

MINUTES
CITY OF FARMINGTON HILLS
FARMINGTON HILLS CITY COUNCIL
SPECIAL MEETING
CITY HALL – COUNCIL CHAMBER
OCTOBER 4, 2022 – 9:00AM

The special meeting of the Farmington Hills City Council was called to order by Mayor Barnett at 9:03am.

Council Members Present: Barnett, Boleware, Bridges and Massey

Council Members Absent: Bruce, Knol and Newlin

Others Present: City Manager Mekjian, City Clerk Smith, Assistant City Manager Valentine, Director Kettler-Schmult, Planning Consultant Rod Arroyo and City Attorney Joppich

PUBLIC COMMENTS DURING CANNABIS EDUCATION SESSION

Rod Arroyo, City Planning Consultant from Giffels-Webster, explained that state law provides for the option for a community to permit commercial cannabis facilities for both medical and recreational purposes. To date, Farmington Hills has not opted in to allow medical cannabis facilities under Michigan Marijuana Facilities Act of 2016 and has opted out of allowing recreational facilities under the 2018 Michigan Regulation and Taxation of Marijuana Act. He stated that the City Council and City staff have been monitoring and studying this topic and reviewing information that has come from the state or from other municipalities. In August, 2021, City Council expressed the desire to obtain more information and conduct a 3-phase information gathering plan that included:

- Information gathering from the cannabis industry
- Researching experiences and ordinances from other municipalities, which was obtained through city staff
- Public input to hear from the residents, the purpose of today's session and the session scheduled for tomorrow at 9am

Mr. Arroyo clarified that tonight's information session is intended to gather information from residents and is not designed to be a debate with City Council or others in attendance and is strictly a listening session for residents to share their opinions with City Council.

Mr. Arroyo discussed the rules established for this session noting that questions raised this evening will not be answered but staff will gather those questions to be answered at a later date. He stated that each person will be provided 3 minutes to speak but additional comments or information could be shared via email to the City Clerk. A sign-in sheet has been provided and is not mandatory but available for anyone that wants to be kept up to date on future meetings or information on this topic.

Mayor Barnett acknowledged letters or emails that had been received following last night's meeting speaking in opposition to cannabis operations and/or dispensaries in Farmington Hills:

Muriel and Scott Tarnawsky
Lindsey Ensley
Ryan Fluetsch
Jennifer Gelletly

Mayor Barnett opened the meeting up for public comments at this time reminding speakers that they will be limited to 3 minutes and asked that they provide their name and street name for the record.

Wallin McMinn, Lorikay, encouraged City Council to support the production and distribution of medically supervised cannabis and restrict recreational cannabis. His concern is that recreational use could introduce people to smoking which is acknowledged to be the number one cause of disease in the country. *Information provided by Mr. Wallen is included with the minutes..*

Heather Aldred, Forestbrook, stated that upon arrival to this country she found Farmington Hills to be a safe, desirable place to raise a family and her desire is that Farmington Hills remains a place that is sought after as safe and family-friendly. She encouraged Council to remain an opt-out city. She added that with this being a cash-only business under federal regulations, she is concerned about robberies and crime and taking up police resources. If the city needs to expand their tax base, she suggested continuing to make Farmington Hills more attractive to young families.

Sharon Brown, Rocky Crest, stated she is against the growing and processing of marijuana as a business in or near homes in Farmington Hills. If the city allows growing and processing, she suggested that the facilities are limited to industrial areas so not to impact homes or shopping areas.

Mayor Barnett mentioned that the videos for the meetings held with the industry representatives are on the city website for anyone who has not seen those and would like to view them.

Bob Schwartz, Sutters Hill Ct., stated that he is in favor of opening up medical and recreational marijuana dispensaries in Farmington Hills and feels it should have been done some time ago to take advantage of some of the tax proceeds. His only concern is with the ability for dispensaries to remain open since there seems to be an overabundance of marijuana growth and prices are dropping so this may be a question for the industry.

Meagan Fluetsch, Whitlock, stated she is completely against opening any dispensaries in Farmington Hills. When they moved to Farmington Hills the draw was that it was a family-friendly community and she believes bringing cannabis dispensaries into the city does not align with the values of the city and what it represents and she encouraged Council to ask themselves if this aligns with our values and would it strengthen the city that is family based. She believes it would weaken the city and families and would not promote the growth the city wants.

Jeannette Grund, Heatherbrook, stated that her reasons to say no to cannabis in the city is based on the following information she has read:

- Smoking over time decreases motivation and a person's ability to perform in society and useful work.
- Byproducts are increased homelessness, accidents and violent acts.
- Smoking cannabis products from early adolescents on regular basis is linked to schizophrenia for those who may be susceptible and could lead to violence.
- Concern with children and pets could ingest edibles
- Attraction of drug dealers to area

She left Council with the question of what type of community do you want to live in, retire in and raise children? *Information was provided to the Clerk and is included with the minutes.*

Jenn Zielinski, Common Citizen located in Marshall Michigan, wanted to speak to the comments on the industry and confirmed that with the influx of cultivated product within the market, it has significantly decreased wholesale and retail prices. To combat what is identified by the cannabis regulatory agency as an oversaturated market, they are considering a moratorium on cannabis grow licenses for a temporary period of time in order to stabilize the industry; and if they impose this moratorium on grow licenses their focus would shift to retail as there currently is not enough retail to push out the supply growers are able to produce. This is something to keep in mind as Council is looking at the landscape in Farmington Hills and the industry.

Eric Nordan, Castlemeadow, wondered if Farmington Hills would fuss about another pharmacy that sells opioids or another grocery store that sells liquor or tobacco or another ice cream shop. Data shows that sugar, alcohol and opioids are more addictive than cannabis. He stated that there are two drugs that are FDA approved on the market derived from marijuana those being THC and CBD and under the adult use law in Michigan persons can grow up to 12 plants. He spoke to the fact that the cannabis industry is in Farmington Hills already – banks, lawyers, CPA's, real estate agents, marketing, etc., and it brings in money, economic development and jobs to the community. He is an attorney representing a client who lives in Farmington Hills and spoke to the issue of zoning and urged Council to allow safety compliance facilities in the same areas as medical labs and to not put a limit on licenses that would create a competitive market and most likely bring lawsuits.

Kurt Vaaler, President of Staman Acres Subdivision, stated that one of his side jobs is property management and he suggested talking to communities who brought in marijuana facilities to ask them what happened in the community. It may bring in jobs, but what type of jobs. Property prices go through the roof and often people are buying properties that they can't use for their purpose and the properties are not maintained. He commented that it doesn't necessarily bring prosperity to all communities. He urged Council to do their homework and stated that he personally is not in favor of this for Farmington Hills

Mayor Barnett stated that if anyone has more information or could not attend the sessions, they could send their comments or concerns through email to the City Clerk.

ADJOURNMENT:

MOTION by Massey, support by Bridges, to adjourn the special meeting at 9:35am.
Motion carried unanimously.

Respectfully submitted,



Pamela B. Smith, City Clerk

Potent Marijuana Strains Are Making Teens Sick

Despite fewer restrictive laws, cannabis products still carry risk.

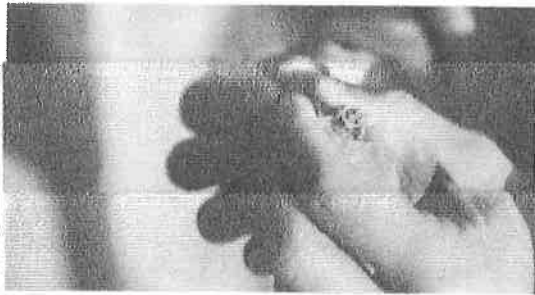


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The trend among states to legalize recreational use of marijuana suggests a public perception that the drug is safe to use—and older teens seem to agree. Fewer than a quarter of 12th-grade respondents to a 2021 federal survey saw “great risk” in regularly using the drug.

Public perception aside, evidence is emerging of harm to young marijuana users because of the high concentrations of tetrahydrocannabinol (THC), the cannabis plant’s psychoactive component, in today’s commercial products. Experts say current formulations lack sufficient amounts of the cannabidiol (CBD) compound that balanced and mitigated the effects of THC in earlier marijuana strains.

Teens who regularly inhale or consume cannabis products containing large amounts of THC are becoming addicted, and some have become sick enough to land in EDs, according to a June 23 report in the *New York Times*. The average concentration of THC in marijuana samples seized by the Drug Enforcement Administration rose from about 4% in 1995 to more than 17% in 2017. In addition to the dried cannabis sold as marijuana, cannabinoids (chemical substances distilled from the plant)

are now available in edibles, vaping oils, and other products, some of which have THC concentrations exceeding 95%. Their potency is largely unregulated.

Recreational marijuana use is legal in 19 states and the District of Columbia for adults ages 21 and older, though surveys suggest these products are easily obtained by teens. “Since 2014, I have seen a huge increase in access to marijuana as well as acceptance, with a lack of understanding of the risks of smoking versus dabbing—inhaling highly concentrated THC or high concentration oils,” said Tessa McIlraith, a school nurse in Washington State, which became one of the first states to legalize recreational marijuana in 2012. McIlraith became certified in drug impairment assessment in 2018, and initially used those skills five or six times a year. “It’s a weekly occurrence now,” she said. “I understand decriminalizing marijuana, but I think the impact it has on brain development isn’t talked about enough.”

According to the Centers for Disease Control and Prevention, children and teens are especially vulnerable to addiction and other drug-related harms because their brains are still developing. They may experience difficulties with thinking, problem-solving, memory, learning, and concentration as well as reduced physical coordination. An estimated three in 10 regular users of marijuana in all age groups develop cannabis use disorder, defined by the National Council of State Boards of Nursing (NCSBN) as “a problematic pattern of cannabis use leading to clinically significant impairment or distress.” The

NCSBN’s marijuana guidelines, published in a July 2018 supplement to the *Journal of Nursing Regulation*, also note cases of cannabinoid hyperemesis syndrome, which presents as “severe, cyclic nausea; vomiting; and compulsively taking extremely hot showers or baths,” and of cannabis withdrawal syndrome, which is marked by irritability, anxiety, sleeping difficulties, and depressed mood. Daily use by adolescents of cannabis products with 10% or more THC has also been linked to hallucinations and earlier onset of psychotic disorders.

Teen users may overdose after unwittingly consuming cannabis products mixed with opiate. “Our problems have been with students vaping marijuana and finding out it was laced with an unknown substance,” reports Lisa E. Patch, executive director of health services for Alamogordo, New Mexico, public schools. “We now have Narcan [an opioid antidote] in all secondary schools and had to use it this year for that reason.”

According to McIlraith, some students use marijuana to quell anxiety. “It’s not recreational for many of them,” she told *AJN*. “It’s really being used medicinally but without guidance, and I think that’s where we’ve let youth down.” She recommended that nurses who work with children and adolescents learn about marijuana products and their potential harms so they can inform patients, just as they would about common over-the-counter drugs. The National Institute on Drug Abuse has information for educating young teens in its *Mind Matters Series* (<http://nida.nih.gov/publications/mind-matters-series>).—Nicole Fautoux

General Medicine

November 11, 2021

The Pros and Cons of Medical Cannabis: Current Evidence



Melissa Kalensky, DNP, FNP-BC, PMHNP-BC, CNE



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Cannabis is one of the most commonly used drugs in the United States. More than 48.2 million people in the US aged 12 years and older (17.5%) have used cannabis in the last year.¹ Although evidence suggest that some medical conditions may benefit from cannabis use, there is a lack of high-quality randomized controlled trials examining the potential therapeutic uses of cannabis and a lack of prospective studies looking at associated adverse effects.

The risks and benefits of any cannabinoid-containing compound need to be carefully weighed for each patient. This includes consideration of potential effects on comorbidities and drug-drug interactions. The increasingly widespread use of cannabis makes screening and counseling patients about the potential risks vs benefits a priority.

Pharmacology

Cannabis sativa and *Cannabis indica* are the 2 most commonly used strains of cannabis, a plant containing approximately 540 chemical compounds, of which more than 100 are classified as cannabinoids.² The compound generally responsible for producing intoxication (high) is delta-9-tetrahydrocannabinol (THC); cannabidiol (CBD) does not produce this effect but may have therapeutic effects.³

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A Case of Myocarditis Observed in a Patient With Monkeypox Infection

Digital Inhaler System Yields Greater Asthma Improvement Than Standard of Care

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Cannabis can be found in natural and synthetic formulations that contain psychoactive and inactive compounds. Cannabis concentrates can be inhaled or vaporized. Products for oral ingestion include pills, teas, edibles, tinctures, and gummies. Lozenges, lollipops, and dissolvable strips can be taken sublingually. Topical products include oils, lotions, and bath salts.⁴

The potency of THC content in samples of recreational cannabis has increased dramatically, from less than 4% in the early 1990s to more than 15% in 2018; some current variants and cannabis concentrates can have much higher THC levels.⁴ In the last 2 decades, the percentage of nonpsychoactive components has steadily decreased, resulting in an increase in the psychoactive to nonpsychoactive component ratio from 14 times in 2001 to 80 times in 2017.⁵ The result is that some currently available products may have a greater ability to produce a high.

Psychoactive Drug Components

The absorption and distribution of THC is highly variable depending on the route of administration and individual patient characteristics. When consumed via inhalation (smoking or vaping), the onset of action is typically within 10 minutes; systemic bioavailability is 11% to 45%.⁶ When THC is consumed orally there is a greater variability in onset and effects due to first-pass metabolism through the liver and significant degradation by gastric acid. Peak THC levels have been reported at 1 to 6 hours after oral ingestion; systemic bioavailability is 4% to 20%.⁶

The metabolism of cannabis occurs via 2 hepatic cytochrome oxidases, CYP2C9 and CYP3A4. Its plasma half-life ranges from 1 to 3 days in occasional users to up to 13 days in chronic users, and it is eliminated through feces (65%) and urine (20%).⁶ The elimination half-life can be substantially longer in regular cannabis users because cannabis is highly lipophilic. With regular use, cannabis accumulates in adipose tissues over time, resulting in a slow release when blood levels are low and accounting for a positive urine drug screening for up to 6 weeks after last consumption vs 4 weeks in occasional users.⁷

Receptors and Reward Pathways

Endogenous cannabinoid receptors are found in the brain, spine, and peripheral nervous system, with components of cannabis acting as a partial agonist at both cannabinoid receptor type 1 (CB1) and type 2 (CB2) sites.⁸ Within the central nervous system, THC strongly binds to CB1 receptors accounting for its psychoactive properties; CBD does not.⁸ Cannabis impacts the release of several neurotransmitters such as acetylcholine, norepinephrine, γ -aminobutyric acid, and serotonin within multiple regions of the brain. Areas impacted include the frontal cortex, basal ganglia, cerebellum, hippocampus, and cerebral cortex, accounting for some of the drug's clinical effects.^{6,8,9}

Binding within the peripheral tissues occurs at CB2 receptors, primarily located within cells in the immune system (B lymphocytes and splenic macrophages), peripheral nerve terminals, and the vas deferens.⁸ The mechanism of action in the periphery is less clear, but cannabinoids may play a role in the regulation of immune and/or inflammatory reactions.⁸ Both CB1 and CB2 cells are found in the cardiovascular system.⁶

Like alcohol and other psychoactive substances, cannabis is processed through the mesolimbic dopamine pathway, the same circuitry involved in the regulation of reinforcement and reward.⁹ This pathway is associated with reinforcement of adaptive behaviors and the natural high associated with joy or accomplishment. Cannabis binding bypasses the brain's neurotransmitters and directly stimulates the release of dopamine within the reward pathway, triggering an artificial high. Long-term cannabis use eventually causes changes in this reward circuit. Over time, this results in an increase in impulsiveness to use the substance, which provides a reward, and a decrease in the pleasure or gratification associated with it, accounting for clinical symptoms related to tolerance.⁹

Physiologic Effects of Cannabis Use

Acute Intoxication

Physiologic effects of acute intoxication may include euphoria, tachycardia, hypertension, conjunctival injection, dry mouth, increased appetite, impaired judgment, and paranoid delusions.¹⁰ Acute neuropsychiatric effects can be highly variable in presentation and appear to be dose dependent. At low doses, mood is described as euphoric, with decreased depression, anxiety, and tension; conversely, at higher doses there is increased anxiety, dysphoria, and panic.¹⁰ Other neurologic or psychiatric effects may include¹⁰⁻¹²:

- Slowed reaction times and impaired motor coordination
- Impaired attention, concentration, short-term memory, and risk assessment
- Distortions in time and spatial perception
- Increased intensity of visual/auditory perception
- Depersonalization, hallucination, grandiosity, paranoia, and/or other signs of psychosis

These effects are additive when combined with other central nervous system (CNS) depressants. Mood-altering effects typically resolve within hours, but residual effects of a dose of cannabis might

last for 24 hours. In laboratory studies of cognitive and behavioral effects, evidence suggests that the effects of cannabis increase as the dose consumed or level of THC in blood increases. Evidence also suggests that effects of cannabis on driving simulator performance and collision risk increase as dose consumed and levels in the body increase.¹³

Cardiovascular Effects

The heart and vascular smooth muscle contain CB1 and CB2 receptors; thus, dose-dependent increases in heart rate and blood pressure can occur with acute intoxication.^{11,12} Orthostatic hypotension is a common side effect in older adults.¹⁴ Other potential physiologic changes can include increased platelet aggregation, arterial vasospasm, and increased cerebral vascular tone, which can result in decreased cerebrovascular blood flow.¹² In the hours after ingestion, cannabis increases the risk for major cardiovascular events, such as hypertensive emergency, myocardial infarction, transient ischemic attack, and cerebrovascular accident.¹¹ Chronic use in individuals with a history of angina may lower the angina threshold and, thus, precipitate chest pain.¹² There also is evidence to suggest a link to new cardiac arrhythmia secondary to ischemia.¹² Atrial fibrillation, ventricular fibrillation, and Brugada pattern (ventricular arrhythmia) are the most commonly associated arrhythmias; when such arrhythmias occur, the mortality rate is estimated at 11%.^{12,15}

Pulmonary Effects

Inhalation of cannabis and associated respiratory irritants can cause acute or chronic cough, increased mucous production, and shortness of breath.¹⁶ Pneumomediastinum can be an acute complication associated with holding ones breath in during inhalation.¹⁷ Evidence suggests that long-term cannabis use may lead to large airway inflammation, increased airway resistance, and lung hyperinflation.¹¹ In individuals with underlying pulmonary disease, such as asthma or chronic obstructive pulmonary disease (COPD), this may increase the risk for respiratory infection and acute exacerbations of chronic disease.

Although cannabis is known to contain potential carcinogens, the connection between lung carcinoma and cannabis use remains less clear.¹⁴ By comparison, cannabis contains 50% more benzopyrene and 75% more benzanthracene than tobacco.¹¹ Evidence also suggests cannabis is associated with 4 times more deposition of tar than tobacco products, suggesting that an underlying link to carcinoma is possible, although there is no definitive evidence linking cannabis to increased head, neck, or lung cancer.^{4,11,14}

Prolonged Neuropsychiatric Effects

Cannabis use in children has the potential to alter brain development and can be linked to poor educational outcomes, such as increased drop-out rates.¹¹ Use in adolescents is correlated with cognitive impairment and lower IQ scores.¹¹ In adults, use causes memory impairment and difficulty learning new information.¹⁸ In some individuals, cannabis increases the risk of developing or

worsening of depression, anxiety, and post-traumatic stress disorder.¹¹ Cannabis use is linked with the development of psychosis, particularly among youth who have preexisting genetic vulnerability, and may advance onset of first psychotic episode by 2 to 6 years in such individuals.^{11,18} Long-term use has been linked with the development of amotivational syndrome and reports of decreased life satisfaction.¹⁸

Cannabis Hyperemesis Syndrome

There are no clinically established diagnostic or treatment guidelines for cannabis hyperemesis syndrome (see *Case Presentation*), but there are definitive patterns in clinical presentation. Patients typically present with intense and unremitting abdominal pain with persistent nausea and vomiting, often with reports of multiple episodes over months to years.¹⁹ Clinical history reveals a heavy use of cannabis daily over a prolonged period of time. Often patients report the only effective alleviating factor for associated abdominal pain is the use of hot baths or showers. Generally, symptom presentation occurs in 3 phases: *prodromal*, acute nausea and diffuse abdominal pain, the intensity of which often causes fear of vomiting; *hyperemetic*, multiple episodes of vomiting, driving the patient to seek medical care; and *recovery*, during which normal eating patterns resume.¹⁹

Case Presentation

A 32-year-old mother of 3 presents to the emergency department with a 10-day history of persistent nausea with intermittent nonbiliary, nonbloody emesis, and diffuse abdominal pain. She denies alcohol or “illicit” drug use but does admit to smoking cannabis 2 to 3 times a day for the last several years. Her vital signs are within normal limits, her electrocardiogram is normal, and her laboratory tests (complete blood cell count, comprehensive metabolic panel, lipase, and serial troponins) are normal. Computed tomography of the abdomen shows no acute pathology. She has received 2 liters of normal saline, as well as multiple doses of intravenous ondansetron and metoclopramide, without improvement in nausea and continued active emesis.

Cannabis has dose-dependent biphasic effects. At a low dose, it acts as an antiemetic; at higher doses, it becomes proemetic.¹⁹ Clinical priorities lay in achieving cessation of hyperemesis, addressing any secondary issues, such as dehydration, electrolyte disturbance, acute kidney injury, or rhabdomyolysis, and advising the patient about long-term cessation of cannabis use.¹⁹

It is unclear why traditional antiemetics are ineffective in addressing nausea and emesis associated with cannabis use. However, it is known that cannabis is active within the dopaminergic pathways of the brain; clinically, dopamine-blocking agents such as intravenous haloperidol (5 mg) often are more effective in treating nausea in these patients.¹⁹ Other treatments, including topical capsaicin (applied to the stomach), corticosteroids, benzodiazepines, and tricyclic antidepressants have been studied but

Potential Drug Interactions, Toxicity, and Overdose

The large volume of chemical compounds within cannabis makes examining potential drug-drug interactions challenging, and knowledge in this area is largely theoretical. Cannabinoids bind at a wide variety of sites to impact gene expression.²⁰ It is presumed that specific chemical components and formulations affect actions and that the duration of exposure may dictate potential drug interactions. The primary metabolism of cannabinoid compounds is via cytochrome P450 (CYP450): THC (CYP2C9/CYP3A4), CBD (CYP2C19/CYP3A4), and cannabinol (CYP2C9/CYP3A4).²⁰

Any prescription drug processed through one or more of these CYP450 pathways, including commonly used medications (eg, NSAIDs, opioids, statins, anticonvulsants, selective serotonin reuptake inhibitors, and antibiotics) has the potential to cause a drug-drug interaction. Generally, data demonstrate that even low doses of alcohol increase plasma levels of THC.²⁰ When cannabis is used in combination with opioid pain medications, there may be increased opioid analgesic effects without correspondingly increased plasma levels.²⁰ Cannabinoids also may work synergistically with gabapentin to improve therapeutic window and effects.²⁰

Adverse effects are more common when cannabis is orally ingested, and symptoms can last up to 12 hours. Naturally occurring cannabinoids act as partial agonists at CB1/CB2 receptors, limiting fatal overdoses.²¹ However, children have an increased risk for overdose, most commonly through unintentional oral ingestion, and they are significantly more likely than adults to experience severe or life-threatening symptoms including hyperkinesia, respiratory depression, lethargy, coma, and death.²² Duration of symptoms in children can vary from 4 to 48 hours postingestion, with treatment involving supportive care.²²

Synthetic cannabinoids act as pure agonists with very high affinity at the CB1 receptor and, thus, their effects are more intense and longer lasting.²³ Synthetic formulations are not detectable on routine laboratory screening tests. If potential ingestion is suspected, cannabis toxicity should be included within a differential diagnosis, regardless of a negative toxicology screening. Synthetic compounds have a greater potential for serious neuropsychiatric toxicity, producing hallucinations, delirium, and/or psychosis in up to 66% of individuals.²³ Life-threatening toxicity, most characteristically manifesting as severe agitation or seizures, is possible at any age.²³

Considerations in Recommending Medical Cannabis

The US Food and Drug Administration (FDA) has approved medical cannabis for 3 clinical syndromes.²⁴ Naturally derived cannabis, labeled as cannabidiol (Epidiolex), is approved for the treatment of seizures associated with Lennox-Gastaut syndrome and Dravet syndrome in patients 2 years and older. The agent is approved in the United Kingdom for treatment of seizures associated with tuberous sclerosis complex.²⁵ The synthetic cannabinoid dronabinol (Marinol and Syndros) is approved for the management of anorexia with associated weight loss in patients with AIDS and

conventional antiemetic treatments.²⁴ Nabilone (Cesamet) is also a synthetic cannabinoid approved for the treatment of nausea associated with cancer chemotherapy in patients who have failed to respond adequately to conventional antiemetic treatments.²⁴

Which condition has evidence of medical cannabis demonstrating some clear improvement in symptoms?

- Parkinson disease
- Major depression
- Spasticity of multiple sclerosis
- Post-traumatic stress disorder

VOTE

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Potential Off-Label Therapeutic Uses

The use of cannabinoids in the treatment of chronic pain (fibromyalgia, rheumatoid arthritis, central pain in multiple sclerosis, and neuropathic pain) is supported by study evidence, with no serious adverse events related to its use.^{2,26} There has been clear efficacy established in the improvement of chemotherapy-induced nausea and vomiting with medical cannabis products that are not FDA-approved, particularly with ingestible products vs inhaled products.^{11,26}

The treatment of seizures beyond those associated with Lennox-Gastaut syndrome and Dravet syndrome is perhaps the most discussed applications for cannabis, but data are highly variable, ranging from no improvement to an estimated 50% reduction in symptoms.²⁶ In the treatment of mental health disorders, studies have shown improvement in generalized and social anxiety disorders but no clear benefits in major depression and variability in the efficacy for psychotic disorders.²⁶ No clear benefit has been found in the treatment of acute postoperative or dental pain, and use improves intraocular pressure in those with glaucoma only transiently.²⁶⁴ The application in Alzheimer disease is purely theoretical, minimal data is available in Parkinson's disease, and no efficacy has been established in the treatment of Huntington disease (*Table*).²⁶ No cannabis formulation has yet proven to have greater efficacy than other FDA-approved medications options for these conditions.²⁶

TABLE. Available Evidence of Cannabis Efficacy^{6,8,24,26}

Not Enough Evidence to Recommend Routine Clinical Use	No Clear Evidence of Clinical Benefits	Evidence Demonstrates Some Clear Improvement in Symptoms	Available Evidence Supports Improvement in Some Cases
Alzheimer disease	Acute pain	Chemotherapy-induced nausea/vomiting	Seizures
Parkinson disease	Glaucoma	Chronic pain	Cachexia related to HIV/cancer
PTSD	Tremor in MS	Spasticity in MS	Schizophrenia
	Major depression	Generalized anxiety	Psychosis
	Huntington disease	Social anxiety	Sleep disorders

MS, multiple sclerosis; PTSD, post-traumatic stress disorder

Use in Pregnancy and Breastfeeding

Minimal data exist on the safety and effects of cannabis use in pregnancy. Both the American College of Obstetrics and Gynecology and the American Academy of Pediatrics advise against cannabis use during pregnancy and breastfeeding, citing concern for adverse neurodevelopmental effects.^{27,28}

Some psychoactive components of cannabis likely cross the placental barrier, with fetal plasma concentrations estimated to be 10% to 30% of maternal serum concentrations.²⁹ With the highly lipophilic nature of THC, it is important to counsel patients that fetal exposure may occur for 4 to 6 weeks after maternal cessation.²⁹

Based on the available evidence, complications of use during pregnancy may include higher rates of maternal anemia, up to twice the rate of preterm births, reduced birth weight, increased likelihood of neonatal intensive care unit stays, and learning/attention deficits into childhood.³⁰

Studies suggest that THC accumulates in breast milk. Peak levels occur approximately 4 hours after maternal inhalation and detectable levels persist for at least 6 days after last maternal use.³¹ Lack of federal regulation in cannabis supply and distribution also raises concern for the potential secondary exposure to pesticides, heavy metals, bacteria, and fungi through cannabis use.³²

Conclusion

Research on use of cannabis in the treatment of medical conditions is emerging at a rapid pace. The expanding number of states that have legalized recreational marijuana use is likely to increase the number of patients who present in the primary care setting seeking information on cannabis use for medical conditions. Clinicians will need to remain updated on evolving evidence to provide tailored patient education on the benefits and risks associated with cannabis use.

withdrawal, and other cannabis-related disorders.

Melissa Kalensky, DNP, APRN, FNP-BC, PMHNP-BC, CNE, is an assistant professor at Rush University College of Nursing in Chicago.

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