Gorelick, D.A. (2018). *Cannabis withdrawal: Epidemiology, pathogenesis, clinical manifestations, course, assessment and diagnosis*. Up to Date.
- ▶ Gorelick, D.A., Saxon, A.J., & Hermann, R. (2018). *Cannabis use and disorder in adults: Pathogenesis and pharmacology*. Up to Date.
- ▶ Kedzior, K.K., & Laeber, L.T. (2014). A positive association between anxiety disorders and cannabis use or cannabis use disorders in the general population -- a meta-analysis of 31 studies. *BMC Psychiatry*, 14, 136. doi:10.1186/1471-244X14-136
- ▶ Kleckner, A.S., Kleckner, I.R., Kamen, C.S., Tejani, M. A., Janelins, M.C., Morrow, G.R., & Peppone, L.J. (2019). Opportunities for cannabis in supportive care in cancer. *Therapeutic Advances in Medical Oncology*, 11, 1758835919866362. doi:10.1117/1758835919866362
- ▶ Lachenmeier, D. W., Habel, S., Fischer, B., Herbi, F., Zerbe, Y., Bock, V., Rajcic de Rezende, T., Walch, S. G., & Sproll, C. (2019). Are side effects of cannabidiol (CBD) products caused by tetrahydrocannabinol (THC) contamination?. *F1000Research*, 8, 1394. <https://doi.org/10.12688/f1000research.19931.3>
- ▶ Mechoulam, R. & Fride, E. (1995). The unpaved road to the endogenous brain cannabinoid ligands, the anandamides. In R.G. Pertwee (Ed.). *Cannabinoid receptors* (pp 233-258). Boston, MA: Academic Press
- ▶ National Academies of Sciences, Engineering, and Medicine. 2017. *The health effects of cannabis and cannabinoids: Current state of evidence and recommendations for research*. Washington, DC: The National Academies Press.
- ▶ National Association to Reform Marijuana Laws (2019) retrieved from www.norml.org
- ▶ Nisavic, M, & Nejad, S. (2018). Patients with substance use disorders. In T.A.Stern, O. Freudenrich, F.A. Smith, G.L. Fricchione, & J. Rosenbaum (Eds), *Massachusetts General Hospital handbook of general hospital psychiatry*, 7th Ed. (pp 149-159). New York, NY: Elsevier
- ▶ Stahl, S.M. (2017). *Stahl's essential psychopharmacology: Neuroscientific basis and practical applications*, 4th Ed. Cambridge, United Kingdom: Cambridge University Press