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# Medicinal cannabis:
## A primer for nurses

By Maria Pettinato, PhD, RN, CCN

PATIENTS TRUST and depend on nurses, who need to have informed and valid answers to patients' questions about the use of medicinal cannabis for various health disorders. Conditions for which cannabis has been approved for medicinal use vary from state to state. To date, 30 states and the District of Columbia have legalized its use for many conditions, although not all have legalized every form. Several additional states have legalized the use of nonpsychoactive forms of cannabinoids for seizures or epilepsy only.[1] Even in states where using medicinal cannabis isn't yet legal, patients may have questions in anticipation of it becoming legally available there.

Healthcare providers provide documentation that authorizes patients to use medicinal cannabis in jurisdictions where it's legal. If a healthcare provider determines that a patient has a disorder that qualifies him or her to use medicinal cannabis, the provider issues an *authorization for use* rather than a prescription. An authorization for use doesn't provide information such as cannabis strain, dose, or frequency of consumption. Depending on the state system, the patient takes the authorization form to a medicinal cannabis dispensary or a recreational cannabis store with medicinal products. Recreational stores that provide medicinal products employ personnel who've been trained in the dispensing of medicinal cannabis to patients. Medicinal cannabis isn't available in traditional pharmacies where no trained personnel are available for providing guidance and recommendations to patients.[1,2]

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In the best scenarios, healthcare providers are knowledgeable about the therapeutic effects of medicinal cannabis and provide education about various strains, including which one has been shown to be effective for the patient's diagnosis. They need to have as much knowledge about the various products as possible. In general, clinicians including nurses need to know how to optimize the use of medicinal cannabis and how to answer their patients' questions.(See *American Nurses Association position on use of medicinal cannabis.*)

This article provides a synopsis of the different strains of medicinal cannabis and their contents, as well as some basic information about dosing. Additional resources are provided for those interested in deepening their understanding of medicinal cannabis. Although many jurisdictions have legalized medicinal cannabis under state law, the sale and use of all types of marijuana continue to be illegal under Federal law. Nurses should check with their board of nursing for guidance on legal issues affecting nursing practice in their state.

## Advantages of medicinal cannabis

As more research comes to light about the therapeutic effects of medicinal cannabis, its use for various medical disorders is becoming more widely accepted. (See *Conditions approved for medicinal cannabis in one state.*) Many healthcare providers may be considering initiating use with their patients.

The legalization of cannabis could help stem the opiate/heroin epidemic in the United States. Medicinal cannabis can be used to treat chronic pain instead of opioids, which are much more dangerous.[3] The CDC reports that in 2015, over 15,000 deaths could be attributed to prescription opioid overdose, accounting for over 60% of all pharmaceutical overdose deaths in the United States.[4] When patients with chronic pain find opioids are no longer prescribed for them, many turn to heroin.[5] When heroin and other opioid overdose deaths are added to the previous figure, that number rises to over 33,000 deaths in 2015 alone.[4] A recent study found that in U.S. states where medicinal cannabis is legal, deaths due to opioid overdose were reduced by approximately 25%.[6]

Reducing dosages and overall prescribing of opioids for chronic pain is a current goal within the United States. As one example, the state of Washington has provided education for healthcare providers about the use of medicinal cannabis to treat chronic pain. The education modules produced by a research team at the University of Washington can be viewed for free at http://adai.uw.edu/mcacp/.

## State of cannabis research

A plethora of information about medicinal cannabis is currently available, and more breakthroughs are on the horizon. A PubMed search of scientific papers specifically dedicated to the cannabis plant and its compounds produced more than 40,000 manuscripts. Search terms were medical marijuana, cannabis, cannabinoids, THC, and CBD. (THC is delta-9 tetrahydrocannabinol and CBD is cannabibidiol.) New information from studies performed within and outside of the United States demonstrates that medicinal cannabis isn't useful only for palliative care, but also possibly for the prevention and treatment of disease.[7]

The number of states legalizing the medicinal use of cannabis is expected to continue to grow as results from the benefits shown by research are shared. U.S. healthcare providers are currently providing case study evidence at various conferences held annually that supports interventions utilizing the benefits of medicinal cannabis.

## American Nurses Association position on use of medicinal cannabis

One of the first concerns that many nurse clinicians may have is, "What support do I have in my practice with regard to the use of medicinal cannabis?" Nurses whose patients are using medicinal cannabis may find it comforting to know that the American Nurses Association provides a supportive position statement highlighted in this excerpt below:

"Professional nursing organizations need to advocate for all nurses and to advance change to improve health and healthcare." The ANA strongly supports:

- Scientific review of marijuana's status as a federal Schedule I controlled substance and relisting marijuana as a federal Schedule II controlled substance for purposes of facilitating research.
- Development of prescribing standards that include indications for use, specific dose, route, expected effect, and possible adverse reactions, as well as indications for stopping a medication.
- Establishing evidence-based standards for the use of marijuana and related cannabinoids.
- Protection from criminal or civil penalties for patients using therapeutic marijuana and related cannabinoids as permitted under state laws.
- Exemption from criminal prosecution, civil liability, or professional sanctioning, such as loss of licensure or credentialing, for healthcare practitioners who discuss treatment alternatives about marijuana or who prescribe, dispense, or administer marijuana in accordance with professional standards and state laws.

Source: American Nurses Association. http://nursingworld.org/MainMenuCategories/Policy-Advocacy/Positions-and-Resolutions/ANAPositionStatements/Position-Statements-Alphabetically/Therapeutic-Use-of-Marijuana-and-Related-Cannabinoids.pdf. With permission.

The Eleventh Annual Clinical Conference on Cannabis Therapeutics was held last spring in Berkeley, Calif. This annual conference is held in various U.S. cities for healthcare professionals and patients. Nurses can obtain education and certification as a cannabis specialist at this conference.[8]

Because the United States hasn't removed cannabis from Schedule I designation, U.S. researchers couldn't receive National Institutes of Health (NIH) funding to conduct clinical trials about the benefits of cannabis until recently.[7] Schedule I drugs are those that have no currently accepted medical use in the United States such as the synthetic hallucinogen lysergic acid diethylamide (LSD) and heroin. Until very recently, the NIH provided grant money only to those researchers who conducted research that hypothesized harm from cannabis consumption.[7] This has begun to change: The NIH has recently approved a study of the effectiveness of cannabis when used in patients with posttraumatic stress disorder.[8]

## Conditions approved for medicinal cannabis in one state

Washington has approved the use of medicinal cannabis for these conditions:

- cancer
- HIV/AIDS
- epilepsy and other seizure disorders
- spasticity disorder
- intractable pain
- posttraumatic stress disorder
- glaucoma
- Crohn disease
- multiple sclerosis
- hepatitis C
- chronic renal failure requiring hemodialysis
- traumatic brain injury
- any disease that results in nausea, vomiting, wasting, appetite loss, cramping, seizures, muscle spasms or spasticity.

Source: Washington State Department of Health, 2016.

Medicinal cannabis can be used to treat chronic pain instead of opioids, which are more dangerous.

Other countries such as Great Britain, Spain, and Israel are far ahead of the United States on research about cannabis because of its U.S. Schedule I designation.[9] Keep your eyes open for more interesting findings regarding not only the inhibition of angiogenic growth factor (AGF) as it pertains to cancer, but also the ability of cannabis to inhibit aggregation of amyloid plaque, the substance that contributes to the development of Alzheimer disease.[10]

At the 2016 Clinical Conference on Cannabis Therapeutics held in Baltimore, Md., researchers from Great Britain shared data they were compiling from their research about cancer cells with cannabinoid receptors. They found that when those receptors are stimulated by exogenous cannabinoids, cancer cell apoptosis (programmed cell death) is induced.[11,12]

Besides Great Britain and Spain, Israel is also a leader in cannabis research. Cannabis research with cancer patients has been conducted since the 1970s.[13] Currently, research conducted in Israel is providing evidence for osteoporosis prevention.[14]

Some other examples of current research on medicinal cannabis include studies that examine its use or potential use for treatment of alcohol abuse;[15] Alzheimer disease;[16] and anxiety, depression, and psychosis.[17] The proapoptotic effect of cannabis along with its ability to inhibit AGF makes it particularly interesting to researchers and clinicians who treat patients with cancer.[18-20] Its anti-inflammatory effect has drawn the attention of those involved in researching and treating autoimmune diseases as well.[21-25]

### A lesson in cannabinoids

Nurses' practice can be enhanced by learning more about cannabinoids.

• **Endogenous cannabinoids.** One reason why cannabis is a relatively safe substance for therapeutic use is that the human body makes its own (endogenous) cannabinoids. Sometimes called *endogenous ligands,* these molecules serve as both upregulators *and* downregulators of certain biologic activities.[7]

Unlike other neuromodulators, endogenous cannabinoids aren't stored in vesicles, waiting for a signal to release them into a synapse. Endogenous cannabinoids are created on demand via enzymatic action that isn't yet well understood.

As with most substances found to be therapeutic in humans, the discovery of receptor sites within (and throughout) the human anatomy came before the discovery of the substances that turn on the receptor. When the receptor sites for cannabinoids were discovered, researchers

realized that it was only a matter of time before endogenous cannabinoids would be found.[26] So far, two endogenous cannabinoids that are created naturally in the body have been discovered. One is named anandamide (the Sanskrit word for *bliss*) and the other is 2AG (2-Arachidonoylglycerol). Most likely, more will be discovered.[27]

Because the body makes its own cannabinoids, the cannabinoid receptors throughout the human body (and in animals' bodies as well) also respond to and are activated by exogenous cannabinoids within the cannabis plant.[28]

• **The cannabis plant.** Patients who don't want to experience the euphoric effect of THC can use strains of cannabis containing very low THC content and high percentages of other beneficial components of the plant such as terpenoids, flavonoids, and CBDs.[29,30]

• **Strains and contents.** Currently, hundreds if not thousands of different cannabis hybrid plants are used for various therapeutic actions. All varieties of the cannabis plant are one of three main strains: *Cannabis sativa, C. indica,* and *C. ruderalis.* Two of these strains, sativa and indica, are the predominant strains that produce the hybrids that are now used in the United States. Each hybrid contains varying percentages of these two strains.[31]

The number of states legalizing the medicinal use of cannabis is expected to continue to grow.

In general, the sativa plant has a higher THC-to-CBD ratio and provides a more energetic and elevated mood.[32] The ratio is significant because the more THC the product contains, the more psychotropic the medication will be. Many patients don't want a psychotropic effect, so it's important for them to know the ratio of THC-to-CBD when purchasing a medication. It's quite effective in helping patients with pain, nausea, and anorexia.[33] Some other benefits reported by patients include alleviation of depression and headaches, including migraines.[34]

Indica strains generally provide a higher CBD content. They provide a predominantly physical effect, helping patients with pain, muscle spasms, and inflammation. Again, as with the sativa strain, patients have reported serendipitous benefits of indica-dominant strains, such as relief of anxiety and promotion of sleep.[35]

## Dosing considerations

Because cannabinoid components vary greatly, establishing precise dosing guidelines is extremely difficult. Each patient's metabolism, preferred route of administration, and level of prior experience with cannabis affect the dosage needed. Nevertheless, some general guidelines have been developed.[34] Patients using cannabis for the first time should begin at a very low dose of the THC component and stop therapy if adverse reactions occur. The key point is that dosing must be determined by the patient using a self-titrating model.[36]

As with any drug therapy, the golden rule of "start low and go slow" applies to medicinal cannabis. Starting low is especially important with products that contain THC. When a cannabis-naive patient begins using medicinal cannabis with a high level of THC, the euphoric effect can evolve from a generalized relaxed feeling (similar to the effect of drinking a glass of wine)

## Learn more

This article provides basic information to help interested clinicians begin the search for more knowledge about the medicinal use of cannabis. For more information, nurses can visit the website of the American Cannabis Nurses Association: http://americancannabisnursesassociation.org. A website not specifically for nurses is https://themedicalcannabisinstitute.org.

A Patients Out of Time conference is held in major cities around the United States every year. Its primary goal is to educate healthcare professionals, their specialty and professional organizations, and the public at large about medicinal cannabis. Visit www.PatientsOutofTime.org for more information about this conference.

The Society of Cannabis Clinicians and the American Academy of Cannabis Clinicians has developed an online CME course in cannabinoid clinical medicine for all healthcare providers. This course is based in California and may have some state-specific information within the course that differs from other state laws. To register for the California-based course, go to www.AACMsite.org or e-mail info.aacm@gmail.com.

to an anxiety-provoking paranoia.[36] Other possible adverse reactions are dry mouth, coughing related to smoking the combustible form, and sleepiness.[36] Just as each patient's endogenous cannabinoid system is unique, each patient's tolerance of specific levels of exogenous THC is also unique.[37] However, no one consuming medication that contains THC should drive.

Starting low isn't an issue with products that provide very low THC content. Starting with any dosage of CBD is okay because CBD has no negative effects, but it's of the utmost importance when considering using a product that contains enough THC to produce a psychotropic effect.[38]

Why do patients choose a product with high levels of THC? One reason is that many consumers appreciate the mild euphoria that comes with consumption. They report they've titrated to their perfect dose, which helps them to relax and not focus on the health problem being treated. They also report enjoying a relatively calm sense of well-being.[33]

A patient may also prefer a strain with psychoactive THC because of the *entourage effect*. In brief, the entourage effect explains the concept of *cannabis synergism,* or the idea that it's much safer and more effective to use the entire natural product than to isolate and use specific components of that product, because the various components provided by nature offer balance and control that isn't present if only one component of the whole plant is isolated and consumed.[39]

## Modes of administration

After considering the ways cannabis can be consumed, the healthcare provider needs to discuss the most appropriate method with individual patients. The differences between the routes, absorption, and the onset of action are discussed with patients, but patients ultimately determine their preferred method of consumption. Generally, when using inhalation via smoking or vaporization, the patient should wait 2 minutes between puffs to determine if more is needed. If the method is oral consumption, either in a food product or a tincture, the patient should wait 60 to 120 minutes to gauge the strength of the effect.[36,40]

Encourage the patient to journal the level of symptom discomfort, dose ingested or smoked, and level of relief provided. This will help both the patient and the healthcare provider customize a plan that works best for the patient. More information on methods of administration and patient teaching can be found in an article by Grant and colleagues.[41] Patients determine the effectiveness of the dosage over time and increase it accordingly. Patients ultimately are in control of their own dose and the ratio desired.

## Potential adverse reactions

Most information in the literature about adverse events relates directly to products high in THC that were consumed recreationally or prescribed as THC-only medications.[42] The most extensive research on medicinal THC plus CBD cannabis products was provided by clinical trials of nabiximols, a THC/CBD medicinal cannabis product used in Canada. According to this research, the most common adverse reactions during the first 4 weeks of treatment were fatigue and dizziness. These effects lessened over time. Sudden discontinuation of treatment produced no significant withdrawal-like signs or symptoms, although some participants reported temporary changes in their sleeping patterns, mood, or appetite following discontinuation.[36]

Although medicinal cannabis can cause some troubling adverse reactions such as paranoia and anxiety associated with high doses of THC, most adverse reactions such as dry mouth are relatively mild.[33] Compared with those of opioids, adverse reactions to medicinal cannabis are much less likely to be serious. Most notably, cannabis doesn't suppress the respiratory system as opioids do. Fatal overdoses with medicinal cannabis products used alone have never been reported. For additional sources of information, see *Learn more.*


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