

Marijuana Usage In Chronic Pain Patients: Driving and Work Guidelines for Clinicians

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For those of us involved in clinical medicine and who are in the position of rendering opinions regarding the use of marijuana in patients with chronic pain (or other medicinal uses), ours is a daunting task. We need to recognize that the issue must bypass our philosophical bias as to whether marijuana is good or bad, and focus our attention on efficacy, safety, and risk versus benefit. We also need to acknowledge an ethical dilemma as well as a legal one.

Our goal as health care providers should be to improve our patients' health and well-being, to replace maladaptive self-defeating behaviors with more adaptive coping skills, and to educate patients about behaviors or activities that could put them or others at risk for adverse outcomes. Even if marijuana were 100% legal, I would still have qualms about its use in patients with chronic pain. For reasons described in detail in this review, I believe that the use of marijuana in patients with chronic pain receiving opioid analgesics or other controlled substances puts them at significant increased risk for adverse outcomes. This is especially true in settings that require their complete attention, alertness, and mental acuity, as is always true while driving and frequently true at the workplace. The use of marijuana by patients in these situations also may put the prescriber and his or her medical practice at increased risk for adverse outcomes.

Legalizing or medicalizing marijuana does remove the specter of diversion that surrounds obtaining an illegal substance, but not nearly enough to justify its widespread use by pain patients, in my opinion.

Overview of Marijuana and Its Potential Effects

Clinical research with marijuana demonstrates efficacy with intractable nausea, anorexia, and vomiting in cancer chemotherapy, HIV/AIDS, cachexia, and other debilitating medical disorders.

There also are multiple studies documenting efficacy with intractable pain disorders.¹⁻³

However, studies do acknowledge that there is a difference between medicinal marijuana in the form of dronabinol (Marinol, AbbVie) at a therapeutic dose and the tetrahydrocannabinol (THC) found in smoked marijuana. Marinol is a fixed dosage and has a known purity level, whereas smoked marijuana is extremely variable in terms of THC potency and the purity of the substance being smoked.⁴

Physician bias regarding the safety of marijuana may come from personal experience with patients, the media, scientific studies, or anecdotal reports. Regardless, there is a large body of data demonstrating that marijuana may cause significant mental status changes. These include altered perception, hallucinations, delusions, euphoria, and dysphoria.⁴ The individual smoking marijuana also is at risk for long-term effects, among which is possible substance abuse.

Clinicians who have worked with patients with a history of substance abuse recognize the high incidence of initial marijuana experimentation with peers followed by a desire to get a better “high.” Some users thus transition to more potent illicit substances, such as opiates, cocaine, and heroin. My clinical practice includes such a high-risk population of current or former substance

abusers. Reviewing their early drug abuse history does indeed reveal childhood/adolescent experimentation, with marijuana acting as a gateway drug that led to either only more regular marijuana abuse or, more commonly, the use of more potent substances.

Since the November 2012 elections, in which Colorado and Washington legalized recreational marijuana, I revisited this issue with many of the patients in my high-risk population. The majority agreed that legalizing recreational marijuana for individuals over the age of 18 can be expected to result in major psychosocial problems, and significant added risks in the workplace and other activities of daily living (eg, riding bicycles), as well as an increase in driving accidents. Their comments reinforce my conviction that many children, adolescents, and young adults will be exposed to recreational marijuana more readily than would have been the case when there were established legal sanctions against its use. In an observational study, Pesce et al noted that up to 19% of the chronic pain patient population used cannabinoids; this study showed roughly a 4-fold incidence in the use of cocaine and methamphetamine among marijuana users in this population.⁵

The pharmacokinetics of cannabinoids show that the effects are perceptible within seconds and fully apparent within minutes. There is a very poor relationship between plasma or urine concentrations and the degree of cannabinoid-induced intoxication.⁶ The pharmacodynamics of cannabinoids indicate that the substances exert their effect by interacting with specific endogenous cannabinoid receptors. Cannabinoids are extremely lipid-soluble, and it has been noted that THC increases the release of dopamine from the nucleus accumbens and prefrontal

cortex,⁷ “producing an effect common to many drugs of misuse (including heroin, cocaine, amphetamine, and nicotine), [which] may be the basis of its reinforcing properties and recreational use. It is reversed by naloxone, suggesting an opioid link.”

A review of the pharmacology and effects of cannabis indicates that the amount of THC contained in current marijuana cigarettes often is many times greater than that seen in the 1960s and 1970s.⁶ This finding is important because the effects of THC are dose-related, and Ashton notes that most of the research on cannabis was performed in the 1970s using doses of 5 to 25 mg THC.⁶ This is consistent with other articles suggesting that in prior research studies, participants may have been given marijuana cigarettes with between 1.5% and 4% THC, whereas marijuana on the street today may have THC levels of between 10% and 30% or more. The data translate into estimates that impairment levels today are significantly higher than those previously found. This has led some to conclude that “legalizing marijuana for any reason will adversely impact public safety. More people would die and be injured on the highways, and the cost to insurance companies and the general population would soar.”⁸

Marijuana and Driving

Several other studies have noted that marijuana has played a significant role in motor vehicle accidents across the United States, with as many as 33% of drivers tested at the scene of the accident being positive for marijuana, and another 12% testing positive for marijuana and cocaine.^{9,10}

An article on the California Compassionate Use Act (CUA) discusses the inherent dangers to public safety resulting from drugged driving. It notes, “the CUA does not supersede legislation prohibiting persons from engaging in conduct that endangers others. California law prohibits driving under the influence of alcohol and drugs, and as a matter of law a person authorized to use alcohol or a drug does not normally constitute a defense to a violation.”¹¹

In reviewing the multiple psychological effects of cannabis in humans as they relate to driving ability, the following can be noted:

Effects on mood, which in recreational users is more euphoric with a high that comes on within minutes of smoking, may last for 2 hours or more, depending on dose.¹² Dysphoric reactions also can occur, often are dose-related, and are more common in naive and psychologically vulnerable users.⁶

Effects on perception include distortion of spatial perception and impairment in time perception. Hallucinations may occur with high doses.⁶

Cannabis may impair both cognition and psychomotor performance.⁶ The effects are dose-related but can be demonstrated after relatively small doses (5-10 mg THC in a joint). This has been confirmed in multiple neurocognitive and psychomotor tests. Furthermore, the effects are additive with those of other central nervous system (CNS) depressants.

“Numerous studies have shown that cannabis impairs road-driving performance and have linked cannabis use with increased incidents of road traffic accidents ... a large proportion of such drivers have not taken alcohol or have concentrations below the legal limit.”¹³ Furthermore,

“there is sufficient consistency and coherence from experimental studies and studies of cannabinoid levels among accident victims... to conclude that there is an increased risk of motor vehicle accidents among persons who drive when intoxicated with cannabis. ... The risk is magnified when cannabis is combined with intoxicating doses of alcohol.”¹⁴

In a population-based, case-control study, Laumon et al ¹⁵ reviewed cannabis intoxication and fatal road crashes in France between October 2001 and September 2003. The study cases were 6,766 drivers considered at fault in their crash. The results indicated “at least 2.5% of fatal crashes were estimated as being attributable to cannabis, compared with 28.6% for alcohol.” The researchers also noted the following:

Marijuana use increases the risk for a motor vehicle accident. “However, in France its share in fatal crashes is significantly lower than that associated with positive blood alcohol concentration.”

A causal link can be found between cannabis and motor vehicle crashes. Furthermore, “the risk of responsibility” for fatal traffic crashes driving after smoking marijuana is significantly dose-related.

It was already known that cannabis consumption, even at low doses, hampers certain faculties necessary for driving a vehicle.

The study estimates the share of fatal crashes attributable to cannabis and alcohol, thus allowing for comparison of the respective road safety issues, which the authors believe to be comparable.

The National Highway Traffic Safety Administration (NHTSA) evaluated the effects of alcohol and marijuana in 16 recreational marijuana users in a 4-way crossover-designed study. Although the effects of low doses of marijuana and alcohol were minimal, moderate doses of marijuana and alcohol combined severely impeded driving performance in city traffic situations.³

According to the NHTSA, short-term effects seen with marijuana usage that can affect driving ability include memory and learning problems, distorted perception, difficulty in thinking and problem solving, and loss of coordination. “Heavy users may have increased difficulty sustaining attention, shifting attention to meet the demands of changes in the environment, and then registering, processing, and using information.”¹⁶

The NHTSA further noted that data from road traffic arrests and fatalities indicate that marijuana is just behind alcohol as the most commonly detected psychoactive substance among driving populations. Impairment with marijuana can impair driving performance, “as measured by performance on driving simulator tasks and open and closed driving courses,” for as long as 3 hours. Effects of marijuana use on driving include “decreased car handling performance, increased reaction times, impaired time and distance estimation, inability to maintain headway, lateral travel, subjective sleepiness, [poor] motor and coordination, and impaired sustained vigilance.”¹⁶ The NHTSA noted that some drivers may have periods of driving while under the

influence of marijuana, “by overcompensating for self-perceived impairment,” but added that these episodes tend to be brief. It further noted, however, that the greater the demands that are placed on a driver’s abilities, “the [greater] the likely impairment.” Marijuana use may have particular detrimental effects on monotonous and prolonged driving, with “decision times to evaluate situations and determine appropriate responses” being increased.³

The NHTSA concludes that “low doses of THC moderately impaired cognitive and psychomotor tasks associated with driving, while severe driving impairment is observed with high doses, chronic use, and in combination with low doses of alcohol. The more difficult and unpredictable the task, the more likely marijuana will impair performance.”¹⁶ Of note, a 2009 article on driver safety procedure published by the California Department of Motor Vehicles stressed that physician-approved medical marijuana should be handled in the same manner as any other prescription medication that may affect safe driving.¹⁷

As of April 2013, 18 states and Washington, DC, sanction medical use of marijuana for debilitating medical conditions; legislation is pending in 10 others. In discussing the impact of marijuana as it relates to employment law in New Jersey, attorney Christine Bonavita reviewed the New Jersey Medical Marijuana Law and noted that “employees are not permitted legally to use marijuana on work premises and that the act also prohibits a person legally using marijuana from operating, navigating, or being in physical control of a vehicle, aircraft, railroad train, stationary heavy equipment, or vessel while under the influence of marijuana.” It was noted that the act did not define what it meant to be “under the influence.” Specific state drugged driving

laws are overviewed in the Figure.

Author Policy/Test of Reaction Time

Several years ago, I adopted a policy in my clinical practice that I consider to be both prudent and within the intent of the federal law that prohibits use of marijuana and considers it to be an illegal substance. Additionally, it is clear from the multiple sources noted here that even low doses of THC may, in susceptible individuals, cause mental status changes, perceptual distortions, and impaired judgment. At moderate to high doses, these problems are frequent. Therefore, it is wise to get urine or oral drug screens at the initial office visit and then randomly thereafter, with a frequency dependent on stratified risk factors for substance misuse, abuse, addiction, and diversion. In the event that the drug screen is positive for marijuana or any other illicit/illegal substance, no prescription will be written for any controlled substance. If the patient is receiving an opioid analgesic for pain, the prescription will not be written. The patient will be counseled and may return for treatment that may or may not include use of opioid analgesics. Before a prescription for opioids is written, the patient must have a normal drug screen and give reassurance that he or she will no longer use any illicit substances. If there is another positive urine drug screen, the patient will be tapered from all controlled substances and a substance abuse protocol will be implemented.

This treatment approach is recommended to all clinicians writing prescriptions for controlled substances for their pain patients. From a risk-management perspective, it is foolhardy to continue writing opioids for patients known to be using/abusing marijuana or other substances

deemed to be illegal. In the event that the patient in question has a work accident or motor vehicle accident in which there is an injury or death, the clinician writing the prescription for the controlled substances with full knowledge that the patient was abusing an illicit drug capable of causing mental status changes, judgment, and perceptual problems would be in a position that is difficult to defend. The physician could potentially be held liable, since he or she provided the drug that may be linked to the tragic accident/fatality. A patient under the influence of marijuana who causes a fatality and is deemed to be an impaired driver could be charged with vehicular homicide. The question that remains to be addressed is whether the health care provider who is aware that the patient was a regular user of marijuana and still provided controlled substances—including opiates for chronic pain—would be considered to be involved as an accomplice. A current legal review noted that administration of medications under such circumstances is soon to be questioned by the Supreme Court, as current policies and common case law support third-party liability to protect the public from potential harm.¹⁸ When discussing this with my patients, I advise them that I am unwilling to risk my medical license or my freedom because of their wish to be involved in the use of recreational drugs.

I have become increasingly concerned about the potential for driving accidents and work injuries in patients who are receiving CNS-active medications without appropriate monitoring. For nearly a decade I have implemented guidelines to improve driving and work safety, recognizing that an impaired patient can increase injury risk to himself or herself, as well as to innocent pedestrians, other drivers, or to co-workers. Based on the literature cited above and my clinical experience, I recommend that clinicians prescribing psychoactive medication or treating patients

who are receiving psychoactive medication from other prescribers carefully monitor mental status at each office visit. This includes monitoring mental acuity, attention span, concentration, cognitive function, thinking, mood, and affect.

Additionally, I use what many of my colleagues have been calling the Aronoff Driving Test but that more properly, I feel, should be called the Aronoff Test of Reaction Time. I have been using the following protocol since 1999. With a patient not anticipating the event, the physician or other health care provider throws a soft rubber or “Nerf” ball (nothing harder, eg, a golf ball, as this could be viewed as an assault) at the patient. The patient’s reaction is observed. A normal response is for the patient to react appropriately and catch the ball (or reach for the ball to avoid being struck). I believe that a sedated patient (or a patient with impaired reaction time from other causes) with decreased mental acuity or impaired reflexes will generally not be able to catch or deflect the ball, and thus will be struck by the ball.

Although this test has not been subjected to scientific validity measures, I have been using it for more than 12 years in more than 5,000 patient encounters. I believe that this test, combined with a detailed mental status examination, gives a good estimate of whether a patient has adequate reaction time to function in a number of situations, including driving and work, and therefore is recommended as a clinically useful tool in an office setting.

Summary

It is essential that health care providers write prescriptions for opiates or other CNS depressants

for patients in a very responsible manner with the recognition that patients often use multiple other prescription medications or over-the-counter substances. We need to be aware of all these and take them into account when we consider safety for return to work or driving. It is our ethical responsibility to protect our patients and the public at large. Allowing our patients or recreational users to use marijuana before working or driving increases the risks for adverse outcomes on many levels.

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