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**A PATIENTS’ GUIDE TO MEDICAL CANNABIS**

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Dear patient,

In 2000, I sustained a severe injury that left me with lack of mobility in my neck, neurological spasms, and severe chronic pain. I had to take painkillers, muscle relaxants, and high doses of ibuprofen to relieve the pain and calm the spasms. After about a year, I started having problems with my stomach and kidneys as a result of the medications. Six months later, my doctor put me on diuretics and warned me that I might have to start dialysis. I was 23 years old and terrified.

Then one day, my doctor shut the exam-room door behind him and asked me in a whisper, "Do you smoke marijuana?" When I said no, he asked, "Do you know anyone who does?" I thought he was trying to buy marijuana from me! My doctor quickly reassured me. He explained that he did not know very much about medical cannabis, but he had seen a few patients with similar intolerance to pain medications who had cut their medication intake by at least half by using cannabis. He said he did not want to put me on dialysis. If I could find some marijuana, we should try it.

It was the first time that I had ever really thought about marijuana as medicine. I probably had the same amount of information on the subject that most Americans had at the time. I was in favor of it in principle, but I did not know anything about the law. Of course, I did not want sick people to go to jail for following their doctors' advice, but I had never heard about the emerging scientific research or considered the needs of patients. I thought medical cannabis was only for dying people with AIDS or cancer. Now I was facing my own medical crisis and the choice between dialysis and cannabis seemed an easy one to make, regardless of the law.

But information about cannabis as medicine was extremely hard to find. I started calling friends, and friends of friends, to try to find access to the plant, but none of these individuals could really explain how to use cannabis as a medicine, what delivery systems were available, or how cannabis worked. I felt alone as I started experimenting with the medicine. Sometimes it worked, sometimes it didn't.

After months of going at this alone, a friend told me about a few medical cannabis centers in California’s San Francisco Bay Area. The successful use of cannabis therapeutics in my life is a direct result of the guidance I received from the staff of one of these facilities.

Access means Action

So much has changed over the past 12 years. New resources, such as this book, make learning about cannabis therapeutics and the laws an easier for patients. But the battle for safe and legal access to this medication rages on.

Medical cannabis patients and their providers remain vulnerable to federal and state raids, arrest, prosecution, and incarceration. As a result, these individuals may suffer pervasive discrimination in employment, child custody, housing, public
accommodation, education and medical care. Laws protecting patients and their providers vary from state to state and, in some cases, may even vary from county to county or city to city. Many sick or injured Americans choose to break outdated state laws that do not account for medical use or access to the medicine their doctor recommends. And no matter what state you are living in, medical cannabis patients and their providers are always violating federal law.

The history of medical cannabis in the US is filled with stories of heroic patients who laid the foundation of safe access and built a movement. At the heart of this movement are the people who are willing to commit daily acts of civil disobedience to provide safe access for patients like me—people willing to stand up against injustice, to fight in the courtroom, to spend their last days concerned about the welfare of others.

My experience convinced me to work with other medical cannabis stakeholders to create an organization that would stand up for the rights of all Americans like me who are seeking safe access, as well as the rights of those willing to provide our medicine. As a cannabis patient, it was my turn, my responsibility, and my honor.

I have had the privilege of working with dedicated activists across the country, as well as an extremely talented staff. From my many teachers along the way and the challenges we have overcome, I've learned that a thorough understanding of the complex realities "on the ground" is the key to catalyzing collective action.

Until ASA members stood up for access, the national debate around medical cannabis was focused solely on the legality and ethics of arresting and prosecuting patients for cannabis usage. That injustice is real, but reflected only a fraction of the challenges that this community confronted on a daily basis. We cannot create good policy without including the voices and experiences of patients and those who provide them with access. That is what ASA members have brought to this movement; that is what WE can bring to every state and the country as a whole.

By participating in this movement, you are helping create the future of medical cannabis in your city, state, and nation. My hope is that, as you discover the utility of cannabis as a therapeutic agent in your life, you will also join this powerful movement to create safe and legal access for everyone who needs it.

Sincerely,

Steph Sherer
Founder and Executive Director, Americans for Safe Access
Guidelines for talking with your current doctor

Be forthright. There is nothing wrong or illegal about discussing medical cannabis with your doctor. Federal courts have ruled that the First Amendment protects doctors in discussing medical cannabis and recommending it to their patients. Doctors are accustomed to patients bringing ideas to them about treatment options and preferences, and cannabis therapeutics should be no different.

Your doctor may be unfamiliar with medical cannabis and hesitant to recommend it, so bring documentation to explain the science and support your experience. ASA has created a series of educational booklets for this very reason. Our Condition-based Booklets and other research can be found on our website at AmericansForSafeAccess.org/patientresources.

A primary care physician with an understanding of your medical history is the best person to consult first about medical cannabis. However, we understand that not everyone has a regular doctor, and many physicians remain unfamiliar with the medical uses of cannabis or are afraid of getting in trouble. In addition, some patients are concerned with their current health insurance company finding out about their use of medical cannabis. For these and other reasons, many patients consult one of the many doctors with a specialty practice in medical cannabis. No matter what doctor you see, here are some pointers:

- Ask for a written recommendation. A sample doctor's recommendation and needed forms can be found on ASA's website. See pages 58-63 of this guide for state-specific information.
- Be prepared to tell your doctor specifically what condition or symptoms you treat with cannabis therapeutics. If you have medical records related to the condition or symptoms, bring them. Honestly describe how long you've had the problem, when you began treating with cannabis, the amount of cannabis you use, how often, and by what delivery method.
- If your regular doctor will not issue a recommendation, you may choose to visit a physician who is a medical cannabis specialist.

Finding a Doctor if You Don’t Already Have One, or if Your Regular Doctor Will Not Issue a Recommendation

There are a number of specialty physicians and clinics available for consultations in states with medical cannabis laws. Before seeing a medical cannabis specialist, patients should already have medical records of diagnosis and treatment or a physician referral. Be aware that:

- You should take your medical records with you to the appointment.
- It generally costs $100 or more to see a medical cannabis specialist.
- Paying for a consultation does not guarantee you a recommendation.
- Time with the doctor and quality of care can vary among medical cannabis specialists.
Chapter 2
WHAT THE SCIENCE SAYS

It can be difficult to locate information about the safety and therapeutic value of cannabis. An unfortunate result of the federal prohibition of cannabis has been limited clinical research to investigate the safety and efficacy of cannabis to control symptoms of serious and chronic illness. Many scientists have noted research is “hindered by a complicated federal approval process, limited availability of research grade marijuana, and the debate over legalization.”

Nonetheless, the documented use of cannabis as a safe and effective therapeutic botanical dates to 2700 BC. Between 1840 and 1900, European and American journals of medicine published more than 100 articles on the therapeutic use of cannabis. In fact, cannabis was part of the American pharmacopoeia until 1942, and is currently available by prescription in Canada, the Netherlands, Israel, and Germany.

The political interference with cannabis research and its use as a medicine originated with the Marihuana Tax Act of 1937. Over the objections of the American Medical Association, two the United States Congress passed the first federal law restricting access to cannabis, even for medical and research purposes. Since then, numerous reviews by local, federal and international commissions have confirmed the relative safety and efficacy of cannabis as a medicine. And in recent decades, research studies have further shown cannabis has the potential to treat a variety of debilitating conditions for which conventional treatments are lacking. Yet the use of cannabis remains completely prohibited by federal law—even for medical purposes.

LaGuardia Report (1944)

The 1937 Marihuana Tax Act may have ended safe and legal access, but it did not end the debate about cannabis policy. In 1939, New York Mayor Fiorello LaGuardia appointed a blue-ribbon panel of renowned physicians, psychiatrists, clinical psychologists, pharmacologists, chemists and other researchers from the New York Academy of Medicine to review claims that smoking cannabis resulted in criminal behavior and a deterioration of physical and mental health.

A summary of the preliminary findings published in 1942 by the American Journal of Psychiatry concluded that “prolonged use of marihuana does not lead to physical, mental or moral degeneration, nor have we observed any permanent deleterious effects from its continued use. Quite the contrary, marihuana and its derivatives and allied synthetics have potentially valuable therapeutic applications which merit further investigation.” The final LaGuardia report expanded on those findings, noting that cannabis is not addictive, does not provide a gateway to other drugs of abuse, and is not associated with increased criminal behavior or juvenile delinquency.
The National Commission on Marihuana and Drug Abuse (1972)


The Shafer report, like the LaGuardia report before it, concluded that cannabis use does not jeopardize health, lead to experimentation with other drugs, or cause criminal activity. It recommended the decriminalization of cannabis for personal use. President Nixon rejected the Shafer report because it conflicted with many of the provisions of both the Comprehensive Drug Abuse Prevention and Control Act and the Controlled Substances Act. Instead of accepting the findings of scientists and doctors, Nixon declared a “War on Drugs.”

Investigational New Drug Compassionate Access (1978)

In 1975, shortly after discovering that smoking cannabis could relieve symptoms of his severe glaucoma, Washington, DC resident Robert Randall was arrested for cultivating cannabis in his home. Randall successfully used the common law “Doctrine of Necessity” to fight the charges. In November 1976, Judge James Washington ruled that “[w]hile blindness was shown by competent medical testimony to be the otherwise inevitable result of the defendant’s disease, no adverse effects from the smoking of marijuana have been demonstrated. Medical evidence suggests that the medical prohibition is not well-founded.”

Randall petitioned the federal government to provide him with access to medical cannabis in accordance with his medical necessity and shortly thereafter became the first American to receive a government-supplied source of cannabis. When Randall went public with his victory, the federal government retaliated with threats to withdraw his access to cannabis. In 1978, Randall filed suit, and federal agencies settled immediately by agreeing to provide free cannabis through a local pharmacy. The Randall settlement helped create the FDA’s Investigational New Drug (IND) Compassionate Access Program, which continues to supply a handful of individuals who suffer from severe or chronic illness with a free monthly supply of federally grown cannabis, up to nine pounds annually.

Though only 30 patients were ever enrolled in the program at any one time, in 1992 an overwhelming number of applications from people suffering the effects of AIDS led President George H.W. Bush to close the program to new applicants, citing concerns that the program undermined prohibition.

In 2002, a study of the remaining individuals in the federal IND program found cannabis to have long-term clinical effectiveness in treating chronic musculoskeletal pain, spasm and nausea, and spasticity associated with multiple sclerosis. Assessment of their physiological systems using MRI scans of the brain,
pulmonary function tests, chest X-ray, neuropsychological tests, hormone and immunological assays, electroencephalography, P300 testing and neurological clinical examinations found no functionally significant health problems after 11 to 27 years consuming up to 12 joints a day.\(^4\)

**Institute of Medicine (1982, 1999)**

In 1982, the Institute of Medicine (IOM), a division of the National Academy of Sciences, published the report “Marijuana and Health.” The IOM noted that “[p]reliminary studies suggest that marijuana and its derivatives or analogues might be useful in the treatment of the raised intraocular pressure of glaucoma, in the control of the severe nausea and vomiting caused by cancer chemotherapy, and in the treatment of asthma.”\(^5\)

More than a decade later, in response to new state laws that permitted the use of cannabis on the recommendation of a licensed physician, the White House Office of National Drug Control Policy commissioned another report from the IOM to assess the medical and scientific value of cannabis. In 1999 the IOM published *Marijuana as Medicine: Assessing the Science Base*, a comprehensive meta-analysis of existing research concerning the therapeutic value of cannabis.\(^6\) In describing the findings of the IOM review, the Congressional Research Service observes that “[f]or the most part, the IOM Report straddled the fence and provided sound bites for both sides of the medical marijuana debate.”\(^7\)

Both IOM reports conclude that there is a sound medical and scientific basis for using cannabis as treatment for a variety of serious or chronic medical conditions. Both reports emphasize the need for continued research with a focus on well-designed clinical trials aimed at developing rapid-onset, reliable, and safe delivery systems. Congress and executive agencies have largely ignored these findings and have never convened a panel to oversee the full implementation of recommendations.

**The House of Lords Select Committee on Science & Technology Report (1998)**

In 1998, the British House of Lords Select Committee on Science and Technology issued a comprehensive report on cannabis that includes testimony from people with serious illness, scientific researchers, and physicians. The report recommended immediately rescheduling cannabis so that doctors could prescribe cannabis to their patients and pharmacies could safely distribute cannabis. This recommendation was made in part because the committee acknowledged that individuals using cannabis for therapeutic purposes “are caught in the front line of the war against drug abuse. This makes criminals of people whose intentions are innocent, it adds to the burden on enforcement agencies, and it brings the law into disrepute. Legalizing medical use on prescription, in the way that we recommend, would create a clear separation between medical and recreational use, under control of the health care professions.”\(^8\)
The report says further “that clinical trials of cannabis for the treatment of MS and chronic pain should be mounted as a matter of urgency.” Specifically, the committee recommended that research focus on alternative modes of administration that “would retain the benefit of rapid absorption offered by smoking, without the adverse effects.”

Since then, a variety of vaporizing systems have been developed and commercially marketed that allow for rapid-onset delivery of cannabis via inhalation without smoking. A sublingual cannabis spray is now also available from GW Pharmaceuticals and has been approved as of 2011 for use by prescription in the UK, Canada, Spain, Germany, Denmark, and the Czech Republic.

THE ENDOCANNABINOID SYSTEM (ECS)

Humans have used drugs derived from the opium poppy for thousands of years to lessen pain and produce euphoria. In 1973, scientists discovered the brain receptors that interact with these opiates, which include opium, morphine, and heroin. In 1975, the first of the brain’s natural chemicals that bind with these receptors was identified. The similarity of this chemical, enkephalin, to morphine suggested opiate drugs work primarily by mimicking natural opiate-like molecules. These discoveries helped explain the effects of opiate drugs and opened the door to the development of powerful new therapeutic drugs that revolutionized pain management.

Similarly, humans have used the cannabis plant for thousands of years to reduce pain, control nausea, stimulate appetite, control anxiety, and produce feelings of euphoria. Since 1964 when the first cannabinoid was identified, researchers have made new discoveries that help us better understand not just why and how cannabis works so well for so many people but its full therapeutic potential.

The therapeutic benefits of cannabis are derived from the interactions of cannabinoids and the human body’s own endocannabinoid system, first identified in 1988. The endocannabinoid system (ECS) is a sophisticated group of neuromodulators, their receptors, and signaling pathways involved in regulating a variety of physiological processes including movement, mood, memory, appetite, and pain.

One of the leading modern cannabinoid researchers, Dr. Ethan Russo, offers this
A comprehensive description of the ECS and its importance to a variety of physiological functions:

The analgesic and palliative effects of the cannabis and cannabinioid preparation have been amply reported over the past generation.... In essence, the effects result from a combination of receptor and non-receptor mediated mechanisms. THC and other cannabinoids exert many actions through cannabinoid receptors, G-protein coupled membrane receptors that are extremely densely represented in central, spinal, and peripheral nociceptive pathways. Endogenous cannabinoids (endocannabinoids) even regulate integrative pain structures such as the periaqueductal gray matter. The endocannabinoid system also interacts in numerous ways with the endogenous opioid and vanilloid systems that that can modulate analgesia and with a myriad of other neurotransmitter systems such as the serotonergic, dopaminergic, glutamateergic, etc, pertinent to pain. Research has shown that the addition of cannabinoid agonists to opiates enhances analgesic efficacy markedly in experimental animals, helps diminish the likelihood of the development of opiate tolerance, and prevents opiate withdrawal. The current author has suggested that a clinical endocannabinoid deficiency may underlie the pathogenesis of migraine, fibromyalgia, idiopathic bowel syndrome, and numerous other painful conditions that defy modern pathophysiological explanation or adequate treatment.9

In the little more than 20 years since researchers began developing an understanding of the ECS, two types of cannabinoid receptors, CB1 and CB2, have been identified, setting the stage for discoveries that have dramatically increased our understanding of how cannabis and its many constituent cannabinoids affect the human body.10-11

CB1 receptors are found in the central nervous system, particularly the brain, and in other organs and tissues such as the eyes, lungs, kidneys, liver and digestive tract. In fact, the brain’s receptors for cannabinoids far outnumber its opiate receptors, perhaps by as much as ten to one. The relative safety of cannabis is explained by the fact that cannabinoid receptors are virtually absent from those regions at the base of the brain that are responsible for such vital functions as breathing and heart control. CB2 receptors are primarily located in tissues associated with immune function, such as the spleen, thymus, tonsils, bone marrow, and white blood cells.
Research is helping scientists and physicians understand the role of the endocannabinoid system in regulating a variety of bodily functions. As noted by the researcher who first identified THC, Raphael Mechoulam, the discovery of the endocannabinoid system has generated a great deal of interest in identifying opportunities for the development of a wide variety of cannabis-based and other cannabinoid therapeutic drugs.¹²

In the meantime, physicians are developing protocols for treating patients with cannabis medicines. Doctors at the University of California Center for Medicinal Cannabis Research, which has completed a series of randomized clinical trials with patients, recently published guidelines for medical care. They note that the decision to use cannabis therapeutics, like other treatment modes, should be based on careful assessment of the patient's condition with consideration for other possible treatments. They propose a possible treatment decision-tree for physicians, using neuropathic pain as an example, as reproduced below.

This is similar to the guidelines established by the California Medical Board for doctors. They indicate that physicians recommending medical cannabis should:

1. Take a history and conduct a good faith examination of the patient;
2. Develop a treatment plan with objectives;
3. Provide informed consent, including discussion of side effects;
4. Periodically review the treatment's efficacy;
5. Obtain consultations, as necessary; and
6. Keep proper records supporting the decision to recommend the use of medical marijuana.
EMERGING CLINICAL DATA

The Therapeutic Potential of Cannabis

While research in the United States has been sharply restricted by the federal prohibition on cannabis in the past, recent discoveries have increased interest among scientists in the more than 100 different cannabinoids so far identified in the cannabis plant. The International Cannabinoid Research Society (ICRS) was formally incorporated as a scientific research organization in 1991, and since its incorporation the membership has more than tripled. The International Association for Cannabis as Medicine (IACM), founded in 2000, publishes a bi-weekly newsletter and holds a bi-annual symposium to highlight emerging clinical research concerning cannabis therapeutics. The University of California established the Center for Medical Cannabis Research (CMCR) in 2001 to conduct scientific studies to ascertain the general medical safety and efficacy of cannabis products and examine alternative forms of cannabis administration. In 2010, the CMCR issued a report on the 14 clinical studies it has conducted, most of which were FDA-approved, double-blind, placebo-controlled clinical studies that have demonstrated that cannabis can control pain, in some cases better than the available alternatives.

To date, more than 15,000 modern peer-reviewed scientific articles on the chemistry and pharmacology of cannabis and cannabinoids have been published, as well as more than 2,000 articles on the body's natural endocannabinoids. In recent years, more placebo-controlled human trials have also been conducted.

A 2009 review of clinical studies conducted over a 38-year period, found that “nearly all of the 33 published controlled clinical trials conducted in the United States have shown significant and measurable benefits in subjects receiving the treatment.” The review’s authors note that cannabinoids have the capacity for analgesia through neuromodulation in ascending and descending pain pathways, neuroprotection, and anti-inflammatory mechanisms—all of which indicates that the cannabinoids found in cannabis have applications in managing chronic pain, muscle spasticity, cachexia, and other debilitating conditions.

Currently, cannabis is most often recommended as complementary or adjunct medicine. But there is a substantial consensus among experts in the relevant disciplines, including the American College of Physicians, that cannabis and cannabis-based medicines have therapeutic properties that could potentially treat a variety of serious and chronic illness. What follows is a brief, annotated compilation of the emerging clinical data that support the therapeutic use of cannabis.

Cannabis and Cancer

People with cancer who must undergo radiation and chemotherapy frequently stop treatments rather than suffer the nausea, pain, and other unpleasant side effects. Years before any state had authorized the medical use of cannabis, a 1991 Harvard Medical School study revealed that nearly half (44%) of U.S. oncologists were recommending cannabis to their patients as a way of mitigating the side effects of cancer treatments.

In its 1999 review, the Institute of Medicine concluded that cannabis could be a
valid alternative for many people living with cancer. Specifically, the IOM notes, “In patients already experiencing severe nausea or vomiting, pills are generally ineffective, because of the difficulty in swallowing or keeping a pill down, and slow onset of the drug effect.”

Since the release of the IOM report, new research has been published which supports the use of cannabis to curb the debilitating effects of cancer treatment. In 2001, a review of clinical studies conducted in several states during the past two decades revealed that, in 768 individuals with cancer, cannabis was a highly effective anti-emetic in chemotherapy. Other studies have concluded that the active components in cannabis produce palliative effects in cancer patients by preventing nausea, vomiting and pain and by stimulating appetite.

The tumor-fighting properties of cannabinoids have also been demonstrated in numerous laboratory studies, though not yet in human clinical trials. Researchers have observed that “these compounds have been shown to inhibit the growth of tumor cells in culture and animal models by modulating key cell-signaling pathways. Cannabinoids are usually well tolerated, and do not produce the generalized toxic effects of conventional chemotherapies.”

### Combating Chemotherapy

Cannabis is used most often to combat nausea induced by chemotherapy agents and pain caused by various cancers. More than 30 human clinical trials have examined the effects of cannabis or synthetic cannabinoids on nausea, not including several U.S. state trials that took place between 1978 and 1986. In reviewing this literature, scientists have concluded that, “THC is superior to placebo, and equivalent in effectiveness to other widely-used anti-emetic drugs, in its capacity to reduce the nausea and vomiting caused by some chemotherapy regimens in some cancer patients.”

A 1998 review by the British House of Lords Science & Technology Select Committee concluded that “cannabinoids are undoubtedly effective as anti-emetic agents in vomiting induced by anti-cancer drugs. Some users of both find cannabis itself more effective.” The House of Lords review builds upon data provided in a 1997 inquiry by the British Medical Association that determined cannabis is, in some cases, more effective than Marinol.

### Cancer-fighting Cannabinoids

Recent scientific advances in the study of cannabinoid receptors and endocannabinoids have produced exciting new leads in the search for anti-cancer treatments. In the past decade, scores of studies, both in vivo and in vitro, have demonstrated that various cannabinoids have a significant effect fighting cancer cells. To date, studies have shown that cannabinoids arrest many kinds of cancer growths through promotion of apoptosis (programmed cell death) in tumors and by arresting angiogenesis (increased blood vessel production). Cannabinoids have also been shown to halt the proliferation or spread of cancer cells in a wide variety of cancer types. Unlike conventional chemotherapy treatments that work by
creating a toxic environment in the body that frequently compromises overall health, cannabinoids have been shown to selectively target tumor cells.

**Cannabinoids and Tumor Reduction**

The direct anti-tumor and anti-proliferation activity of cannabinoids, specifically CB1 and CB2 agonists, has now been demonstrated in dozens of studies across a range of cancer types, including brain (gliomas), breast, liver, leukemic, melanoma, phaeochromocytoma, cervical, pituitary, prostate and bowel.\(^{24-40}\) The anti-tumor activity has led in laboratory animals and in-vitro human tissues to regression of tumors, reductions in vascularisation (blood supply) and metastases (secondary tumors), as well as the direct destruction of cancer cells (apoptosis).\(^{41-45}\) A 2009 review of recent studies on the role of cannabinoids and cannabinoid receptors in the treatment of breast cancer notes that research on the complex interactions of endogenous cannabinoids and receptors is leading to greater scientific understanding of the basic mechanisms by which cancers develop.\(^{46}\)

Cannabinoids have been shown to inhibit tumor growth in laboratory animals in multiple studies.\(^{47-52}\) In one study, injections of synthetic THC eradicated malignant brain tumors in one-third of treated rats, and prolonged life in another third by as long as six weeks.\(^{53}\) Other research on pituitary cancers suggests that cannabinoids may be the key to regulating human pituitary hormone secretion.\(^{54-57}\)

Research published in 2009 found that the non-psychoactive cannabinoid cannabidiol (CBD) inhibits the invasion of both human cervical cancer and human lung cancer cells. By manipulating cannabidiol's up-regulation of a tissue inhibitor, researchers may have revealed the mechanism of CBD's tumor-fighting effect. A further *in vivo* study demonstrated “a significant inhibition” of lung cancer metastasis in mice treated with CBD.\(^{58}\) The mechanism of the anti-cancer activity of CBD and other cannabinoids has also been repeatedly demonstrated with breast cancers.\(^{59-63}\)

Scientists have also demonstrated the anti-tumor effects of the cannabinoid THC on cholangiocarcinoma cells, an often-fatal type of cancer that attacks the liver's bile ducts. A 2009 study found that “THC inhibited cell proliferation, migration and invasion, and induced cell apoptosis.” At low levels, THC reduced the migration and invasion of cancer cells, while at high concentrations, THC triggered cell-death in tumors. In short, THC reduced the activity and number of cancer cells.\(^{64}\) This dose-dependent action of cannabinoids on tumors has also been demonstrated in animal studies.

Research on cannabinoids and gliomas, a type of aggressive brain cancer for which there is no cure, holds promise for future treatments for this disease. A study that examined both animal and human glioblastoma multiforme (GBM) tumors, the most common and aggressive form of brain cancer, describes how cannabinoids controlled glioma growth by regulating the blood vessels that supply the tumors.\(^{65}\) In another study, researchers demonstrated that the administration of the non-psychoactive cannabinoid cannabidiol (CBD) significantly inhibited the growth of subcutaneously implanted U87 human glioma cells in mice. The authors of the study noted that “CBD was able to produce a significant antitumor activity both *in vitro* and *in vivo*, thus suggesting...
a possible application of CBD as an antineoplastic agent.\textsuperscript{66}

The targeted effects of cannabinoids on GBM were further demonstrated in 2005 by researchers who showed that the cannabinoid THC both selectively inhibited the proliferation of malignant cells and induced them to die off, while leaving healthy cells unaffected.\textsuperscript{67} While CBD and THC have each been demonstrated to have tumor-fighting properties in isolation, research published in 2010 shows that they work better in combination, as CBD enhances the inhibitory effects of THC on GBM cell proliferation and survival.\textsuperscript{68}

Similarly, researchers reported in 2010 that the way cannabinoid and cannabinoid-like receptors in brain cells “regulate these cells' differentiation, functions and viability” suggests cannabinoids and other drugs that target cannabinoid receptors can “manage neuroinflammation and eradicate malignant astrocytomas,” a type of glial cancer.\textsuperscript{69} These recent studies confirm the findings of multiple studies that indicated the effectiveness of cannabinoids in fighting gliomas, some of the deadliest forms of brain cancer.\textsuperscript{70-77}

Indications of the remarkable potential of cannabinoids to fight cancer in humans have also been seen in three recent large-scale population studies. The studies were designed to find correlations between smoking cannabis and cancers of the lung, throat, head and neck. Instead, the researchers discovered that the cancer rates of cannabis smokers were at worst no greater than those who smoked nothing at all or even significantly better.\textsuperscript{78} One study found that 10-20 years of cannabis use reduced the incidence of head, neck and throat cancers by 62\%.\textsuperscript{79} Researchers suggest that cannabinoids may produce a prophylactic effect against cancer development, as seen in the anti-proliferation effect that has been demonstrated \textit{in vitro} and \textit{in vivo}.

**Cannabis, HIV/AIDS and Hepatitis-C**

Cannabis helps to improve the lives of many people living with HIV/AIDS. It’s effects help manage appetite loss, wasting, nausea, vomiting, pain, anxiety, stress, depression and other symptoms of both the disease and the anti-retroviral regimes used to treat it. As many as one in four people living with HIV/AIDS use cannabis for medical purposes.\textsuperscript{80}

An international group of nursing researchers has determined from a longitudinal, multi-country, multi-site, randomized-control clinical trial that cannabis is frequently used to manage the six common symptoms of HIV/AIDS. The 2009 study found that a significant percentage of those with HIV/AIDS find cannabis effective for anxiety, depression, fatigue, diarrhea, nausea, and peripheral neuropathy. Researchers note that “those who did use marijuana rate it as effective as prescribed or over the counter medicines for the majority of common symptoms….”\textsuperscript{81}
In addition to symptoms of the disease, cannabis has proven to be effective in controlling unpleasant effects of the drugs used to treat HIV/AIDS. People living with HIV/AIDS who use cannabis to combat the side-effects of HAART therapy are approximately three times more likely to remain on their prescribed drug therapies than those who do not use cannabis, according to a 2007 study.82

In the 1970s, a series of human clinical trials established that cannabis stimulates food intake and weight gain in healthy volunteers, a finding confirmed by numerous subsequent studies. In a randomized trial in people living with AIDS, THC significantly improved appetite and nausea in comparison with placebo. There were also trends towards improved mood and weight gain. Unwanted effects—dry mouth, drowsiness and anxiety—were generally mild or moderate in intensity.83-85

The Institute of Medicine’s comprehensive review in *Marijuana and Medicine* concluded, “For patients such as those with AIDS or who are undergoing chemotherapy and who suffer simultaneously from severe pain, nausea, and appetite loss, cannabinoid drugs might offer broad-spectrum relief not found in any other single medication.”

An FDA-approved preliminary safety trial of smoked cannabis, conducted in 2003 at the University of California at San Francisco, concluded that neither synthetic THC nor inhaled cannabis had any significant effect on the immune system or viral load. Moreover, the researchers noted that study participants who used cannabis gained weight.86

Cannabinoids may also inhibit the spread of the HIV virus within the body by acting on CD4+ T cells, which are critical to immune function and a target of the virus. A 2012 study found that a cannabinoid that activates CB2 receptors produced a dose-specific reduction of HIV infection of up to 50%, leading the researchers to suggest that the therapeutic use of cannabinoids may help fight the spread of the virus to uninfected T cells in late stages of HIV-1 infection.87

Previous research has shown that the use of cannabinoid drugs in patients with HIV is associated with an increase in CD4+ T cell number and has been shown to reduce viral load in an animal model of HIV.

**THE CLINICAL TRIALS**

**Neuropathic Pain**

More than one-third of people living with HIV/AIDS suffer from excruciating nerve pain in the hands or feet, frequently in response to the antiretroviral therapies that constitute the first line of treatment for HIV/AIDS. This neuropathic pain is extremely difficult to treat, and as a result, many individuals reduce or discontinue their HIV/AIDS therapy because they cannot tolerate or get adequate relief from the debilitating side effects of the antiretroviral medications.

The effectiveness of cannabis and cannabinoids in relieving neuropathic pain has been demonstrated in more than three dozen preclinical and clinical trials. A 2009 review noted that “a large number of research articles have demonstrated the
efficacy of cannabinoids” and concluded that “cannabinoids show promise for treatment of neuropathic pain.”

A series of double-blind, placebo-controlled studies of people living with HIV/AIDS have demonstrated that cannabis can reduce neuropathic pain and promote weight gain without immunological compromise. One randomized, placebo-controlled clinical trial of 50 people who had experienced neuropathic pain for an average of six years showed that smoked cannabis was well-tolerated and effectively relieved chronic neuropathic pain from HIV-associated sensory neuropathy, according to researchers at the University of California, San Francisco. Other double-blind, placebo-controlled clinical trials with people living with HIV who experience neuropathy pain not adequately controlled by other pain-relievers, including opiates, found that cannabis provided pain relief.

More recent randomized clinical trials conducted by the University of California Center for Medicinal Cannabis Research (CMCR) also demonstrated that smoked cannabis is effective in treating neuropathic pain. Researchers found that over half of patients with painful HIV peripheral neuropathy experienced pain reduction of more than 30% when treated with cannabis, a level of relief pain researchers correlate with improved life quality. That improvement occurred in two CMCR trials of patients with HIV peripheral neuropathy and in a separate trial of patients with mixed neuropathic pain due to peripheral or central dysfunction of the nervous system. Additional double-blind, placebo-controlled clinical trials indicate cannabis medicines may improve neuropathic pain associated with multiple sclerosis and mixed neuropathies resulting from herpes, trauma and vascular problems. This research is also important for people with cancer, as many of them also experience neuropathic pain.

While at least one study found that the effectiveness of cannabis as an analgesic was dose specific, with lower doses decreasing pain and higher doses increasing pain, other studies have indicated that low- and high-dose cannabis produced similar levels of pain relief, reducing both the intensity and unpleasantness of unbearable nerve pain.

Researchers have found that cannabinoids such as THC work in concert with opiate-based painkillers to increase their effectiveness, particularly in neuropathic pain, allowing patients to reduce their opiate dosage. That synergistic or entourage effect extends to cannabinoids, with multiple studies finding isolated synthetic cannabinoids such as THC (dronabinol) did not provide the same degree of efficacy as a whole-plant preparation of cannabis.

**Hepatitis-C Virus**

Cannabis may improve the effectiveness of drug therapy for the hepatitis C virus (HCV), a potentially deadly viral infection that affects more than 3 million Americans. Treatment for Hepatitis-C virus (HCV) involves months of therapy with two powerful drugs, interferon and ribavirin, both of which have severe side effects, including extreme fatigue, nausea, muscle aches, loss of appetite and depression. Due to these side effects, people often do not finish treatment, which worsens their symptoms and can promote harm to the liver.
Researchers from the University of California, San Francisco medical school and the Organization to Achieve Solutions in Substance-Abuse (OASIS) found that “modest cannabis use may offer symptomatic and virological benefit to some patients undergoing HCV treatment by helping them maintain adherence to the challenging medication regimen.” Other research found that people combating HCV who used cannabis while undergoing combination ribavirin and interferon treatment were about three times more likely to complete their conventional medical treatment than those participants who did not use cannabis.

While cannabis may have a positive biomedical effect on the immune system similar to that demonstrated with HIV, these studies indicate that for people fighting HCV it improves appetite and offers psychological benefits such as reduced depression that help them tolerate the treatment’s unpleasant side effects.

**Chronic Pain**

According to the American Academy of Pain, nearly 50 million Americans suffer from persistent pain. Unfortunately, it is estimated that four out of every ten people living with moderate-to-severe pain have yet to experience relief. After reviewing a series of trials in 1997, the U.S. Society for Neuroscience concluded that “substances similar to or derived from marijuana could benefit the more than 97 million Americans who experience some form of pain each year.”

Although a wide variety of prescription analgesic drugs are available to treat pain—from aspirin to oxycotin—none of these drugs are completely adequate and many cause severe side-effects with continued use. Opiate painkillers are notorious for causing severe nausea, disorientation and drowsiness, while prolonged use can increase tolerance and, in some cases, result in severe dependence or addiction. Even milder analgesics can pose serious risk. Drugs such as aspirin can cause stomach irritation and in some cases ulceration. Prolonged use of acetaminophen can result in liver damage. Ibuprofen can cause kidney failure. Each of these analgesics can produce fatal overdose.

By contrast, the safety record of cannabis is remarkable, and its centuries of use as an analgesic well documented. In their meta-analysis of the available data, the Institute of Medicine acknowledged the wide use of cannabis for pain, noting that “after nausea and vomiting, chronic pain was the condition cited most often to the IOM study team as a medicinal use for marijuana.” Currently, pain relief is by far the most common condition for which physicians recommend the use of cannabis.

Many well-designed, double-blind placebo-controlled clinical trials clearly demonstrate that cannabis can reduce neuropathic pain, as previously noted. Years of clinical studies confirm that the active ingredients in cannabis have powerful analgesic effects, sometimes equivalent to codeine or morphine. A review of the body of scientific research concerning the analgesic effects of cannabis concluded that “[t]here is now unequivocal evidence that cannabinoids are antinociceptive [capable of blocking the transmission of pain] in animal models of acute pain.”

Research shows that cannabinoids also produce an entourage effect that
enhances the effectiveness of opiate painkillers. One animal study found morphine was 15 times more active with the addition of a small dose of THC. Codeine was enhanced on the order of 900 fold.\textsuperscript{106} Human and animal studies have repeatedly shown that cannabinoids work synergistically with opioid drugs in relieving neuropathic pain. Researchers suggest that direct and indirect interactions between opioid and cannabinoid receptors not only enhance analgesia but also reduce the development of tolerance to opiates. These interactions hold promise for developing therapeutic strategies that provide better pain relief with fewer of the dangerous and debilitating side effects that patients reliant on opiate pain killers experience.\textsuperscript{107-111}

Decades of research on cannabis’ effectiveness in pain management include clinical human trials and volumes of anecdotal evidence, as well as new understanding of how activation of the cannabinoid system in the central nervous system reduces sensitivity to pain.\textsuperscript{112-118} Some of the most encouraging clinical data on the effects of cannabinoids on pain involve the treatment of intractable cancer pain and hard-to-treat neuropathic pain. Somewhere between 25% and 45% of cancer patients experience neuropathic pain, a type of chronic nerve pain that resists conventional treatment.

The effectiveness of cannabis and cannabinoids in relieving neuropathic pain has been demonstrated in more than three dozen preclinical and clinical trials. A 2009 review notes that “a large number of research articles have demonstrated the efficacy of cannabinoids” for treating neuropathic pain and concludes that “cannabinoids show promise for treatment.”\textsuperscript{119}

Multiple clinical trials have shown that a dosage-controlled whole-plant extract of cannabis (Sativex) relieves intractable cancer pain, and does so better than THC alone. A recent double blind, randomized, placebo-controlled trial of 360 cancer patients in 14 countries found that pain scores improved significantly with a cannabis extract. Researchers report that the combination of natural cannabinoids in Sativex “is an efficacious adjunctive treatment for cancer-related pain” for patients who do not get relief from opiate painkillers such as Oxycontin or Vicodin.\textsuperscript{120, 121}

Pain from spinal injuries may also be treatable with cannabis. Several sets of researchers have recently published findings on the efficacy of cannabinoids in treating pain resulting from spinal cord injuries (SCI). A French team, noting that “very few pharmacological studies have dealt specifically with neuropathic pain related to SCI,” suggests that for “refractory central pain, cannabinoids may be proposed on the basis of positive results in other central pain conditions (e.g. multiple sclerosis).”\textsuperscript{122} Researchers have demonstrated in an animal model of SCI pain that cannabinoids yield more consistent positive results than conventional analgesics such as opiates, which “decrease in efficacy with repeated treatment over time,” concluding that drugs targeting the body’s cannabinoid receptors “hold promise for long-term use in alleviating chronic SCI pain.”\textsuperscript{123}
Researchers have also determined that neuropathic pain may be treatable via bolstering the body's natural cannabinoids. A study that inhibited the two enzymes that break down the body's natural cannabinoids found that preserving them “reduces neuropathic pain through distinct receptor mechanisms of action” that “present viable targets” for developing new analgesic drugs.124

Drugs which can selective target CB2 cannabinoid receptors, which are almost completely absent from the central nervous system, have also been shown to have therapeutic potential for both inflammatory and neuropathic pain control.125

**Multiple Sclerosis**

One survey of people living with multiple sclerosis reported that more than 40 percent of respondents used cannabis to relieve symptoms of the disease. Among them, nearly three quarters said that cannabis mitigated their muscle spasms, and more than half said it alleviated their pain. A similar survey found that 96% of Canadians living with MS believe cannabis is therapeutically useful for treating the disease. Of those who admitted using cannabis to treat symptoms of MS, the majority cited relief of chronic pain, spasticity, and depression.126

In addition, numerous studies have reported improvement in tremor, sexual dysfunction, bowel and bladder dysfunctions, vision dimness, dysfunctions of walking and balance (ataxia), and memory loss, as well as pain and spasticity.127-131

In fact, cannabinoids have been shown in animal models to not just measurably lessen MS symptoms but may also slow or halt the progression of the disease. Cannabinoids have demonstrated effects on immune function that may reduce the autoimmune neuroinflammatory response which drives relapsing neurological attacks and increasing disability.132-136 Clues as to why may lie in research that discovered that persons with multiple sclerosis have increased levels of endocannabinoids in their blood, indicating that the endocannabinoid system “may be dynamically modulated depending on the subtype of the disease.”137

Previous studies of the pharmacology of cannabis have identified effects on motor systems of the central nervous system that have the potential of affecting tremor and spasticity. A controlled study of the efficacy of THC in the animal model of MS, experimental allergic encephalomyelitis (EAE), demonstrated significant amelioration of these two MS symptoms. A review of six randomized controlled trials of a cannabis extracts that combines delta-9-tetrahydrocannabinol (THC) and cannabidiol (CBD) finds “a trend of reduced spasticity in treated patients” and “evidence that combined THC and CBD extracts may provide therapeutic benefit for MS spasticity symptoms.”138

One such dosage-controlled THC-CBD whole-plant extract—GW Pharmaceuticals' sublingual spray, Sativex®—has been shown in numerous clinical trials to ease pain, decrease spasm frequency, and improve bladder control and sleep. Clinical trials of Sativex® found that it “demonstrated a statistically significant and clinically relevant improvement in spasticity and was well tolerated in MS patients.”139 As of June 2012, Sativex® is available by prescription in the UK, Spain,
Germany and Denmark for the symptomatic relief of spasticity, neuropathic pain, or both in adults with multiple sclerosis. It has been approved for distribution in Italy, Sweden, Austria and the Czech Republic, with recommendations for approval in Belgium, Finland, Iceland, Ireland, Luxembourg, the Netherlands, Norway, Poland, Portugal and Slovakia.

MS patients frequently report cannabis helps with bladder control, and a review of studies on cannabinoid receptors in the bladder notes that non-psychoactive cannabinoids are effective, and psychotropic effects of THC can be mitigated by delivering cannabinoids directly into the bladder.140

The distribution of CB1 cannabinoid receptors in the brain suggests that they may play a role in movement control. Only recently have scientists identified EAE as an animal model for MS, allowing testing for symptom suppression. While objective measures of spasticity in humans have not consistently shown benefit from cannabinoid treatment, a randomized clinical trial with 189 MS patients being treated with a cannabis extract showed 40% achieved a greater than 30% improvement.141

In addition to studying the potential role of cannabis and its derivatives in the treatment of MS-related symptoms, scientists are exploring the potential of cannabinoids to inhibit neurodegeneration. A 2003 study that the National MS Society called “interesting and potentially exciting” demonstrated that cannabinoids were able to slow the disease process in mice by offering neuroprotection against EAE.142 Neurodegeneration is implicated in a host of debilitating conditions.

Other Movement Disorders

Muscular spasticity is a common condition, affecting millions of people in the United States. It afflicts individuals who have suffered strokes, as well as those with multiple sclerosis, cerebral palsy, paraplegia, quadriplegia, and spinal cord injuries. Conventional medical therapy offers little relief for spasticity. Phenobarbital and diazepam (Valium) are commonly prescribed, but they rarely provide complete relief, and many patients develop a tolerance, become addicted, or complain of heavy sedation. These drugs also cause weakness, drowsiness and other side-effects that people find intolerable.

The therapeutic use of cannabis for treating muscle problems and movement disorders has been known to western medicine for nearly two centuries. In 1839, Dr. William B. O’Shaughnessy noted the plant’s muscle relaxant and anti-convulsant properties, writing that doctors had “gained an anti-convulsive remedy of the greatest value.”143 Contemporary animal and human clinical studies reveal that cannabis and its constituent cannabinoids may effectively treat movement disorders affecting older patients, such as tremors and spasticity, because cannabis has antispasticity, analgesic, antitremor, and antiataxia actions.144-155

As mentioned, the contemporary understanding of the actions of cannabis was advanced by the discovery of an endogenous cannabinoid system in the human body. This system appears to be intricately involved in regulating normal physiology.156-158 Central cannabinoid receptors are densely located in the basal
ganglia, the area of the brain that controls body movement. Endogenous cannabinoids also appear to play a role in the manipulation of other transmitter systems within the basal ganglia—increasing transmission of certain chemicals, inhibiting the release of others, and affecting how still others are absorbed. Most movement disorders are caused by a dysfunction of the chemical loops in this part of the brain. Research suggests that an endogenous cannabinoid “tone” participates in the control of movements.160-161

Endocannabinoids have modulating effects on the nervous system: Sometimes they block neuronal excitability and other times they augment it. As scientists are developing a better understanding of the physiological role of endocannabinoids, it is becoming clear that these chemicals may be involved in the pathology of several neurological diseases. This means researchers are identifying an array of potential therapeutic targets within the human nervous system. They have determined that various cannabinoids found in the cannabis plant interrupt the synthesis, uptake, or metabolism of the endocannabinoids that drive the progression of Huntington's disease, Parkinson's disease, and tremor.162

The neuroprotective qualities of cannabis mean it has enormous potential for protecting the brain and central nervous system from the damage from disease or injury that creates various disorders. Researchers have found that cannabinoids fight the effects of strokes, brain trauma, and spinal cord injury, as well as multiple sclerosis and neurodegenerative diseases. More than 100 research articles have been published on how cannabinoids act as neuroprotective agents that slow the progression of Huntington's, Alzheimer's, and particularly Parkinson's, a condition that affects more than 52% of people over the age of 85.163-165

Arthritis

According to the Arthritis Foundation, arthritis is one of the most prevalent chronic health problems and the nation's leading cause of disability among Americans over age 15. A 2006 report estimated that 46 million Americans—nearly 1 in 5 adults—live with chronic joint pain and arthritis.

The use of cannabis as a treatment for musculoskeletal pain in western medicine dates to the 1700s.166 Modern research confirms that cannabis and related therapies can relieve the pain associated with arthritis and the other rheumatic and degenerative hip, joint and connective tissue disorders. Not only is cannabis an effective pain reliever and anti-inflammatory in its own right, it also has the potential to enhance the efficacy of opiate painkillers, allowing for better pain relief at reduced dosages. In their 1999 meta-analysis of the data then available, the Institutes of Medicine specifically noted that the anti-inflammatory properties of cannabinoids could have therapeutic application in preventing or reducing pain caused by swelling (such as arthritis).167

Research has shown that cannabis and its constituent cannabinoids have powerful immune-modulation and anti-inflammatory properties that may treat chronic
inflammatory diseases directly.\textsuperscript{168-170} Many patients and doctors report cannabis has proven an effective treatment for rheumatoid arthritis, and it is one of the recognized conditions for which many states permit medical use. Specifically, cannabis has a demonstrated ability to improve mobility and reduce morning stiffness and inflammation, and research suggests that individuals can reduce their use of potentially harmful Non-Steroidal Anti-Inflammatory Drugs (NSAIDs) when using cannabis as an adjunct therapy.\textsuperscript{171,172}

One of the non-psychoactive cannabinoid components of cannabis, cannabidiol (CBD), has also been shown to have numerous medical applications as an anti-inflammatory and neuroprotective agent, including as a treatment for rheumatoid arthritis.\textsuperscript{173-175} Research indicates that CBD suppresses the immune response in mice and rats that is responsible for a disease resembling arthritis, protecting them from severe damage to their joints, and markedly improving their condition.\textsuperscript{176,177}

**Alzheimer's Disease**

Alzheimer's disease is a neurodegenerative condition for which cannabis and cannabinoid therapies show promise, both for treating the symptoms and the underlying disease.

Agitation is the most common behavioral management problem in people with Alzheimer's and affects an estimated 75 percent of people with the disease. It can include symptoms ranging from physical or verbal abusive behavior to pacing and restlessness, as well as disruptive behaviors such as screaming and repetitive requests for attention. Clinical research involving THC indicates that the cannabinoid reduced the agitation common to Alzheimer's sufferers.\textsuperscript{178,179} THC is also proven effective in combating anorexia or wasting syndrome, a common problem for people with Alzheimer's disease.\textsuperscript{180}

Alzheimer's disease is widely held to be associated with oxidative stress due, in part, to the membrane action of beta-amyloid peptide aggregates. Recent studies have indicated that one of the cannabis plant's primary components, cannabidiol (CBD), combats that problem through a combination of neuroprotective, anti-oxidative and anti-apoptotic effects by inhibiting the release of the toxic beta-amyloid peptide.\textsuperscript{181,182}

This new research, coupled with the extensive work done on other neuroprotective qualities of cannabis and its components, indicates that cannabis or cannabis-based therapy may become the source of the most effective treatments for battling the Central Nervous System diseases that afflict millions of elderly Americans.\textsuperscript{183-186}

**CANNABIS-BASED MEDICINES**

**The 'Pharmaceuticalization' of Cannabis**

Dr. Lester Grinspoon, a professor emeritus at Harvard Medical School and author of several books on the medical use of cannabis, has defined the “pharmaceuticalization of cannabis” as the development of isolated individual cannabinoids, synthetic cannabinoids, and cannabinoid analogs. While this process is characteristic of medical research, it also represents what Dr. Grinspoon
describes as the U.S. federal government’s desire to introduce a cannabis-like pill to replace natural cannabis use. The first efforts to “pharmaceuticalize” cannabis came to fruition in 1985 when a synthetic form of THC known as dronabinol (or Marinol) was approved by the FDA.

**Dronabinol (Marinol)**

Dronabinol (Marinol) is an encapsulated synthetic preparation of delta-9-tetrahydrocannabinol, the primary psychoactive cannabinoid found in the cannabis plant, suspended in sesame oil. Designed and marketed by Solvay Pharmaceuticals and its subsidiary Unimed, Marinol was first indicated for treatment of nausea and vomiting associated with cancer chemotherapy in people who failed to respond adequately to conventional antiemetic treatments; it was later made available for the treatment of anorexia associated with weight loss for people living with HIV/AIDS.

When first approved for medical use, dronabinol was tightly controlled as a Schedule II drug under the Controlled Substances Act, meaning it was classified as a drug with a “high potential for abuse” that could “lead to severe psychological or physical dependence.” In 1999, in response to a rescheduling request by Unimed to make dronabinol more widely available, it was moved by administrative rule to Schedule III, meaning it was now classified as having a lower potential for abuse and only a low or moderate likelihood of physical dependency. Currently Marinol is available in three dosage strengths: 2.5, 5, and 10mg. Despite the well-documented therapeutic value of THC, dronabinol has enjoyed only moderate success.

Marinol’s oral route of administration hampers its effectiveness because of slow absorption and difficulty in controlling dosing. In their review of Marinol, the Institute of Medicine specifically noted that only about 10-20% of an oral dose is absorbed by the human body, and onset of action is not obtained until two and four hours after dosing. By contrast, inhalation yields very rapid onset of therapeutic effects, allowing for both more immediate relief and control over dosage. People prescribed dronabinol for severe nausea and vomiting also frequently report difficulty keeping the pills down, a problem not shared by inhalation delivery methods.

**Nabilone (Cesamet)**

Nabilone (Cesamet) is a synthetic derivative of THC with a slightly modified molecular structure from dronabinol. Currently available for medical use in Canada, United Kingdom, and Mexico, it was approved by the FDA in 1985 for treatment of chemotherapy-induced nausea and vomiting that has not responded to conventional medication. Although nabilone was approved more than twenty years ago, it has only been marketed in the United States since 2006 as a treatment of nausea and vomiting caused by cancer chemotherapy.

**Cannabis Extract Oral-mucosal Spray (Sativex™)**

THC or delta-9-tetrahydrocannabinol is the most familiar cannabinoid, and its therapeutic effects have been well established. However, at least 100 other cannabinoids have been identified in cannabis, including CBD, which not only
offset the psychoactive effect of THC, but may contain therapeutic benefits of their own. In fact, research suggests that the therapeutic effect of cannabis might be linked to what researchers call an “entourage effect,” the synergistic relationship between multiple cannabinoids which may make them more therapeutically beneficial in combination then they are individually.

Researchers affiliated with GW Pharmaceuticals, a company founded in the United Kingdom in 1998 to develop cannabis-based medicines, have noted that in practice medicines or extracts derived from the cannabis plant provide greater relief of pain than the equivalent amount of synthetic cannabinoid given as a single chemical entity like dronabinol.

Sativex® is GW Pharmaceuticals' lead cannabinoid product, and in 2005 became the world's first prescription medicine derived from extracts of the cannabis plant. Specifically, Sativex® is a cannabis extract containing equal amounts of dronabinol (THC) and cannabidiol (CBD), which is administered as an oral spray absorbed in the patient's mouth.

Sativex® is available by prescription for varying conditions in Canada, the UK, Spain, New Zealand, and Germany. It has been approved for distribution in the Czech Republic and Denmark, and regulatory approval is pending in Italy, Sweden and Austria. It is currently undergoing late stage clinical trials in the United States. Upon approval in the United States, Sativex will be marketed by Otsuka Pharmaceuticals.

The primary indication for which Sativex® has been approved is for the treatment of spasticity due to multiple sclerosis. In Canada, it is also approved for symptomatic relief of neuropathic pain in multiple sclerosis and as adjunctive analgesic treatment in people with advanced cancer who experience moderate to severe pain during the highest tolerated dose of strong opioid therapy for persistent background pain.

According to Dr. Grinspoon's theory, the “pharmaceuticalization” of cannabis will only succeed if the pharmaceutical derivatives and extracts displace cannabis as medicine. Although a few individuals will prefer dose-consistent pharmaceutical alternatives, it seems unlikely that these drugs will completely replace the use of organic cannabis, especially given the plant's negligible toxicity, easy availability, and low cost of production relative to pharmaceuticals. New vaporization devices that replace smoking as an easy and rapid delivery method that allows better dosage control than oral ingestion of pills or oralmucosal sprays such as Sativex® are expanding the plant's remarkable medical versatility.

Investigative Roadblocks: The U.S. Research Experience

Over the past three decades, there has been an explosion of international research on the therapeutic applications of cannabis and cannabinoids. But restrictions on cannabis research in the U.S. have resulted in very few clinical trials conducted domestically. Meanwhile, scientific teams in Great Britain, Spain, Italy, Israel, and elsewhere have confirmed-through case studies, basic research,
pre-clinical and clinical investigations—the medical value of cannabis for treating a wide variety of conditions. Equally important, numerous studies have provided strong indications of the potential for more targeted drugs, whole-plant cannabis derivatives and synthetic cannabinoids. The current research challenge is to conduct controlled human clinical trials that can establish protocols for cannabis-based treatments of specific medical conditions.

That challenge was identified in *Marijuana and Medicine*, the Institute of Medicine's 1999 report, but there has been no additional U.S. government effort to fully implement the IOM's recommendations or review the vast amount of research conducted since then. Worse, the federal prohibition of cannabis continues to limit clinical research that could investigate the safety and efficacy of cannabis to treat serious and chronic conditions or control their symptoms. In the United States research is stalled, and in some cases blocked, by a complicated federal approval process and restricted access to research-grade cannabis, despite the order of a federal administrative law judge to allow other production sites to meet research demands.

**A Movement in Public Health**

Despite barriers to research, a growing body of clinical data supports the use of cannabis for medical purposes, as it has been for millennia. While there is still much to learn, the medical value of cannabis is indisputable. As a result, a growing number of public health organizations have endorsed the therapeutic use of cannabis and programs that advance medical and scientific research. Here are some of the more prominent ones.

In 1994 the Federation of American Scientists recommended that the President instruct the National Institutes of Health and the FDA to reopen Investigational New Drug (IND) protocols that would provide federal research cannabis to seriously ill patients who physicians believed would be helped by it. The following year, the American Public Health Association passed a resolution that encourages vigorous research and “urges the Administration and Congress to move expeditiously to make cannabis available as a legal medicine.”

In 1996 the American Academy of Family Physicians offered their support for using medical cannabis to treat specific conditions under the supervision of a licensed medical professional. And, in 1997, two years prior to the publication of the Institute of Medicine's report, the New England Journal of Medicine, one of the world's leading medical publications, published an editorial that said:

A federal policy that prohibits physicians from alleviating suffering by prescribing marijuana to seriously ill patients is misguided, heavy-handed, and inhumane.... It is also hypocritical to forbid physicians to prescribe marijuana while permitting them to prescribe morphine and meperidine to relieve extreme dyspnea and pain... [because] there is no risk of death from smoking marijuana.

Citing the 1999 Institute of Medicine report and studies published since which indicate that the use of cannabis can alleviate the debilitating symptoms of cancer chemotherapy and wasting, the Lymphoma Foundation of America passed a resolution urging Congress and the President to enact legislation to reschedule cannabis to allow doctors to prescribe cannabis for their patients in accordance with need. The Leukemia & Lymphoma Society also “supports legislation to...
remove criminal and civil sanctions for the doctor-advised, medical use of marijuana by patients with serious physical medical conditions” and has encouraged “the federal government to authorize the Drug Enforcement Administration to license privately funded production facilities that meet all regulatory requirements to produce pharmaceutical-grade marijuana for use exclusively in federally approved research.”

Following the lead of several state nurses organizations, the American Nurses Association passed a resolution in support of health care providers who recommend the use of cannabis and further acknowledged that “the right of patients to have safe access to therapeutic cannabis.” The ANA specifically called for more research and urged the removal of cannabis from the list of Schedule I controlled substances.

Recently, the Assembly of the American Psychiatric Association unanimously approved a strongly worded statement championing legal protections for individuals using cannabis in accordance with a physician’s recommendation. The American Psychiatric Association is the main professional organization for psychiatrists in the United States, representing 40,000 members and 16 allied organizations (including the American Academy of Psychiatry and the Law, American Academy of Child and Adolescent Psychiatry, American Association for Social Psychiatry, American Academy of Addiction Psychiatry, and the American Association of Emergency Psychiatrists).

In 2008, the American College of Physicians (ACP) published a position paper underscoring the therapeutic value of cannabis and specifically recommending the federal government consider “reclassification [of cannabis] into a more appropriate schedule, given the scientific evidence regarding marijuana's safety and efficacy in some clinical conditions.” The ACP is the second largest physician group in the United States with 124,000 members and publishes the the most widely-cited medical specialty journal in the world.

Regarding the growing support by public health organization, former Surgeon General Dr. Jocelyn Elders observed that “large medical associations are by their nature slow and cautious creatures that move only when the evidence is overwhelming.” She continued, “The evidence is indeed overwhelming that, as ACP put it, there is ‘a clear discord’ between what research tells us and what our laws say about medical marijuana.”

Other professional health organizations that have endorsed the medical use of cannabis include the American Medical Association, American Public Health Association, the American Academy of Family Physicians, the National Association of Boards of Pharmacy, the California Medical Association, the American Preventive Medical Association, the American Society of Addiction Medicine, the Iowa Board of Pharmacy, and many more.

The current acceptance of cannabis as medicine in the US is further evidenced by the thousands of American doctors who have recommended its use to their patients, the tens of thousands of individuals who are using it safely and effectively, and millions of American voters and many state legislatures—representing more than 1/3 of the U.S. population—that have approved its legal use as medicine.
Chapter 3
HOW SAFE IS CANNABIS USE?

Cannabis and its psychoactive cannabinoid, THC, have an excellent safety profile. The Drug Awareness Warning Network Annual Report, published by the Substance Abuse and Mental Health Services Administration (SAMHSA), contains a statistical compilation of all drug deaths which occur in the United States. According to this report, there has never been a death recorded from the use of cannabis. Pharmacology expert and author Dr. Iverson explains the enormous doses that have been tested:

Laboratory animals (rats, mice, dogs and monkeys) can tolerate doses of up to 1000mg/kg. This would be equivalent to a 70-kg person swallowing 70g of the drug—about 5,000 times more than is required to produce a high. Despite widespread illicit use of cannabis, there are very few if any instances of people dying from an overdose. 188

DEA Chief Administrative Law Judge, Francis Young, in response to a petition to reschedule cannabis under federal law concluded in 1988 that, “In strict medical terms marijuana is far safer than many foods we commonly consume.... Marijuana in its natural form is one of the safest therapeutically active substances known to man. By any measure of rational analysis marijuana can be safely used within the supervised routine of medical care.” 189

More than a decade later, Institute of Medicine investigators considered the physiological risks of using cannabis and concluded that “Marijuana is not a completely benign substance. It is a powerful drug with a variety of effects. However, except for the harms associated with smoking, the adverse effects of marijuana use are within the range of effects tolerated for other medications.” 190

Since the IOM report, research on the longterm effects of smoking cannabis that studied thousands of users over decades has shown that smoking moderate amounts of cannabis (equivalent to a joint a day) has no negative effects on lung function, even in those who have consumed more than 10,000 joints.

Toxicity, Risk of Overdose

Cannabis has an extraordinarily high estimated lethal dose, equivalent to smoking approximately 1,500 pounds in 15 minutes, a physical impossibility. Scientists have had to estimate the LD50, or Lethal Dose for 50% of the human population, because it has never been demonstrated. 186 This puts cannabis in a class of its own, since even relatively safe medications such as aspirin have a lethal dose. Dr. Grinspoon had this to say in a 1995 article in the Journal of the American Medical Association:

One of marihuana's greatest advantages as a medicine is its remarkable safety. It has little effect on major physiological functions. There is no known case of a lethal overdose; on the basis of animal models, the ratio of lethal to effective dose is estimated as 40,000 to 1. By comparison, the ratio is between 3 and 50 to 1 for secobarbital and between 4 and 10 to 1 for ethanol.Marihuana is also far less addictive and far less subject to abuse than many drugs now used as muscle relaxants, hypnotics, and
analgesics. The chief legitimate concern is the effect of smoking on the lungs. Cannabis smoke carries even more tars and other particulate matter than tobacco smoke. But the amount smoked is much less, especially in medical use, and once marihuana is an openly recognized medicine, solutions may be found; ultimately a technology for the inhalation of cannabinoid vapors could be developed.\textsuperscript{191}

That technology Dr. Grinspoon envisioned is now readily available in the form of vaporizing devices, manufactured by many companies. And, as mentioned previously, recent research on the rate of lung cancer and pulmonary diseases among even heavy cannabis smokers has revealed that they have no greater risk of lung cancer, obstructive pulmonary disease, or other adverse effects on pulmonary function than those who smoke nothing at all.

However, cannabis should not be considered a harmless substance. Cannabis has a number of physiological effects, such as rapid heart rate and dilation of the blood vessels, that in limited cases could be hazardous, particularly for those with pre-existing cardiac conditions. These adverse effects are within the range tolerated for most FDA-approved medications, and tend to dissipate with continued use.\textsuperscript{187}

As Dr. Grinspoon observes, “The greatest danger in medical use of marihuana is its illegality, which imposes much anxiety and expense on suffering people, forces them to bargain with illicit drug dealers, and exposes them to the threat of criminal prosecution.”

**The Acute Effects of Cannabis**

The acute, or short-term, effects of cannabis may begin when the drug is first taken, if it is inhaled, or within an hour or more if ingested as an edible. Effects can last between one and three hours, longer if taken as edibles. Individual response varies, depending upon both the individual, the situation in which it is taken, and whether cannabis is ingested or inhaled. Short-term effects from using herbal cannabis may include: coughing or wheezing if cannabis is inhaled, euphoria, dry mouth, reddening of the eyes, increased appetite, blurred vision, dizziness, headache, delayed motor reactions, sedation, and anxiety. Many of the psychoactive effects will decrease with prolonged use. In most cases, side effects are mild, well tolerated, and can be controlled with careful titration or dose management.

In rare cases, usually as a result of consuming large doses of cannabis in food or drink, individuals may experience acute complications such as anxiety attacks, temporary psychosis, or convulsions. Referred to in medical literature as marijuana psychosis, it can be severe enough to compel admission to an emergency hospital.\textsuperscript{192}
Effects of Prolonged Use of Cannabis

Cannabis is a psychoactive drug, and legitimate concerns have been raised about the effects of prolonged use. Although cannabis remains a prohibited substance, tightly controlled even for medical research purposes, the FDA has approved synthetic derivatives of cannabis' psychoactive cannabinoid, THC, and classified them as Schedule III drugs with less likelihood of creating dependency than many other medications.

In considering the consequences of cannabis use, the Institute of Medicine concluded in 1999 that these concerns fall into two categories: the effects of chronic smoking of cannabis and the effects of THC.

SIDE EFFECTS OF CANNABIS

Based on thousands years of use, anecdotal reports, and extensive research, we know that cannabis is one of the safest medicines: it is impossible to consume enough to produce a fatal toxic effect in the body. However, if you are unfamiliar with its use, you should familiarize yourself with the side effects prior to use so that you can use it effectively.

Uneasiness

Cannabis usually has a soothing and comforting effect on the mind, and many use it to manage anxiety. Sometimes, however, people can experience feelings of anxiety while using cannabis. If this happens to you, there are several things you can do. Try to stay in environments where you feel naturally comfortable. If you feel anxious, sit or lie down, breathe deeply, and relax. If you have loved ones with you, hold each other for a while. If you have a pet, hold or stroke it. Eating food will often quickly reduce the feeling of anxiety. Next time you use it, try reducing your dosage. Because of the social stigma related to getting high, you may have feelings of guilt. Understand that “high” or intoxicated feelings related to cannabis consumption are a side effect of using cannabis, much like the side effects of many other pharmaceutical drugs. Know that you have a right to your medicine.

Hunger and Thirst

Many patients use cannabis to stimulate appetite. If you are not using cannabis for this purpose, try to drink water or all-natural juices to avoid unnecessary weight gain. If you wish to eat, chose healthy and nourishing food rather than sweets.

Redness in the Eyes

Red eyes are a normal side effect related to cannabis use. It will not hurt you. If you feel insecure, or if you must go out in public and are concerned about others' reaction to the redness, try using eye drops like Visine or wearing sunglasses.

Drowsiness

If cannabis makes you sleepy, try scheduling your medicating around situations that require you to be alert. Taking a nap or relaxing may help you regain energy. As with all medicines that can produce drowsiness, don’t drive or operate heavy machinery until you know how cannabis affects you.
Sleeplessness

If you find that you can't sleep for a while after using cannabis, try reducing your dosage or avoid medicating right before bed. If you need to medicate before going to bed, give yourself a two hour or so before you normally sleep.

Short-term Memory Loss

Sometimes people have a hard time with recalling short term memories when using cannabis. Some people may find it difficult to carry on a complicated conversation, keep track of details, or perform complex tasks. If this happens to you, schedule complicated tasks and give yourself some leeway when medicating before-hand. These effects are limited to actively using cannabis.

Feelings of Euphoria

When you start medicating with cannabis, you may find that events or situations that wouldn’t normally seem funny become quite amusing. This is a side effect most people enjoy, however if you must deal with situations where humor would be inappropriate, avoid medicating immediately before.

Hazards of Smoking Cannabis

Because cannabis smoke shares many of the same dangerous compounds found in tobacco smoke, concerns have been raised that smoking cannabis can lead to the same increased risk of lung cancer and other chronic respiratory diseases found in tobacco smokers. However, the research done to date indicates that the long term health consequences of cannabis smoking are considerably less serious, if not negligible.\(^{193}\)

Population studies have found mild lung function changes in heavy cannabis smokers and long-term heavy use may generate symptoms of bronchitis, including wheezing, production of phlegm and chronic cough.\(^{194-195}\) More study is required to determine any causal relationship between smoked cannabis and the development of respiratory infections, but anyone needing large or frequent doses may benefit from choosing alternative delivery methods, especially if they smoke tobacco.

While many have historically maintained that heavy cannabis smokers are at higher risk of contracting cancer, new research casts doubt on these claims.\(^{196}\) Studies at the cellular and molecular level have suggested that chemicals in smoked cannabis may cause cancer; however, new evidence indicates that cannabinoids themselves may decrease the cancer-causing effect of the carcinogens typically inhaled from smoking cannabis, preventing cancers from developing. That prophylactic effect makes cannabis smoke inherently less dangerous than tobacco smoke, even though they contain some similar chemicals.\(^{197}\)
In 2006, the results of a five-year, case-controlled investigation—the largest study of its kind—unexpectedly found that smoking cannabis, even regularly and heavily, does not lead to lung cancer or other types of head, neck or throat cancers. Lead investigator Dr. Donald Tashkin, chief of pulmonary medicine at UCLA medical school, speculated on the basis of other research that cannabis may contain key components that regulate aging cells and keep them from becoming cancerous. Dr. Tashkin's findings reaffirm the results of prior case-control studies dismissing a causal link between cannabis use and certain types of lung and upper aerodigestive tract (UAT) cancers. Other studies have found significant differences between the health effects of cannabis and tobacco smoking. Even heavy smokers of cannabis do not have an increased rate of Obstructive Pulmonary Disease, a common affliction for tobacco smokers, and the rate of head, neck and throat cancers, common problems for tobacco smokers, is considerably lower among moderate cannabis smokers than among those who smoke nothing at all.

To avoid smoke inhalation, cannabis can be used with a vaporizer, orally in baked goods and other food product, in oral sprays, or in a suppository. No data exists suggesting that orally ingested cannabis may cause cancer.

**Effects on Cognition**

Cannabis use can temporarily impair cognition involving short-term memory, performance, attention and concentration among long-term heavy smokers. While some studies have suggested that deficits in attention and memory occur more often with heavy cannabis use, and that these deficits can extend beyond the period of intoxication, a 2003 meta-analysis of the 15 relevant studies on non-acute effects found that “there might be decrements in the ability to learn and remember new information in chronic users,” but “other cognitive abilities are unaffected.” The researchers note that, despite their expectations to the contrary, all studies done to date have “failed to demonstrate a substantial, systematic, and detrimental effect of cannabis use on neuropsychological performance.”

**Effects on psychomotor performance**

The most common types of psychomotor functions impaired by cannabis use include body sway, hand steadiness, a test of motor skill performance involving tracking a rotating target, driving and flying simulation, divided attention, sustained attention, and the digit-symbol substitution test, which involves...
remembering symbols arbitrarily matched to numbers.\textsuperscript{203} The effects are generally short-lived and do not appear to persist over the long-term, that is when not using cannabis. Research clearly indicates that cannabis use impairs psychomotor performance, and studies have shown that those unaccustomed to cannabis use are less able to compensate for its effects.\textsuperscript{204} With prolonged use, many people develop ways of compensating that mitigate the effects. No one using cannabis should drive or operate dangerous machinery if they feel intoxicated.

**Effects on the immune system**

The effects of cannabis use on the immune system are not yet fully understood. The discovery of CB-2 receptors in the various cell types of the immune system has excited interest in the interaction of cannabinoids and immune function. Several pharmaceutical companies have expressed interest in developing CB-2-selective drugs which might have utility as immunosuppressants, or in the treatment of arthritis, multiple sclerosis and other autoimmune disorders.\textsuperscript{205} People living with AIDS may experience opportunistic bacterial and fungal infections associated with exposure to pathogens from contaminated cannabis material, according to one study.\textsuperscript{206} Yet there is no evidence that the long-term use of cannabis renders users more susceptible to bacterial or additional viral infections.\textsuperscript{207,208} Recent studies have shown cannabis use has no adverse effect on immune function for people living with HIV/AIDS. A 2003 randomized, placebo-controlled clinical trial demonstrated that cannabis did not affect HIV RNA levels, CD4+ and CD8+ cell counts, or protease inhibitor levels.\textsuperscript{209} In another randomized, placebo-controlled study, the administration of oral THC or smoked cannabis did not significantly alter pharmacokinetic properties of the protease inhibitors tested and had no effect on antiretroviral efficacy.\textsuperscript{210}

In fact, as mentioned in the earlier section on HIV, a 2012 study found that cannabinoids can strengthen immune function. Researchers demonstrated CB2 activation has an anti-viral effect on CD4+ T cells, reducing cell-to-cell HIV infection up to 50%. The authors of that study suggest that the therapeutic use of cannabinoids may help fight the spread of the virus to uninfected T cells in late stages of HIV-1 infection.\textsuperscript{211} Other research has shown that cannabinoid drugs reduce viral load in an animal model of HIV.
CANNABIS 101

Cannabis is a flowering plant that has fibrous stalks used for paper, clothing, rope, and building materials leaves, flowers, and roots used for medicinal purposes, and seeds used for food and fuel oil.

Cannabis leaves and flowers are consumed in several forms: dried flower buds or various types of concentrated, loose, or pressed resin extracted from the flowers or leaves through a variety of methods.

Once mature, the plant’s leaves and flowers are covered with trichomes, tiny glands of resinous oil containing cannabinoids and terpenes that provide physical and psychoactive effects.

- 100+ different types of cannabinoids and terpenes.
- Concentrations or percent of each type of cannabinoid ranges widely from plant to plant and strain to strain.
- The first identified and best-known cannabinoid is THC (delta-9-tetrahydrocannabinol). THC has the most significant psychoactive effect of the cannabinoids.
- The ratio of THC to other cannabinoids varies from strain to strain.

While THC has been the focus of breeding and research due to its various psychoactive and therapeutic effects, non-psychoactive cannabinoids have physiologic effects that can be therapeutic.

- Cannabidiol (CBD) relieves convulsions, inflammation, anxiety and nausea—many of the same therapeutic qualities as THC but without psychoactive effects. It is the main cannabinoid in low-THC cannabis strains, and modern breeders have been developing strains with greater CBD content for medical use.
- Cannabinol (CBN) is mildly psychoactive, decreases intraocular pressure, and seizure occurrence.
- Cannabichromene (CBC) promotes the analgesic effects (pain relief) of THC and has sedative (calming) effects.
- Cannabigerol (CBG) has sedative effects and antimicrobial properties, as well as lowers intraocular pressure.
- Tetrahydrocannabivarin (THCV) is showing promise for type 2 diabetes and related metabolic disorders.

In addition to cannabinoids, other cannabis plant molecules are biologically active. A few other molecules known to have health effects are flavonoids and terpenes or terpenoids (the flavor and smell of the strain). Cannabinoids, terpenoids, and other compounds are secreted by the glandular trichomes.
found most densely on the floral leaves and flowers of female plants.

**Effects**

Different people have different experiences. One individual may feel stress release, while another feels over-stimulated and stressed, while another feels energized and on-task. There are many factors that impact the effect:

- Amount used (dosage)
- Strain of cannabis used and method of consumption
- Environment/setting
- Experience and history of cannabis use
- Biochemistry
- Mindset or mood
- Nutrition or diet

**Types of Cannabis**

Though cannabis is biologically classified as the single species Cannabis Sativa, there are at least three distinct plant varieties: Cannabis Sativa, Cannabis Indica, and Cannabis Ruderalis, though the last is rare. There are also hybrids, which are crosses between sativa and indica varieties. Cannabis used for fiber is typically referred to as hemp and has only small amounts of the psychoactive cannabinoid THC, usually less than 1%.

- Genetic “breeders” of the cannabis seed have developed thousands of different strains of cannabis from these three varieties.
- There are marked differences between sativa, indica, and hybrid.
- Today, we mostly find hybrids. It can be difficult to find pure indica or sativa.

All types of medical cannabis produce effects that are more similar than not, including pain and nausea control, appetite stimulation, reduced muscle spasm, improved sleep, and others. But individual strains will have differing cannabinoid and terpene content, producing noticeably different effects. Many people report finding some strains more beneficial than others. For instance, strains with more CBD tend to produce better pain and spasticity relief. As noted above, effects will also vary for an individual based on the setting in which it is used and the person’s physiological state when using it.

In general, sativas and indicas are frequently distinguished as follows:

**Sativas**

The primary effects are on thoughts and feelings. Sativas tend to produces stimulating feelings, and many prefer it for daytime use.

Some noted therapeutic effects from use of Sativas:

- Stimulating/energizing
- Increased sense of well-being, focus, creativity
- Reduces depression, elevates mood
- Relieves headaches/migraines/nausea
- Increases appetite

Some noted Side-Effects from use of Sativas:
- Increased anxiety feelings
- Increased paranoia feelings

**Indicas**

The primary effects are on the body. Indicas tend to produce sedated feelings, and many prefer it for nighttime use.

Some noted Therapeutic Effects from use of Indicas:
- Provides relaxation/reduces stress
- Relaxes muscles/spasms
- Reduces pain/inflammation/headaches/migraines
- Helps sleep
- Reduces anxiety
- Reduces nausea, stimulates appetite
- Reduces intra-ocular pressure
- Reduces seizure frequency/anti-convulsant

Some noted Side-Effects from use of Indicas:
- Feelings of tiredness
- “Fuzzy” thinking

**Hybrids**

Strains bred from crossing two or more varieties, with typically one dominant. For example, a sativa-dominant cross may be helpful in stimulating appetite and relaxing muscle spasms. Crosses are reported to work well to combat nausea and increase appetite.

**CANNABIS EXTRACTS AND CONCENTRATES**

The dried flower or bud from the manicured, mature female plant is the most widely consumed form of cannabis in the U.S. Elsewhere in the world, extracts or concentrates of the cannabis plant are more commonly used.

Concentrates are made from cannabinoid-rich glandular trichomes, which are found in varying amounts on cannabis flowers, leaves and stalks. The flowers of a mature female plant contain the most trichomes.

Many methods are used to separate the trichomes from the plant:
- Sift the cannabis flower and/or leaves through a fine screen either via a mechanical/motorized tumbler or by hand. Called “dry sift.” What passes through the screen is primarily the oil-rich glandular heads.
- Roll the cannabis flowers between the fingers to rupture the trichomes and collect the resin that sticks to the fingers. Called “finger hash.”
- Submerge cannabis leaves in ice water and agitate mixture
to solidify trichomes. Filter mixture through series of increasingly fine screens or bags. Dry the trichomes and press into blocks. Called “bubble hash.” This method has increased yield.

- There are other ways to separate the trichomes from other plant material, such as butane extractions, but consult your local medical cannabis laws concerning restrictions on certain types of preparations and use caution as some methods can create serious combustion dangers.

Kief

Kief is a powder made from trichomes removed from the leaves and flowers of cannabis plants. Can be compressed to produce cakes of hashish, or consumed (typically smoked) in powder form in a pipe or with cannabis bud or other herbs.

Hashish

Hashish (also known as hash or hashisha) is a collection of compressed or concentrated resin glands (trichomes). Hash contains the same active cannabinoids as the flower and leaves but typically in higher concentrations (in other words, hash is more potent by volume than the plant material from which it was made).

Hashish usually is a paste-like substance with varying hardness. Good quality is typically described as soft and pliable. It becomes progressively harder and less potent as it oxidizes and oil evaporates.

- THC content of hashish ranges from 15-70%.
- Often smoked with a small pipe. Can be used in food, in a hookah, vaporizer, mixed with joints of cannabis bud or aromatic herbs.
- Color varies from black to brown to golden or blonde. Color typically reflects methods of harvesting, manufacturing, and storage.

MYTH: The effects from smoking hash are different. FACT: The effects of hash vary in the same way strains of cannabis do. This stems from differences in potency of hash and the regional variations between cannabis strains used for making it.

Hash oil

Hash oil is a mix of essential oils and resins extracted from mature cannabis foliage through the use of various solvents such as ethanol or hexane. The solvent is then evaporated, which leaves the oil.

- Honey oil contains waxes and essential oils.
- Tends to have a high proportion of cannabinoids—a range from 30 to 90% THC content can be found.
- Can smoke with a specialty pipe for hash oil or hash, with a vaporizer, with cannabis bud in a pipe, joint, or added to food.

CANNABIS EDIBLES

Cannabis can be ingested or eaten when added to cake, cookies, dressings, and
other foods. It can also be brewed into a tea or other beverage. To be effective, cannabis and its extracts or concentrates must be heated in order to convert the cannabinoid tetrahydrocannabinolic acid into active THC.

Digestive processes alter the metabolism of cannabinoids and produce a different metabolite of THC in the liver. That metabolite may produce markedly different effects or negligible ones, depending on the individual. Onset of effects are delayed and last longer due to slower absorption of the cannabinoids.

- Cannabinoids are fat-soluble, hydrophobic oils, meaning they dissolve in oils, butters, fats and alcohol, but not water.
- Processes using oil, butter, fat or alcohol can extract the cannabinoids from plant material.

Various forms of converted cannabis can be used for edible medicating. Each can be made from cannabis flowers, leaves of concentrates such as hash. The potency of the edible will depend on the material used in making it and the amount used. Edibles made with hash will be stronger than those made from leaf trim.

### Cannabis Oil

Cannabis Oil (cannaoil): is cooking oil infused with cannabinoids. Various means to extract include heating the oil and cannabis mixture at low temperature in a frying pan or pot, double boiler, or slow cooker then straining out the plant material. Can be used in any recipe that includes oil and that doesn’t go over 280 degrees Fahrenheit (evaporating point). Think cookies, cakes, candies, and other food items.

### Cannabis Butter

Cannabis Butter (cannabutter) is butter infused with cannabinoids. Heat raw cannabis with butter to extract cannabinoids into the fat. Various means to extract include heating the butter and cannabis mixture at low temperature in a frying pan or pot, double boiler, or slow cooker then straining out the plant material. Can be used in any recipe that includes oil and that doesn’t go over 280 degrees Fahrenheit.

### Tincture

Tinctures use ethanol alcohol (e.g. pure grain alcohol, not rubbing alcohol) to extract the cannabinoids. You use droplet amounts, and it is absorbed through the mucous membranes in the mouth.

### Spray

Sublingual sprays is another way of using a tincture. Use ethanol alcohol to extract the cannabinoids. You use a pump to spray cannabis-alcohol solution under your tongue.

### Cannabis Liquor

Liquor may be infused with cannabinoids. Best to cook stems and leaves into
brandy or rum. Can be added to coffee and other beverages.

**CANNABIS TOPICALS (APPLIED TO THE SKIN)**

Cannabinoids combined with a penetrating topical cream can enter the skin and body tissues and allow for direct application to affected areas (e.g. allergic skin reactions, post-herpes neuralgia, muscle strain, inflammation, swelling, etc.).

- Cannabinoids in cannabis interact with CB1 and CB2 receptors that are found all over the body, including the skin.
- Both THC and Cannabidiol (CBD) have been found to provide pain relief and reduce inflammation.
- Topical cannabis use does not produce a psychoactive effect, which is different from eating or inhaling the medicine.

Different types of cannabis topicals include:

- **Salve**: cannabinoids heated into coconut oil combined with bees wax and cooled. Rub directly on skin.
- **Cream**: cannabinoids heated into shea butter combined with other ingredients and cooled. Rub directly on skin.

Topicals may produce anti-inflammatory and analgesic or pain relief effects. Research has to date been limited to studies on allergic and post-herpes skin reactions and pain relief. Anecdotal reports on topical treatment efficacy include:

- Certain types of dermatitis (including atopic) and psoriasis
- Balm for lips, fever blisters, herpes
- Superficial wounds, cuts, acne pimples, furuncles, corns, certain nail fungus
- Rheumatism and arthritic pains (up to the 2nd degree of arthritis)
- Torticollis, back pains, muscular pains and cramps, sprains and other contusions
- Phlebitis, venous ulcerations
- Hemorrhoids
- Menstruation pains
- Cold and sore throat, bronchitis
- Asthmatic problems with breathing
- Chronic inflammation of larynx (application in the form of a Priessnitz compress)
- Migraine, head pains, tension headaches

**PHARMACEUTICAL CANNABIS OR CANNABINOIDs**

Pharmaceutical cannabis or cannabinoid drugs are those that have been standardized in composition, formulation and dose. That means you always know exactly what and how much you are getting with each pill or spray. These are drugs which have been developed to meet regulatory requirements for prescribing by physicians.
Dronabinol (Marinol®)

Dronabinol (Marinol®) is a prescribed capsule classified as a Schedule III drug used to treat nausea and vomiting caused by chemotherapy and loss of appetite and weight loss in people who have acquired immunodeficiency syndrome (AIDS). It is a synthetic version of THC suspended in sesame oil and does not contain CBD (cannabidiol) or other cannabinoids.

Sativex®

Sativex® is a prescribed oromucosal (mouth) spray to alleviate various symptoms of MS and cancer, including neuropathic pain, spasticity, overactive bladder and other symptoms, depending on the country. Derived from two strains of cannabis, the principal active cannabinoid components are THC and CBD suspended in ethanol. Each spray of Sativex® delivers a fixed dose of 2.7mg THC and 2.5mg CBD.

CANNABIS CONSUMPTION

How Can I Use Cannabis More Safely?

Adjust the Way You Use Cannabis. One of the great aspects of cannabis is that there are many ways to use the medicine effectively.

Ingest via Eating

This is one of the safest ways to consume your medication, but understand that the effects from eaten cannabis may be more pronounced and onset of the effects will be delayed by an hour or more and typically last longer than inhalation. Using edible cannabis effectively will usually take some experimentation with particular product types and dosage. Digesting cannabis also metabolizes the cannabinoids somewhat differently and can produce different subjective effects, depending on the individual.

- Use small amounts of edibles and wait 2 hours before gradually increasing the dose, if needed. Take care to find and use the right dose-excessive dosage can be uncomfortable and happens most often with edibles.
- Try cannabis pills made with hash or cannabis oil.

Ingest via Tinctures/Sprays

This is one of the safest ways to consume your medication.

- Find your ideal dosage to enhance your therapeutic benefits. Start with no more than two drops and wait at least an hour before increasing the dosage, incrementally and as necessary.

Apply via Topicals

This is one of the safest ways to consume your medication and may be the best option for certain pains or ailments. Rubbing cannabis products on the skin will not result in a psychoactive effect.

Inhale via Smoking

Because the effects are noticed or felt quickly, this is a good way to get immediate relief and find the best dose for you. Research has shown that smoking cannabis
does not increase your risk of lung or other cancers, but because it entails inhaling tars and other potential irritants, it may produce unpleasant bronchial effects such as harsh coughing.

- Smoke as little as possible. Try 1 to 3 inhalations and wait 10 to 15 minutes to find the right dosage. Increase dosage as necessary.
- Take smaller, shallower inhalations rather than deep inhales. Holding smoke in does not increase the effects; studies show that 95% of the THC is absorbed in the first few seconds of inhaling.
- If consuming with others, for health reasons, try not to share the smoking device. If sharing, quickly apply flame to the pipe mouthpiece or wipe with rubbing alcohol to kill germs.
- To avoid inhaling unnecessary chemicals, use hemp paper coated with beeswax to light your medicine rather than matches or a lighter.

**Inhale via Vaporizer**

This is the safest way to inhale your medicine because it heats the cannabinoid-laden oils to the point where they become airborne vapors, without bringing the other plant material to combustion, drastically reducing the amount of tars and other chemical irritants that you otherwise would inhale. Vaporizers also emit much less odor than any type of smoking.

- Invest in a tabletop Volcano brand vaporizer or a hand-held vaporizer (such as vaporPlus). Construct own vaporizer if you can't afford to buy one.

**Vaporizers come in many sizes, from tabletop to pocket**

**Inhale via a Pipe/One-Hitter/Steam Roller**

- Use a glass, stainless steel, or brass pipe; avoid wood or plastic pipes.
- Glass one hitters, tubular pipes that contain a single dose, are the most economical devices.

**Inhale via a Bong/Water Pipe**

- Don’t use a bong or water pipe regularly. The water absorbs some of the THC and other cannabinoids, and you can inhale water vapor or water drops into your lungs.
- Don’t use a bong made from plastic, rubber or aluminum that can produce harmful fumes when heated or melted.
- If you do use one, change the water frequently to limit exposure to germs.
Know Your Variety

Cannabis comes in many varieties, roughly divided between Sativas that originated near the equator and Indicas that come from northern latitudes, though modern breeding programs have created a wide range of hybrids. Each variety has its own cannabinoid and terpene profile and subtly different effects. Whether you use Sativa-dominant, Indica-dominant, or a Hybrid it makes a difference.

- Take note of what effect each variety produce for you (therapeutic and side effects); keeping a log can be helpful.
- Use higher potency cannabis so you use less medicine. Concentrates can be useful, particularly if you need higher doses.
- For concentrates, use a glass pipe made for cannabis concentrates.
- Experiment with high CBD strains, particularly for nausea, appetite, and pain.
- Take a medicine vacation occasionally. While cannabis does not produce tolerance in the way opiates do, reducing or ceasing cannabis use can yield enhanced effects when restarted. Either reduce or stop for however long it feels comfortable for you.
- Change the variety if the one you’re using seems to be losing its effectiveness.
- Whenever possible, choose organic cannabis products. Never consume cannabis that has been treated with pesticides.

Think About Drug Interactions

No significant interactions between cannabis and other drugs are known at this time, though research indicates cannabis enhances the effects of opiate painkillers. Little is known about the interaction of cannabis and other

<table>
<thead>
<tr>
<th>Mode of Use</th>
<th>How Enters Body</th>
<th>Notice of Effects</th>
<th>Length of Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inhale or Vaporize</td>
<td>Absorbed through lungs</td>
<td>0-10 minutes</td>
<td>Generally 2-3 hours</td>
</tr>
<tr>
<td>Tincture/Spray</td>
<td>Absorbed through mucus membranes</td>
<td>10-40 minutes</td>
<td>Generally 2-4 hours</td>
</tr>
<tr>
<td>Eat/Drink</td>
<td>Absorbed through the digestive tract</td>
<td>30-90 minutes</td>
<td>Generally 3-6 hours</td>
</tr>
<tr>
<td>Skin Topical</td>
<td>Absorbed through the skin</td>
<td>2-3 minutes</td>
<td>Generally 1-2 hours</td>
</tr>
</tbody>
</table>
pharmaceutical medications, but it is important to consider any complementary effects.

- Talk to your doctor or find a doctor who you can talk to about medical cannabis. Some studies show interactions with barbiturates, theophylline, fluoxetine, disulfiram, sedatives, antihistamines, etc.
- A synergistic effect can occur with alcohol use; limit mixing the two.

**Consider Safety. For yourself and your community.**

- Indicas can cause drowsiness—avoid driving or operating heavy machinery when using your medicine.
- Don’t consume cannabis and drive. Cannabis use can impair motor skills. Find a safe environment to consume your medicine. Wait at least 1-2 hours after you medicate before getting behind the wheel.

**Managing medicine costs**

If paying for your medicine is an issue, try a few of these tips.

- Track your costs to get an accurate picture of your spending on cannabis.
- Take a “grow your own” class and explore growing your own medicine or work with a small group of patient cultivators.
- If you access your medicine through a dispensary, use discount cards or investigate other ways to receive free or discounted medicine (like a low-income program, sliding scale program, activism volunteer)
- Store your medicine properly to maintain quality over time. Airtight glass jars kept in a cool dark space work best.

**KEEPING A CANNABIS LOG**

To establish an optimal treatment regime with cannabis, you will need to balance the effects of different strains, doses, and methods of ingestion. It may be helpful to record your therapeutic relationship with cannabis on an ongoing basis. One method is through keeping a cannabis-use log that captures your experience, including thoughts, feeling, and behaviors. Periodically reviewing the log can help both you and your doctor make decisions about what works best.

To start, keep a detailed log, as described below, for at least one week. Once you’ve got a week’s worth of information, complete the self-assessment worksheet that follows. This worksheet will help you better understand many things about yourself, including: your ailments and symptom patterns, your treatment behaviors, and the efficacy and side effects of the cannabis medicines you use.

In keeping a medication log, try to keep things standardized, and be as consistent as possible. Here are some logging tips on useful information to collect:

- **Date/Time:** Record every time you consume cannabis with the current date and time of day.
- **Amount:** The amount of cannabis used (gram estimate or other consistent measure).
**Strain**: The name, strain or variety of the cannabis strain or variety of cannabis medicine used. If you don’t know the name, write a detailed description of the medicine.

**Code**: Strains are generally described as Indica, Sativa, or hybrid. You may want to code your entries: I=Indica, S=Sativa, S/I=Sativa-dominant Indica Cross, and I/S= Indica-dominant Sativa Cross.

**Type** is the form of cannabis consumed: dried bud flower (most common), concentrates, tincture/sprays, edibles/drinks or topical. You may want to use: F=flower, C=concentrate, T=tincture/spray, E=edible, TO=topical.

**Cannabinoid Content**: refers to the percent of THC, CBD and/or CBN. If you have this information available to you, write down percentages of each cannabinoid. If you’re using edibles or similar, a description of potency and preparation is helpful.

**Mode**: Write down how you used your medication. Either inhale via S=smoke or V=vaporize, E=eat/digest, T=tincture or spray, TO=topical.

**Therapeutic Effects**: List any positive effects you experience (physical, mental, social, behavioral, etc).

**Negative Side Effects**: List your negative effects

**Timing**: How quickly did you experience the first therapeutic effects? When did you feel the peak of relief? When did it start to noticeably dissipate? How long until effects were gone?

**What prompted your cannabis use?** List the specific factors that told you it was time for medicine, as well as the general symptoms or conditions being treated (e.g. pain, nausea, anxiety, etc.

**How did you feel (mindset)**? Record your mood and feelings before and after you used cannabis.

**Where were you (setting)**? Were you at home, at a collective, in your office? Sitting, standing, lying down?

**Who were you with**? Were you by yourself, with a friend, a large group, among other cannabis consumers, etc?

**What were you doing?** Just before you used cannabis, what was going on? What were the activities or circumstances leading up to it?
<table>
<thead>
<tr>
<th>Date: ________________</th>
<th>Time: __________________</th>
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</thead>
<tbody>
<tr>
<td>Amount: ______________</td>
<td>Strain: __________________</td>
</tr>
<tr>
<td>Product Type: __________</td>
<td>________________________</td>
</tr>
<tr>
<td>THC % ______ CBD % ____ CBN % ______</td>
<td></td>
</tr>
<tr>
<td>Mode: __________________</td>
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<tr>
<td>Effects: ________________</td>
<td></td>
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<tr>
<td>Side Effects: ____________</td>
<td></td>
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<tr>
<td>Minutes to onset:______ Min to peak: _____ Min to dissipation:______</td>
<td></td>
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<tr>
<td>What prompted use? ____________________________</td>
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<tr>
<td>What symptom(s) being treated? __________________</td>
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<tr>
<td>Mood/feelings before use: ____________________</td>
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<tr>
<td>Mood/feelings after use: ______________________</td>
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<tr>
<td>Setting: __________________</td>
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<tr>
<td>Who you were with: ________________</td>
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<tr>
<td>What you were doing: ________________________</td>
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<tr>
<td>Other notes: ____________________________</td>
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A Patient's Guide to Medical Cannabis
Now that you’ve completed at least a week of your cannabis-use log, you can complete Part Two, the self-assessment exercise below. This worksheet is designed to clarify how you typically use cannabis and how it fits into your life, both in terms of what factors are related to your use and what impact cannabis may have on other aspects of life. Refer to the data in your log to answer each question. Some questions require knowing the percentages of different cannabinoids in the cannabis you consume. If you obtain your cannabis from a dispensary, they may know the cannabinoid profile of different strains. It’s also possible to obtain laboratory testing in some areas. If you don’t know or can’t get answers to some questions, just skip them.

YOUR PATTERNS OF CANNABIS USE
(When, Where, How and How much you use)

1. Amount

In a 7-day span, I used cannabis _______ days. During that time, I consumed a total of _____ grams of cannabis.

2. Times

You may use cannabis during different times of the day. Let’s figure out when you consume the most and the least. Mark with a dash each time you consumed cannabis during that time frame, then record how much you consumed at each use.

<table>
<thead>
<tr>
<th>Time</th>
<th>Times per week</th>
<th>Quantity</th>
<th>Total</th>
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<tbody>
<tr>
<td>5am-7am</td>
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<td>7am-9am</td>
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<td>9am-11am</td>
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<td>1pm-3pm</td>
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<td>3pm-5pm</td>
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<td>5pm-7pm</td>
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<td>9pm-11pm</td>
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<td>11pm-1am</td>
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<td>1am-3am</td>
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<td>3am-5am</td>
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</table>
After you've recorded your consumption times above, add each time frame to find the total number of times you consumed cannabis during that week, then multiply by the average quantity consumed during that time period to find your total for the two-hour time period.

What times of the day are you most likely to consume cannabis?

___________________________________________________________________________

What times of the day are you consuming cannabis the least?

___________________________________________________________________________

3. Strains and Varieties

During the 7-day period, what sort of cannabis did you use most and least? List the names of strains in the first box, then put check marks for each time you consumed that strain in the second box, then total the check marks for each strain.

<table>
<thead>
<tr>
<th>Name of Strain</th>
<th>Times per week</th>
<th>Total</th>
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</tbody>
</table>

After you've recorded the names above, add each slash mark to find the total number. What strain of cannabis are you consuming the most?

___________________________________________________________________________

Use the following table to record the varieties for those strains.

<table>
<thead>
<tr>
<th>Variety</th>
<th>Times consumed</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indica</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sativa</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indica dominant Sativa cross</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sativa dominant Indica cross</td>
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<td></td>
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</tbody>
</table>

After you've recorded the varieties above, add each slash mark to find the total number.

What variety of cannabis are you consuming the most?_____________________
What variety of cannabis are you consuming the least?_____________________

___________________________________________________________________________
4. Cannabinoid Ratios

How does the varying cannabinoid content impact you? Let's look into this factor. To complete this, you will need to know the THC, CBD and CBN percentages for all the cannabis products you consumed.

<table>
<thead>
<tr>
<th>Strain/Extract/Edible</th>
<th>THC %</th>
<th>CBD %</th>
<th>CBN %</th>
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<tbody>
<tr>
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</tbody>
</table>

Let's take a look at the range of THC % consumed. What is the highest THC % consumed? ________

What was your lowest THC% consumed? __________

Let's take a look at the range of CBD % consumed. What is the highest CBD% consumed? _______

What was your lowest CBD% consumed? __________

Let's take a look at the range of CBN % consumed. What is the highest CBN % consumed? _______

What was your lowest CBN% consumed? __________

5. Modes of Use

Use the following table to record the types of cannabis products (flower, edible, tincture, etc.) you consume.

<table>
<thead>
<tr>
<th>Type of Cannabis</th>
<th>Times consumed</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flower</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Concentrate (hash/kief)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tincture/Spray</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Edible</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Topical</td>
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</tbody>
</table>

What cannabis product are you consuming the most? __________________________

What cannabis product are you consuming the least? __________________________
6. Emotions

How did you feel—what does cannabis do for you emotionally? Tally the number of times you listed each feeling under the how column.

<table>
<thead>
<tr>
<th>Emotion</th>
<th>Times consumed</th>
<th>Total</th>
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</thead>
<tbody>
<tr>
<td>Stressed</td>
<td></td>
<td></td>
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<tr>
<td>Anxious</td>
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<tr>
<td>Angry</td>
<td></td>
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<tr>
<td>Relaxed</td>
<td></td>
<td></td>
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<tr>
<td>Happy</td>
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</table>

7. Location

Let’s explore the environment, or your settings that you consume cannabis most and least often.

<table>
<thead>
<tr>
<th>Location</th>
<th>Times consumed</th>
<th>Total</th>
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Where are you consuming the most often? ______________________________
Where are you consuming the least often? ______________________________

8. Activities

Are there particular activities associated with your cannabis use? What precedes or follows your consumption? Is there a pattern?

<table>
<thead>
<tr>
<th>Who With</th>
<th>Times consumed</th>
<th>Total</th>
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</table>
EVALUATING THE RESULTS

9. Effects

What therapeutic benefits are you getting from using cannabis? Be as detailed as possible for each strain of cannabis you use and mode of use.

<table>
<thead>
<tr>
<th>Strain / Mode of Use</th>
<th>Therapeutic Effect(s)</th>
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</table>

How effective is cannabis at managing your condition(s) or symptom(s)? Did it deliver what you wanted?

<table>
<thead>
<tr>
<th>Activity</th>
<th>Times consumed</th>
<th>Total</th>
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</table>

10. Side Effects

Some people report non-therapeutic effects. What are your side effects, if any?
What stands out as the most negative side effect?

11. Weighing the Benefits

Compare your Therapeutic Effects (benefits) and Side Effects (limitations) from medical cannabis use.

Therapeutic Benefits

Side Effects

12. Why You Use Cannabis

Why do you consume cannabis? What are your patterns of use?

<table>
<thead>
<tr>
<th>Why You Consumed</th>
<th>Times consumed</th>
<th>Total</th>
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13. Impact

Consider how your cannabis use positively and negatively affects various areas of life. List its effects in each area.

**Physical Health:**

___________________________________________________________________________
___________________________________________________________________________
___________________________________________________________________________

**Mental Health (Mood/Thoughts/Feelings):**

___________________________________________________________________________
___________________________________________________________________________

**Family Relationships:**

___________________________________________________________________________
___________________________________________________________________________

**Friend/Co-worker Relationships:**

___________________________________________________________________________
___________________________________________________________________________

**Romantic Relationships:**

___________________________________________________________________________
___________________________________________________________________________

**Employment/Work/Career:**

___________________________________________________________________________
___________________________________________________________________________

**Goals:**

___________________________________________________________________________
___________________________________________________________________________

**Money/Finances:**

___________________________________________________________________________
___________________________________________________________________________

**Legal Matters:**

___________________________________________________________________________
___________________________________________________________________________
First-time cannabis growers should start with a soil-based system rather than other more complicated methods such as hydroponics. Your first harvest will help you get the feel for the growth and life cycle of cannabis. This will help you build confidence that things are going well for your next harvest.

**Growing Medium**

Soil is the easiest medium to grow from for a number of reasons. First, micronutrients, which are critical to proper growth and vigor of the plant, exist in gardening or potting soil naturally. Good quality soil is inexpensively available at any gardening store and not suspicious to neighbors who may wonder what all the equipment is for otherwise.

Make sure that the soil is not too dense. Use perlite, a natural volcanic glass, to lighten and loosen the soil. This provides necessary space in the medium for air. Air is an important factor in cultivating any type of plant. Do not use soil from your yard as it may have pH imbalances, lack nutrients, or contain insects or mold spores that could harm your plants.

**Light**

If growing indoors, use a high-intensity discharge (HID) light, either a high-pressure sodium (HPS) or a Metal Halide (MH) bulb. Both work well, but HPS systems are the best for flowering.

While fluorescent grow bulbs work for the vegetative growth of the plant, they lack the proper light spectrum and intensity to produce dense buds. Never use regular incandescent bulbs—they will not provide the correct spectrum of light for the plants and are expensive to run. Specialty incandescent “grow bulbs” don’t have the intensity needed to grow dense buds, but they will definitely keep the plants alive. New LED bulb technology draws far less power and generates much less heat than HIDs, with better light spectrum output than fluorescents, though yield may not be quite as good as with an HID.

Cannabis flowers form naturally outdoors in the fall, as the nights grow longer. Indoors, we can force cannabis to flower when we want by creating a growing space where the light cycle can be controlled. At least 12 hours of uninterrupted darkness is necessary
to force cannabis to flower. This period, known as the flowering period, lasts approximately 6-10 weeks, depending on the strain of cannabis.

The vegetative period, which precedes the flowering period, is usually done under 24 hours of continuous light. If starting with clones, that is rooted cuttings from a mature plant, this period usually lasts from five days to a month depending on strain, vigor, and the desired plant size. If starting from seed (not recommended), the vegetative period will be longer to allow the plant to mature.

Seeds will produce both male and female plants. Males should be culled before they can pollinate the female plants. You can determine the sex of the plant as it begins the flowering cycle.

Cannabis plants will usually increase in size 50% during the flowering period, so plan for that in relation to the height and width of your garden.

**Nutrients**

There are three main nutrients that plants need to flourish: Nitrogen (N), Phosphorus (P) and Potassium (K). Plant food labels show their N-P-K content as relative percentages. That means a high-nitrogen food good for vegetative growth would be listed as 20-10-10 or 20% nitrogen, 10% phosphorus, and 10% potassium.

When forcing the plants from vegetative to flowering growth (i.e. changing the light cycle from 24 hours of continuous light to 12 hours of light and 12 hours of uninterrupted darkness), the nutrient ratio must change as well. Plants use P and K to make flowers or “buds.” During the flowering stage, feed your plants a plant food high in P and K. Something like 1-10-12 would be appropriate, but some nitrogen is necessary. Don’t get hung up on the actual numbers. It is the ratio that is actually important. Follow the instructions on the label and be careful not to overfeed!

**Water**

Water your plants once the top two inches of soil are dry. Overwatering is a common cause of death for cannabis. Overwatered plants droop and may look like they need water. What the plants are actually lacking is air, because the roots are drowning. One simple way to check for the proper time to water is with a wand-type water meter, another is to lift the pot after watering. Feel its weight, or put it on a scale and make a note. Next time you think the plant needs water, lift the pot and see how heavy it is. If it is light, then water it. If it feels heavy, then don’t. Young plants will use less water. As the plant grows and the root ball fills the container, it will use more water.

**pH**

pH is a measure of the acidity or alkalinity of the planting mix and water. The right
pH is critical to the plant's ability to absorb nutrients. In general cannabis likes the root zone to be acidic; around 5.8-6.5 is the ideal range for soil, and no lower than 5.5. The only way to know and adjust the pH of your plants' environment is with pH test strips or a pH test kit that you can use to check the plants' runoff. The pH of your tap water may change from season to season, so it's best to check it frequently.

If you are maintaining proper pH and providing appropriate nutrients and your plants are still not thriving, or are turning yellow or appear to be burning at the edges of the leaf, you should consult a more exhaustive source of information about how to go about solving these problems.

**Air and temperature**

Cannabis needs circulating air rich in carbon dioxide or CO2. Fresh air from the outside can be used if you are ventilating an indoor garden with fans. Cannabis plants can consume far more CO2 than is in the atmosphere naturally, so for maximum yield some method of CO2 enrichment is frequently used. The easiest is using a regulator attached to a CO2 tank, which can be found at beverage supply stores. Without enrichment or fresh air, plants will consume all the CO2 in the environment and replace it with oxygen, leaving them without the carbon dioxide needed to grow well.

Whether enriched or not, air circulation also helps manage temperature and create stronger plants. HID lights in particular generate a lot of heat, and temperatures above 95 degrees will inhibit growth. Keep the cultivation area temperature between 80 and 85 degrees, using an air conditioner or fans with outside air to cool the space. Too cold is bad as well, especially in the root zone. Below 60 degrees, the plant will be unable to photosynthesize and stops growing.

If you're using fans to bring in outside air and exhausting air from the garden, you may want to use carbon filters or other odor-scrubbing devices on the exhaust. Cannabis emits powerful, distinctive aromas, particularly during flowering, that can attract unwanted attention.

If you keep the basic needs of the plant in mind, cannabis will reward you enormously. For information on managing pests or creating sophisticated hydroponic systems, consult one of the books by experts such as Ed Rosenthal or Jorge Cervantes. Suggested reading for detailed information on cannabis cultivation:

- *Marijuana Garden Saver* by Ed Rosenthal and JC Stitch
- *Indoor Horticulture* by Jorge Cervantes

www.AmericansForSafeAccess.org
The following recipes come from the Vancouver Island Compassion Society (www.thevics.com). Please note that not all state medical cannabis laws allow for cannabis concentrates. Where they do not, manufacture or possession of these substances usually carries serious penalties.

**VICS CANNAMIST/TINCTURE**

*Recipe and Instructions on How to Convert THCA Into THC*

A tincture is an alcohol-based solution of a non-volatile medicine (in this case cannabis). In a cannabis tincture, alcohol is not only the solvent used to separate cannabinoids from the plant matter, it is what makes this type of application (particularly in fine-mist form) more bio-available and therefore effective.

In whole-plant cannabis, THC content is expressed as THCA (tetrahydrocannabinolic acid) prior to decarboxilation into THC, which takes place when cannabis is heated during cooking, smoking or vaporized ingestion. THCA is a mild analgesic and anti-inflammatory but in order to make a THC-rich tincture that has many of the same therapeutic effects as smoked ingestion (including rapid absorption, quick relief and ease of self-titration), we must convert the THCA in the plant matter into THC prior to extracting it through an alcohol soak.

**Supplies**

- Converted cannabis
- Alcohol (50% is preferred, but 40% vodka works just fine)
- Organic mint
- Organic honey
- Large mason jar, x 2
- Cheesecloth or fine mesh sieve

**Dry heat conversion of THCA into THC**

- Preheat oven to exactly 325°F (160°C). Use an oven thermometer to be sure.
- Spread leaf or bud in a 1 inch (2.5 cm) layer on a clean cookie sheet.
- Put in the oven until the first hint of smoke or 5 minutes, whichever is first; remove and transfer to a glass or ceramic container to cool.

**Tincture/Cannamist Recipe:**

- Pack a mason jar loosely but completely with converted cannabis product.
- Add alcohol until the jar is full.
- Seal, shake and put in a dark, cool place.
- After week one, strain mixture through cheesecloth or fine mesh sieve and add to another mason jar packed with converted cannabis and a few sprigs of fresh organic mint.
- After week two, strain through cheesecloth or fine mesh into mason jar.
- Add organic honey to taste.
- Shake/mix and then decant into bottles fitted with fine mist spray tops.
Dosage

Initial Dosage: Spray two times on the inside of the cheek, and wait 30 seconds before swallowing. Wait ten minutes. If desired effect has not been reached, repeat on the opposite cheek. Wait ten minutes. Repeat until desired effect is achieved. Dosage will vary between users, but should remain fairly constant once established.

Effect will last for between 1-2 hours. Repeat use as needed. If you feel dizzy or disoriented, immediately discontinue use. Do not operate heavy machinery or drive during use of this product.

THE VIC’S CANNABIS OIL RECIPE

Makes about 2 Liters of oil.

Supplies

200 to 250 grams good quality organic cannabis shake (trim)
Slow cooker
Cheese cloth
Silkscreen, min. 200+ thread count per inch
3 Liters Extra Virgin Olive Oil
Colander or strainer

Recipe

- Put cannabis into slow cooker
- Add olive oil until it just covers the cannabis.
- Turn slow cooker to High for 2 hours, and then turn down to Low for an additional 4 to 6 hours, stirring occasionally.

To make a stronger product, add fresh cannabis to the previously heated oil left in the slow cooker and top up oil to cover the cannabis; keep cooking on low heat overnight or up to two days.

- Strain oil, as warm as possible, through cheese cloth, then strain through silkscreen. The oil is ready to use as is. It will keep for up to 3 months.

Cannabis oil can be quite potent and have a very narcotic effect. It is recommended that you do not drive or perform difficult tasks after consumption.

THE VIC’S SALVE RECIPE

This recipe yields roughly 525 ml of topical salve; vary ingredients proportionately for a smaller or larger batch.

Supplies

400 ml Cannaoil (converted cannabis and olive oil - see our Cannaoil recipe)
40 grams shaved beeswax
45 drops lavender oil
30 drops mint oil
1/2 tsp. of honey
Recipe

- Combine Cannaoil and beeswax in a small crockpot, or a small double boiler; put on low heat, no higher than 150°F (65°C).
- Stir constantly until all the beeswax is melted.
- Add lavender and mint oil to the Cannaoil/beeswax. Stir to blend oils. Allow to sit for a few minutes.
- Keeping the crockpot, or double boiler, on very low heat, pour the salve into container(s); stir the mix prior to pouring in order to maintain consistency.
- Let salve cool completely before putting lid(s) on.

Benefits: Fast skin absorption with minimal residual effect. Eases dry skin conditions. Provides mild pain relief for muscular and/or joint pain.

THE VICS CANNABUTTER RECIPE

Supplies
Good quality organic cannabis (14 grams of bud or 76 grams of shake (trim) per 454 grams (1 lb.) of butter)
6 to 8 Litre (1.5 gallon) capacity boiling pot
Fine mesh strainer, or colander, or large coffee filter, or nylon stockings
Large refrigerator-safe pot

Recipe

- Fill a 6 to 8 litre pot with cold water and bring to boil.
- Add butter and cannabis.
- Mix.
- Lower heat and simmer for 2 to 3 hours, stirring occasionally (add water if necessary).
- Strain out liquid into refrigerator-safe bowl using fine strainer, large coffee filter or nylon stocking. Squeeze butter out of remaining leaf (wear gloves, the leaf is hot!).
- Discard strained leaf.
- Let liquid cool, and then put into refrigerator overnight. Butter will separate from water and form a hard crust on surface of liquid.
- Lift out butter crust and put into large mixing bowl. Cream and fold butter using a large metal or wooden spoon. Discard remaining liquid.

Butter is ready to use as is. It will keep in freezer up to 3 months. When baking with cannabutter, select recipes such as cookies with short, low-heat cooking instructions (below 163 degrees C or 325 degrees F) At higher temperatures, the cannabinoids in the butter will break down and be lost while cooking.

Products baked with cannabutter take effect within 30 to 90 minutes from initial ingestion and can last for several hours. For maximum effect, ingest on an empty stomach. Cannabutter can be quite potent and have a strong narcotic effect. It is recommended that you not drive or perform difficult tasks after ingesting.
BECOMING A MEDICAL CANNABIS PATIENT

The laws and regulations pertaining to state medical cannabis programs change rapidly, so it's critically important that patients stay up to date on information pertaining to their state. For that reason, ASA maintains online resource pages at AmericansForSafeAccess.org for each state medical cannabis program. The information below is accurate as of the time of its writing but in abbreviated form. Please check the relevant online resource page for your state, too.

**ALASKA**

Any patient with a valid registry card may legally use marijuana for medicinal purposes and their caregiver may assist them in doing so. You can possess paraphernalia associated with growing or consuming marijuana for medical use. All patients must enroll in the state patient registry and possess a valid identification card in order to be legally protected. A copy of a registry identification card is not valid. A damaged card is not valid.

Between you and your caregiver, you can legally possess six marijuana plants, only three of which may be mature enough to bear usable marijuana, plus one ounce of marijuana in usable form. If you violate these limits, they can keep you off the registry for one year.

For more information on becoming a patient and other issues, check the state resources page on our website: AmericansForSafeAccess.org/Alaska.

**ARIZONA**

It is legal for a patient with an Arizona registry ID card to use cannabis for medical purposes. Patients may also grow cannabis and appoint a designated caregiver for assistance. Patients and designated caregivers may only cultivate if they live at least 25 miles from a registered dispensary; until further notice, however, the dispensary program is in limbo, therefore all patients with registry ID cards are able to cultivate their own medicine, as long as they receive permission to cultivate.

A patient may have up to twelve plants and two and one-half ounces of usable marijuana. Patients must have received permission to cultivate in order to grow their own medicine, and can only grow cannabis in an "enclosed" space, whether it is indoors or outdoors.

For more information on becoming a patient and other issues, check the state resources page on our website: AmericansForSafeAccess.org/Arizona.

**CALIFORNIA**

Patients and their caregivers are permitted to legally use, have, and grow cannabis for medical purposes. The law also protects not-for-profit collective and cooperative grow operations and allows primary caregivers to be reimbursed for the costs of their services.
To be a legal medical cannabis patient in California, you need a valid recommendation or approval from a licensed California physician in good standing. While state law allows for verbal approval of medical cannabis use from your doctor, most collectives and cooperatives require a verifiable written recommendation issued within the past 12 months. The state also provides a voluntary ID registry program that provides additional protections against arrest, provided you are within certain limits.

The state limits are: six mature or 12 immature cannabis plants plus eight ounces of dried cannabis per patient. Cities and counties can set limits that are higher than this limit, but cannot set lower limits. For a listing of known guidelines for localities across California, see the California patient resource page listed below. Also, the doctor’s recommendation can specify that you need an amount of medical cannabis that exceeds the limits, but only for your personal use.

For more information on becoming a patient and other issues, check the state resources page on our website: AmericansForSafeAccess.org/California.

**COLORADO**

Any patient with a valid registry card may legally use marijuana for medicinal purposes and their caregiver may assist them in doing so. A patient who is charged with a crime for having more medicine than the law allows may argue in court that possessing this extra medicine was medically necessary. Police are instructed not to harm or neglect any property related to medical marijuana (including plants). Any property seized must be returned as soon as the DA determines possession was for medical use.

Between you and your caregiver, you can legally possess six marijuana plants, only three of which may be mature enough to bear usable marijuana, plus two ounces of marijuana in usable form. If you violate these limits, the state can keep you off the registry for one year. Driving or operating heavy machinery under the influence remains illegal, as is public consumption. If you violate the rules, the state can revoke your card for a year.

For more information on becoming a patient and other issues, check the state resources page on our website: AmericansForSafeAccess.org/Colorado.

**CONNECTICUT**

Connecticut’s medical cannabis law takes effect October 1, 2012. The new law allows qualified patients age 18 or older, or their caregiver, to register with the Department of Consumer Protection. Once registered, they may obtain up to a one-month supply of cannabis from dispensaries. Dispensaries may only be licensed to pharmacists and must obtain cannabis from licensed producers. Qualifying medical conditions in Connecticut are cancer, glaucoma, HIV, Parkinson’s, multiple sclerosis, spinal cord injuries causing spasticity, epilepsy, wasting, Crohn’s disease, and PTSD. Additional conditions may
be added at the discretion of the Department of Consumer Protection. Qualified patients may register to possess cannabis temporarily while the department implements the new law.

For more information on becoming a patient and other issues, check the state resources page on our website: AmericansForSafeAccess.org/Connecticut.

DELAWARE

Patients with a Delaware registry identification card may possess up to 6 ounces of usable cannabis and may designate a caregiver to assist them. Qualified patients from other states are afforded the same protections, and unregistered Delaware patients are allowed an affirmative medical defense if charged with state marijuana violations. This does not prevent arrest or prosecution but can be used to prevent conviction in court. To use this defense you must qualify to become a patient and must not possess more than the legal amount. Personal cultivation is prohibited in Delaware. A state-supervised distribution system of dispensaries in each county has been delayed by threats to state officials from federal prosecutors.

For more information on becoming a patient and other issues, check the state resources page on our website: AmericansForSafeAccess.org/Delaware.

HAWAII

A doctor may recommend marijuana to a seriously ill patient, providing the patient with protection from criminal conviction for marijuana use under Hawaii law. Hawaii also has a registry ID card system for patients which should ordinarily prevent a patient from being arrested for marijuana use. A primary caregiver may help a medical marijuana patient cultivate and ingest their medicine.

The law allows a patient to have three mature marijuana plants, four immature marijuana plants, and one ounce of usable marijuana per each mature plant. These limitations apply to the total amount of medicine possessed between a patient and caregiver.

For more information on becoming a patient and other issues, check the state resources page on our website: AmericansForSafeAccess.org/Hawaii.

MAINE

A patient who possesses a medical marijuana ID card issued by the Maine Department of Health and Human Services may use and possess marijuana. A patient may also designate a caregiver for assistance and receive marijuana from a dispensary. If you are a patient and elect to grow your own medicine, you must indicate this choice on the application for your ID.

A patient may possess up to 2.5 ounces of usable marijuana. If a patient does not designate a primary caregiver to grow marijuana, then the patient may have up to 6 plants only 3 of which may be mature, flowering plants.

For more information on becoming a patient and other issues, check the state resources page on our website: AmericansForSafeAccess.org/Maine.
MARYLAND
Maryland enacted a medical cannabis law in 2003 that does not protect against arrest or prosecution but allows an affirmative medical defense and substantially reduced penalties for qualified patients. Defendants possessing less than one ounce of marijuana who can prove they used marijuana out of medical necessity and with a doctor’s recommendation face a maximum penalty of $100, with no criminal record or possibility of imprisonment.

For more information on becoming a patient and other issues, check the state resources page on our website: AmericansForSafeAccess.org/Maryland.

MASSACHUSETTS
Voters approved Ballot Measure 3 on November 6, 2012, authorizing patients with qualifying conditions to possess a 60-day supply of cannabis and establishing up to 35 non-profit medical cannabis distribution centers. Patients who meet certain conditions will be permitted to cultivate their own medicine.

For more information on becoming a patient and other issues, check the state resources page on our website: AmericansForSafeAccess.org/Massachusetts.

MICHIGAN
In Michigan, a patient with a debilitating disease whose doctor recommends marijuana may use medical marijuana with the proper state-issued ID. A patient may elect to have a primary caregiver assist them in growing and using marijuana.

As a patient, you may have up to 2.5 ounces of usable marijuana. If you do not have a primary caregiver who will cultivate marijuana for you, you may keep up to 12 plants in an enclosed, locked facility. Primary caregivers may have up to 2.5 ounces and 12 plants for each patient they care for. You may possess pipes, vaporizers, and growing equipment.

For more information on becoming a patient and other issues, check the state resources page on our website: AmericansForSafeAccess.org/Michigan.

MONTANA
Montana issues ID cards allowing qualifying patients to use marijuana legally. Patients may designate caregivers to assist them with taking and growing their medicine. A patient and a caregiver may possess up to six plants and one ounce of usable marijuana each.

For more information on becoming a patient and other issues, check the state resources page on our website: AmericansForSafeAccess.org/Montana.

NEVADA
Patients with certain chronic or debilitating diseases may obtain a state-issued ID card that shields them from prosecution for limited medical use. Patients who do not have a card or who possess more than the laws allow can still be prosecuted but are allowed to raise a medical necessity defense.
Patients with a Nevada patient ID card may possess one ounce of medicine, three mature plants, and four immature plants. Designated primary caregivers can help patients use and produce their medicine.

For more information on becoming a patient and other issues, check the state resources page on our website: AmericansForSafeAccess.org/Nevada.

NEW JERSEY

The New Jersey medical cannabis patient registry opened in 2012. Prior to launch, the state released a list of more than 100 physicians who registered to recommend medical marijuana for debilitating conditions including cancer, MS, AIDS, muscular dystrophy, seizure disorders and Crohn's disease. A qualified patient can designate a primary caregiver; caregivers must pass a criminal background check. Once registered, patients or caregivers may legally obtain up to two ounces in a 30-day period from a state-licensed center. As of November 2012, New Jersey has one distribution center operating and another slated to open soon.

For more information on becoming a patient and other issues, check the state resources page on our website: AmericansForSafeAccess.org/NewJersey.

NEW MEXICO

An approved New Mexico patient may legally possess marijuana for medicinal purposes. A patient can also apply for a production license, which would allow the patient to grow their own medicine. A patient may designate a caregiver for assistance. The state issues IDs for both patients and caregivers.

As a patient, you and your caregiver may collectively possess up to a three month "adequate supply." A three month adequate supply is presumed to be no more than six ounces of usable marijuana. If you need more than this amount, your doctor should include this in your recommendation.

For more information on becoming a patient and other issues, check the state resources page on our website: AmericansForSafeAccess.org/NewMexico.

OREGON

A patient with a valid ID card may use marijuana for medicinal purposes and the patient can designate a primary caregiver to help them with their medicine. Patients may possess "paraphernalia" such as pipes, water pipes, vaporizers, in order to use their medicine. Patients must enroll in the state patient registry and possess a valid identification card in order to be legally protected.

With a valid registry ID card you (or your designated primary caregiver) may possess up to 6 mature plants and 24 ounces of dried plant material. You must have the registry identification card with you when using or transporting marijuana in a location other than your home.

For more information on becoming a patient and other issues, check the state resources page on our website: AmericansForSafeAccess.org/Oregon.
RHODE ISLAND

It is legal for a patient with a Rhode Island registry ID card to use marijuana for medical purposes. Patients may also grow marijuana and appoint a primary caregiver for assistance.

A patient may have up to twelve plants and two and one-half ounces of usable marijuana. Plants must be stored in an indoor facility.

For more information on becoming a patient and other issues, check the state resources page on our website: AmericansForSafeAccess.org/RhodeIsland.

VERMONT

Vermont allows patients to obtain a registry ID card if their doctor recommends marijuana for the treatment of a debilitating medical condition. With this ID a patient can legally use and cultivate marijuana for medicinal purposes. A patient can also designate a primary caregiver for assistance. A patient and primary caregiver can together have up to two mature marijuana plants, seven immature plants, and two ounces of usable marijuana. You may also own devices for using marijuana, such as pipes and vaporizers.

For more information on becoming a patient and other issues, check the state resources page on our website: AmericansForSafeAccess.org/Vermont.

Washington

In the state of Washington, patients with a recommendation from a doctor are permitted a legal defense for the medical use and cultivation of cannabis. Police may still confiscate marijuana, arrest patients or providers, and charge patients and providers. Using marijuana in public is a misdemeanor.

A patient may designate a provider to assist in cultivating marijuana for medical purposes. Up to twenty-four ounces of usable marijuana and fifteen plants are allowed between a patient and a designated provider for each sixty-day period. Patients may exceed these limits if they can show medical need documented by a doctor.

For more information on becoming a patient and other issues, check the state resources page on our website: AmericansForSafeAccess.org/Washington.

Washington, D.C. (District of Columbia)

Qualifying patients or their caregivers may possess no more than two ounces of cannabis at any one time and must obtain it from a licensed distribution. Four medical cannabis distribution centers in the District of Columbia have been approved by the Department of Health as of June 2012 and are expected to be serving patients by winter 2012-13. Six cultivation centers have been approved separately; each is restricted to cultivating no more than 95 plants. Qualifying conditions are limited to cancer, HIV/AIDS, glaucoma or severe muscle spasms; there are provisions for expanding the list.

For more information on becoming a patient and other issues, check the state resources page on our website: AmericansForSafeAccess.org/DC.
Medical cannabis patients and their providers are vulnerable to federal and state raids, arrest, prosecution, and incarceration. As a result, these individuals may suffer pervasive discrimination in employment, child custody, housing, public accommodation, education and medical care. Laws protecting patients and their providers vary from state to state and, in some cases, may vary from county to county. Many individuals choose to break outdated state laws that do not account for medical use or their access. And no matter what state you are living in, medical cannabis patients and their providers are always violating federal law.

Making the choice to participate in a medical cannabis program or to resist current laws should be done with thoughtful consideration. Following the law in your local area may not always protect you from law enforcement encounters, and the more you know about your rights, the more likely you will be to have a successful encounter with law enforcement. It’s important to also remember that the best law enforcement encounter is the one that never happens.

The information found in this section is meant to educate patients and their providers about the existing federal laws, how to avoid law enforcement encounters, how to be prepared for encounters, how to understand your rights during encounters, and how to navigate the legal system after an encounter. After you understand this material, be sure to share this information with your family, friends, or anyone who may be at risk.

A. KNOW THE LAWS

STATE LAWS

Medical cannabis laws vary from state to state. The section on state laws summarizes some of the key information, with links to more details. If you live in a medical cannabis state, consult AmericansForSafeAccess.org/LocalResources to find out about your state’s medical cannabis program. Finally, consult local laws and regulations to make sure that you are adhering to any guidelines developed by your county or city. Following each law to the letter may not prevent you from having a law enforcement encounter, but it will help you have a successful one.

FEDERAL LAWS

Despite the promises made by the Obama campaign and the memo issued in 2009 by the Department of Justice, medical cannabis remains illegal at the federal level and carries severe penalties. Federal interference with state medical cannabis programs can happen in every state, and there is no “medical” defense within the federal justice system. If you’re participating in your state’s medical cannabis program, you are in direct violation of federal law. It is important to remember that even though the media has hyped the meager promises made by different parts of the federal government, patients have no federal protection and are still at risk. Until federal law changes, patients across the country face dire choices between violating the laws of their country and treating their illness with the medication deemed most appropriate by their physician.
The federal government regulates drugs through the Controlled Substances Act (CSA) (21 U.S.C. § 811), which places every controlled substance in a schedule, according to its relative potential for abuse and medicinal value. Under the CSA, cannabis is classified as a Schedule I drug, which means that the federal government views cannabis as being highly addictive and having no medical value. Doctors may not "prescribe" cannabis for medical use, though they can "recommend" or "approve" its use under the First Amendment. This recommendation or approval does not provide patients with any sort of legal protection under federal law, but it may be the basis for legal protection under state law. Under federal law, you and your doctor are free to discuss the possible benefits and side effects of medical cannabis.

The Drug Enforcement Administration (DEA), charged with enforcing federal drug laws, has taken a substantial interest in individual medical cannabis patients and caregivers, particularly those involved in large cultivation and distribution operations. Over the past decade, hundreds of people have been the targets of federal enforcement actions. Many of them have been arrested and had property seized. More than a hundred medical cannabis providers are currently in prison or are facing charges.

Federal cannabis laws are very serious, and punishment for people found guilty is frequently severe. Federal judges have ruled that medical necessity cannot be used as a defense. In fact, medical cannabis cannot even be mentioned during a federal trial. Patients may not use evidence related to their state's medical cannabis program, their doctor's recommendation, their illness, or anything else related to medical cannabis.

Federal sentencing guidelines take into account not only the amount of cannabis but also past convictions. Not all cannabis convictions require jail time under federal sentencing guidelines, but some do and all are eligible for imprisonment. If convicted and sentenced to jail, a minimum of 85% of that sentence must be served. The greater the quantity of cannabis involved, the more likely one is to be sentenced to jail time, as opposed to probation or alternative sentencing.

In addition to the sentencing guidelines, there are statutory mandatory minimum sentences, which primarily target offenses involving large quantities of cannabis. There is a five-year mandatory minimum for cultivation of 100 plants or possession of 100kgs, and there is a ten-year mandatory minimum for these offenses if the defendant has a prior felony drug conviction. Cultivation of 1,000 plants or possession of 1,000kg triggers a ten-year mandatory minimum, with a twenty-year mandatory sentence if the defendant has one prior felony drug conviction, and a life sentence with two prior felony drug convictions.

The 2005 US Supreme Court decision in US v. Booker altered the mandatory minimums to make them effectively advisory, requiring a sentencing court to consider Guidelines ranges. Nonetheless, to avoid a five-year federal sentence, it is advisable to cultivate well below 100 plants, including any rooted cuttings or clones.
Low-level federal offenders, even with multiple prior convictions, may end up with probation for the entire sentence of one to twelve months and no jail time required. Possession of over one kg (2.2 lbs.) of cannabis with no prior convictions carries a sentence of six to twelve months with a possibility of probation and alternative sentencing. Over 2.5 kg with no criminal record carries a sentence of at least six months in jail; with multiple prior convictions, a sentence might be up to two years to three years in prison with no chance for probation.

Keep in mind that even though medical cannabis protections may exist in your state, the federal government allows no medical defense to possession, cultivation, or distribution charges. Even though the Obama administration and the Department of Justice have made statements that prosecuting patients is a low priority, patients and providers are still being harassed, raided, arrested, and convicted throughout the U.S. Until federal law changes, participating in your state’s medical cannabis program still carries some risk.

**OTHER APPLICABLE LAWS**

**School Zones**

Patients and providers should avoid possession and cultivation of cannabis in school zones—a 1,000-foot radius around any school, including any daycare facility—as there are typically additional penalties for the possession, use, and cultivation of cannabis near schools, whether it is for medical or recreational use. Some state medical cannabis laws have limitations on "sensitive use" areas, limiting cultivation, use, and possession of medical cannabis within a specific amount of space of a school, playground, etc. Most use the federal 1,000-foot radius but some mandate up to 1,500 feet. In addition, keep in mind that Drug Free School Zone laws can double the maximum sentences in federal court, where the mention of "medical cannabis" is prohibited.

**Firearms**

Firearms can result in harsher federal sentencing and may draw attention to patients. Even if your state protects patients’ right to safe access to medical cannabis, the presence of firearms may increase the chances of an adverse state or federal law enforcement encounter, and harsher sentences if convicted. Again, the best law enforcement encounter is the one that never happens.

Under federal law, "any person who, during any drug trafficking crime for which the person may be prosecuted in a court of the United States, uses or carries a firearm, or who, in furtherance of any such crime, possesses a firearm, shall:

(i) Be sentenced to a term of imprisonment of not less than 5 years;

(ii) If the firearm is brandished, not less than 7 years; and (iii) If the firearm is discharged, not less than 10 years."

Although the U.S. Constitution confers a right to carry firearms, we have seen many patients face extreme legal consequences for having firearms in addition to plants.
In addition, the memo issued by the Department of Justice in 2009, which was intended to provide the U.S. Attorneys' Offices with guidance on the prosecution of medical cannabis patients and providers, specifically mentions the presence of firearms as an example of "potential federal interest" that probably falls outside of "clear and unambiguous compliance" with underlying state law. In other words, beyond the sentencing enhancements, the presence of firearms makes patients and providers a more likely target for federal prosecution.

ASA strongly advises that, if you are a medical cannabis patient, do not carry firearms or keep them on your property or allow others to do so.

**Civil Asset Forfeiture**

Federal law provides for the forfeiture of property and profits obtained through or used in the commission of felony drug offenses. Prosecutors have incentives to include forfeiture offenses in all drug indictments. Forfeiture can apply to landlords who rent to people considered in violation of federal law, and therefore can also be used to intimidate the landlords of patients who cultivate or use their medicine on the premises. It should be noted, however, that landlords do have defenses available to them in these types of civil actions, and that they are rarely targets of forfeiture if they themselves were not participating in the use, possession, or cultivation of medical cannabis.

**B. BEST LAW ENFORCEMENT ENCOUNTER IS THE ENCOUNTER THAT NEVER OCCURS**

While your state may have extensive laws that protect your right to use medical cannabis, many law enforcement officers still believe that medical cannabis is a "sham" and that all use of cannabis is recreational use. Law enforcement officers often seize medicine, harass patients, issue citations, and even arrest patients for exercising their rights. Carry your doctor's written recommendation and/or state-issued ID Card (following your state's requirement) at all times, but do not present it to law enforcement unless accused of a cannabis-related crime. Dealing with criminal charges and/or getting your medicine back can be stressful and costly, and may cause you to be "outed" as a medical cannabis patient. That's why we say that the best law enforcement encounter is the one that never occurs. If you follow these tips, you will be that much less likely to be harassed by law enforcement.

**1. Use Common Sense**

Consider safety when and where you choose to medicate; cannabis smoke and vapor have very distinctive smells. You will attract less attention if you do not consume cannabis in plain view or near open windows.

Do not drive your car while medicating. If law enforcement officers smell cannabis, they have probable cause to search your vehicle. If you are going somewhere, medicate after you arrive. Please note that no medical cannabis laws protect you from charges of driving under the influence of cannabis, and cannabis can impair motor skills. Every state has the ability to prosecute patients for driving under the influence if they are impaired while driving.
Although it may help with dosages and rationing, packaging your medicine in multiple bags looks suspicious. Cannabis stores best in glass jars or airtight plastic containers in cool dark places, so carry only what you need.

Fewer plants attract less attention from thieves and others who may wish you harm, so be realistic about the amount of cannabis you will need.

Try to limit the amount of cannabis you have with you at any given time. While you may seal your medication in airtight containers, there is still a distinctive odor that is hard to prevent and can lead to law enforcement encounters. The less medicine you have with you, the less smell there is.

2. Be a Good Neighbor

A common cause of trouble for both patients and caregivers is complaints from neighbors. This problem might begin with an unpleasant personal confrontation, or the neighbors may notice your cannabis use and report concerns about nuisance and safety to landlords or police. Subsequent investigations can lead to the arrest of patients and caregivers and to the closure of medical cannabis dispensing centers.

Neighbors and nearby businesses may or may not share your opinion about medical cannabis, but they will be much more likely to respect your right to safe access if you are not causing them problems. By being conscious of neighbors' rights, privacy, and property, patients and dispensing centers can establish and maintain harmonious relationships.

Other issues with your neighbors can lead to law enforcement encounters. Domestic disputes, loud music, illegal parking, barking dogs, and other nuisances should be kept to a minimum. Police are required to investigate these reports, and they will come to your location, giving them an opportunity to find grounds for a search. When neighbors complain to law enforcement, citations or criminal charges for nuisance violations can be difficult to deal with, and investigation into these types of charges may lead to charges related to your medical cannabis use. Being a good neighbor can help you avoid these types of encounters.

3. Sensible Medical Cannabis Use

Patients and caregivers should educate themselves about medical cannabis and understand the benefits and potential side effects of their medicine. If you are new to using medical cannabis, or are trying a new strain, strength, or route of administration, it might be best to do so when you have no other responsibilities or plans. New routes of administration in particular may cause somnolence, or tiredness. By being a sensible medical cannabis user and making informed decisions, you can not only be as healthy as possible and help change the way people think about medical cannabis use, but also limit your chances of a law enforcement encounter.

Guidelines for Sensible Medical Cannabis Use:

1. Always listen to the advice of your doctor and use good judgment when using medical cannabis.
2. Carefully determine the amount of cannabis that is right for you. Start with
a small amount and slowly increase your dosage to find the proper level for symptomatic relief.

3. Be informed about the side effects of cannabis. It is also important to be aware of the possible risks of using medical cannabis.

4. Think carefully and in detail about the benefits of cannabis and relief that its use provides you. Being able to explain your use of medical cannabis can help you be an effective advocate, and you can be an example that helps your friends, family, and community forum their own opinions of medical cannabis.

5. Avoid medical cannabis use that puts you or others at risk, such as using it while driving, at work, or in public places. Remember, you can still be arrested for cannabis use and penalties can be stiff. As with any other medication, it remains illegal to drive while under the influence.

6. Always carry a copy of your physician's recommendation, caregiver's agreement, and/or ID card when in possession of medical cannabis.

**Travel Safely**

Many arrests for cannabis possession arise from traffic stops. Do not medicate and drive. If you travel with cannabis, make sure your vehicle is up to code and your cannabis is concealed—preferably in your trunk.

Recently, news outlets have reported that some TSA and airport officials have relaxed their policy regarding flying with medical cannabis; please note that these officials may still turn patients over to local law enforcement. It's also important to remember that airports and planes are under federal jurisdiction, so you are much more likely to interact with federal law enforcement when flying, and there is NO medical defense to possession, transportation, or trafficking charges at the federal level. Federal fines are steep, and these types of charges may also lead to jail time. In addition, some states' medical cannabis protections do not extend to people who intend to leave the state with their medicine, so even if you are arrested in the state where you are a qualified patient, you may still face state criminal charges and conviction. It's best NOT to fly with medicine, EVEN if your flight never leaves your home state.

Also, keep in mind that most medical cannabis states do NOT recognize patient status for travelers (except Arizona, Maine, Michigan, Montana, and Rhode Island). Being a qualified medical cannabis patient in your home state, does NOT always make you a qualified patient elsewhere.

**C. BEING PREPARED IN ADVANCE FOR SUCCESSFUL LAW ENFORCEMENT ENCOUNTERS**

Fortunately, many patients and caregivers never have law enforcement problems. Even those who do regularly report successful interactions with local and county police; many municipalities offer strong protection to medical cannabis patients. Yet even in friendly jurisdictions, qualified patients are still being harassed and
arrested for medical cannabis, despite proof of their patient status.

Any patient or caregiver can become the target of a law enforcement action. Each person who decides to use medical cannabis or help a patient to do so should be prepared to successfully maneuver through these encounters. You might not be able to avoid arrest in each instance, but chances of successfully fighting charges are greatly improved by education and careful planning.

There are many measures you can take before legal problems occur. You should carefully study the Law Enforcement Encounters section of this manual and, if possible, attend an ASA "Know Your Rights" training to most effectively learn this detailed information.

The first step is to stay on top of the basics. This includes maintaining a current doctor’s recommendation and having a clearly defined patient/caregiver relationship. Keep a copy of your recommendation or ID Card or both (depending on the state) in your wallet or purse at all times. You may want to memorize your physician’s and lawyer’s phone numbers, or write them down to keep with your doctor's recommendation or identification.

It is very important to inform the people in your life, such as family, friends, and roommates, about your medical use of cannabis. They should be prepared to assist if you are harassed or arrested. They should also be educated about their own legal rights (see the "Know Your Rights" information), as they may be questioned in an investigation about your cannabis use. Also, be aware of how to get out of jail if you are arrested. You may want to make a plan for bail, bond, or being released from jail on your own recognizance. You may want to protect and organize your personal belongings and financial data, as well as make a plan for emergency child, pet, and plant care. Lastly, always stay alert for signs of surveillance and be aware of potential conflicts with the neighbors to avert problems early.

1. Safe Gardening

Have Your Paperwork Together

Post a copy of patient medical cannabis recommendation(s) and/or caregiver paperwork and/or other required paperwork prominently at any place where cannabis is cultivated. Keep a copy of all of your paperwork at an off-site location; if a raid occurs, your paperwork may be destroyed or seized.

In the Garden

Don’t be sloppy. Compost or eliminate trash off site. The larger the garden appears, the more likely you are to attract the attention of thieves or others who wish to cause you harm. Cultivating indoors is generally considered safer because it helps avoid nosy neighbors and reduces the risk of theft. Use extra odor control methods during harvest to avoid offending neighbors. The plants smell especially pungent during harvest, as they are particularly resinous, and you may find the smell lingering in the air, on your clothes, and in your hair.
Be Smart: Be discreet

Be mindful about hauling grow equipment, tools, and plants into your home or grow site in view of neighbors. In the same vein, as tempting as it may be to talk about, tell as few people as possible about the location of the site.

2. Create Security Culture in Your Community

"Security Culture" refers to the importance of developing unbreakable unity within the medical cannabis community. If everyone involved maintains this unity, the entire community will be safer. Law enforcement agents rely on turning people against each other and disorganize or disband the community.

Implement a Security Culture

Take care of yourself and your community. Don’t gossip, brag or ask for compromising or unnecessary information about medical cannabis operations and activities. Although such behavior may be entertaining, it puts you at greater risk of arrest and law enforcement officers may use personal splits to divide the community. When you are about to discuss your personal involvement in any medical cannabis activity, consider the following:

- Would this person repeat what you are about to tell them to anyone else? When you share information about your use or cultivation of medical cannabis, you are providing evidence that may be used against you in court if this person is ever interrogated as a witness. You should also be cautious of theft. Patients and providers have been robbed, so it’s best to limit the dissemination of sensitive information.
- Would you want this person to have to perjure him or herself? Think carefully: you may be giving people information that may cause harm to you or to them.

If someone you know is giving out sensitive information, talk to him or her in private about why such talk can be hazardous. Someone who repeatedly engages in gossip, bragging or seeking unnecessary information about inappropriate topics after repeated educational talks is a grave risk at best, and an informant looking to incriminate others at worst.

Keeping an Eye Out for Surveillance

Take precautions. Assume you are under surveillance if you are in any way involved in cultivating medical cannabis for yourself or other patients. Do not discuss sensitive matters on the telephone, through the mail, by email, or in your home, car, dispensing collective, or office. Be cautious with whom you discuss sensitive information. Keep written materials and lists of other patients in a secure place. If you are arrested, law enforcement officers may investigate all of your contacts. Law enforcement officers have the right not only to go through your address book, but can also answer any calls made to your phone. Keep in mind that electronic data such as emails and text messages still exist even after they’ve been deleted, and your phone company or service provider may turn them over to law enforcement.

D. SUCCESSFUL LAW ENFORCEMENT ENCOUNTERS

When dealing with law enforcement officers, keep your hands in view and don’t make sudden movements. Avoid passing behind them. Nervous officers are dangerous officers. Also, never touch law enforcement officers or their equipment—you can get injured and/or charged with assault and battery.

Law enforcement officers do not decide your charges; they can only make recommendations. The prosecutor is the only person who can actually charge you. Remember that law enforcement officers have no power to negotiate or charge; promises of leniency or threats of harsher penalties are all lies and are designed to get you to start talking.

1. Law Enforcement Encounters

Conversation

When law enforcement officers are trying to get information, but don’t have enough evidence to detain or arrest you, they’ll try to coerce information from you. They may call this a “casual encounter” or a “friendly conversation.” If you talk to them, you may give them the information they need to arrest you or your friends. In most situations, it is not advisable to volunteer information to law enforcement officers. During a law enforcement encounter that involves an officer asking you questions or trying to engage you in conversation, ask “Am I being detained or Arrested?” If you are not being detained or arrested, walk away. If you are being detained or arrested, let the officer know that you do not consent to a search and that you wish to remain silent and want a lawyer.

Detention

Law enforcement officers can detain you only if they have reasonable suspicion (see below) that you are involved in a crime. Detention means that, though you aren’t arrested, you can’t leave. Detention is supposed to last a short time, and they are not supposed to move you. During detention, law enforcement officers can pat you down and go into your bag to make sure you don’t have any weapons. They aren’t supposed to go into your pockets unless they feel a weapon.

If law enforcement officers are asking you questions, ask if you are being detained. If not, leave and say nothing else to them. If you are being detained, you should ask why, and remember their answer. Then you should say the Magic Words: "I am going to remain silent. I want a lawyer" and nothing else. Remain silent. Anything you say to law enforcement may be used against you, and sometimes it’s hard to recognize that the information you are volunteering might harm you. It is always better to say nothing at all. If they ask to search your person or belongings, say, "I do not consent to a search." They may say, "Empty your pockets." You are within your rights to refuse. If you do empty your pockets, it is considered consent and anything they find in your pockets may be used against you.
A detention can easily turn into arrest. If law enforcement officers are detaining you and they get information that you are involved in a crime, they will arrest you, even if it has nothing to do with your detention.

For example, if someone is pulled over for speeding (detained) and the officer sees drugs in the car, the officer may arrest her for possession of the drugs, even though it has nothing to do with her being pulled over. Law enforcement officers have two reasons to detain you: 1) they are writing you a citation (a traffic ticket, for example), or 2) they want to arrest you but they don’t yet have enough information to do so.

**Arrest**

Law enforcement officers can arrest you only if they have probable cause (see below) that you are involved in a crime. When you are arrested, the officers can search you to the skin and go through your car and any belongings. By law, an officer strip-searching you must be the same gender as you. If arrested, you should still say, "I do not consent to a search" to preserve your rights. After that, say, "I choose to remain silent and I want a lawyer." After that, remain silent. Law enforcement will try to get you to give them information about the crime(s) they are holding you for. Keep in mind that denying things that they say is NOT remaining silent.

**Reasonable Suspicion vs. Probable Cause**

Reasonable suspicion must be based on more than a hunch—law enforcement officers must be able to put their suspicion into words. For example, an officer can't just stop someone and say, "She looked like she was up to something." They need to be more specific, such as, "She was standing under the overpass staring up at graffiti that wasn't there two hours earlier. She had the same graffiti pattern written on her backpack. I suspected that she had put up the graffiti."

Law enforcement officers need more proof to say they have probable cause than to say they have a reasonable suspicion. For example, "A store owner called to report someone matching her description tagging a wall across the street. As I drove up to the store, I saw her running away spattered with paint and carrying a spray can in her hand."

**Searches**

Never consent to a search. If police try to search your house, car, backpack, pockets, etc. say the Magic Words: "I do not consent to this search." This may not stop them from forcing their way in and searching anyway, but if they search you illegally, they probably won’t be able to use the evidence against you in court. You have nothing to lose from refusing to consent to a search and lots to gain. Do not physically resist officers when they are trying to search, because you could get hurt and/or charged with resisting arrest or assault and battery. Just keep repeating the Magic Words "I do not consent to a search" so that the officers and all witnesses know that this is your stance.
Be careful about casual consent. That is, if the officers stop you and you get out of the car but don't close the door, they might search the car and claim that they thought you were indicating consent by leaving the door ajar. Also, if you say, "I'd rather you didn't search," they can claim that you were reluctantly giving them permission to search. Always just say the Magic Words: "I do not consent to this search."

**Questioning**

Interrogation isn't always bright lights and rubber hoses—usually it's just a conversation. Whenever law enforcement officers ask you anything besides your name and address, it's legally safest to say these Magic Words:

"I am going to remain silent. I want to see a lawyer." This invokes legal rights, which protect you from interrogation. When you say this, all law enforcement officials are legally required to stop asking you questions. They probably won't stop, so just repeat the Magic Words or remain silent until they catch on. If you forget your decision to remain silent and start talking to the officers, you can and should re-invoke the Magic Words, then remain silent. Do not raise your status as a medical cannabis patient, unless you are specifically asked about this or the medicine has already been found.

Remember, anything you say to the authorities can and will be used against you and your friends in court. There's no way to predict what information law enforcement officers might try to use or how they will use it. Plus, law enforcement officers often misquote or lie altogether about what was said. So say only the Magic Words and let all the cops and witnesses know that this is your policy. Make sure that when you're arrested with other people, the rest of the group knows the Magic Words and promises to use them.

One of the jobs of law enforcement officers is to get information out of people. Law enforcement officers are legally allowed to lie when they're investigating, and they are trained to be manipulative. The only thing you should say to law enforcement officers, other than identifying yourself, are the Magic Words: "I am going to remain silent. I want to see a lawyer."

Here are some lies they may tell you:

- "You're not a suspect—just help us understand what happened here and then you can go."
- "If you don't answer my questions, I'll have no choice but to arrest you. Do you want to go to jail?"
- "If you don't answer my questions, I'm going to charge you with resisting arrest."
- "All of your friends have cooperated, and we let them go home. You're the only one left."

Law enforcement officers can be sneaky, and there are lots of ways they can trick you into talking. Here are some scams they may pull:
"Good Cop, Bad Cop": "Bad cop" is aggressive and menacing, while "good cop" is nice, friendly, and familiar (frequently the "good cop" will be the one who is the same race and gender as you). The idea is "bad cop" scares you so badly you are desperately looking for a friend. "Good cop" is that friend.

Prisoners' Dilemma: The officers will tell you that your friends ratted on you so that you will snitch on them. Meanwhile, they tell your friends the same thing. If anyone breaks down and talks, you all go down.

The officers will tell you that they have all the evidence they need to convict you, but that if you "take responsibility" and confess, the judge will be impressed by your honesty and go easy on you. What they really mean is: "We don't have enough evidence yet, please confess."

Jail is a very isolating and intimidating place. It is really easy to believe what the officers tell you. Insist on speaking with a lawyer before you answer any questions or sign anything.

Miranda Rights

Law enforcement officers do not have to read you your rights (also known as the Miranda warnings). Miranda applies when there is (a) an interrogation (b) by a police officer or other agent of law enforcement (c) while the suspect is in custody (you do not have to be formally arrested to be "in custody"). Even when all of these conditions are met, law enforcement officers intentionally violate the Miranda requirement. And though your rights have been violated, what you say can be used against you. For this reason, it is better not to wait for the cops to inform you of your rights. You know what your rights are, so you can invoke them by saying the Magic Words, "I am going to remain silent. I want to see a lawyer."

If you've been arrested and realize that you have started answering questions, don't panic. Just re-invoke your rights by saying the Magic Words again. Don't let them trick you into thinking that because you answered some of their questions, you have to answer all of them.

Arrest and Search Warrants

If law enforcement officers come to your door with an arrest warrant, step outside and lock the door behind you. Law enforcement officers are allowed to search any room you go into, so don't go back into the house for any reason. If they have an arrest warrant, hiding won't help, because they are allowed to force their way in if they know you are there. It's usually better to just go with them without giving them an opportunity to search.

If law enforcement officers have a search warrant, nothing changes—it's legally safest to say the Magic Words. Again, you have nothing to lose from refusing to consent to a search and lots to gain if the search warrant is found to be incorrect or invalid. If they do have a search warrant, ask to read it. A valid warrant must have a recent date, the correct address, and a judge's or magistrate's signature; some warrants also indicate the time of day the cops can search. You should say the Magic Words whether or not the search warrant appears correct. The same goes for encounters with any other government official who tries to search you,
your belongings, or your house.

**Infiltrators and Informants**

Undercover law enforcement officers sometimes infiltrate political organizations. They can lie about being officers even if asked directly. Undercover officers can even break the law (undercover officers get hazard pay for doing drugs as part of their cover) and encourage others to do so as well. This is not legally entrapment.

**FBI, DEA, and Other Government Agents**

The essence of the Magic Words "I'm keeping my mouth shut until I talk to a lawyer" not only applies to police but also to the FBI, DEA, INS, CIA, even the IRS. If you want to be nice and polite, say that you don't wish to speak with them until you've spoken with your lawyer or that you won't answer questions without a lawyer present.

**Phone Calls in Jail**

You're entitled to make a phone call from jail, but that doesn't mean you're going to get one right away. Jail telephones are often rigged to only make collect calls, although some take coins as well. All telephone calls from people in custody can be monitored. You should not discuss anything on the phone that is secret or sensitive—circumstances of your arrest, people you are close to, any contact information for those people, etc.

**Taking Notes**

Whenever you interact with or observe law enforcement officers, always write down what is said and who said it. Write down the officers' names and badge numbers and the names and contact information of any witnesses. Record everything that happens. If you are expecting a lot of police contact, get in the habit of carrying a small tape recorder and a camera with you. Be careful—law enforcement officers don't like people taking notes, especially if they are planning on doing something illegal. Observing them and documenting their actions may have very different results; for example, it may cause them to respond aggressively, or it may prevent them from abusing you or your friends.

**Conclusion**

People deal with law enforcement officers in all kinds of circumstances. You must make an individual decision about how you will interact with law enforcement. It is important to know your legal rights, but it is also important for you to decide when and how to use them in order to best protect yourself.

**DEMYSTIFYING THE LEGAL SYSTEM**

1. **Getting Out of Jail**

There are several procedures for getting out of jail while a case is in process. Once arrested, the judge will decide whether to offer you bail, bond, or release you on your own recognizance (OR).

Citation: Citing out is a type of release from custody in which you sign a citation, which is a promise to appear in court. It is usually a form that looks like a traffic
Never sign a piece of paper that is an admission of guilt. Read the form closely and make sure you know what you are signing.

**Bail:** Bail is money you pay to the court, to be forfeited if you don’t appear at scheduled hearings. A bail bondsman can put up the money for you, but you have to give the bondsman a percentage of the total bail, which the bondsman keeps as payment. Often, there is a pre-set bail for misdemeanors and lesser felonies that you can pay at the jail without waiting to go before a judge.

**Bond:** A bond is like bail except that you put up collateral instead of paying money. Collateral is something of value, like a car, a house, or property.

**OR:** Release on your own recognizance (OR, ROR or PR) is based simply on your promise to come to court for scheduled hearings, without having to put up bond or pay bail. Usually you will only be released on your own recognizance if you can prove that: (1) you are not a danger to the community; and (2) you are not a flight risk or unlikely to return for court appearances.

You are likely to be kept in jail if you:

- Have an outstanding warrant for another charge
- Are already out on OR, bond or bail for another charge
- Are currently on probation or parole
- Have failed to appear for court dates in the past
- Have immigration problems

You are likely to be released from jail if you can prove you’re not a flight risk by organizing documents for your first court appearance that show the judge you have long-term ties to the community and are therefore unlikely to skip town. Assemble as many of the following documents as possible. You need the originals, plus a copy to give the court:

- Lease, rent receipts, utility bills, phone bills (both current bills and old ones to show the time you’ve been at this residence)
- Employment contract, pay stubs, records of volunteer work
- School ID, school records
- Proof of membership in community organizations or churches
- General character reference letters from landlords, roommates, employers, teachers, clergy
- List of character references with phone numbers
- Letters on doctor’s stationery about any medical conditions or appointments that necessitate your release

It would be very difficult for your friends to assemble such materials while you are sitting in jail. It makes more sense for you to put together this packet in advance and keep it in a safe and accessible place. If you are arrested, your friends can bring these papers to your lawyer so that you will have this material in court.

### 2. Going to Court

**When do I go to court for the first time?**
If you are in custody, the authorities are legally obligated to bring you to court within two business days or "as soon as reasonably possible." If you are not being held in jail, your first court date may be anywhere from one week to a month after arrest. Court dates should be written on the citation or release forms.

**What happens at the first court appearance?**

The first hearing generally involves the appointment of counsel. You indicate who is going to represent you: yourself, a private attorney, or a court-appointed lawyer. Also at the first hearing, you find out the charges against you, and respond by making a demurrer or entering a plea. This part is the arraignment.

If you've been in jail up until your first court appearance, the first hearing usually focuses on release issues: bail, bond or release on your own recognizance (OR). This part is called a bail hearing. Even if you're not released the first time, the subject can be brought up at later hearings. The appointment of counsel, arraignment, and bail hearing can be separate appearances. Many people choose to waive the right to a speedy trial at this time, called "waiving time." This is mainly done to have time to plan a defense and build public support.

**What are the choices when it's time to enter a plea?**

Pleas generally fall into two categories: guilty and not guilty. Normally, people only plead guilty if they've negotiated a plea bargain. If you do not reach or want a plea bargain plead "not guilty" and go to trial.

**What happens if I don't show up for a court hearing?**

If you miss a scheduled hearing, the judge will usually issue a bench warrant. If an individual with an outstanding bench warrant gets into any kind of trouble, like a traffic violation, that person is subject to arrest. Judges usually accept extreme excuses for missing a hearing, like funerals or medical emergencies. Conflicts with school or work schedules are not acceptable excuses.

**When does the trial happen?**

When you do not waive time, trial usually occurs a month or two after arraignment. When time is waived, trial might not begin for many months. In both cases, trials are often preceded by hearings at which written and/or oral "motions" are made and heard.

**What goes on at trial?**

At trial, you can testify if you want to. You can also put on witnesses and possibly witnesses to testify about your good character. In addition, you have the right to cross-examine the witnesses against you, who will probably be law enforcement officers. You also get to make opening and closing arguments.

The judge may try to forbid you from talking about anything political, and even disallow mention of medical cannabis, on the grounds that it would be irrelevant. Lawyers may be able to get around the judge's prohibitions, but there's considerable precedent (published results of earlier trials) supporting the notion that judges can forbid discussion of political matters at trial.

Your lawyer will handle witnesses, make opening and closing arguments, and file
motions. All you do is testify. Sometimes, people represent themselves (called pro per or pro se). In these cases, it's useful to have an attorney as advisory counsel or co-counsel for technical legal matters.

You don't necessarily get a jury trial. The alternative is a bench trial, or trial by judge in which the judge hears the evidence and reaches a verdict. The judge will also decide what will be allowed as testimony and evidence. In state court, you must be charged with at least a misdemeanor to get a jury trial. In federal court, you must be charged with an offense that carries a maximum sentence of greater than six months to get a jury trial. This requirement rules out all infractions and most misdemeanors.

The trial ends with the verdict: guilty, not guilty, or a hung jury. If found not guilty, celebrate. If there is a hung jury (the jury couldn't agree on the verdict), then the prosecutor gets to decide whether to retry you or dismiss the case. Prosecutors often give up or offer a really good deal at this point. If you're found guilty, then the judge sentences you. The judge can either sentence you immediately after the verdict or set a separate hearing for sentencing. You may be qualified to appeal this sentence or the original case ruling, so consult an attorney.

What happens at sentencing?

You can pack the courthouse. You get to make a speech, because you have the right to allocution. This sentencing statement is normally a chance to ask for mercy and explain mitigating factors, but activists often use it as a chance to discuss political matters, especially if they didn't get to speak their minds or offer complete evidence at trial.

3. Return of Property

In nearly every case where a patient or caregiver is cited or arrested for medical cannabis, law enforcement will seize the medicine and often other property they feel is connected with the alleged offense. If this happens and you are found not guilty or have your charges dismissed or dropped, you can petition the court for the return of your property. Law enforcement typically does not return property without a court order. This requires you to file a motion for return of property. See AmericansForSafeAccess.org/ROP for more information about filing.

If you are certain that the property has been destroyed or damaged beyond use, you may want to file a civil suit against the city or county responsible. This process can take years to complete. In order to qualify for filing a civil suit, you must first file a claim form with the appropriate government entity shortly after the seizure. It may be helpful to have the civil suit complaint drafted by an attorney, but that is not necessary. Contact ASA about how to file a claim.

This section is adapted from information provided to ASA by the Midnight Special Law Collective—www.midspecial.net.
REFERENCES

5. Institute of Medicine. 1982. Marijuana and Health: Report of a Study by a Committee of the Institute of Medicine, Division of Health Sciences Policy. National Research Council of the National Academy of Science.
13. Grant I, et al. 2010. Report to the Legislature and Governor of the State of California. Center for Medicinal Cannabis Research. Results of only five of the 14 studies conducted have been published to date, with a sixth completed but not yet published. Two showed that smoked cannabis was effective for hard-to-treat pain in HIV patients. One demonstrated that cannabis is effective for relieving neuropathic pain related to spinal cord injuries and other conditions. Another study found that higher doses of cannabis produced more relief in subjects who had pain induced via chemical heat. The remaining studies have not yet been completed. Studies appear in the peer-reviewed journals Neurology, Journal of Pain, Anesthesiology, Neuropsychopharmacology, and Clinical Pharmacology & Therapeutics. www.cmcr.ucsd.edu/CMCR_REPORT_FEB17.pdf (accessed June 22, 2012).


64. Leelawat et al. 2010. Op Cit.


103. O’Shaughnessy WB. 1838. On the preparations of the Indian hemp, or gunjah (Cannabis indica); their effects on the animal system in health, and their utility in the treatment of tetanus and other convulsive diseases. Transactions of the Medical and Physical Society of Bengal. 18; 40: 71-102, 421-61.
143. O'Shaughnessy WB. 1838. On the preparations of the Indian hemp, or gunjah (Cannabis indica); their effects on the animal system in health, and their utility in the treatment of tetanus and other convulsive diseases. Transactions of the Medical and Physical Society of Bengal. 18: 40: 71-102, 421-61.
Physcopharmacology 185: 524-528.


181. Eubanks et al. 2006. A molecular link between the active component of marijuana and Alzheimer's 

Neuroscience 25: 1904-1913.

183. Marchalant et al (2009) Cannabinoids attenuate the effects of aging upon neu roinflammation and 

June 24, 2012).

185. Marchalant et al. 2007. Anti-inflammatory property of the cannabinoid agonist WIN-55212-2 in a 

186. Hampson et al. 1998. Cannabidiol and delta-9-tetrahydrocannabinol are neuroprotective 

Drug Policy, 12 (5-6); 377-383.

188. Iverson, L. Op cit.


marijuana alone, smokers of marijuana and tobacco, smokers of tobacco alone, and non-smokers. 


196. Marijuana use and cancer incidence. Sidney S, Quesenberry CP, Friedman GD, Tekawa IS.; Cancer 
Causes Control. 1997; 8: 722-728.

197. Melamede RJ. 2005. Cannabis and tobacco smoke are not equally carcinogenic. Harm Reduction 

Thoracic Society International Conference. May 23, 2006, San Diego, California

199. Hashibe M, et al. 2006. Marijuana use and the risk of lung and upper aerodigestive tract cancers: 
results of a population-based case-control study. Cancer Epidemiol Biomarkers Prev. 2006 

2004;64(11):4049-4054.


Intl Neuropsy Soc.


205. Iverson. Op Cit.

Ther. 2001; 1: 61-65


ABOUT AMERICANS FOR SAFE ACCESS

Americans for Safe Access is the largest national member-based organization of patients, medical professionals, scientists and concerned citizens promoting safe and legal access to cannabis for therapeutic use and research. ASA is dedicated to meeting the immediate needs of medical cannabis patients and their providers while creating a movement to promote safe and legal access.

ASA works to overcome political and legal barriers by creating policies that improve access to medical cannabis for patients and researchers by engaging a multifaceted strategy that incorporates public education, impact litigation, grassroots development and advocacy, media campaigns, and direct support services.

ASA created a vision for what safe access should look like, and the legal framework to support that vision, through the passing of state and local laws and numerous court battles. Our extensive monitoring of law enforcement activity has helped thousands of patients to navigate the legal system, held law enforcement accountable for their actions, and established major policy changes. On Capitol Hill, we have fought back against attempts to further undermine our state laws, and we continue to work with members of Congress and the Administration to resolve the federal conflict.

ABOUT THIS GUIDE

This guide is intended to be a starting point for the consideration of applying cannabis therapies to specific conditions; it is not intended to replace the training and expertise of physicians with regard to medicine, or attorneys with regard to the law.

But as patients, doctors and advocates who have worked intimately with these issues for many years, we have seen firsthand how helpful cannabis can be for a wide variety of indications. We know doctors want the freedom to practice medicine and patients the freedom to make decisions about their healthcare.

For more information, please see AmericansForSafeAccess.org or call us at 1-888-929-4367.
ADDITIONAL RESOURCES

Americans for Safe Access maintains a website with additional resources for patients and doctors at AmericansForSafeAccess.org.

There you will find the latest information on legal and legislative developments, new medical research, and what you can do to help protect the rights of patients and doctors.

You can also stay up to date with ASA by joining us at facebook.com/safeaccessnow and following us at twitter.com/safeaccess.

With more than 50,000 active members and chapters and affiliates in all 50 states, ASA is the largest national member-based organization of patients, medical professionals, scientists, and concerned citizens promoting safe and legal access to cannabis for therapeutic uses and research.