PUBLIC HEALTH, WELFARE & SAFETY

Exhibit No. 3

Date 1/26/2011

Bill No. SB 193

The 2011 Legislators' Guide to Medical Cannabis

A Comprehensive Guide to Understanding Medical Cannabis in the State of Montana

Senate Bill 193--AN ACT REVISING THE MEDICAL MARIJUANA ACT; REQUIRING STATEMENTS BY PHYSICIANS PROVIDING WRITTEN CERTIFICATION; REQUIRING NONDIVERSION STATEMENTS FROM INDIVIDUALS APPLYING FOR REGISTRY IDENTIFICATION CARDS; REQUIRING MONTANA RESIDENCY; ESTABLISHING APPLICATION AND RENEWAL FEES; ESTABLISHING PENALTIES; REVISING LIMITS ON POSSESSION AND DISTRIBUTION OF USABLE MARIJUANA; PROHIBITING SMOKING IN PUBLIC PLACES

This document is provided to the members of the Senate Public Health, Welfare and Safety Committee. Excerpts from *The 2011 Legislators' Guide to Medical Cannabis* providing recommendations and rationale pertaining to SB193 are provided herein.

The Montana Medical Growers Association is fundamentally supportive of SB193 with several practical issues to consider:

Section 1 (9), (11a) Definition of Patient

The proposed bill mandates a patient must be a resident. Patients residing out of state come to Montana for treatment; there is no reason they should be denied medicine approved by a physician even if they live out of state.

Found in *The 2011 Legislators' Guide* pg 5

Issue: The ability of an out-of-state resident to obtain a medical cannabis recommendation and subsequent license. Currently there are 103 licensed Montana medical cannabis patients with out of state residency. A number of patients come to Montana for treatment of different illnesses, including cancer. A Stage 4 brain cancer patient was recommended for a Montana medical cannabis card by her physician in Billings but was rejected by DPHHS because her permanent residence is in Wyoming, but comes to Montana for treatment. Her inability to take other pharmaceutical treatments to ease her symptoms during chemotherapy added to her condition and was not in the interest of the patient. While she has now been issued her license, any patient being treated by medical professionals in Montana should have access to an appropriate standard of care and course of treatment as recommended by their physician. It is reasonable to ensure that patients coming to Montana for medical treatment can be provided the opportunity to receive quality, safe, and appropriate medicine.

There has been a question about "snow birds" that live in Montana part time. If a patient has been diagnosed with a qualifying condition, they should be afforded the opportunity to obtain medicinal product for the time they reside in Montana.

Recommendation: Continue to permit out of state residents to obtain Montana medical cannabis recommendations and licenses.

Section 2 (2c) Patient Application Fee

The cost of $150 is excessive for patients who may be on fixed incomes. With the potential of caregivers/providers being licensed under a separate board, the cost for patient processing should not require this extensive a fee.

Section 3 (2)(a)(i) physicians must have been a patient's primary care physician for at least one year, with at least four visits over time reviewing the patient's medical condition and treatment status

Section 3 (2) (a) (ii) Recommended Physician Assuming Primary Responsibility for the Condition

Many patients in Montana, an estimated 27%, have no insurance and likely no primary physician.

Found in *The 2011 Legislators' Guide* pg 6.

As of June 2009, there were only 202 physicians making medical cannabis recommendations in the state of Montana while attempting to serve a potential patient base of nearly 1,000,000 residents. At the beginning of 2011, there are 359 recommending physicians. Currently there are 2,361 licensed in-state physicians representing a patient/physician ratio of 1:423. By comparison, in Colorado the patient/physician ratio is 1:270.

There are a number of reasons why physicians have refrained from making medical cannabis recommendations for qualified patients. The majority of physicians in Montana work for groups or hospitals or state and federally funded agencies and may have been expressly forbidden to make recommendations. In addition, many physicians may have felt unqualified to make such recommendations because of a lack of specific training in medical cannabis. Most physicians are yet unaware that continuing education courses on the benefits of medical cannabis are available to them and have been approved by the AMA for continuing education credits.

Issue: Medical Personnel Authorized to Make Recommendations

Currently the Montana Medical Marijuana Act states that only licensed physicians may recommend medical cannabis to a patient. There are currently 625 Advance Practice Registered Nurses (APRNs) able to prescribe medicine but denied the ability to recommend medical cannabis to a patient. In addition, there are approximately 20,000 other nursing professionals that could be involved in the care of patients, including those utilizing medical cannabis as an alternative treatment. It is proposed that APRNs be added to physicians and doctors of osteopathy who are able to recommend medical cannabis to patients. Education is critical for any medical professional recommending medical cannabis or any other pharmaceutical. By including Registered Nurses and other paramedical professionals in continuing education programs, these individuals can assist in patient assessment and patient

follow up which will help to improve overall standard of care. It is more likely that these paramedical professionals, moreover than the physicians themselves, are better suited to communicate with caregivers and the providers of medical cannabis and to spend the time necessary with patients to determine an ongoing course of treatment.

Recommendations:

Legislative

1. Authorize APRNs to write medical cannabis recommendations.
2. Authorize Registered or Licensed Practical Nurses to complete the preliminary assessment of patients before referring the patient to an APRN or physician for a final recommendation.

Administrative Rule

1. Require all physicians take Continuing Education courses on **new medical alternatives** they may wish to recommend or prescribe by January 1, 2012.
2. Require all APRNs take Continuing Education courses on **new medical alternatives** they may wish to recommend or prescribe by January 1, 2012.

Section 4 (2) Special Revenue Account

Rather than a contribution to the general fund, the Montana Medical Growers Association proposes the following:

- Any funds in the account at the end of the fiscal year must be used to support you education on prescription and recommended drugs.

Section 5 (2c) Record Maintenance

Found in *The 2011 Legislators' Guide* referring to the proposed regulatory board, pg. 14

The 2011 Legislators Guide includes a full regulatory requirement for tracking including fee structure, responsibilities and limitations.

Section 5 (2a) Caregiver possession limit

The 2011 Legislators Guide offers a recommendation on caregiver possession limit. Any limit should be based on practical science on how a plant grows. With the MMGA proposed "closed loop" tracking system, the quantity grown by a caregiver is fully tracked thus the caregiver possession limits can be better suited to actual plant production.

The 2011 Legislators' Guide to Medical Cannabis

A Comprehensive Guide to Understanding Medical Cannabis in the State of Montana

Presented by **Montana Medical Growers Association**

Foreword by Jim Gingery, Executive Director
Montana Medical Growers Association

Foreword

The Montana Medical Growers Association is pleased to present *The 2011 Legislators' Guide to Medical Cannabis, A Comprehensive Guide to Medical Cannabis in the State of Montana.* As one of the leading issues facing the 2011 Montana Legislature, it is critical that all decision makers have accurate information in order to support their legislative decisions. During the 2010 General Election, all candidates were provided a survey on medical cannabis in Montana. Some respondents favored outright repeal; some favored legalization, while others called for stricter regulation or suggested the law was working fine as it is currently written. A great majority of candidates asked for more information on medical cannabis so that any decision they were to make as a legislator would be an informed one.

The primary purpose of this guide is to provide the 2011 Montana Legislature with reference material in one location that will analyze the issues, provide recommendations and potential unintended consequences of different legislative actions. This guide is not intended to be the final word, but to organize the issues with debatable positions and support material. The majority of material contained in this guide has been gathered as a result of practical considerations for this new agricultural industry and issues which were raised during the Work Group sessions convened by the Children, Families, Health and Human Services Interim Committee during the Summer sessions in 2010. An overwhelming consensus of opinion was gathered of the parties involved, including State and local law enforcement, representative caregivers, City and State departmental officials and other stakeholders. Results of these Work Group sessions were presented to the Interim Committee during several specially held sessions throughout the summer. The consensus opinions were used to form the basis of the proposed draft legislation for changes to the current Montana Medical Marijuana Act. Those consensus ideas for improving the medical cannabis law in Montana are presented in this legislative guide.

When Initiative 148 permitting the use of medical cannabis for patients was passed with a 62% vote, no one anticipated the rapid growth of the patient count in the State. There were a number of reasons for this growth, some positive and others extremely negative. Both will be explored in this guide. There have also been some very positive, albeit unintended, consequences. The foremost being the professional industry that has begun to evolve involving medical cannabis, the jobs it has created taxes that have been paid to the State and the professionalism and use of accepted business practices are utilized by the majority of Caregiver operations. An initial Economic Impact Study has been completed on how the medical cannabis industry has impacted the Montana economy. Excerpts from that study are included in this guide.

There has also been a great deal of confusion regarding the issue of medical cannabis. This is due in part, to the actions of a very few self interested individuals that have continually been the source of negative media attention toward this new industry. It is extremely unfortunate that those who have acted solely for their own economic and selfish interests continue to cast a dark shadow on those patients and others who act responsibly, legally, ethically, and morally. Those who refuse to acknowledge the direction of the State Board of Medical Examiners do not represent the patients, caregivers, or in fact anyone in the Montana medical cannabis industry other than themselves. Additional confusion has resulted from significant misinformation, rumors and falsehoods that have been espoused by some. There are always, at best, two sides to an issue. This guide will address those diversified issues in an attempt to present legislators

with an overall view of the subject so that they can make informed choices regarding the variety of bills being drafted.

While there is general agreement that cannabis should be considered a medical alternative, it is also clear that additional guidelines and regulations are imperative. However, there is no consensus within the medical cannabis industry on solutions for all of the issues, although the general direction of appropriate regulation is fully supported by the legitimate medical cannabis community. This Guide does not represent the opinions of the entire medical cannabis industry in Montana, but attempts to offer a concise and directional approach to proposed legislation.

This guide has a great deal of summary information provided in the Appendix as a reference source. In some instances, only summary data is provided with reference points and links for those who wish to delve further into that subject. The Index outlines different subjects so that when specific issues are discussed in the legislature, the summary and reference material will be easily accessible. Legislators will be made aware in this guide of alternatives on many of the issues that may be most efficiently addressed by legislation or by administrative rule.

One fact is undeniable. When Initiative 148 passed the intent was to provide qualified patients with a natural alternative to their prescribed treatment regimen. It is our opinion that it remains imperative that any new legislation keep in mind that no deserving patient should be left without their recommended treatment of choice. Rather, the goal should be to propose legislation that ensures the most compassionate care for the patient while meeting the needs of the State, law enforcement, and the general public at large.

Jim Gingery
Executive Director
Montana Medical Growers Association

Acknowledgements:

We wish to thank the members of the Montana Medical Growers Association, Danni Goldhaber of Solutions for Montana and Town Center Media & Marketing, Cannabis Science, and those interested parties who added comments on the web blog for their assistance with the drafting of this document.

About the Montana Medical Growers Association:

The Montana Medical Growers Association is a non-profit professional trade association representing both licensed patients and caregivers in Montana and assuring that the interests of all involved in the industry are protected. The mission of the Association is to provide a voice for medical cannabis cultivators, support superior patient care and product quality, and promote the lawful and ethical conduct of its members. Members of the Association participated in the Medical Marijuana Work Group organized by the Children, Families, Health and Human Services Interim Committee in April, 2010 and were part of the contributing panel for every hearing of the Interim Committee throughout the summer. The MMGA has also assisted a number of communities in writing local ordinances that clarified where medical cannabis businesses could be located and how licensing should be granted.

For more information on the Montana Medical Growers Association, please call (800) 518 9113.

Table of Contents

Legislative Goals

It is the hope that any changes in the legislation regarding medical cannabis in Montana would continue to meet the following issues:

- Safe, legitimate medical care with access and appropriate consultations for patients
- Guidelines for high industry standards for medical professionals and businesses
- Regulations regarding transparency and accountability for caregivers that meet the needs of law enforcement and regulatory agencies
- Appropriate protections for potential employers and their licensed medical cannabis employees
- Appropriate and valid impairment testing for medical cannabis patients and all Montanans regarding DUI and job safety issues
- Science-driven policy regarding patient eligibility and appropriate use
- Protecting the safety and privacy of patients and the sanctity of the doctor/patient relationship
- Invite all stakeholder groups including patients, caregivers, medical professionals, Law Enforcement, employers, City & County officials and the public at large to participate in ongoing education
- Insure ongoing, age-appropriate education to children and students on all prescribed or recommended medications
- Insure future legislation considers that neither physicians' appointments nor the cannabis medicine are covered by insurance and that any tax or fee may impact the patient.

Dispelling Misinformation & Rumor

In this section, we hope to answer some of the questions that have arisen as the number of registered patients has grown throughout the State.

There are NO studies supporting the efficacy of medical cannabis

There are volumes of research now available on the efficacy of medical cannabis for certain medical conditions. Please see the study reviews in the Appendix of this guide.

Cannabis is out of control in Montana – Caregivers are just Drug Dealers

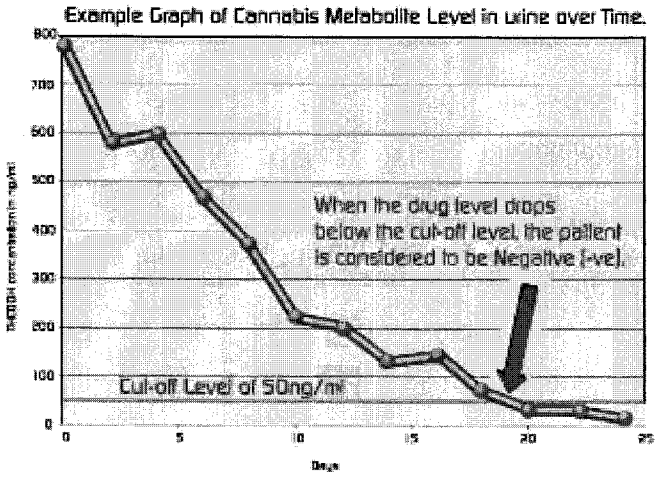
The professionalism that this new agricultural industry presents now leads the country in medical cannabis licensed states. Inventory tracking, production efficiencies and closed loop distribution is becoming common place in Montana through the efforts of caregivers working toward self regulation. The majority of compliance checks of responsible caregivers have come back as outstanding. This does not indicate that there are not issues to be addressed at the legislative and administrative level. There is now a Code of Ethics and Standard of Care for Patients. (please see Appendix) Caregivers continually attempt to provide the best medical cannabis alternative for their patients. Follow up care with patients, especially first time users of medical cannabis, is also common place.

An overwhelming number of minors have "green cards" in Montana

Only 58 minors hold medical cannabis licenses in the State. This equates to 0.21% of the overall number of patients registered with the Department of Public Health and Human Services. The necessity for these individuals to utilize medical cannabis is a matter between their parent or legal guardian and the physician who examined them and made the recommendation. It is acknowledged that prescription drug abuse is rampant in school age children as is the illegal use of marijuana. There is yet no conclusive study that the increase in patients using medical cannabis has had any impact on school age children. Many parents who are medical card holders choose not to grow medical cannabis in their homes, emphasizing instead the need for registered caregivers to provide for their medicinal needs. Continued education and parental oversight of children is a critical element in reducing any abuse of drugs by children.

An individual who has used medical marijuana is significantly impaired

Driving while impaired by any substance is a serious issue in Montana and must be addressed legislatively. Currently there is no scientifically acceptable medical cannabis impairment test to determine whether a patient is capable of driving a vehicle. Current testing methodology can show that medical cannabis in the individuals system, but that does not indicate if they are impaired. The chart below shows how medical cannabis may indicate a positive test result based on available testing methods. It is estimated that the physical effect of smoking medical



cannabis may be minimal two-to-three (2-3) hours following usage but may appear in current testing protocols for as long as 30 days following medication. The effect of using medical cannabis is unlike the effect of alcohol consumption. Different cannabis strains possess unique characteristics which cause varying reactions in patients. An employee who tests positive for having consumed medical cannabis may actually have consumed it at some time in the past month, but is not necessarily impaired. Currently no impairment test exists to accurately measure the affects of medical cannabis. Employers should establish performance standards for all employees and routinely provide performance evaluation for all employees regardless of whether they may be a medical cannabis patient, on pharmaceuticals, or simply to see if they can perform their job to the standards set.

Cannabis is a Gateway Drug

Recent research suggests that recreationally used cannabis does not act as a gateway drug to harder drugs such as alcohol, cocaine and heroin. The same will apply to users of medicinal cannabis.

Several research studies addressed the question whether cannabis leads to the use of harder drugs such as alcohol, cocaine and heroin.

According to a study to be published by the Centre for Economic Policy Research, London, cannabis does not lead to the use of hard drugs (Sunday Times of 16 December 2001). Findings are based on a survey of drug users in Amsterdam over a 10-year period. The study by Jan van Ours of Tilburg University in the Netherlands shows that cannabis users typically start using the drug between the ages of 18 and 20, while cocaine use usually starts between 20 and 25. But it concludes that cannabis is not a stepping stone to using cocaine or heroin. Four surveys, covering nearly 17,000 people, were carried out in Amsterdam in 1987, 1990, 1994 and 1997.

The study found that there was little difference in the probability of an individual taking up cocaine as to whether or not he or she had used cannabis. Although significant numbers of people in the survey did use soft and hard drugs, this was linked with personal characteristics and a predilection to experimentation.

The Institute of Medicine study characterized marijuana's role as a "gateway drug" as follows: "Patterns in progression of drug use from adolescence to adulthood are strikingly regular. Because it is the most widely used illicit drug, marijuana is predictably the first illicit drug most people encounter. Not surprisingly, most users of other illicit drugs have used marijuana first. In fact, most drug users begin with alcohol and nicotine before marijuana—usually before they are of legal age.

In the sense that marijuana use typically precedes rather than follows initiation of other illicit drug use, it is indeed a "gateway" drug. But because underage smoking and alcohol use typically precede marijuana use, marijuana is not the most common, and is rarely the first, "gateway" to illicit drug use. There is no conclusive evidence that the drug effects of marijuana are causally linked to the subsequent abuse of other illicit drugs. An important caution is that data on drug use progression cannot be assumed to apply to the use of drugs for medical purposes. It does not follow from those data that if marijuana were available by prescription for medical use, the pattern of drug use would remain the same as seen in illicit use" (Joy et al. 1999)

A more recent study based on national survey data also does not support the hypothesis that increases in marijuana use lead to increased use of more dangerous drugs among the general public. In the American Journal of Public Health, Andrew Golub and Bruce Johnson of the National Development and Research Institute in New York wrote that young people who smoked marijuana in the generations before and after the baby boomers do not appear to be likely to move on to harder drugs. The researchers said that these findings suggest that the gateway phenomenon reflects norms prevailing among youths at a specific place and time. "The recent increase in youthful marijuana use has been offset by lower rates of progression to hard drug use among youths born in the 1970s. Dire predictions of future hard drug abuse by youths who came of age in the 1990s may be greatly overstated" (Golub & Johnson 2001).

Research also suggests that the "gateway theory" does not describe the behavior of serious drug users:

"The serious drug users were substantially different from high school samples in their progression of drug use. The serious drug users were less likely to follow the typical sequence identified in previous studies (alcohol, then marijuana, followed by other illicit drugs). They were more likely to have used marijuana before using alcohol, and more likely to have used other illicit drugs before using marijuana. We also found that atypical sequencing was associated with earlier initiation of the use of illicit drugs other than marijuana and greater lifetime drug involvement. These findings suggest that for a large number of serious drug users, marijuana does not play the role of a 'gateway drug'. We conclude that prevention efforts which focus on alcohol and marijuana may be of limited effectiveness for youth who are at risk for serious drug abuse" (Mackesy-Amiti et al. 1997)

References

Mackesy-Amiti ME, Fendrich M, Goldstein PJ. Sequence of drug use among serious drug users: typical vs. atypical progression. Drug Alcohol Depend 1997; 45(3):185-96.

Joy JE, Watson SJ, Benson JA, eds. Marijuana and medicine: Assessing the science base. Institute of Medicine. Washington DC: National Academy Press, 1999.

Golub A, Johnson BD. Variation in youthful risks of progression from alcohol and tobacco to marijuana and to hard drugs across generations. Am J Public Health 2001; 91(2):225-32.

Legislative Issues and Proposed Recommendations

Issues and Recommendations Affecting Patients

Overview

As of December 31, 2010 there were more than 27,000 Montanans licensed to utilize medical cannabis as an alternative treatment method.

Based on numbers gathered by the Department of Public Health and Human Services, the following represents the distribution of patients and correlating qualifying conditions:

Cachexia or Wasting Syndrome	659
Cancer, Glaucoma or HIV (AIDS)	769
Multiple Sclerosis	26
Seizures	233
Severe Nausea	452
Severe Seizures and/or Nausea and/or Muscle Spasms	59
Severe or Chronic Pain	20084
Severe or Chronic Pain & Muscle Spasms	3452
Severe or Chronic Pain & Nausea	1218
Severe or Chronic Pain & Seizures	191
Severe or Chronic Pain, Nausea & Muscle Spasms	503
Severe or Persistent Muscle Spasms	504

Compassionate patient care is of the utmost importance to caregivers across the State. The outcome of 2011 legislation should center on the need to maintain and enhance the standard of care that these patients deserve and expect. The majority of issues regarding patient care are geared towards the caregiver and are addressed in a later section of this guide.

Issue: The ability of an out-of-state resident to obtain a medical cannabis recommendation and subsequent license.

Currently there are 103 licensed Montana medical cannabis patients with out of state residency. A number of patients come to Montana for treatment of different illnesses, including cancer. A Stage 4 brain cancer patient was recommended for a Montana medical cannabis card by her physician in Billings but was rejected by DPHHS because her permanent residence is in Wyoming, but comes to Montana for treatment. Her inability to take other pharmaceutical treatments to ease her symptoms during chemotherapy added to her condition and was not in the interest of the patient. While she has now been issued her license, any patient being treated by medical professionals in Montana should have access to an appropriate standard of care and course of treatment as recommended by their physician. It is reasonable to ensure that patients coming to Montana for medical treatment can be provided the opportunity to receive quality, safe, and appropriate medicine.

There has been a question about "snow birds" that live in Montana part time. If a patient has been diagnosed with a qualifying condition, they should be afforded the opportunity to obtain medicinal product for the time they reside in Montana.

Recommendation: Continue to permit out of state residents to obtain Montana medical cannabis recommendations and licenses.

Issue: Public Smoking and/or Use

Local jurisdictions have adopted regulations regarding smoking restrictions. It is important to understand how the medicine works. A seizure patient for example may only have a minute or two to medicate to avoid a seizure. There should be limitation though on the extent that a local ordinance may inhibit a patient's ability to properly medicate when necessary. Of serious concern for appropriate patient care are the outright prohibitions some cities have invoked. Any prohibition of smoking in public should apply to any form of smoking, including tobacco, where an individual may be affected by second hand smoke.

Recommendation: This issue should be left to the individual City or County to determine.

Issues and Recommendations Affecting Physicians

Overview

This section of *The Legislator's Medical Cannabis Guide* will provide recommendations to address the most significant issues regarding physicians and other medical professionals and their role in the recommendation of medical cannabis to patients.

It is important to remember that a Montana-licensed physician may only "recommend" medical cannabis as part of a treatment plan for a patient; they are not permitted to "prescribe" or to provide specific guidance on usage. As cannabis is currently a Schedule 1 drug, a physician may **neither** prescribe **nor** advise specific use of cannabis to a patient. Based on the recommendation of the AMA, and certainly with the recent support for medical cannabis by the Department of Veteran Affairs for its use in the treatment of PTSD, the federal government will continue to evaluate rescheduling at which time the terminology of "recommendation" versus "prescription" can be discussed.

As of June 2009, there were only 202 physicians making medical cannabis recommendations in the state of Montana while attempting to serve a potential patient base of nearly 1,000,000 residents. At the beginning of 2011, there are 359 recommending physicians. Currently there are 2,361 licensed in-state physicians representing a patient/physician ratio of 1:423. By comparison, in Colorado the patient/physician ratio is 1:270.

There are a number of reasons why physicians have refrained from making medical cannabis recommendations for qualified patients. The majority of physicians in Montana work for groups

or hospitals or state and federally funded agencies and may have been expressly forbidden to make recommendations. In addition, many physicians may have felt unqualified to make such recommendations because of a lack of specific training in medical cannabis. Most physicians are yet unaware that continuing education courses on the benefits of medical cannabis are available to them and have been approved by the AMA for continuing education credits.

Issue: Traveling Clinics

As a direct result of statewide physician scarcity and an overwhelming number of uninsured patients in the State, traveling clinics were initially created to bring doctors to patients. Unfortunately, this well-spirited effort did not last. The "cannabis caravans" moved about the State and vast numbers of patients were seen. The number of medical cannabis recommendations being sent to DPHHS grew exponentially and caused a significant backlog in the processing of licenses. The number of licenses issued jumped from 842 at the end of 2008 to nearly 20,000 by June 2010. Questions began to be raised regarding the ethics of these clinics and the reliability of the recommendations made by the doctors involved. The Children, Families, Health and Human Services Interim Committee began to investigate the medical cannabis industry. These roving mass clinics have since been halted. First, as a result of public outcry; and secondly, as a result of the recent decision by the State Board of Medical Examiners to better regulate the standard of care offered to patients at these events.

It is estimated that 20 percent of Montana citizens between the ages of 10 and 64 have no health insurance. While the number of recommending physicians has grown 77% since June 2009, this still represents less than one (1) percent of Montana licensed physicians.

Fortunately, in some areas around the State, community clinics offer reasonable cost healthcare alternatives, however medical professionals at these facilities are generally not permitted to recommend medical cannabis for fear of losing state and/or federal funding.

This makes physician follow up care with the patients for whom they have recommended medical cannabis very problematic. While many recommending physicians work with the respective caregivers on aspects of their patient's treatment plan, more involvement is desired from the traditional medical community. The need for mobile clinics remains, and should be highly regulated if only to insure that all patients in Montana will have access to appropriate medical care.

Recommendation:

Administrative Rule

1. Require that all physicians must have a base of operations in the State of MT. Montana licensed physicians living outside of State should be fully versed on Montana law and held to the same level of compliance as those practicing in state.
2. The Montana Medical Board of Examiners would regulate mobile clinics for the ongoing care of patients.

Issue: Skype Appointments

The issue of telemedicine is not a new concept; open-heart surgery consultations can now be executed via telemedicine. There are home-bound or limited mobility patients that may require this type of medical appointment. Due to the rural nature of Montana and the overall limited number of physicians in the State, it is essential that some provision for Skype appointments for these patients be retained, however strictly regulated.

Recommendations:

Legislative

1. Require the Medical Board of Examiners to adopt administrative rules regarding Skype appointments that take into consideration physician density and availability and the rural make up in the state.

Administrative Rule

1. Mandate that initial in-person appointments are required as standard practice; however, in appropriate instances, Skype appointments are acceptable for initial appointments in limited circumstances i.e. patients with verifiable medical records and those patients who may be home bound or in remote locations. These appointments would also be used for follow-up care and return appointments. The physician recommendation form should be revised to include acknowledgement of a Skype or in-person appointment with rationale for necessity of the Skype appointment.

Issue: Medical Personnel Authorized to Make Recommendations

Currently the Montana Medical Marijuana Act states that only licensed physicians may recommend medical cannabis to a patient. There are currently 625 Advance Practice Registered Nurses (APRNs) able to prescribe medicine but denied the ability to recommend medical cannabis to a patient. In addition, there are approximately 20,000 other nursing professionals that could be involved in the care of patients, including those utilizing medical cannabis as an alternative treatment. It is proposed that APRNs be added to physicians and doctors of osteopathy who are able to recommend medical cannabis to patients. Education is critical for any medical professional recommending medical cannabis or any other pharmaceutical. By including Registered Nurses and other paramedical professionals in continuing education programs, these individuals can assist in patient assessment and patient follow up which will help to improve overall standard of care. It is more likely that these paramedical professionals, moreover than the physicians themselves, are better suited to communicate with caregivers and the providers of medical cannabis and to spend the time necessary with patients to determine an ongoing course of treatment.

Recommendations:

Legislative

1. Authorize APRNs to write medical cannabis recommendations.
2. Authorize Registered or Licensed Practical Nurses to complete the preliminary assessment of patients before referring the patient to an APRN or physician for a final recommendation.

Administrative Rule

1. Require all physicians take Continuing Education courses on **new medical alternatives** they may wish to recommend or prescribe by January 1, 2012.
2. Require all APRNs take Continuing Education courses on **new medical alternatives** they may wish to recommend or prescribe by January 1, 2012.

Issue: Adequate Standard of Care

While the Medical Board has taken a stand regarding the definition of adequate standards of care, the Board is encouraged to take further action as outlined below.

Recommendations:

Legislative

1. Grant the Medical Board of Examiners the authority to act on complaints not only against specific physicians, but also against clinics, companies, and those entities who may hire physicians.
2. Require that law enforcement officials file complaints with the Board against any physician they have probable cause to believe has made a medical cannabis recommendation in violation of the Board's Standards of Practice.

Administrative Rule

1. Require that after January 1, 2012, any physician making more than fifteen (15) medical cannabis recommendations in a given year must obtain continuing education coursework, accredited by the AMA, specific to medical cannabis science. This coursework is available online through the national cannabis science organization called Patients Out of Time.
2. Require the Medical Board of Examiners to advise all licensed physicians in the State, that AMA approved continuing education programs for medical cannabis are available.

Issue: Medical Records

Many patients do not utilize their Primary Care Physician to obtain a medical cannabis recommendation. Others do not have a Primary Care Physician because of a lack of health insurance. As a result, some patients present without medical records. It is absolutely necessary that the physician who evaluates and treats a patient requesting a medical cannabis recommendation keep precise patient records. A thorough and complete medical history and physical examination must be performed on any new patient who presents for a medical cannabis recommendation, except in the limited circumstances as cited above. Follow-up care notes and subsequent examinations, referrals and recommendations must be documented and made available for administrative review whenever requested or required.

Recommendations:

Administrative Rule

1. Require a complete physical examination of any patient who does not have verifiable medical records.
2. Require complete, precise medical records be kept and retained for any and all patients since regardless of the office setting.

Issue: Unqualified patients obtaining recommendations

The State Board of Medical Examiners has issued a revised Standard of Care that specifically addresses this issue. If individuals have received a recommendation without merit, their license will not be renewed under the new policy revisions. Suspensions of current medical cannabis licensing would be at the discretion of DPHHS.

Recommendations:

Administrative Rule

1. Penalties for physicians found to have not provided acceptable and/or adequate standards of care should also be assessed to companies openly supporting the defiance of the Medical Board's guidelines.

Issues and Recommendations Affecting Caregivers

Overview

This section of the guide will address issues that affect caregivers. The caregiver community is quite diverse in terms of prior business experience and financial means. Many caregivers have invested life savings into their new business, taking second mortgages and cashing in 401Ks. While many are new business owners, others are well schooled in professional business and operational practices. The great majority of caregivers have a deep commitment to the patients they serve, with the desire to provide the right medicine in the right form. According to DPHHS, 90% of current caregivers have ten (10) patients or less.

The MMGA began to implement some of the following recommendations after its state wide conference in October 2010. The conference featured guest panels with legislators, members of the medical community, and outstanding participation from the Departments of Agriculture and Labor and Industry. Representatives from the Department of Agriculture held seminars designed to inform caregivers about agricultural protocols. The Department of Labor spoke at length regarding worker's compensation and overall business management. In addition, classes were provided on business operations and inventory control, The MMGA has also developed industry guidelines for a Code of Ethics and a Patient Standard of Care.

According to the Montana Department of Public Health and Human Services, there were 4,807 licensed caregivers registered as of December 31, 2010.

Caregiver and Patient Distribution

Caregivers with 0 to 100 patients
In increments of: 10

2444	Caregivers with 1 Patient
695	Caregivers with 2 Patients
373	Caregivers with 3 Patients
233	Caregivers with 4 Patients
172	Caregivers with 5 Patients
117	Caregivers with 6 Patients
89	Caregivers with 7 Patients
86	Caregivers with 8 Patients
65	Caregivers with 9 Patients
56	Caregivers with 10 Patients
239	Caregivers with 11 to 20 Patients
92	Caregivers with 21 to 30 Patients
42	Caregivers with 31 to 40 Patients
26	Caregivers with 41 to 50 Patients
16	Caregivers with 51 to 60 Patients
11	Caregivers with 61 to 70 Patients
6	Caregivers with 71 to 80 Patients
8	Caregivers with 81 to 90 Patients
4	Caregivers with 91 to 100 Patients
33	Caregivers with more than 100 Patients

Issue: Licensing Board

The consensus of this summer's Work Group was that a separate licensing and regulatory board should be created to guide caregivers. As this is an agricultural product, the involvement of the Montana Department of Agriculture is critical to insure safe medicinal product. The Department has already been helpful regarding the hemp mite which has destroyed entire crops in the State.

An initial recommendation for a licensing board was made at the last Interim Subcommittee meeting held in August, 2010. This recommendation was carefully designed to provide for some industry self regulation with appropriate oversight. The recommendation includes a significant portion of the Work Group concerns and guidance. The recommendation from the summer has been updated and details of this recommended licensing board follow this section.

Recommendations:

Legislative

1. Establish a new licensing board to regulate registered caregivers in the State.

2. Oversight should be under the guidance of the Departments of Agriculture and Revenue.

Administrative

1. To adopt the proposed licensing board.

Issue: Tracking of Medicinal Product

Any successful business must know their inventory levels and customer base preferences. By tracking all medicinal products in a closed loop system, law enforcements concerns are handled. There are a number of acceptable commercial tracking programs already in place around the state. By administrative rule, a regulatory board could refine details insuring the patients and law enforcement needs were fully met. The proposed direction for tracking accomplishes the following:

- Significant reduction, if not elimination, of illegal v. legal product
- The ability for law enforcement to easily track illicit activity
- Assist caregivers with inventory control and regulatory compliance
- Insure patients receive uninterrupted supply of legal medicinal product

This has been the major issue with law enforcement. There are a number of commercial applications available and are currently being utilized by caregivers across the State. These programs track all stages of the grow cycle and subsequent distribution with full point of sale (POS) reporting. Each business should have appropriate closed loop tracking systems in place.

Recommendations:

Administrative

1. Establish standards and requirements for appropriate tracking systems for all caregivers.

Issue: Caregivers serving out of state licensed patients

This is a common practice in other states. With proper identification and reciprocal agreements between States, patients' needs can be met.

Caregivers should be permitted to serve licensed patients from other states with the following guidelines:

- Limit of 1 ounce per week per patient
- An exception should be made for terminally ill patients

Recommendation:

Legislative

1. Permit caregivers to serve licensed patients from other states.

Proposed Medical Cannabis Licensing Board (MCLB)

The Work Group, impaneled by the Children, Families, Health and Human Services Interim Committee, spent a great deal of time discussing how to best regulate and control medical cannabis in Montana. Lewis Smith, Powell County Attorney submitted a local government perspective on June 28th supporting the need for a dedicated licensing board for caregivers in Montana. With the nuances of this new industry, regulation and oversight are essential. The following recommendation to the Subcommittee has taken into consideration the positions of Mr. Smith, the consensus opinion of the Work Group, the recommendations and concerns of Mike Batista and the Department of Justice, Law Enforcement officials' concerns and the opinions of the members of the Interim Committee. We have also had discussions with the attorney for the State Department of Agriculture.

Currently, the Department of Public Health and Human Services (DPHHS) has the responsibility of licensing both patients and caregivers. If the responsibility of licensing caregivers is moved to a new board, DPHHS would only be responsible for the licensing of patients thereby significantly reducing the application processing time and would permit that department to better focus on patient license issues.

Once a patient has been approved by DPHHS, the MCLB would receive the paper work for the new caregiver. The MCLB would review and approve the new caregiver status.

There will need to be a fully integrated database of patients and caregivers so that both DPHHS and the new regulatory board can have access along with Law Enforcement and inspection entities. This access would also solve the problem of law enforcement concerns of being able to easily identify suspicious or illegal activity. Some of the following recommendations would be legislative in nature, others would be implemented by administrative rule by the new board. The MCLB should address the following concerns by all representative stakeholder groups:

- Identification and monitoring of grow facilities
- Methodology to address potential legal medicine ending up on the black market
- Tracking of plants, plant products, and usable medicine from seed/clone to patient delivery
- Quality of patient care by caregivers
- Inventory & quality control of medicine products
- Caregiver/Caregivers Issues - Complaint & Ethics Resolution Board
- Training & Continuing Education Requirements, Execution & Tracking

The responsibilities of the MCLB should include the following:

1. To sanction and regulate caregiver education, insuring that caregivers are professional, properly educated and trained, and insure that they adhere to basic levels of professional conduct and ethics.

2. To conduct a 50 state background check and, based on legislative direction, determine who may be restricted from being licensed as a caregiver or subsequently remove the licenses of existing caregivers who it is learned have prior convictions.

3. To set growing standards with the assistance the Department of Agriculture to insure that all medicine is grown with appropriate protocols and in an acceptable manner.

4. To handle the patients desire to change caregivers. It is recommended that the patient identify why they wish to change caregivers so that appropriate action may be taken if the change is due to inappropriate business practices or not meeting the mandatory standard of care that will be established by the Board. There would be a fee charged for this change to be incurred by the new Caregiver.

5. To establish and collect licensing fees. Fees would be based on the number of patients registered to a particular caregiver with additional licensing and fees required per grow facility and dispense location. The Fee structure should be sufficient to fund the new Board and be in line with other license costs in the state.

6. To establish a closed loop tracking system for all caregivers which will be a full business POS (point of sale) system and agricultural plant tracking and product storage methodology. There are a number of commercial POS systems currently in place and are being utilized by responsible caregiver operations. The regulated closed loop system should not dictate an individual POS system but require certain elements of the business to be tracked and recorded.

7. To establish inspection guidelines for grow facilities and product distribution points and sanction caregiver inspection teams to include legal compliance, health & safety, grow protocols and product quality with the assistance of the Department of Agriculture.

Once testing is more commonplace (estimate-24 months) medicine may be graded based on cannabinoid make-up, differentiating different strains for different medical conditions. This will lead to more effective labeling of medicine for the patients' benefit. This is a longer term solution and is not practical today but will be in an estimated 24 months and could be addressed by the new Board at that time.

8. To establish a protocol for patient, caregiver and public complaints. This would include complaints regarding caregiver Standard of Care and product diversion. The Board would also have a mediation alternative for the medical cannabis industry, paid for by the litigants.

9. To establish a protocol for caregivers to report patients that may be selling medicine to non-patients to DPHHS to investigate potential revocation of the patient's license.

10. To design and implement a paper license that displays the licensing level license number and the number of patients registered to that caregiver. The caregiver would be responsible for logging into the database at the end of each month and verifying the number of patients registered to him/her and printing the month-end license list. The caregiver database would be available to law enforcement 24/7 so that they can always know the current number of patients for a particular caregiver.

The patient card would no longer have the caregiver's name on it, so that when a change of caregiver is made, no new patient card need be issued. It is the responsibility of the caregiver to ONLY serve the patients to whom they are registered. If a caregiver provides medicine to a

patient not registered to them, they may be fined and/or have their caregiver license suspended. The MCLB should establish the appropriate penalties through administrative rule.

NOTE: During the Work Group session over the summer, the desire to retain Montana's Closed Loop Distribution System received near unanimous support as the most efficient way to control inventory and reduce the likelihood of illegal distribution.

11. To register grow facilities with an online interactive database so caregivers can submit quarterly updates on plant count and existing inventory. The number of plants and legal inventory should be based on a developed guideline rather than by defined statute. This gives the caregiver the opportunity within a given month both add and subtract patients without affecting plant count or inventory levels and without the need to destroy or otherwise distribute excess product. The plant and inventory count would be a guide rather than an absolute. By recording inventory and subsequent sales, appropriate tracking in the closed loop system will be enforced.

12. Edible products (medibles) and sundry products are essential to meeting a Standard of Care appropriate for each patient. These products require new definitions that are consistent with actual THC and other cannabinoid content. All such products should have appropriate nutritional and ingredient labels which would be regulated by the new Board. New research is being conducted to assist in the formulation of complete labeling. It is recommended that the State Crime Lab be directed to work with medical cannabis industry experts on formulating their recommendations to the MCLB.

Recommended Board Membership

Most of the recommendations being made in this document and in the proposed 2011 legislation are already being imposed as good business practices by caregivers around the State in the form of self regulation. The membership makeup of the MCLB is critical to insure proposed guidelines are practical and appropriate.

The recommendation is that a board of 11 be established including patient, caregiver/grower, medical, law enforcement and agricultural representation. The usual number of members is 5 - 9, but a board of 11 is recommended due to the unusual nature of this Board. It is essential that the Board makeup be representative but not stacked with any conflict of interest.

Important considerations for membership:

- No conflict of interest between any member caregivers or patients.
- Representation of different size caregivers and distribution models
- Medical representative fully supports the use of medical cannabis
- Each member should be a US Citizen and a resident of the State.
- Member patients & caregivers must have current licenses to serve
- Member caregivers may not be the caregiver of a patient Board member OR in a business affiliated with another member caregiver.

The patient members may not be affiliated either directly (as patient) or indirectly (as patient of a business affiliate of another caregiver Board member). One of the Patient members may also

be a caregiver.

The recommended board of 11 should include:

- 1 Patient with a medical cannabis license that has been active for a minimum two consecutive years.
- 1 Physician currently licensed who has made at least 20 medical cannabis recommendations over the preceding two years.
- 1 Law Enforcement/DOJ or other legal official
- 1 Representative from the State Department of Agriculture
- 1 Grower currently licensed with a minimum of two years of caregiver experience who has maintained a minimum of 50 Patients for the preceding two years.
- 1 Caregiver currently licensed with a minimum of two years of caregiver experience who has maintained a minimum of 15 but less than 50 Patients for the preceding two years.
- 1 Caregiver currently licensed with a minimum of two years of caregiver experience who has maintained a minimum of 1 but less than 15 Patients for the preceding two years.
- 1 Commercial Infused Medicine Provider.
- 1 Commercial Store Front Owner currently licensed with a minimum of two years of caregiver experience.
- 1 Public Member - Non Patient, Non Caregiver, Non Medical Practitioners, Non Law Enforcement
- 1 Member representing DPHHS

Proposed License Fee Structure

Licensed caregivers will be required to complete continuing education courses (CEUs) in order to maintain good standing. Licensees will be required to submit proof of completion of required CEUs for license renewal. The license cost structure is based in part on raising the necessary funds to operate the Board while keeping license costs somewhat in line with other licenses in the state.

Patients need to be able to change caregivers. Changes can occur for a number of different reasons, i.e. product availability, quality, price or simply convenience. As a result of a patient changing caregivers, the "patient count" and subsequent "plant and inventory count" also can change regularly with patients being added or removed from a particular caregiver. To insure proper accounting of license fees, a license fee should paid on a semi-annual basis, determined by the number of patients at the end of the reporting period. The proposed license fee structure would be sufficient to provide oversight by the Department of Agriculture and enforcement of the fee structure by the Department of Revenue.

Some of the proposed fees are one-time, others annual and some semi-annual.

One Time Fees

- Conditional Caregiver License - This would be required in advance of any new caregiver being permitted to become a caregiver. A basic examination would be required for all new caregivers PRIOR to being able to be licensed caregiver. Existing caregivers at the

time of implementation would be grandfathered by license but would be required to pay the initial license fee immediately. Within 120 days of receiving a Conditional Caregiver License, applicants must complete the required 24 hours of continuing education. Proof of completion of the required coursework must be submitted to the Board as with other licensing agencies. The funding from the conditional onetime fee will be used to defray costs for establishing the initial Board and regulatory structure. Subsequent years will provide less projected conditional license fees. During initial implementation, all caregivers would be issued a conditional license.

Conditional License Fee $35

Semi-Annual Fees

- Caregiver License - Once the Continuing Education credits have been verified, the caregiver will receive a bill from the Department of Revenue for their current authorized patient count as of that start date. A fee of $15 per patient will be due semi-annually. Following the initial start, patient count will be billed based on the final patient count for the prior period.

  Caregiver License Fee $15/patient

  Annual Fees

  Caregivers and patients may work as a collective for the purposes of grow facilities. The facility manager will be responsible for the grow facility license and MUST be a **resident** licensed caregiver. The endorsement of a collective concept between caregivers and/or patients helps to insure that patients can receive the best medical strain for their particular need. **The tracking of product solves any potential issue of diversion.**

- Commercial Store Front License – Any commercial zoned facility housing a medical cannabis related store front.

  Commercial Store Front License $1,000

- Commercial Grow Facility - Any facility growing medical cannabis for commercial purposes. This excludes patients growing their own medicine or caregivers growing less than 30 plants at that location or for less than five (5) patients.

  Commercial Grow Facility License $1,000

- Commercial Infused Medicine License – Requires Commercial Kitchen license in addition to Commercial Infused Medicine License.

  Commercial Infused Medicine License $500

- Medical Cannabis Delivery License – Transporting of medicine between facilities including grow to store, between stores, and to a patient's is essential to insure that patients receive appropriate medicinal product. The MMGA proposed tracking system

significantly reduces medicinal product diversion. Anyone transporting medical cannabis would be required to obtain a medical cannabis delivery license.

Medical Cannabis Delivery License $25

- Commercial Testing License – A location where a patient or caregiver takes cannabis or cannabis by-product for testing.

  Commercial Testing License $1,000

- Non Patient/Non Caregiver Participation License - Available for individuals working in the business but who are neither patients nor caregivers.

  Non Patient/Non Caregiver Participation License $50

  On-Going Fees

- Caregiver Change Fee - Each time a patient changes caregiver, the new caregiver will be charged a $10 fee which must be submitted with the caregiver change form.

  Caregiver Change Fee $10

The projected initial annual fees generated would equal approximately $ 1,657,090. based on the current caregiver count as of December 31, 2010, and the estimated number of different grow facilities, store front/dispensaries, infused product licenses and annual caregiver changes.

Fee Basis:

License	Costs	Count (est.)	Extension	Annual
Conditional License	$35	4,807	$168,245	$168,245
Caregiver Patient License Fee	$15 per patient	26,314	$394,710	$789,420
Commercial Store Front	$1,000	200 est.	$200,000	$200,000
Commercial Grow Facility over 60 plants at one location	$1,000	400 est.	$400,000	$400,000
Commercial Infused Medicine License	$1,000	20 est.	$20,000	$20,000

Commercial Testing License	$1,000	5 est.	$5,000	$5,000
Non Patient/Non Caregiver	$50	500 est.	$12,500	$12,500
Delivery License (over 10 Patients)	$25	477 est.	$11,925	$11,925
Caregiver Changes	$10	5000 est.	$50,000	$50,000

Potential Penalties

Any penalty system should be developed by the MCLB. Provided are some potential recommendations.

- Failure to register an existing Grow Facility within 60 days of notice given to all Caregivers of new Board regulations- $1,000
- Failure to register an existing Grow Facility within 120 days of notice given to all Caregivers of new Board regulations- $2,500
- A grow facility not registered after 120 days will be considered an illegal grow and subject to State and/or Federal prosecution.
- A caregiver found selling to NON-Patients or an unauthorized caregiver based on card count, will result in lost licensure as a caregiver.

Other Issues and Recommendations

Overview

This section of *The Legislator's Medical Cannabis Guide* will provide recommendations to address the most significant issues regarding the legislative, administrative, and judicial roles of the State in regard to registered patients and caregivers.

Some of these issues are already being addressed, in part, by various state agencies. Nonetheless, they deserve mention in this Guide.

Issue: Add PTSD as a qualifying condition

There has been some consideration of reviewing qualifying conditions by the Subcommittee, DPHHS, and the Board of Medical Examiners. With the recent action by the Veterans' Administration to permit returning veterans to utilize medical cannabis and President Obama's specific mention of PTSD as a qualifying condition, we propose the Legislature consider adding PTSD to the list of qualifying medical conditions.

Recommendation:

Legislative

1. Add Post Traumatic Stress Disorder (PTSD) as a qualifying condition.

Issue: Driving under the influence (DUI)

Ideally the Legislature would request from a crime lab or other entity scientific proof of intoxication. THC can be in someone's system for up to 25 days after utilization of medicinal cannabis. The affect of some strains as outlined in the support material show very low THC content yet traces remain in the person's system. This is a national issue as well and requires a careful scientific approach to be fair and accurate.

This issue requires research to help determine when any individual that has used medicinal product is no longer able to operate a motor vehicle.

Recommendation:

Administrative

1. Require the Montana State Crime Lab to work with industry specialists to establish an accurate testing protocol and outcome analysis regarding levels of impaired driving performance specific to medical cannabis including varying tests for different strains of medicinal product.

identifies a person as a qualifying patient or caregiver.

(9) (a) "Usable marijuana" means the dried leaves and flowers of marijuana and any mixture or preparation of marijuana.

(b) The term does not include the seeds, stalks, and roots of the plant.

(10) "Written certification" means a qualifying patient's medical records or a statement signed by a physician stating that in the physician's professional opinion, after having completed a full assessment of the qualifying patient's medical history and current medical condition made in the course of a bona fide physician-patient relationship, the qualifying patient has a debilitating medical condition and the potential benefits of the medical use of marijuana would likely outweigh the health risks for the qualifying patient.

Proposed Terminology

Term: Caregiver vs. Provider

This term can replace "Caregiver", and is meant to represent anyone involved in the manufacture, sale, distribution of medical cannabis, must be 18 years of age or older.

Recommendations:

Legislative

1. Change the word "Caregiver" to the term "Provider" which is better suited to the definition found in 50-46-102.

Term: Marijuana vs. Cannabis

One of the biggest areas of confusions by the public is in the lack of understanding regarding the differentiation between medical cannabis and marijuana. As reference, marijuana or "black market street product" is neither tested by licensed testing facilities, nor grown under appropriate agricultural protocols. Marijuana is sold illegally by individuals to other individuals and is often imported from out of state. The issue of illegal marijuana concerns everyone especially the legitimate medical cannabis community. The word *marijuana* is a Mexican slang term which became popular in the US in the late 1930's, during a series of media and government programs which were referred to as the "Reefer Madness Movement". It refers specifically to the part of cannabis which Mexican soldiers used to smoke. Medical Cannabis is now grown, in many instances, under pharmaceutical conditions, is tested for medicinal and by-product content and is then properly labeled for the patient.

Recommendations:

Legislative

1. In all legislative revisions of the current Initiative, the term *medical cannabis* should be used rather than *marijuana*.

Term: Cannabis Store Front

A retail outlet where patient(s) licensed to an individual caregiver may either walk in or by appointment purchase their medicinal product on-site. There is a significant need for store-fronts for those patients that wish to evaluate a wider variety of product available for their condition and do not mind being seen going into a location. Some cities have regulated a CAP or limited number of store fronts based on city population, with the flexibility of reviewing that count as either population or patient count in the area changes. It is recommended to avoid the term *Dispensary* as that term is widely recognized as an "open pharmacy" of sorts permitting **any** patient to obtain medicine from **any** licensed outlet. The Summer Work Group sessions arrived at the consensus that it was necessary to retain the established concept that patients should only receive their medicinal product from their designated caregiver.

Recommendations:

Legislative

1. Apply the terminology "Cannabis Store Front" in all future legislation

Term: Cannabis Home Delivery

Many patients wish to remain out of the public eye for both professional and personal reasons. Some patients are 100% home bound and require the personal attention of their caregiver. The vast majority of cannabis sold in Montana is through small caregivers serving less than 20 patients with the majority involving home delivery. These are small caregivers who cannot afford to open a store front but have invested significant funds into their grow facilities.

Recommendations:

Legislative

1. Apply the terminology "Cannabis Home Delivery" in all future legislation

Term: Cannabis Grow Facility

A commercial grow facility is the physical location where the medical cannabis is grown and may be a different location from that of a store front, or the main place of business of the caregiver. The caregiver may have one or more grow locations. Through inspection, it should be insured that the facility has proper electrical, odor mitigation, plant count to cards, fire safety and security.

Plant Terminology

Recommended plant terminology in all future legislation:

When discussing the actual cannabis plants, their definition should be based solely on scientific fact. Cannabis plants only have significant medical benefit once they are in the flowering stage. Vegetative plants have inconsequential medicinal impact. The recommendation is to qualify separately vegetative and bloom plants. In most instances for indoor grow facilities; the grower determines at what point the plants move from a vegetative state to a bloom state. This change significantly reduces inspection time for law enforcement.

> **Term:** *Bloom Plant* - A bloom plant is a plant that has begun to flower or has begun the flowering stage.
>
> **Term:** *Vegetative Plant* - Clones or any rooted plant not in the bloom cycle. Many varieties require lengthy vegetative schedules and may include "mothers" or plants not going to bloom but are used for cloning.
>
> **Term:** *Seed* - There is no medicinal efficacy in seeds and therefore does not require specific regulation.
>
> **Term:** *Trim* - When a plant is harvested, there is waste plant material that is either discarded or used for low level production of other by-products. The medicinal content of trim is significantly less than bud or flower material. There is minimal medicinal efficacy in trim and therefore does not require specific regulation or control.

Term: Medical Cannabis - The actual bud or flower of the plant. Bud has different stages, usable and unusable.

> **Term:** *Usable Medical Cannabis* - The product has been properly cured and is ready for sale.
> **Term:** *Unusable Medical Cannabis* - The product is in the curing stage and is not ready for sale.

Term: Allowable Medical Cannabis **-** It is recommended that allowable cannabis amounts be designated differently for patients and caregivers.

> **Term:** *Patient Allowable Cannabis* **-** 1 ounce per week from their caregiver unless documented by the caregiver with supporting rationale from the recommending physician. Examples would be terminally ill patients or far remote patients where delivery is problematic. A patient may maintain his/her own six bloom plants and retain the yield in full.
>
> **Term:** *Caregiver Allowable Cannabis* **-** It is a caregiver's responsibility to have an ongoing supply of medicinal product for their patients. The limit should be six flowering plants per patient with no restrictions on usable product. Transparent tracking and reporting by caregivers eliminate the possibility of any black market activity either in bound or out bound and will insure an uninterrupted supply of legal, quality product for the patient.

Methodology for Distribution & Tracking of Medical Cannabis

Law Enforcement officials expressed a desire for a methodology to be in place to determine if a caregiver is operating within the law. Although the MMGA has provided some training on business practices, there is currently no uniform standard in place for the tracking of plant count, plant material, and/or medicine or medicinal by-products.

Legal representatives on the Work Group came to a unanimous consensus that if appropriate and complete tracking were instituted and subsequently monitored, they would be more easily able to inspect and determine if all involved were compliant under the Initiative in whatever form it may take.

Many caregivers already utilize some form of tracking system which includes plant count, licensed patients' buying patterns, available inventory and forthcoming anticipated harvests. There is currently a review in process of a number of different "best practices" to help determine the most practical and efficient way to track in a 100% transparent manner.

The following items should be included in all transparent record keeping. This is a representative sample and not intended to be a complete listing.

1. Production facility tracking:

    - Track date and strain seeded or cloned
    - Track all stages of production - clone, vegetative, bloom, harvest, curing, ready for sale
    - When the plant is harvested it is weighed, and weighed again after drying and then again after curing and ready for sale.

Any medicine ready for sale is weighed in and the information on weight, strain, genetics (Indica/Sativa percentage) and so forth are entered in the POS. Consistencies have been shown in the shrink (loss of weight) metrics that occur naturally due to many factors including drying out.

2. Sales Tracking

All cannabis is received into the tracking system by weight, strain, method of delivery, and/or source. This will accommodate Caregiver-to-Caregiver transactions that are necessary to maintain appropriate patient Standard of Care.

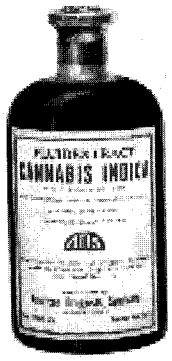
Law Enforcement would be able to review all sales by a Caregiver, track where the product originated and where it was ultimately sold. Under this system, sales are linked to a specific MMP card number which provides metrics on what patients are purchasing (strain, amount, frequency, etc.) As each purchase is made, the inventory decreases in the POS and when all medicine is gone there should be none in the inventory. It is estimated that between 5 and 10% of weighed medicine may be lost due to spillage or product degradation. Discrepancies caused by this should be listed in a separate waste/loss category. This lower grade material

The History of Medicinal Cannabis

Background

As early as 2737 B.C., the mystical Emperor Shen Neng of China was prescribing cannabis tea for the treatment of gout, rheumatism, malaria and, oddly enough, poor memory. The drug's popularity as a medicine spread throughout Asia, the Middle East and down the eastern coast of Africa, and certain Hindu sects in India used cannabis for religious purposes and stress relief. Ancient physicians prescribed cannabis for everything from pain relief to earache to childbirth.

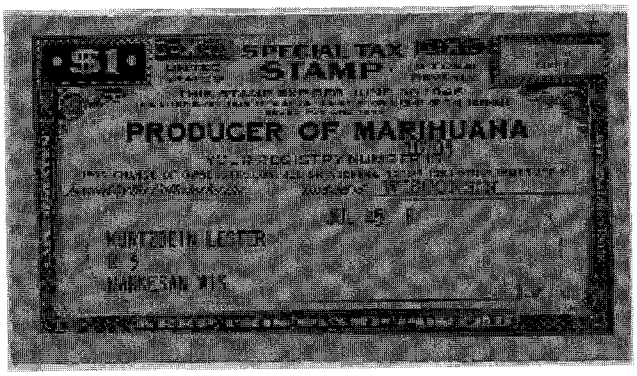
In terms of American history, it was reported that in 1492 Christopher Columbus brought cannabis as rope of hemp into the New World. In 1619, Jamestown colony law declared that all settlers were required to grow cannabis. George Washington grew cannabis for fiber production at Mount Vernon as his primary crop.



By the late 18th century, early editions of American medical journals showed recommendations of hemp seeds and roots for the treatment of inflamed skin, incontinence and venereal disease. Irish doctor William O'Shaughnessy first popularized cannabis's medical use in England and America. As a physician with the British East India Company, he found cannabis eased the pain of rheumatism and was helpful against discomfort and nausea in cases of rabies, cholera and tetanus.

The change in American attitudes toward cannabis came at the end of the 19th century, when between 2% and 5% of the U.S. population was unknowingly addicted to morphine, a popular secret ingredient in patent medicines. To prevent more of the country from morphine addiction, the government introduced the Pure Food and Drug Act in 1906, creating the Food and Drug Administration. While it didn't apply to cannabis and merely brought the distribution of opium and morphine under a doctors' control, the regulation of chemical substances was a major shift in American drug policy.

It wasn't until 1914 that drug use was defined as a crime, under the Harrison Act. To get around states' rights issues, the act used a tax to regulate opium- and coca-derived drugs; it levied a tax on nonmedical uses of the drugs that was much higher than the cost of the drugs themselves, and punished anyone using the drugs without paying the tax. The Cannabis Tax Act of 1937 made possession or transfer of cannabis illegal throughout the United States under federal law, excluding medical and industrial uses, in which an expensive excise tax was required. Annual fees for the tax were $24 for importers, manufacturers, and cultivators of cannabis, $1 annually for medical and research purposes, and $3 annually for industrial uses. Detailed cannabis sale logs were required to keep record of cannabis sales. Cannabis could be sold to any person who has previously paid the tax at $1 per ounce or fraction thereof; however, it was $100 per ounce or fraction thereof if sold to any person who had not registered and paid



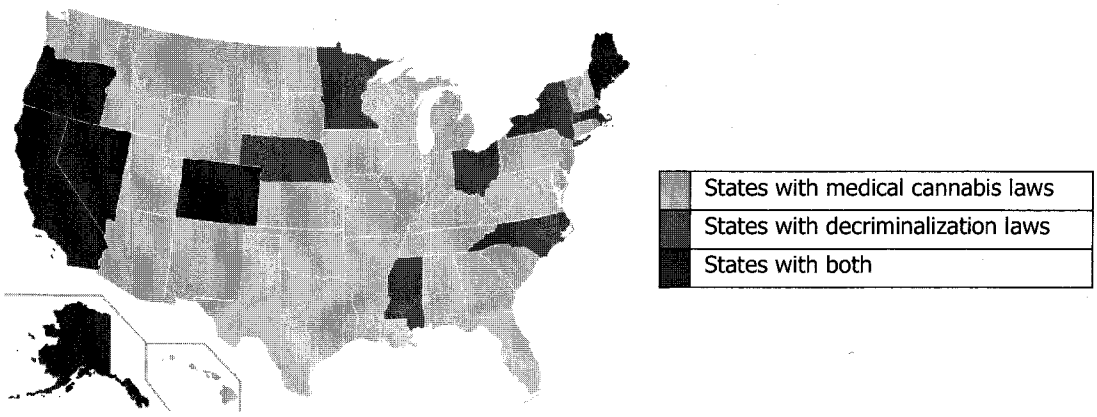
the special tax.

With an exception during World War II, when the government planted huge hemp crops to supply naval rope needs and make up for Asian hemp supplies controlled by the Japanese, cannabis was criminalized and harsher penalties were applied. In the 1950s Congress passed the Boggs Act and the Narcotics Control Act, which laid down mandatory sentences for drug offenders, including cannabis possessors and distributors.

In 1969, the Supreme Court held the Marijuana Tax Act to be unconstitutional since it violated the Fifth Amendment privilege against self-incrimination. In response, Congress repealed the Marijuana Tax Act and passed the Controlled Substances Act as Title II of the Comprehensive Drug Abuse Prevention and Control Act of 1970.

Despite an easing of cannabis laws in the 1970s, the Reagan Administration's get-tough drug policies the following decade applied to cannabis as well. Still, the long-term trend has been toward relaxation. Since California became the first state to legalize medical cannabis in 1996, fourteen other states have followed suit.

In October 2009, President Barack Obama instructed Attorney General Eric H. Holder Jr. to direct federal prosecutors to back away from pursuing cases against medical cannabis patients, signaling a broad policy shift that drug reform advocates interpret as the first step toward legalization of the drug. The government's top lawyer said that in the 14 states with some provisions for medical cannabis use, federal prosecutors should focus only on cases involving higher-level drug traffickers, money launderers or people who use the state laws as a cover.



Furthering the shift in opinion regarding medical cannabis, the American Medical Association adopted a resolution in November 2009 calling for the Federal government to review its classification of cannabis as a Schedule I drug, in order to ease the way for more research into its use.

Medical Use of Cannabis in the United States

In 1978, Robert Randall sued the federal government for arresting him for using cannabis to treat his glaucoma. The judge ruled Randall needed cannabis for medical purposes and required

the Food and Drug Administration set up a program, called the Federal Compassionate IND Program, to grow cannabis on a farm at the University of Mississippi and to distribute 300 cannabis cigarettes a month to Randall. In 1992, George H. W. Bush discontinued the IND program after Randall tried to make AIDS patients eligible for the program. At the time, thirteen people were already enrolled and were allowed to continue receiving cannabis cigarettes; today the government still ships cannabis cigarettes to six people. Irvin Rosenfeld, who became eligible to receive cannabis from the program in 1982 to treat rare bone tumors, urged the George W. Bush administration to reopen the program; however, he was unsuccessful.

In 1972, 1995, and 2002, petitions for cannabis rescheduling in the United States were filed to remove cannabis from the "Schedule I" category of tightly-restricted drugs that have no medical use, as the Controlled Substance Act allows the executive branch to decriminalize medical and recreational use of cannabis without any action by Congress depending on the findings of the Secretary of the United States Department of Health and Human Services on certain scientific and medical issues specified by the Act.

DEA and NIDA opposition prevented any scientific studies of medical cannabis for more than a decade, but in the 1990s, activists and doctors were energized by seeing cannabis help dying AIDS patients. A study of smoked cannabis at the University of California, San Francisco, under Dr. Donald Abrams was approved after five years. Further research followed, particularly due to a ten million dollar research appropriation by the California legislature. The University of California coordinates this research. However, there are still significant barriers, unique among Schedule I substances, to conducting medical cannabis research in the US. Many years of work remain before sufficient research could be approved and conducted to meet the FDA's standards for approving cannabis as a new prescription medicine.

Montana Medical Marijuana Law

The State of Montana legalized the medical use of cannabis in 2004 by a 62% referendum vote. The Montana Medical Marijuana Program, administered by the Department of Health and Human Services licenses and permits a patient to grow six (6) plants and have in their possession one (1) usable ounce. The patient may also select a caregiver, a person who may also grow six (6) plants and possess one (1) usable ounce for that patient.

In order for persons to participate in the medical marijuana program, they must be diagnosed with a debilitating medical condition. A debilitating medical condition is defined as:

> (a) cancer, glaucoma, or positive status for human immunodeficiency virus (HIV), acquired immune deficiency syndrome (AIDS), or the treatment of these conditions;
>
> (b) a chronic or debilitating disease or medical condition or its treatment that produces one or more of the following:
>
> (i) cachexia or wasting syndrome;
>
> (ii) severe or chronic pain;

(iii) severe nausea;

(iv) seizures, including but not limited to those caused by epilepsy; or severe or persistent muscle spasms, including but not limited to those caused by multiple sclerosis or Crohn's disease; or any other medical condition or treatment for a medical condition adopted by the department by rule.

The new law also allows qualified patients and their caregivers to grow and/or possess a restricted number of marijuana plants.

Montana is the 10th state to pass a medical marijuana law. Under federal law, it is still illegal to grow, sell, purchase, or use marijuana, even for health-related reasons.

To use or grow marijuana under the Montana law, patients and caregivers must first register with the Quality Assurance Division of the Department of Public Health and Human Services.

Montana's Medical Cannabis Industry as of January 1, 2011

A medical cannabis license is commonly known as a "green card." There are currently more than 27,000 patients licensed by the state of Montana. Enrollment in the program steadily increased in the first four years of the Initiative's passage, but escalated sharply in late 2009 as a result of roving "cannabis caravans". Since November 2009, there has been a more than 100% increase in total patient count. The frequency of these clinics has dropped since the Montana Board of Medical Examiners issued its recommendation that licensed physicians in Montana must strive to maintain the necessary standard level of care that is required in any other practice of medicine.

How Medical Cannabis is Sold in Montana

Licensed patients may grow their own plants and they may designate another person as their registered caregiver to grow on their behalf. There are currently over 4,800 licensed caregivers in the State. The majority of caregivers (approximately 85%) are small hobbyist growers, mom and pop operations, with four (4) or fewer patients. Just a handful of large professional caregiver/growers, only 5% of registered caregivers, have more than fifteen (15) patients.

Montanans have created a number of new business models to embrace this new industry. These include growing co-ops, contract growing, and storefront distribution sites. Due to Montana's extreme climate, most medical cannabis farm facilities in Montana are inside grow facilities. Some farm facilities produce a minimal number of strains while others may carry between 20-25 different strains. In Montana, outside growing results in one crop per year, while inside grows can anticipate 3 to 4 crops per year.

Many caregivers utilize home delivery to patients. While there are some state-wide home delivery caregiver services, most are local and regional due to the long traveling distances within the State. Some caregivers sell medicine to patients in storefront locations. These storefronts may ONLY serve medicine to patients who have selected a representative of that storefront as their caregiver.

Unlike some other states, the storefront is NOT an open dispensary that can serve any patients holding a license.

No cannabis product of any kind may cross ANY state line.

The Future of Medical Cannabis in Montana

The growth in patient count in the past year has brought increasing need for regulation. Some local jurisdictions have attempted to avoid the issue with an outright ban while other cities have taken an understanding approach to the needs of the patient attempting to bring a consensus at the local level. Forward thinking cities like Bozeman and Ennis have worked with caregivers and patients in their area to create comprehensive zoning laws that take into consideration the needs of the medical cannabis community and the feelings of the general public.

Some people object to medical cannabis being called an industry. With many voter initiatives and legislative actions there are often unintended consequences. There are times those unintended consequences are good and positive and other times fail to accomplish the intended objective. A positive outcome of medical cannabis in Montana is a growing young agricultural industry. The unemployed are finding jobs, mortgages are being paid and homes avoiding bankruptcy. Patients are receiving high quality medicine, and in most instances appropriate standard of care. That is not to say the industry does not need additional training and education. Businesses supporting this new industry have expanded operations, purchased or rented new buildings, added staff and we now see specialization, including testing services, chefs and kitchens, security services, and growing facilities that specialize in one or a handful of strains of marijuana. As testing facilities become more prevalent some caregivers may grow specific strains for particular medical conditions, and all medicine will have appropriate labeling. It is anticipated that by the end of 2012 approximately 90% of all medical cannabis and related products will be quality and potency tested and appropriately labeled.

Caregivers today represent a number of different business models, including very small caregivers that provide medicine to close relatives and friends to very large caregiver organizations with employees and sophisticated tracking and monitoring systems. Some caregivers utilize a store front to serve patients while others use home delivery especially for patients who wish to maintain some anonymity. Bakers and cooks with other specialty edible products are in the testing stages of developing dose controlled exactness to offer alternative delivery options of the medicine to a patient.

Training programs have been conducted for the industry providing guidance for new business owners in traditional business practices and requirements, ethics and appropriate agricultural protocols. The medicine grown in Montana is of the highest quality.

Physicians and nurses who recommend medical cannabis for their patients are now afforded the opportunity to increase their knowledge of what this treatment can do by enrolling in Continuing Education courses through the compassionate educational forum, Patients Out of Time. Seminars and other coursework, all accredited by The University of California, San Francisco School of Medicine, are now available online for physicians to earn CMEs and nurses

and other healthcare professionals to earn contact hours for their continuing education requirements. CE courses provided by Patients Out of Time are accredited by the American Medical Association and the American Nurses Association.

The Montana Medical Growers in cooperation with Solutions for Montana and Malcolm Fowlie, Outlaw Hill Health & Sustainability Institute conducted a preliminary Economic Impact Study on medical cannabis in Montana. The results from that study follow:

Economic Impact Study Data

Caregiver Respondents

Respondent patient count ranged from 10 patients to 350 patients

Respondent businesses have an average of 2.6 different caregivers involved in the business unit
25% have 5 or more caregivers participating in the business unit

67% belong to the Montana Medical Growers Association

Employment

Approximately 70% of employees were previously unemployed.

Approximately 61 people employed per 1,000 patients. (Estimated 1,400 jobs)

Caregiver Costs & Expenses

On average, 76% of monthly expenses are spent in local communities and 94% spent in Montana.

$600—$1,000 estimated startup cost per new patient

Approx. $35 spent per patient per month on power - $675,000/mo $8,100,000 annually

Approx. $13 spent per patient per month on water & fertilizer - $351,000/mo $4,212,000 in non power utilities & fertilizer, etc. For the 27,000 registered patients, this would equal $1,180,000 spent per month

(All estimates exclude costs of patients growing their own).

Pricing & Testing of Medical Product

The average retail price is $248 per ounce, 17% less than year ago.

56% of caregivers provide free or reduced price medicinal product to some patients

25% of caregivers currently have some of their medicinal product tested

Of those caregivers who test, between 5 – 70% of medicinal product is tested

Caregiver Statistics

50% of caregivers have Delivery only businesses

5% of caregivers run Store Front businesses

44% have both Store Front and Delivery businesses

81% of the Caregivers grow 100% of the medicine for their patients

67% of medicine sold grown by patients designated Caregiver

94% of Caregivers limit patient purchases to one ounce per week

75% offer Medibles, of those, 31% purchase from another supplier, 46% make their own and 23% do both

38% offer Sundry Products, with 57% acquiring from another supplier

Cannabis Life Cycle

The following provides a glimpse into the Life Cycle of a Cannabis Plant. This is meant to be a guide and not an absolute as each strain of Cannabis may require different time sequences. Individual growers may also have different growing, harvesting and curing techniques which may significantly alter the time frames indicated.

Cannabis is an annual dioecious (unisexual) flowering plant. To elaborate, it germinates from a seed, reaches sexual maturity, reproduces and dies all within one year when growing wild. Its flowers are unisexual so males and females are distinct plants, but hermaphrodites have been continually documented.

Modern cultivation techniques can be employed to extend a plant's natural life cycle, sometimes almost indefinitely through cloning, allowing favorable phenotypes to exist continually without relying on the blind luck associated with random genetic shuffling present from natural sexual reproduction. The time for a branch to form roots is between 5 and 20 days, following which the branch can be considered an independent plant capable of full growth, with the same genetics as its mother.

The entire cannabis life cycle is described below; clones begin as little more than a branch, until advantageous roots form at which time the plant most closely resembles a seedling, and eventually moves into a full vegetative phase.

Germination

Germinating of cannabis seeds requires stratification (absorbing sufficient water) along with darkness to initiate key metabolic processes that begin sprouting a seedling. Depending on the age of a seed initial germination may take from a day up to eight; the taproot firmly anchors in the ground and 2 cotyledons emerge within 2-4 days. There is no medicinal value during the germination period.

- Total Time: 3-12 Days

Seedling

A cannabis plant is considered a seedling once its cotyledons are exposed and actively beginning transpiration and photosynthesis. For clarification, cotyledons are the two small circular leaves that first sprout from a seed; they differ markedly from the distinctive rigged angular leaves that follow soon after. During this period a plant exhibits marked phototropism, growing and extending towards whatever light source offers the appropriate wavelengths. Fluorescent lights are primarily employed because the plant does not require high quality low wavelength red light present in high pressure sodium lights, and it

does not require the quantity of light or the heat emitted by metal halide bulbs. A very experienced grower may be able to "sex" the plant at this stage, however generally a plant is not "sexed" to know if it is a male or female plant until the 2nd week of the Bloom cycle. Once a male plant has been identified, it is generally destroyed by the grower. There is no medicinal value during the germination period.

- Total Time: 1-4 Weeks

Vegetative

The vegetative phase of cannabis development exhibits the greatest increase in biomass and total growth. Root growth extends considerably to cope with the drastic increase in nutrient demand, large leaves begin to grow to produce adequate surface area for photosynthesis, and transpiration is dramatically increased so water intake must also be increased. This period resembles natural summer growth, with an absence of low wavelength red light and metal halide bulbs being employed primarily for their strong short wavelength blue light. The photoperiod during this time always follows more light per day than darkness, a crucial component in avoiding early flowering. Cannabis is short day quantitative, and flowering depends on the quality of the light it receives, as well as how much of a lack rather than quantity it receives. Some growers leave plants in a vegetative state for a greater length of time. This can include plants used as mothers (a plant that is used ongoing for cloning. While the cannabinoids begin to slowly develop in this stage there is no significant medicinal affect or efficacy for vegetative plants. For this reason, some states laws medical cannabis laws count vegetate plants differently than flowering plants.

- Total Time: 1-2 Months

Transitional (Pre-Flowering)

During this brief period nutrient intake increases dramatically as growth can sometimes double in an extremely short time. This change involves the plant expending as many nutrients as possible growing as much as possible before its hormonal changes signal reproduction. This stage in plant development can be artificially forced by limiting exposure to light to 12 hours a day with 12 hours darkness following. Cannabis contains the same photoreceptors present in many plants that inhibit flowering as a response to light exposure. Only by limiting the amount of light and increasing the amount of darkness can a cannabis plant be flowered. This stage prepares the plant for the flowering stage and the subsequent development of the different cannabinoids.

- Total Time: 1-2 weeks

Flowering

The reproductive phase of cannabis development involves profound hormonal changes brought upon by an increase in red and far red wavelengths of light (provided in controlled settings primarily by high pressure sodium bulbs) and by the change in photoperiod described above in the transitional period. This period presents the first dramatic

increase in THC, CBD and the various other cannabinoids present in high concentrations in female cannabis times. Prior to the flowering stage trace amounts are present in plant tissues, but in quantities that could never intoxicate. Only once flowering is initiated and the plant begins to expend more of its energy in calyx production to increase surface area for the resulting trichomes does the plant begin to produce cannabinoids in abundance. The flowering time varies greatly between strains. When the plant is harvested in the flowering cycle determines mix and level of each cannabinoid. Some strains are harvested early or late to maximize the performance of different cannabinoids. The flower or bud stage is where the plant begins to develop significant medicinal benefit.

- Total Time: 1-4 Months

Harvesting & Curing

Following flowering and a 'flush' or decrease in nutrients and water if it is taking place, the cannabis is ready to harvest. Harvesting cannabis involves trimming and drying the product with some time taken afterward to cure it to a finished medicine. Trimming is time and labor intensive, the desirable part of the cannabis plant is the flower or bud, specifically the calyxes

containing the most cannabinoids. Leaves contain very low amounts of cannabinoids respectively and a larger number of harmful combustion related byproducts when smoked. Trimming and drying involves removing the large fan leaves and cutting the smaller ones with scissors, hanging the product upside down for several days, and trimming the remaining leaves off after that. Curing involves placing the product in glass jars for several days at a time, allowing periods of fresh air exposure and rotation of the product. Curing promotes chlorophyll and sugar breakdown, removes the remainder of water, and improves the taste and consistency of finished medicine. Some grow experts believe that curing time can be months rather than weeks. While the trim or plant material removed has some value it is significantly less than the flower or bud. For this reason plant material must be considered differently than the flower or bud material.

- Total Time: 14-60 days

Sources

Greg Green (2001). *The Cannabis Grow Bible*

Jorge Cervantes. *Marijuana Horticulture*

USDA, ARS, National Genetic Resources Program. *Germplasm Resources Information Network - (GRIN)* [Online Database]. National Germplasm Resources Laboratory, Beltsville, Maryland.

The Endocannabinoid System is a Unique Manifestation of Evolution

Evolution, driven by the physical laws of from equilibrium thermodynamics, has selected the endocannabinoid system as an all-pervasive homeostatic regulator.

For example, there are two major types of cannabinoid receptors found throughout the human body, CB1 (CNR1) and CB2 (CNR2). CB1 is quite brain and nervous system specific, and CB2 is found throughout the peripheral organs and tissues throughout human, mammal, and indeed all vertebrate species. The converse is also true: CB1 receptors can be found in many organs, and CB2 can be found centrally.
These endocannabinoid receptors play a unique role in homeostasis and many other critical body functions. Our endocannabinoids, 2-Arachidonyl Glycerol (2-AG) and anandamide (Sanskrit for bliss) are produced and degraded on demand relatively quickly.

The high number of genes, receptors, tissues, organs, organ systems, etc. with cannabinoid activity of some kind explains the ability of phytocannabinoids to modulate many disease states. Furthermore, recent scientific discoveries are confirming that some of these disease states could be due to endocannabinoid system deficiencies.

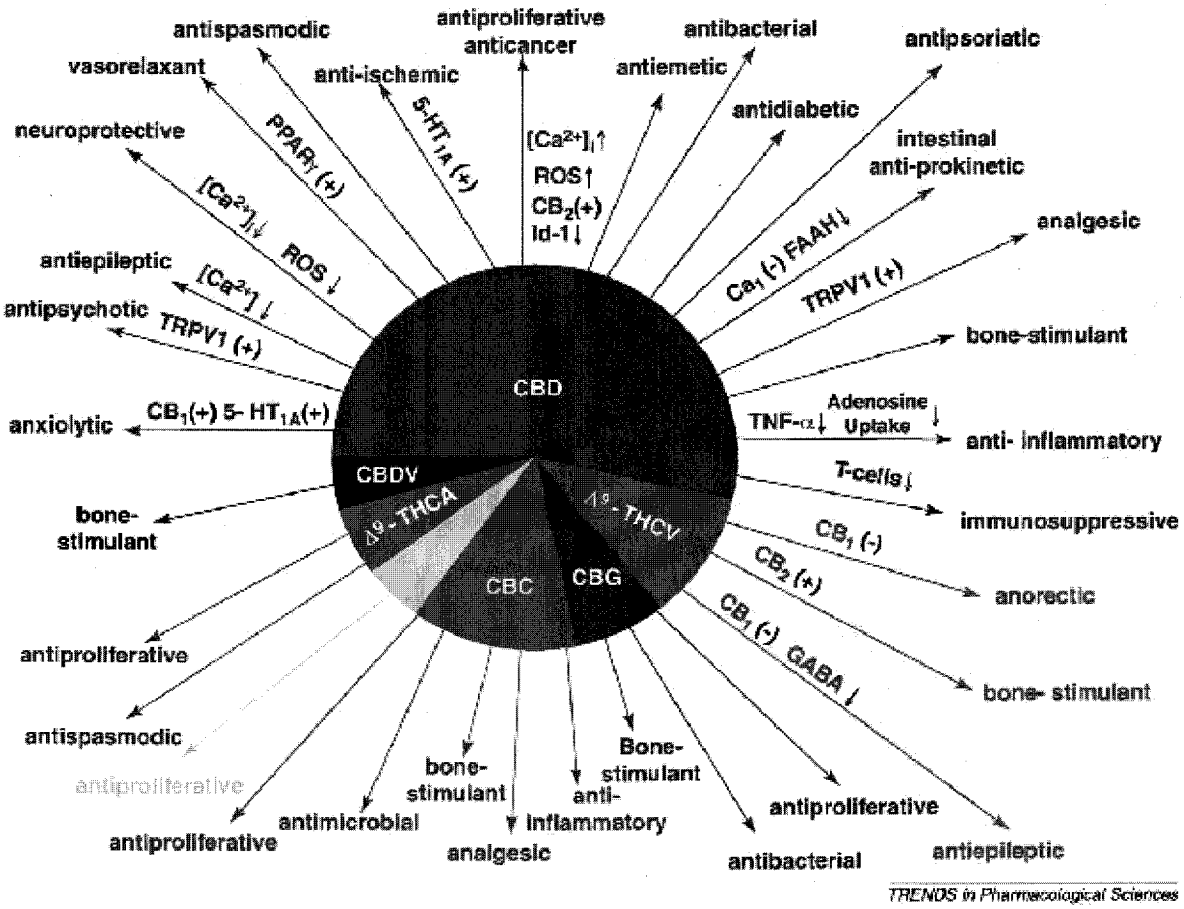
When a plant is outlawed that inhibits aging, including age-related illnesses such as: Autoimmune Diseases, Cardiovascular Diseases, Osteoporosis, Neurological Disorders, and Cancer, the ability for the world to effectively treat and prevent disease thorough safe, non-toxic means is diminished.

We are now presented with unprecedented business and scientific opportunities responsible for driving change that will profoundly alter our current physician/big pharma healthcare model.

Source:

Cannabinoids: Potential Anticancer Agents
Manuel Guzman. Nature Reviews Cancer 3, 745-755 (October 2003)
Central and Peripheral Signaling Mechanisms Involved in Endocannabinoid Regulation of Feeding:
A Perspective on the Munchies
Keith A. Sharkey* and Quentin J. Pittman

The following pie chart shows the impact different cannabinoids may have on certain medical conditions.



TRENDS in Pharmacological Sciences

Medical Cannabis and Its Use with Current Qualifying Conditions

This information contained in this chapter is intended to be a starting point for the consideration of applying medical 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.

Between 1840 and 1900, European and American medical journals published more than 100 articles on the therapeutic use of the drug known then as Cannabis Indica (or Indian hemp) and now simply as medical cannabis. Today, new studies are being published in peer-reviewed journals that demonstrate medical cannabis has medical value in treating patients with serious illnesses such as AIDS, glaucoma, cancer, multiple sclerosis, epilepsy, and chronic pain.

The use of medical cannabis has been endorsed by numerous professional organizations, including the American Academy of Family Physicians, the American Public Health Association, and the American Nurses Association. Its use is supported by such leading medical publications as *The New England Journal of Medicine* and *The Lancet.*

MEDICAL CANNABIS AND HIV/AIDS

The effectiveness of medical cannabis for treating symptoms related to HIV/AIDS is widely recognized. Its value as an anti-emetic and analgesic has been proven in numerous studies and has been recognized by comprehensive government-sponsored reviews, including those conducted by the Institute of Medicine (IOM), the U.K. House of Lords Science and Technology Committee, the Australian National Task Force on Cannabis, and others. The IOM 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." The University of California's Center for Medicinal Cannabis Research is currently conducting three HIV/AIDS related studies: two on medical cannabis as treatment for neuropathy, a condition which afflicts AIDS, diabetes and other patients with severe tingling and pain in their hands and feet, and one on how repeated treatment with medical cannabis affects the driving ability of patients with HIV-related neuropathy.

Recent research published found that nearly one-quarter of AIDS patients were using medical cannabis. A majority reported relief of anxiety and/or depression and improved appetite, while nearly a third said it also increased pleasure and provided relief of pain.

AIDS wasting syndrome was a very frequent complication of HIV infection prior to the advent of protease-inhibitor drugs, and has been associated with major weight loss and cachexia, conditions that further debilitate its victims, who are already weakened by immune system failure and opportunistic infections. Medical cannabis has been a frequently employed

alternative medicine for the condition, particularly in the USA, because of its reported benefits on appetite and amelioration of other AIDS symptoms.

MEDICAL CANNABIS AND MULTIPLE SCLEROSIS

An estimated 350,000 people in the United States are living with multiple sclerosis (MS), a painful, debilitating, and sometimes fatal disorder of the central nervous system. MS is the most common debilitating neurological disease of young people, often appearing between the ages of 20 and 40, and affecting more women than men. Symptoms vary considerably from person to person; however, one frequently noted is spasticity, which causes pain, spasms, loss of function, and causes difficulties in nursing care.

MS exacerbations appear to be caused by abnormal immune activity that causes inflammation and the destruction of myelin (the protective covering of nerve fibers) in the brain or spinal cord. MS most frequently presents at onset as a relapsing and remitting disorder, where symptoms come and go. Current treatment of MS is primarily symptomatic, focusing on such problems as spasticity, pain, fatigue, bladder problems and depression.

Anecdotal reports and a small controlled study have reported that medical cannabis improved spasticity and, to some extent, improved tremor in MS patients. Many studies of the pharmacology of medical cannabis have identified effects on motor systems of the central nervous system that have the potential of affecting tremor and spasticity. A recent carefully controlled study of the efficacy of THC in experimental allergic encephalomyelitis, the animal model of MS, demonstrated significant amelioration of these two MS symptoms. Moreover, medical cannabis has demonstrated effects on immune function that also have the potential of reducing the autoimmune attack that is thought to be the underlying pathogenic process in MS.

Many MS patients report that medical cannabis has a startling and profound effect on muscle spasms, tremors, balance, bladder control, speech and eyesight.

Numerous case studies, surveys and double-blind studies have reported improvement in patients treated with cannabinoids for symptoms including spasticity, chronic pain, tremor, sexual dysfunction, bowel and bladder dysfunctions, vision dimness, dysfunctions of walking and balance (ataxia), and memory loss. Cannabinoids have been shown in animal models to measurably lessen MS symptoms and may also halt the progression of the disease.

In comparison to standardized pharmaceutical treatments, the side effects associated with medical cannabis are typically mild and are classified as "low risk." Euphoric mood changes are among the most frequent side effects.

MEDICALCANNABIS AND ARTHRITIS

More than 31 million Americans suffer from arthritis. There are two common types of arthritis, rheumatoid arthritis and osteoarthritis, but both affect the joints, causing pain and swelling, and limiting movement.

Rheumatoid arthritis is caused by a malfunction of the immune system. Instead of fighting off intruders such as bacteria or viruses, the body attacks the synovial membranes, which facilitate the movement of joints, eventually destroying cartilage and eroding bones. Rheumatoid arthritis is most common among the aged, whose immune systems are no longer as robust or efficient. Osteoarthritis, or arthritis of the bones, is also found primarily among the elderly, where cartilage has been worn away through many years of use. Arthritis may also manifest as chronic inflammation of the joints as the result of injuries.

The use of medical cannabis as a treatment for musculoskeletal pain in Western medicine dates to the 1700s. Evidence from recent research suggests that medical cannabis-based therapies are effective in the treatment of arthritis and the other rheumatic and degenerative hip, joint and connective tissue disorders. Since these are frequently extremely painful conditions, the well-documented analgesic properties of cannabis make it useful in treating the pain associated with arthritis, both on its own and as an adjunct therapy that enhances the efficacy of opioid painkillers.

But medical cannabis has also been shown to have powerful immune-modulation and anti-inflammatory properties, suggesting that it could play a role in treating arthritis, and not just in symptom management. In fact, one of the earliest records of medical use of cannabis, a Chinese text dating from ca. 2000 BC, notes that cannabis "undoes rheumatism," suggesting its anti-inflammatory effects were known even then.

Modern research on cannabidiol (CBD), one of the non-psychoactive components of medical cannabis, has found that it 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.

Human studies have shown medical cannabis to be an effective treatment for rheumatoid arthritis, one of the many recognized conditions for which many states allow legal medical use. Medical cannabis has a demonstrated ability to improve mobility and reduce morning stiffness and inflammation. Research has also shown that patients are able to reduce their usage of potentially harmful Non-Steroidal Anti-Inflammatory drugs (NSAIDs) when using medical cannabis as an adjunct therapy.

Conventional Arthritis Medications

Nearly 100 medications are listed by the Arthritis Foundation for use with arthritis or other related conditions, such as fibromyalgia, psoriasis, osteoporosis and gout. These medicines include aspirin, ibuprofen and other oral and topical analgesics that dull pain. It is reported that about 60% of patients will respond to any single NSAID. Approximately 10% of rheumatoid arthritis patients will not respond to any NSAID.

By comparison with traditional pharmaceutical therapies, the side effects associated with cannabis are typically mild and are classified as "low risk." Euphoric mood changes are among the most frequent side effects.

MEDICAL CANNABIS AND CANCER

Medical cannabis has been found to help cancer patients with pain and nausea, and recent research indicates it has tumor-reducing and anti-carcinogenic properties as well. It has proven highly effective at controlling the nausea associated with chemotherapy, and its appetite-stimulation properties help combat wasting. Medical cannabis can also help control the pain associated with some cancers, as well as that resulting from radiation and chemotherapy treatment.

Medical cannabis and chemotherapy side effects

One of the most widely studied therapeutic applications for medical cannabis and the pharmaceutical drugs derived from cannabinoids is in the treatment of nausea and vomiting associated with cancer chemotherapy. Numerous clinical studies have reported that the use of cannabis reduces nausea and vomiting and stimulates appetite, thereby reducing the severity of cachexia, or wasting syndrome, in patients receiving chemotherapy treatment.

In the last three years, there have been major advances in both cannabinoid pharmacology and in understanding of the cancer disease process. In particular, research has demonstrated the presence of numerous cannabinoid receptors in the nucleus of the solitary tract, a brain center important in control of vomiting.

Although other recently developed anti-emetics are as effective as or more effective than oral THC, nabilone or smoked cannabis, for certain individuals unresponsive to conventional anti-emetic drugs, the use of smoked cannabis can provide relief more effectively than oral preparations which may be difficult to swallow or be vomited before taking effect.

While clinical research on using cannabis medicinally has been severely limited by federal prohibition, the accumulated data speaks strongly in favor of considering it as an option for most cancer patients, and many oncologists do. Survey data from a Harvard Medical School study in 1990, before any states had approved medical use, shows that 44% of oncologists had recommended cannabis to at least some of their patients. Nearly half said they would do so if the laws were changed. According the American Cancer Society's 2003 data, more than 1,300,000 Americans are diagnosed with cancer each year. At least 300,000 of them will undergo chemotherapy, meaning as many as 132,000 patients annually may have cannabis recommended to them to help fight the side effects of conventional treatments.

Cancer-fighting properties of medical cannabis

More than twenty major studies published between 2001 and 2006 have shown that the chemicals in medical cannabis, known as cannabinoids, have a significant effect fighting cancer cells. We now know cannabinoids arrest many kinds of cancer growths (brain, breast, leukemic, melanoma, phaeochromocytoma, et al.) through promotion of apoptosis (programmed cell death) that is lost in tumors, and by arresting angiogenesis (increased blood vessel production).

Recent scientific advances in the study of cannabinoid receptors and endocannabinoids have produced exciting new leads in the search for anti-cancer treatments.

How medical cannabis compares to other medications

The American Cancer Society lists 269 medicines currently prescribed to treat cancer and its symptoms, and to treat the side effects of other cancer drugs. Some drugs are prescribed for pain caused by cancer, and cancer patients report pain relief with medical cannabis therapy. Many chemotherapy agents cause severe nausea and 13 drugs are currently prescribed to treat nausea, including Marinol, a synthetic form of delta-9-THC, one of the active ingredients in cannabis. By comparison, the side effects associated with the use of medical cannabis are typically mild and are classified as "low risk."

MEDICAL CANNABIS AND CHRONIC PAIN

Persistent and disabling pain can have numerous and sometimes multiple causes, including cancer; AIDS; sickle cell anemia; multiple sclerosis; defects or injuries to the back, neck and spinal cord; arthritis and other rheumatic and degenerative hip, joint and connective tissue disorders; and severe burns. Pain is not a primary condition or injury, but rather a severe, frequently intolerable symptom that varies in frequency, duration, and severity according to the individual. The underlying condition determines the appropriate curative approach, but does not determine the proper symptom management. It is the character, severity, location and duration of the pain that determines the range of appropriate therapies.

For patients in pain, the goal is to function as fully as possible by reducing their pain as much as possible, while minimizing the often-debilitating side effects of the pain therapies. Failure to adequately treat severe and/or chronic pain can have tragic consequences. Not infrequently, people in unrelieved pain want to die. Despair can also cause patients to discontinue potentially life-saving procedures (e.g., chemotherapy or surgery), which themselves cause severe suffering. In such dire cases, anything that helps to alleviate the pain will prolong these patients' lives.

Medical cannabis can serve at least two important roles in safe, effective pain management. It can provide relief from the pain itself (either alone or in combination with other analgesics), and it can control the nausea associated with taking opioid drugs, as well as the nausea, vomiting and dizziness that often accompany severe, prolonged pain.

Opioid therapy is often an effective treatment for severe pain, but all opiates have the potential to induce nausea. The intensity and duration of this nausea can cause enormous discomfort and additional suffering and lead to malnourishment, anorexia, wasting, and a severe decline in a patient's health. Some patients find the nausea so intolerable that they are inclined to discontinue the primary pain treatment, rather than endure the nausea.

Inhaled medical cannabis provides almost immediate relief for this with significantly fewer adverse effects than orally ingested Marinol. Inhalation allows the active compounds in medical cannabis to be absorbed into the blood stream with greater speed and efficiency. It is for this reason that inhalation is an increasingly common, and often preferable, route of administration for many medications. Medical cannabis may also be more effective than Marinol because it contains many more cannabinoids than just the THC that is Marinol's active ingredient. The additional cannabinoids may well have additional and complementary antiemetic qualities. They have been conclusively shown to have better pain-control properties when taken in combination than THC alone.

Research on medical cannabis and pain management

Medical cannabis has historically been used as an analgesic and patients often report significant pain relief from marijuana. Some of the most encouraging clinical data on effects of cannabinoids on chronic pain are from studies of intractable cancer pain and hard-to-treat neuropathic pain. 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."

How medical cannabis compares to other commonly prescribed pain medications

According to the Institute of Medicine, "All of the currently available analgesic (pain-relieving) drugs have limited efficacy for some types of pain. Some are limited by dose-related side effects and some by the development of tolerance or dependence."

The opioid analgesics commonly used to combat pain include codeine (Dolacet, Hydrocet, Lorcet, Lortab, and Vicodin); morphine (Avinza, Oramorph); oxycodone (Oxycontin, Roxicodone, Percocet, and Roxicet); propoxyphene (Darvon, Darvocet) and tramadol (Ultram, Ultracet). These medicines can cause psychological and physical dependence, as well as constipation, dizziness, lightheadedness, mood changes, nausea, sedation, shortness of breath and vomiting. Taking high doses or mixing with alcohol can slow down breathing, a potentially fatal condition. In addition, patients in pain are often prescribed muscle relaxants such as Robaxin and Flexeril; anti-anxiety agents like Valium, Sinequan, Vistaril, Ativan and Xanax; hypnotics such as Halcion, Restoril, Chloralhydrate, Dalmane and Doral and antiemetics like Zofran, Compazine, Phenergan, Tigan and Marinol.

By comparison to traditional pharmaceutical treatments, the side effects associated with cannabis are typically mild and are classified as "low risk."

An Analysis of the Montana Pain Management Study

Issued February 2008

The Montana Pain and Symptom Management Task Force (MPSMTF) was founded as a result of Senate Joint Resolution 28 passed by Montana Legislature in 2005. This resolution recognized the formation of a task force that would be given the task of assessing pain management practices and policies in Montana and making recommendations aimed at improving pain management throughout the state.

For the purposes of *The Legislators' Guide to Medical Cannabis*, we include the results of that study in this document. Chronic pain is a leading cause of recommendations for medical cannabis in the State. An estimated 73.5% of individuals registered with the Montana Department of Health and Human Services (DPHHS) as utilizing medical cannabis as an alternative treatment list severe or chronic pain as their qualifying condition. Overall, this number represents only two (2) percent of the total patient population who potentially could benefit from medical cannabis.

In general, untreated and under-treated pain is a serious public health problem across the United States. Chronic pain is defined as pain which persists for longer than six (6) regardless of treatment. A chronic condition is one lasting 3 months or more, by the definition of the U.S. National Center for Health Statistics. The American Pain Foundation estimates that 76.5 million people suffer from persistent pain. Pain and other symptoms can be debilitating, causing not only physical strain but serious financial, social and quality of life issues for many pain sufferers. It is estimated that chronic pain in the United States costs $100 billion annually in lost wages, worker productivity and health care expenses.

Pain and symptom management are complex, multi-faceted issues. Social, cultural and psychological factors play significant roles in the experience of pain, the willingness or reluctance to report it, and the way it is managed. Disparities in pain treatment and experience exist between men and women, veteran and non-veteran populations, racial and ethnic groups, and elderly populations. Factors such as racial profiling for diversion, gender-bias in treatment, and higher rates of pain incidence for institutionalized elders all contribute to complexity in pain management. Furthermore, some widely prescribed pain medications have the potential to be abused.

Specifically, the MPSMTF recognized that medical cannabis was a legal treatment option for Montanans living with chronic pain. The task force supported efforts which improved patient access to effective, evidence-based pain treatment and that provided Montana providers with more pain management options.

Definitions of Chronic Pain

- Chronic pain has several different meanings in medicine. Traditionally, the distinction between acute and chronic pain has relied upon an arbitrary interval of time from onset; the two most commonly used markers being 3 months and 6 months since the initiation of pain, though some theorists and ...
  en.wikipedia.org/wiki/Chronic_pain
- Is pain that is ongoing and appears to be permanent.
  www.treatmentsolutionsnetwork.com/dictionary.aspx
- Pain that persists after an injury has healed or a disease is over.
  www.everydayhealth.com/pain-management/glossary-of-pain-management-terms.aspx
- How long pain must occur before it becomes chronic is disputed - six months is a time used for some types of human pain.
  www.link.vet.ed.ac.uk/animalpain/Pages/glossary.htm
- Long-lasting or frequently occurring.
  www.nuvasive.com/patients/dictionary.htm
- Is pain that persists for long periods of time (usually >3 months). Failure to treat acute pain promptly and appropriately at the time of injury, during initial medical and surgical care, and at the time of transition to community-based care, contributes to the development of chronic pain
  www.letstalkpain.org/real_story/definitions.html
- Chronic pain is a state in which pain persists beyond the usual course of an acute disease or healing of an injury, or that may or may not be associated with an acute or chronic pathologic process that causes continuous or intermittent pain over months or years.
  www.dhss.mo.gov/PainManagement/Glossary.html
- Pain that may exist for months or years, rarely causing changes in heart rate or blood pressure but often causing loss of appetite, sleep disturbance, and depression
  www.mywhatever.com/cifwriter/content/66/4620.html
- Pain that has lasted for more than three months generally having significant psychological and emotional affects and limiting a person's ability to fully function.
  www.garyflegal.com/glossary.htm
- A pain state which is persistent and in which the cause of the pain cannot always be removed or is difficult to treat. Chronic Pain may be associated with a long term incurable or intractable medical condition or disease.
  www.painclinic.org/aboutpain-introduction.htm
- Is considered chronic if it last over 6 months. The condition may include weakness, numbness, tingling, or other sensations, along with sleeping difficulties, a lack of energy, and depression. The state of your mind has a lot to do with your perception of pain.
  www.arthritis-msm-supplements.com/msm_glossary.htm
- Is pain that last for more than six months. It is also known as persistent pain. It can be malignant, getting worse as the source of the pain worsens (as a tumor grows in cancer). It can also be non-malignant as in a chronic illness such as arthritis.
  www.absoluteastronomy.com/topics/Pain
- Pain that may range from mild to severe and persists or progresses over a long period of time. www.mesotheliomaweb.org/glossary.htm
- Is pain that has been present for three to six months, depending on who's defining the period. Chronic conditions tend to much harder to treat because the physical and

psychological changes causing it have become much more permanent. www.tipna.org/info/glossary/GlossaryMain.htm

- Chronic pain is any pain that lasts for more than six months or beyond the expected healing time. www.uhn.ca/Focus_of_Care/KNC/Pain/glossary.asp

Conditions Causing Chronic Pain

Back Pain

Back pain affects eight out of 10 people at some point in their lives. It can be caused by an injury, or it can develop with age. Back injuries are an epidemic in the workplace, and are one of the leading causes of disability.

Common sources of chronic back pain:

- Slipped or bulging discs. These are often the result of twisting or lifting injuries. Damaged discs protrude into the spinal canal, pressing against nerves as they exit the spinal cord.
- Spinal stenosis. This is the term for narrowing of the spinal canal, which can compress nerves.
- Compression fractures. Commonly associated with osteoporosis, these fractures occur when brittle vertebral bones collapse.
- Soft tissue damage. Heavy lifting or trauma can cause damage to back muscles, ligaments and tendons.
- Traumatic fractures. Falls from elevation, car accidents or crush injuries can cause painful vertebral fractures.
- Structural deformities. Spinal abnormalities such as scoliosis, kyphosis or lordosis put strain on the muscles that control posture, causing pain and fatigue.

Headaches

Headaches are one of the most common types of chronic pain reported by Americans. A headache is considered chronic if it happens for three months in a row, for at least 15 days out of each month.

The most common types of chronic headaches are:

- Muscle tension headaches. Often caused by stress, fatigue or "sleeping wrong," muscles of the neck, shoulders and scalp tighten. This causes pressure on the head, leading to pain.
- Eye strain headaches. Ocular muscles become fatigued and cause head pain. This is usually caused by sitting at a computer for too long, or wearing the wrong eyeglass prescription.
- Migraines. Migraines can be caused by nervous system triggers or hormonal changes in the body. They often cause pain on one side of the head or face, and may be accompanied by sensitivities to light, sounds or smells.
- Cluster headaches. Often confused with migraines, these severe headaches are usually caused by enlarged blood vessels leading into the head.

Chronic headaches may also be present with diseases such as MS, cancer, brain injuries, HIV and high blood pressure. They can be caused by the disease process itself, or may be unpleasant side effects of medications.

Joint Pain

Joint pain is one of the leading types of chronic pain reported by Americans. Arthritis is the most common type of joint pain; however joint pain is not only felt by the elderly. Depending on its source, chronic joint pain can begin at any age.

The common types of joint pain are:

- Osteoarthritis. OA is the term for wear and tear on joints over time. It is common in the elderly, and usually affects one or more of the larger joints in the body.
- Rheumatoid arthritis. Often present in early adulthood, RA causes swelling in the joint spaces. Eventually it also damages bones, ligaments and tendons.
- Repetitive strain injury. Common in athletes, frequent injuries over time can result in chronic pain. Typically these involve larger joints like the knee or the shoulder.

Neuropathic Pain

Nerves that carry pain signals to the brain may be triggered by swelling, compression or damage. Nerves that are healing may also over-fire, causing sensations such as pain to be more intense.

Some examples of neuropathic pain are:

- Sciatica. The sciatic nerve runs from your back to your feet. Compression or damage of this nerve often causes pain to shoot down the leg on one side of the body.
- Bulging or slipped discs. Nerve compression in the spinal cord can cause local pain, or pain referred elsewhere along the nerve's path.
- Diabetic neuropathy. Sensory nerve damage is a common side effect of diabetes. It can cause numbness or pain, most often in the hands or feet.
- Carpal tunnel syndrome. Swelling in the wrist tunnel irritates the median nerve. CTS causes tingling, numbness and pain over the thumb, first and middle fingers.

Chronic neuropathic pain can also be present in disorders of the nervous system such as MS, spinal cord injury and stroke.

Other Diseases and Illnesses that Cause Chronic Pain

- Fibromyalgia. Though the exact cause of fibromyalgia is unknown, its effects can be devastating. It causes widespread muscle fatigue and pain, and is often accompanied by chronic fatigue, sleep disorders and irritable bowel syndrome.
- Cancer. Cancer pain can be caused by tumors or lacerations to tissues or nerves. Pain is also a common side effect of many cancer drugs, such as those used for chemotherapy and radiation.
- Depression. While depression is commonly thought of as a psychiatric disorder, it is often accompanied by unrelenting pain. In fact, many drugs used to treat depression today are also effective at treating the physical symptoms of this disease.

Bibliography

Information from the following studies and abstracts was used to create the preceding document:

Abrams DI et al (2003). Short-Term Effects of Cannabinoids in Patients with HIV-1 Infection: A Randomized, Placebo-Controlled Clinical Trial. Ann Intern Med. Aug 19; 139(4):258-66.5.

Dixon WE (1899). The pharmacology of Cannabis Indica. BMJ, ii: 1354-1357.

Reynolds JR (1890) Therapeutical uses and toxic effects of Cannabis Indica. Lancet, i: 637-638.

Noyes R et al (1975). The analgesic properties of delta-9-tetrahydrocannabinol and codeine. Clinical Pharmacology and Therapeutics, 18: 84-89.

Noyes R, Baram D (1974). Cannabis analgesia. Compr. Psychiatry 15: 531.

Holdcroft A et al (1997). Pain relief with oral cannabinoids in familial Mediterranean fever. Anaesthesia, 5 483-486.

Hall W et al (1994). The Health and Psychological Consequences of Cannabis Use. Canberra, Australian Government Publishing Service.
http://www.druglibrary.org/schaffer/hemp/medical/home.html

Society for Neuroscience Press Conference, October 26, 1997.
http://www.calyx.com/%7Eolsen/MEDICAL/POT/analgesia.html; "Marijuana-Like Drugs May Be Effective Painkillers". Los Angeles Times. 26, Oct., 1997.

Karst M et al (2003). Analgesic Effect of the Synthetic Cannabinoid CT-3 on Chronic Neuropathic Pain A Randomized Controlled Trial. JAMA. 290:1757-1762.

Callahan R (1998). "How Does Marijuana Kill Pain?" Associated Press, October 4. http: //www.mapinc.org/drugnews/v98/n868/a07.html

Hazekamp A et al (2006). Evaluation of a vaporizing device (Volcano(R)) for the pulmonary administration of tetrahydrocannabinol. J Pharm Sci 95 (6) Apr 24: 1308-1317.

Petro D (1980). Marijuana as a therapeutic agent for muscle spasm and spasticity. Psychosomatics 21 81-85.

Recommendations for Improving Pain and Symptom Management in Montana, A White Paper of the Montana Pain and Symptom Management Task Force, February 2008.
http://www.mtpain.org/White_PaperOptimized.pdf

Studies on the Use of Medical Marijuana & State-approved Qualifying Conditions

http://www.cannabisnews.org/united-states-cannabis-news/medicalmarijuana/marijuana-cuts-lung-cancer-tumor-growth-in-half-study-shows/

The active ingredient in marijuana cuts tumor growth in common lung cancer in half and significantly reduces the ability of the cancer to spread, say researchers at Harvard University who tested the chemical in both lab and mouse studies.

http://vegandflower.com/uncategorized/the-benefits-of-medical-marijuana-for-chronic-pain-sufferers/

http://vegandflower.com/uncategorized/ancient-chinese-healing-with-marijuana-seeds/

http://www.sciencenews.org/view/feature/id/59872/title/Not_just_a_high

Scientists test medicinal marijuana against MS, inflammation and cancer.

http://medicalmarijuana.procon.org/view.answers.php?questionID=000129

Pro & con examples of whether medical marijuana is helpful in the treatment of HIV and AIDS wasting disease.

http://medicalmarijuana.procon.org/view.answers.php?questionID=000131

Research on use for arthritis

http://medicalmarijuana.procon.org/view.answers.php?questionID=000216

Research on use for chronic pain

http://medicalmarijuana.procon.org/view.answers.php?questionID=000137

Research of use for the side effects of chemotherapy

Is medical marijuana an effective treatment for depression, bipolar disorders, anxiety, and similar mood disorders?

General Reference (not clearly pro or con)

The American Psychiatric Association (APA) defined depression and bipolar disorder in its 2005 brochures "Let's Talk Facts About Depression" and "Let's Talk Facts About Bipolar Disorder (Manic Depression)":

Depression:
"Depression is a serious mental illness that negatively affects how you feel, the way you think and how you act.
Depression has a variety of symptoms, but the most common are a deep feeling of sadness or a marked loss of interest or pleasure in activities. Other symptoms include:

- *Changes in appetite that result in weight losses or gains unrelated to dieting*
- *Insomnia or oversleeping*
- *Loss of energy or increased fatigue*
- *Restlessness or irritability*
- *Feelings of worthlessness or inappropriate guilt*
- *Difficulty thinking, concentrating, or making decisions*
- *Thoughts of death or suicide or attempts at suicide...*

For many people, depression cannot always be controlled for any length of time simply by exercise, changing diet or taking a vacation. It is, however, among the most treatable of mental disorders: between 80% and 90% of people with depression eventually respond well to treatment, and almost all patients gain some relief from symptoms."

Bipolar Disorder (Manic Depression):
"Bipolar disorder, also commonly known as manic depression, is a brain disorder that causes shifts in a person's mood, energy, and ability to function.... Bipolar disorder can cause dramatic mood swings - from high and feeling on top of the world, or uncomfortably irritable and 'revved up,' to sad and hopeless, often with periods of normal moods in between....

Because bipolar disorder is a recurrent illness, long-term preventive treatment is strongly recommended."

2005 - American Psychiatric Association (APA)

PRO (yes)

Frank Lucido, MD, a private practice physician, stated in his article "Implementation of the Compassionate Use Act in a Family Medical Practice: Seven Years Clinical Experience," available on his website (accessed June 2, 2006):
With appropriate use of medical cannabis, many of these patients have been able to

CON (no)

Health Services at Columbia University (HSC), in the GoAskAlice section of their website, stated in a Feb. 4, 2005 response to a question from "a concerned boyfriend" who asked "She says smoking pot is like self-medicating — it is better than using anti-depressants. She also claims smoking pot helps with depression because of how

Jay Cavanaugh, PhD, National Director for the American Alliance for Medical Cannabis, wrote in his 2003 article "Cannabis and Depression," published on the American Alliance For Medical Cannabis website:
Numerous patients report significant improvement and stabilization with their bipolar disorder when they utilize adjunctive therapy with medical cannabis. While some mental health professionals worry about the impact of cannabis on aggravating manic states, most bipolar patients trying cannabis find they 'cycle' less often and find significant improvement in overall mood. Bipolar disorders vary tremendously in the time spent in the depressive versus manic states. Those who experience extended depressive episodes are more likely to be helped with cannabis.

Patients who use cannabis to 'relax' may be treating the anxiousness sometimes associated with depression. Cannabis aids the insomnia sometimes present in depression and can improve appetite. Better pain control with cannabis can reduce chronic pain related depression. While cannabis cannot yet be considered a primary treatment of major depression it may improve mood when used under physician's supervision and in combination with therapy and/or SSRI's.

2003 - Jay Cavanaugh, PhD

Bill Zimmerman, PhD, former President of the Americans For Medical Rights, stated in his 1998 book *Is Marijuana the Right Medicine For You?*
Some patients have found the mood altering effects of marijuana to be helpful for treating mood disorders such as anxiety, depression and bipolar (manic-depressive) illness. Using marijuana to treat mood disorders was described in medical writings in the 19th and early 20th centuries...

looked at taking these medicines and cannabis. However, they are too new to be sure and a problem might have been missed. Therefore the newer antidepressants should not be taken with cannabis due to lack of information.

Feb. 9, 2006 - National Health Service (UK)

Nancy Schimelpfening, the About Guide to Depression for About.com, stated in her About.com article "Is It A Bad Idea to Use Marijuana to Relieve Depression" (accessed on June 2, 2006):
Although there is preliminary evidence that marijuana may have antidepressant properties, many argue there are also some important drawbacks to its usage. There is a well-known phenomenon called 'amotivational syndrome' in which chronic cannabis users become apathetic, socially withdrawn, and perform at a level of everyday functioning well below their capacity prior to their marijuana use. Although the depressed person may feel relief from their symptoms, this may be an illusion of well-being if the person loses motivation and productivity. Furthermore, if the drug is smoked, it can be far more harmful to the respiratory system that tobacco use because of the fact that it is not filtered.

June 2, 2006 - Nancy Schimelpfening

However, using marijuana to treat mood disorders can be very tricky... If you intend to use marijuana for this purpose, it is very important that you thoroughly discuss it with your doctor. Patients who respond well report that marijuana not only diminishes their undesirable moods, it also motivates them to productivity. For some of these patients, depression was a by-product of a debilitating disease or illness for which marijuana provided a welcome remedy. For others, the marijuana seems to have acted directly on the depression. The mental component of the pre-menstrual syndrome (PMS) often causes psychological problems and is now technically classified as an atypical (not typical) depression. Many women report benefit from using marijuana to improve the symptoms of PMS.

1998 - Bill Zimmerman, PhD

Can marijuana help treat Alzheimer's disease?

General Reference (not clearly pro or con)

The National Institute on Aging stated in its Mar. 2006 booklet *Understanding Alzheimer's Disease*:

"Alzheimer's disease is an illness of the brain. It causes large numbers of nerve cells in the brain to die. This affects your ability to remember things and think clearly. Doctors don't know what causes the disease. They do know that it usually begins after age 60 and nearly half of people age 85 and older may have Alzheimer's. However, it is not a normal part of aging...

There are medicines that can treat the symptoms of Alzheimer's. However, there is no cure. Some medicines keep your memory loss and other symptoms from getting worse for a time. These medicines work best if Alzheimer's disease is found early. Other medicines work to help you sleep better or feel less worried and depressed. These medicines don't directly treat the disease. They do help you feel more comfortable."

Mar. 2006 - National Institute on Aging

Gary Wenk, PhD, Professor of Psychology & Neuroscience & Molecular Virology, Immunology and Medical Genetics at the Ohio State University and Medical Center, made the following statement in a Nov. 19, 2008 Ohio State University press release titled "Scientists are high on idea that marijuana reduces memory impairment" regarding a study on cannabinoid receptors and memory in rats for which he served as principal investigator:

"Could people smoke marijuana to prevent Alzheimer's disease if the disease is in their family? We're [Gary Wenk, Yannick Marchalant, Francesca Cerbai, and Holly M. Brothers] *not saying that, but it might actually work. What we are saying is it appears that a safe, legal substance that mimics those important properties of marijuana can work on receptors in the brain to prevent memory impairments in aging. So that's really hopeful."*

[**Editor's Note:** ProCon.org spoke with Dr. Wenk on Dec. 11, 2008. He explained that in his 30 years of research into improving memory throughout aging, "nothing seemed to work on old brains" but that synthetic "cannabinoids worked." To avoid over-simplifying the results of his research, we have provided a direct link to a PDF of the entire study "Cannabinoid Receptor Stimulation Is Anti-inflammatory and Improves Memory in Old Rats" published in the journal *Neurobiology of Aging* (Dec. 2008).]

Nov. 19, 2008 - Gary Wenk, PhD

[**Editor's Note**: On Jan. 30, 2009, ProCon.org searched the websites of the Alzheimer's Association and the Alzheimer's Foundation of America and found no statements or research regarding "marijuana" or "cannabis".]

PRO (yes)

Lisa M. Eubanks, PhD, Staff Scientist at the Scripps Research Institute and the Skaggs Institute for Chemical Biology, et al. stated in an Aug. 9, 2006 article titled "A Molecular Link Between the Active Component of Marijuana and Alzheimer's Disease Pathology," published in *Molecular Pharmaceutics*:
"In contrast to previous studies aimed at utilizing cannabinoids in Alzheimer's disease therapy, our results provide a mechanism whereby the THC molecule can directly impact Alzheimer's disease pathology...
It is noteworthy that THC is a considerably more effective inhibitor... than the approved drugs for Alzheimer's disease treatment, donepezil and tacrine, which reduced [protein deposits in the brain] by only 22% and 7%, respectively, at twice the concentration used in our studies...
THC and its analogues may provide an improved therapeutic for Alzheimer's disease [by] simultaneously treating both the symptoms and progression of Alzheimer's disease."

Aug. 9, 2006 - Lisa Eubanks, PhD A Molecular Link Between the Active Component of Marijuana and Alzheimer's Disease Pathology

Maria L. de Ceballos, PhD, Group Leader in the Department of Neural Plasticity at the Cajal Institute in Spain, et al., wrote in their Feb. 23, 2005 *Journal of Neuroscience* article titled "Prevention of Alzheimer's disease Pathology by Cannabinoids: Neuroprotection Mediated by Blockage of Microglial Activation":
"Our results indicate that cannabinoid receptors are important in the pathology of AD [Alzheimer's disease] *and that cannabinoids succeed in preventing the neurodegenerative process occurring in the disease."*

CON (no)

Helen Phillips, Science Journalist at the *New Scientist*, stated in her July 29, 2006 article titled "Medical Cannabis Is a Blunt Tool," published in the *New Scientist*:
"Some compounds in cannabis, including THC and cannabidiol, interfere with a natural signaling system throughout our brains, nerves and immune system...
Even with purified cannabis extracts, changing the amount, time or place of a dose could produce completely opposite effects on the body...
One study... boosted levels of an endocannabinoid called anandamide in rats engineered to develop an Alzheimer's-like disease. This appeared to protect the rats from memory loss and nerve degeneration. But if the rise was prolonged, cannabinoids became ineffective or even damaging."

July 29, 2006 - Helen Phillips

Susanne Sorensen, MD, head of research at the Alzheimer's Society, stated in a Feb. 22, 2005 BBC News article titled "Marijuana May Block Alzheimer's":
"The Alzheimer's Society looks forward to seeing further research being carried out on cannabinoid receptors as drug targets for Alzheimer's disease but would warn the public against taking marijuana as a way of preventing Alzheimer's.
It is now generally recognized that as well as providing a 'high,' long-term use of marijuana can also lead to depression in many individuals."

Feb. 22, 2005 - Alzheimer's Society

The Alzheimer's Research Trust stated in a Feb. 22, 2005 article in BBC News titled "Marijuana May Block Alzheimer's":
"If it is possible to make drugs that act only on CR2 [one of two main types of cannabinoid receptor in the brain]... *they might mimic the positive effects of*

Feb. 23, 2005 - Maria L. de Ceballos, PhD

The Oregon Department of Health Services stated in a June 14, 2000 press release: *"After reviewing the recommendations of an expert panel, we have decided to add Agitation of Alzheimer's disease to the list of medical conditions for which a doctor may write a statement of support for the medical use of marijuana."*

June 14, 2000 - Oregon Department of Health Services

cannabinoids without the damaging ones of marijuana.
However, this is a fairly new field of research and producing such selective drugs is not an easy task. There is also no evidence yet that cannabinoid-based drugs can slow the decline in human Alzheimer's patients."

Feb. 22, 2005 - Alzheimer's Research Trust

What is known about marijuana's potential utility in treating Tourette's syndrome?

General Reference (not clearly pro or con)

The American Medical Association stated in an online report "Medical Marijuana (A-01)" (accessed on Jan. 10, 2007):
"Only limited data exist on the effects of marijuana in patients with Tourette's syndrome who respond inadequately to standard treatment, consisting of 4 case histories that report beneficial effects of smoked marijuana and 1 who reported substantial benefit from oral 9-THC (10 mg)."

Jan. 10, 2007 - American Medical Association (AMA)

The Institute of Medicine published in its Mar. 1999 report titled "Marijuana and Medicine: Assessing the Science Base":
"The movement disorders most often discussed as candidates for marijuana-based therapies are dystonias, Huntington's disease, Parkinson's disease and Tourette's syndrome.

As a general consideration, it is important to note that stress and anxiety tend to worsen the symptoms of movement disorders. Thus, marijuana's calming effect could be a primary reason why some patients claim that it brings them relief."

Mar. 1999 - Institute of Medicine
"Marijuana and Medicine: Assessing the Science Base"

Kirsten R. Müller-Vahl, MD, Director of the Tourette's Syndrome Clinic at the Medical School of Hannover, stated in her Oct. 2003 article "Cannabinoids Reduce Symptoms of Tourette's Syndrome," published in *Expert Opinion on Pharmacology*:
"Currently, the treatment of Tourette's syndrome (TS) is unsatisfactory. Therefore, there is expanding interest in new therapeutical strategies. Anecdotal reports suggested that the use of cannabis might improve not only tics, but also behavioral problems in patients with TS.
A single-dose, cross-over study in 12 patients, as well as a 6-week, randomized trial in 24 patients, demonstrated that delta-9-tetrahydrocannabinol (THC), the most psychoactive ingredient of cannabis, reduces tics in TS patients. No serious adverse effects occurred and no impairment on neuropsychological performance was observed. If well-established drugs either fail to improve tics or cause significant adverse effects, in adult patients, therapy with delta-9-THC should be tried.
At present, it remains unclear whether herbal cannabis, different natural or synthetic cannabinoid CB1-receptor agonists or agents that interfere with the inactivation of endocannabinoids, may have the best adverse effect profile in TS."

Oct. 2003 - Kirsten R. Müller-Vahl, MD

Reuven Sandyk, MD, Assistant to the Editor-in-Chief at the *International Journal of Neuroscience*, and Gavin Awerbuch, MD, a Neurologist and Pain Management/ Sleep

Disorder Specialist, stated in their Dec., 1988 letter to the *Journal of Clinical Psychopharmacology* titled "Marijuana and Tourette's Syndrome":
"We recently encountered three patients with TS [Tourette's syndrome] *who experienced incomplete responses to conventional anti-TS drugs but noted a significant amelioration of symptoms when smoking marijuana...*

It is reasonable to assume that the effects of marijuana in TS may be largely related to its anxiety-reducing properties, although a more specific antidyskinetic effect cannot be excluded."

Dec. 1998 - Reuven E. Sandyk, MD
Gavin I. Awerbuch, MD

What are some of the pros and cons of different delivery methods of medical cannabis?

General Reference (not clearly pro or con)			
	Method / Description	**Pros**	**Cons**
1.	**Smoking - Full Plant** Burning the flowering tops and sometimes the leaves, and inhaling it into the lungs.	Relief from symptoms is usually obtained in less than a minute because the smoke enters the bloodstream directly from the lungs.	Marijuana smokers have been shown to suffer an increased incidence of bronchitis and respiratory infections. There could be a greater risk of cancer of the throat and respiratory tract. Results will often fade after an hour or two.
2.	**Smoking - Plant Particles** Patients manipulate the flowered tops (and sometimes leaves) of the plant to make a product that is comprised mainly of the trichomes of the plant...cannabinoid crystals without additional plant material. It is changed into substances, depending upon the process, known as hashish, kief, bubble hash, and others. It is then burned in a pipe or joint, and inhaled. Some people may bake it into foods.	Relief from symptoms is usually obtained in less than a minute because the smoke enters the bloodstream directly from the lungs.	Smoking anything can cause severe medical problems, although less of the harmful materials are consumed in this method. Results will often fade after an hour or two.
3.	**Vaporization** Heating marijuana to a point where it produces a vapor (a fine mist), then inhaling the vapor into the lungs. The vapor consists of the plant's cannabinoids.	Some people feel a greater affect than by smoking, and some patients use less product in this method than by smoking. Because the cannabinoids enter the blood stream directly	Some people do not feel that same beneficial effects as they do from smoking; others say it uses more cannabis material than is economically feasible (for them). The vaporizer needed for this

	and is mostly free of contaminants. A vaporizer machine is usually used for this purpose.	from the lungs, relief from symptoms is usually obtained in less than a minute (without the harmful toxins in the smoke).	is too expensive for some patients. (Prices range from about $30 up to hundreds of dollars for high-tech versions. The marijuana plant material must be heated to a certain temperature to be effective, too high and the health benefits are negated.) Results will often fade after an hour or two.
4.	**Oil** Cannabis flowered tops and leaves are filtered into its oils by a method using butane gas. Some patients may create a weaker oil using a "supercritical carbon dioxide extraction." The oil can then be inhaled using a pipe or vaporizer, directly added to foods or liquids, or for some conditions applied directly to the skin.	The primary benefit of this method is to convert leaf or inferior cannabis buds into a form that is safer to inhale or consume, without the tars and other plant materials inhaled when smoking. Inhalation methods (smoking or vaporization) usually take effect in less than a minute.	The extraction method uses highly flammable gases (such as butane) and can be dangerous, as well as too complicated for some people. The oil, some say, is messy and difficult to work with. Non-inhaling (eating or drinking it) often takes 30-90 minutes for the full effects to be realized. This method can be expensive to purchase or produce -- technicians say they produce "less than a gram of oil from each ounce of leaf and between 1 and 3 grams of oil from each ounce of...bud."
5.	**Tincture** Cannabis flowered tops and leaves are soaked in an alcohol solution, transferring the THC and other cannabinoids to the liquid. The tincture is then used in various ways; added to foods and liquids, applied to the skin, or the patient consumes directly by drinking a small quantity or placing a few drops under the tongue (sublingual).	This method is used mostly by pain patients, who say the tinctures dull the pain without the strong psychoactive effects of other methods, because the tinctures are generally weaker in potency.	This method often takes 20-30 minutes for the full effects to be realized. Many conditions do not find adequate relief from this product as it is too weak to produce some of the desired effects. The alcohol consumed in this method is undesirable to some.

6.	**Butter** Cannabis flowered tops and leaves are simmered in butter (or vegetable oil) for several hours, transferring the THC and other cannabinoids to the butter. The solid plant material is then discarded. The butter, now a dark shade of green, is then used in baking such items as brownies and cakes, or added to such foods as spaghetti sauce or soup. The oily base of the butter is needed for the cannabinoids to properly adhere.	This method can create a product that delivers long results, lasting several hours. Patients can modulate the results by eating smaller or larger portions, and can carry their medicine with them in public without being noticed. Pain patients claim this method relieves their symptoms the longest, and many patients use this method mostly in the evenings to assist with sleep.	This method often takes 30-90 minutes for the full effects to be realized. Proper doses are difficult to determine, and patients often don't realize until too late that their portion is too strong or too weak. Eating too much can cause vomiting and loss of consciousness.

(Prepared by Medical Marijuana ProCon.org. Specials thanks to Dale Gieringer of California NORML and Jay Cavanaugh, PhD of the American Alliance For Medical Cannabis for their input.)