The growing trend of medical marijuana

Although controversial, as more states legalize medical marijuana, despite its federal ban, you're more likely to care for patients who are using it. Understanding this substance and its effects will help you provide the best care for these patients.

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For hundreds of years, marijuana has been used for medical reasons, with the earliest written reference to it appearing in 15th century China. More than 100 articles on the therapeutic use of marijuana appeared in various medical journals from 1840 to 1900. Cannabis was prescribed for many different symptoms, including pain relief, vomiting, convulsions, and spasticity. Today, marijuana is being used to treat similar conditions, such as nausea, vomiting, pain, and glaucoma.

Throughout the history of cannabis use in the United States, various reports indicated a link between marijuana and crime. In 1951, Congress passed a law that classified marijuana as a narcotic. Today, conflicting reports about marijuana make it difficult to evaluate its medical use. In addition, it isn't legal to use or dispense marijuana for medical use federally. However, several states have legalized medical marijuana use or have pending legislation, with each state following different rules (see *State medical marijuana laws as of June 2014*). This is resulting in a legal conundrum with not only state versus state laws, but also federal versus state laws.

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The purpose of this article is to outline the current state of medical marijuana use and what you need to know if you're caring for someone who's using medical marijuana. Regardless of personal viewpoints on the use of this substance, you may care for a patient who's either legally smoking medical marijuana or taking dronabinol, the oral preparation of marijuana. It's important to learn the pharmacologic action of this drug, its adverse reaction profile, and interactions with other medications to safely and effectively care for these patients.

How marijuana works

Marijuana comes from the hemp plant cannabis sativa. It contains chemicals called cannabinoids that may be useful in controlling

State medical marijuana laws as of June 2014

State	Registry/ID	Dispensaries	Specifies conditions	Can use if from other state	Allows recreational use
Alabama		Limited	Yes (low THC/high CBD)	No	No
Alaska	Yes	No	Yes		
Arizona	Yes	Yes	Yes	Yes	
California	Yes	Yes	No		
Colorado	Yes	Yes	Yes		Yes
Connecticut	Yes	Yes	Yes		
Delaware	Yes	Yes	Yes	Yes	
District of Columbia	Yes	Yes	TBD		
Florida	Yes	Yes	Yes		
Hawaii	Yes	No	Yes		
Illinois	Yes	Yes	Yes (low THC/high CBD)	No	
Kentucky	No	Limited	Yes (low THC/high CBD)		
Maine	Yes	Yes	Yes	Yes	
Maryland	Yes	Yes	Yes		
Massachusetts	Yes	Yes	Yes		
Michigan	Yes	No	Yes	Yes	
Minnesota	No	Limited	Yes		
Missisiipi			Yes (low THC/high CBD)	No	
Montana	Yes	No	Yes	No	
Nevada	Yes	No	Yes		
New Hampshire	Yes	Yes	Yes	Yes	
New Jersey	Yes	Yes	Yes		
New Mexico	Yes	Yes	Yes		
Oregon	Yes	No	Yes		
Rhode Island	Yes	Yes	Yes	Yes	
Tenneesse		Limited	Yes (low THC/high CBD)	No	
Utah					
Vermont	Yes	Yes	Yes		
Washington	No	No	Yes		Yes
Wisconsin	No	Limited	Yes (low THC/high CBD)		

the symptoms of certain medical conditions. Delta-9-tetrahydrocannabinol (THC) is the main component responsible for the mood-altering effect. Cannabinol and cannabidiol are some of the other chemicals in marijuana that share the properties of THC but have less psychoactive effects. By smoking or ingesting marijuana, these psychoactive components attach to CB1 and CB2, two types of cannabinoid receptors in the body. CB1 receptors are found in the brain, especially in the areas involving body movement, memory, and vomiting. CB2 receptors are found elsewhere in the body, such as the immune system, spleen, and lymph nodes, and can suppress the immune response.

After smoking marijuana, the peak effects occur within minutes and can last up to 2 hours. On the other hand, when marijuana is ingested orally, it can take several hours to reach its peak; the effects may last for hours, but may result in erratic absorption. Any gastrointestinal (GI) disorder, such as irritable bowel syndrome, that increases passage through the system may alter the effectiveness of absorption.

Medical marijuana use

Marijuana is used to treat a variety of symptoms associated with different illnesses. There has been research done to evaluate how effective marijuana is in alleviating some symptoms, but formal research decreased drastically in 1972. It was at this time that the FDA made marijuana a Class 1 controlled substance, severely limiting the ability to gain permission or obtain grant money to use the substance in studies. Therefore, in the United States, we have past research results and individual anecdotal reporting to let us know which symptoms marijuana can be helpful in treating.

However, the FDA recently gave approval for research to begin on a medical form of marijuana. Cannabidiol—the nonpsychoactive component of cannabis—has been granted research status for the treatment of children with Dravet syndrome, a severe form of genetic epilepsy. Also, clinical studies are still occurring in other countries, particularly in Europe.

Some of the most researched indications for medical marijuana use include nausea, glaucoma, pain, and posttraumatic stress disorder (PTSD).

Nausea

Many published studies support the benefit of marijuana as an antiemetic for patients with cancer. In fact, cancer is a qualifying indication for medical marijuana use in the states that have legalized it. These studies demonstrated that dronabinol was superior to placebo in controlling nausea and vomiting related to chemotherapy. Dronabinol was also compared with prochlorperazine and it was found that both drugs were equal in alleviating nausea.

Irritable and inflammatory bowel diseases, such as Crohn disease and colitis, which cause the symptoms of cramping, pain, diarrhea, and weight loss, can also be treated with marijuana. Preclinical studies have demonstrated that activation of the cannabinoid receptors decreases GI activity, suppresses intestinal secretion, and reduces acid reflux. All of these actions assist in treating nausea and vomiting.

Glaucoma

Glaucoma is a disease of the optic nerve that results in vision loss with possibly blindness. The many factors that result in this disorder are still not totally understood, but lowering the intraocular pressure does decreased the damage to the optic nerve. Marijuana has been found to reduce intraocular pressure, but there's currently no evidence to conclude that marijuana can decrease pressure long enough to prevent the optic nerve damage of glaucoma. Efforts to use an ophthalmic solution to avoid any systemic effects of marijuana didn't result in decreasing pressure. So it was apparent that only inhaled or oral marijuana helped reduce pressure in glaucoma.

Yet, the recent discovery of receptors for the active components of cannabis in the tissue of the eye suggests eye drop administration may be effective, so ophthalmic solution can't be ruled out. Brain research has also found that the cannabinoid components of marijuana may actually protect the optic nerve cells. However, since there are no definitive research studies to demonstrate cannabis efficacy, the American Glaucoma Society's position statement doesn't support marijuana to treat glaucoma.

Pain

Recent studies have shown marijuana to be effective in alleviating nerve pain. Cannabinoids have analgesic effects that help treat pain problems. These cannabinoids can also potentiate the effects of opioids, allowing smaller dosages of these potentially addicting medications to be used for pain relief. Other studies suggest that oral marijuana alone does have some analgesic properties.

The cannabinoids in marijuana have also been shown to relieve the tremors, muscle spasms, and bladder incontinence of patients with multiple sclerosis (MS). In addition, the use of cannabis extracts resulted in long-term reductions in neuropathic pain in MS. Clinical trials at the University College of London's Institute of Neurology reported that cannabinoids may provide actual neuroprotection in MS patients, thus slowing the progression of the disease.

Fast facts about cannabis

cheat sheet

- Comes from the hemp plant cannabis sativa
- Categorized as a Class I controlled substance
- Delta-9-tetrahydrocannabinol, or THC, is the main chemical responsible for mood altering effects
- Cannabinol and cannabidiol are other chemicals in marijuana that have a less psychoactive effect
- Cannabidiol, the nonactive component, is being studied for the treatment of epilepsy
- Peak effects of the drug occur within minutes if smoking or several hours if ingested orally

However, marijuana can make a person more sensitive to other forms of pain. In one study, subjects with induced sunburn experienced increased pain when given marijuana for relief. The pain response is a complex matter, but currently it appears that marijuana is effective in treating chronic neurologic types of pain but isn't helpful in the acute pain response.

PTSD

When a person experiences an out-of-the-ordinary traumatic event, the memories are recorded and then played back (flashbacks) repeatedly, causing much distress and lack of sleep. Throughout time, soldiers have returned from war unable to put the horrible experience behind them. Many of today's Iraq and Afghanistan veterans believe that marijuana not only assists with the psychological pain, but also assists in controlling the flashback memories of PTSD. Marijuana may help with a restful sleep and decrease the potency of flashbacks for veterans, acting as a modulator of emotional response and allowing the painful memories to decrease or actually be forgotten. This allows many veterans to successfully participate in their family and community roles.

Adverse reactions

Marijuana can potentially adversely affect various body systems, such as the cardiovascular, respiratory, endocrine, and immune systems. You also need to be aware of decreased cognitive ability and the potential for addiction.

Cardiovascular system

There are many changes that occur in the cardiovascular system with the use of marijuana. It causes a 20% to 100% increase in heart rate that can last up to 3 hours, with a cardiac output increase of 30%. Also, at higher doses of smoked or oral marijuana, postural hypotension can occur. Peripheral vascular resistance decreases and skin temperature can drop 4° C to 6° C.

The cardiovascular effects of marijuana may not cause problems in young, healthy users;

however, in individual who are older and/or have coronary artery disease, the risk of unhealthy events can increase. These cardiovascular changes may cause problems with patients who have preexisting heart problems. Yet, the administration of synthetic cannabinoids has been shown to lower BP and inhibit atherosclerosis with little adverse reactions.

Respiratory system

Research studies have shown that smoking marijuana can have adverse reactions on respiratory function, but the pattern is different from those changes associated with tobacco. Smoking marijuana causes large airway obstruction that's evident on pulmonary function tests and cellular inflammatory abnormalities in the bronchial epithelium. Marijuana can increase respiratory symptoms such as dyspnea, pharyngitis, and bronchial spasm. These symptoms are caused by the effects of the smoke on the bronchial mucosa. In addition, some studies have shown that chronic marijuana use may not result in the same long-term effects as smoking tobacco, such as emphysema or lung cancer.

Yet in a recent study that followed men over age 40 in Sweden, it was found that "heavy" marijuana use resulted in a two-fold risk of developing lung cancer. Because both marijuana and tobacco smoke can contain similar carcinogens, it's important to continue research on the effect of marijuana on lung function and disease.

Endocrine system

Marijuana use can cause decrease sperm count and motility in men. In addition, prolactin, follicle-stimulating hormone, luteinizing hormone, and growth hormone levels are increased in female users. These alterations in normal hormone levels may cause long-term problems in couples trying to conceive.

Immune system

Marijuana can both positively and negatively affect the immune response. THC and other cannabinoids in marijuana have been shown to impair the cell-mediated and humoral immune system response. This decreased immunity may put a person at increased risk for developing infection. On the other hand, those patients with overactive immune responses, such as in MS, may benefit from the immune suppression caused by marijuana.

key points

Patient education

- Caution patients that thinking, problem-solving skills, and memory can be affected.
- Educate patients not to drive or operate heavy machinery while using marijuana.
- Advise older adults that balance and coordination may be affected.
- Advise patients not to use marijuana when responsible for the care of others.
- Alert patients with cardiovascular problems that heart irregularities can occur and to report any palpitations or headaches to their healthcare provider.
- Advise immune-suppressed patients to call their healthcare provider if any signs of infection occur, such as fever or lethargy.
- Educate patients about the possible drug-to-drug interactions with the use of marijuana.
- Advise patient to keep any marijuana safe from children and others in the home just as with any prescribed medication.

Cognitive ability

Marijuana can diminish psychomotor activity and responses, similar to alcohol ingestion. Because of this, patients using marijuana who work with heavy machinery or need to utilize gross motor skills may experience poor performance. Short-term memory may also be affected, so the cognitive ability to carry out simple tasks may be altered with marijuana use. Memory impairment was the most consistent deficiency in chronic users when compared with nonusers. This can affect the safety of a patient utilizing marijuana for symptom relief.

Marijuana may hamper a patient's ability to perform his or her job or decrease the ability to learn new material needed for the job. Research has also shown that the negative effects that marijuana has on attention and learning can last for days or weeks after the initial response

to the drug. This means that a patient who uses marijuana on a daily basis may be functioning at a decreased cognitive level most of the time. In fact, evidence suggests that when compared with nonsmoking peers, students who smoke marijuana get lower grades and are more likely to drop out of high school.

Addiction

Currently, all studies looking at the addictiveness of marijuana have been done with individuals who use the drug recreationally. Because more states are approving the medical use of marijuana, it's important to research the addictive process in individuals who are using the drug for medical reasons. It's also important to evaluate if patients who are prescribed medical marijuana are using the drug for that purpose and not just for recreation.

The 2010 National Survey on Drug Use and Health indicated that 4.5 million American were dependent on marijuana. Also, 18% of people who were in drug abuse treatment programs reported their drug of choice as marijuana.

Marijuana can be addicting, with 9% of users becoming addicted. That number increases in those individuals who start using marijuana at a young age or individuals who are daily users. In fact, one study of both fraternal and identical twins found that the twin who used marijuana before age 17 had an elevated risk of drug problems later in life compared with the twin who didn't use marijuana before age 17. So, the risk of addiction is definitely an important consideration when talking about marijuana use.

Signs of marijuana addiction

cheat sheet

- Needing more of the drug to get the same effect
- Continuing to use the drug despite family or work relationships being negatively affected
- Neglecting personal appearance
- Neglecting responsibilities
- Lack of control over the amount of the drug being used
- Spending an increasing amount of time using the drug

In addition, marijuana dependency is increased among patients with other mental health disorders, such as depression or anxiety disorders. Long-term marijuana users who are trying to quit report some physical withdrawal symptoms similar to nicotine, including irritability, sleep disturbances, anxiety, appetite changes, and depression.

Patient education

It's important for you to know how marijuana works, its main adverse reactions, and what symptoms patients should report to their healthcare providers. Caution patients that marijuana, whether smoked or oral, will impair thinking, problem-solving skills, and memory. It would be wise not to drive or operate heavy machinery while using it. Marijuana will also reduce balance and coordination, so advise older adults to watch their footing and movements. It's particularly important to counsel caregivers on the use of medical marijuana because taking care of others requires lucid decision making and concentration.

Because of the possible cardiovascular effects, alert patients who are compromised that heart irregularities can occur. If they experience any palpitations or headaches, instruct them to call their healthcare provider. Also, advise them to rise slowly because BP may drop when changing positions.

Because there may be an increased risk of chronic cough and respiratory infections, it's important to educate immune-compromised patients to call their healthcare provider if they experience a fever, lethargy, or other signs of infection. It may be beneficial for patients to use a clean water pipe or change to oral dronabinol if they have compromised respiratory functioning. There are studies that have shown the respiratory effects of marijuana can be decreased with the use of a vaporizer that heats until just the THC is released.

As with any medications, educate your patients about the drug interactions that can occur. Marijuana shares common metabolic pathways with tobacco, alcohol, and psychoactive drugs. This causes the absorption and

clearance of these substances to be slowed or hastened when taken with marijuana, depending on the timing and sequence of drug ingestion. So any patient taking other medications that have a narrow safe level, such as warfarin or digoxin, can experience adverse consequences from combined use with marijuana.

Because marijuana can be addicting, it's important to screen for it. Some of the signs of addiction include needing more of the drug to get the same effect, lack of control over the amount of marijuana being used, spending an increasing amount of time using the drug, continuing to use the drug even though family or work relationships are negatively affected, and neglecting personal appearance or responsibilities. Counsel the patient if you notice the signs of addiction and refer him or her to mental health services.

Lastly, educate medical marijuana users on the risk of marijuana use when children are at home. Encourage them to keep the drug locked and safe from others in their home as with other prescribed medications.

Be prepared!

Medical marijuana is a controversial topic, with a lack of research addressing both the effectiveness of treatment outcomes for different disorders and attention to the adverse reactions and addiction potential. However, regardless of personal viewpoints or opinions, you'll encounter patients who use different forms of marijuana for medicinal purposes. Be aware of how this drug may be utilized to treat certain medical conditions, the action of the drug on the body, and the adverse reactions it may have on the patient. This will prepare you to provide competent nursing care and education to patients. ■

Learn more about it

Abrams DI, Couey P, Shade SB, Kelly ME, Benowitz NL. Cannabinoid-opioid interaction in chronic pain. *Clin Pharmacol Ther.* 2011;90(6):844-851.

Abrams DI, Vizoso HP, Shade SB, Jay C, Kelly ME, Benowitz NL. Vaporization as a smokeless cannabis delivery system: a pilot study. *Clin Pharmacol Ther.* 2007;82(5):572-578.

Aldington S, Williams M, Nowitz M, et al. Effects of cannabis on pulmonary structure, function and symptoms. *Thorax.* 2007;62(12):1058-1063.

American Academy of Ophthalmology. *The Use of Marijuana in the Treatment of Glaucoma.* San Francisco, CA: American Academy of Ophthalmology; 1992.

American Society of Anesthesiologists. Oral cannabis ineffective in treating acute pain, study finds. http://www.sciencedaily.com/releases/2008/06/080624151827.htm.

Bartholomew J, Holroyd S, Heffernan TM. Does cannabis use affect prospective memory in young adults? *J Psychopharmacol.* 2010;24(2):241-246.

Bostwick JM. Blurred boundaries: the therapeutics and politics of medical marijuana. *Mayo Clin Proc.* 2012;87(2):172-186.

Bowles DW, O'Bryant CL, Camidge DR, Jimeno A. The intersection between cannabis and cancer in the United States. *Crit Rev Oncol Hematol.* 2012;83(1):1-10.

Brown TT, Dobs AS. Endocrine effects of marijuana. *J Clin Pharmacol.* 2002;42(11 suppl):90S-96S.

Callaghan RC, Allebeck P, Sidorchuk A. Marijuana use and risk of lung cancer: a 40-year cohort study. *Cancer Causes Control.* 2013;24(10):1811-1820.

Coleman AL, Miglior S. Risk factors for glaucoma onset and progression. *Surv Ophthalmol.* 2008;53(suppl 1):S3-S10.

Davis MP. Oral nabilone capsules in the treatment of chemotherapy-induced nausea and vomiting and pain. *Expert Opin Investig Drugs.* 2008;17(1):85-95.

Di Carlo G, Izzo AA. Cannabinoids for gastrointestinal diseases: potential therapeutic applications. *Expert Opin Investig Drugs.* 2003;12(1):39-49.

Earleywine M, Barnwell SS. Decreased respiratory symptoms in cannabis users who vaporize. *Harm Reduct J.* 2007;4:11.

Fergusson DM, Boden JM. Cannabis use and later life outcomes. *Addiction.* 2008;103(6):969-978.

Gouzoulis-Mayfrank E. Dual diagnosis psychosis and substance use disorders: theoretical foundations and treatment [article in German]. *Z Kinder Jugendpsychiatr Psychother.* 2008;36(4):245-253.

Grant I, Gonzalez R, Carey CL, Natarajan L, Wolfson T. Non-acute (residual) neurocognitive effects of cannabis use: a meta-analytic study. *J Int Neuropsychol Soc.* 2003;9(5):679-689.

Green AJ, De-Vries K. Cannabis use in palliative care—an examination of the evidence and the implications for nurses. *J Clin Nurs.* 2010;19(17-18):2454-2462.

Hall W. The adverse health effects of cannabis use: what are they, and what are their implications for policy? *Int J Drug Policy.* 2009;20(6):458-466.

Hall W, Degenhardt L. Adverse health effects of non-medical cannabis use. *Lancet.* 2009;374(9698):1383-1391.

Hegde VL, Nagarkatti M, Nagarkatti PS. Cannabinoid receptor activation leads to massive mobilization of myeloid-derived suppressor cells with potent immunosuppressive properties. *Eur J Immunol.* 2010;40(12):3358-3371.

Hughes S. FDA approves cannabis extract study in pediatric epilepsy. http://www.medscape.com/viewarticle/817701.

Jones RT. Cardiovascular system effects of marijuana. *J Clin Pharmacol.* 2002;42(11 suppl):58S-63S.

Karch SB. Cannabis and cardiotoxicity. *Forensic Science Medicine and Pathology.* 2006;2:13-18.

Lehmann A, Blackshaw LA, Brändén L, et al. Cannabinoid receptor agonism inhibits transient lower esophageal sphincter relaxations and reflux in dogs. *Gastroenterology.* 2002;123(4):1129-1134.

did you know?

A team of medical industry professionals is currently exploring the safety data required for Institutional Review Board and FDA approval of Phase I, II, and III human studies on the use of medical marijuana.

Lynskey MT; Heath AC, Bucholz KK, et al. Escalation of drug use in early-onset cannabis users vs co-twin controls. *JAMA*. 2003;289(4):427-433.

Nucci C, Bari M, Spanò A, et al. Potential roles of (endo)cannabinoids in the treatment of glaucoma: from intraocular pressure control to neuroprotection. *Prog Brain Res*. 2008;173:451-464.

PBS. Marijuana timeline. http://www.pbs.org/wgbh/pages/frontline/shows/dope/etc/cron.html.

Pertwee RG. Cannabinoids and the gastrointestinal tract. *Gut*. 2001;48(6):859-867.

Pryce G, Ahmed Z, Hankey DJ, et al. Cannabinoids inhibit neurodegeneration in models of multiple sclerosis. *Brain*. 2003;126(Pt 10):2191-2202.

Rog DJ, Nurmikko TJ, Young CA. Oromucosal delta9-tetrahydrocannabinol/cannabidiol for neuropathic pain associated with multiple sclerosis: an uncontrolled, open-label, 2-year extension trial. *Clin Ther*. 2007;29(9):2068-2079.

Steffens S, Mach F. Towards a therapeutic use of selective CB2 cannabinoid receptor ligands for atherosclerosis. *Future Cardiol*. 2006;2(1):49-53.

Substance Abuse and Mental Health Services Administration. *Results from the 2010 National Survey on Drug Use and Health: Summary of National Findings*. Rockville, MD: HHS Publication No. (SMA) 11-4658; 2011.

Tetrault JM, Crothers K, Moore BA, Mehra R, Concato J, Fiellin DA. Effects of marijuana smoking on pulmonary function and respiratory complications: a systematic review. *Arch Intern Med*. 2007;167(3):221-228.

Wade DT, Makela PM, House H, Bateman C, Robson P. Long-term use of a cannabis-based medicine in the treatment of spasticity and other symptoms in multiple sclerosis. *Mult Scler*. 2006;12(5):639-645.

Ware MA. Clearing the smoke around medical marijuana. *Clin Pharmacol Ther*. 2011;90(6):769-771.

Wilsey B, Marcotte T, Tsodikov A, et al. A randomized, placebo-controlled, crossover trial of cannabis cigarettes in neuropathic pain. *J Pain*. 2008;9(6):506-521.

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The author and planners have disclosed no potential conflicts of interest, financial or otherwise.

DOI-10.1097/01.NME.0000452683.33224.92

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