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The Medical Geography of Cannabinoid Botanicals in Washington State: Access, Delivery, and Distress

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Abstract

The Medical Geography of Cannabinoid Botanicals in Washington State: Access, Delivery, and Distress

Sunil Kumar Aggarwal

Chair of the Supervisory Committee:
Professor Jonathan Mayer
Geography

Though rendered dormant by a post-1937 *Cannabis sativa* L. prohibition, the emerging field of cannabinoid medicine is growing in the United States as ever greater numbers of physicians become educated about the physiologic importance of the endogenous cannabinoid system and about the wide safety margins and broad clinical efficacies of cannabinoid drugs, available in both purely botanical and purely chemical varieties and useful for managing pain and other conditions in the growing chronically and critically ill patient population. Research presented here is focused on medical access and delivery of cannabinoid botanicals in Washington State and seeks to map the geography of this developing cannabinoid medical care system by taking medical geographic "snapshots" of two purposefully chosen locations: a rural clinic site in Washington State where patients currently access cannabinoid botanicals for medical use in the treatment of chronic pain syndromes with acceptable safety under medical supervision and another site where qualifying patients are delivered environmentally-culled cannabinoid botanicals. At the former site, retrospective chart reviews were conducted with 139 patients with chronic pain, and at the latter site, a convenience sample of 37 qualifying patients delivered a monoclonal lot of cannabinoid botanical medicine were prospectively studied using standard and tailored survey instruments. A political ecology of disease approach was employed to rationalize and depathologize patients' mental distress at potentially facing possession-related legal problems due to their consumption of the still-contraband biota. Results provide quantitative and

qualitative insight into the frail health status in both samples of qualifying patients and give a grounded understanding of the lengths that patients and care providers go, despite multiple hurdles, to access and deliver treatment with cannabinoid botanicals that relieves patients' diverse symptoms and improves their health-related quality-of-life.

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DEDICATION

For my family.

Introduction: Medical Geography and the Phenomenon of Hempen Cannabinergy

The topic of this dissertation is the medical geography of hempen cannabinergy in Washington State. 'Hempen' is the adjectival form of 'hemp', the oldest English word for *Cannabis* plants. *Cannabis* plants are the only known botanicals to robustly produce secondary metabolites known as cannabinoids in their essential oils. Cannabinoids, classically 21-carbon terpenophenolics, have medically important receptor-based pharmacological activities in humans chiefly mediated by the molecular signaling network known as the endogenous cannabinoid system, which is found ubiquitously throughout the body. While this homeostasis-maintaining network was only recently discovered and shown to be biologically widespread, phylogenetic evidence suggests that it actually evolved in living systems approximately 600 million years ago in order to effectuate intercellular communication in multicellular organisms (Melamede 2005). This essential mode of signaling and pharmacological activity is known as cannabinergy, and it is in fact the scientific basis for the use of cannabinoid medicines today.

Hence, to study the medical geography of cannabinoid botanicals is really to study the medical geography of hempen cannabinergy. The latter may seem an obscure term due to the fact that neither knowledge of the hemp plant nor its cannabinergic activity in humans is widespread today amongst educated classes—contemporary sociopolitical fallout of the heavily enforced twentieth-century prohibitions of cannabis. The prohibitions of cannabis in medicine and law around the world are underpinned by prevailing sociomedical notions of danger and pathology with regards to all human usage of cannabis. Using tools and approaches of medical geography, a central aim of the three papers of this dissertation is to directly present a challenge to this pathologization by precisely and comprehensively documenting access and delivery of cannabinoid botanicals for medical use at specific locations in Washington State's health care delivery system.

One way to study the medical geography of hempen cannabinergy is to uncover the underlying human-environment relationships in medical systems that employ cannabinoid botanical medicines and, on the basis of that knowledge, explain and understand particular geographic patterns of health and disease. Given the current state of conflicting policies that regulate cannabinoid botanical medical systems in the United States, federal courts have mandated that the medical geography of cannabinoid botanicals be necessarily bipolar, with patients receiving *access to* treatment at one set of locations and *delivery of* treatments at other locations. Note that the terms *access* and *delivery* here carry specific meanings with respect to the bipolar geographic nature of the cannabinoid botanical medical systems in the United States; they should not be thought of in terms of their general usages in medical geography. More specifically, at one set of sites, qualifying patients receive authorizations from physicians to medically use cannabinoid botanicals—access—a fully legal act, and at other distinct sites patients implement those authorizations and receive cannabinoid botanicals—delivery—still considered to be a criminal act at the federal level—for their self-administered use under medical supervision. Correspondingly, field data presented in this dissertation is drawn from two purposefully chosen representative locations of access and delivery. The patterns of health and disease seen in patients at these particular geographic locales are ascertained through review of medical records at the access site (Paper I) and patient surveys and interview with the facility director at the delivery site (Papers II and III). At the access site, quantitative and qualitative data about patient health are gleaned from the perspective of medical professionals providing treatment, and at the delivery site similar data about patient health and distress are gleaned from the perspective of the patients themselves who are all being delivered cannabinoid botanical medicine from a common, monoclonal lot. In this way, medical geographic 'snapshots' are taken of the cannabinoid botanical medical care system in Washington State today.

This dissertation research is continuous with work in the area of medical geography, both in its modern and early formations. Medical geography traces its origins to

Hippocrates'(c. 460 BCE-c. 377 BCE) disease geography work which led him to investigate causes of disease such as environmental influence and population morals (Barrett 2003). Barrett, a historian of medical geography, writes that the second use of the term 'medical geography' was in a 1792 work by German physician Leonhard Ludwig Finke called *An Attempt at a Universal Medical-Practical Geography* (p.1). This work, excerpted in Barrett's collection, demands attention because it is an example of a physician who is interested in employing medical geographic fieldwork coupled with studies of the published 'topographies' of his time to understand not only the nature of health and disease states worldwide but also to discover medical practices that may be of interest to the family physician. Finke writes: "If anyone wants to try new medications and methods of healing, he will find sufficient opportunity in this book. These are all advantages which a family physician can draw from a medical geography" (p. 50-51). Finke is interested in "General Indigenous Medications of Different Peoples of the World" (p.37), an idea he had for the original title of his work, because he recognizes that "many a medication owes its invention to some unknown people" which a "doctor becomes acquainted with accidently [sic]" and subsequently makes popular (p.50). He astutely makes the distinction between the "medical history of man" and that of a "people's pharmacology" based on "tradition and experience" as opposed to "an artificially learned pharmacology" (p.46-47). Finke is making an important distinction between what medicines he has been taught about in his formal training as a doctor and those that are in use in the field. Clearly, he is interested in discovering what a "people's pharmacology" has in store. In laying out the numerous areas of investigation useful for "conclusions to be drawn regarding the healthy and unhealthy states" of world regions, Finke identifies amongst these the consumption of "foodstuffs, beverages, and spices." In this category, he lists "Narcotic substances, opium – tobacco – **hemp leaves** [sic], etc" (p. 37-39, emphasis added). Though he is likely referring to hemp *flowers* rather than leaves, it is worthwhile to note that this earliest conception of the complete scope and concept of medical geography included

an investigation of people's use of cannabis, a long-neglected area that this dissertation addresses.

In modern times, medical geography has generally concerned itself with elucidating the role of human-environment relationships in explaining and understanding sociospatial patterns of health, disease, health-related behaviors, and medical practices. The main specializations in medical geography that have arisen out of its fruitful multidisciplinary fertilizations, such as disease ecology (May 1958), the political ecology of disease (Mayer 1996), therapeutic landscapes (Gesler 1992), ethnomedical geography (Good 1980), and spatial perspectives on health care access and delivery systems (Shannon and Dever 1974; Joseph and Phillips 1984), provide the subdiscipline with the ability to analyze complex health-related spatial phenomena and the ability to better serve pragmatic planning and policymaking aims. This dissertation on the medical geography of cannabinoid botanicals in Washington State adds to the medical geographic literature by building on each of the five aforementioned specializations within the subdiscipline.

First, the disease ecology specialization is part of the broader ecological tradition in medical geography that traces its roots to Hippocrates. Using the basic precepts of ecology, medical geographers are able to describe dynamic biophysical linkages between humans, other organisms, and abiotic factors, with research focusing on the spatial interplay between human agents and non-human biological objects. This is contextualized against the backdrop of an interdependent and interconnected shared environment, broadly construed to include both biophysical (e.g., terrain, climate, biome) and social (e.g., public health regulation, political-economic forces, cultural practices) dimensions at multiple scales, stretching from the local to the global. Although disease ecology has traditionally been applied to the etiology of infectious diseases and diseases of malnutrition, it can also be applied to other diseases, especially those that arise or are thought to arise, in part or whole, from human interactions such as consumption (or lack of consumption), absorption, or spatial coincidence, with

environmentally-derived biological materials (e.g. plants, high carbohydrate foods), chemicals and radiation (e.g. biotoxins, pollution), or spatially-distributed violence and injury-causing objects and events (e.g., landmines, political/civil unrest, unjust spatial confinement) ("Meanings Beyond Mountains" 2006). In this dissertation research, the ecological traditions of medical geography are evoked when uncovering how particular plant genetic resources (germplasms) found in the local environment—those of cannabinoid botanicals—are utilized in Washington State's medical care system. This includes discovering the health characteristics of patients clustering in sites associated with medical access and delivery these botanicals (Papers I and II), estimating the costs involved in maturating a monoclonal lot of cannabinoid botanical medicine (Paper II), enumerating a lot's reach in terms of number of patients served (Paper II), and inquiring into the nature of mental distress associated with close contact with the still-contraband botanical (Paper III).

The mental distress associated with botanical close contact and consumption is analyzed in this dissertation through a second key specialization of medical geography—the political ecology of disease. This approach, which can provide "a challenge for the sociomedical interpretation of disease" (Mayer 2000, p. 949) joins disease ecology with the power-calculus of political economy and calls for situating health-related phenomena in their broad social and economic context, demonstrating how large-scale global processes are at work at the local level, and giving due attention to historical analysis in understanding the relevant human-environment relations (Hanchette 2008). Further background for the political ecology of disease is given in Paper III. Using similar frameworks, many medical geographers have underscored the necessity of taking a critical approach towards disease naming systems (nosologies). Jones and Moon (1992) point out in their introductory text, *Health, Disease, and Society: A Critical Medical Geography*, "Disease is therefore not only a biological state but also a social status which physicians have the power to confer or withhold. In taking such decisions and by following the norms of society, physicians are acting as

agents of social control" (p.6). Similarly, Stock (1986), in drawing on Rogerson's dissertation research on the pathologization of coffee sellers in South Africa, observes:

> As a general rule, medical geographers have tended to uncritically accept official and scientific definitions of disease. In reality, health problems are often socially-produced, i.e. reflecting the ability of the ruling classes to define what is important and what is not (hegemony). Rogerson's study of the rise and fall of coffee cart trading in Johannesburg [105] illustrates the relevance of hegemony for medical geography. The prolonged campaign to eliminate these traders centered on their alleged threat to public health. City officials repeatedly evoked the metaphor of the 'sanitation syndrome' to outlaw cart trading. Rogerson's work reminds us that official pronouncements on public health issues may have more political than medical content—that public health campaigns may use alleged disease threats to isolate and victimize particular disadvantaged groups. (p. 696).

Mounting challenges to pathodiagnostic 'bodily inscriptions' (her term for disease diagnoses) in medical geography are also well covered by Parr (1999; 2002a; 2004). She writes: "…some individuals…sometimes resist a totalising medical 'naming' of their states of mind/body. Hence, when we discuss a 'geography of mental illness and mental health', we should be doing so critically, with an eye to the alternative definitions and understandings that individuals and groups have of their own mental states" (1999, p. 183). Finally, the frequent slippage between social deviance and pathology is noted by Gesler (1992), a pioneer in the concept of therapeutic landscapes. He notes:

> the ideology of the medical model includes definitions of deviancy, establishes the authority of physicians, and stresses the biological aspects of disease. A specific example is the definition of alcoholism and drug addiction in terms of illness states as opposed to personal moral dilemmas. Those who ignore the moral-aesthetic norms of society, expressed as symbols, are labeled as stupid, insensitive, unlearned, or in extreme situations, mad. (740-1)

In a similar vein to the issues that Gesler raises here, in this dissertation a challenge is presented to the prevailing sociomedical interpretation of mental distress in cannabis

users stemming from actual or threatened cannabis possession-related legal problems by studying the political ecology of this dis-ease. Data are presented and analyzed from mental distress-specific survey instruments administered to a medical cannabis-using patient sample in Paper III, and additional historical and contextual information relevant to the political ecology of this mental distress is presented later in this Introduction and in the Conclusion.

The therapeutic landscapes specialization of medical geography is a third area of scholarship upon which this dissertation research builds, both in terms of its emphasis on medicinal plants culled from the local biophysical environment and in terms of its sensitivity to local cultural medical practices. Drawing from a rich tradition in geography that distinguishes the culturally imbued, meaning-laden concept of 'place' from the notion of mere geometric 'space', the therapeutic landscapes specialization refers to cultural-material studies on the confluence of environmental, individual, and social factors that come together to make a certain place or situation therapeutic. One particular therapeutic landscape class Gesler (1992) outlines is "traditional healthcare landscapes." He writes:

> there is a long tradition that healing powers may be found in the physical environment, whether this entails materials such as *medicinal plants*, the fresh air and pure water of the countryside, or magnificent scenery. The pharmacopoeia of both folk societies and professional medical systems (Chinese, ayurvedic, unani, biomedicine) contains thousands of medicines made from leaves, *herbs*, roots, bark, and other materials found in nature. (p. 736) [emphasis added]

Meade and Earickson (2000), in their comprehensive introductory text, also highlight the importance of the material landscape for medical geographers, noting:

> Geographers have traditionally studied the creation of landscape, the mobility and composition of population, the determinants of economic activity and its location, and diffusion of things, ideas, and technology. All these are of consequence to medical geography. The landscape is composed of insects, *medicinal herbs*, and hospitals… (p. 21) [emphasis added]

That locally available medicinal herbs are part of the nexus of considerations for therapeutic landscapes is shown in prior work such as that of Madge (1998), who has published work on medicinal plants used in the therapeutic landscapes of Gambia. By describing the utilization of a locally available and readily cultivatable dioecious herb in medical practices in Washington State, this dissertation research is consonant with work in medical geography that emphasizes material therapeutic relationships with biophysical landscapes.

The therapeutic landscapes specialization in medical geography is part of a long arc of scholarship in the field that has sought to give due attention to cultural factors in illness and health care, a fourth area upon which this dissertation bulids. Such approaches allow for geographic consideration of alternatives therapies and illness conceptions in medically pluralistic societies, even when they remain somewhat hidden. Dauskardt (1990), who examined the geography of herbal pharmacies in urban South Africa, noted: "Indeed, by revealing the spatial aspect of medical pluralism and adopting a more holistic explanatory approach, geographers may have a unique contribution to make within the literature on traditional medicine". Along these lines, Good (1980; 2000) proposed an "ethnomedical geography" that incorporates "alternative systems of reality, belief, and behavior that figure so importantly in health and illness." He had in mind the inclusion of "traditional medical practitioners (TMPs)—including herbalists, diviners, midwives, fertility specialists, shamans, spiritualists and others" into WHO-style international medicine heath planning in the Third World (p. 94; also see Good 1977). But Good also makes clear that the ethnomedical geographic approach is also useful in American cities where "non-establishment" medical systems and "self-treatment" persist. Indeed, Good and Gesler went on to publish work on the medical geography of alternative therapies in the United States (in Gordon 1998). Parr (2004) reviewed the work in medical geography in the area of alternative health care, noting that Gesler's early writing on folk medicines which mostly focused on the developing world were extended by Wiles and Roseburg (2001) and Williams (2000) work in

Canada, among others, to look at how western trends of conventional health care were "being supplemented or replaced with various types of self-care (Parr 2002b) or by care from 'alternative healthcare practitioners'". Parr (2004) continues: "Here there is much work to be done on how and why people access such forms of care, and these authors provide a link with other work as they note 'alternative medicine use is an example of hidden consumption' (Wiles and Rosenberg, 2001: 222)".

Indeed, uncovering what is 'hidden' is an important task for geographers. Barrett (1986), in an excellent essay on the concept and definition of medical geography, quotes the French medical geographer Picheral who, speaking on behalf of medical geographers, writes: "We act somewhat as a photographer when we bring to light the spatial difference in frequency. Nothing is explained, but a lot, is disclosed." Barrett goes on to say: "Disclosure is the first step in analysis, and analysis is a pre-requisite to explanation" (p. 27). Consistent with this aim of making plain what is hidden, this dissertation research seeks to shed light on the poorly understood geography of the alternative cannabinoid botanical medical care system in the United States today by disclosing key patient health indications and relevant human-environment relationships found at representative sites. It is important to examine how people are already making use of cannabinoid botanicals for self-described beneficial purposes; in such a study, there is no need to request permission to obtain these substances for research purposes, a rarely-granted and exceedingly difficult multi-year process. What is lost here in terms of highly controlled studies in humans is made up by gains in terms of valuable knowledge about cannabinoid botanical use from experienced users in natural settings—practices that have been part of human culture since prehistoric times (Rudgley 1993). Such studies can guide future humane policymaking by elucidating human rights abuses present in the existing medical-legal framework, and they can help to lay the groundwork for future medical/clinical and community research in areas such as drug and botanical development as well as the development of novel therapeutic models and modalities. While many such "natural use" studies regarding cannabis have been done in anthropology (such as Rubin and Comitas 1975) and sociology

(Becker 1953; 1963), no such studies been done in geography with the sole exception of Jansen's (1991) work on cannabis in Amsterdam. Writing in the context of African traditional medicine, Good (1987) has laid out the necessary fieldwork methodologies and constraints for discovering the geography of 'hidden' therapeutic practices:

> The fieldwork required as a precondition of such geographical analysis involves the extraordinary arduous task of tracing the formation and activities of therapy managers, or "significant others" who act as brokers between the sufferer and therapy specialists, and following the movement of ill persons among the various specialists and the places where therapeutic activities are performed. Anyone who has attempted to develop case studies of individual courses of therapy in an African setting will readily appreciate the enormous constraints to obtaining comprehensive and accurate accounts of illness history, therapy-seeking, and actual treatments. These constraints include the logistics of perpetual readiness; the time frame (some cases extend over months and even years); the spatial range of therapy-seeking; considerations of subjects' privacy; availability and cost of personnel, and of transport, regardless of seasonal conditions; and the need for both social science and biomedical expertise on the research team. It is essential that fieldwork be adapted to these realities. (p. xiv-xv)

Even though the fieldwork conducted as part of this dissertation was done in the developed world, a very similar constellation of actors and constraints as Good describes above were encountered in the access and delivery geographies of Washington State's cannabinoid botanical medical care system, with the 'sufferers' being the patients and the 'therapy managers' or 'brokers' being those who facilitate the delivery of cannabinoid botanical medicines to those who have been recommended the treatment by 'therapy specialists' or Washington State-licensed physicians. Similar to Good's work, privacy, cost of personnel, transport, and broad expertise were all key considerations in this dissertation research. One key insight from work on medical pluralism is that the cannabinoid botanical medical care system, with physicians licensed in biomedicine authorizing treatment with a long-utilized ethnobotanical medicine, represents an *intercalation*, or intertwining, of modern medicine with traditional medicine. Bhardwaj and Paul (1986), in describing medical pluralism in

Bangladesh, drew on the framework of Young (1983), a medical anthropologist who described the particular ways that traditional medical cultures are relevant to modern primary healthcare. Young identifies four possibilities: integration, complementarity, rivalry, and intercalation. On the latter, he writes:

> rather than integrating traditional healers into the official sector, under certain circumstances it may be possible to adopt their material medica…when local non-modern traditions…include medicines of equal efficacy…traditional medicines can be intercalated into the armamentarium of the official medical sector. In order to intercalate such medicines it is necessary to (a) identify traditional medicines which are suitable substitutes for commonly used imported medicines, (b) organize the production and distribution of adequate and regular supplies of these medicines (assuming that they can be produced on this scale) and (c) train practitioners in the official medical sector to use these medicines (if special knowledge is needed) and how to prepare them from locally produced or collected raw materials (if this is necessary and feasible)" (p.1210-11).

A fifth and final specialization of medical geography that this dissertation research adds to is work on spatial perspectives on health care access and delivery systems. Work in this area focuses on the key question: what is the impact of geographic factors on the acquisition of various medical services? Joseph and Phillips (1984) refer to this specialization as a 'contemporary' approach to medical geography that "involves research into the location, planning, and utilization of health care facilities, together with the identification of those features of health care delivery systems that influence their efficiency and effectiveness" (p. 4). However, published research in this area stretches back to 1852 with the work of Edward Jarvis in the United States on the relationship between a population's close proximity a mental health care facility and higher rates of usage of that facility compared to those living farther away. A century later, work by Jehlik and McNamara (1952) similarly revealed the importance of distance for explaining the observed patterns of health care usage for those who live in rural farming areas. Later, more nuanced work that drew from developments in urban and transportation geography by Morrill and Earickson (1968) showed that people

were willing to travel more for specialty care, and that racial and socioeconomic disparities were evident in travel-to-clinic distances in Chicago (Morrill, Earickson, and Rees 1970). Since the delivery of cannabinoid botanical medical treatment is unlike any other aspect of the health care delivery system, and since it is about a different kind of access to a different kind of health care service, and given the fact that delivery locations are generally not optimized with respect to site placement and in fact tend to be inconspicuously sited amongst other irregularities, this dissertation adds new fundamental medical geographic insights about health care access and delivery to the literature.

Within the field of health care access and delivery, medical geographers also have called for greater consideration of cultural contextual factors. Broadening the discussion beyond health care facilities and patient utilization, Dear (1984) for example advocated for a social theory of health that embeds an analysis of health care systems "within the wider logic of the contemporary social formation" (p. 9). This includes both a view towards the origin and evolution of particular aspects of the health care institution as well as a view towards the political sphere of health care. Similarly, Mayer (1982) observed that "there have been few attempts to analyse the question of how cultural definitions of illness and disease may influence spatial behaviour in the process of seeking care from either indigenous or western practitioners….thus, a study of the cultural context of health care and related spatial elements provides yet another potential synthesis of medical geography's approaches" (p. 226-7). Rosenberg (1988) stated this another way: "Mayer would have us examine how people of different cultures define illness and disease and how this affects their spatial behavior and ultimately, their consumption of health care services" (p.180). Rosenberg gave the example of the delivery of abortion services in Canada and Ontario during the period immediately preceeding and the period immediately following its legalization, a mark of growing cultural acceptance of the oft-controversial medical treatment. His study utilized patient narratives and the availability of abortion facilities and sought to

accomplish the broader goal of linking the geographical, the medical and the political in analyzing health care delivery systems. Similarly, a linked analysis of the politically controversial medical treatment of cannabinoid botanical therapy is presented in this dissertation.

With this backdrop of medical geographic scholarship, specific background information about the historical geography of *Cannabis* that sketches how the species became a contested part of the local environment in Washington State is warranted. Starting from the origin, *Cannabis* (Kingdom Plantae; Phylum Magnoliophyta; Class Magnoliopsida; Order Rosales; Family Cannabaceae; Genus Cannabis; Species sativa) evolved on earth approximately 36 million years ago (McPartland et al. 2004). It

> is believed to be one of humanity's oldest cultivated crops, providing a source for fiber, food, oil, medicine, and inebriant since Neolithic times (Chopra and Chopra 1957; Schultes 1973; Li 1974; Fleming and Clarke 1998). *Cannabis* is normally a dioecious, wind-pollinated, annual herb, although plants may live for more than a year in subtropical regions (Cherniak 1982) and monoecious plants occur in some populations (Migal 1991). The indigenous range of *Cannabis* is believed to be in Central Asia, the northwest Himalayas, and possibly extending into China (de Candolle 1885; Vavilov 1926; Zhukovsky 1964; Li 1974). The genus may have two centers of diversity, Hindustani and European-Siberian (Zeven and Zhukovsky 1975). *Cannabis* retains the ability to escape from cultivation and return to a weedy growth habitat, and is considered to be only semi-domesticated (Vavilov 1926; Bredermann et al. 1956). Methods of *Cannabis* cultivation are described in the ancient literature of China, where it has been utilized continuously for at least six thousand years (Li 1974). The genus may have been introduced into Europe ca. 1500 B.C. by nomadic tribes from Central Asia (Schultes 1970). Arab traders may have introduced *Cannabis* into Africa, perhaps one to two thousand years ago (Du Toit 1980). The genus is now distributed worldwide from the equator to about 60°N latitude, and throughout much of the southern hemisphere. (Hillig 2005)

Fiber-producing *Cannabis* strains from Europe were first introduced into the Americas by Spanish, French, and British colonists in the sixteenth and seventeenth centuries.

Drug-producing *Cannabis* strains (cannabinoid-rich) were introduced by Angolans brought as slaves to Brazil in the mid-sixteenth century, but the major geographic dispersion of drug-producing *Cannabis* strains in the region occurred three centuries later when nearly half a million indentured workers from India settled in the British West Indies in the late 1830s, bringing drug strains of *Cannabis* with them. *Cannabis* had been used in Indian civilization for well over a millennium, with extant religious texts dating back to 2000 BCE referring to drug strains of *Cannabis* as divine gifts to provide relief from tension and distress. Throughout the nineteenth and early twentieth centuries, successive waves of labor migration from the Caribbean introduced drug *Cannabis* strains into Central America and eventually into the United States when over a million Mexican laborers entered the Southwest in the first three decades of the twentieth century.

The introduction of cannabinoid-rich *Cannabis* by Mexican migrants into the United States was actually one of five entry points of these botanicals into the United States. A second entry point of drug *Cannabis* strains in the early twentieth century was via the port city of New Orleans where Caribbean and South American sailors introduced them around 1910; from there, drug *Cannabis* strains spread up the Mississippi River in refrigerated barge ships (hence, 'reefers' became a slang word for cannabis). A third entry point was via Indian immigrants to California in the first decades of twentieth century who, like their predecessors in the Caribbean, were also reported to have brought drug strains of *Cannabis* with them to the United States. A fourth entry point was via major pharmaceutical production houses which, in the early twentieth century, began to cultivate drug strains of *Cannabis* to supply the growing medical market that spawned in the 1850s, with Eli Lilly and Parke-Davis famously marketing a strain known as Cannabis Americana grown on a farm near Rochester, Michigan. A fifth entry point during the same time period was via mail order catalogues, 'tea' pads, and World Fairs and International Expositions—famously at the 1876 Centennial Exposition in Philadelphia which featured a Turkish Hashish Exposition—whereby

Americans were invited to experience the 'orient' and the self through indulging in the smoking or oral ingestion of *Cannabis* resin concentrates called hash(i/ee)sh, a practice that had been first popularized by major literary writers in Paris in the mid-1840s when hashish was brought back to France during the Napoleonic conquest of Egypt (Russo 2005; 2007; Bourne 2003; Courtwright 2001; Herer 2000; Mikuriya et al. 1988; Rubin 1975)

Widespread cultivation of drug strains of *Cannabis* in North America began in the 1960s when tropical varieties from Colombia and Thailand were planted outdoors and grew to maturity in the warm climates of coastal Florida, Southern California, and Hawaii. Sub-tropical varieties from Mexico and Jamaica were grown in the southern two-thirds of the United States. In the mid-1970s, cultivators became increasingly sophisticated in their horticultural skills, adopting the practice of growing seedless drug strains of *Cannabis* (*sinsemilla*) through segregation of the sexes and the practice of intentional cross-breeding to select for desired traits. In the mid-to-late 1970s, cross-breeding of American *Cannabis* strains with landraces from Afghanistan and Pakistan began, due in part to increased pressures from law enforcement which led to the need to find adaptable strains that could thrive indoors and in part due to the Soviet invasion of Afghanistan in 1979 which brought accessions from that region into the collections of Dutch seed companies and other seed sellers. The crossbred strains came to be known as indica/sativa hybrids, and they are the mainstay *Cannabis* germplasms (plant genetic resources) in the United States today (Clarke 2006). The Americas are now the leading producers of *Cannabis* herb in the world today, regionally accounting for 55% of the 41,400 metric tons of the crop produced globally in 172 countries and territories in 2006 (UNODC 2008).

Thus, while *Cannabis* is firmly a part of the natural environment today in the United States, its use as a locally available complementary and alternative botanical medicine remains legally problematic. *Cannabis* was removed from the United States

Pharmacopoeia in 1941 at the insistence of the Federal Bureau of Narcotics, the predecessor to the modern Drug Enforcement Administration (DEA) (Mikuriya et al. 1988), and to this day, despite a strongly-worded ruling of a DEA Administrative Law Judge (1985) calling for the reclassification of *Cannabis* as medically useful and similar evidence-based pronouncements by the Institute of Medicine (1999) and the American College of Physicians (2008), federal agencies refuse to recognize a currently accepted medical use for *Cannabis*, or 'marihuana', as it is still pejoratively referred to in law.

'Marihuana', which is legally equivalent to the term 'marijuana' (a Mexican-Spanish-Portuguese slang term likely derived from the word 'mariguango', meaning 'intoxication'), is classified as a 'Schedule I substance', prohibited from general use in medicine. Its name is a technical legal term carved out in US federal law since 1937 as the following:

> The term "marihuana" means all parts of the plant Cannabis sativa L., whether growing or not; the seeds thereof; the resin extracted from any part of such plant; and every compound, manufacture, salt, derivative, mixture, or preparation of such plant, its seeds or resin. Such term does not include the mature stalks of such plant, fiber produced from such stalks, oil or cake made from the seeds of such plant, any other compound, manufacture, salt, derivative, mixture, or preparation of such mature stalks (except the resin extracted therefrom), fiber, oil, or cake, or the sterilized seed of such plant which is incapable of germination. (21 U.S.C. 802)

This definition clearly encompasses cannabinergic hempen botanical medicine and its viable germplasm as the therapeutically active cannabinoids are in the plant's resin. A federal administrative ban continues in the US for cultivating *Cannabis sativa* L. for any reason, including hempen fiber, cellulose, or seed. Nevertheless, a stereoisomer of Δ9-tetrahydrocannabinol (THC), widely recognized as the most psychoactive chemical component of drug-producing cannabis, is allowed to be sold suspended in sesame seed oil as a Schedule III substance, prescriptions for which can be phoned in. At the international level, as per the 1961 Single Convention Treaty on Narcotic Drugs,

notwithstanding the fact that cannabis cannot properly be termed a narcotic, both *Cannabis* and *Cannabis* resin are included in the most restrictive category of international control but are nevertheless allowed for scientific and medical use whereas 'non-medical' use is forbidden. Bruun, Pan, and Rexed (1975), in *The Gentleman's Club: International Control of Drugs and Alcohol*, identify 1954 and 1955 as the crucial years during which the then-named 'Commission on Narcotic Drugs' made the decision to include cannabis in the most restrictive category (Schedule IV) of the Single Convention Treaty, which was only in draft form at the time (p. 197). As should be expected, "The U.S., the primary force, mobilized all the control organs concerned" (p. 203). One of the major propagandists who lobbied international control organs on behalf of the US was Federal Bureau of Narcotics chief Harry J. Anslinger. In a paper communicated to the League of Nations Advisory Opium Committee (renamed the 'Narcotics Commission' in 1946), 14 May 1938, Anslinger opined: "…the drug (marihuana) is adhering to its old world tradition of murder, assault, rape, physical demoralization and mental breakdown…Bureau records prove that its use is associated with insanity and crime. Therefore, from the standpoint of police work, it is a more dangerous drug than heroin or cocaine." In current US federal law, *Cannabis* (Class I) is still classified as more dangerous than cocaine (Class II).

The first major social remedy to the skewed classification of *Cannabis* was the medical marijuana law passed by California voters in 1996, with similar laws following in 11 other states, including Washington The 'medical marijuana' social phenomenon is a grassroots movement to fully reclaim civil society ownership over the globally distributed, free germplasm of *Cannabis*, specifically those varietals that cheaply mature into cannabinergic hempen botanical medicine, the sustainably producible natural flowering herb whose international ownership ban was instituted through dispossession without due process afforded to the most heavily affected populations. This monopolization of a therapeutically efficacious, naturally occurring botanical

from the global commons is predicated, activists argue, on an extremist ideology that calls for suppression with deadly force of cannabinergic psychoactivation. It is responsible for the underdevelopment of the unparalleled forest pulp resources-substituting and fossil fuel-replacing chemurgic land use opportunities agroeconomically achievable with large-scale farming of stalk-selected varietals of the hemp plant's germplasm. This same policy also impedes the development of highly nutritious hemp seed (achene) based food-products, a nutritive source of all essential amino acids and omega-6 and omega-3 fatty acids, which remain undercultivated and underutilized in this era of worldwide hunger and food shortage. Sustainable medicine, food, energy, and industrial raw materials production are the major opportunities for human development that are imperiled by the twentieth century ownership-bans on *Cannabis*—one of humankind's oldest and most widely cultivated plants.

The medical marijuana movement operates on a 'triage' model, whereby physicians are empowered to authorize those with the most urgent medical concerns with amnesty from prosecution under state marijuana laws. The medical marijuana state laws additionally facilitate the maturation and delivery of local, environmentally-accessed and clonally propagated *Cannabis* germplasm samples to patients with medically documented needs. However, the cannabis used in such programs nevertheless remains encircled by a structurally violent ownership-ban upheld ultimately by the United States DEA, a federal agency headed by a political appointee. This ownership-ban, which has become ingrained in numerous social structures, delivers pain in the name of 'cannabis abuse disorder prevention and control' to all those involved in this type of botanical medicine access and delivery. This dissertation research aims for a 'daylighting' of this somewhat underground, health care-driven, pain-ridden human-environment relationship.

The anonymity of the qualifying patients enrolled in the studies described in the following three papers is protected by Certificates of Confidentiality, as stipulated in IRB review. Study subjects have all have been diagnosed with at least one or more of

the following medical conditions: cancer, human immunodeficiency virus (HIV), multiple sclerosis, epilepsy or other seizure disorder, or spasticity disorders; or intractable pain, limited to mean pain unrelieved by standard medical treatments and medications; or glaucoma, either acute or chronic, limited to mean increased intraocular pressure unrelieved by standard treatments and medications; Crohn's Disease with debilitating symptoms unrelieved by standard treatments or medications; Hepatitis C with debilitating nausea and/or intractable pain unrelieved by standard treatments or medication; or any disease, including anorexia, which results in nausea, vomiting, wasting, appetite loss, cramping, seizures, muscle spasms, and/or spasticity, when these symptoms are unrelieved by standard treatments or medications. The studies described herein were unfunded, but the author was supported while conducting them by a National Science Foundation Graduate Research Fellowship.

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The Medical Geography of Cannabinoid Botanicals in Washington State I: Characteristics of Patients with Chronic Pain Accessing Treatment at a Rural Clinic

Introduction to cannabinoid medicine in the US

Though rendered dormant by a post-1937 *Cannabis sativa* L. prohibition, the emerging field of cannabinoid medicine is growing in the United States (see **Figure 1.1**) as ever greater numbers of health care providers become educated about the physiologic importance of the endogenous cannabinoid system ("Here, There, and Everywhere: the Endocannabinoid System" 2008; Pacher et. al 2006) and about the wide safety margins (Wang et al. 2008) and broad clinical efficacies (Musty et al. 2001; Bagshaw et al. 2002; Ben Amar 2006; Rocha et al. 2008) of cannabinoid drugs. Cannabinoid medicines are available in both purely botanical and purely chemical varieties and are useful for managing pain and other conditions in the growing chronically and critically ill patient population (World Health Statistics 2008). This paper is a study of the increasingly accepted cannabinoid medical care system in the US that documents the medical geographic context at one rural clinic site in Washington State where patients

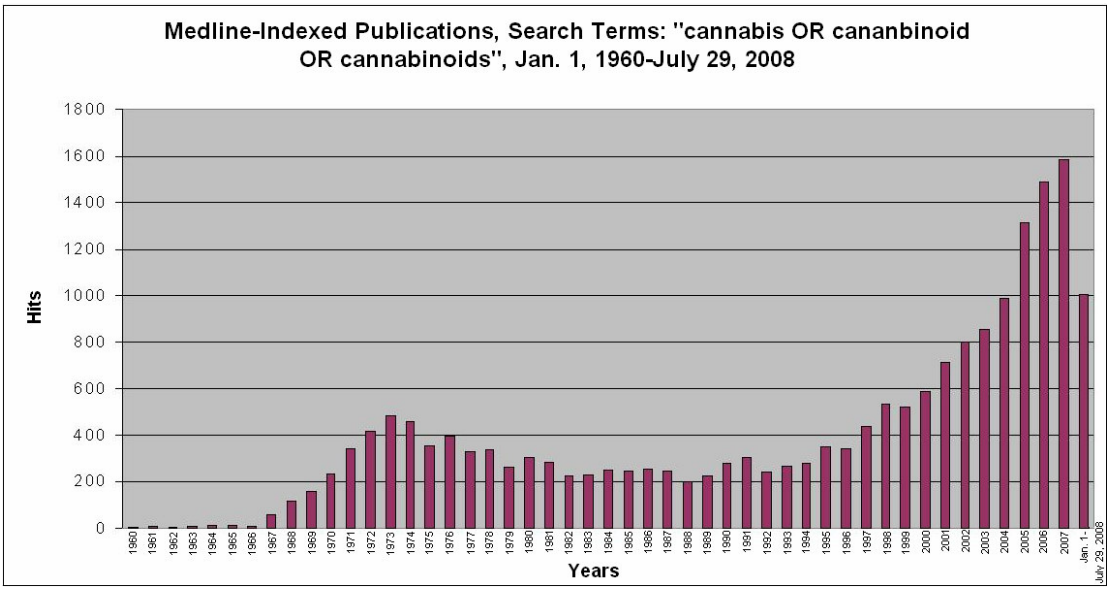

Figure 1.1: Medline Publications on Cannabis and Cannabinoids Are Growing.

currently access cannabinoid botanicals for medical use in the treatment of chronic pain syndromes with acceptable safety under medical supervision.

By way of introduction, the following is a brief overview of the various cannabinoid medicines currently utilized in the American health care sector. They fall into three categories: chemical pharmaceuticals, cannabis-based medicinal extracts, and phytocannabinoid-dense botanical medicines—the main focus of this paper (**Figure 1.2**). The first category includes FDA-approved synthetic or semi-synthetic cannabinoid pharmaceuticals available by prescription. Currently, these are dronabinol, a Class III[1] drug, and nabilone, a Class II drug. Though both are also used off-label, dronabinol, a (-)*trans* THC isomer found in natural cannabis, has been approved for two uses since 1985 and 1992, respectively: the treatment of nausea and vomiting associated with cancer chemotherapy in patients who have failed to respond adequately to conventional antiemetic treatments and the treatment of anorexia associated with weight loss in patients with AIDS ('Label for Marinol®' 2006; 'Dronabinol Approval History' 2008). Nabilone, a synthetic molecule similarly shaped to THC, has also been approved since 1985 for use in the treatment of nausea and vomiting associated with cancer chemotherapy ('Label for Cesamet®' 2006; 'Nabilone Approval History' 2008).

The second category of cannabinoid medicines being used in the US includes a line of cannabis-based medicinal extracts developed by several companies. The industry leader is GW Pharmaceuticals, a UK-based biopharmaceutical company whose lead product is currently undergoing FDA-approved, multi-site Phase IIb clinical trials for the treatment of cancer pain in the US (NCT00530764 2008) and has received prior approval for Phase III clinical trials in the US. This botanical drug extract has already secured approval in Canada for use in the treatment of central neuropathic pain in

[1] For those unfamiliar with this classification scheme, see, for example: Hardman JG, Limbird LE, Gilman AG. 2001. *Goodman & Gilman's The Pharmacological Basis of Therapeutics.* 10th ed. New York: McGraw-Hill.

multiple sclerosis (in 2005) and in the treatment of intractable cancer pain (in 2007) ('Sativex® Health Canada' 2008). It is also available on a named patient basis in the UK and Catalonia ("What is Sativex" 2008; "Catalan Government" 2008), a scheme which allows a doctor to prescribe an unlicensed drug to a particular 'named patient'. This phytocannabinoid natural product preparation, produced with permission from the British government, is made by formulating cold organic solvent ($CO_{2(l)}$) extracts of two strains of herbal *Cannabis sativa*—cultivated and ground-up in-house at an undisclosed location in the English countryside—into an oromucosal spray.

The third category of cannabinoid medicines currently being used in the US includes the Class I medicinal plant *Cannabis sativa* L. itself, which, while currently unavailable for general prescription use in the US, is in use in the context of 2 active controlled clinical trials (NCT00682929 2008, NCT00308555 2008), 33 completed controlled clinical trials (Ellis et al. 2008; Wilsey et al. 2008; Corey-Bloom et al. 2008; Abrams, Jay et al. 2007; etc.[2]), and 1 on-going, now-defunct investigational clinical study (Aggarwal et al. 2007; Russo et al. 2002). The few patients enrolled in American cannabis clinical studies are prescribed a cannabis strain or blend cultivated under contract at the federal research farm at the University of Mississippi at Oxford. The analytical chemist in charge of the farm (whom the author met at the 2005 International Cannabinoid Research society meeting) holds the patent on a rectal suppository formulation of dronabinol. This drug has heretofore been produced by total synthesis, but recently it and other cannabinoid formulations were approved for commercial extraction as natural products directly from the cannabinoid botanical supply grown in Oxford, Mississippi (USDOJ 2005). Since cultivation began, the federal cannabis herbal product has been inaccessible for general medical use, and since 1970, federal

[2] Abrams, Vizoso et al. 2007; Haney et al. 2007; Wallace et al. 2007; Haney et al. 2005; Abrams et al. 2003; Söderpalm et al. 2001; Abrams et al. 2000; Greenwald et al. 2000; Greenberg et al. 1994; Randall 1990; Research Advisory Panel 1989; Foltin et al. 1988; Foltin et al. 1986; Behavioral Health Sciences Division 1983, 1984; Board of Pharmacy, State of Tennessee 1983; Kutner 1983; Department of Social Oncology 1982; Chang et al. 1981; Merritt et al. 1980; Chang et al. 1979; Crawford et al. 1979; Greenberg et al. 1976; Tashkin et al. 1975; Hill et al. 1974; Tashkin et al. 1974; Tashkin et al. 1973; Vachon et al. 1973; Hollister 1971

agencies have maintained the ideological hardliner position that cannabis, pejoratively termed ‘mari(h/j)uana’ during the early 1900s, has “no currently accepted medical use in treatment in the United States” (21 USC Sec. 812 01/22/02).

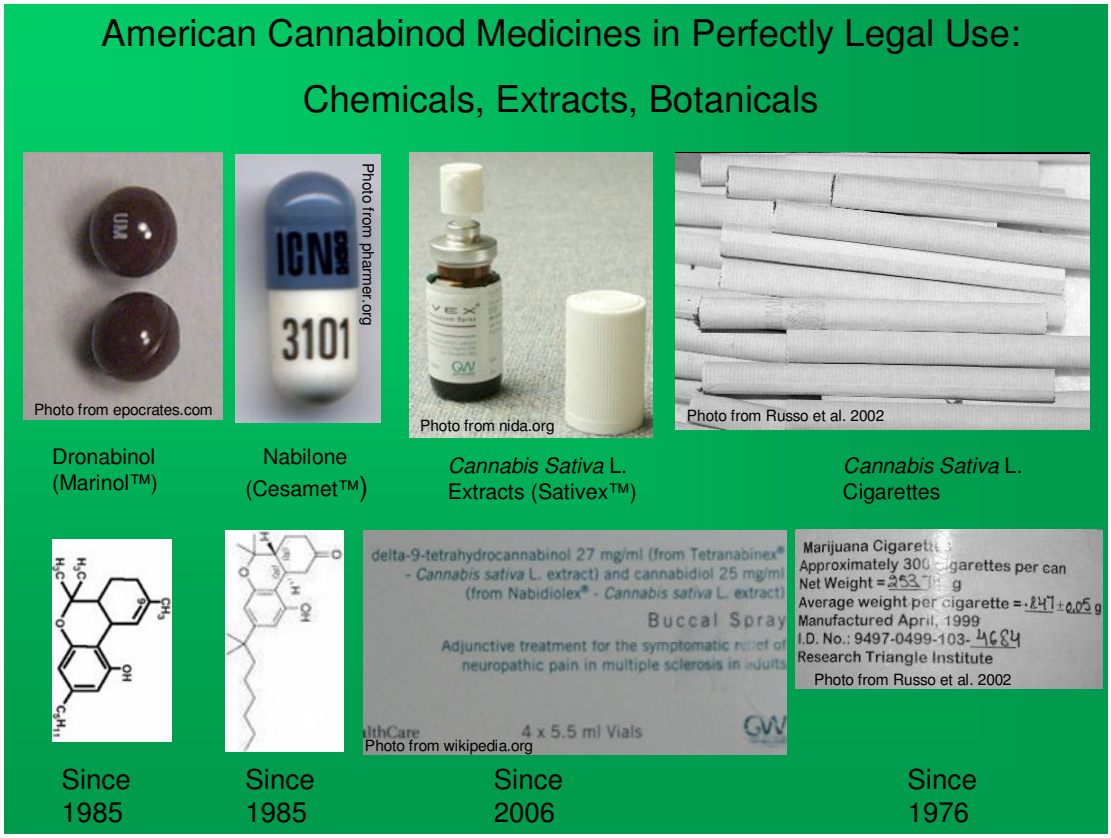

Figure 1.2: Four Cannabinoid Medicines Currently in Legal Use in US Patients.

Since the focus of this paper is on cannabinoid botanicals, this overview of cannabinoid medicines in use in the United States would be incomplete without a brief overview of the clinical evidence base for their use. The contemporary era of American cannabinoid botanical medicine clinical research began in May 1998 when the first FDA-approved clinical study of cannabis use in a patient population in 15 years enrolled its first subject (MAPS 2008; Abrams et al. 2000). Overall, the 33 completed and published American controlled clinical trials with cannabis have studied its safety, routes of administration, and use in comparison with placebos, standard drugs, and in some cases dronabinol, in: appetite stimulation in healthy volunteers, the

treatment of HIV neuropathy and other types of chronic and neuropathic pain, both pathological and experimentally induced, spasticity in multiple sclerosis, weight loss in wasting syndromes, intraocular pressure in glaucoma, dyspnea in asthma, both pathological and experimentally-induced, and emesis, both secondary to cancer chemotherapy and experimentally induced. The 1 on-going, now-defunct federal cannabis clinical study jointly administered by NIDA and FDA has been running for three decades without follow-up and currently has 4 chronically ill patients enrolled (3 of whom the author has met). It was abruptly closed to new enrollees in 1991 with the explanation from the U.S. Public Health Service that the program was undermining negative public perceptions about cannabis needed to sustain its illegality for the general population (Randall and O'Leary 1998, p.375-6).

Four reviews of modern human clinical studies with cannabis and cannabinoids in the US and elsewhere have recently been published in the peer-reviewed literature (Musty et al. 2001; Bagshaw et al. 2002; Ben Amar 2006; Rocha et al. 2008). Musty et. al's (2001) "Effects of Smoked Cannabis and Oral Δ9-Tetrahydrocannabinol on Nausea and Emesis After Cancer Chemotherapy: A Review of State Clinical Trials" reviewed 7 state health department-sponsored clinical trials with data from a total of 748 patients who received smoked cannabis and 345 patients who received oral THC for the treatment of nausea and vomiting following cancer chemotherapy in Tennessee (1983), Michigan (1982), Georgia (1983), New Mexico (1983 and 1984), California (1989), and New York (1990). The authors found that patients who received smoked cannabis experienced 70-100% relief from nausea and vomiting, while those who used oral THC experienced 76-88% relief. Bagshaw et al.'s (2002) "Medical efficacy of cannabinoids and marijuana: A comprehensive review of the literature" reviewed 80 human studies of cannabis and cannabinoids, including 10 case reports, and found a preponderance of evidence in support of their use in the treatment of refractory nausea, refractory pain, and appetite improvement. Ben Amar's (2006) "Cannabinoids in medicine: A review of their therapeutic potential" identified 72 controlled studies of the therapeutic effects

of cannabis and cannabinoids and found that they possessed "interesting therapeutic potential" as antiemetics, appetite stimulants in debilitating diseases (cancer and AIDS), analgesics, and in the treatment of multiple sclerosis, spinal cord injuries, Tourette's syndrome, epilepsy and glaucoma. Rocha et al.'s (2008) "Therapeutic use of *Cannabis sativa* on chemotherapy-induced nausea and vomiting among cancer patients: systematic review and meta-analysis" identified 30 randomized, controlled clinical trials that evaluated the anti-emetic efficacy of cannabinoids in comparison with conventional drugs and placebo. A meta-analysis of 18 studies of cannabis or cannabinoids versus standard anti-emetics, which included 13 randomized clinical trials evaluating cannabis for treatment of nausea and vomiting in cancer patients receiving chemotherapy and 5 controlled trials evaluating specific cannabinoids for the same treatment, revealed a statistically significant difference in patient 'preference for one of the study drugs' in favor of *Cannabis* or its components versus a standard anti-emetic drug (n = 1138; RR = 0.33; CI = 0.24–0.44; $P < 0.00001$; NNT = 1.8).

While the aforementioned reviews draw from both American and internationally conducted research, current and past clinical trials of cannabis—not cannabinoids—occurring specifically in the US deserve some separate considerations due to historical and political reasons. Seven randomized, placebo-controlled or dronabinol-controlled clinical trials of cannabis from 2005-2008 conducted in patient populations the United States—published after the Ben Amar (2006) review's cut-off date—which investigated indications such as HIV-related and other forms of painful neuropathy, spasticity in multiple sclerosis, and appetite stimulation in HIV patients, have consistently shown statistically significant improvements in pain relief, spasticity, and appetite in the cannabis-using groups compared to controls (Ellis et al. 2008; Wilsey et al. 2008; Corey-Bloom et al. 2008; Abrams, Jay et al. 2007; Haney et al. 2007; Wallace et al. 2007; Haney et al. 2005). In fact, nearly all of the 33 published controlled clinical trials with cannabis conducted in the United States have shown significant and measurable benefits in subjects receiving the treatment. Four notable exceptions are

the negative results from Chang et. al's (1981) randomized, placebo-controlled study involving 8 patients receiving cancer chemotherapy which reported that smoked cannabis or oral THC had no anti-emetic effect compared to placebo; the California state health department-sponsored study (Research Advisory Panel 1989) in which smoked cannabis given to 98 patients was found to be inferior to oral THC given to 2000 patients for nausea and vomiting associated with cancer chemotherapy; Greenberg et al.'s (1994) randomized placebo-controlled trial in 10 patients with spastic multiple sclerosis and 10 healthy controls which showed a subjective feeling of clinical improvement in some patients, but greater impairment of posture and balance in the patient group; and Hill et al.'s (1974) placebo-controlled study of cannabis in the treatment of electrically-induced experimental pain in 26 healthy male volunteers, 6 of whom received placebo and 20 of whom received cannabis, which showed decreased pain tolerance and increased sensitivity to pain in the cannabis using group. On balance, however, even though most of the studies were small-to-medium sized, the preponderance of American cannabis clinical trials empirical data shows evidence of bona fide medical utility for the botanical.

Contesting cannabinoid botanical medicines

The rising prominence of phytocannabinoid-rich botanicals in health care is actually a rediscovery and not a novel medical practice since the medicinal use of dried, resin-producing pistillate inflorescences of *Cannabis sativa* has an extensive ancient history cross-culturally, with the oldest documented references known today in the Chinese pharmacopoeia of Emperor Shen-Nung dated to 2737 BCE in the oral tradition, but written down in the first century CE (Earlywine 2002, p.26; Abel 1980). The medical use of cannabis in the modern period was common in the USA from the mid-1850s to the early 1940s due to its introduction into Western medicine as 'Indian Hemp' by Calcutta Medical College co-founder and professor, Dr. W.B. O'Shaughnessy (1809-1889), in a landmark 1839 journal article[3].

[3] O'Shaughnessy WB. 1838-1840. On the preparations of the Indian hemp, or gunjah (Cannabis indica);

Today, nearly one and three-quarter centuries later, cannabinoid botanical medical science has greatly advanced due in large part to the elucidation of *in vivo* cannabinergic structure and function. The cannabinoid system helps regulate the function of major systems in the body, making it an integral part of the central homeostatic modulatory system–the check-and-balance molecular signaling network that keeps the human body at a healthy "98.6", as illustrated by the title of the May 2008 theme issue of the *Journal of Neuroendocrinology*: "Here, There and Everywhere: the Endocannabinoid System." The discovery and elucidation of the endogenous cannabinoid signaling system with widespread cannabinoid receptors and ligands in human brain and peripheral tissues, and its known involvement in normal human physiology, specifically in the regulation of movement, pain, appetite, memory, immunity, mood, blood pressure, bone density, reproduction, and inflammation, among other actions, has led to the progression of our understanding of the therapeutic actions of cannabinoid botanical medicines from folklore to valid science (Aggarwal et al. 2007, Pacher et al. 2006). Cannabinoids, of which cannabis contains 68, along with other bioactive compounds, have many distinct pharmacologic properties, including analgesic, antiemetic, antispasmodic, antioxidative, neuroprotective, antidepressant, anxiolytic, and anti-inflammatory properties, as well as glial cell modulation and tumor growth regulation. Their application in pain treatment is especially promising as cannabinoids inhibit pain in "virtually every experimental pain paradigm" in supraspinal, spinal, and peripheral regions (Baker et al. 2003, p.294) and have no risk of accidental lethal overdose. However, these properties are medically under-utilized and scarcely recognized by regulatory bodies as a large translational gap currently exists in the field of cannabinoid medicine between research-driven scientific knowledge and patient-centered medicine.

Their effects on the animal system in health, and their utility in the treatment of tetanus and other convulsive diseases. *Transactions of the Medical and Physical Society of Bengal* 1838-1840:71-102, 421-61. Available at: http://www.mikuriya.com/s1_1.pdf.

Despite the fact that the Institute of Medicine concluded after reviewing relevant scientific literature—including dozens of works documenting marijuana's therapeutic value—that "nausea, appetite loss, pain, and anxiety are all afflictions of wasting, and all can be mitigated by marijuana" (Joy et al., 1999, p.159) and despite the fact that legal access to marijuana for specific medical purposes has been supported by numerous national and state medical organizations, including the American Medical Association-Medical Student Section, the American College of Physicians, the American Psychiatric Association's Assembly, the American Academy of Addiction Psychiatry, the American Academy of Family Physicians, the California Medical Association, the Medical Society of the State of New York, the Rhode Island Medical Society, the American Academy of HIV Medicine, the HIV Medicine Association, the Canadian Medical Association, the British Medical Association, and the Leukemia and Lymphoma Society, among others ('Proceedings' 2008; 'Medical Marijuana Endorsements' 2008), indicating a growing acceptability of the therapeutic practice amongst organized medicine groups—a necessary prerequisite for availability of the service, federal agencies who are empowered by Congress make reclassifications based on scientific and medical considerations insist that marijuana "has no currently accepted medical use in treatment in the United States" and that "there is a lack of accepted safety for the use of" marijuana "under medical supervision" (21 USC Sec. 812 01/22/02) as grounds for maintaining its prohibition. In doing so, these State actors could be accused of shrinking their specific legal "obligation to refrain from prohibiting or impeding traditional preventive care, healing practices and medicines", engaging in the "deliberate withholding or misrepresentation of information vital to health protection or treatment", and aiming for "the suspension of legislation or the adoption of laws or policies that interfere with the enjoyment of any of the components of the right to health"—all specifically enumerated violations of governmental obligations to respect the human right to health in international law ('General Comment No. 14' 2000).

In moving towards the protection and fulfillment of the right to health, a dozen American states—Alaska, California, Colorado, Hawaii, Maine, Montana, Nevada, New Mexico, Oregon, Rhode Island, Vermont, Washington—containing approximately 20% of the national population and representing 40% of the total geographic area of United States—have passed laws granting physicians the authority to approve or recommend use of cannabinoid botanicals based on medical evaluation to qualifying chronically or critically ill patients, thereby freeing such patients from state-level prosecution and the worst consequences of the ongoing denial of cannabis's medical utility in federal law. A medical marijuana authorization is the means by which patients receive *access* to this health care resource. While not a true prescription, it is a legally recognized doctor-patient clinical discussion viewed as protected speech according to a ruling by the Ninth U.S. Circuit Court of Appeals that the Supreme Court of the United States let stand (Conant v. Walters 2002/3); current estimates indicate that approximately 7,000 American physicians have made such authorizations for a total of several hundred thousand patients[4]. After receiving medical marijuana authorizations, patients procure cannabinoid botanical medicinal products, or medical cannabis, for their self-administered use under medical supervision from in-state channels and hence *delivery* of the treatment is effectuated—actions which continue to be harshly criminally sanctioned under federal law ('DEA' 2008; Gonzales v. Raich 2005). In such a sociopolitical environment, major medicine access and delivery problems certainly do remain for patients. Not only is access to knowledgeable physicians who feel comfortable recommending medical cannabis a challenge for patients, but also following such recommendations and being delivered a safe and adequate supply, a need that state laws do not comprehensively address, present significant challenges and hardships.

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[4] Currently available figures indicate that over 1,500 physicians have recommended medical marijuana use for 350,000 patients in California ("California Medical" 2006; "Dr. Mikuriya" 2006)), 182 physicians for 2,051 patients in Colorado ('Colorado' 2008), 124 physicians for 4047 patients in Hawaii ("Lawmaker" 2008), 145 physicians for 634 patients in Montana ("ACLU" 2008), 145 physicians for 900 patients in Nevada ("Federal" 2008), 2,970 physicians for 19,646 patients in Oregon ('Oregon' 2008), 149 physicians for 302 patients in Rhode Island ("For more" 2007), and 2,000 physicians for 20,000 patients in Washington (Aggarwal SK et al. 2007).

Work in medical geography in the area of spatial perspectives on health care access and delivery systems focuses on the key question: what is the impact of geographic factors on the acquisition of various medical services? Given the current state of conflicting policies that regulate cannabinoid botanical medical systems in the United States, federal courts have mandated that the medical geography of cannabinoid botanicals access and delivery be necessarily bipolar, with patients receiving *access to* treatment at one set of locations and *delivery of* treatments at other locations. Note that the terms *access* and *delivery* here carry specific meanings with respect to cannabinoid botanical medical systems in the United States; they should not be thought of in terms of their general usages in the field of medical geography. Generally speaking, according key experts in the field, access to health care

> is the product of four sets of variables: the availability of services, the possession of the means of access (money or insurance, transportation), the nondiscriminatory attitudes of health care providers, and the failure of the ill themselves to cope with their situation, such as their ability to recognize symptoms, communicate with health professionals, and navigate the health care system. (Meade and Earickson 2001, p. 381)

For accessing health care with cannabinoid botanicals, the focus of this paper, the critical variable is availability of the service. This is contingent on the legality of the practice in a given region and its acceptability within the medical profession. In this health care delivery system, the authorizing physician "acts as a gatekeeper for the individual entering the formal health care delivery system" (Rosenberg 1988, p. 182). For Joseph and Phillips (1984), people's "socio-economic accessibility" of a health care service includes consideration of "whether they are permitted to use it (organizational and institutional restrictions on accessibility)" (p. 2). However, proof of access or accessibility is not simply the mere presence or legality of a service or practitioner who provides it. It is only through *utilization* of health care resources that accessibility is revealed (Joseph and Phillips 1984, p. 2)

Authorizing the medical use of cannabinoid botanicals in Washington State

Following Washington State's passage by voter initiative of a law authorizing the medical use of marijuana for qualifying patients in 1998, the University of Washington and Harborview Medical Centers adopted policy guidelines for physicians regarding medical marijuana in March 2002 (Policy Number 80.15). Washington's Medical Use of Marijuana Act was subsequently affirmed and amended in the 2007 state Legislative session (RCW 69.51a) during which time $94000 was allocated for a Department of Health rule-making study on medical marijuana dosing and supply originally due on July 1, 2008. Valid documentation that medical marijuana may benefit a qualifying patient with a terminal or debilitating condition has been provided by an estimated one to two thousand Washington-licensed physicians to an estimated ten to twenty thousand qualifying patients across Washington State (Aggarwal et al. 2007). The list of state-approved qualifying conditions includes cancer, human immunodeficiency virus (HIV), multiple sclerosis, epilepsy or other seizure disorder, spasticity disorders; intractable pain, limited to mean pain unrelieved by standard medical treatments and medications; glaucoma, either acute or chronic, limited to mean increased intraocular pressure unrelieved by standard treatments and medications; Crohn's Disease with debilitating symptoms unrelieved by standard treatments or medications; Hepatitis C with debilitating nausea and/or intractable pain unrelieved by standard treatments or medication; or any disease, including anorexia, which results in nausea, vomiting, wasting, appetite loss, cramping, seizures, muscle spasms, and/or spasticity, when these symptoms are unrelieved by standard treatments or medications. A process exists whereby additional conditions may be added to this list.

In order for medical cannabis recommendations to be considered standard, quality medical treatment, they should be accompanied by health information regarding cannabis usage, including patient education about auto-titration dosing schedules and harm reduction approaches that emphasize the least hazardous means of pharmacological delivery of cannabinoid botanicals (such as vaporization and oral

administration), treatment management over time, if feasible, and a willingness to submit medical testimony should patients encounter legal or administrative problems related to their possession or use of the botanical medicine. Patients should also be counseled that they do not necessarily have to be 'high' to obtain a medical effect from the treatment. An American Academy of Cannabinoid Medicine, of which the author is a founding member, is in the process of formation and intends to accredit physicians in this area of medicine and provide much-needed practice standards, ethics, and continuing medical education.

With regards to the medical use of cannabinoid botanicals specifically for pain management, several considerations should be noted in the risk-benefit ratio. The properties that make cannabinoids well-suited for analgesia are their extremely high safety, remarkably low toxicity, and documented efficacy for relieving a wide range of pain states, from neuropathic pain to muscle ache / joint pain, to migraine pain. With the botanical variety of cannabinoid medicines, with its 68 cannabinoids, these three properties hold true. With other natural and synthetic single-molecule cannabinoid therapeutic options, such as dronabinol, nabilone, and experimentally-used cannabinoid drugs such as levonantradol, and ajumelic acid, these properties of safety, low toxicity, and efficacy also hold, but to a lesser degree, and with intolerable side effects such as drowsiness, dysphoria, and increased toxicity reported in pre-clinical and clinical data. A recent review of 31 clinical studies on the adverse effects of medical cannabinoids by Wang et al. (2008) showed that the vast majority of adverse events reported were non-serious (96.6%). With respect to the "164 serious adverse events" that did occur, the authors reported that "there was no evidence of a higher incidence of serious adverse events following medical cannabis use compared with control (rate ratio [RR] 1.04, 95% CI 0.78–1.39)" (p. 1672), with the same holding true for medical cannabinoids generally (p. 1676). Serious adverse events were not evenly reported in the literature. The authors note: "The fact that 99% of the serious adverse events from

randomized controlled trials were reported in only 2 trials suggests that more studies with long-term exposure are required to further characterize safety issues" (p. 1676).

In its 4,000+ years of documented use, there is no report of death from overdose with cannabis. In contrast, as little as 2 grams of dried opium poppy sap can be a lethal dose in humans as a result of severe respiratory depression. If a very large dose of cannabis is consumed, which typically occurs via oral ingestion of a concentrated preparation of cannabis flowers' resin (e.g., in the form of an alcohol tincture or lipophillic extract), agitation and confusion, progressing to sedation, is the generally the result (Mikuriya 2006). Some have even called this an 'acute cannabis psychosis', and this exacerbates fears that cannabis consumption, in the long term, might lead to schizotypy such as chronic, debilitating psychosis. Review of the current epidemiological data shows that such fears are unfounded (Erowid 2005; Armentano 2006; Gardner 2005; Mirken et al. 2005). In a comprehensive review of schizotypy risks to the general population related to cannabis consumption, the United Kingdom's Advisory Council on the Misuse of Drugs (ACMD), a statutory and non-executive, non-departmental, independent public body of experts that advises the UK government on drug-related issues, offered the following words of wisdom after careful and extensive consideration of the published data:

> In the last year, over three million people appear to have used cannabis but very few will ever develop this distressing and disabling condition. And many people who develop schizophrenia have never consumed cannabis. Based on the available data the use of cannabis makes (at worst) only a small contribution to an individual's risk for developing schizophrenia. (2005, p. 15).
>
> For individuals, the current evidence suggests, at worst, that using cannabis increases the lifetime risk of developing schizophrenia by 1% (2005, p. 11).

The ACMD revisited the issue in 2008, and after another thorough review which incorporated data that had been published since its prior review, they concluded:

> since the Council's previous review the evidence has become more, rather than less, confused. Although there is a consistent (though weak) association, from longitudinal studies, between cannabis use and the development of psychotic illness, this is not reflected in the available evidence on the incidence of psychotic conditions. The most likely (but not the only) explanation is that cannabis – in the population as a whole – plays only a modest role in the development of these conditions. The possibility that the greater use of cannabis preparations with a higher THC content might increase the harmfulness of cannabis to mental health cannot be denied; but the behaviour of cannabis users, in the face of stronger products – as well as the magnitude of a causal association with psychotic illnesses – is uncertain. (p. 33)

Thus, in light of the minor associations that have been documented in a small number of longitudinal studies between heavy cannabis consumption and later schizotypy, those who are early- or pre-teens and who have pre-existing symptoms of mental illness, should abstain from cannabis consumption, especially in large amounts. If medical need arises, they should be closely monitored.

It should also be noted that cannabis use, when delivered via combustion-and-inhalation, does not have similar health hazards to nicotine-rich tobacco smoking, aside from the potential for bronchial irritation and bronchitis. A recent large, population-based, retrospective, case-control study involving 1,212 incident cancer cases and 1,040 cancer-free controls matched to cases on age, gender, and neighborhood in the Los Angeles area demonstrated strong, positive, dose dependant, and significant associations between tobacco smoking and the incidence of head, neck, and lung cancers but no significant positive associations or dose dependency with cannabis smoking and the incidence of those same cancers. In fact, a significant, albeit small, protective effect was demonstrated in one group of combusted cannabis consumers (Hashibe et al. 2005). Other reviews, such as Melamede's (2005), offer physiological and chemical evidence to account for these significant differences between cannabis and tobacco smoke.

It is clear that cannabis has an extremely high safety level and remarkably low and manageable toxicity level as an analgesic. Unlike opioids, cannabinoid medicines do not promote appetite loss, wasting, and constipation, but instead can be used to therapeutically treat these symptoms. A synergistic and entourage effect in which endogenous cannabinoids are also involved likely results in the superior analgesia of whole plant cannabis. Carter et al. (2004) summarize this as follows: "Cannabinoids produce analgesia by modulating rostral ventromedial medulla neuronal activity in a manner similar—but pharmacologically distinct from—that of morphine. This analgesic effect is also exerted by some endogenous cannabinoids…" (p. 949). In addition, terpenoids, flavinoids, and essential oils present in cannabinoid botanical preparations have been shown to have therapeutic effects on mood, inflammation, and pain (Russo 2002, p. 366; McPartland and Pruitt 1999). Additionally, cannabinoids are known to have antinociceptive effects in descending pain pathways, such as those mediated by the periaqueductal gray. Finally, cannabinoid-rich cannabis has anti-inflammatory properties (acting through prostaglandin synthesis inhibition and other cytokine-mediated mechanisms) and can presynaptically modulate the release of dopamine, serotonin, and glutamate—neurotransmitters involved in migraine, nausea, and many other noxious symptoms.

Study design and procedures

In order to better understand the medical geography of cannabinoid botanicals, a study was conducted on patient access to medical treatment in Washington State with the third category of cannabinoid drugs, medical cannabis, by studying its utilization at one physician's medical practice. The study was sited at a University of Washington faculty member's medical practice where access to medical cannabis treatment, information, and management are provided to qualifying patients. Retrospective chart reviews of qualifying medical marijuana patients were conducted focusing on issues related to chronic pain management and functionality. In conducting this study, the author acted as an agent of the University of Washington, and the chief administrator

of the hospital with which the clinic is affiliated signed a letter of cooperation transferring study oversight responsibilities from the hospital institution to the University of Washington IRB. Only 19 researchers in the US have the necessary licenses to conduct research with cannabis supplied by federal agencies (Doblin 2008), and of these, only 2 licensees have a currently active clinical research study. The current project is significant because it is the only rigorous medical social scientific study on medical cannabis active in the US that examines the utilization of medical cannabis treatment from a clinic-based, patient-centered perspective. It was approved by the Human Subjects Division at the University of Washington, Application No. 33067 on 10/23/07 with an approved Waiver of HIPAA Authorization, and a federal Certificate of Confidentiality (NCCAM 08-02) was issued by the National Institutes of Health's National Center for Complementary and Alternative Medicine on 12/4/07. The Certificate ensures that any sensitive information collected as part of this study will remain shielded from outside parties and that those involved in conducting the study "cannot be compelled in any Federal, State, or local civil, criminal, administrative, legislative, or other proceedings to identify" study participants or otherwise compromise their privacy. The IRB stipulated that subjects be informed in writing that they may wish to seek legal advice about the potential risks of being in the study but that the University of Washington cannot provide this advice. The other important step taken to protect subjects' privacy in this study was requesting and receiving approval for the necessary waivers which ensured the absence of any written documentation with subjects' names or other identifying information on any permission sheet, consent form, or study material.

The study was conducted in 2007-2008 and based at a purposefully chosen office-based physical and rehabilitation, neurology, and pain medicine outpatient clinical practice and referral site in rural Washington State where a proportion of patients are undergoing authorized medical marijuana treatment under the care of a state-licensed physician and UW faculty member. All clinical data collected from charts were de-

identified; patients' home zip codes were used to determine geographic areas from which patients traveled to access treatment (using the initial three digits of a zip code if the geographic unit formed by combining all ZIP Codes with the same three initial digits contains more than 20,000 people). A code number was assigned and tagged to each chart and any information that linked the code numbers with the identities of the patients was held in confidence by the medical practice.

The study began by separating out the charts of all patients at the clinic, ages 18 and older, who have access to medical cannabis treatment through valid documentation provided by treating physicians included in their medical records. This was the sole inclusion criterion. Any patient who was taking a cannabinoid receptor blocker drug was excluded. The records were scored for health indicators such as time since first medical cannabis authorization, qualifying condition(s), McGill Pain score records, functionality, chronic pain management, opioid and other pain medication usage and change over time, and any issues related to medical marijuana cannabis access (previous barriers, referrals from physicians unwilling to provide documentation, etc.). See **Figure 1.3** for chart review data collection form. All diagnostic data collected from charts was verified by Gregory Carter, MD, MS, Clinical Professor of Rehabilitation Medicine at the University of Washington, a board-certified physician fellowship-trained in pain medicine and medical director of outpatient clinical services

UNIVERSITY OF WASHINGTON
Chart Review Data Collection Form
"Cannabinoid Medical Geography in Washington State: Health Access in a Convenience Sample"

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Age _____ Gender _____ Ethnicity _____ ZIP ____

Time since first medical marijuana authorization:

Qualifying condition(s), and brief history of present illnesses (subjective vs. objective findings):

McGill Pain score records over time:

Functionality over time:

Chronic pain management over time:

Opioid and other pain medication usage and change over time:

Any issues related to medical marijuana documentation access (previous barriers, referrals from physicians unwilling to provide documentation, etc.):

Figure 1.3: Chart Review Data Collection Form. Additional pages attached as needed.

Results

One hundred thirty-nine patients' medical charts with valid documentation for their authorized medical use of cannabis were identified and reviewed. No patients were excluded as none were taking a cannabinoid receptor-blocking drug. See **Appendix A** for selected data from the chart review. The group consisted of 87 males with a median age of 47 years and 52 females with a median age of 48 years. Males ranged in age from 18-69 years old, and females ranged in age from 22-84 years old. Very little data on ethnicity were available. See **Table 1.1** for patient sample demographics.

The medical cannabis-using patient population had home addresses that were predominantly (71.9%) in the same 3-digit ZIP code area as the clinic site. Fewer and fewer patients from increasingly more distant 3-digit ZIP code areas accessed medical cannabis treatment at the pain clinic. See **Table 1.2** and **Figure 1.4** for numerical and spatial representations of distance-decay in estimated travel-to-clinic distances in this patient sample.

While all 139 patients had authorizations for the medical use of cannabis from Dr. Carter, 15 patients (10.8%) had documentation of prior authorization for medical cannabis use from other physicians also included in their medical records. In total, the sample contained 236.4 patient-years of authorized medical cannabis use, with Dr. Carter as the primary authorizing physician for 225.4 (95.3%) of these patient-years. Patients ranged in authorization lengths from 11 days to 8.31 years. The median number of Carter-authorized patient-years in the sample was 1.12 years. Sixty percent of the Carter-authorized patient-years in the sample were in male patients, but female patients had on average 0.18 years of authorized use greater than the male patients. See **Table 1.3** for complete results.

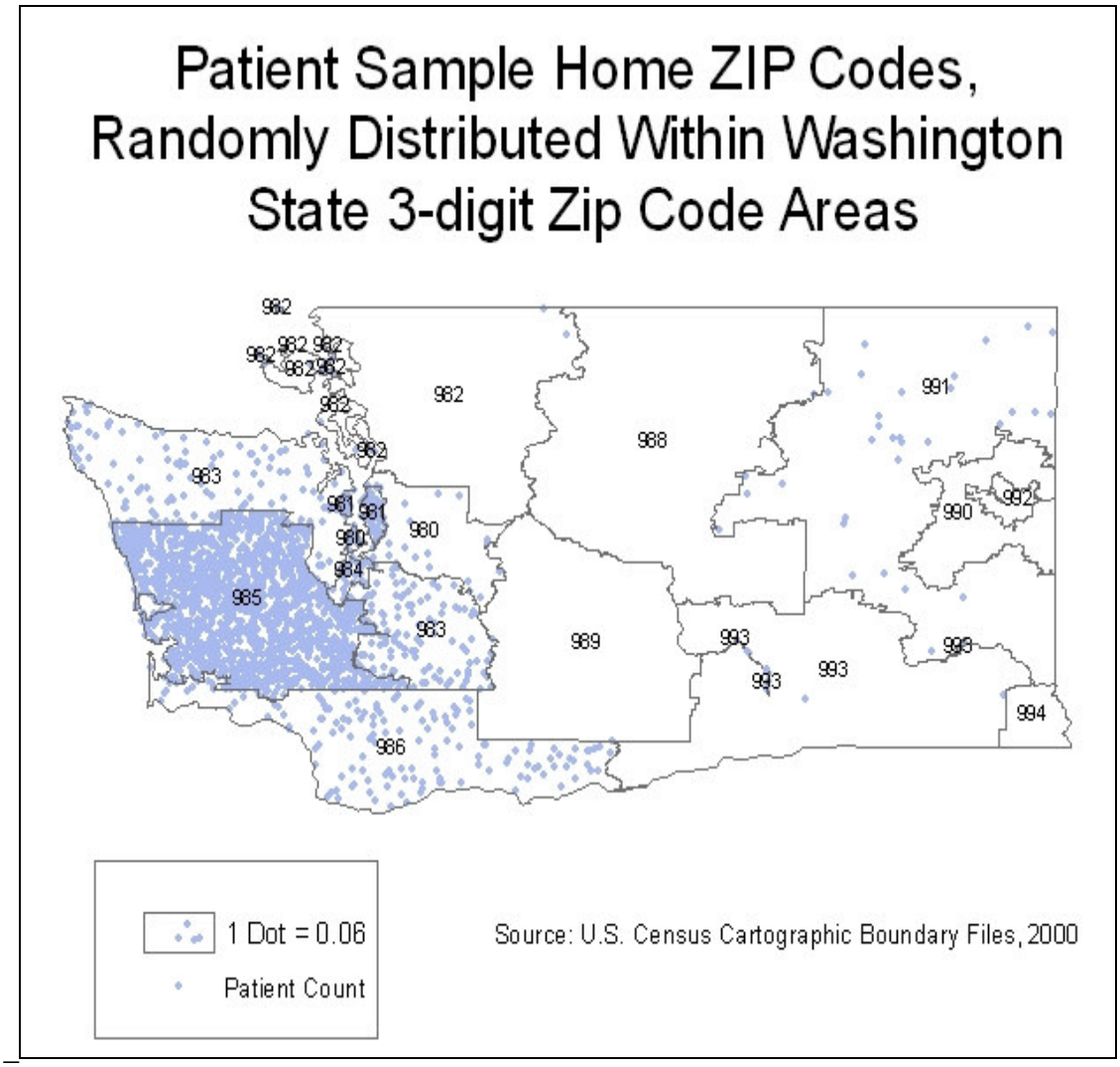

Figure 1.4: Map of Patient Home 3-Digit ZIP Codes.

Using diagnostic and medical historical chart data, chronic pain documented in each medical cannabis-using patient was classified according to its syndromic nature and type. The following classes were used: Myofascial Pain Syndrome (MPS), Diabetic Neuropathy (DN), Neuropathic Pain Syndrome (NPS), Central Pain Syndrome (CPS), Phantom Pain (PP), Spinal Cord Injury (SCI), Fibromyalgia Syndrome (FMS), Osteoarthritis (OA), Rheumatoid Arthritis (RA), Discogenic Back Pain (DP), HIV Neuropathy (HIV), Visceral Pain (VP), and Malignant Pain (MP). This classification

scheme is based on chronic pain etiology and is drawn primarily from a recent classification scheme advanced by pain management researchers well-respected in the field (Ramamurthy et al. 2006). All classifications made using this scheme were verified by the treating physician. Results are shown in **Table 1.4**. Most patients (*n* = 123, 88%) had more than one chronic pain syndrome or type present.

Figure 1.5 summarizes the distribution of chronic pain syndromes diagnosed in the patient population. Myofascial pain syndromes were the most common (*n* = 114, 82%), followed by neuropathic pain syndromes (*n* = 89, 64%), discogenic back pain (*n* = 72, 51.7%), and osteoarthritis (*n* = 37, 26.6%).

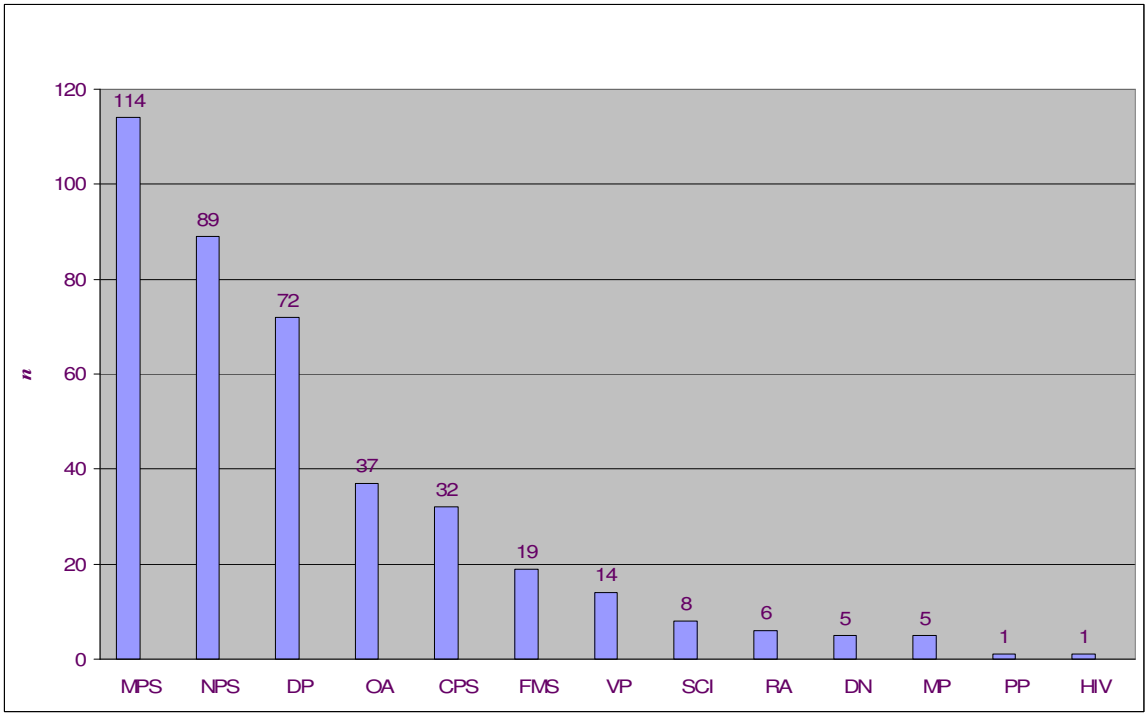

Figure 1.5: Distribution of Chronic Pain Syndromes Diagnosed in Patient Sample.

While patient records frequently documented significant symptom alleviation with medical cannabis and improved tolerance compared to other pain medications, the medical records of 37% of the patients in the sample (*n* = 51) had documented instances of major hurdles related to accessing medical cannabis such as prior

physicians unwilling to authorize use, legal problems related to medical cannabis use, and difficulties in finding an affordable and consistent supply of medicine.

Discussion

The 139 patients accessing medical cannabis treatment for chronic pain at the study clinic in rural Washington State were a group of severely ill patients with extensive injurious and pathogenic exposures, including 14 with traumatic brain and closed head injuries, 9 with Hepatitis C virus, 4 with past history of gun shot wounds (one in the head), 3 with past history of shrapnel wounds, 5 with spinal cord injuries, 1 with ALS (amyotrophic lateral sclerosis), 1 with PLS (primary lateral sclerosis), 1 with myotonia congenita, 1 with HIV, and 19 with fibromyalgia.

There was a predominance of males (63%) in the clinic's patient population who were accessing treatment with medical cannabis, a trend seen in all prior published demographic data on the American medical cannabis-using patient population studied at access and delivery sites (Child et al. 1997; Harris et al. 2000; Gieringer 2001; Corral 2001; O'Connell et al. 2007; Reinman 2007). This predominance may reflect the fact that male patients may be willing to take greater risk with accessing a recently legalized treatment with considerable social stigma still attached, or other gender-specific factors. However, the male and female median ages did not significantly differ. Data support the fact that males and females are accessing medical cannabis at the same rate, given the similarity in median authorization times in males and females.

Geographically, most patients came from the 983 and 985 ZIP codes which cover the following counties in Western Washington: Lewis, Thurston, Grays Harbor, Pacific, Mason, and Pierce. Although the pain clinic is in a rural setting, it is a sub-specialty referral site, and thus patients who are referred there for consultation and pain management often have not received satisfactory symptom control in primary care settings. It is clear from a review of chart notes in their medical records that these

patients on follow-up or in initial self-reports frequently received satisfactory treatment of their refractory pain conditions with the medical use of cannabis. This is seen, for example, in the following chart notes from 4 patients (quotations taken verbatim from medical records found in **Appendix A**): ["He has been using marijuana on his own, as he feels gives him the best pain relief of anything that he has used." 2-3 inhalations on a MJ cigarette 2-3/day, & this improves his pain levels drastically w/o incapacitating him (Patient #101)]; ["using MJ successfully on a daily basis; pain from 8-9/10-->2-3/10; needs only ~2-3 inhalations from a MJ cigarette to get pain relief" (Patient #7)]; [marijuana daily with no SE; "only thing she is now currently using for pain" (Patient #38)]; ["She has been using cannabis in the past and has had excellent results with respect to her migraine headaches." Using <1/4 oz/week (Patient #67)]. Moreover, there was no documentation in any of the medical records of patient cessation of medical cannabis use due to intolerance or any other medical reason.

A standard classification system for chronic pain diagnoses was used describe the patient sample. Most patients (n = 123, 88%) had more than one chronic pain syndrome or type present. The data indicate that myofascial pain syndromes were the most common in this study population, followed by neuropathic pain syndromes, discogenic back pain, and osteoarthritic pain. These syndromes often involve inflammatory pathophysiological mechanisms, and their treatment with cannabinoid botanicals is consistent the known analgesic and anti-inflammatory pharmacological effects of cannabinoid medicines. The data support the notion that cannabinoid botanicals can be used to treat multiple pain syndromes in the same patient.

Over one-third of the patients in the study sample have had past or ongoing hurdles in accessing cannabinoid botanicals for medical use. A medical cannabis authorization functions in many ways as an authorization for medical asylum from substance control/drug enforcement policies that are generally described as war-like. However, given the frequent presence of cannabis possession-related legal problems in this patient sample, medical amnesty from relevant state laws for the use of cannabinoid

botanicals is imperfect and continues to be occasionally disruptable by law enforcement and other administrative actions, given that the exact letter of Washington State's medical marijuana law in its current form only provides an affirmative defense for qualifying patients. Additionally, due to the non-reimbursable cost and general unavailability of delivery systems, medical-grade cannabis is frequently difficult for patients with documented medical needs to obtain.

Conclusion

By providing a medical geographic patient utilization "snapshot" of the medical use of cannabinoid botanicals at a rural pain medicine clinic, this paper provides further validation for the utility, acceptability, tolerability, and safety of cannabinoid botanicals in the treatment of a broad range of refractory chronic pain conditions. The results presented here should help to deconstruct mythologies about the kinds of patients accessing medical cannabis treatment such as their young age or their propensity to malinger or feign disease. Additionally, by reviewing medical records kept at a pain clinic referral site directed by a qualified physician in academic medicine, this paper should help to dispel stereotypes and caricatures about valid and invalid treatment with botanical and non-botanical cannabinoid medicines, as the legal distinctions between the different types of cannabinoid medicines are sites of active cultural contestation. Efforts to influence public opinion about cannabinoid medicines are made by federal law enforcement spokespersons, as seen in the two illustrations in **Figure 1.6** of "Dr. Pot" and "Dr. Pat" that appear on a Drug Enforcement Administration (DEA) prevention website targeted towards adolescent education entitled "Rx pot: a prescription for disaster."

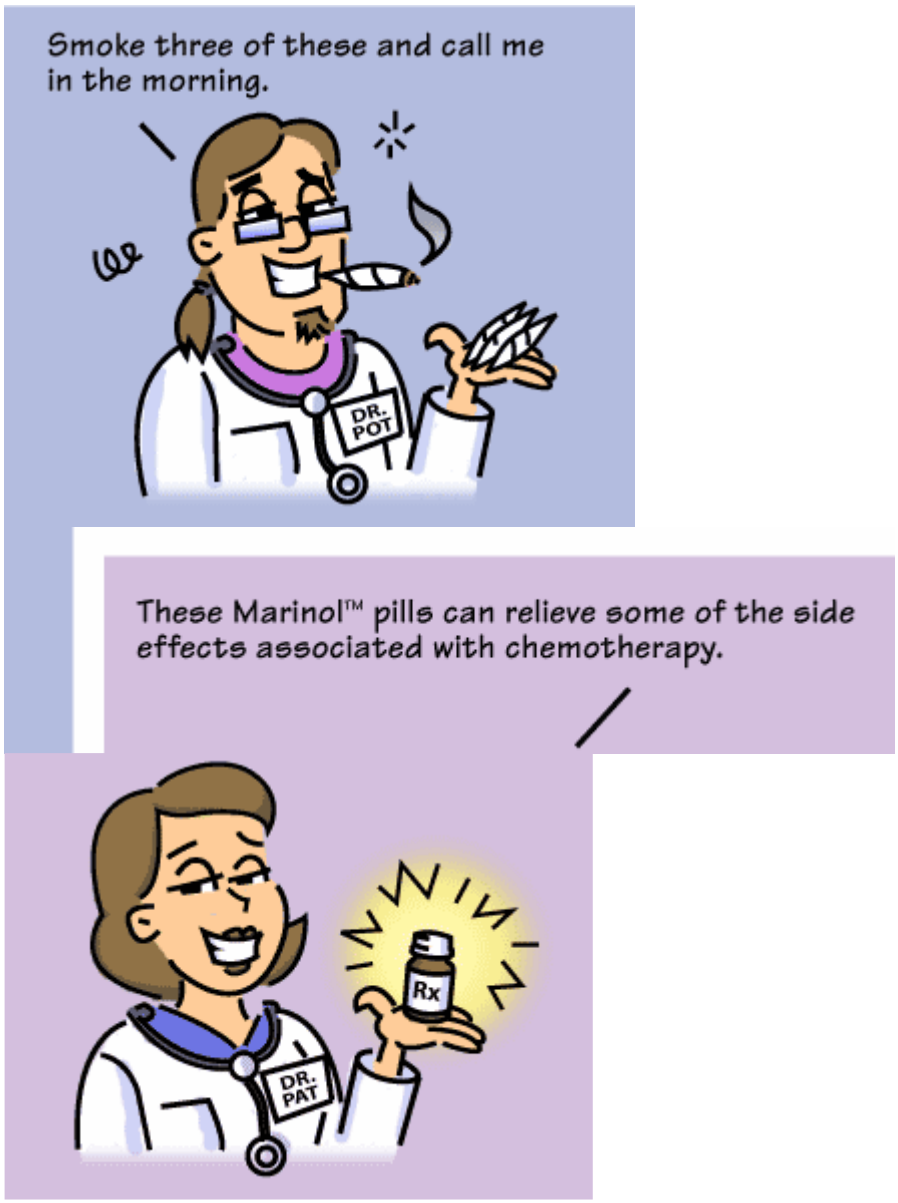

Figure 1.6: Federal Efforts at Validating Purely Chemical Cannabinoid Medicines and Invalidating Purely Botanical Cannabinoid Medicines. Example of drug prevention education on a DEA website targeted towards adolescents. The text that appears on the page is: "There's a lot of *hype* about so-called *"medical" marijuana*. Get to the *facts*—and cut through the *haze*." And "The *Government* has already *approved medications* to *help suffering patients*." (Source: http://justthinktwice.com/stumbleweed/rx_pot_01.htm)

Table 1.1: Patient Sample Demographics. As of 5/31/08.

Gender	n (%)	Mean Age ± SD (Yrs)	Median Age (Yrs)	Age Range (Yrs)
Male	87 (62.6)	46.6 ± 12.7	47	18-69
Female	52 (37.4)	46.2 ± 12.9	48	22-84
Total	139 (100)	46.4 ± 12.7	48	18-84

Table 1.2: Home 3-Digit ZIP Codes of Patients Accessing Medical Cannabis. All 3-digit ZIP codes are in Washington State; *one patient had moved to Illinois.

3-digit ZIP code area of home address	Patient Count
985	100
983	14
986	9
981	7
984	2
980	2
991	2
982	1
993	1
605	1*

Table 1.3: Patient-Years of Authorized Medical Cannabis Use in Sample. As of 5/31/08.

	Patient-Years	Mean ± SD (Yrs)	Median (Yrs)	Range		Carter-authorized Patient-Years	Carter-auth. Median (Yrs)	Carter-auth. Mean ± SD (Yrs)	Range
Male	145.3	1.67 ± 1.67	1.21	11 days - 8.31 years		135.1	1.12	1.55 ± 1.65	11 days - 8.31 years
Female	91.1	1.75 ± 1.64	1.18	50 days – 6.80 years		90.3	1.15	1.73 ± 1.64	50 days – 6.80 years
Total	236.4	1.70 ± 1.66	1.18	11 days - 8.31 years		225.4	1.12	1.62 ± 1.64	11 days - 8.31 years

Table 1.4: Classification of Chronic Pain Syndromes in Medical Cannabis Patient Sample. MPS = Myofascial Pain Syndrome, DN = Diabetic Neuropathy NPS = Neuropathic Pain Syndrome, CPS = Central Pain Syndrome, PP = Phantom Pain, SCI = Spinal Cord Injury, FMS = Fibromyalgia Syndrome, OA = Osteoarthritis, RA = Rheumatoid Arthritis, DP = Discogenic Back Pain, HIV = HIV Neuropathy, VP = Visceral Pain, MP = Malignant Pain

Pt	Gender	Age	MPS	DN	NPS	CPS	PP	SCI	FMS	OA	RA	DP	HIV	VP	MP
1	M	40			X			X							
2	M	58			X					X				X	
3	F	25	X									X			
4	F	48	X		X										
5	M	50	X									X		X	
6	M	30	X		X										
7	M	18	X			X									
8	F	35	X		X					X		X			
9	F	55							X						
10	F	49				X			X						
11	M	25			X			X							
12	M	37	X		X			X							
13	F	40							X						
14	F	39	X		X				X						
15	M	52	X									X			
16	F	49									X				
17	F	53							X	X		X			
18	M	59		X	X					X		X			
19	M	36	X			X									
20	M	43	X		X					X		X			
21	M	63	X		X							X			
22	F	33							X				X		
23	M	54			X	X			X						
24	M	22	X									X			
25	M	53	X			X									
26	M	58			X	X									
27	F	45	X							X					
28	F	45	X		X				X			X			
29	M	47	X												
30	M	41	X		X			X				X			
31	F	53	X						X						
32	F	84	X		X							X			
33	M	42	X	X	X							X			
34	M	53			X										
35	M	55	X												
36	M	61	X		X							X			
37	M	53	X			X									
38	F	35	X		X					X					
39	M	37			X			X							

Table 1.4 continued

Pt	Gender	Age	MPS	DN	NPS	CPS	PP	SCI	FMS	OA	RA	DP	HIV	VP	MP
40	M	64			X							X			
41	F	60	X							X					
42	F	45	X		X				X						
43	M	28	X												
44	M	38	X		X										
45	F	45	X			X			X			X			
46	M	53	X		X					X		X			
47	M	67	X			X						X			
48	M	43	X			X									
49	F	49			X							X			
50	F	40	X												
51	F	63													X
52	F	22	X		X										
53	F	23	X						X			X			
54	M	58			X					X		X			
55	M	36	X		X							X			
56	M	26	X		X			X							
57	M	23	X		X	X									
58	M	65			X										
59	F	48	X		X							X			
60	M	46	X		X							X			
61	M	19			X										
62	F	54	X		X					X		X			
63	M	47	X		X			X				X			
64	F	51							X	X	X	X			
65	F	47	X		X										X
66	M	33	X			X				X		X			
67	F	39	X			X				X					
68	M	41			X	X									
69	M	54	X		X							X			
70	M	51	X		X										
71	M	68	X		X							X			
72	F	45	X		X							X			
73	F	57	X						X			X		X	
74	M	25	X			X								X	
75	M	68	X							X		X			
76	M	50			X	X									
77	F	22	X												
78	F	46	X						X						
79	M	53	X									X		X	
80	M	34	X												
81	F	50	X		X	X						X		X	
82	F	43	X		X							X			X
83	M	25				X									

Table 1.4 continued

Pt	Gender	Age	MPS	DN	NPS	CPS	PP	SCI	FMS	OA	RA	DP	HIV	VP	MP
84	M	43	X		X							X			
85	M	28	X		X	X									
86	F	55	X		X				X			X			
87	M	51	X		X	X				X	X	X		X	
88	F	33	X		X										
89	F	52	X		X							X			
90	M	72	X											X	
91	M	44	X		X							X			
92	F	56	X		X							X			
93	M	58	X		X					X					
94	F	61	X		X					X		X			
95	F	23	X		X						X				
96	M	53	X		X					X		X			
97	F	52	X												
98	M	43	X			X				X		X			
99	M	32	X		X										
100	M	52	X		X					X		X			
101	M	52	X		X					X		X			
102	F	49	X		X				X			X			
103	M	45	X		X							X			
104	M	45	X		X	X									
105	M	46	X		X	X								X	
106	M	46	X		X	X						X			
107	M	69	X		X					X					
108	M	49	X		X							X		X	
109	M	51	X							X		X			
110	F	49	X							X		X			
111	M	66	X		X									X	X
112	M	33	X								X				
113	M	55	X		X		X					X		X	
114	M	51	X	X						X		X			
115	M	61	X		X										
116	F	47							X	X		X			
117	M	25	X												
118	F	24	X									X			
119	M	46	X		X					X		X			
120	M	51	X		X					X		X			
121	F	23	X		X	X						X			
122	F	54	X		X	X									
123	F	74	X						X	X		X			
124	M	51	X		X							X			
125	M	43	X		X							X			
126	M	50	X									X		X	
127	M	47	X		X	X						X			

Table 1.4 continued

Pt	Gender	Age	MPS	DN	NPS	CPS	PP	SCI	FMS	OA	RA	DP	HIV	VP	MP
128	M	38	X		X							X			
129	M	55	X		X					X	X				
130	M	37	X		X	X		X							
131	F	58	X		X	X						X			
132	M	55	X									X			
133	M	53	X		X					X		X			
134	F	52	X		X					X					
135	F	42	X		X	X				X		X			
136	M	47	X	X	X	X				X		X			
137	M	40	X		X	X									
138	M	68	X	X	X					X		X			X
139	F	60	X		X					X				X	

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The Medical Geography of Cannabinoid Botanicals in Washington State II: Subjective Health Status of Qualifying Patients Delivered a Clonal Lot of Maturated Germplasm

Introduction

While botanical geographies have a long history in the discipline as evidenced by the lengthy entries under "Progress of Botanical Geography" in *The Encyclopaedia of Geography* published in 1837 (p.237), they have rarely engaged the interest of medical geographers. Only one contemporary medical geographic study of botanicals can be found in the published literature. Price's (1960) "Root Digging in the Appalachians: The Geography of Botanical Drugs" chronicles the historical decrescendo of botanical medicines in the American pharmacopoeia and illustrates the anachronistic practices of collecting, producing, distributing and consuming wild medicinal roots, barks, and herbs then still extant in Southern Appalachia. As plants fell out of the mainstream of modern medicine, field research into the medical geography of botanicals quickly died out as well. Nowadays, one must turn to the medical anthropological and ethnobotanical literatures to find health-oriented social scientific research studies of human-plant relations.

However, with the rising interest in complementary and alternative medicine, botanicals have started to make a small comeback in medical geographic studies of health care delivery (Gordon et al. 1998) concomitant with the trend in emerging medical practices of physicians and patients (re)turning to botanical medicines in their exploration of less toxic and more affordable therapies (Craker et al. 2006; "Guidance for Industry: Botanical Drugs" 2004, CDC 2004). Additionally, the need for adequate treatments for a growing chronically and critically ill patient population (World Health Statistics 2008) has helped to ease long-standing prohibitions on the medical use of botanicals, as is happening today with the ~36 million year old plant species *Cannabis sativa* L. (**Figure 2.1**), which was federally prohibited in the year 1937 and is

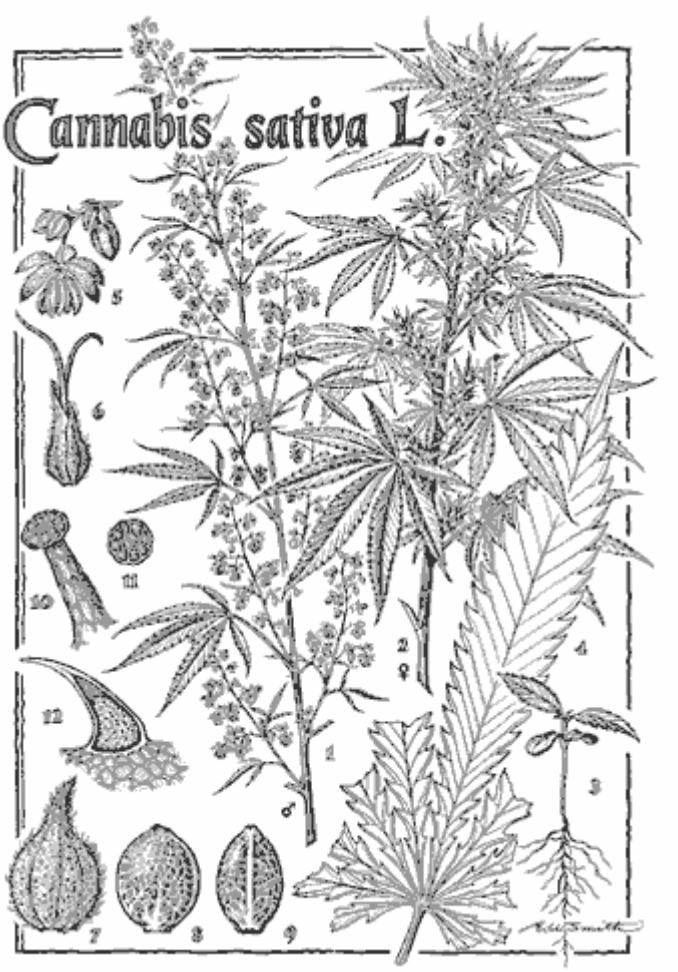

Figure 2.1: *Cannabis sativa* L. Botanical Plate. Composite plate of Cannabis sativa by Elmer Smith. 1. Flowering branch of male plant. 2. Flowering branch of female plant. 3. Seedling. 4. Leaflet. 5. Cluster of male flowers. 6. Female flower, enclosed by perigonal bract. 7. Mature fruit enclosed in perigonal bract. 8. Seed (achene), showing wide face. 9. Seed, showing narrow face. 10. Stalked secretory gland. 11. Top of sessile secretory gland. 12. Long section of cystolith hair (note calcium carbonate concretion at base). (Economic Botany Archives, Harvard University, Cambridge, Massachusetts, USA. Available at: http://www2.dpi.qld.gov.au/hemp/16241.html.)

retained in Class I[5] to this day, the most restrictive drug classification in federal law. In fact, a field of cannabinoid medicine arising out of clinical experience and modern research on the mechanisms of action for cannabis' effects on the body is growing in

[5] For those unfamiliar with this classification scheme, see, for example: Hardman JG, Limbird LE, Gilman AG. 2001. *Goodman & Gilman's The Pharmacological Basis of Therapeutics.* 10th ed. New York: McGraw-Hill.

the United States as ever greater numbers of health care providers become educated about the physiologic importance of the endogenous cannabinoid system ("Here, There, and Everywhere: the Endocannabinoid System" 2008; Pacher et. al 2006) and about the wide safety margins (Wang et al. 2008) and broad clinical efficacies (Musty et al. 2001; Bagshaw et al. 2002; Ben Amar 2006; Rocha et al. 2008) of cannabinoid drugs, available in both purely botanical and purely chemical varieties. This paper is a study in the geography this developing and increasingly accepted cannabinoid medical care system that documents the medical geographic context at one site in Washington State where cannabinoid botanicals are delivered to qualifying patients for their use in treatment under medical supervision. The main aim of this project is to add to the clinical science database of medical cannabis use using tools and approaches from medical geography to capture meaningful information about patients' ongoing use patterns in the field.

Contesting cannabinoid botanical medicines and the human-environment relationship

The Class I medicinal plant *Cannabis sativa* L., while currently unavailable for general prescription use in the US, is in use in the context of 2 active controlled clinical trials (NCT00682929 2008, NCT00308555 2008), 33 completed controlled clinical trials (Ellis et al. 2008; Wilsey et al. 2008; Corey-Bloom et al. 2008; Abrams, Jay et al. 2007; etc.[6]), and 1 on-going, now-defunct investigational clinical study (Aggarwal et al. 2007; Russo et al. 2002). The few patients enrolled in American cannabis clinical studies are prescribed a cannabis strain or blend cultivated under contract at the federal research farm at the University of Mississippi at Oxford. The analytical chemist in charge of the farm (whom the author met at the 2005 International Cannabinoid Research society meeting) holds the patent on a rectal suppository formulation of

[6] Abrams, Vizoso et al. 2007; Haney et al. 2007; Wallace et al. 2007; Haney et al. 2005; Abrams et al. 2003; Söderpalm et al. 2001; Abrams et al. 2000; Greenwald et al. 2000; Greenberg et al. 1994; Randall 1990; Research Advisory Panel 1989; Foltin et al. 1988; Foltin et al. 1986; Behavioral Health Sciences Division 1983, 1984; Board of Pharmacy, State of Tennessee 1983; Kutner 1983; Department of Social Oncology 1982; Chang et al. 1981; Merritt et al. 1980; Chang et al. 1979; Crawford et al. 1979; Greenberg et al. 1976; Tashkin et al. 1975; Hill et al. 1974; Tashkin et al. 1974; Tashkin et al. 1973; Vachon et al. 1973; Hollister 1971

dronabinol—an active chemical found in the cannabis plant that is in Class III. This drug has heretofore been produced by total synthesis, but recently it and other cannabinoid formulations were approved for commercial extraction as natural products directly from the cannabinoid botanical supply grown in Oxford, Mississippi (USDOJ 2005). Since cultivation began, the federal cannabis herbal product has been inaccessible for general medical use, and since 1970, federal agencies have maintained the ideological hardliner position that cannabis, pejoratively termed 'mari(h/j)uana' during the early 1900s, has "no currently accepted medical use in treatment in the United States" (21 USC Sec. 812 01/22/02).

Overall, the current and past published American controlled clinical trials with cannabis have studied its safety, routes of administration, and use in comparison with placebos, standard drugs, and in some cases dronabinol, in: appetite stimulation in healthy volunteers, the treatment of HIV neuropathy and other types of chronic and neuropathic pain, both pathological and experimentally induced, spasticity in multiple sclerosis, weight loss in wasting syndromes, intraocular pressure in glaucoma, dyspnea in asthma, both pathological and experimentally-induced, and emesis, both secondary to cancer chemotherapy and experimentally induced. The 1 on-going, now-defunct study federal cannabis clinical study jointly administered by NIDA and FDA has been running for three decades without follow-up and currently has 4 chronically ill patients enrolled (3 of whom the author has met). It was abruptly closed to new enrollees in 1991 with the explanation from the U.S. Public Health Service that the program was undermining negative public perceptions about cannabis needed to sustain its illegality for the general population (Randall and O'Leary 1998, p.375-6).

Seven randomized, placebo-controlled or dronabinol-controlled clinical trials of cannabis published in 2005-2008 and conducted in patient populations in the United States, which investigated indications such as HIV- and other forms of painful neuropathy, spasticity in multiple sclerosis, and appetite stimulation in HIV patients,

have consistently shown statistically significant improvements in pain relief, spasticity, and appetite in the cannabis-using groups compared to controls (Ellis et al. 2008; Wilsey et al. 2008; Corey-Bloom et al. 2008; Abrams, Jay et al. 2007; Haney et al. 2007; Wallace et al. 2007; Haney et al. 2005). In fact, nearly all of the 33 published controlled clinical trials with cannabis conducted in the United States have shown significant and measurable benefits in subjects receiving the treatment. Four notable exceptions are the negative results from Chang et al. (1981) and the California state health department-sponsored (Research Advisory Panel 1989) studies on emesis in cancer chemotherapy patients, Greenberg et al.'s (1994) study with spastic multiple sclerosis patients, and Hill et al.'s (1974) study of electrically-induced experimental pain. On balance, however, even though most of the studies were small-to-medium sized, the preponderance of American cannabis clinical trials empirical data shows evidence of bona fide medical utility for the botanical.

Despite the fact that the Institute of Medicine concluded after reviewing relevant scientific literature—including dozens of works documenting marijuana's therapeutic value—that "nausea, appetite loss, pain, and anxiety are all afflictions of wasting, and all can be mitigated by marijuana" (Joy et al., 1999, p.159) and despite the fact that legal access to marijuana for specific medical purposes has been supported by numerous national and state medical organizations, including the American Medical Association-Medical Student Section, the American College of Physicians, the American Psychiatric Association's Assembly, the American Academy of Addiction Psychiatry, the American Academy of Family Physicians, the California Medical Association, the Medical Society of the State of New York, the Rhode Island Medical Society, the American Academy of HIV Medicine, the HIV Medicine Association, the Canadian Medical Association, the British Medical Association, and the Leukemia and Lymphoma Society, among others ('Proceedings' 2008; 'Medical Marijuana Endorsements' 2008), indicating a growing acceptability of the therapeutic practice amongst organized medicine groups—a necessary prerequisite for availability of the

service, federal agencies who are empowered by Congress make reclassifications based on scientific and medical considerations insist that marijuana "has no currently accepted medical use in treatment in the United States" and that "there is a lack of accepted safety for the use of" marijuana "under medical supervision" (21 USC Sec. 812 01/22/02) as grounds for maintaining its prohibition and undermining remedial state laws. In doing so, these State actors could be accused of shrinking their specific legal "obligation to refrain from prohibiting or impeding traditional preventive care, healing practices and medicines", engaging in the "deliberate withholding or misrepresentation of information vital to health protection or treatment", and aiming for "the suspension of legislation or the adoption of laws or policies that interfere with the enjoyment of any of the components of the right to health"—all specifically enumerated violations of governmental obligations to respect the human right to health in international law ('General Comment No. 14' 2000).

In moving towards the protection and fulfillment of the right to health, a dozen American states—Alaska, California, Colorado, Hawaii, Maine, Montana, Nevada, New Mexico, Oregon, Rhode Island, Vermont, Washington—containing approximately 20% of the national population and representing 40% of the total geographic area of United States—have passed laws granting physicians the authority to approve or recommend use of cannabinoid botanicals based on medical evaluation to qualifying chronically or critically ill patients, thereby freeing such patients from state-level prosecution and the worst consequences of the ongoing denial of cannabis's medical utility in federal law. A medical marijuana authorization is the means by which patients receive *access* this health care resource. While not a true prescription, it is a legally recognized doctor-patient clinical discussion viewed as protected speech according to a ruling by the Ninth U.S. Circuit Court of Appeals that the Supreme Court of the United States let stand (Conant v. Walters 2002/3); current estimates indicate that approximately 7,000 American physicians have made such authorizations

for a total of several hundred thousand patients[7]. After receiving medical marijuana authorizations, patients procure cannabinoid botanical medicinal products, or medical cannabis, for their self-administered use under medical supervision from in-state channels and hence *delivery* of the treatment is effectuated—actions which continue to be harshly criminally sanctioned under federal law ('DEA' 2008; Gonzales v. Raich 2005). In such a sociopolitical environment, major medicine access and delivery problems certainly do remain for patients. Not only is access to knowledgeable physicians who feel comfortable recommending medical cannabis a challenge for patients, but also following such recommendations and being delivered a safe and adequate supply, a need that state laws do not comprehensively address, present significant challenges and hardships.

Work in medical geography in the area of spatial perspectives on health care access and delivery systems focuses on the key question: what is the impact of geographic factors on the acquisition of various medical services? Key summary texts of the last three decades, such as Shanon and Dever's *Health Care Delivery: Spatial Perspectives* (1974), Joseph and Phillips' *Accessibility and utilization: geographical perspectives on health care delivery* (1984), and Meade and Earickson's *Medical Geography* (2000), have tended to focus on larger-scale geographic analyses, and their distance-derived modeling may not be straightforwardly applicable at smaller-scales. This is a critique that Pyle (1976) advanced regarding Shannon and Dever's work, but it could easily apply to the later texts as well. Medical geographic models of health care delivery need to be suitably adapted both to be applied to small-scale delivery systems and to account for any unique idiosyncrasies such systems present. Recently published work by Mayer et al. (2008) on the availability of opioid medicines in Washington State

[7] Currently available figures indicate that over 1,500 physicians have recommended medical marijuana use for 350,000 patients in California ("California Medical" 2006; "Dr. Mikuriya" 2006)), 182 physicians for 2,051 patients in Colorado ('Colorado' 2008), 124 physicians for 4047 patients in Hawaii ("Lawmaker" 2008), 145 physicians for 634 patients in Montana ("ACLU" 2008), 145 physicians for 900 patients in Nevada ("Federal" 2008), 2,970 physicians for 19,646 patients in Oregon ('Oregon' 2008), 149 physicians for 302 patients in Rhode Island ("For more" 2007), and 2,000 physicians for 20,000 patients in Washington (Aggarwal SK et al. 2007).

outpatient pharmacies charts a novel path for medical geographers in the field of healthcare access and delivery, both in that it considers the small scale and is medication delivery-based rather than based broadly on a particular type of medical service, such as pain management or emergency medicine, which would include availability of practitioners, medicines, and facilities over a given region. The work focused strictly on the availability of particular opioid medicines for delivery to patients who have been prescribed them. With data collected from a comprehensive state-wide pharmacy mail-in survey; the authors presented relevant state-level geographic analysis of the phenomenon of opioid availability based on small-scale, zip code-sized enumeration units and showed that there were no clinically significant geographic differences in the availability of short-acting and long-acting opioid medicines for delivery to patients at Washington State pharmacies.

Similarly, the focus of this paper is on the delivery of a controlled class of medicines—cannabinoid botanicals—to patients who are qualified to access them for their self-administered treatment under medical supervision, though it is empirically based only at one site. Note that the terms *access* and *delivery* used here carry specific meanings with respect to cannabinoid botanical medical systems in the United States; they should not be thought of in terms of their general usages in the field of medical geography. Given the current state of conflicting policies that regulate cannabinoid botanical medical systems in the United States, federal courts have mandated that the medical geography of cannabinoid botanicals access and delivery be necessarily bipolar, with patients receiving *access to* treatment at one set of locations and *delivery of* treatments at other locations. Based on the alternative/traditional medicine literature, such a system would be referred to an *intercalation* (or intertwining) of the practice of modern biomedicine with a traditional materia medica (Young 1983).

There are unique geographic factors to consider in state-level medical cannabis delivery systems. The medical cannabis being used today by patients in the 12 active

state programs in the United States is presumed to all be locally cultivated; official government sources of marijuana do not enter into the mediation at all. It can be safely assumed that in order to effect delivery of cannabinoid botanical medicines as part of state-level medical marijuana programs, patients, providers, or their contacts in their respective social networks, have to at some point come into direct contact with medicinal-grade cannabis germplasm (plant genetic resources) found in their local environments such as a seed, a cutting, or a starter plant. In other words, patients and their cannabis-providing communities of support effectuate their health care by culling germplasms found in their surrounding, socially-mediated natural environments. Viable medical-grade cannabis germplasm is procured by cultivators through their reliance on spatially diffuse social networks and community supports that have access to the natural resource. Because local, state, and federal law enforcement efforts in seemed pursuit of the much-politicized 'drug free America' vision have never been successful at completely eradicating viable cannabis germplasms from US territory and leaving the federal farm its sole source, renewable sources of germplasms invariably remains in local environments that patients and care providers count on to tap into and maturate, growth cycle after growth cycle, into usable medical-grade cannabinoid botanical medicines of varying strain variety. Clearly, medical cannabis delivery at its root level is a human-environment relationship that has complex and interdependent social and natural dimensions. The natural and social history of these local medicinal cannabis plant genetic resources, their propagation, preservation, domestication, and the like, are part of an underground human-environment relationship that has never been carefully studied or well-documented in the American context. A long project of shedding light on this human-plant relationship through the collection of oral histories, plant breeding histories, and plant genetic fingerprints remains to be done in order to better elucidate American cannabis medical ethnobotany.

For those who wish to provide cannabinoid botanical medicine to patients, the essential geographic challenges are first to make contact with the plant genetic resource, and

second, once maturated and prepared, to deliver them across space to qualifying patients who have themselves traveled to seek out such care. The first geographical challenge will not be addressed in this paper, as data regarding it is difficult to collect and trace and given that such contacts are generally shrouded in secrecy, an adaptive strategy developed to manage the potentiality of legal problems. The second geographic challenge of maturated germplasm delivery will be analyzed here, both from the perspective of the patients utilizing care and those expending efforts to deliver the botanical medicine to them.

Study background

Minimal documentation on quality of life and health exists in the published, peer-reviewed literature for medical cannabis patients who receive authorizations to use cannabis from licensed physicians in accordance with state laws in the US. In Washington State, where they number in the 20,000 range (Aggarwal et al. 2007), such patients have not been studied at all. Four medical cannabis state-level programs, however, have taken efforts to publish on the internet health statistics collected in their state registries that describe their medical cannabis-using patient populations. See currently available data from Oregon, Nevada, Colorado, and Rhode Island in **Appendix D**. In California, where an officially recognized medical cannabis patient population has existed for 12 years, a handful of observational studies, all in the San Francisco Bay Area, have been published: three access-based and eight delivery-based. They will be briefly reviewed here in chronological order. A 1993-1995 delivery-based survey conducted by J. Mandel (reported in Gieringer 2001) of 351 randomly-selected members of the San Francisco Cannabis Buyer's Club (SFCBC), a site which delivered medical cannabis and served as the initial headquarters for the California initiative to legalize medical marijuana prior to the law's passage in 1996, found that 305 (87%) had a medically verified illness, and of these, 258 (84.5%) were HIV+, with a majority of these patients also carrying the diagnosis of AIDS. Six patients (2%) had multiple sclerosis, another 6 patients (2%) had severe musculoskeletal disorders, and

34 patients (11%) had cancer, glaucoma, or other diseases. The sample was 90% male and had a median age of 36 years, which closely matched the gender and age distribution of San Francisco's AIDS population. Mandel conducted two additional, larger, delivery-based surveys in 1997 and 1998 with core and current members of the Oakland Cannabis Buyers Club (OCBC), respectively (reported in Gieringer 2001). The OCBC site absorbed many of the patients who were utilizing the SFCBC after its first temporary closure in 1996-1997 by court order. The 1997[8] survey of OCBC members showed a majority of HIV/AIDS patients (54%), but this percentage reduced to 29% in the 1998[9] survey, when chronic pain and related disorders were the most frequently reported conditions (40%). Gieringer (2001) attributes this shift to several factors: "(1) a heightened appreciation amongst physicians for cannabis' utility for other conditions; (2) an exodus of former SF CBC members to new clubs in San Francisco, and (3) a decline in the number of PWAs [persons with AIDS] with wasting syndromes due to the advent of protease inhibitors" (2001, p. 145). In another early delivery study, Child et al. (1997) surveyed adult members of the San Francisco Cannabis Cultivator's Club (formerly the SFCBC) and the OCBC by inviting all clients, through the auspices of existing site personnel, to complete a brief questionnaire that focused on HIV/AIDS and symptom treatment. Two hundred and six patients, 78% of whom were male, completed the study; of these, 102 or 49.5% were HIV+. The HIV+ patients had a mean age of 40 years, were 97% male, and their first and second most frequent cited reasons for cannabis use were "appetite improvement/weight gain" (71%) and for "feeling better mentally/reduce stress" (58%), respectively. The HIV- patients had a mean age of 43 years, were 64% male, and their first and second most frequent cited reasons for cannabis use were for "feeling better mentally/reduce stress" (65%) and to "decrease physical pain/discomfort" (56%), respectively. Harris et al.'s (2000) delivery study reported on self-reported cannabis effects and characteristics of 100 San Francisco medical

[8] In 1997, the OCBC had 768 "core members", defined as having made four or more purchases in 1997.
[9] In 1998, the OCBC had 965 "current members", defined as having registered between April 1998 and April 1999. This included 743 males, 222 females; age distribution: 507 were < 45 years old, 325 were 45-54 y.o., 88 were 55-64 y.o., and 44 were ≥ 65 y.o.

cannabis club members based on interviews and surveys conducted with 100 patients recruited through advertisements posted at the ~8500-member Cannabis Cultivator's Club. The sample was predominantly middle-aged, male, white, and unemployed. Sixty percent reported HIV seropositive status, and the primary reason the HIV patients reported using medical cannabis was to treat decreased appetite. Eighty-seven percent had a history of substance abuse problems. Fifty-eight percent of the patient sample reported experiencing one or more days in the past month in which they stayed in bed due to illness, and 72% reported an inability to meet most of their needs; however, their median quality of life rating was 7/10. Gieringer (2001) also reported access-based data from 2,480 patients interviewed by Tod Mikuriya (1933-2007), a psychiatrist and widely published cannabinoid botanical medicine specialist (with whom the author worked in his outpatient clinic in Feb. 2007). Mikuriya recorded more than 250 separate indications for cannabis under the *International Classification of Disease* Ninth Revision (ICD-9) system in these patients; results were tabulated in 1999 by Gieringer. One hundred percent of the patients had chronic conditions. Based on primary ICD-9 diagnosis, the largest category of patients interviewed by Mikuriya (1133 patients, 45.7%) used cannabis for analgesia to treat conditions such as migraines and neuralgias, arthritis, musculoskeletal injuries, or degenerative disorders. The second largest category (660 patients, 26.6%), included patients who used cannabis to treat mood disorders, such as post-traumatic stress disorder, depression, bipolar disorder, and schizophrenia. The third largest category of patients (136 patients, 5.5%) used cannabis as a harm reduction substitute for other problematic drug use, such as alcohol dependency (118 patients), opioid dependency (8 patients), and others (10 patients). Corral (2001) published a three-year observational, delivery-based study of the differential effects of medical marijuana based on strain variety conducted at a Santa Cruz, CA cannabinoid botanical medicine collected called Wo/Men's Alliance for Medical Marijuana (WAMM) in which some strains were superior to other in improving appetite and energy level. In that survey-based study, which included provision of medical cannabis to patients from a "genetically-monitored, organic,

communal garden tended by WAMM client/participants under the direction of Mike Corral and Valerie A. Leveroni Corral", 77 medical cannabis patients participated, of whom 56% were male, 29% were female, 15% were not coded as to gender. By primary diagnoses, 39 patients (51 percent) had HIV/AIDS, 14 (18%) had neurological diseases, 7 (9%) had cancer, 4 (5%) had orthopedic diagnoses, 3 (4%) had epilepsy, 1 (1%) had lupus, 1 (1%) had arthritis, 1 (1%) had fibromyalgia, and 1 (1%) had glaucoma.

In more recent studies of American medical cannabis patients, Sylvestre et al. (2006) reported in a prospective observational study that included patients who were qualified to access medical cannabis treatment that cannabis use improved retention and virological outcomes in patients who received interferon treatment for hepatitis C at a community-based non-profit clinic providing medical and psychiatric treatment to substance users in Oakland, California. The study recruited 22 cannabis users and 49 non-users; the authors noted that the cannabis used by patients in the study "was often obtained with outside medical approval through local 'cannabis clubs'" (pg. 1058). O'Connell et al. (2007) reported on the demographics, social characteristics, patterns of cannabis and other drug use in 4117 patients seeking access to medical cannabis at the private medical practice of Dr. O'Connell, a thoracic surgeon in the San Francisco, California Bay Area, during the period 2001–2007 based on data gathered from structured clinical interviews. The sample was 77.4% male, 68.8% Caucasian, and their median age was 32 years old. Nearly all patients were already established cannabis users who self-medicated for a "mix of physical and emotional symptoms" (pg. 5). Investigators overwhelmingly found that once patients had established cannabis as their substance of choice, subsequent consumption of alcohol, and to a lesser degree, tobacco, diminished (pg. 4). Reinman's (2006, 2007) study involved 130 medical cannabis patients recruited from 7 sites that deliver cannabinoid botanical medicines—2 in Berkeley and 5 in San Francisco. The sample was 74% male, their median age was 39.9, and 59% identified as Caucasian only. Patients reported various

symptom durations and current health statuses; 74% reported using cannabis as a substitute for prescription drugs, the main reason being fewer side effects. As an indicator of functionality, eighty-one percent of patients surveyed had used medical cannabis on the day of the survey. A just published study by Chapkis and Webb (2008) reports on the health status of 42 medical marijuana patients delivered treatment at the aforementioned Santa Cruz, CA cannabinoid botanical medicine collective based on in-depth, open-ended interviews. They were 79% Caucasian, 59% male, and ranged from 29-94 years old. Sixty percent lived with AIDS and cancer, 14% with serious neurological disorders such as MS and epilepsy, and 13% with severe chronic pain.

Very recently, a new source of delivery-based data on medical cannabis patient populations became available—searches and seizures by federal agencies. On July 30, 2008, the same day US Congressional representatives held a press conference on two pieces of proposed legislation, House Resolution 5843, the Personal Use of Marijuana by Responsible Adults Act of 2008, which would eliminate federal criminal penalties for simple possession of 100 grams or less of cannabis—the first bill of its kind in 30 years—and House Resolution 5842, the Medical Marijuana Patient Protection Act, which would reclassify marijuana from Schedule I to Schedule II of the Controlled Substances Act, the US White House Office of National Drug Control Policy (ONDCP) released a "*2008 Marijuana Sourcebook*" entitled *MARIJUANA: THE GREATEST CAUSE OF ILLEGAL DRUG ABUSE* which ONCDP officials published online and also distributed at the Washington, DC, press conference (ONDCP 2008). The "Introduction" section states that the report presents data summary on several topics, including "the issue of so-called medical marijuana" (p. 1). In a section entitled "THE 'MEDICAL MARIJUANA' ISSUE", ONDCP provides data from "San Diego marijuana dispensaries", citing the source "Drug Enforcement Administration (San Diego). Unpublished tabulations based on 3,636 dispensary records seized from October 2005 through July 2006." Based on this sample, they report that 2% of "customer ailments" found in "San Diego Marijuana Dispensaries, 2006" were "AIDS,

Glaucoma, Cancer" and 98% were "Muscle spasms, insomnia, back/neck/post-surgical pain, anxiety, headache, and other." The "Customer Age Distribution" reported was ages 21-31, 41%, ages 31-40, 19%, ages 41-50, 13%, ages "under 21", 12%, ages 51-60, 9%, and ages "Over 60 and unkown[sic]", 6% (p. 20).

Study design

The main aim of this project is to add to the clinical science database of medical cannabis use using tools and approaches from medical geography to capture meaningful information about patients' ongoing use patterns in the field. The focus of this study is on the delivery of the third category of cannabinoid drugs, medical marijuana, to qualifying patients in Washington State at a purposefully chosen complementary and alternative cannabinoid botanical medicines community clinic that delivers locally produced medicine to verified qualifying patients. Using basic methodologies such as questionnaires, interviews, and observation, the study followed the geographic arc of a selected clonal lot of cannabinoid botanical medicine. It sought to characterize the costs involved in the lot's delivery to patients, the self-reported, cannabinoid-related health status of patients who drew their physician-recommended botanical medicine from the lot, and in some cases, the level of symptomatic relief the treatment afforded. In reviewing findings from this study, the remainder of this paper quantitatively and qualitatively assesses patient health-related quality of life, systemic challenges and hardships, and key human-environment relationships necessary for producing and delivering cannabinoid botanical medicines.

In conducting this study at a medical marijuana delivery clinic, the author acted as an agent of the University of Washington. The University of Washington and Harborview Medical Centers adopted policy guidelines for physicians regarding medical marijuana in March 2002 (Policy Number 80.15) following Washington State's passage by voter initiative of a law authorizing the medical use of marijuana for qualifying patients in 1998 which was subsequently affirmed and amended in the 2007 state Legislative

session (RCW 69.51a) when $94000 was allocated for a Washington State Department of Health rule-making study on medical marijuana dosing and supply originally due on July 1, 2008. Only 19 researchers in the US have the necessary licenses to conduct research with cannabis supplied by federal agencies (Doblin 2008), and of these, only 2 licensees have a currently active clinical research study. This research project is significant as the only rigorous medical social scientific study on medical cannabis currently active in the US that examines the delivery of medical cannabis from a germplasm-directed, community-based, and patient-centered perspective. It was approved by the Human Subjects Division at the University of Washington, Application No. 33070 on 10/23/07, and a federal Certificate of Confidentiality (NCCAM 08-01) was issued by the National Institutes of Health's National Center for Complementary and Alternative Medicine on 12/4/07. The Certificate ensures that any sensitive information collected as part of this study will remain shielded from outside parties and that those involved in conducting the study "cannot be compelled in any Federal, State, or local civil, criminal, administrative, legislative, or other proceedings to identify" study participants or otherwise compromise their privacy. The IRB stipulated that subjects be informed in writing that they may wish to seek legal advice about the potential risks of being in the study but that the University of Washington cannot provide this advice. The other important step taken to protect subjects' privacy in this study was requesting and receiving approval for necessary waivers which ensured the absence of any written documentation with subjects' names or other identifying information on any permission sheet, consent form, or study material.

The exact location of the complementary and alternative cannabinoid botanical medicines clinic where the study was conducted will remain anonymous and undisclosed to protect subjects' privacy and must remain so as per IRB review. Prior to beginning the sampling study, contact and working relationships were made with the clinic director and staff who assisted in later patient-subject recruitment and data collection. The critical sampling strategy used in this study was a geographic,

germplasm-based one. This means that all patient-subjects recruited for enrollment in this study visited the clinic site on one of the four days during which time the study was taking place, and all patients chose, out of the several cannabinoid botanical medicine strains available on those days, to treat themselves with one named “plum”, a strain which had been pre-selected for study unbeknownst to patients, with or without drawing from the other lots. The patients in the study therefore constituted a convenience sample that may or may not have been representative of all patients utilizing the clinic or all medical cannabis patients in Washington State generally, and there is no way of knowing as no uniform state-level data about medical cannabis patients are available. Geographic and germplasm source and maturation information about the lot of “plum” available in the clinic during study days was collected through observation and prior interview with the clinic director. Several lots of other strains of cannabinoid botanicals were also available at the clinic on study days—patients who solely chose from these lots for treatment were neither recruited to participate in the study nor were patients in any way influenced to choose one strain over another. The study inclusion criteria were that: one had to be a qualified medical cannabis patients (pre-verified by clinic and asked of subjects as initial survey item) who was delivered the “plum” study lot, aged 18 or older, and proficient in reading and understanding English. The sole study exclusion criterion was: mention made by any subject that s/he was taking a cannabinoid receptor blocker drug (none did). Patients were given no gifts, payments, or services without charge for participation.

Study procedures

One cannabinoid botanical medicine clinic director and one group of qualifying cannabinoid botanical medicine patients were enrolled in this study. The director was recruited into the study upon making initial contact with the clinic, and the qualifying patients were recruited into the study when obtaining their physician-authorized cannabinoid botanical medicine at the clinic site.

Oral informed consent was obtained prior to conducting a semi-structured interview with the clinic director. A six-page "Complementary and Alternative Botanical Medicine Provider Semi-Structured Interview Script" (see **Appendix B**) was adapted from a previous student's dissertation (Reiman 2006). The interview collected de-identified geographic data on the costs and environmental factors involved in procuring and maturing a cannabis germplasm sample delivered as a lot to qualifying patients. Questions sought to elicit spatially relative, geographic information related to location and movement. Basic service data such as the size of clinic's patient population and the number of unique health care providers whose authorized patients have received botanical medicine from the clinic were also collected. Information from the semi-structured interview was captured through note-taking.

The patient sampling study was conducted during clinic hours over four consecutive operational days during 2007-2008 academic year. Patients were recruited with the assistance of clinic staff who directed potential subjects receiving the particular pre-selected clonal lot of botanical medicine to the researcher who was stationed in another part of the clinic. They were told explicitly that they are under no obligation to participate in the study, that their participation is entirely voluntary, and that they are free to discontinue their participation at any time. With their oral informed consent (see **Appendix C** for consent information statement), willing patients were then enrolled into the study. They were assigned a random number and asked to participate in the research study by filling out the "Medical Marijuana Patient On-site Questionnaire" (see **Appendix B**) that assessed their medical marijuana treatment history, health-related quality of life (HRQoL), levels of mental distress, problems/concerns related to medical marijuana use, coping strategies, and cannabis abuse/dependence patterns using standard and tailored instruments. The questionnaire was administered in a quiet area. Upon completion, subjects were given a second questionnaire, the "Medical Marijuana Patient Take-Home Questionnaire" (see **Appendix B**). Subjects were instructed to complete the second half of this

questionnaire after consuming the physician-authorized medical cannabis received at their clinic visit. The take-home questionnaire focused on patient satisfaction with cannabinoid botanical medicines vis-à-vis their use of other medications; it queried symptomatic relief achieved with self-titrated dosing of their supply of the cannabinoid botanical medicine stain under investigation, travel-to-clinic distances, times, costs, and repeated some HRQoL items from the on-site questionnaire. Patients were also given a symptom-relief dosing-diary and given instructions for completing the diary. Patients were given an addressed and stamped envelope to return the take-home questionnaire and dosing diary and also given the option to drop-off completed materials at the clinic. All materials associated with a given patient were coded with the original randomly assigned study number. Returned questionnaires and study materials were securely retained with the researcher. Over two months after the initial on-site patient sampling was completed, a sign was posted by clinic staff behind the counter for two weeks to increase return rate of prospective study materials that read: "First of all, we would like to thank all of you who participated in the survey by the UW medical student. We would like to remind you to complete and return the surveys. We know it's a lengthy survey but it is very important to our community. So those of you who have to complete the study, RETURN THEM AS SOON AS YOU ARE HAVE COMPLETED THEM."

Complementary and alternative cannabinoid botanical medicines community clinic characteristics

At the time that this study was conducted, the facility had been open for 26 months, and the current director had been operating it for 16 months. The facility's hours of operation were 11am-6pm, Monday through Friday, 12-2pm the first Saturday of each month, and on Sundays closed. In addition to delivering cannabinoid botanical medicines, the clinic offered "Starting Growing" classes for $75 taught by a multiple sclerosis patient. It also offered a number of support services for no charge such as a monthly patient meeting, peer counseling on using and growing medical marijuana, information on Washington's medical marijuana law, medical marijuana usage, patient

rights, and medical marijuana scientific research information. Support groups, legal advice, political advocacy trips to the state capital, courtroom support for prosecuted patients, visitation of patients in jail or in the hospital, and illness-specific emotional support in which HIV/AIDS and MS patients talked to other HIV/AIDS and MS patients (or staff) about housing, medical issues, caregiver issues, etc., were all additional services available for no charge. To be verified as a qualifying patient, a patient needed a state-issued ID card and a copy of a Washington State-licensed physician's authorization for the use of medical marijuana. Patients were not allowed to use marijuana on site, and they were also not allowed to use tobacco on site. During an average week, ~250 patients utilized the clinic, and since opening, ~600 patients had been served. During the four days of patient sampling, the clinic delivered cannabinoid botanical medicines each day to 72, 49, 66, and 42 patients, respectively, for a four-day total of 229 patients. Since its opening, ~100 physicians' patients have been delivered cannabinoid medical treatment from the clinic, and currently ~20 physicians' patients are being served by the clinic.

The clinic director felt that the facility has the support of local government officials, that it maintains excellent relationship with local police, and has no history of raids by local, state, or federal law enforcement. The clinic offered a variety of cannabinoid botanical medicinal products including: cannabis flower buds (pistillate inflorescences), edibles prepared with lipophillic extracts (cookies, brownies, etc.), tinctures, salves, butter, hashish, 'mary pills' (encapsulated ground cannabis flowers activated with coconut oil), tea (market spice tea infused with cannabis 'sugar leaf' from the second trimming), and elixir (a cannabis flower bud-medicated honey). As a service to indigent patients, an apportioned amount of the leafy bits that falls off during handling of the cannabis flower buds and accumulates in the bottom of storage bags and which still have cannabinoid content were made available to patients at no charge as part of a fund named in honor of a patient who had passed away. The director emphasized the fact that all medicinal products offered at the clinic came from known

and reliable sources and were produced cleanly and without pesticides. The clinic also sold combustion-and-inhalation delivery pipes from $10-20, offered books, DVDs, and a donation closet for no charge. The size of the facility was approximately 2500 square feet, of which only 1/3 was being regularly used. The clinic tried to have "good and easy parking" on the premises and tried to maintain "easy accessibility" for all patients with disabilities.

The clinic employed 3 full-time workers and 2 part-time workers for counter staff services. One full-time worker did medicine intake and outtake out of the back office. S/he interacted with those who brought medical supplies and did the weighing and packaging of medicine that was delivered to patients. Another full-time worker handled the front office. S/he was the patient intake coordinator and served as liaison to physician's offices for patient verification, conducted new patient orientation about the clinic's policies and procedures, and maintained the clinic website. The third full-time worker was the clinic director who also served as the community liaison, did courtroom and jail visitations and other political/legal services. The clinic also maintained a volunteer staff, and much of their time was used in helping patients set-up for producing medical marijuana at home.

The roadblocks the clinic director saw in meeting patient needs were all related to social structural barriers in patients' community and home environments. These included dealing with: housing issues, such as the fact that some apartment complexes would not allow patients to use or grow medical marijuana; the fact that patients could not use medical marijuana in public; difficulties patients had in maintaining a consistent supply of medical marijuana, and the fact that there were police who continued to raid patients' gardens. The director was less concerned with harsh federal policies than with ensuring local-level policies served patient interests. In terms of general community relations, the director stated that they tried to be good neighbors and good community members in the area where the clinic was situated. They did not

have loud music or parties and tried to foster positive relations. S/he stated: “The community knows what we are doing.”

Subjective health status in a convenience sample of qualifying patients

At 2:30pm on Day 1 of the study, the sampling portion of the study began when a 907.18-gram (32-ounce) monoclonal lot of plum strain cannabinoid botanical medicine was delivered to the clinic. Once the lot was processed and prepared for delivery by clinic staff, the complete available stock of cannabinoid botanical medical products available to patients consisted of the following strains and preparations as displayed with and without prices on a white marker board behind the medicine counter: Ms. Magic 7, Tanner 7, Plum 6, Hawg 7, Tiva 6, Green Hornet 5, Eastern Shag 5, Hash, Elixir, Butter, Mari-pills, Green Cream (a topical salve), and Goo Balls (a sweetened edible). (A '0' is added to the end of a number to determine the asking price in dollars of a quarter ounce of a particular strain). Over the course of the observed days, 1.9g of the plum lot was placed in a sample medicine container which patients were able to inspect prior to making their strain choices, and 15.6g of leafy bits that fell off during handling of the lot of plum strain cannabis flower buds and accumulated at the bottom of storage bags was freely delivered to 37 patients at no charge—14 on day 1, 8 on day 2, 12 on day 3, 3 on day 4—which included an unknown number of repeat patients. Over the course of the four consecutive operating clinic days during with the study took place, 71 different chronically and critically ill patients—13 on day 1, 25 on day 2, 29 (+8 from previous days) on day 3, 4 (+6 from previous days) on day 4—were delivered physician-recommended cannabinoid botanical medicine from the clonal plum strain lot of dried, resinous cannabis flower buds—233.9g on day 1, 287.0g on day 2, 283.5g on day 3, and 85.0g day 4—until it was completely used up. Of the 71 unique patients served by the lot, 37 (52%) enrolled in the study (5, 14 16, and 2 on days 1-4, respectively), 34 (92%) completed the on-site questionnaire (three could not due to time constraints), and 5 (15%) returned the take-home materials (which will be

covered in a later section). **Figure 2.2** summarizes the study sampling strategy and its implementation.

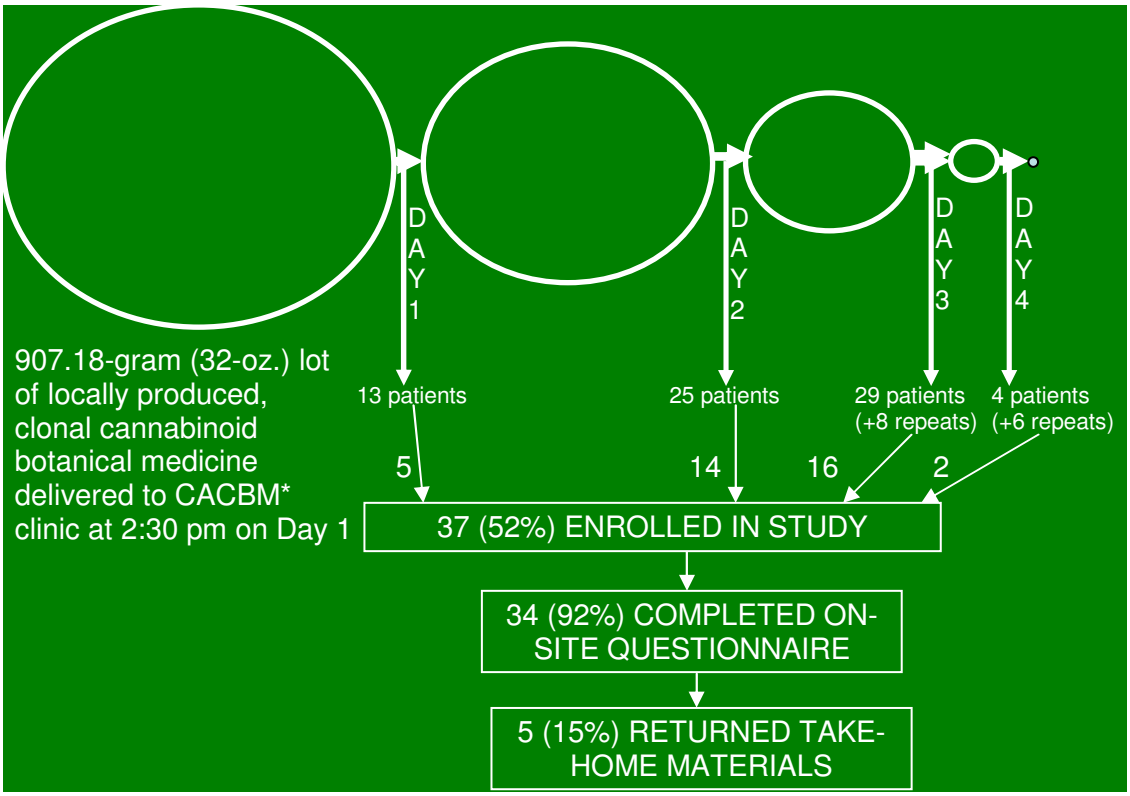

Figure 2.2: Cannabis Lot Delivery-Based Patient Sampling Strategy. Circle sizes are proportional to size of lot at the beginning of each day over the course of its complete delivery. *Complementary and Alternative Cannabinoid Botanical Medicine

Table 2.1 and **Table 2.2** show the demographic characteristics of the n = 37 patients who enrolled in the study in order of their enrollment day. There was a wide variation in the length of time the patients identified as being qualifying medical marijuana patients, averaging 3.84 ± 3.99 years. In terms of the range, the longest qualifying medical marijuana patient in the sample had been so for 16 years and the shortest had been so for 4.4 months. While all the patients in the sample were verified medical marijuana patients under Washington State law, one identified as also having been a qualifying medical marijuana patient in California, and another identified as having been so in Oregon. The sample was 35% female and 65% male. The average age was

39 years old and ranged from 21 years to 61 years old. The female median age was 12 years higher than the male median age, and the overall median age was 39 years. At the Washington State level, the overall median age (which includes individuals ages 0-18) was 36.68 years in 2007, 35.73 years for males and 37.68 years for females ('State of Washington' 2008). The sample median age is 2.32 years higher than the state median age, and the state female median age is higher than the state male median age, reflecting the direction of the gender-median age differential seen in the patient sample; however, that differential is 6 times greater in magnitude in the sample as compared to the state population. In terms of ethnicity, 67.6% of the patients in the sample identified as Caucasian, 13.5% as African-American, 8.1% as Native-American, 5.4% as Hispanic, and 8.1% as Other. At the state level, available statistics from 2006 estimate the state population as being 84.76% White, 3.56% Black, 9.09% Hispanic, 1.63% Native (American Indian or Alaska Native), 6.60% Asian, and 0.46% Native Hawaiian or Pacific Islander. This indicates that the study sample had an approximately 17% lower white representation and included a higher proportion of all non-white ethnicities, except Hispanic, than the averages seen at the state level (US Census Bureau 2006). The sample's median annual income was $20,000-34,499. The midpoint of the sample's median income range was approximately $27,000 lower than the median household income for the State of Washington overall, which was projected to be $56,462 in 2007 ('State of Washington' 2008). Eighty-eight point six percent (88.6%) of the patients in the sample had some form of health insurance—very close to the 86% health care access/coverage rate in Washington State overall (BRFSS 2007)—and of these 64.5% held health insurance from the public sector (e.g., Medicare, Medicaid, Early Intervention Program, VA).

Table 2.3 shows the qualifying conditions for the medical use of marijuana in Washington State with which the patients in the sample identified as being diagnosed, including their specifiers and comments on their qualifying conditions. Throughout this paper, for purposes of authenticity, subjects' responses are reported exactly as they

were worded and spelled on returned study instruments. In this clonal lot-delivered convenience sample of 37 patients, all ten qualifying condition categories were represented: 4 (10.8%) had cancer, 6 (16.2%) had HIV, 6 (16.2%) had multiple sclerosis, 3 (8.1%) had epilepsy or other seizure disorder, 8 (21.6%) had spasticity disorder, 16 (43.2%) had intractable pain, 2 (5.4%) had glaucoma, 1 (2.7%) had Crohn's disease, 4 (10.8%) had hepatitis C, and 14 (37.8%) had any other disease, including anorexia, resulting in nausea, vomiting wasting, appetite loss, cramping, seizures, muscle spasms, and/or spasticity. Half of the patients identified more than one qualifying condition. The percentage of patients reporting 'intractable pain', the most frequently reported condition in the sample, was similar to the percentage reporting 'chronic pain' in Mandel's 1998 OCBC medical cannabis patient delivery survey study, where it was also the most frequently reported condition.

Table 2.4 shows a list of symptoms and illnesses that go beyond Washington State's list of qualifying conditions that are theoretically responsive to cannabinoid medical treatment, based on cannabinoid physiology studies, clinical experience, other regional medical cannabis access policies, and/or population surveys ('Oregon' 2008, IACM 2008, Health Canada 2008, Swift et al. 2005, Grinspoon and Bakalar 1997, POZ 2008, Medical Marijuana Patient Survey 2008). Patients were asked if they suffered from any of these conditions or had ever been diagnosed with them; if so, they were also asked if they ever had used marijuana to treat the condition(s). In five cases (Pts# 7, 9, 10, 12, 18), when subjects did not answer the latter part of the question likely due either to difficulty in understanding the survey question or inability to complete the questionnaire (as in Pts# 9 and 10), a reasonable attribution about whether they have ever used marijuana to treat those self-identified health conditions was inferred based on other portions of their questionnaire responses. The results shown in **Table 2.4** indicate the following sample condition rates, arranged in descending order of tertiles. First tertile: depression in 20 (54.1%), migraine in 14 (37.8%), persistent nausea in 14

(37.8%); second tertile: arthritis in 13 (35.1%), and sleep apnea[10] in 10 (27.02%), neuralgia/neuropathy in 9 (24.3%), post-traumatic stress disorder in 8 (21.6%), panic disorder in 7 (18.9%), and hypertension in 7 (18.9%); third tertile: myalgic encephalomyelitis (chronic fatigue) in 6 (16.2%), insomnia in 6 (16.2%), attention deficit disorder in 6 (16.2%), asthma in 5 (13.5%), irritable bowel syndrome in 5 (13.5%), and other conditions reported by fewer than 5 patients. The percentage of patients reporting these conditions who also reported that they had used 'marijuana' to treat these aforementioned conditions (indicated by the blue X's in **Table 2.4**) was 100% for all, with the exception of 92.9% for migraine, 80% for asthma, 71.4% for hypertension, 70% for sleep apnea, and 50% for attention deficit disorder. One final noteworthy finding is that two patients reported successful cannabis substitution therapy for methamphetamine use disorders.

Table 2.5, Column 1 displays the results of the question: "Thinking now about your qualifying condition, for which of the following symptom-relieving purposes do you use medical marijuana?" Patients were given a list of symptom control choices from the standard Review of Systems (ROS) of a medical history patient interview divided into the following categories by body system: General, Dermatological, Head, Ears, Eyes, Nose, Throat, Breast, Respiratory, Cardiovascular, Gastrointestinal, Genitourinary, Musculoskeletal, Neurological, and Psychiatric. Symptom relief options from the ROS were chosen based on the known clinical database of medical cannabis effects (see **Appendix B**). Patients were asked to circle the options that applied to them and to indicate on a scale of 1-10 what kind of symptom relief they get, where 10 = absolute symptom control and 1 = minimum symptom control. The second column of **Table 2.5** displays the complete results from the open-ended question asked immediately afterwards: "Overall, what would you say are the main symptoms that you

[10] It was not specified whether the sleep apnea was of obstructive, central, or mixed origin, however, evidence for the therapeutic potential of cannabinoids in treating all of these types of sleep apnea, which have some degree of CNS involvement, is available. See Carley DW, Pavlovic S, Janelidze M,and Radulovacki M. 2002. Functional Role for Cannabinoids in Respiratory Stability During Sleep (alternative title: Cannabinoids Suppress Sleep Apnea). *Sleep* 25, 4:388-395. Available at: http://www.journalsleep.org/Articles/250403.pdf.

regularly use medical marijuana to treat (not necessarily limited to those stemming from your qualifying condition)?" Notable trends include the fact patients use medical cannabis to treat a wide array of symptoms across multiple body systems and that symptom control ratings are consistently in the 7-10 range. See **Table 2.6** for frequency of reported symptom treatment. Consistent with data shown there, it is worth noting that 14 patients or 40% of the sample reported psychiatric symptoms not covered under Washington State's law such as stress, depression, anxiety, insomnia, PTSD exacerbation, and rage, amongst the main symptoms they regularly treated with medical cannabis.

As defined by the Centers for Disease Control and Prevention (1999), the concept of health-related quality of life (HRQoL) refers to a person or group's perceived physical and mental health over time and helps to understand how illness interferes with day-to-day life. A variety of psychometric instruments have been developed over the last several decades for gauging this type of perceived health status (McHorney 1999). They are utilized extensively in health surveillance and are considered valid instruments to gauge service needs and intervention outcomes, especially given the fact that self-assessed health status has proven to be a better predictor of mortality and morbidity than many objective measures of health, as Idler et al. (1997) showed in a review of 27 prospective, longitudinal community studies from the US and abroad, in which 23 studies consistently showed, with large effect sizes, that self-ratings of health reliably predicted survival in populations, even when known health risk factors have been taken into account. **Table 2.7** and **Table 2.8** summarize the sample patients' health-related quality of life (HRQoL), using the standard survey instruments of the SF-36 (short form, 36 questions) and the CDC HRQoL-14 (Center for Disease Control, 14 questions). The SF-36, developed in 1992, is the most widely used survey instrument worldwide to gauge self-reported health status. Its questions explore a person's physical functioning (e.g., their ability to walk, climb stairs, etc.), role limitations due to physical problems, social functioning, bodily pain, general mental

health, role limitations due to emotional problems, vitality, and general health during the past year, past month, and in current day-to-day life. The SF-36 questionnaire used in this study was slightly modified from the standard version such that the 'bodily pain during the past 4 weeks' self-reporting question had 5 response choices rather than 6. The patient sample's median SF-36 score on a scale of 0-100, where '0' is the worst possible health status and '100' is the best possible health status, was 49.625 and ranged from 7–88.88. For comparison, in a sample of 173 18-24 year-olds randomly sampled from the US general population, the average SF-36 total score was 80.4 (Huffman et al. 2008)—60% higher than the median total score in this study's sample. For further comparison, a random sample of 4229 men and 5103 women aged 18-64 years in and around Oxford, England, UK, had average SF-36 total scores of 81.1 and 77.6, respectively (Jenkinson et al. 1993)—63% and 53% higher, respectively, than the median total score in this study. The second health-related quality of life survey instrument used in this study, the CDC HRQoL-14, developed in 1993, combines the Healthy Days Core Module, the Activity Limitations Module, and the Healthy Days Symptoms Module. These include one health status measure (self-rated health), three HRQoL measures (recent physical health, recent mental health, and recent activity limitation), five activity limitation questions, and five questions that measure recent symptoms of pain, depression, anxiety, sleeplessness, and vitality. On average, patients in the sample rated their general health as 'Fair' to 'Good'—one full notch below the state average of 'Good' to 'Very Good' (BRFSS 2007). Patients in the sample reported 12.41 ± 10.45 days in the last 30 that their physical health was not good—3.5 times higher than the state average (BRFSS 2006)—and 11.029 ± 10.72 days in the last 30 that their mental health was not good—3.4 times higher than the state average (BRFSS2006). Patients reported on average that during 8.65 ± 8.66 days of the past 30 days, poor physical or mental health kept them from doing their usual activities such as self-care, work, or recreation. These limited days were 3.9 times higher than the average number reported in a state-level survey (BRFSS 2006). The results from the Healthy Days Symptoms Module shown in the last 5 columns of **Table**

2.7 give some indication of the nature and extent of physical and mental symptoms experienced on a day-to-day basis by patients in the study. Patients reported, on average, that only on 11.94 ± 9.86 days out of the last 30 days did they feel 'very healthy and full of energy'. Five patients reported experiencing no such days.

Table 2.8 displays the results of the Activity Limitations Module. This module "measures the presence of any self-reported current limitation and, if present, its main cause and duration, as well as whether the help of another person is needed to perform basic activities of daily living (ADLs) or other routine instrumental activities of daily living (iADLs)" (Moriarty et al. 2003). Patients were asked if they were "limited in any way in any activities because of any impairment or health problem?" 85.3% of the sample answered 'yes'. The percentage of 'yes' responders to a similarly phrased question posed in the state-level survey was 22.8% (BRFSS 2007), meaning the medical cannabis clonal lot-delivered patient sample reported limitation nearly 4 times more frequently than reported on average at the state-level. Because of impairment or health problems, 17/34 or 50% of the patients needed the help of other persons with handling routine needs, such as everyday household chores, doing necessary business, shopping, or getting around for other purposes, and 7/34 or 20.6% needed the help of other persons with personal care needs such as eating, bathing, dressing, or getting around the house.

Prospective health data from returned take-home materials

Travel-to-clinic geographic information, prospective self-reported health status, and health information related to medical cannabis use were collected from 5 patients in the convenience sample who returned their take-home questionnaires and symptom relief dosing diaries, which they were instructed to do only after completely consuming the medical cannabis plum strain supply they received on the day they enrolled in the study. This represented a response rate of 15%; it is unclear why study materials from the other 29 patients were not returned, even after a sign was placed for two weeks in

the clinic two months after the initial sampling study was completed reminding patients who participated to return their take-home materials. The patients who did return prospective study materials mostly had differing ethnic backgrounds—two were Caucasian and the rest reported partial or full minority ethnicities. They ranged in age from 37-52 years old. Four out of the five patients reported an average annual income of less than $20,000. This means that no patients who reported average annual incomes higher than $20,000 returned their take-home materials, with the exception of one spinal cord-injured multiple sclerosis patient who reported an annual income in the $50,000-99,999 range. Put another way, the <$20,000 annual income quintile had the highest survey return rate of 4/13 or 31%, and the $50,000-99,999 quintile had a second highest survey return rate of 1/5 or 20%, and all other quintiles had a survey return rate of 0%. It is interesting to note that no patients who were recruited on Day 3 of the study, the day with the heaviest subject recruitment, returned take-home materials.

The patients were a 41-year-old Caucasian male with HIV (Pt#2), a 49-year-old Caucasian male with multiple sclerosis (Pt#15), a 37-year-old African- American male with neck muscle spasms and chronic headaches (Pt#16), a 52-year-old Native American/Caucasian female with multiple sclerosis (Pt#20), and a 39-year-old Hispanic/Caucasian male with AIDS-stage HIV (Pt#37). Results shown in **Tables 2.9**, **2.10**, **2.11**, and **2.12** are presented as side-by-side case studies to better appreciate and compare individual psychosocial contexts and health outcomes of medical cannabis use.

Cost of keeping a lot of cannabinoid botanical medicine stocked and deliverable

During the interview with the clinic director, the following data were obtained about the costs involved in delivery. The normal cannabinoid botanical medicine germplasm maturation cycle takes approximately 4 months. This includes approximately 4 weeks for plant rooting, 4 week for vegetative growth, and 8 weeks for blooming, for a total

of 16 weeks. The clinic director reports that the cannabis germplasm maturation cycle (from vegetative phase to bloom phase, and from bloom phase to harvest) needs to be kept going so that a consistent supply can be maintained. With optimal conditions, at the end of the cycle, a large plant may yield 0.5 lbs (8 oz. or 226.8 grams) of usable botanical medicine. This means that the 37-patient convenience sample described above, taken from the 71 patients served in total, were delivered a 32-ounce (907.18-gram) lot of plum strain cannabinoid botanical medicine which may have originated from the yield of as few as 4 monoclonal cannabis plants. **Table 2.13** displays the estimated delivery costs for a four-month cycle, which totaled ~$47,000.

Discussion

The health-related data collected from one convenience sample of qualifying medical cannabis patients in Washington State all drawing from one common monoclonal lot of cannabinoid botanical medicine, when combined with the data collected on delivery site characteristics and logistics, makes considerable progress towards shedding light not only on the sociomedical characteristics of an all-but unseen critically and chronically ill patient group, but also on the human-environment relationships central to this system of medicine delivery. Geographic strategies as described earlier are employed in the cannabinoid botanical medicines delivery system whereby patients' caregivers cull plant genetic resources from the environment, maturate them, and deliver them across space to patients who have traveled to a delivery site seeking cannabinoid botanical medicines to which they have been granted medical access. Thus, in this study, an attempt has been made to map the medical geography of cannabinoid botanical medicines delivery at the single-clinic delivery scale, keeping in mind the underlying human-environment relationships, from germplasm maturation to patient utilization. Following one monoclonal lot of botanical medicine allows an appreciation of the sociomedical value of a community health care delivery system that has access to cannabis germplasm, allows for the development a rational geographic

patient sampling strategy, and enables collection of health outcomes data from patients who are using a chemotypically identical strain of cannabinoid botanical medicine.

It should be noted that the placement of delivery sites locations for cannabinoid botanical medicines likely deviate from optimal location out of necessity and are more likely sited to due to provider preferences and subject to neighborhood and local law enforcement tolerance. They are not optimally or even obviously sited, so it is interesting to note that, as shown in **Table 2.10**, the five patients who returned take-home survey materials all resided within close proximity to the clinic (6.1 mi, mean; 4-10 mi, range), with 3 traveling south from home and 2 traveling northeast from home to reach the clinic. This geographic information was anonymously gleaned by asking patients to estimate their travel-to-clinic distance by logging into the website *Google Maps* (maps.google.com), inputting their home address and the clinic address, and reporting the estimated distance given by the computer program (see **Appendix B**). Using this technique, no personally identifying residential geographic information had to be collected, and it could be assured that all subject travel-to-clinic distances were based on a common geographic reference system.

Several outcomes from the collected data set confirm the sensibility a germplasm-based convenience sampling method for conducting a health resource delivery study with cannabinoid botanical medicines. First, the percentage of patients in the sample who reported having health insurance of some kind, 88.6%, was remarkably concordant with the Washington State average of 86%, demonstrating a similar degree of economic access to health care resources amongst the patient sample compared to the general statewide population. Additionally, the sample has cross-sectional representational strength, as all ten qualifying medical conditions enumerated in Washington State law and set by the Health Quality Assurance Commission were reported as being present in the patient sample, with the majority reporting “intractable pain” or “any disease, including anorexia, which results in nausea, vomiting, wasting,

appetite loss, cramping, seizures, muscle spasms, and/or spasticity" qualifying conditions. As predicted, a high concentration of cannabinoid-responsive conditions were found in patients who frequented a cannabinoid medical delivery space. Thirty out of thirty-eight of the conditions listed as likely cannabinoid medicine-responsive were present in the patient sample. Despite the fact that many of these are currently not listed as qualifying conditions for the medical use of marijuana in Washington State, there was a high prevalence of self-reported migraneurs, depressives, sleep apneics, arthritis suffers, and others in the sample, consistent with data reported in medical cannabis use survey of in Australia (Swift et al. 2005). In that survey of 128 people who were 63% male, had a median age of 45 years, and used cannabis for medicinal purposes, authors reported: "Participants reported a wide range of medical conditions and symptoms associated in the literature with the use of medicinal cannabis…most commonly chronic pain (53%) and arthritis (38%). Approximately one in five reported migraine (22%), weight loss (21%) and persistent nausea (20%)" (no pagination). Consistent with current biomedical science, patients reported treatment of symptoms across multiple body symptoms owing to the widespread nature of the body's endogenous cannabinoid system which serves as a central homeostatic modulator. With such a high rate of psychiatric symptoms being treated with cannabis, it would be sound health policy to include selected mental disorders as qualifying conditions for medical cannabis use in state programs.

By all measures, patients had a much lower health-related quality of life compared to state and national averages as shown in **Table 2.7**. Strikingly, the CDC HRQoL-14 measures nearly all uniformly improved or stayed the same in the prospective sample patient data as shown in **Table 2.11**. During this period, all patients said that medical cannabis was a major component of their health/disease management. However, it should be noted that it is unclear whether these validated HRQoL instruments, while designed to be reliable and responsive over time, can acutely gauge the short-term effects of taking a new lot of a chronically self-administered treatment in a chronically

ill patient. Summary data from the dosing diaries shown in **Table 2.12** does capture some meaningful information on dose-by-dose symptom relief patient experienced with the botanical medicine.

The study was limited by the difficulties inherent in generalizing from a convenience sample, the small return rate of prospective study materials, lack of a control group, and the lack of observed documentation on the origins of the cannabis germplasm line studied and the number of clonal medicinal plants that have ultimately emerged from it.

Conclusion

The aims of this research were to investigate and uncover the medical geography of cannabinoid botanicals delivery in Washington State, a unique system of health care delivery that is subject to peculiar sociopolitical constraints. This study sought to describe the sociomedical and biophysical contexts of a representative site involved in this health system and to document health outcomes and characteristics of a convenience sample of qualifying patients. The case studies described here help illustrate the geography of cannabinoid botanical medicines delivery in Washington State by providing insight into the health status of a representative sample of qualifying patients and help develop an understanding of the lengths to which care providers go to deliver botanical medicine that relieves patients' diverse symptoms and improves their health-related quality-of-life.

Table 2.1: Demographics of Clonal Lot-Delivered Convenience Sample of Patients. [a]also had been a qualifying medical marijuana patient in California; [b]also had been a qualifying medical marijuana patient in Oregon.

Demo. → ↓**Patient**	Years as Qualifying Patient	Sex	Age	Ethnicity	Health Insurance	Annual Income
1	1[a]	M	28	Caucasian	N	20-35k
2	10	M	41	Caucasian	Y:Medicare/aid	<20k
3	9 mo.	M	39	Caucasian	Y:Medicare/aid	20-35k
4	13	M	40	Caucasian	Y:Medicare/aid	<20k
5	1.083	M	47	Native American, Caucasian	N	20-35k
6	7.17[b]	M	26	Caucasian	N	20-35k
7	3	F	37	Caucasian	Y:Medicare/aid	20-35k
8	~10 mo.	M	33	Caucasian	Y:PPO	50-100k
9	3	M	N/A	N/A	N/A	N/A
10	3	F	N/A	N/A	N/A	N/A
11	16	M	38	Other	Y:Medicare/aid	<20k
12	1	M	44	Caucasian	Y:Medicare/aid	<20k
13	1.25	F	51	Caucasian	Y:PPO	20-35k
14	3.5	M	34	Caucasian	Y:Medicare/aid	<20k
15	9	M	49	Caucasian	Y:HMO	50-100k
16	0.92	M	37	African-American	Y:VA	<20k
17	11	F	48	Caucasian	Y:HMO,Medicare/ aid	35-50k
18	0.5	F	55	African-American	Y:Medicare/aid	N/A
19	0.5	F	34	Caucasian	N	50-100k
20	7.75	F	51.8	Native American, Caucasian	Y:Medicare/aid	<20k
21	7.5	F	29	Caucasian	Y:PPO	20-35k
22	5	M	47	Caucasian	Y:EIP(Early Interve.)	20-35k
23	2	F	53	Other: "1/2 Black & ½ Bengali"	Y:PPO(Blue Cross, Premera)	20-35k
24	7.04	F	54	Caucasian	Y:Medicare/aid	<20k
25	1.083	M	21	Caucasian	Y:HMO	N/A
26	1	F	58	African-American	Y:Medicare/aid	20-35k
27	4.5	M	38	Caucasian	Y:Medicare/aid, PPO	35-50k
28	N/A	M	42	Hispanic	Y:Medicare/aid	<20k
29	3.25	M	36	Caucasian	Y:PPO	35-50k
30	1	M	22	Native American, African- American, Caucasian	Y:PPO(Premera)	<20k
31	3	M	59	Caucasian	Y:Medicare/aid	20-35k
32	0.5	F	36	Caucasian	Y:PPO	>100k
33	4.4 mo.	M	29	Other: "American/Italian"	Y:PPO	50-100k
34	6 mo.	M	54	Other: "Scotts, Irish"	Y:PPO	50-100k

Table 2.1 continued

35	2.17	F	61	African-American	Y:Medicare/aid,HMO	<20k
36	0.92	M	39	Other	Y:Medicare/aid, "GAU DSHS"	<20k
37	4	M	39	Caucasian, Hispanic	Y:Medicare/aid	<20k

Table 2.2: Sample Demographics Summary Statistics.

Gender n(%)		Ethnicity (n identifying as)(%)	
Male	24(65)	Caucasian	25(65.8)
Female	13(35)	African American	5(13.2)
		Native American	3(2.6)
		Hispanic	2(5.3)
		Other	3(2.6)
Years as Qualifying Patient		Annual Income n(%)	
Male		< $20,000	13(39.4)
Mean ± SD	3.95 ± 4.31	20,000-34,999	11(33.3)
Range	4.4mo.-16yr	35,000-49,999	3(9.1)
Female		50,000-99,999	5(15.2)
Mean ± SD	3.63 ± 3.48	> 100,000	1(3.0)
Range	6mo.-7.75yr		
Total			
Mean ± SD	3.84 ± 3.99		
Range	4.4mo.-16yr		
Age (Years)		Health Insurance n(%)	
Male		Yes	31(88.6)
Mean ± SD	38.3 ± 9.4	No	4(11.4)
Median	39	Type of Health Insurance	
Range	21-59	(n claiming) (%)	
Female		HMO	4(3.0)
Mean ± SD	47.3 ± 10.5	PPO	9(27.3)
Median	51.4	Medicare/Medicaid	18(54.5)
Range	29-51.8	Other (EIP, VA, etc.)	2(6.1)
Total			
Mean ± SD	41.4 ± 10.6		
Median	39		
Range	21-61		

Table 2.3: Diagnosed Qualifying Conditions for the Medical Use of Marijuana in Washington State Reported in Patient Sample. [1]epilepsy or other seizure disorder, [2]limited to mean pain unrelieved by standard medical treatments and medications; [3]either acute or chronic, limited to mean increased intraocular pressure unrelieved by standard treatments and medications; [4]with debilitating symptoms unrelieved by standard treatments or medications; [5]with debilitating nausea and/or intractable pain unrelieved by standard treatments or medication; [6]any disease, including anorexia, which results in nausea, vomiting, wasting, appetite loss, cramping, seizures, muscle spasms, and/or spasticity, when these symptoms are unrelieved by standard treatments or medications. *Traumatic Brain Injury.

→Diagnosed Qualifying Conditions for medical use of marijuana in WA state **↓ Patient**	Cancer	HIV	Multiple Sclerosis	Epilepsy, oth. Seizure Dis.[1]	Spasticity disorder	Intractable pain[1]	Glaucoma[2]	Crohn's Disease[3]	Hepatitis C[4]	Nausea/vom./wasting/appe. loss/cramping/seizures/ musc. spasms/spasticity[5]	COMMENT
1						X[a]					[a]"chronic stomach/nausea"
2		X									
3						X				X[b]	[b] "Cronic Migraines"
4		X									
5						X[c]				X[d]	[c]"chronic migraines"; [d]"appetite loss due to migraines"
6								X		X[e]	[e]"Irritable Bowel Syndrome IBS"
7						X[f]				X[g]	[f]"Back-Spine Injuries, Surgeries & Acute Pain. (Nerves & Muscles) Arthritis"; [g]"cramping, muscles spasms, pain (instead of "hard" narcotics)"

Table 2.3 continued

→Diagnosed Qualifying Conditions for medical use of marijuana in WA state **↓ Patient**	Cancer	HIV	Multiple Sclerosis	Epilepsy, oth. Seizure Dis.[1]	Spasticity disorder	Intractable pain[2]	Glaucoma[3]	Crohn's Disease[4]	Hepatitis C[5]	Nausea/vom./wasting/appe. loss/cramping/seizures/ musc. spasms/spasticity[6]	COMMENT
8	X[h]					X[i]					[h]"Colon Cancer"; [i]"Migraine headache"
9						X[j]			X		[j]"Hep C"
10						X[k]			X		[k]"Hep C"
11				X							
12				X[l]	X						[l]"TBI"*
13	X[m]										[m]"Breast Cancer Stage 4"
14						X[n]					[n]"Chronic Nerve Pain / Muscle Spasms"
15			X								
16					X[o]					X[p]	[o]"Arthritis of Neck" "Chronic Headaches"; [p]"Alternative medicine for severe muscle spasms"
17			X		X[q]						[q]"leg spasticity rel. to MS"
18	X[r]					X				X[s]	[r]"Kidney R Removed"; [s]"Diverticulitis"
19						X[t]					[t]"Migrains"
20			X								
21			X								
22		X									

Table 2.3 continued

→Diagnosed Qualifying Conditions for medical use of marijuana in WA state **↓ Patient**	Cancer	HIV	Multiple Sclerosis	Epilepsy, oth. Seizure Dis.[1]	Spasticity disorder	Intractable pain[2]	Glaucoma[3]	Crohn's Disease[4]	Hepatitis C[5]	Nausea/vom./wasting/appe. loss/cramping/seizures/ musc. spasms/spasticity[6]	COMMENT
23					X[u]	X[v]				X[w]	[u]"spastic colon"; [v]"osteoporisis"; [w]"chronic diarrhea, migraines"
24	X[x]										[x]"Breast"
25					X[y]					X[z]	[y]"lower back Behind Pelvis"; [z]"muscle spasms lower back"
26					X[aa]	X				X[bb]	[aa]"severe Osteo. Art."; [bb]"muscle spasm / very bad cramps"
27				X[cc]	X[dd]	X[ee]				X[ff]	[cc]"parathesia disorder"; [dd]"spinal cord injury, C5-C6, incomplete feeling below level of injury"; [ee]"burning parathesias", "stomach cramping pain-->sharp & dull pain"; [ff]"spinal cord injury --> appetite stimulation"
28		X									
29		X									

Table 2.3 continued

→Diagnosed Qualifying Conditions for medical use of marijuana in WA state **↓ Patient**	Cancer	HIV	Multiple Sclerosis	Epilepsy, oth. Seizure Dis.[1]	Spasticity disorder	Intractable pain[2]	Glaucoma[3]	Crohn's Disease[4]	Hepatitis C[5]	Nausea/vom./wasting/appe. loss/cramping/seizures/ musc. spasms/spasticity[6]	COMMENT
30										X[gg]	[gg]"I throw up 3 to 5 times a day"
31					X[hh]	X[ii]	X		X	X	[hh]"gastro intestional disorder", [ii]"diabetic neuropathy"
32			X						X		
33			X								
34										X[JJ]	[JJ]"Charcot-Marie-Tooth"
35						X	X			X	
36						X					
37		X[kk]									[kk]"Full Blown AiD'S under 50 T cells"
Totals	4	6	6	3	8	16	2	1	4	14	

Table 2.4: Self-Reported Cannabinoid-Responsive Conditions. **X-**indicates if patient reports ever having used cannabis for treatment of symptom or condition; [1](Lupus, Sjogren's, Graves's, etc); [2]Myalgic Encephalomyelitis; [3]Pre-menstrual Syndrome; [4]Amyotrophic Lateral Sclerosis; [a]"harm reduction leading to full reovry from meth."; [b]"anxiety"; [c]"nerve pain L arm"; [d]"used more medicine while quitting methamphetamine"; [e]"L arm"; [f]"appetite stimulation / HIV wasting syndrome"; [g]"spinal"; [h]"(/) Narcotic use"; [i]"-TICS"; [j]"Arthritis due to Bone Trauma"; [k]"Left Arm Nerve Damage"; [l]"Lesion C2-C7"; [m]"chronic"; [n]"osteo"; [o]"peripheral"; [p]"MS"; [q]"osteoporosis", [r]"prevent suicidle thoughts"; [s]"Cronic pain"; [t]"increase appetite"; [u]"type I"; [v]"foot neuropathy"; [w]"(occasionally)"; [x]"M.S."; [y]"feet & legs"; [z]"M.S."; [aa]"CMT"; [bb]"Anxiety Deppression"; [cc]"Borderline Diabetes Because of AIDS".

←Pt CB-Responsive Condition↓	Arthritis	Autoimmune Disease[1]	Migraine	Persistent nausea	Chronic fatigue (ME[2])	Fibromyalgia	Hypertension	Diabetes	Asthma	Incontinence	Sleep Apnea	Irritable bowel syndrome	PMS[3] and dsymenorrhoea	Muscular Dystrophy	Lou Gerhig's Disease (ALS[4])	Osteoporosis	Ankylosing Spondylitis	Convulsions	Neuralgia/neuropathy
1			X	X															
2									X										
3			X	X							X								
4				X															X[c]
5	X		X				X		X										
6												X							
7	X[g]																		
8	X		X				X				X	X							
9					X														
10					X														
11			X								X								
12	X		X	X			X				X	X							X
13		X							X										
14	X[j]								X										X[k]
15																			X[l]
16	X[m]		X	X															
17																			
18			X	X	X		X		X										
19			X										X						
20	X[n]			X		X													X[o]
21			X		X					X			X						

Table 2.4 continued

←Pt	CB-Responsive Condition↓	Other neurological disorder	Alzheimer's Disease	Parkinson's Disease	Huntington's Disease	Head trauma	Stroke	Spinal cord injury	Spinal cord disease	Post-Traumatic Stress Disorder	Depression	Bipolar Disorder	Psychotic episodes	Substance Use Disorder(s)	Insomnia	Tourette's syndrome	Panic Disorder	Attention Deficit Disorder	Schizophrenia	Pruritis (severe itching)	Other
1										X	X										
2										X	X			X[a]	X						
3											X	X						X			X[b]
4										X	X			X[d]						X[e]	X[f]
5						X				X	X						X				
6																					
7								X	X	X	X			X[h]		X[i]	X	X			
22				X	X							X									
23		X[q]		X	X	X		X			X		X	X			X				
24		X			X		X	X				X					X				
25																					
26		X		X								X					X				
27					X							X	X								X
28																					
29																					
30					X							X									
31		X							X[u]												X[v]
32			X[x]	X	X	X						X									X[y]
33			X[z]																		
34		X													X						X[aa]
35		X						X													
36																					
37					X				X[cc]												
total		**13**	**3**	**14**	**14**	**6**	**2**	**7**	**2**	**5**	**2**	**10**	**5**	**3**	**1**	**0**	**3**	**0**	**0**	**9**	

Table 2.4 continued

8										X				X						
9										X										
10																				
11																				
12					X				X							X	X			
13																				
14																				
15							X													
16					X		X							X						
17																				
18									X	X										
19																X				
20										X										
21	X p									X										
22																				
23									X	X	X	X		X		X				X r
24										X						X				X s
25																				
26										X	X			X		X				
27							X			X							X			
28										X										
29																				X t
30																				
31										X w										
32														X			X			
33																				
34																				
35										X										
36	X b b									X										
37										X							X			
total	2	0	0	0	3	0	4	1	8	20	3	1	3	6	1	7	6	0	1	5

Table 2.5: Symptom Control with Medical Marijuana. HEENT = head, ears, eyes, nose, throat, DERM = dermatological, MUSK = musculoskeletal, GI = gastrointestinal, GU = genitourinary, RESP = respiratory, NEURO = neurological.

Pt ↓	Symptom Control with Medical Marijuana by Body System (Control Rating, 1[least]-10[most])	Main Symptoms Regularly Treated with Medical Marijuana
1	to reduce nausea (?), to reduce vomiting (?), to stimulate appetite (?), to improve mood (?), to reduce anxiety (?)	"mood/nausea/pain"
2	to reduce RESP pain (7), to reduce chest pain (7), to reduce nausea (8), to stimulate appetite (9), to relieve spasm (5), to improve mood (7), to reduce anxiety (2)	"harm reduction - reovrery, sleep & depression, AIDS - nausea & weight"
3	to manage/gain weight (9), to reduce nausea (7), to stimulate appetite (9), to reduce MUSK pain (8), to reduce NEURO pain (8), to reduce anxiety (8)	"Pain management, anxiety, appetite stimulation"
4	to manage/**gain** weight (7), to reduce DERM pain (9), to reduce nausea (9), to reduce vomiting (10), to stimulate appetite (10), to reduce NEURO pain (10), to improve mood (10), to reduce anxiety (9)	"nausea supression, appetite stimulation, PTSD"
5	to reduce HEENT pain (10), to reduce RESP pain (6), to reduce nausea (8), to reduce vomiting (10), to stimulate appetite (7), to reduce MUSK pain (7), to improve mood (5), to reduce anxiety (10)	"Primarily to reduce incidence & severity of chronic migraines. I get as many as 24 migraines a month without marijuana & only get 1-2 every 2 months when I use marijuana regularly."
6	to stimulate appetite (10), to reduce abdominal pain (7-8), to improve mood (8-10); Others: "cramping in stomach" (7-8)	"I use it to help with appetite & muschle cramping in stomach. And my mood When I get real pist have some medicine and I'm a lot Better."
7	to reduce nausea (9.5), to reduce vomiting (9.5), to reduce MUSK pain (9), to relieve spasms (9.5), to improve mood (9), to reduce anxiety (9.5)	"Improve mood; reduce pain to be able to function through-out my day (help anxiety & fears) muscle spasms reduction, SLEEP; depression."
8	to reduce HEENT pain (8), to lower intraocular pressure (8), to reduce nausea (10), to reduce abdominal pain (8), to reduce MUSK pain (8), to improve mood (10), to reduce anxiety (10)	"Pain from migraine headache and GI distress, Arthritic Pain"
9	N/A	N/A
10	N/A	N/A
11	to reduce NEURO pain (?), to reduce dizziness (?), to improve mood (?), to reduce anxiety (?)* [appears to have ranked them, prevent seizure = to reduce dizziness > to improve mood > red. pain > red. anxiety]	"prevent seizures, ↓appetite, stress"

Table 2.5 continued

12	to reduce DERM pain (?), to reduce HEENT pain (?), to reduce RESP pain (?), to reduce chest pain (?), to stimulate appetite (?), to reduce abdominal pain (8), to reduce GU pain (7), to relieve spasms (9), to reduce NEURO pain (10), to improve mood (10), to reduce anxiety (10), "Helps with migraines"	"Sei/PTSD" [SEIZURES/PTSD]
13	to reduce DERM pain (8), to reduce **H**EENT pain (10), to reduce breast pain (10), to reduce RESP pain (4), to reduce nausea (10), to reduce MUSK pain (8), to improve mood (10), to reduce anxiety (10)	"HeadAches, Breast Pain, Nausea, is primarily what I use it for & it does lift my spirit & make me WANT to get out of bed."
14	to reduce DERM pain (8), to reduce RESP pain (5), to reduce nausea (10), to reduce MUSK pain (8), to reduce NEURO pain (8), to control or prevent seizures (7)	"Chronic Pain / Muscle Spasm"
15	to reduce DERM pain (5), to reduce MUSK pain (8), to relieve spasms (8), to reduce NEURO pain (8), to reduce anxiety (8)	"Spasm, Pain, Anxeity" (in that order)
16	to manage/gain weight (5), to reduce DERM pain (7), to reduce nausea (8), to reduce vomiting (8), to stimulate appetite (8), to reduce MUSK pain (8), to relieve spasms (8), to reduce NEURO pain (8), to improve mood (8), to reduce anxiety (8) [put 1's on all other blanks, but only circled these]	"Alternative medicine to replace Ibupropen and cyclobenzaprine."
17	to manage/gain weight (8), to reduce nausea (10), to stimulate appetite (10), to reduce abdominal pain (7), to reduce GU pain (8), to reduce urinary urgency (7), to reduce urinary frequency (6), to reduce MUSK pain (9), to relieve spasms (10), to reduce dizziness (9), to improve mood (10)	"Nausea, pain, spasticity, appetite"
18	to manage/**gain** weight (10),to reduce DERM pain (10),to reduce **HE**ENT pain (10),to reduce RESP pain (10),to reduce chest pain (10),to reduce nausea (10),to reduce vomiting (10),to stimulate appetite (10),to reduce abdominal pain (10),to reduce GI motility (10),to increase GI motility (10),to reduce GU pain (10),to reduce MUSK pain (10),to reduce dizziness (10),to improve mood (10),to reduce anxiety (10)	"Sharp pain - headache"; "Diverticulitis"; "sciatic nerve pain"
19	to reduce DERM pain (8), to reduce HEENT pain (8), to reduce anxiety (8)	"Migraine & Mood"
20	to reduce nausea (10), to reduce vomiting (8), to reduce abdominal pain (8), to reduce MUSK pain (8), to relieve spasms (8), to reduce NEURO pain (8)	"Nausea, spasm, and pain"
21	to reduce nausea (8), to reduce vomiting (8), to stimulate appetite (8), to reduce GU pain(8), to reduce urinary urgency (6), to reduce urinary frequency (6), to reduce MUSK pain (10), to relieve spasm (10), to reduce NEURO pain (10), to reduce dizziness (10), to control or prevent seizures (10), to improve mood (10), to reduce anxiety (10)	"muscle spasms, tightness, psychological tension, focus, aches & pains, cognitive functioning"
22	to manage/gain weight (8), to reduce HEENT pain (7), to reduce nausea (10), to reduce vomiting (10), to stimulate appetite (10), to reduce abdominal pain (10), to increase GI motility (10)	"Appetite, Nausea, Pain"

Table 2.5 continued

23	to reduce HEENT pain (10), to reduce nausea (10), to reduce vomiting (10), to stimulate appetite (10), to reduce abdominal pain (10), to reduce GI motility (10), to reduce NEURO pain (8), to improve mood (10), to reduce anxiety (10)	"depression, spastic colon, bone pain"
24	to reduce HEENT pain (10), to reduce breast pain (10), to reduce nausea (10), to stimulate appetite (10), to reduce GU pain (10),to reduce MUSK pain (8), to improve mood (10), to reduce anxiety (10)	"cronic pain / depression, ringing of the ear, ostoprosis (Bone Pain)"
25	to reduce MUSK pain (9)	"muscle spasms, restless at night because I can't get comfortable"
26	to reduce HEENT pain (8), to reduce GU pain (9), to reduce urinary frequency (7), to reduce NEURO pain (9), to improve mood (9), to reduce anxiety (9)	"My knees, arms, back, and headaches very bad pain / pain"
27	to manage/gain weight(7); to reduce nausea (8); to stimulate appetite (7); to reduce abdominal pain (5); to reduce GI motility (5); to reduce MUSK pain (7); to relieve spasms (5); to reduce NEURO pain (6); to improve mood (5); to reduce anxiety (5)	"stomach pain and nausea, sleep apanea"
28	to manage/gain weight (10), to improve mood (10), to reduce anxiety (10)	"Appetite Anxiety"
29	to reduce nausea (8), to stimulate appetite (9)	"Nausea & Appetite issues. Have never been able to eat breakfast - that's why I get M.M."
30	to reduce nausea (10), to reduce vomiting (10), to stimulate appetite (6)	"constant vomiting & nausea"
31	to reduce RESP pain (4), to reduce nausea (9), to reduce vomiting (6), to stimulate appetite (10)	"Nausea, Appetite, Pain, Vomiting"
32	to reduce DERM pain (6), to reduce HEENT pain (6), to reduce nausea (7), to relieve spasms (7), to reduce NEURO pain (8), to reduce dizziness (6), to reduce anxiety (8)	N/A
33	to reduce NEURO pain (8), to reduce dizziness (7), to control or prevent seizures (N/A)	"I RECEIVE numbness IN MY LEGS AND the marijuana relieves that tense throbbing feeling. I run every night and it is the marijuana that eliminates all pain which is like a tuning fork multiplied by 100% in my legs"
34	to reduce DERM pain (7-8), to reduce MUSK pain (8), to relieve spasms (8), to reduce NEURO pain (8), to improve mood (8), to reduce anxiety (8) "REDUCE ANXIETY OF PAIN"	"Joint Pain, cramping in legs, arms"
35	to lower intraocular pressure (8), to reduce MUSK pain (9), to relieve spasms (9*), to improve mood (10), to reduce anxiety (10) [assuming same number for both b/c only one # written for both latter pairs]	"Back Pain, Pelvic Pain"

Table 2.5 continued

36	to reduce HEENT pain (?), to reduce MUSK pain (?), to reduce NEURO pain (?), to improve mood (?), to reduce anxiety (?)	"1. pain / 2. aid with sleep"
37	to manage/gain weight (7), to reduce DERM pain (5), to reduce HEENT pain "Lips" (7), to reduce nausea (9), to stimulate appetite (9), to improve mood (10), to reduce anxiety (7)	"gain weight, nausea, depression, pain"

Table 2.6: Frequency Count of Symptom Control Reported.

Symptom Control Reported	#	%	Symptom Control Reported	#	%
to reduce anxiety	25	71.4	to reduce abdominal pain	9	25.7
to improve mood	24	68.6	to reduce respiratory pain	7	20
to reduce nausea	23	65.7	to reduce dizziness	7	20
to stimulate appetite	19	54.3	to reduce GU pain	6	17.1
to reduce musculoskeletal pain	18	51.4	to reduce chest pain	3	8.6
to reduce neurological pain	16	45.7	to reduce GI motility	3	8.6
to reduce HEENT pain	13	37.1	to control or prevent seizures	3	8.6
to reduce vomiting	12	34.3	to reduce urinary frequency	3	8.6
to relieve spasms	12	34.3	to lower intraocular pressure	2	5.7
to reduce dermatological pain	11	31.4	to increase GI motility	2	5.7
to manage/gain weight	9	25.7	to reduce urinary urgency	2	5.7
			to reduce breast pain	2	5.7

Table 2.7: Health-Related Quality of Life. SF-36, CDC Healthy Days Core and Symptoms Modules. [1]Days Physical Health Not Good, [2]Days Mental Health Not Good; 'G' = Good; 'VG' = Very Good; 'Exce' = Excellent; SF-36 scores scale from 0-100; CDC days measurements are all out of 30.

←Pt HRQoL↓	SF-36 Physical	SF-36 Mental	SF-36 Total	General Health	Days PH N.G.[1]	Days MH N.G.[2]	Unhealthy Days	Limited Days	Pain Diff. Days	Depressed Days	Anxious Days	Not Enough Sleep/Rest Days	V. Healthy and Full of Energy Days
1	20.5	17.9	18.4	Fair	30	30	30	15	30	30	30	30	0
2	73.5	67.33	71.15	G	2	4	6	1	1	4	2	7	2
3	78	64	68.13	Exc	3	2	5	3	3	2	0	6	27
4	49.5	75.2	62.31	G	4	7	11	10	4	10	3	0	20
5	24	24.9	23.69	G	18	10	28	14	10	20	10	20	2
6	78	87.4	85.25	G	1	0	1	1	0	0	0	2	28
7	33	43.8	34.88	VG	10	15	25	8	8	6	28	4	10
8	41	40.3	41.44	G	15	25	30	10	25	15	20	25	5
9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
11	68	66.67	66.04	G	0	10	10	5	10	5	0	0	25
12	17.5	27.97	22.17	Poor	17	24	30	20	20	15	10	16	5
13	38	48	43.13	G	18	4	22	7	10	5	30	13	N/A
14	30	68.9	50.56	Poor	30	0	30	20	30	2	2	30	5
15	44	64	59.38	Fair	15	29	30	5	30	1	1	25	0
16	46	61.97	51.23	Fair	2	2	4	1	1	2	2	10	20
17	35	73.6	57.88	VG	4	5	9	2	0	0	0	0	28
18	5.5	8.7	7	Poor	30	30	30	20	N/A	30	15	30	0
19	83	83.2	86.38	G	3	5	8	0	3	2	2	5	25
20	34.5	39.4	36.81	Fair	5	10	15	5	15	10	10	15	4
21	33.5	48.17	40.42	Fair	10	15	25	8	8	5	6	18	15
22	65.5	71.4	71.81	G	4	2	6	2	2	2	2	15	15
23	22.5	25	22.19	Fair	14	14	28	14	20	20	20	7	5
24	30	40.17	35.10	Fair	20	30	30	15	20	20	30	30	10
25	80.5	92.7	88.88	G	4	0	4	0	4	0	0	0	26
26	22.5	29.7	25.75	Fair	17	22	30	12	12	20	10	17	10
27	25.5	29.2	26.063	Fair	30	3	30	30	30	3	7	30	15
28	70	70.27	68.29	Exc	0	0	0	0	5	0	0	0	25
29	87	73.93	83.71	VG	7	5	12	0	0	5	3	4	20
30	24	21.4	21.5	Poor	30	25	30	30	30	30	30	30	5
31	34	54.9	48.69	Poor	30	28	30	4	0	20	20	5	0
32	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
33	71.5	80.8	77.06	Exc	2	0	2	1	0	0	0	6	20
34	26	64.7	46.06	G	3	2	5	0	30	2	2	5	0
35	12.5	42.97	30.29	Fair	21	0	21	21	21	3	3	30	0
36	63.5	53	55.31	VG	18	12	30	10	10	10	20	3	12
37	50	46.13	54.46	Poor	5	5	10	0	5	15	10	2	10

Table 2.7 continued

←Pt HRQoL↓	SF-36 Physical	SF-36 Mental	SF-36 Total	General Health	Days PH N.G.[1]	Days MH N.G.[2]	Unhealthy Days	Limited Days	Pain Diff. Days	Depressed Days	Anxious Days	Not Enough Sleep/Rest Days	V. Healthy and Full of Energy Days
AVG ± STDEV MED. RANGE	44.63 ± 23.26 36.5, 12.5–87	53.17 ± 21.91 53.95, 8.7–92.7	49.45 ± 22.32 49.625, 7–88.88	Fair to Good	12.41 ± 10.45 10, 0–30	11.029 ± 10.72 6, 0–30	18.15 ± 11.47 21.5, 0–30	8.65 ± 8.66 6, 0–30	12.030 ± 11.030 10, 0–30	9.24 ±9.49 5, 0–30	9.65 ± 10.56 4.5, 0–30	12.94 ± 11.20 8.5, 0–30	11.94 ± 9.86 10, 0–28
US and WA AVGs			80.4 (18-24 y.o.'s - US Gen. Pop.)	G to VG WA '07	3.5 WA '06	3.2 WA '06	6.7 WA '06	2.2 WA '06	N/A	N/A	N/A	N/A	N/A

Table 2.8: Major Limitations and Impairments.

Patient ↓	Limited? Major impairment? How Long? Need help of other persons with Routine or Personal Care needs?
1	"chronic nausea/pain"; "years"; YES and NO "it varys"-ROUTINE
2	"depression and its treatment"; "10 years"
3	"migraine, pain, depression (not very often anymore)"; "25 years"
4	NOT LIMITED
5	"chronic pain"; "4 years"; YES-ROUTINE
6	"stomach cramping and diaria"; "2"; "couple to 5 times Day"
7	"BACK INJURY"; "ANXIETY"; "4 yrs"
8	"migraine pain"; "20 years"
9	N/A
10	N/A
11	"Epilepsy"; "19 year's"
12	"PSTD" "TBI" "2-3 years"; YES-PERSONAL CARE; YES-ROUTINE
13	"full use of my left arm"; "9 mos (since they removed my left breast)"; YES "sometimes"- PERSONAL CARE; YES-ROUTINE
14	"chronic nerve pain / bone trauma"; "3.5 years"; YES-ROUTINE
15	"spasticity"; "15 years"
16	"neck pain dizzyness headaches" "05 [years? days?]" "08 hrs a day"
17	"weakness, spasticity"; "20 months"
18	"5 yr"; YES-PERSONAL CARE; YES-ROUTINE
19	NOT LIMITED
20	"spasm & pain"; "8 yrs (since dx)"; YES-ROUTINE
21	"Fatigue" ; "8 yrs."; YES-ROUTINE
22	"Nausea / Lack of Energy"; "Approx 2 days"; YES "Rarely"-ROUTINE

Table 2.8 continued

23	"bi-polor"; "panic attacks"; "20 years"; YES-PERSONAL CARE; YES-ROUTINE
24	"extreme back pain/shoulder neck/hand"; "7 yrs" "(was 1991-1994) (2000 - to present) "=10 [yrs over last] 15"; YES-ROUTINE
25	"muscle spasms"; "2 years"
26	"Sev. joint pain"; "5 years"; YES-PERSONAL CARE; YES "Have worker 3 days a week"-ROUTINE
27	"SCI" [spinal cord injury]; "11.5 yr"; YES-PERSONAL CARE; YES-ROUTINE
28	NOT LIMITED
29	NOT LIMITED
30	"5 m. of morphine daily"; 1 year"; YES-PERSONAL CARE; YES "50% of the time"-ROUTINE
31	"medication and my legs"; "8 months"
32	N/A
33	NOT LIMITED
34	"Loss of Strength, Joint Pain"; "15+ years"; YES-ROUTINE
35	"Can't Stand up Straight"; "24" "2 yrs"; YES-PERSONAL CARE; YES-ROUTINE
36	"Emotional health / Lack of Inspiration or Sluggishness"; "6 month per year"
37	"Weakness and some pain" "5"; YES-ROUTINE
SUMMARY	5 patients are not limited; 29 are limited. Of these, 17 need help with Routine needs; 7 need help with Personal Care needs

Table 2.9: Medical Cannabis Use in General, Not Specific to Any Batch or Strain. Several questions adapted from Reinman 2006 and 'Dr. Alfonso Jimenez's Follow Up/Renewal Assessment' 2008.

Pt#	2	15	16	20	37
Elapsed Time: From On-site to Take Home Receipt	72 days	71 days	26 days	12 days	17 days
Do you believe marijuana or alcohol has a negative impact on your mobile senses, while performing physical movements? (e.g. driving a car, physical sports, etc)	Alcohol	Alcohol	Both	Neither	Neither

Table 2.9 continued

Have you ever stopped using Cannabis because of bothersome adverse effects?	No	No	Yes	Yes	No
What negative side effects, if any, do you experience with cannabis, and how do you manage these?	N/A	"Cough, congestion - massage therapy seems to break up the phlegm."	"eating too much get sick, throw up or be constipated"	"Headache - turn out to be MS related, NOT Cannabis"	"It makes me sleepy. I usually take naps."
What is your preferred method of using Cannabis?	Inhalation by smoking (pipe, water pipe), Ingestion (baked goods, mari-pills), Inhalation by vaporization	Inhalation by smoking (water pipe)	Inhalation by smoking, Ingestion	Inhalation by vaporization (1), Inhalation by smoking(2), Ingestion(3)	Inhalation by smoking
Have you ever used Alcohol to self-medicate?	No	No	No	No	No
Have you ever used a non-prescription, legal drug besides alcohol such as an herbal supplement to self-medicate?	N/A	Yes	No	Yes	No
Have you ever used a non-prescription psychoactive substance other than Cannabis to self-medicate?	No	No	No	No	No

Table 2.9 continued

Have you ever used Cannabis as a substitute for alcohol?	No	No	Yes	No	No
Have you ever used Cannabis as a substitute for other psychoactive substances?	Yes: "Crystal Meth. This is harm-reduction done w/ professiona l help"	No	No	No	No
Have you ever used Cannabis as a substitute for prescription drugs?	Yes: "Marinol."	Yes	Yes	Yes	Yes
Why did you use Cannabis instead of other psychoactive substances?	Less Adverse Side Effects, Better Symptom Manageme nt from Cannabis	Less Adverse Side Effects, Better Symptom Management from Cannabis	Less Adverse Side Effects, Less Withdrawal, Social acceptance of Cannabis is Greater, Better Symptom Management from Cannabis	Less adverse Side Effects, Less Withdrawal, Better Symptom Management from Cannabis	Better Symptom Managem ent from Cannabis
Did the use of Cannabis modify your use of prescription (Rx) and/or over-the-counter (OTC) medicines?	Cannabis and Rx/OTC medicines work best together	I was able to reduce my Rx/OTC meds., Cannabis and Rx/OTC medicines work best together	I was able to reduce my Rx/OTC medicines.	I was able to reduce my Rx/OTC medicines.	Cannabis and Rx/OTC medicines work best together
Does the use of Cannabis help you to tolerate other medication?	Yes, "Cannabis relieves the side effects of medications ."	No	No	Yes, "re: lower N/V"	Yes, "Aids meds make my stomach upsets. Cannabis makes the stomach ache go away."

Table 2.9 continued

How often do you use cannabis?	Three times a day	More than four times a day	More than four times a day	Twice a day	Three times a day
If you are a daily user of flower buds, what is your average amount of Cannabis used per day?	3 grams	2 grams	<1 gram, 2 grams	1.5 grams	1 gram
Would you use it more if cost were not an issue?	Yes	Yes	Yes	Yes	Yes
How do you usually obtain your medical Cannabis?	dispensary/ collective/c oop, cultivation	dispensary/colle ctive/coop, friend/street, cultivation	dispensary/colle ctive/coop	dispensary/collec tive/coop	dispensary /collective /coop
Would you use it more if it was easier to obtain?	Yes	Yes	Yes	Yes	Yes
Compared to available prices, price is…	cheaper at dispensary/ collective/c oop	cheaper at dispensary/colle ctive/coop	cheaper at dispensary/colle ctive/coop	cheaper at dispensary/collec tive/coop	cheaper at dispensary /collective /coop
Do you grow your own medical marijuana?	Yes	Yes	No	Yes	No
How did you obtain your seeds or female clones?	dispensary/ collective/c oop	dispensary/colle ctive/coop, friend/street, cultivation	dispensary/colle ctive/coop	Dispensary/colle ctive/coop, Friend or street	N/A
Has the amount of Cannabis needed to control your symptoms changed over time?	Stayed about the same	Required more	Required more	Stayed about the same "(on average)"	Required more
Have you ever used synthetic THC (Marinol [Dronabinol]) available by prescription as a class III drug?	Yes	No	No	Yes	Yes

Table 2.9 continued

How does your Marinol experience compare to natural Cannabis?	Marinol wasn't effective.	N/A	N/A	Marinol wasn't effective.	Marinol wasn't effective.
Do you have a pending Cannabis case?	No	No	No	No	No
Are you on probation or parole?	No	No	No	No	No
Have you ever discontinued Cannabis only to find your condition worsen?	Yes	Yes	Yes	Yes	Yes
If your medical condition dissipates or is substantially reduced would you keep on using Cannabis?	Yes	Yes	Yes	Yes	No
Do you have any spiritual or religious views regarding Cannabis?	Yes, "Cannabis is a plant given to me by God, or The Highest Creative process, it opens me up to accept love others & is therefore spiritual."	No	Yes, "Instead of sacrifice God let us use the plant" [also sent 2.5 pg doc titled "Spiritual Aspects of MaryJuana" on Coptic Church and history of cannabis in cultural/relig. Use x-culturally"]	Yes, "this herb was Created before we were; by a force greater than ourselves."	No

Table 2.9 continued

Has medical marijuana use helped you to extinguish any aversive (painful) memories?	Yes, "extinguish is a harsh word, Cannabis has lessed the effects from painful memories of abuse, but it requires real psychologic al work to stop the cycles."	No	Yes, "Divorce Trauma"	No.	Yes, "Helps with Depressio n."
Has medical marijuana use helped you to extinguish any irrational fears?	N/A	No	No	No	No
Is medical marijuana able to synergize (or improve the effectiveness) of other medications that you take?	Yes, "it works with my antidepress ant to calm me down, help me sleep"	Yes, "It appears to work well when taken with Baclofen"	Yes, "My stomach upset in morning and my head hurts. Need pain relief so I smoke first get appitite so I could take motrin and muscle relaxers otherwise if I took motrin and relaxers without food that damages the lining in stomach so rantidine is needed to counter stomach problems"	Yes, "-Increased absorption secondary to reduced N/V & spasm"; "- decreased doseage/frequen cy of prescription pain meds"	No
Do you use medical marijuana as preventive medicine?	Yes, "for its cardiovascu lar benefits"	Yes, "I use it regularly to prevent spasms."	Yes, "No Narcotics", "No Rantidine", "No Prumetazine", "less cyclobenzaprine "	Yes, "to decrease N/V, when such might be anticipated"	No

Table 2.9 continued

How have you incorporated medical marijuana into your life? Do you have a relationship with this botanical medicine?	"when I have plants I feel a relationship of love & respect & awe in the plant."	"Frankly, it's rather a bother due to the quasi-legality issue."	Yes	"We are both created of the same source/maker: Inhaling, ingestion or other application of nautral medicine brings one closer, than w/ synthetics or man-mades."	"?"
What are your overall thoughts about medicines? Please include relevant social, cultural, and political aspects.	"Herbs & plants are for my use & purchase, I am responsible for researche[?] etc.", "pills are good."; "I want Gene Therapy for H.I.V."	"I generally try not to think about medicine, but regrettably have little choice."	"That White Resin that the pharmacy and drug company wants people to buy causes cancer."	"Medicine is both tangible, and intangible. It holds many powers (some humans covet power)."	"medical cannabis should be legalized"
How likely are you to recommend medical marijuana to a friend who has the same disease as you?	"I recommed & help people with all diseases & states of being to receive medical marijuana."	"Thoroughly likely!"	"Highly likely but MAYBE Different Products Depending on illness or injury"	"highly likely - no pun intended."	"would highly recommend"
Do you have any major worries or concerns regarding your use of medical marijuana?	N/A	"Only the quasi-legality issue…"	"In the future the Govt might make us TAKE MARINOL Instead of the the natural. NO other than that no"	"That Uncle Sam won't respect my rights, OR states rights."	"No"
Is there anything else that you would like to share with the researcher?	N/A	"Thanks for doing this study!"	"If we are not meant to have it then why does the Human Body produces it at certain ages?"	"Thank You"	"---"

Table 2.10: Level of Satisfaction with Medical Cannabis Clonal Lot. *subject's answer was inverted to correct for a likely inverted response to rating question. Medication satisfaction questions were adapted from Ryan et. al 2007.

Pt#	2	15	16	20	37
What amount did you receive?	3.5g	17.7g	56.7g	3.5g	3.5g
Please indicate the cost you paid (or donation you gave) to the clinic for the study medical marijuana strain batch.	$0	$150	$0	$35	$30
How long did it take you to completely use up the study medical marijuana strain batch?	36 hrs	8 days	24 hrs	5 days	3 days
Would you say that medical marijuana treatment is a major component of your health/disease management?	Yes	Yes	Yes	Yes	Yes
How far did you have to travel to make it to the clinic to pick up your medical marijuana?	5 mi	5 mi	10 mi	6.3 mi	4 mi
Cardinal direction that you have to travel to get from home to clinic?	S	NE	S	S	NE
How much time, approximately, did it take you to travel to the clinic?	45 min	15 min	30 min	45 min	20 min

Table 2.10 continued

Did your transportation to the clinic require special accommodations (driver, special vehicle, public transit, etc.)?	Bus	No	No	"public transit (bus) "2 buses = 45 min avg. total." "1/2 hr (bus)"	"I take the Bus."
In general, has medical marijuana use allowed you to reduce or discontinue other medications?	No	Yes, "I have been able to avoid moving to the "A-B-C" drugs (Avonex, Beta-Seron, cet.) generally given to MS patients"	Yes, "During the summer Capsicum Oleoresis w or 25% Capsaicin is very hot and uncomfortable Durring summer, especially when it runs. Cannibis Green Cream is an excellent alternative in the psring and summer months it's hot."	Yes, "D/C'd anti-hypertensives" "decreased pain meds (opiates)"	No
During the period you used study medical marijuana strain batch obtained from the clinic, how much of the other medications (that you reduced or discontinued) would you have used had you not used the medical marijuana, and approximately how much would they have cost?	"20 mg of Marinol I would have taken"	"Impossible to say -- sorry…"	"I have reducd the dependacy of 800mg Iburophin or Motrin to 400mg" "I reduced muscle relaxer cyclobenzaprine 10 mg 3 times daily to every three days or so."	"approx. twice as much pain meds", "0 cost w/ Medicare D"	"?"

Table 2.10 continued

Did using the study medical marijuana strain batch marijuana help to maintain your functional status (activities of daily living such as ambulating, toileting, eating, etc.)?	No	Yes, "Moderates spasticity so that I am able to function, sleep, walk."	Yes, "Ibuprophen is very hard to Digest and pass through the intestines plenty of water is needed to stay functional at all"	Yes, "increased energy / ease of movement"	Yes, "Let's me spend each Day doing whatever I want By taking away the Nausea of the AID medicines which make me throw up. Cannabis allows me to not have to throw up."
Please describe what effect, if any, the use of the study medical marijuana strain batch has had on your quality of life.	"These were small doses, so the effects could have been better. A lessing of anxiety/mood & up appetite."	"Major increase in life quality. With MMJ, I can work. Part-time. Without it, I am pretty much disabled."	"a natural muscle relaxer"	"increased quality w/ reduced N/V & pain/spasm =increased productivity/satisfaction w/ life"	"---"
Please describe any negative side effects you experienced with the study medical marijuana strain batch? How did you deal with these?	"none--"	"Fatigue -- take naps"	"Hunger? the munchees"	"dry mouth/cough. Increased lubrication w/ H20 & cough drop (occasionally)"	"---"
Please describe any positive side effects you experienced with the study medical marijuana strain batch?	"see 11"	"Decreased spasticity"	"stay happy when alone, no need to spend money I don't have anyway. Calm"	"increased productivity", "elevated mood"	"---"

Table 2.10 continued

Please report on the frequency and amounts of other strains of medical marijuana that you used during the same period of time that you used the study medical marijuana strain batch? If you know the name(s) of the other strain(s) you used, please include that as well.	"not apprecable as I could never afford more than one strain at a time. Also we are not told about strains, which is best for what symptom etc."	"None--"	"I tried a couple of other strains but plum is the best one or the best one's because it is easy to digest, smells good,"	N/A	"A.F. Gooey strain batch 3.5 grams, Bobo 1.5 grams, Green Hornet 0.5 grams"
Please rate the study medical marijuana strain batch on a scale of 1 to 10 for each symptom recorded on your symptom relief dosing-diary. How effective was the study strain of medical marijuana in relieving each symptom, (A) COMPARED TO OTHER MEDICAL MARIJUANA YOU HAVE USED, (B) COMPARED TO OTHER NON-MARIJUANA MEDICATION YOU HAVE USED. (A):,1 = least effective relative to other medical marijuana; 10 = most effective relative to other medical marijuana. (B): 1 = least effective relative to other non-marijuana medicine; 10 = most effective relative to other non-marijuana medicine. Symptom(A,B)	"depression" (7,6*), "nausea" (5,6*), "Appetite" (9,7*)	"Spasticity" (9,10)	"Medical Marijuana is always better"	"Nausea" (9,9),"Spasm" (8,10), "Pain"(other) (8,10)	"Appetite" (9,8*), "Nausea" (9,8*), "Depression" (8,7*), "Pain" (9,8*)

Table 2.10 continued

For each symptom recorded on your symptom relief dosing diary, overall what percentage of the time (how often) was the study medical marijuana strain batch able to provide any degree of treatment for your symptoms? Symptom(%)	"depression" (50%), "nausea" (30%), "appetite" (80%)	"Spasticity" (100%)	"The green cream is unique and it works well in summer when hot."	"Nausea" (100%), "Spasm" (100%), "Pain(other)" (100%)	"Appetite" (1 hour), "Nausea" (2 hours), "Depression" (4 hours), Pain (0.5 hour)
Overall, how satisfied were you with the study medical marijuana strain batch, on a scale of 1 to 10?	5	9	9	7	8
Overall, how satisfied were you with the study medical marijuana strain batch, on a scale of 1 to 10?	9*	10	9	9	10

Table 2.11: Changes (Δ) in Health-Related Quality of Life from Take-Home vs. On-Site Responses. Showing changes in SF-36, CDC Healthy Days Core and Symptoms Modules and Degree of Attribution of Highly Vital Days to Medical Cannabis Use.

Pt#	2	15	16	20	37
Δ SF-36 physical	-3	-10	+7.5	+10.5	+7
Δ SF-36 mental	-15.63	-2	-3.67	+11.97	+3.23
Δ SF-36 Total	-9.15	-9.38	+0.52	+12.79	+0.15
Δ Gen Health	Same	Same	Same	Same	Same
Δ Days Physical Health Not Good	-2	+5	0	-2	0
Δ Days Mental Health Not Good	0	-29	0	-7	0
Δ Unhealthy Days	-2	-10	0	-9	0
Δ Limited days	0	0	+1	-5	+5
Δ Pain diff. days	-1	-25	3	-12	0
Δ Depressed Days	-2	-1	-1	-7	0
Δ Anxious days	0	-1	-1	-7	-7
Δ Not enough rest/sleep days	0	0	+5	0	+2
Δ very healthy and full of energy days	-2	+5	+6	+6	+10

Table 2.11 continued

During the past 30 days, for about how many days have you felt very healthy and full of energy?	0	5	26	10	20
How many of the days that you felt very healthy and full of energy were directly attributable to your use of medical marijuana?	0	5	8	"8-9"	10
Approximately what percentage of the medical marijuana you used that was directly attributable to days that you felt very healthy and full of energy during the past 30 days was the study medical marijuana strain batch?	0	100%	100% "Plum"	30%"?"	100%

Table 2.12: Symptom Relief Dosing Diary Summaries.

Pt#	2	15	16	20	37
Medical Cannabis Amount	3.5g	28.35g	0.5g	3.4g	5g
Degree of Symptom Relief Provided on Average	75% depression relief for 12 hours, 62% nausea relief for 12 hours, 88% appetite stimulation for 10.5 hours	22% spasm relief for 97 hours	67% head pain relief over 2 hours	98% nausea relief for 60 hours; 100% spasm relief for 72 hours, 97% pain relief for 65 hours	23% appetite stimulation for 10 hours, 23% nausea relief for 10 hours, 23% depression relief for 10 hours, 23% pain relief for 10 hours

Table 2.13: Estimate of Cannabinoid Botanical Medicine Delivery Costs Over a 4-Month Germplasm Maturation Cycle. *One-time costs.

Stocking / Maturation Costs per Cycle	
$2000-house rent / month	$8000
$500-electricity / month	$2000
$250-water/sewage / month	$1000
$100-cable/phone/internet ("need it to be an actual seeming home with someone there") /month	$400
$2400-6 lights (pressurized Na lamps) = ballast, hood, light bulb ($400/unit and $100 for replacement bulbs per year)	$2400*
$200-fluorescent lights	$200*
$100-cultivation buckets (one for each plant)	$100
$100-soil/perlite	$100
$500-nutrients (fertilizer) (2 month supply)	$1000
$0-clones for free (sometimes, $15-$20), but mostly people freely sharing excess clones ("collectivist ethic since beginning") OR $600 for 4 seeds (♀)	$0
$20-$30-dumping costs for soil (every 2 months)	$50
$100-misc. packaging, garbage, transportation materials	$100
Labor Costs per Cycle (wage: $10-$15/hr or $13/hr)	
3-5 hours of work / day x 112 days (16wks)	$5824
Harvest/trim: 10 people working for 7 hours	$910
Dry trim: 10 people working for 7 hours	$910
Need 36 hours of labor on immediate reserve—Insurance—for landlord issues (housing law, e.g., have to move the entire operation due to a landlord site visit)	$468*
Transportation Costs per Cycle	
2.5 hr distance = 5 hr roundtrip x $13/hr = $65 + $30	$95
Available and Deliverable at Staffed Facility, Costs over a Cycle	
$2500-facility rent / month	$10000
$385-phone/fax/internet / month	$1540
$350-electricity/heat/water/sewage / month	$1400
$400-office supplies (labels, paperwork, packaging supplies) / month	$1600
$100-security alarm system / month	$400
$150-cellphone for 24 hr. emergency contact / month	$600
$2775-$75 / day-wages for 2 employees during operating hrs – 37 hours/month	$11100
Installing camera system	$10000*
Installing iron bars on windows	$10000*
Totals	
One-time costs (lights, reserve labor, camera system, iron bars)	$23068*
Total Stocking Costs	$12750
Total Labor and Transportation Costs	$7739
Total Available and Deliverable at Staffed Facility Costs	$26660
Total Costs per 4-month cycle (excluding one-time costs)	$47149

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The Medical Geography of Cannabinoid Botanicals in Washington State III: Contraband Psychoactive Biota Consumption and the Political Ecology of Mental Distress at Facing Possession-Related Legal Problems

Tracing the roots of a critical political ecology of disease

A significant step forward in the theoretical sophistication and explanatory power of medical geography was taken in 1996 with Mayer's *Progress in Human Geography* article, "The political ecology of disease as one new focus for medical geography". Analysis in the article joins the disease ecology tradition in medical geography with the power calculus perspective of political economy, thereby improving the search for structures, agendas, and agents that shape health and disease processes across space (Cutchin 2007). Mayer argues that the main strength of a political ecology approach is that it "integrates cultural ecology and political economy into one coherent analytical framework" (p.446). In its explicit integration of the concept of human agency, which it derives from its political economy pedigree, political ecology allows one to consider or tease out the effects of "'hidden agendas' of individuals or groups in a political context, as well as the social forces and struggles over resources and sociopolitical power" (p. 449). From its ecology heritage, political ecology derives notions of "individual and group adaptation and adaptive processes", which are basic dimensions of human-environment interaction. Thus, with its blend of social and material concepts and sciences, a political ecology research approach can offer an unparalleled level of explanatory power into the nature and effects—intended and unintended—of ongoing struggles over natural resources.

When specifically considering the outlines of a political ecology of disease approach, Mayer identifies two major features: locality and disease ecology. With regards to locality, he observes it is a basic feature of political ecology in general and writes that "the political ecology of disease…should demonstrate how large-scale social, economic and political influences help to shape the structures and events of local areas" (1996, p.449). With regards to disease ecology, the second major feature of a

political ecology of disease approach, Mayer recalls that it arose from the application of cultural ecology to the study of human disease, notably by May (1958). As defined by the *Dictionary of Human Geography* (2000), cultural ecology is

> [a]n approach to the study of the relations between a cultural group (a mode of life associated with specific material and symbolic practices) and its natural environment…it is the…study of the adaptive processes by which human societies and cultures adjust through subsistence patterns to the specific parameters of their local environment. (p. 134)

While disease ecology has traditionally been applied to infectious diseases and diseases of malnutrition, many of which are endemic in poorer countries and locales, it can also be applied to other diseases, especially those that arise or are thought to arise, in part or whole, from human interactions such as consumption (or lack thereof), absorption, or spatial coincidence, with environmentally-derived biological materials (e.g. plants, high carbohydrate foods), chemicals and radiation (e.g. biotoxins, pollution), or spatially-distributed violence and injury-causing objects and events (e.g., landmines, political/civil unrest, unjust spatial confinement) ("Meanings Beyond Mountains" 2006). Disease ecology was a natural addition to the integrated political ecology approach which developed at interface of anthropology and geography, as both disciplines umbrella active medical social science subdisciplines whose health and illness concerns have rarely engaged political ecologists. Positing it as one way of resolving the 'contextual' versus 'geometric' spatial debates in medical geography, the political ecology of disease approach that Mayer outlines calls for situating health-related phenomena in their broad social and economic context, demonstrating how large-scale global processes are at work at the local level, and giving due attention to historical analysis in understanding the relevant human-environment relations (Hanchette 2008). Because of the wide applicability of disease ecology, a political ecology of disease could therefore potentially address a large number of human maladies and discontents, both infectious and non-infectious, that are thought to arise out of particular types of human-environment interaction.

A related area of relevance to medical geography that Mayer also introduces is 'the political ecology of health', which addresses questions such as: "In a phenomenological and experiential sense, how do political factors mediate the experienced life worlds of specific locations and places, particularly for those who are ill or infirmed?" (p.454). In a political ecology of health framework, environmental factors are seen as having a very real and tangible impact on the embodied experience of health (for the sick and hale alike) in a way that goes beyond physical exposures to disease-causing agents to include how large scale social forces affect local and embodied experiences of health and well-being.

Mayer's 1996 paper is significant in that it provides the most robust elucidation to date of the outlines of a political ecology of disease framework, using illustrative examples such as HIV/AIDS in sub-Saharan Africa, cryptosporidiosis in Wisconsin, and Lyme disease in Connecticut. Several papers in the literature, identified through MEDLINE and GEOBASE searches, have taken up Mayer's formulation of the political ecology of health/disease, in whole or in part, and applied it to a wide range of health and hazards issues (Kalipeni and Oppong 1998; Kalipeni and Fedder 1999; Gandy 2001; Collins 2001; 2002; Hunter 2003; Oppong and Kalipeni 2005; Richmond et al. 2005; Paul 2005; Oppong 2006; Cutchin 2007; Hanchette 2008). These include the refugee crisis in Africa (Kalipeni and Oppong 1998), the global tuberculosis pandemic (Gandy 2001), landmines in Africa (Oppong and Kalipeni 2005), health status of 'Namgis First Nation members affected by salmon aquaculture (Richmond et al. 2005), land degradation and disease ecology in Mozambique (Collins 2001; 2002), deforestation and environmental health in southern Malawi (Kalipeni and Fedder 1999), polio resurgence in Africa (Oppong 2006), flood hazard planning in Bangladesh (Paul 2005), schistosomiasis and dam-building in Ghana (Hunter 2003), petrochemical industry-related community and occupational health and safety concerns in a Texas Gulf Coast city, and lead poisoning in Eastern North Carolina (Hanchette 2008). All of these authors explicitly refer to Mayer's (1996) political ecology of disease model with the

exception of Hunter (2003), who does not refer to political ecology, but whose pioneering studies are sine qua non of the political ecology of disease. They all emphasize local-global linkages and disease ecology or other ecologically-informed approaches.

Since its inception, political ecology has been more widely applied to understanding the unequal relationships within society to land-based resources in rural areas of developing countries (Blaikie and Brookfield 1987). Traditionally, this mode of explanation has been used to uncover the adverse consequences of development projects, such as land usurpation, environmental degradation, and increased human vulnerability. More recent developments in the realm of political ecology have incorporated critical, poststructuralist perspectives from areas such as gender, cultural, and postcolonial studies (Peet and Watts 1996, 2004; Robbins 2004) and have begun to shift attention to urban and developed world settings. In a 2000 paper, Mayer reiterates the call for a political ecology of disease, taking stock of then-recent critical and post-structural perspectives that Peet and Watts (1996, 2004) and others had brought into political ecology. This new critical political ecology works to "'denaturalize' certain social and environmental conditions, showing them to be the contingent outcomes of power, and not inevitable"; in essence, it functions as a 'hatchet' that hacks away at socially constructed mystifications (Robbins 2004, 12). In attempting to imagine what a political ecology of disease that incorporates these critical perspectives would do for medical geography, Mayer writes: "Using an interpretive framework developed in the context of advocating social change provides a challenge for the sociomedical interpretation of disease" (p.949). No examples are given, because, as can likely be concluded, no political ecology studies that challenged sociomedical interpretations of disease existed then. It seems that this powerful approach, a critical political ecology of disease, has yet to be applied to environmentally-associated diseases and the socially constructed mystifications that arise around their nosologies and etiologies. While a literature search does reveal a self-described political ecology of health study—really

more a cultural critique—that challenged the prevailing sociomedical interpretation of female circumcision as maladaptive in the Sudanese context (Gruenbaum 1996), and while Escobar (1999), a well-known proponent of critical political ecology who describes the field as concerned at root with the articulations of history and biology, anticipated an 'antiessentialist' political ecology that could critique disease diagnostics in the sense that they exemplified particular 'bodily inscriptions' that create an alliance 'between words and things', it can be safely stated that this critical approach to disease has been left on the whole all but dormant.

Psychoactive biotic substances and the political ecology of mental distress

Critical approaches to the political ecology of health and disease have the potential to incorporate ever-broadening social, political, economic, and cultural factors to challenge traditional causes, definitions, and sociomedical understandings of disease. Inspired by the patient-centered medical diagnosis critiques in medical geography that have been sketched by Philo and Parr (Philo 1999; Parr 2000, 2002, 2004), this paper will use a critical political ecology of disease approach to challenge certain prevailing sociomedical interpretations of disease, or more specifically, mental disorder, found in the field of substance abuse diagnostics and the related punitive public policy regimes of substance abuse prevention and control, with regards to the use of biotic substances. It will then present empirical evidence from a study on mental distress experienced by therapeutic cannabis users in an American state

'Substance' is a shorthand term used in common parlance for '*psychoactive* substance', a pharmacologically active, consumable material, usually self-administered, that can reliably have, among other physiological effects, a discernable impact on one's mood, emotions, feelings, sensations, perceptions, and/or thinking. For the last century, consumption of a select group of psychoactive substances has been a matter of pressing political concern for modern State bureaucracies, and in that time all manner of popular conceptions concerning substance use, abuse, dependence, and addiction have had

ample opportunity to be race-baited, red-baited, even gay-baited, chauvinistically slanted, politicized, inflated, and conflated due to a variety of cultural-historical reasons such as scapegoating, xenophobia, and 'culture wars' over the years, which an extensive literature has documented (see, for example: Musto 1999; Helmer 1975; Becker 1963). Nosology and diagnostics for substance-related mental disorders developed in health professional social circles and codified in standard psychiatry manuals have similarly shifted over time, with earnest attempts made in recent years at their summary de-politicization by mental health professionals and 'drugabuseologists'. But notwithstanding these efforts at putative 'scientific sanitization', this paper argues that long-hardened commitments to the normalized ideology of pharmacologicalism, eloquently described by DeGrandpre (2006) as providing "a scientific foundation for the moral ordering of drugs" (p. 27), as in the good vs. bad / angel vs. demon / legal vs. illegal psychoactive substance dichotomies enshrined in high-level public policy, have uncritically been allowed to take root in medical diagnostic screening criteria for substance-related mental disorders. Under the current official diagnostic nosology, when a person engages in a pattern of substance use that leads to mental distress as manifested by their recurrent or year-long persisting substance possession-related legal problems, that person's substance use is seen as maladaptive, is summarily labeled pathologically self-abusive, and the individual is judged to be mentally disordered.

One may pause here and ask: what does any of this talk about the use of psychoactive substances have to do with a politics of the environment? Why address substance abuse diagnostic questions with a political ecology framework? Should this not be left to critical cultural studies of mental illness and psychiatry? That such questions even bubble to the surface is indicative of how successful the social mystifications that have arisen around psychoactive substance use have been in obscuring its basis in human relationships with the natural environment. Though often overlooked, many of the contested psychoactive substances in currency today (e.g., opium, coca, and cannabis)

are botanicals found in the natural environment that evolved tens of millions of years ago. Very basic and well-defined human-environment relationships underpin the discovery, production, and consumption of all biotic psychoactive substances. Ultimately, it is argued here, addressing questions about human adaptation (or maladaptation) to psychoactive substance-replete natural environments, both at the societal and individual levels, is central for any clearheaded, scientific understanding of a given individual's substance use patterns and attendant mental distress that may be manifested, in order to judge whether that distress has a firm basis in psychopathology or not. The critical political ecology of disease approach is a suitable lens to use to address this question. Applying the rubric to such issues is not without precedent, as one veteran political ecologist, Paul Robbins, has called for a "political ecology of the drug trade" (Robbins 2004, 215), the beginnings of which have been sketched by Steinberg et al. (2004; 2005).

Biotic substances usage can quite literally be grounded in precise and particular locales, yet the prevailing conceptions of substance use are anything-but grounded. It is a marvel that practical scholarship, to say nothing of policy, regarding a whole class of human-biota consumptive relations remains to this day to be wholly divorced from considerations of environmental ethics, co-evolution, and ecology. Take for example academic studies on problematic crack-cocaine consumption in American urban inner cities. While most studies of morbidity, morality, and social cost will examine social factors such as poverty, deprivation, and glamour surrounding problematic use and local distribution of the substance, rarely, if ever, will a study trace the crack-cocaine used by subjects to the thousands of pounds of coca leaves which were planted, grown, and harvested from which the cocaine alkaloid was extracted and later reacted with baking soda (sodium bicarbonate) and heat to produce crack 'rocks' that 'appear' in glass vials in the inner city for consumption. Nor will such studies earnestly question the normalized contraband status of the coca leaf botanical and the chemicals extracted from it, and what impacts that contraband status has on the chain of events linking

problematic consumption of the substance in an urban inner city in the United States to, for example, cultivation practices in a Northern Peruvian rural village.

Understandably, the contraband status of such botanicals limits depth of inquiry. However, the problem could also be one of obfuscating terminology. While humans have lived and evolved within a world composed of material substance (and energy), psychoactive portions of this substance have come to be known, with no effort at semiotic clarity, simply as 'substances'. For the sake of rational grounding, let us divide these into biotic substances and abiotic substances. Biotic psychoactive substances are naturally occurring organisms that are an integral part of the biosphere and web of life in the same sense that any other terrestrially-evolved organisms are. They have unique secondary metabolite biochemical profiles that set them apart from other biota in that they contain chemicals that can robustly interact with endogenous systems of mood regulation, pleasure, muscle relaxation, and brain reward (among others) in humans and oftentimes other animals. They are the focus of this paper. As far as the abiotic substances are concerned, some, but not all of them, are unmodified or slightly modified concentrates of chemicals that were naturally biosynthesized in biotic substances. Others are novel products of the synthetic age. Across cultures and throughout history and pre-history (Eschotado et al. 1999), human beings have known about biotic organisms living in their natural environments that, when intentionally ingested in whole or in part, could "stimulate, sedate, [palliate,] or elate" (Tupper 2008, p. 356). In the modern era, an arbitrary subgrouping of these living organisms, be they plants or fungi, along with the unique chemicals they produce and their related congeners, have become the locus of intense medical, public health, and international law enforcement focus. Today many who use biotic substances are vigorously pursued by law enforcement and punished by criminal justice systems using methods and tactics that increasingly undermine human dignity, given the death penalty routinely used abroad and available to prosecutors in some cases in the US, the multi-decadal mandatory prison sentences routinely meted out to drug offenders, and other

normalized violations of drug offenders' privacy and family integrity, understandably producing significant mental distress for those involved with these contraband biotic substances The ultimate stated purpose of the entire medico-legal apparatus positioned against these substances derives its final justification from a claim to act towards the 'prevention and control' of 'substance abuse' by individuals. A critical political ecology of disease perspective can shed light on the origins of substance use mental distress as manifested by biota possession legal problems and help address the central question: must this mental distress necessarily be viewed as a pathological sign of a maladaptive substance use pattern? After all, consumption, possession, or close proximity to biotic substances are all instantiations of particular human-environment relationships of close contact which, for now, are criminalized. When the latter fact is made manifest in one's life through encounters with some form of law enforcement, it is understandably mentally distressing considering the harsh punitive consequences that are allowed by law and routinely meted out.

On a personal note, the author can attest to the reality of this mental distress, as he has personally experienced the mental distress of potential contraband biota possession-related legal problems and has been a target of a harassment episode where the threat of exposing his past consumption practices to law enforcement and other authority figures was used to terrorize him. The author has feared arrest, losing funding, being disqualified for professional licensure, being expelled from collegiate and professional training schools, and has feared for his loved ones being caught in harm's way for his actions. Given the extensive use of informants in drug law enforcement, not knowing whom or how much to trust someone has also a source of mental distress for him. The author has also personally met individuals who were hunted and captured by law enforcement officials at local, county, state, and federal levels for their contraband biota-related activities. He has met people living with serious illnesses (e.g., rheumatoid arthritis, failed-back surgery syndromes, cancers, chronic pain) who have literally been terrorized, whose bodies have been tortured when incarcerated or pulled from organ transplantation lists, or forcibly denied access to therapeutic and palliative

cannabis consumption or other medical treatment. He has met people who were facing or have faced life sentences for their cannabis cultivation practices—even when that cannabis was being used for medical purposes. He has met others who have faced grave legal consequences and attendant distress such as lengthy incarceration or its threat related to their possession and consumption of other biotic psychoactive substances, such as psilocybine fungi. The author is also familiar with many other cases that he has read about or learned about from trusted sources. In sharp relief to this, he has also met people who have complete amnesty and sanctuary from prosecution related to their contraband biota consumption or production practices. He has met the grower who produces cannabis for the United States federal government and who holds the patent on single-cannabinoid medicine marketed as a legal alternative to contraband cannabinoid botanicals. He has met three out of four of the ill and disabled American patients who, as a result of a landmark lawsuit, are supplied cannabis to consume by the federal government because their physicians attested to its profound therapeutic value for them. He has also met chronically ill patients in Canada who have been granted amnesty by the Canadian government to produce and consume cannabis. Finally, he has met individuals in various cafes in Vancouver, British Columbia and Amsterdam, Holland who breathe out deep sighs of relief as they come to fully inhabit the safe spaces that grant them a sanctuary for cannabis and psilocybine fungi consumption. The existence of such widely divergent scenarios of amnesty and terror helps to underscore the critical role the environment plays in producing or preventing mental distress related to contraband psychoactive biota consumption.

Applying a political ecology of mental distress approach can help to understand how individuals and groups react to such environments. The clash between localized understandings of particular human-environment interactions and medical and public policy interpretations of those same interactions creates stressful conditions to which individuals and groups adapt. The modern concept of human adaptation has its roots in the cultural ecological work of the mid-1950s spearheaded by Julian Steward, student

of the renowned anthropologist Alfred Kroeber (Grossman 1977; Singer 1989). The geographer Bennett (1969) in his book on the inhabitants of the Great Plains of North America, helped to bring the human adaptation concept into geography. He offers valuable insight to the nature and type of adaptation patterns that individuals and groups practice when responding to problems and stressors. He sees adaptive behaviors as coping mechanisms that take a multitude of forms including "problem-solving, decision-making, consuming and not consuming, inventing, innovating, migrating, staying" (p. 11). To define or measure adaptation, Bennett suggests looking in terms of goal-satisfaction and resource conservation (p. 13). He insists on making the very useful distinction between *adaptive strategies* and *adaptive processes*. Adaptive strategies pertain to "the pattern formed by the many separate adjustments that people devise in order to obtain and use resources and solve immediate problems" and are generally conscious decisions. Adaptive processes pertain to "changes introduced over relatively long periods of time by the repeated use of such strategies or the making of many adjustments" and usually can be seen only by outside observers (p.14). The study of human adaptation patterns is a significant part of work in human geography and has been examined in diverse contexts, from natural hazards and threats to subaltern studies of peasant resistance strategies.

Given the universal, embodied human experience of distress and threat, it should be no surprise that adaptation to various types of environmentally-induced distress may take similar forms. Mitchell (1974), in a review on the geographic study of natural hazards, states as much: "the insights of natural hazard research may aid in developing general theories of man-environment relations. The possibility exists that models of human response to environmental threat may also function as analogs for research on man's adjustment to more pervasive forms of social stress" (p. 312). The topical diversity of the studies using Mayer's political ecology of disease framework also attests to this. Mayer (1996) also recognizes the relevance of socially stressful stimuli for a political ecology of disease framework: "it is important in the context of political ecology to ascertain the causes, both intentional and unintentional, of social isolation and

marginalization" (p.451). It is additionally equally important to ascertain the responses and adaptations of individuals and groups to conditions that produce these sorts of social stress.

Literature in ecological anthropology, such as work by Vayda and McCay (1975), has made significant headway in showing how the category of hazards can subsume "social and psychological insults" such as mental distress which produce demonstrable "psychological and behavior adaptations strategies." In their review of work in this area, they write broadly about the nature of various hazards that face organisms and groups and their responses. They are particularly concerned with those hazards that lead to "the risk of losing an 'existential game' in which success consists simply in staying in the game" (p.293). This aptly describes the hazards faced by those who produce and consume or otherwise come into close contact with contraband biota, such as cannabis and other forbidden biotic substances. Indeed, Vayda and McCay see the notion of 'hazards' to encompass not only "extreme geophysical events such as floods, frosts, droughts, hurricanes, and tornadoes" but also "predation by warfare, plundering or raiding…exactions of tribute and taxes…or acts of religious persecution" (294). Those affected by the psychoactive substance prohibitions under a policy commonly known as the 'war on drugs', variously referred to by its detractors as 'the pharmacratic inquisition' or 'psychopharmacological Calvinism' (Ott '95;'96;'97; & Riley '00), do certainly perceive their life hazards with terms such as predations, raiding, and persecution. These hazards form the backbone of the adaptation pressures to consider in a political ecology of mental distress at facing possession-related legal problems.

Substance-related disorders diagnostics and possession-related legal problems

The 'substance' nomenclature was first widely popularized as a result of sweeping, comprehensive, and international template-setting United States federal legislation passed by the Congress in 1970 and still in effect today. This legislation, known as the Controlled Substances Act, created a chapter under Title 21 "FOOD AND DRUGS" of

the federal code: “CHAPTER 13 - DRUG ABUSE PREVENTION AND CONTROL.” Note the clear and explicit language that identifies this as a public health-styled disease “prevention and control” regulatory schema. Under this policy, a system of five ‘Controlled Substance’ Schedules was created. In moving from Schedule V to Schedule I, increasing degrees of criminal prohibition apply, with Schedule I ‘substances’ falling for all practical purposes into the category of total prohibition (with exemptions granted for extremely limited medico-scientific research, religious use, and ‘instruction’). Substances in Schedules V, IV, III, and II are allowed for progressively restricted medical use and research but are otherwise prohibited. According to the regulations, Schedules I and II apply when “The drug or other substance has a high potential for abuse.” Biotic psychoactive substances appear only in Schedules I and II. They either appear directly by name (e.g., “Marihuana”, “Peyote”, “Opium poppy”), or by implied identification with a unique secondary metabolite made by the organism (e.g., “Psilocybin” referring to a metabolite made by 186 species of psilocybine fungi). On an official government website, the name of the organism that produces the scheduled metabolite is listed alongside the chemical name (‘Drug Scheduling’ 2008). To give an idea of size, currently 125 substances are listed in Schedule I, 57 in Schedule II, 34 in Schedule III; 68 in Schedule IV; and 8 in Schedule V—292 ‘controlled’ substance in all (‘Electronic Code’ 2008). These can be referred to as the ‘Controlled 292’. In this vast controlled substance-scape, the focus of this paper is in on biotic psychoactive substances, which have a far more extensive history of human use and are far more easily studied with a political ecology lens compared to abiotic ones (though the two are surely interconnected). The number of distinct biological organisms represented in the ‘Controlled 292’ probably number in the low hundreds (with psilocybin-, dimethyltryptamine-, and related tryptamine-containing organisms making up the vast majority (Halpern 2004; Ott 1996)). It is worth noting that several of the 292 substances appear endogenously in the human body, such as dimethyltryptamine (Christian et al. 1976) and morphine (Poeaknapo et al. 2004). If one is charged for this internal possession of controlled substances or

worried about it, perhaps one can mount the defense of 'guilt by association'! All absurdities aside, the final downstream target of this entire enforcement schema has to do with particular situations in which human bodies make close contact with one of these politicized plants, fungi, or chemicals, and the ensuing embodied experiences that follow as a result of the body's absorption of active chemicals into its bloodstream. Given this context, do these consumptive experiences amount to 'drug' or 'Substance' Abuse?

In the current fourth edition of the American Psychiatric Association's DSM (Diagnostic and Statistical Manual for Mental Disorders), Substance-Related Disorders are divided into two groups: the Substance Use Disorders (Substance Dependence and Substance Abuse) and the Substance-Induced Disorders (Substance Intoxication, Substance Withdrawal, Substance-Induced Delirium, Substance-Induced Persisting Dementia, Substance-Induced Persisting Amnestic Disorder, Substance-Induced Psychotic Disorder, Substance-Induced Mood Disorder, Substance-Induced Anxiety Disorder, Substance-Induced Sexual Dysfunction, and Substance-Induced Sleep Disorder). Of these, the mental disorders that will be focused on here are the Substance Use Disorders, especially Substance Abuse but also to some extent Substance Dependence (see discussion in 'Case Study' section). Substance Intoxication disorders, which also merit attention, will not be addressed here due to space constraints.

To begin a brief modern history of the nosology of Substance Abuse, one must start in 1952, with the publication of the original DSM. There, Substance Abuse or drug abuse was listed as a Sociopathic Personality Disturbance—the same category that homosexuality was placed in (which was finally removed in 1973 but its "treatment" not fully repudiated until 1998 ("American Psychiatric Association" 2008)). Both the DSM-I and DSM-II were virtually identical to the ICD (International Classification of Disease) nosology developed by the WHO (World Health Organization). The DSM-

III, released in 1980, was a significant break from this; it incorporated approaches that were developed by researchers at Washington University School of Medicine during the 1970's. It introduced the multiaxial system of diagnostic evaluation. In this schema, Substance Abuse, as a class of Substance Use mental disorders, was classified under Axis I, which was reserved for syndromes such as depression and schizophrenia. For the first time, DSM-III classified Substance Use mental disorders in a separate diagnostic category distinct from the personality disorders. DSM-III-R (revised) was released in 1987, and in 1988, the most extensive process yet of reworking the Substance Use mental disorders section began. This reworking was completed 6 years later with the release of the DSM-IV in 1994. With regards to Substance Use disorders, the most significant change in the DSM-IV was the specific definition and clear enumeration of four free-standing, pathognomonic diagnostic criteria for Substance Abuse mental disorder, as distinguished from Substance Dependence mental disorder (Schuckit 1994).

Stepping back for a moment, it appears that in the history of Substance Abuse nosology, there was a time in history when the psychopathological category of 'Substance Abuse' *itself* was on the chopping block, just barely escaping deletion during the period between the DSM-III and DSM-III-R. Schuckit (1994) and Helzer (1994), writing in the *DSM-IV Sourcebook*, relay the following bits of psychiatric lore:

> The change between DSM-III and DSM-III-R represented an entire reorientation in the concept of abuse and dependence…the term *dependence* was broadened considerably. As a consequence, the framers of DSM-III-R originally proposed to delete the concept of abuse, feeling that the entire spectrum of substance-related problems was now incorporated into the broad concept of dependence. At the last minute, however, pressure from the field required that the term *abuse* be reinserted into the manual. However, abuse was now viewed as a residual diagnosis that was to be applied only to individuals who still had some substance-related difficulties but who did not fit into even a broad approach to dependence (Shuckit, p.7)
> …

> In a personal communication to the Substance Use Disorders Committee, Richard Frances recalled that there was an attempt to drop the term *abuse* in the DSM-III-R criteria, but that it was reinstituted at the time of the field trials by the popular demand of those attempting to use the new DSM-III-R criteria. (Helzer, p. 25)

Who might have been the most vocal opponents of the Substance Use Disorders Committee's planned deletion —the 'squeakiest' wheels? It is unclear. Nevertheless, this category of mental disorder known as 'substance abuse' has persisted, notwithstanding how ever so tenuously it survived near-deletion or protestations about the essentially pejorative nature of the diagnosis recorded in the *American Journal of Psychiatry* (Blackwell 1987; Peyser and Gitlow 1988). The question remains: how to go about characterizing it? A definition of substance abuse emerged by consensus when the question was posed to a panel of 99 substance abuse experts by Rindali and colleagues (1988). Using this Delphic approach, the expert panel concluded that 'drug abuse' is "any use of drugs that causes physical, psychological, economic, legal, or social harm to the individual user or to others affected by the drug user's behavior" (quoted in Helzer, p. 24). The current DSM-IV-TR (2000, TR = "Text Revision") definition of substance abuse, with its four free-standing criteria of distress or impairment manifestations accompanying substance use patterns—shirking of work/school obligations, engaging in physically hazardous behavior, recurring substance-related legal problems, and social/familial disputes—is essentially based on the panel's consensus definition. This four-criterion algorithm allows for 15 possible criteria combinations (1 only, 2 only, 3 only, 4 only, 1+2 only, etc.) that will satisfy the diagnosis for Substance Abuse. The focus of this paper's inquiry is only on the third diagnostic criterion for substance abuse mental disorder which describes persons engaged in a patterns of substance use who present "clinically significant…distress" "as manifested by…recurrent substance-related legal problems" which have "occurred repeatedly" or "been persistent" in the past year (Criterion A3). The DSM-IV states that if persistent or recurrent substance-related legal problems arise in conjunction with substance use, then that substance use pattern is maladaptive and a Substance Abuse

mental disorder is the likely underlying diagnosable psychopathology that explains the person's "clinically significant…distress."

Rather than uncritically accepting this criterion as a factual description of psychopathy, the analysis here is directed towards potential depathologization of this criterion. Such an orientation follows the lead of numerous medical geographers in the field, such as Parr (1999; 2002; 2004), Stock (1986), Gesler (1992), and Jones and Moon (1992), who advocate the necessity of maintaining critical perspectives on highly socially-contingent disease-like states and giving due attention to alternative explanations for such states by patient-subjects. This paper attempts to question the basis of the A3 diagnostic criterion and depathologize the mental distress described therein on the grounds that additional, unaccounted social variables influence the manifestation of mental distress by some substance-related legal problems. Issues with this 'legal problems' criterion have, in fact, been raised by others in substance abuse and general medical literatures. For example, Alexander (2003), in a paper in *The American Journal of Drug and Alcohol Abuse* that presents a "Marijuana Screening Inventory", notes some difficulties with criterion A3, in the case of Cannabis Abuse:

> Subjective clinical judgment enters into Cannabis Abuse criterion distinctions regarding the meaning of 'recurrent' or 'maladaptive pattern.' For example, legal consequence risks are present with any marijuana use level, but may remain latent, or risk exposure only if a person drives or buys. Behavioral frequency cutoffs are not sufficiently clear regarding 'legal' or 'driving' problems with marijuana to allow consistent clinical agreement that a 'recurrent' 'maladaptive' pattern exists. (p. 622)

Another commentator, Earleywine, a well-known academic psychologist who studies cannabis-related issues, writes in a response letter questioning the conclusions of a study published in the *Journal of the American Medical Association* about rising rates of cannabis abuse disorders in a particular urban population that "recurrent marijuana-related legal problems qualify users for the abuse diagnosis. Marijuana arrests

increased dramatically in the decade studied (1991-2001)…which could account for the observed increases in the disorders" (Earleywine 2004, "Marijuana arrests and increase in marijuana use disorders", *JAMA* Aug 18;292(7):802). Earleywine's point rests on the necessity of establishing an analytically useful distinction between cannabis use disorders and cannabis arrests, showing that more aggressive enforcement of cannabis prohibtions laws may better account for the "observed increases in the disorders", rather than any uptick in underlying incidence of psychopathology.

What is most problematic about the criterion is that the psychopathology-manifesting substance-related legal problems that the DSM-IV describes *include* those that arise from nonviolent, 'victimless infractions' of substance prohibition laws—in other words, legal charges or other legal problems related to the possession, production, and pharmacological delivery of contraband substances or discovered metabolic evidence of their consumption. For shorthand, these can be called substance-possession legal problems (with metabolites being a form of 'internal' possession). That such legal problems are also included in the criterion's assessment is absolutely indisputable as the manual specifically enumerates them. Shown in **Table 3.1** is a comprehensive compilation of all the occurrences of the concept of "legal problems" in the DSM-IV, all of which appear in Substance-related disorders section of the manual with the sole exception of a single reference made to "legal difficulties" in the manual's description of conduct disorder. Underlining has been added to highlight specific references to legal problems that arise from nonviolent infractions. Simply reading the underlined words brings into relief how these distressing legal problems, for the framers of the DSM-IV, translate into mental disorder.

To recap, the codified, canonical diagnostic criteria found in the DSM-IV-TR (2000) that health care providers use to evaluate patients' substance consuming patterns for Substance Abuse disorder require providers to take careful note, ideally (but often not) in the course of a structured interview, of "clinically significant…distress". The DSM-

IV-TR states that this "distress" and the "maladaptive" substance use pattern that led to it can be "manifested by…recurrent substance-related legal problems" which have "occurred repeatedly" or "been persistent" in the past year to qualify for the disorder. The idea is that because someone is engaging in a continuing behavioral pattern of substance use despite the adverse consequence of legal problems, s/he must be mentally disordered. The DSM-IV-TR diagnostic criteria for substance use disorders do not interrogate the substance control criminal sanction systems in which patients live; substance-related legal problems are never themselves seen as *the problem*. Under this rubric, one's experience of distress that is manifested by pending or year-long persisting legal problems is understood as mentally *disordered* in light of the ordinary and ubiquitous nature of the globalized contraband biotic substance prohibition enforcement regimes—i.e., the prevailing *order*. These regimes are understood to be naturalized and normalized aspects of the environment; for someone to run counter to them is understood as maladaptive, and any resultant distress is interpreted as a diagnostic sign of mental illness.

Banning biota and sowing the seeds of distress

Medical anthropologists have long reminded medical social scientists to beware of slippage between pathology and expressions of cultural and social difference. Merrill Singer warned of this when he wrote: "the adaptationist perspective appears to assign inequities in social relationships to the environment, thereby not only legitimizing those inequities as natural, but implying that the noxious consequences of exploitation are indicators of the maladaptation of politically and economically subordinate groups" (1989, p.226)

This paper's contention is that current medical thinking on substance abuse has acquiesced to what could be called 'drug war diagnostics'. Consider an alternate explanation to account for a substance-using patient's mental distress as manifested by recurrent or persistent biotic substance possession legal problems. What if their mental

distress is a normal response to a system of substance/social control that has itself set up a maladaptive relationship with the psychoactive substance-replete global environment? If this may be the case, might it be unreasonable then to expect people to adapt to a system of biotic substance control committed to eradicating whole botanical species, not only from their personal lifeworlds, but also entirely from the face of the planet, save for a handful of authorized sites and personages?

The following section of the paper will critically assess how this biotic substance control system spreads itself biogeographically and sociospatially at multiple scales, from a broad, global environmental level to the ultra-local perspective of the individual consumer. In the so-called "public health" campaign to prevent and control substances abuse, State governing bodies the world over have essentially extraprocedurally taken ownership of entire species of naturally-occurring, pharmacologically-active biota from the plant and fungal kingdoms—out of the hundreds of types of naturally occurring psychoactive biota—and criminalized their consumption outside of narrow, official channels. Ten species that evolved on Earth's biosphere are currently at the heart of this policy, through direct or indirect reference in international, federal or state-level Schedules. They are: *Papaver somniferum* L., *Erythroxylum coca* Lam, *Cannabis sativa* L., *Lophophora williamsii* J.M.C., 186 Psilocybine fungi spp., *Catha edulis* Vahl, *Tabernanthe iboga* L., *Banisteriopsis caapi* C.V.M. & *Psychotria viridis* Ruiz & Pav, and *Salvia divinorum* Epling & Játiva. More commonly, these are known as opium, coca, cannabis, peyote, mushrooms, khat, iboga, ayahuasca, and salvia. Of these, the first three—opium, cannabis, and coca—have the longest standing ownership-bans in the modern era with the most far-reaching consequences. These are in fact ownership-bans because global biotic psychoactive substance prohibitions grant legitimate, monopoly ownership of the biota—or, at root, select germplasms (plant genetic resources) (**Figure 3.1**)—wherever they may occur and at whatever generational age of the species—to State authorities while prohibiting safe access by others, literally bioimpoverishing unauthorized billions through force or the threat of

force. Those who civilly disobey these regulations by consuming or facilitating consumption of contraband biota—possession law violators—are, in effect, stealing from world governments, and many are routinely charged for such crimes. The institution of such bans on nature requires a historical act of biocolonization: a prior political call of species-wide, claims-staking, i.e., a depletion of the commons pool of plant genetic resources through decree. It is this historical act that gives the past tense to the word ‘control’ in the phrase ‘controlled substances’, and this control has become absolutely commonplace and normalized.

Figure 3.1: Key Contraband Germplasms. (from top left, rightward) Coca: http://www.ethnogarden.com/cart/index.pl/catid_77/proid_292/_/_/CocaSeeds/ErythroxylumCoca/, Khat: http://www.shamanica.com/Catha%20edulis.asp, Chacruna:http://www.ethnogarden.com/cart/index.pl/catid_77/proid_250/_/_/Chacruna/PsychotriaViridis, Yage: http://www.shamanic-extracts.com/xcart/shamanic-products/banisteriopsis-caapi-seeds.html, Cannabis: http://www.cannabisculture.com/articles/4477.html, Opium: http://www.plantcultures.org.uk/plants/opium_poppy_traditional_medicine.html, Peyote: http://tryptamind.com/grow_peyote.html, Iboga: http://www.shamanic-extracts.com/xcart/shamanic-products/tabernanthe-iboga-seeds.html, Salvia Divinorum: http://www.sagewisdom.org/sdseeds.html Psilocybe: http://www.erowid.org/plants/mushrooms/mushrooms_cultivation_az2.shtml.

The points in space of interaction between *Homo sapiens* and these elements of banned non-human nature are points of material and sociocultural significance; their geographies are shaped by ecological and sociopolitical forces and thus easily lend themselves to the analytic frame of political ecology. When a human being comes into close contact with a banned botanical life form in her or his environment, experienced

psychosocially at this most local scale is the rule of global scale international and national prohibition laws that encircle the botanical biota with boundaries which historically have been shaped by sociopolitical forces of power, influence, and authority—basic issues that concern political economy—that have the effect of alienating individuals from freely associating with these elements of the natural world. These are exactly the sorts of boundaries that Robbins is referring to when he writes:

> In recent history, powerful modern institutions and individuals ([e.g.,] environmental ministries, multinational corporations, corrupt foresters) have gained undue and disproportionate power by explicitly attempting to divide and police the boundaries between human and non-human nature, even while allying themselves and building new connections to the non-human world, leading to unintended consequences and pernicious results. In the process, resistance emerges from traditional, alternative, and progressive human/non-human alliances marginalized by such efforts (usually along lines of gender, class, and race) (2004, p. 213).

Contact with banned psychoactive biota is also ecologically mediated through the organic distribution of living species, mutual adaptation (e.g., health-related behavior), and co-evolution (e.g., selective cultivation), which influence how often and in what context human and non-human species will come into gross and "deep" consumptive contact, the latter understood through the logics of pharmacology, physiology and metabolism. It is readily apparent, then, that the overall effects of the consumption of banned biotic substances wherever they may occur locally, such as those related to psychoactivation, are never determined solely by material or biophysical forces alone; rather, agency, culture, context, and psychological set play equally vital roles.

Biogeographic State ownership and control of whole species of life in the service of substance abuse prevention and control has a qualitative policy parallel only in the arenas of biological weapons control and endangered species preservation. In the former category, unauthorized persons found in ownership or possession of entire species of life (or quasi-life) such as plague (*Yersinia pestis*), tularemia (*Francisella*

tularensis), *Ebola* virus, or processed derivatives of these and other species are subject to criminal sanctions. In the latter arena, unauthorized persons found in ownership or possession of threatened or endangered species of life such as the Salt Creek tiger beetle (*Cicindela nevadica lincolniana*), the African violet (*Saintpaulia ionantha*), and the White Rhinoceros (*Ceratotherium simum*) are also subject to criminal sanctions. Exceptions are commonly granted in both cases, and criminal penalties are rarely delivered. Governments' exertion of authoritative biogeographic control as per their international treaty or convention obligations over potentially mass violence-causing biological agents and species threatened with extinction has not led massive civil/political unrest or strife, mainly because these policies do not undermine basic social goals of peace, development, and sustainability. In essence, there is no valued benefit to exposing people to highly virulent pathogens or to wiping out endangered species that is being undermined, although these prohibitions are balanced against the fulfillment of people's desires to own biological weapons for self-defense or people's desires to consume and possess endangered species for aphrodisia or sport.

On the other hand, the banning of ten biota out of the hundreds with psychoactive potential, while heavily and yet often duplicitously enforced, do not further the goals of public health and safety as they are purported to do. On the contrary, they have led, over the course of several decades, to a significant amount of corruption, chaos and instability (secondary to money laundering), structural violence, direct violence (secondary to black markets), morbidity (such as untreated problematic substance use and the significant spread of HIV and HCV due to needle sharing and inaccessible clean injection equipment), mortality (overdose deaths from unregulated products), lengthy mass incarceration (1 in 99 adults were incarcerated in the US at the beginning of 2008, with non-violent offenders being the majority and drug offenders held the longest), execution (including summary and extra-judicial), and opportunity cost globally (Webb 1999; McCoy 1991; Russell 2000; CRS 2004; Farmer 1999, 2005; Chien et al. 2000; Nordstrom 2004; Ott 1996; "HIV, harm reduction, and human

rights" 2005; Wolfe et al. 2004; Malinowska-Sempruch et al. 2004; Pew Center 2008; Justice Policy Institute 2008; Bewley-Taylor et al. 2005; Lines 2007; Drug War Clock 2008). At root, this is because bans on psychoactive botanical biota, regardless of whatever 'hidden agendas' may additionally be at work, undermine longstanding medicinal, cultural, and religious practices and unsuccessfully attempt to politically suppress what may well be an acquired universal human drive for psychoactivation through categorically forbidding natural substances and policing populations for compliance (Siegel 2004; Weil 1986). This policy, often called a 'war on drugs' or 'drug abuse prevention and control' is seen by those who bear its brunt as a low-grade, persistent, prisoner-taking war on steeped in the ideology of pharmacologicalism in which some substances are allowed and encouraged for psychoactivation (e.g, tobacco, alcohol, caffeine, sugar, cacao) and others, such as those listed above, are forbidden. Through this ideology, which ultimately makes no distinction between psychoactive substances that are of biotic or abiotic origins, numerous substances such as the Controlled-292 in the United States Code have come under the globalized system of differential prohibition. Since human drives must prevail for life to go on, there will always be a demand for these officially prohibited substances as long as there is information available about their effects. By creating a regulatory vacuum, substance prohibitions essentially ensure that the drive to psychoactivate, which may well be established in future research, will be met by and large in the most exploitative and damaging manner—maximizing harm and minimizing benefit at both the population and individual levels. An earnest attempt at public health would at the very least reduce the harms associated with the consumption of psychoactive substances by ensuring that such substances are safely self-administered, made available through safe and regulated channels with known and unadulterated compositions, and that the public is given factual, evidence-based education about their effects.

It is only diplomats and politicians from a past era who have created this unique biotic constellation carved out with scientific botanical taxonomy—this biogeographic

catalogue of ten different types of banned germplasm. That these germplasms are members of a common class is strictly historical artifact and not due to any natural grouping. Authority-holders' enactment of biotic prohibitions has created an il/legal natural geographic lifeworld mapping for nearly every world citizen in which whole species and sub-subspecies of botanicals have become bounded up and encircled by prohibitionist-pharmacologicalist borders that were drawn without civic engagement or due process afforded to the most heavily affected populations. Each species so bounded has a unique ecology, a unique consumption-efficacy profile, and a unique environmental and human utilization history. Each encircling biotic prohibition inscribed around a natural species is a unique 'map feature' of an individual's lifeworld that presents distinct 'lost opportunities' for their utilization of that biota to fulfill part of their medicine and health care delivery, nutritional, religious, chemurgic, and/or safe psychoactivation needs—all remaining virtually inaccessible to law-abiding citizens and society at large who are taught 'thou shalt not unlawfully trespass' the extra-procedurally drawn boundary lines. The vast majority of citizens will not want to *openly* disobey these rules by crossing the boundaries for fear of arrest and associated penalogic social, civil, and bodily death threats—pain delivery—that is ongoing and virtually omnipresent. As a resultant adaptive strategy, nearly all boundary-crossing is done clandestinely under the cover of a 'black' or underground half-trillion dollar market (alone worth perhaps 10%+ of total global market exchange) (Steinberg and Mathewson 2005) or through private non-commercial land use and exchange. More often than not, end substance consumers are far removed from the cultivation and ecological embeddedness of the biota they consume.

Asserting the human right to health

It is those who are using biotic substances and are discovered or detected, possibly through acts of accidental indiscretion, and charged with violations of substance possession laws that are the focus of this inquiry. They have transgressed laws that purport to prevent and control, at the population level, the very mental disorder that

they stand to be diagnosed with. Should not an attempt be made to distinguish bona fide psychopathology from transgressions of laws supposedly meant to prevent and control that psychopathology? Legal problems or not, do people have a right to consume natural substances? The United Nations Special Rapporteur on the Human Right to Health has highlighted "the indispensable role of health professionals in the promotion and protection of the right to health" ("The right to health" 2005). In this regard, the ethical and phronetic orientation of this medical geographic research is towards the promotion and protection of the human right to health. The Committee on Economic, Social, and Cultural Rights (CESCR), a body of independent experts that monitors implementation of the International Covenant on Economic, Social and Cultural Rights by its State parties, was established by the United Nations Charter-created Economic and Social Council (ECOSOC) of the UN General Assembly under ECOSOC Resolution 1985/17 of 28 May 1985 to carry out the monitoring functions assigned to the ECOSOC. The Committee has acknowledged that the human right to health "is closely related to and dependent upon the realization of other human rights, as contained in the International Bill of Rights, including the rights to food, housing, work, education, human dignity, life, non-discrimination, equality, the prohibition against torture, privacy, access to information, and the freedoms of association, assembly and movement" ('General Comment No. 14' 2000). The human right to health, as enumerated in international law, implies certain freedoms and entitlements such as "*the right to control one's health and body*…and the right to a system of health protection which provides equality of opportunity for people to enjoy the highest attainable level of health" [emphasis added] ('General Comment No. 14' 2000). The right to determine food and drug preferences ought to be seen as a natural consequence of human dignity, especially vis-à-vis the human right to health, and the legitimate role of public policy ought to be harm minimization (as described above) and benefit maximization as related to these preferences (Nutt et al. 2007). This should apply equally well to drugs or substances which are preferred for intoxication or other practices that are associated with psychoactivation. UCLA psychopharmacologist

Ronald Siegel has written in his book *Intoxication: The Universal Drive for Mind-Altering Substances* (2004) that

> the medical purpose of intoxication is easier to understand if we think of intoxicating drugs as *adaptogens*. Technically, an adaptogen is a substance that helps people adjust to changes in their physical or psychological environments…Intoxicating drugs medicate the needs of the...drive for a change in state or mood…the pursuit of intoxication serves a legitimate medical purpose. The solution to the drug problems of our species begins when we acknowledge the legitimate place of intoxication in our behavior. (308-9)

Satisfying the putative acquired human drive for psychoactivation is a health issue and must be examined with ethics, reason, and patience—not with the usual hilarity, levity, and flippancy that dominates much discussion of this topic in the mainstream media, some policymaking circles, and countless casual conversations the author has witnessed as a result of discussants' reliance on tropes from popular culture, memories of past embodied experiences or inclinations toward future sought-out experiences of pleasure, and/or unexamined privileged positions of distance from the excesses of structurally violent drug enforcement regimes. To summarize, prohibitionist drug laws are, at root, a violation of the right to control one's health and body—essential pillars of the human right to health. Thus, in the author's estimation, it is difficult to understand how the consumption of any drug or substance per se can be understood as a criminal act; rather, this paper argues that the *criminalization* of drug consumption itself must be seen as a criminal act by States insofar as it violates their obligation to respect, protect, and fulfill the human right to health.

Therapeutic cannabis users' mental distress at facing possession-related legal problems: a local case study

On the international human rights view, the mental distress seen in substance-using patients who face substance-possession legal problems ought to been seen as a reflection of structural violence, and not a sign of underlying substance abuse mental disorder. To help demonstrate this point, examine the localized case of therapeutic

cannabis use by patients in American states that have enacted medical marijuana programs. The medical marijuana being used today by patients in the 12 active state programs is presumed to all be locally cultivated; official government sources of cannabis do not enter into the mediation at all. While such physician-authorized substance use is permitted by twelve state laws in Alaska, California, Colorado, Hawaii, Maine, Montana, Nevada, New Mexico, Oregon, Rhode Island, Vermont, Washington, and while current estimates indicate that approximately 7,000 American physicians[11] have made medical cannabis authorizations for several hundred thousand patients, the US Supreme Court ruled that federal law "trumps" state law in this area (Gonzales v. Raich 2005). Patients who follow their physicians' advice are put at risk for up to one year in federal prison for possession of marijuana, and up to five years in federal prison for growing one marijuana plant, as federal law does not make a distinction between medicinal and other use ('DEA' 2008). They are seen as being in violation of the federal government's public health program of cannabis abuse prevention and control.

Despite the fact that the National Academy of Sciences' Institute of Medicine concluded after reviewing relevant scientific literature—including dozens of works documenting marijuana's therapeutic value—that "nausea, appetite loss, pain, and anxiety are all afflictions of wasting, and all can be mitigated by marijuana" (Joy et al., 1999, p.159) and despite the fact that legal access to marijuana for specific medical purposes has been supported by numerous national and state medical organizations, including the American Medical Association-Medical Student Section, the American College of Physicians, the American Psychiatric Association's Assembly, the

[11] Currently available figures indicate that over 1,500 physicians have recommended medical marijuana use for 350,000 patients in California ("California Medical" 2006; "Dr. Mikuriya" 2006)), 182 physicians for 2,051 patients in Colorado ('Colorado' 2008), 124 physicians for 4047 patients in Hawaii ("Lawmaker" 2008), 145 physicians for 634 patients in Montana ("ACLU" 2008), 145 physicians for 900 patients in Nevada ("Federal" 2008), 2,865 physicians for 16,635 patients in Oregon ('Oregon' 2008), 149 physicians for 302 patients in Rhode Island ("For more" 2007), and 2,000 physicians for 20,000 patients in Washington (Aggarwal et al. 2007).

American Academy of Addiction Psychiatry, the American Academy of Family Physicians, the California Medical Association, the Medical Society of the State of New York, the Rhode Island Medical Society, the American Academy of HIV Medicine, the HIV Medicine Association, the Canadian Medical Association, the British Medical Association, and the Leukemia and Lymphoma Society, among others ('Proceedings' 2008; 'Medical Marijuana Endorsements' 2008), indicating a growing acceptability of the therapeutic practice amongst organized medicine groups—a necessary prerequisite for availability of the service, federal agencies who are empowered by Congress make reclassifications based on scientific and medical considerations maintain the pharmacologicalist hardliner position that, as a Class I substance, marijuana "has no currently accepted medical use in treatment in the United States" and that "there is a lack of accepted safety for the use of" marijuana "under medical supervision" (21 USC Sec. 812 01/22/02). In doing so, these State actors could be accused of shrinking their specific legal "obligation to refrain from prohibiting or impeding traditional preventive care, healing practices and medicines", engaging in the "deliberate withholding or misrepresentation of information vital to health protection or treatment", and aiming for "the suspension of legislation or the adoption of laws or policies that interfere with the enjoyment of any of the components of the right to health"—all specifically enumerated violations of governmental obligations to respect the human right to health in international law ('General Comment No. 14' 2000). When seen in this light, it truly begs the question: is the mental distress that medical marijuana-using patients might feel with regards to their fear of running afoul of federal laws and regulations a sign that they have an underlying cannabis abuse mental disorder?

In part to explore such questions, a study was conducted over four consecutive operational days during 2007-2008 academic year with a germplasm-linked group of thirty-seven chronically and critically ill qualifying medical marijuana patients recruited at a complementary and alternative cannabinoid botanical medicine clinic in

Washington State. The patient group recruited was germplasm-linked in that they all drew their physician-approved medicine from the same single-strain monoclonal lot pre-selected for study. This was a convenience sample that may or may not have been representative of all patients utilizing the clinic or all medical cannabis patients in Washington State generally, and there is no way of knowing as no uniform state-level data about medical cannabis patients are available. The sample included 13 females and 24 males, with an average age of 41 years old and median age of 39 years old, four of whom had cancer, six HIV, six MS, three epilepsy, four HCV, sixteen intractable pain, two glaucoma, and one Crohn's disease, though these categories were not mutually exclusive, among other illnesses and hardships. The study was located at a purposefully chosen complementary and alternative cannabinoid botanical medicine community clinic in Washington State that delivered locally produced cannabinoid botanical medicines to verified qualifying patients. They were surveyed with a general inventory of psychological health, asked about their level of mental distress related to the criminality of marijuana in federal law, queried the types of substance control / drug enforcement practices they had been subjected to or were specifically threatened with, and how they coped. They were also screened with a modified portion of the National Survey on Drug Use and Health related to cannabis abuse and dependence, and their views on cannabis abuse and dependence prevention and control were elicited.

In conducting this study at a medical marijuana delivery clinic, the author acted as an agent of the University of Washington. The University of Washington and Harborview Medical Centers adopted policy guidelines for physicians regarding medical marijuana in March 2002 (Policy Number 80.15) following Washington State's passage by voter initiative of a law authorizing the medical use of marijuana for qualifying patients in 1998 which was subsequently affirmed and amended in the 2007 state Legislative session (RCW 69.51a) when $94000 was allocated for a Washington State Department of Health rule-making study on medical marijuana dosing and supply originally due on

July 1, 2008. Only 19 researchers in the US have the necessary licenses to conduct research with cannabis supplied by federal agencies (Doblin 2008), and of these, only 2 licensees have a currently active clinical research study. This research project is significant as the only rigorous medical social scientific study on medical cannabis currently active in the US that examines the delivery of medical cannabis from a germplasm-directed, community-based, and patient-centered perspective. It was approved by the Human Subjects Division at the University of Washington, Application No. 33070 on 10/23/07, and a federal Certificate of Confidentiality (NCCAM 08-01) was issued by the National Institutes of Health's National Center for Complementary and Alternative Medicine on 12/4/07. The Certificate ensures that any sensitive information collected as part of this study will remain shielded from outside parties and that those involved in conducting the study "cannot be compelled in any Federal, State, or local civil, criminal, administrative, legislative, or other proceedings to identify" study participants or otherwise compromise their privacy. The IRB stipulated that subjects be informed in writing that they may wish to seek legal advice about the potential risks of being in the study but that the University of Washington cannot provide this advice. The other important step taken to protect subjects' privacy in this study was requesting and receiving approval for necessary waivers which ensured the absence of any written documentation with subjects' names or other identifying information on any permission sheet, consent form, or study material.

The findings reviewed here are from the portion of the questionnaire (see **Appendix C**) that begins with the prompt: "Now please think about your experiences with **substance control/drug enforcement.**" **Table 3.2** shows the subjects' responses to the question: "Do you feel any distress related to the criminality of marijuana in federal law?" For options, they were presented with a five-point scale to choose from—"Not at all", "A little bit", "Moderately", "Quite a bit" and "Extremely"—and then asked to explain their choice. Columns 3 and 4 show the results. Three subjects, #9, #10, and #32, did not complete the survey due to time constraints.

Table 3.2 also quantifies psychological distress in the patient sample in showing how patients scored on the 53-item Behavioral Symptom Inventory (BSI-53). First introduced in 1975 as a short-version of a longer 90-item inventory, the BSI-53 is widely used, rapidly administered and interpreted instrument to gauge the presence and degree of general psychological distress levels in individuals, not specific to any diagnosis, and has been used in both outpatient medical settings and the general population (Derogatis 1975; 1993). The BSI-53 asks subjects to self-report on the presence of psychological and physical symptoms and to rate the severity of each symptom on a numeric scale ranging from 0 (symptom not present) to 4 (extreme severity). The questions covers nine symptom dimensions—Somatization, Obsession-Compulsion, Interpersonal Sensitivity, Depression, Anxiety, Hostility, Phobic Anxiety, Paranoid Ideation and Psychoticism—and produces three global indices of distress: the Global Severity Index (GSI, column 2), the Positive Symptom Distress Index (PSDI, not shown), and the Positive Symptom Total (PST, not shown). The global indices measure current or past level of symptomatology, intensity of symptoms, and number of reported symptoms, respectively, and are compared with population norms to gauge severity. Any score that exceeds the mean population score by more than 2 standard deviations is considered to be abnormal (Ruckenstein et al. 2001). In this study, the patient sample's median GSI score on a scale of 0-4 was 0.745 and ranged from 0.11-3.057. For baseline comparison, in a sample of 719 adult individuals who were randomly selected from the US general population that was 49% female, 12% African-American, and had an average age of 49 years, the mean GSI score was 0.30 with a standard deviation of 0.31 (Derogatis and Melisarotos 1983, quoted in Francis et al. 1990), and in a psychiatric outpatient sample of 1002 US patients, the mean GSI was 1.19 with a standard deviation of 0.87 (Derogatis and Melisarotos 1983, quoted in Ryan 2007). When compared with these norms, the median level of mental distress in this patient sample as measured by the BSI-53 GSI was nearly 2.5 times higher than the mean found in a general population sample, though still less than one-and-a-half standard deviations higher the mean population norm. Additionally, the patient sample

median GSI score was one-third lower than that found in a psychiatric outpatient sample.

Subjects were then asked whether then had been subjected to the following substance control/drug law enforcement tactics or whether they had received threats about being subjected to them or specifically feared enduring them. Results are shown in **Table 3.3**. In summary, 12 patients had been subjected to ***searches*** and 11 had been specifically threatened with them—one patient commented: "had officer want to go threw house but changed his mind."; 4 had been subjected to and 5 threatened with ***surveillance***; 4 had been subjected to and 6 threatened with ***raids***; 0 had been subjected to and 3 threatened with ***confidential informant placement***; 11 had been subjected to and 10 threatened with ***arrest***; 7 had been subjected to and 5 threatened with ***trial***; 5 had been subjected to and 9 threatened with ***incarceration***; 0 had been subjected to and 0 threatened with ***child-removal***; 4 had been subjected to and 3 threatened with ***job loss***; 9 had been subjected to and 6 threatened with ***home eviction***; 0 had been subjected to and 1 threatened with ***asset forfeiture***; 0 had been subjected to and 2 threatened with ***financial aid suspension***; 5 had been subjected to and 3 threatened with ***biometabolite screen of excrement or hair***—one patient commented: "Didn't pass urine Test for a job."; 4 had been subjected to and 3 threatened with ***robbery of your medical marijuana***; 6 had been subjected to and 1 threatened with ***assault by law enforcement***—one patient commented: "more than once!!!/Torn shoulder during arrest"; 2 had been subjected to and 3 threatened with ***assault/injury related to violent elements from the underground market in controlled substances***. Other comments patients made in this section included: "neighbors who smell medicine have called police"; "no but I've seen patients be raided! (very sick people)"; "son got ticket in my car for my pipe."; and "I've lost friends who don't understand."

A scale for measuring coping with extreme risks, the López-Vázquez adaptation of "Échelle Toulousaine de Coping" (López-Vázquez et al. 2004; Esparbès et al. 1993), was also administered to ascertain how medical marijuana-using patients adapt to and

cope with the extreme uncertainty of substance control / drug enforcement in their lives. The scale chosen has been validated previously in Mexico for gauging coping mechanisms in people who endure extremely hazardous situations that are beyond their control, such as living in close proximity to an active volcano or other areas of high seismic activity, places that frequently flood, or places in proximity to highly polluting industries (López-Vázquez et al. 2004). The original scale, the Toulouse Scale of Coping, developed by Tap and colleagues in 1993 and first published in a French organizational psychology journal (Esparbès et al. 1993), bases its theoretical framework on the idea that stress is a non-specific response to all externalities that impose upon the body, and that coping is a modality through which a subject reacts to a stressful situation. Coping strategies are stabilizing factors allowing an individual to maintain psychosocial adaptation during stressful periods. The goals of coping are to get over a conflict, adapt to a new situation, or to defend against inconvenience or maladjustment. Subjects were asked how often they agreed with affirmations that reflected a range of coping strategies. These included: Acceptance, Value Changes, Denial, Social Withdrawal, Cognitive Focalization, Distraction, Informational Social Support, Emotional Control, Emotional Social Support, Active Focalization, Regulation of Activities, Cognitive Control and Planning, Wordlessness, Cooperation, Behavioral Changes, and Mental Withdrawal. Complete results (not shown) indicate that patients employ a widely divergent set of coping strategies and mechanisms and that no particular strategy out of the ones presented was favored over others. While there was a very even spread in the reported utilization of these various coping strategies, Active Focalization (acknowledging the situation and directly addressing the problem) was the highest reported strategy and Cognitive Control and Planning (giving oneself objectives, planning ahead, treating the problem in an abstract and logical way) was the second highest. Denial and Cooperation were the lowest and second lowest, respectively, reported coping strategies in the patient sample.

The National Survey on Drug Use and Health (NSDUH) is an annual study of American drug use patterns based on in-person interviews conducted with approximately 70,000 persons aged 12 and over sponsored by the Substance Abuse and Mental Health Services Administration (SAMHSA). The section of the survey's screening questions having to do with problematic cannabis use (there is no section querying beneficial uses) are based exactly on the diagnostic criteria for Cannabis Abuse Mental Disorder (DSM-IV Diagnostic Code 305.20) and Cannabis Dependence Mental Disorder (DSM-IV Diagnostic Code 304.30) and are used by federal agencies to generate nationwide figures on the number of people in the population "abusing or dependent on drugs." Previously in this paper, the problems with Substance Abuse disorder diagnostics were discussed, but it should be re-emphasized that Substance Abuse mental disorders are understood in fact to be residual diagnoses for individuals who do not meet the diagnostic criteria for Substance Dependence mental disorders. The DSM-IV-TR notes: "diagnosis of Substance Abuse is preempted by the diagnosis of Substance Dependence if the individual's pattern of substance use has ever met the criteria for Dependence for that class of substances (Criterion B)." For Substance Dependence, one must demonstrate a "maladaptive pattern of substance use, leading to clinically significant impairment or distress" as manifested by satisfying at least 3 simultaneous diagnostic criteria (none are pathognomonic). Two of the criteria pertain to tolerance and withdrawal, the hallmarks of physiological dependence. There is nothing suspect about these, aside from the potential of confusing the negative effects of ceasing consumption of a substance that provides therapeutic benefits with a syndrome of withdrawal from that substance. Additionally, behaviors described in other substance dependence diagnostic criteria could be demonstrated to be present in a particular substance consumer simply due to the fact that the substance is prohibited. For example, a portion of Criterion A5—"a great deal of time is spent in activities necessary to obtain the substance (e.g., visiting multiple doctors or driving long distances)"—could be satisfied solely due to the fact the substance is prohibited and therefore unavailable for local or home production and/or distribution (especially true

for biotic substances). Furthermore, if a substance is being used medicinally or therapeutically, it could certainly be the case that, as Criterion A3 states, "the substance is often taken in larger amounts or over a longer period than was intended." Often, individuals 'discover' the therapeutic benefits of a substance that was initially intended to be consumed sparingly under an environment of prohibition. Once this therapeutic discovery is made, more of the substance will be needed than was previously intended. Moreover, one may go to greater lengths to obtain it (Criterion A5), similar to the lengths that people may go to in order to obtain any effective medicine, even if the medicinal benefit is palliative rather than curative or complementary rather than central. Given the environment of prohibition and the importance of the consumption of the substance to the maintenance of one's health, the time and effort involved in procurement may cut into time that could be used for doing other activities, such as those enumerated in Criterion A6: "important social, occupational, or recreational activities are given up or reduced because of substance use." Given these contextual qualifications, when a portion of the NSDUH screening for cannabis abuse and dependence was administered to the patients in this study, after each screening question asked, the question "Would you have answered this question differently if marijuana were treated like other herbal medicines?" was also asked.

Here is a selection of the results from the NSDUH screening questions. In the 34 patient-subject sample screened, half (17) said 'yes' to the question: "During the past 12 months, was there a month or more when you spent a lot of your time getting or using marijuana or hashish?", and of these four said that they would have answered this question differently if marijuana were treated like other herbal medicines. One patient wrote the following comment: "what is a lot of time? Every day I use; I get it every two weeks." Twenty-two said 'yes' to the question: "During the past 12 months, did you try to set limits on how often or how much marijuana or hashish you would use?", and of these 6 said that they would have answered this question differently if marijuana were treated like other herbal medicines. Comments patients wrote about this question

were: “it Depends on quantity and quality”; “2^{o} to financial availability”. Eighteen said ‘yes’ to the question: “During the past 12 months, did you need to use more marijuana or hashish than you used to in order to get the effect you wanted?”, and of these 5 said that they would have answered this question differently if marijuana were treated like other herbal medicines. Two patients answered yes to the question: “During the past 12 months, did using marijuana or hashish cause you to do things that repeatedly got you in trouble with the law?”, and one responded that he would have answered this question differently if marijuana were treated like other herbal medicines. With regards to the pair of questions: “During the past 12 months, did you have any problems with family or friends that were probably caused by your use of marijuana or hashish?” and “Did you continue to use marijuana or hashish even though you thought it caused problems with family or friends?”, five and nine patients, respectively, said ‘yes’, and six said they would have answered these questions differently if marijuana were treated like other herbal medicines. Several subjects disputed the premises of several of the yes-or-no questions such as “Did you continue to use marijuana or hashish even though you thought it was causing you to have physical problems?” with comments such as “I Never thought that.”

Finally, in the spirit of soliciting input from those who are directly affected by policies when crafting them, a basic tenet of due process, patients were asked if they had anything that they would like to say about the prevention and control of cannabis abuse disorder. The input from those who responded is shown in **Table 3.4**.

In summary, for this germplasm-delivery linked group of chronically and critically ill medical cannabis patients, the average state of distress related to the criminality of marijuana in federal law was nearly three-quarters of the way from “A little bit” to “Moderately”. Their explanatory comments speak for themselves—their mental distress appears to have rational foundation. It is worth noting that, as a group, patients’BSI-53 GSI and PSDI scores are not linearly correlated with their ratings of

distress related to criminality of marijuana in federal law, implying that their distress related to federal marijuana laws was not obviously correlated with their distress as measured by the BSI-53, though the two are likely related at the individual patient level. Responses to the drug enforcement tactics screening show that patients have been subjected to a wide range of human rights violations by law enforcement under the color of authority granted to them from the substance abuse prevention and control laws, at all levels of governance. Collectively, patients in the sample had been subjected to or specifically threatened by each substance control/drug enforcement tactic presented in the survey, with the sole exception of 'child-removal', which may have been due to the fact that none of the patients had young children living with them at home. Seventy-six percent (26 out of 34) of the sample reported being subjected to or specifically threatened by the tactics listed. The 8 patients who did not report experiencing or being specifically threatened by these also did not report distress levels related to the criminality of marijuana in federal law greater than 'Moderately', and all patients who reported distress levels of 'Extremely' or 'Quite a bit' also reported having been specifically subjected to one or more substance control/drug enforcement tactics. However, the converse was not true, as 6 out of the 8 patients who reported 'Not at all' as their distress level also reported having been specifically subjected to one or often more substance control/drug enforcement tactics. Thus, aside from the associations described, there is no apparent linear relationship between reported distress levels and tactics exposure. Despite these clear examples of suffering and structural violence, the patients have found ways of coping with the continual deprivation of their internal locus of control, and the fact that they employ positive coping mechanisms is indicative of their development of constructive adaptive strategies for dealing with the contraband status of cannabis biota. Such adaptation undoubtedly represents some of the "resistance" Robbins refers to "emerg[ing] from traditional, alternative, and progressive human/non-human alliances marginalized by [the] efforts" of "modern institutions and individuals" to "gain[] undue and disproportionate power by explicitly attempting to divide and police the boundaries

between human and non-human nature". Finally, patients' responses to the NSDUH screening questions, which were often very complex and dealing with multiple individual and social factors whose influences cannot be specifically ascertained with a basic set of yes-or-no questions, demonstrated that Cannabis Abuse and Dependence nosologies are deficient in incorporating many of the sociolegal and sociomedical contexts of cannabis use, including self-administered use under medical supervision.

Discussion

What is readily apparent from a critical political ecology of disease perspective is that before a substance abuse mental disorder diagnosis can be made, patient-centered, subjectivist perspective demands scrutiny of the political context for patients' "substance-related problems". This would entail ethically interrogating the basis of the "legal" aspects of patients' problems, as well as seeking to uncover "hidden agendas" that may be at work (Mayer 1996, p. 449). This paper argues that the success or failure of a so-called public health regulation like a substance abuse prevention and control law as it applies to a particular patient, i.e., whether or not he or she has distressfully transgressed the regulation, ought not to be the grounds on which a mental disorder diagnosis is made. Rather, the diagnosis of substance abuse mental disorder should be made based on whether or not the individual patient does indeed engage in problematic substance consumption practices. Just because the Substance Abuse prevention and control law, a supposed public health measure, has been flouted—with distressing consequences for the patient—does not mean that this is a sure sign that mental disorder is present in the patient. After all, how a patient's consumption practices came to articulate spatio-temporally with the public health regime of substance abuse disorder prevention and control to generate 'their' "legal problems" is not simply a function of a patient's mental health. Depending on the effectiveness and sincerity of the public health regulation, regulatory transgressions may not be a sign of mental disorder, but rather one of governmental disorder. This possibility must be sincerely entertained, and the upcoming edition of the DSM should recognize this.

As an example, an alternative approach to cannabis abuse diagnostics based on the findings presented in this paper would be to jettison legal problems as a useful criterion to gauge cannabis abuse. Cannabis-related legal problems are unreliable indicators of psychopathology, not to mention often unjust (Gettman, "The Cannabis Rescheduling Petition"). It is better to focus on particular problems associated with an individual's cannabis consumption (Earlywine 2002; 2005). In fact, the whole substance use/abuse dichotomy ought to be discarded and the transition be made to a spectrum view, as has been adopted by the British Columbia Ministry of Health. In their framework for addressing problematic substance use, they include the diagram below (**Figure 3.2**) and note:

> The Framework recognizes that instances or patterns of substance use occur along a spectrum from beneficial use to non-problematic use to problematic use (including potentially harmful use and substance use disorders). Substance use disorders represent the extreme and most damaging end of the spectrum. Some people choose to abstain from using psychoactive substances while some people choose to use only certain substances. It is important to emphasize that abstinence is a healthy lifestyle option. Nevertheless, many people choose to use substances and some do not develop serious problems because of this use. (p. 8)

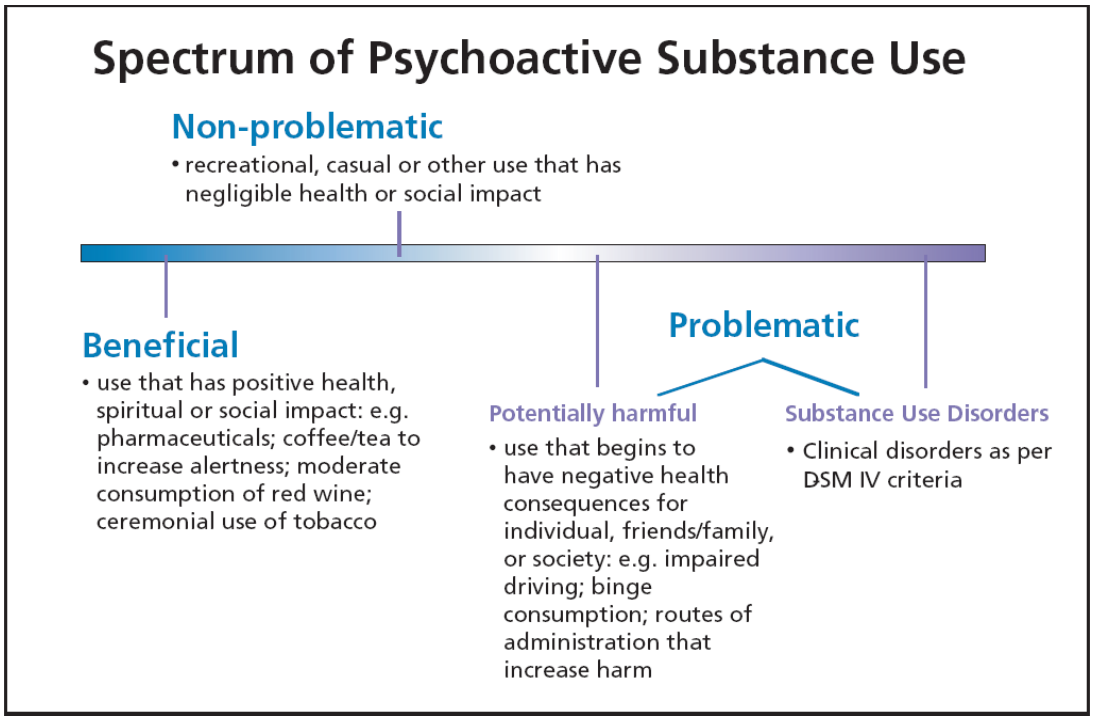

Figure 3.2: Spectrum of Psychoactive Substance Use. From "Every Door Is The Right Door: a British Columbia planning framework to address problematic substance use and addiction." May 2004.

Though they do not abandon the substance use disorders nosology, the public heath officers in British Columbia take an enlightened approach to understanding psychoactive substance use. Applying this to cannabis use, it is clear that cannabis consumption can be beneficial, non-problematic, or problematic for the consumer. Distinguishing between problematic and non-problematic use is straightforward: probe for the existence of medical/psychosocial problems, leaving legal issues aside as a Dutch health care provider would be inclined to do, given the Netherlands' system of de facto cannabis (re)legalization. If problems are identified, attention should be focused on reducing those particular harms associated with cannabis use for the patient-citizen. Distinguishing between non-problematic versus beneficial use of cannabis is more difficult, given the *relaxant* properties of cannabis use, and given consumers' tendency to reduce or substitute for alcohol consumption, which has its

own health benefits. Perhaps this determination, if it must be made at all, ought to be done on strictly subjective grounds, as per "the new subjective medicine" that seeks to take "the patient's point of view" on matters related to health status and withdrawal of life-support (Sullivan 2003). Given that cannabis is not recognized as a medicine at the federal level and in 38 states, it is likely that consumers may not be 'looking' for medicinal or beneficial effects, though when doctors and patients do find them, they ought to be free to use them. A questionnaire that focuses on quality of life, stress reduction, spirituality, somaesthetics (Shusterman 1999), self-directed psychotherapeutics, self-care, and related issues would likely help to elicit beneficial aspects of cannabis consumption that a consumer may only be dimly aware of on open-ended questioning.

Continuing with the cannabis example, one aspect of cannabis consumption that risks total neglect (and 'abuse', if you will) in substance use/abuse and related discourses is the relationship that human beings develop with environmental biota that they discover, produce and consume, such as plants, and in particular the cannabis plant. Appreciation, seed planting, nurturing, harvesting, and consumption of cannabis are all part of a human-environment relationship between two biotic species that both descended from a common evolutionary ancestor between 1 and 2 billion years ago (Dawkins 2004). Medical geographer Hester Parr, in her 2006 talk at the UW Geography Colloquium, spoke about the emotional benefits that mental patient-citizens glean through their experience with gardening and plant care. Her research showed that horticultural practices helped to "ground" patient-citizens. One respondent noted: "You slow your thoughts down to the speed of the plant and what's happening to it." Another said: "…you go into a sort of trance." A third said: "You can go into this place that is not you and it's not the world" (2006, author's notes from lecture). While such reactions may not be specific to human relations with plants and may occur as a part of any slow or meditative activity, it is clear human-plant relationships can have

cultural and therapeutic aspects to them. This side of cannabis consumption and production is totally neglected in modern 'use/abuse/dependence' discourses.

Problematic use of any and all of the "Controlled 292" substances—plus alcohol—can be referred to with the diagnosis of Substance Abuse mental disorder, effectively eliding their diverse pharmacology. A tremendous amount of confusion is created by this scattered grouping of 293 chemicals and organisms into a catch-all term of 'Substances', 'drugs', or the pejorative term, 'dope.' Frequently alcohol is distinguished from the rest with vapid phraseology such as "alcohol and drugs." With such terminology, it is easy to see how and why the most problematic aspects of use of certain 'substances' in the list of 292 Controlled Substances can become misattributed to use of any other particular 'Substance' in the classification. As this paper has attempted to show, the use of proper language is critically important in the arenas of substance regulation policy and substance-related diagnostics. The following is a quote from McGill University Law Professor Desmond Manderson's paper entitled the "Archeology of Drug Laws" (1994) that underscores the importance of using accurate language when discussing drug policy. Manderson examines the universal tone of ferocity and repulsion at ugliness that is betokened in drug laws in the twentieth century. He places the word 'narcotic', which appears in the 1914 Harrison Narcotic Act, the first punitive federal drug law in the United States, in its historical context when answering the question: "What is the effect of the endemic use of this word?"

> It implies that the substances previously identified only as 'dangerous' are united in their medical and pharmacological nature as well as by their legal status. There is a patina of scientific legitimacy attached to that crucial word 'narcotics'. By using it, the title tells us to expect a certain kind of scientific substance to be dealt with. The frame gives medical legitimacy to the like treatment of the substances dealt with in the Act.
>
> Clearly the language of the title is a nonsense: neither cocaine nor cannabis is a narcotic (i.e. sedative). By categorising them using a technical medical term, however, their legal treatment was shored up

> with scientific authority, all the while underscoring the belief that 'drug use' itself was a medical problem. 'Narcotics' in the first place gives the illusion of a scientific basis to legal policy and, second, presents the drug question as a medical rather than a moral issue. The word acts as a legitimation and a defense of government intervention. Here, then, we see the power of the language of the title to construct a reality, to expropriate authority by the use of persuasive words, and to redefine a social event - the consumption of cannabis, for example - by placing it within a frame so that it becomes seen to be scientifically dangerous and medically unjustifiable.
>
> The language of narcosis, however, while it reflected and effected a focus on the medical dangers of drug use alien …was, by the 1970s, no longer an adequate description and justification of people's fears…by [then]…the concern over drug use…[was]…to do partly…with the non-medical or recreational use of drugs…The drug user may not be suffering from any medical problem but he or she is nevertheless 'abusing' drugs. In fact, the power of the language comes exactly from the intentional conflation of use with misuse and abuse.

Conclusion

Moving into a post-drug war era, society will need a fuller understanding of the penal pain inflicted en masse by the current system per banned substance. In order to maximize consumer-related health protection and safeguards in public policy while at the same time realizing their fullest potential in medicine, each of the ten banned botanical species will require a separate medical geographic treatment through the lens of the political ecology of health and disease, as each presents unique health justice policy issues and challenges. The human-environment relationships surrounding each will require 'daylighting', a concept borrowed from urban design and planning which normally refers to a process by which an underground stream is redirected into an above-ground channel where it is visible by the light of day. In the context of biotic substance use, daylighting means the application of scholarly labor so that the light of understanding is shone on underground human-environment relationships which are presently in the dark and out of view. For example, with coca, a longstanding Andean medicinal and sacramental plant, comes issues related to the concentration and

isolation the alkaloid cocaine, which occurs naturally as 0.1% by weight of the leaf, and its conversion to crack cocaine with the addition of baking soda (sodium bicarbonate) and heat. Additionally, with opium, also an invaluable medicinal plant with cross-cultural roots, comes issues related to the concentration and isolation of morphine, which is about 10% by weight of dried poppy juice, and its conversion to heroin (diacetyl morphine) with the addition of dry vinegar (acetic anhydride) and heat. A political ecology of health, must necessarily attend to these concentrates and the contexts in which they are produced from mature botanicals, distributed in an underground economy, and consumed. It should be mentioned that the critical aspects of the political ecology of disease approach argued for here which challenge sociomedical understandings of diseases may only be applicable to illnesses characterized by signs and symptoms perceived as maladaptive, such as those often found in psychopathology (Sarason 2002), e.g. DSM-IV substance-related disorders diagnostics, wherein the term maladaptive is left purposely undefined. However, specific modifications may allow for its application to other projects of depathologization seeking to explain other patterns of human-environment-related health and health hazards. As far as biotic substance use-related mental distress manifested by possession-related legal problems is concerned, the critical political ecology of disease approach applied here has been successful in depathologizing this mental distress and seeing it instead as a product of a structurally violent substance abuse prevention policy gone too far, undermining fundamental human-environment biotic relations and the human right to health.

Table 3.1: Substance Abuse Mental Disorders and Possession-Related Legal Problems in the DSM-IV-TR. [bolding in original, underlining added].

Substance Abuse mental disorder, diagnostic Criterion A3: "recurrent substance-related legal problems (e.g., arrests for substance-related disorderly conduct)"
Alcohol Abuse (305.00) mental disorder: "Legal difficulties may arise because of alcohol use (e.g., arrests for intoxicated behavior or for driving under the influence)."
Cannabis Abuse (305.20) mental disorder: "…legal problems that may occur as a consequence of arrests for cannabis possession."
Cocaine Abuse (305.60) mental disorder: "Legal difficulties may result from possession or use of the drug."
Hallucinogen Abuse (305.30) mental disorder: "…legal difficulties may arise due to behaviors that result from intoxication or possession of hallucinogens."
Amphetamine Abuse (305.70) mental disorder: "Legal difficulties typically arise as a result of behavior while intoxicated with amphetamines (especially aggressive behavior), as a consequence of obtaining the drug on the illegal market, or as a result of drug possession or use. Occasionally, individuals with Amphetamine Abuse will engage in illegal acts (e.g., manufacturing amphetamines, theft) to obtain the drug; however, this behavior is more common among those with Dependence."
Inhalant Abuse (305.90) mental disorder: "Users can also become agitated and even violent during intoxication, with subsequent legal and interpersonal problems."
Opioid Abuse (305.50) mental disorder: "Legal difficulties may arise as a result of behavior while intoxicated with opioids or because an individual has resorted to illegal sources of supply."
Phencyclidine Abuse (305.90) mental disorder: "Legal difficulties may arise due to possession of phencyclidine or to behaviors resulting from Intoxication (e.g., fighting)."
"The category of Substance Abuse does not apply to caffeine and nicotine";
"The term *abuse* should be applied only to a pattern of substance use that meets the criteria for this disorder; the term should not be used as a synonym for "use," "misuse," or "hazardous use";
"The essential feature of Substance Abuse is a maladaptive pattern of substance use manifested by recurrent and significant adverse consequences related to the repeated use of substances. In order for an Abuse criterion to be met, the substance-related problem must have occurred repeatedly during the same 12-month period or been persistent";
There may be recurrent substance-related legal problems (e.g., arrests for disorderly conduct, assault and battery, driving under the influence) (Criterion A3)";

Table 3.1 continued

"Substance-Related Disorders are distinguished from **nonpathological substance use** (e.g., "social" drinking) and from the **use of medications for appropriate medical purposes** by the presence of a pattern of multiple symptoms occurring over an extended period of time (e.g., tolerance, withdrawal, compulsive use) or the presence of substance-related problems (e.g., medical complications, disruption in social and family relationships, vocational or financial difficulties, legal problems);
"Although a diagnosis of Substance Abuse is more likely in individuals who have only recently started taking the substance, some individuals continue to have substance-related adverse social consequences over a long period of time without developing evidence of Substance Dependence."

Table 3.2: Global Severity Index and Distress Related to Criminality of Marijuana in Federal Law in Medical Cannabis-Using Patient Sample.

Mental Distress → ↓Patient	BSI-53: Global Severity Index (0-4)	Distressed Related to Criminality of Marijuana in Federal Law?	Explanation
1	1.68	Extremely	N/A
2	0.75	Extremely	"As someone who wants to grow while having Section 8 housing it is stressfull, Also volunteering with local Cannabis Clubs causes fear of arrest, loss of housing, and benefits."
3	0.64	Moderately	"I think it should be legal for Medical use and much easier to get for medical use."
4	0.62	A little bit	"travel w/ med. Mj is extremely stressful & difficult especially by plane. Sometimes I worry my association w/ med mj clubs could get me into federal trouble. Ie: "drug ring" mentality
5	1.75	Extremely	"Outside of my marijuana use, I am a law-abiding citizen. I feel it is an outrage that I'm forced to break the law simply to acquire & use marijuana to provide an acceptable quality of life."

Table 3.2 continued

6	0.30	Quite a bit	"I believe it has a lot of tightening up to do with the laws specifically in Washington. So people could grow enough medicine For our patients without Fear that the number of plants you have might get you 5-10 yrs."
7	1.057	Extremely	"Marijuana in the State of WA is legal for patients like me, although- "illegal-federally"-------> would you be nervous? YES, I'm very nervous!"
8	1.34	Moderately	"I fear punishment by law for possession or use of marijuana."
9	N/A	N/A	N/A
10	N/A	N/A	N/A
11	0.36	Not at all	N/A
12	2.68	Not at all	N/A
13	1.075	A little bit	"If I am busted and go to jail"; "The benefits outweigh the punishments" "Pros: No pain, No nausea, No dizziness Again, no pain, Less pills, Less toxic pills, No addictions"; "Cons: ticket, jail time"
14	0.42	Extremely	"MEDICINAL USE OF MARIJUANA VIA PRESCRIPTION USE AS DIRECTED THROUGH CARE PROVIDED QUALIFYING PATIENTS BY THEIR PRIMARY CARE PHYSICIAN AS LICENSED BY GOVERNING STATE SHOULD BE LEGALIZED"
15	0.25	Moderately	"I am concerned that my medical use limits my employment options and would negatively impact my family if I was arrested."
16	0.5	A little bit	"Cops get wild hair up ass and bust patients just to be an asshole. Lol."
17	0.30	Moderately	"Yes, as a co-signer of the initiative, which became law in Washington State in 1998-I feel I have a responsibility to represent the patients which are too ill. I am passionate about my convictions- and I have the full support of my remote community. Ie: sherriff, school teachers, family, friends
18	3.057	A little bit	"feel that at times that the police may stop me because I have it in my car or home."

Table 3.2 continued

19	0.36	Not at all	"I followed All proper channels to obtain the treatment."
20	0.91	Not at all	"I believe in the sovereignty (sp?) of states' rights & my right to control my body/illness."
21	0.92	A little bit	"Of course I do, the feds do not acknowledge my need and benefit from cannabis. I have a family and need to protect them"
22	0.77	Moderately	"I am always worried if I travel w/ medicine in my vehicle. Also am worried work might ask me T take a drug test."
23	2.64	Extremely	"I get so depressed & I can't eat anything without pot. So I hear about all the pain and lack of money to buy it from others & myself -- I know it should be legal. It's the only reason I am still here and I can experience any joy."
24	1.17	Extremely	"I live in small town and laws are diff than ___ County it would be nice if they were all the same." "I would like to grow" "to afraid."
25	0.13	Moderately	"Some people don't understand what marijuana can do for you because they are so set on thinking it's just a drug, and I'm Just a pot head for using it."
26	2.13	Moderately	"don't quite understand the big picture"
27	1.49	A little bit	"It's legal on a state level but not federal and that bothers me."
28	0.11	Not at all	"I feel it should be legalized across the board. I have never had any legal confrontation w/ law enforcement
29	0.43	A little bit	"There is a slight risk but I know there isn't much chance I'll get in any trouble"
30	0.53	Not at all	N/A
31	0.64	Not at all	"I am not concerned with the Feds."
32	N/A	N/A	N/A
33	0.28	Not at all	"Marijuana has been a part of my life and my family's both recreationally and medicinally for a long time. I feel 100% just with my usage regardless of what the American Legal system may say."

Table 3.2 continued

34	0.25	Quite a bit	"It sometimes angers me when people do not give the effectiveness that marijuana has in releiving pain due credit"
35	0.74	Moderately	"You Never Know when they may be busted."
36	1.038	Moderately	"B A little nervous as WA state becomes more observant of who is getting how much med and how often"
37	1.38	Not at all	"It should be legalized."
Mean ± SD, Median, Range	0.96 ± 0.76, 0.745, 0.11–3.057	~ 3/4 from A little bit to Moderately	

Table 3.3: Substance Control / Drug Enforcement Tactics Reported in Medical Cannabis Patient Sample. ** from the underground market in controlled substances*; [a]"more than once!!!/Torn shoulder during arrest"; [b]"--minimal marijuana charge"; [c]"no but I've seen patients be raided! (very sick people)"; [d]"As a patient only"; [e] "(police returned it!)"; [f] "I've lost friends who don't understand."; [g]"son got ticket in my car for my pipe."; [h]"Not related to marijuana"; [i]"Piss tests for jobs"; [j]"Didn't pass urine Test for a job."; [k]"threats from patients when you can't meet their needs"; [l]"neighbors who smell medicine have called police"; [m]"no, but, medical patients at our clinic do!"; [n]"had officer want to go threw house but changed his mind."

Enforcement / Control Tactics Subjected To (S) or Specifically Threatened(T)↓ ←Pt	*Searches*	*surveillance*	*raids*	*confidential informant placement*	*arrest*	*trial*	*incarceration*	*child-removal*	*job loss*	*home eviction*	*asset forfeiture*	*financial aid suspension*	*biometabolite screening of excrement/ hair*	*robbery of your medical marijuana*	*assault by law enforcement*	*assault/injury related to violent elements**	*other*
1	S, T	T	T		S, T	S, T	T		S						S[a]		
2					S				S	S							T[k]
3					S[b]	S[b]	S[b]										
4	S, T	S, T	T		T	T	T			T		T		T		T	T[l]

Table 3.3 continued

←Pt **Enforcement / Control Tactics Subjected To (S) or Specifically Threatened(T)↓**	*Searches*	*surveillance*	*raids*	*confidential informant placement*	*arrest*	*trial*	*incarceration*	*child-removal*	*job loss*	*home eviction*	*asset forfeiture*	*financial aid suspension*	*biometabolite screening of excrement/ hair*	*robbery of your medical marijuana*	*assault by law enforcement*	*assault/injury related to violent elements**	*other*
5	S, T	S, T	S							S					S, T	S	
6	S, T		S, T	T	S, T		S, T										
7																	S[c], T[m]
8					T		T										
9 N/A																	
10 N/A																	
11	S		S		S	S											
12	S									S					S		
13																	
14	S				S	S											
15	S, T		T		S	T	T		S, T	T	T	T	S, T	S, T		T	
16		S[d]															
17																	
18					T												
19																	
20	S, T	S, T			S	S	S		T	S, T			S, T	S[e]	S		
21																	
22	S, T			T	S, T		T		T	S			S, T	S			
23					T					S, T							S[f]
24	T[n]																S[g]
25																	
26	T				T		T		S	S				T			
27																	
28										S[h]							

Table 3.3 continued

←Pt	**Enforcement / Control Tactics Subjected To (S) or Specifically Threatened(T)↓** *Searches*	*surveillance*	*raids*	*confidential informant placement*	*arrest*	*trial*	*incarceration*	*child-removal*	*job loss*	*home eviction*	*asset forfeiture*	*financial aid suspension*	*biometabolite screening of excrement/ hair*	*robbery of your medical marijuana*	*assault by law enforcement*	*assault/injury related to violent elements**	*other*
29																	
30	S, T	T	T	T	S, T	S, T	S, T							S	S	S , T	
31	S		S		S	S	S								S		
32 N/A																	
33																	
34													$S^{i.}$				
35	T		T		T	T	T			T			$S^{j.}$				
36																	
37										S, T							
Totals	**12S 11T**	**4S 5T**	**4S 6T**	**0S 3T**	**11S 10T**	**7S 5T**	**5S 9T**	**0S 0T**	**4S 3T**	**9S 6T**	**0S 1T**	**0S 2T**	**5S 3T**	**4S 3T**	**6S 1T**	**2S 3T**	**3S 3T**

Table 3.4: Medical Cannabis Patient Input into Cannabis Use Policy.

	Is there anything you would like to say about the prevention and control of Cannabis abuse and/or dependence?
1	"As a CDPT [Chemical Dependency Professional Trainee] I do not believe there is physical or phycological dependence, however I do believe in some cases are specioal due to dual addictions"
2	"Yes, Safeguards for children should be used."
3	"Medically, it should be totally legal and recreationally - it should be legal over 21 years old."
4	"Like any prescription drug it's up to the user to be responsible with dosage."
5	"I've never had a problem with marijuana abuse as I've always been able to stop whenever I want. I don't see dependance as an issue, I simply use it for my chronic, severe pain."
7	"Allowing medical patients control of their own cannabis will deture abuse within our communities."
8	"I don't feel Cannabis is treated fairly as an herbal medicine."
12	"I Belive That Cannabis is a Healthy way to Treat MANY Ilnessis Without the toxic effects of pill's"
13	"Legalize it. The medical use is better than suffering the side effects of the toxins I get from the legal pills"
15	"I am Far more concerned about law enforcement than dependence, although I am concerned about the long term health effects of smoking cannabis."
16	"its Better than pharmacy Drugs that are known to be carcenogenic or cancer causers."
17	"I think that patient networks is the best way to regulate consistency and supply of this medicine that has a "protective" effect according to my neurologist. I also am very vocal about discouraging young people from recreational use-I mainly tell them that it dilutes your focus-makes it difficult to concentrate on one subject and you may be putting yourself in legal jeopardy."
18	"It is Great for my Medical Problems and it helps me a Great Deal."
20	"Legalize it. _ tax & regulate?"
22	"1. At times it can cause a lack of motivation or energy (But is still necessary to aide with medical issues). 2. I have NEVER felt or acted in a violent way when using medical cannabis!!!"
23	"It's the only thing that makes me happy."
24	"I have a good memory, good teeth and it helps in maintaining a good attitude and eating habits and helps with cronic pain."; "Thank you"
25	"It's better for my condition than prescription medication"
26	"I see no problem with pretty much anything that makes me feel better"
27	"No"
28	"LEGALIZE IT! It is a joke 4 Cannibis to be illegal when alcohol kills so many people. Cannibis is a Naturally ocurring green plant, a gift from God."
33	"Nothing"
34	"It is the best thing I have found for the relif of pain and cramps"; "All perscription drugs I've been given either make me nausis or uneasy"
36	"Pot should be easire to get ahold of for everyone. Non patients need it to."
37	"If it wasn't for cannabis I would not be able to stomach the medicine or keep my weight up and would Definitely be dead by now. Cannabis has saved my life."

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Conclusion: Pain Relief on Pain of Death—When Worldviews Collide

The studies presented here have sought to chart the medical geography of cannabinoid botanicals in Washington State by documenting health statuses and distress levels in all patients accessing such treatment at a rural pain clinic and in a subset of patients being delivered such treatment at an anonymous location. While the data collected from 139 patient medical records, one interview with a cannabinoid botanical medical provider, and 37 patient surveys were not matched against controls, they do represent an accurate documentation of practical 'facts on the ground' in the Washington State cannabinoid botanical medical care system. The studies make a contribution to the health care access and delivery focus of medical geography by describing patient utilization of a health care system with a unique set of sociomedical, sociolegal, and ecological constraints.

The retrospective medical records chart review in the first paper showed that patients with a variety of chronic pain syndromes are accessing the treatment and are able to find some relief under cannabinoid botanical medical treatment. The prospective patient survey study in the second paper recorded improvements in patients' health-related quality of life that patients attributed to their use of locally cultivated cannabinoid botanicals. The study of mental distress related to possession charges in the third paper belies a vertically dis-integrated law enforcement system and characterizes a structurally violent environment that is ultimately destructive towards the therapeutic ends of the cannabinoid botanical medical care system. These concluding comments will mainly focus on this aspect of the medical geography of cannabinoid botanicals.

The structural violence is most starkly apparent when considering the fact that patients are subject to both state and federal laws, and the two could not be more diametrically opposed on the issue of medical cannabis use. At the state level cannabis is understood as life- and health-promoting medicine, but at the federal level cannabis possessed or

cultivated in a certain quantities is understood as grounds for the imposition of the penalty of death. Death penalty apportionment is specified through United States Code 18 USC 3591(b) which empowers the federal government to put to death one or more individuals involved in a substantial resource-delivering 'enterprise' with 60,000 or more 'marihuana plants' or 60,000 or more kilograms of a 'mixture or substance containing a detectable amount of marihuana'. Here is the actual US federal code for the marihuana death penalty, spelled out across 3 separate sections of legal code:

> 18 U.S.C. 3591(b) A defendant who has been found guilty of - (1) an offense referred to in section 408(c)(1) of the Controlled Substances Act (21 U.S.C. 848(c)(1)), committed as part of a continuing criminal enterprise offense under the conditions described in subsection (b) of that section which involved not less than **twice the quantity of controlled substance** described in subsection (b)(2)(A)…*shall be sentenced to death*
>
> 21 U.S.C. 848(b)(2)(A):the violation referred to in subsection (c)(1) of this section involved **at least 300 times the quantity of a substance** described in subsection 841(b)(1)(B) of this title,
>
> 21 U.S.C. 841(b)(1)(B): (vii) 100 kilograms or more of a mixture or substance containing a detectable amount of marihuana, or **100 or more marihuana plants** regardless of weight. (emphasis added):

To put it in spatial terms, growing (100 x 300 x 2 =) 60,000 plants with 3-foot crop spacing would require only ~12 acres. According to this morbid mathematics, the 907.18 grams of cannabinoid botanical medicine that was delivered to 71 patients as described in the second paper would constitute 0.0015% of the quantity that qualifies for imposition of the death penalty. This is a paltry amount, but it definitely contextualizes the mental distress related to potential and actual possession-related legal problems that patients and providers experience. If one uses the figure of 24 ounces as the presumptive amount of cannabinoid botanical medicine that a patient should have for a 2-month supply—an underestimate that does not take into full account oral administration—that Washington State Department of Health has recently proposed (WA DOH 2008), then any person or persons who take it upon themselves to

supply the yearly needs of 14,698 patients—less than the total number of qualifying medical cannabis patients statewide—would be delivering a quantity sufficient for imposition of the punishment of death by American federal authorities. Is it any wonder that state employees tasked with developing sound health regulations for medical marijuana programs perpetually fall short?

While a death penalty sentence for 'marihuana' has not yet been fully judicially apportioned in the United States, its threat remains 'on the table' in defendants' sentencing and plea bargaining discussions with federal prosecutors. Cannabis-related death penalties are however routinely meted out in Saudi Arabia, Indonesia, Thailand, Malaysia, Singapore, Qatar, Kuwait, Pakistan, China, and recently India ("Hands Off Cain" 2008). Maintaining an explicit death penalty for some degree of association with hempen cannabinergic botanical medicine at any stage of its maturation from viable germplasm onward legitimates, justifies, and provides cover for any aspect of enforced dignity-denial, pain, suffering, distress, hardship, and/or human right's violation apportioned to qualifying medical marijuana patients solely on the basis of their health-dependent association with this renewable, easily maturated germplasm from the global commons.

The UN Office of Drugs and Crime estimates that some 166 million people used cannabis in 2006, equivalent to 3.9% of the global population age 15-64 (UNODC 2008). Since comprehensive global Cannabis Abuse mental disorder prevention and control regimes were put into place in 1961 with the adoption of the UN Single Convention Treaty on Narcotic Drugs until 2006, ~26 million cannabis-related arrests have been made worldwide, ~70% of these in the US alone (Emery 2006). In the United States, over the 41-year period from 1965-2006, 18.5 million people were arrested and charged under cannabis-related criminal laws—over 7 million from 1997-2006 alone. Of the ~1.8 million 'drug-related' arrests made in the United States annually, 40% or 829,625 were cannabis-related in 2006 (the largest fraction of all drug arrests), 89% of which were for possession only, with cannabis-related arrests

occurring at the rate of 1 every 38 seconds. The total number of cannabis-related arrests in 2006 exceeded the total number of arrests for violent crimes that year, including murder, manslaughter, forcible rape, robbery, and aggravated assault (NORML 2007; Gettman 2005). Currently, there are between ~32,500-40,000 prisoners in federal, state, and local jails and prisons in the United States incarcerated for violations of cannabis prohibition with approximately 30,000 cannabis prisoners currently being held in America whose cannabis "crimes" are their most serious or controlling offences (King and Mauer 2006). Many are serving long sentences (Gorman 2006). It is hoped that research such as the type presented here will compel the public and policymakers who serve them to adopt reforms such as the repeal of cannabis prohibition and the adoption of program of restoration comprised of relegalization, amnesty, decarceration, and restitution (d'Oudney et al. 2006).

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APPENDIX A: Chart Review Data

Patient #	Gender	Age	ZIP+3	Auth Length (yr)	Carter-only Auth (yr)
1	M	40	986	1.50	1.50
2	M	58	983	0.32	0.32
3	F	25	985	1.56	1.02
4	F	48	985	0.42	0.42
5	M	50	985	1.24	1.24
6	M	30	985	1.71	1.71
7	M	18	985	0.35	0.35
8	F	35	985	1.62	1.62
9	F	55	986	2.27	2.27
10	F	49	985	2.03	2.03
11	M	25	985	0.66	0.87
12	M	37	985	4.77	4.77
13	F	40	985	0.38	0.38
14	F	39	985	0.97	0.97
15	M	52	985	0.66	0.66
16	F	49	985	0.33	0.33
17	F	53	985	0.88	0.88
18	M	59	983	0.25	0.25
19	M	36	985	1.02	1.02
20	M	43	993	1.25	1.25
21	M	63	985	2.23	2.23
22	F	33	985	2.13	2.13
23	M	54	985	1.87	1.28
24	M	22	985	1.80	1.80
25	M	53	985	0.56	0.56
26	M	58	605	0.72	0.72
27	F	45	985	0.68	0.68
28	F	45	985	1.66	1.66
29	M	47	985	5.81	5.81
30	M	41	985	2.58	2.58
31	F	53	985	0.95	0.95
32	F	84	986	2.27	2.27
33	M	42	985	1.53	1.53
34	M	53	985	2.38	2.38
35	M	55	985	0.39	0.39
36	M	61	983	1.10	0.18
37	M	53	985	0.35	0.35
38	F	35	985	2.71	2.71
39	M	37	985	0.41	0.41
40	M	64	985	2.02	2.02
41	F	60	985	0.42	0.42
42	F	45	985	0.47	0.47
43	M	28	986	2.48	2.48
44	M	38	985	2.29	2.13
45	F	45	983	1.75	1.48
46	M	53	985	1.37	1.37
47	M	67	985	1.79	1.79

48	M	43	985	1.12	1.12
49	F	49	983	0.68	0.68
50	F	40	985	0.80	0.80
51	F	63	983	0.55	0.55
52	F	22	985	0.78	0.78
53	F	23	985	1.18	1.18
54	M	58	983	6.76	6.76
55	M	36	986	2.39	1.04
56	M	26	985	0.18	0.18
57	M	23	980	0.57	0.57
58	M	65	986	3.38	3.38
59	F	48	981	5.94	5.94
60	M	46	985	0.36	0.36
61	M	19	985	3.36	3.36
62	F	54	985	4.46	4.46
63	M	47	983	0.20	0.20
64	F	51	985	1.07	1.07
65	F	47	986	2.39	2.39
66	M	33	985	0.88	0.88
67	F	39	980	0.60	0.60
68	M	41	983	1.68	1.68
69	M	54	985	0.05	0.05
70	M	51	985	0.70	0.70
71	M	68	985	8.31	8.31
72	F	45	985	2.50	2.50
73	F	57	985	6.11	6.11
74	M	25	985	0.03	0.03
75	M	68	985	0.91	0.91
76	M	50	981	0.33	0.33
77	F	22	986	2.04	2.04
78	F	46	985	4.04	4.04
79	M	53	985	0.92	0.92
80	M	34	985	0.79	0.79
81	F	50	991	2.02	2.02
82	F	43	985	0.66	0.66
83	M	25	981	0.37	0.37
84	M	43	985	1.14	1.14
85	M	28	985	2.08	1.25
86	F	55	983	0.23	0.23
87	M	51	985	3.53	3.53
88	F	33	982	0.35	0.35
89	F	52	985	6.80	6.80
90	M	72	985	0.68	0.68
91	M	44	985	0.68	0.68
92	F	56	985	5.01	5.01
93	M	58	985	2.81	2.81
94	F	61	985	1.34	1.34
95	F	23	981	0.33	0.33
96	M	53	985	1.60	1.60
97	F	52	985	2.00	2.00
98	M	43	985	2.04	2.04

99	M	32	984	1.47	1.47
100	M	52	981	1.27	1.19
101	M	52	985	0.41	0.41
102	F	49	985	3.23	3.23
103	M	45	985	0.46	0.46
104	M	45	983	1.37	1.37
105	M	46	984	3.66	3.66
106	M	46	983	1.11	1.01
107	M	69	983	2.33	2.33
108	M	49	985	8.10	8.10
109	M	51	985	0.70	0.70
110	F	49	985	0.70	0.70
111	M	66	985	0.10	0.10
112	M	33	985	0.93	0.93
113	M	55	985	1.12	1.12
114	M	51	985	1.27	1.27
115	M	61	991	2.02	2.02
116	F	47	985	5.01	5.01
117	M	25	985	0.27	0.27
118	F	24	985	1.12	1.12
119	M	46	985	1.21	1.21
120	M	51	985	2.56	2.56
121	F	23	985	0.30	0.30
122	F	54	985	0.48	0.48
123	F	74	983	1.18	1.18
124	M	51	985	1.47	1.47
125	M	43	985	0.61	0.61
126	M	50	985	1.08	1.08
127	M	47	985	2.40	0.39
128	M	38	985	5.01	0.68
129	M	55	985	1.48	1.48
130	M	37	986	1.22	1.22
131	F	58	985	1.75	1.75
132	M	55	985	0.53	0.53
133	M	53	985	1.14	1.14
134	F	52	981	0.37	0.37
135	F	42	985	1.50	1.50
136	M	47	985	5.88	5.88
137	M	40	985	0.61	0.61
138	M	68	985	0.20	0.20
139	F	60	981	0.14	0.14

Pt #	Primary Diagnoses
1	Chronic neuropathic pain secondary to ASIA Class A asymmetric quadriplegia, C7 on Left and T10 on Right
2	Hepatitis C virus, neuropathic pain, chronic neck/back pain
3	Chronic coccygeal pain secondary to trauma (stress Fx or Chro. subluxation)
4	Chronic low back pain

5	Chronic back pain secondary to DJD+DDD throughout L-spine and Hx of C- and L sprain/strain injury (fell off two-story roof); incr. radicular pain depending on activity level
6	Severe chronic pain with strong neuropathic component 2ndary to Hx of Polytrauma with IED shrapnel throughout R side of body
7	Chronic pain secondary to traumatic brain injury (riding bike and struck by a motor home--was in coma (Glasgow scale 4))
8	Cervical sprain/strain with upper back and neck pain & intermittent cervical radiculopathy
9	Chronic pain of Fibromyalgia (headaches, joint pain, muscle pain, back pain)
10	Chronic migraine headaches
11	Chronic neuropathic pain 2ndary to ASIA Class B paraplegia, spina bifida, Arnold-Chiari type 2 malformation
12	Chronic neuropathic pain 2ndary to ASIA Class D T12 paraplegia (sledding accident @ Mt. St. Helen's with multiple spinal Fxs)
13	Chronic pain 2ndary to fibromyalgia (diffuse body pain in the upper back, neck, and lower back; joint stiffness)
14	Intractable pain (partly myofascial, partly neuropathic) secondary to Systemic Lupus Erythematosus
15	Chronic upper back and neck pain 2nary to Moderately Severe to Advanced DJD+DDD in C-spine
16	Chronic pain 2ndary to Rheumatoid Arthritis (pain/inflammation in most joints daily); tried predisone, relafen, solumedrol, enbrel, abatacept, remicade
17	Chronic back, neck, and hip pain syndrome secondary to Fibromyalgia, Severe Osteoarthritis with multiple joint involvement, DJD; DDD t/o spine
18	Chronic neck and back pain 2ndary to DJD+DDD in L-spine & degenerative OA in L hip and suspected widespread DJ arthritis
19	Chronic pain syndrome 2ndary to TBI (myofascial & neurological) with R spastic hemiparesis and severe headaches (struck in back of head w/ a sprinkler nozzle while trying to break up a fight on 3/23/96)
20	Chronic neck, back, and leg pain and muscle spasms 2ndary to DJD+DDD t/o spine (worse in L-); L- and C-spinal stenosis w/ peripheral neuropathic pain and myelopathy
21	Chronic L arm, shoulder, and neck pain 2ndary to Chronic L C6 radiculopathy status post-ant C diskectomy and fusion; (injury f/ lifting 1/2 in thick plateglass for 150 gal aquarium tank on 12/15/97)
22	HIV-related peripheral neuropathy; on combivir and viracept (diag'd HIV+ on 3/9/99; exposure to unprotected sex)
23	Chronic pain 2ndary to fibromyalgia with chronic daily migraine headaches + intermittent cluster headaches
24	Chronic back pain 2ndary to Hx of spinal compression Fx's at T10-T12, status post surgical fusion (2/23/03: snowboarding acc. @ Whitepass; went off a jump, came down on R shoulder-immed, excr. Pain)

25	Chronic headaches for 10-15 years, multifactoral with some component of migrainous pain but also likely myofascial tension headaches (prodromal effects with flashing lights)
26	Significant ongoing spasticity 2ndary to primary lateral sclerosis (diagnosed in 2002)
27	Chronic low back pain with muscle spasms; likely myofascial in origin
28	Chronic neuropathic pain and anorexia; upper back and neck pain and L C7 radiculopathy
29	Chronic, intractable lower back pain (initially stemming from a work-related injury that occurred in 1990 while working in bridge construction)
30	Chronic pain 2ndary to failed back surgery syndrome (13 spinal fusions; 1987 military accident + other later accidents)
31	Chronic neck and back pain 2ndary to fibromyalgia with chronic daily headaches
32	Chronic neck pain and headaches 2ndary to MVA 30 yrs ago w/ severe whiplash injury--chronic cervical neck strain, sprain and stiffness; occ. Radicular pain
33	Chronic mid-low back pain and leg pain; Hx of Lumbar sprain/strain with disk extrusion at L3-L4 producing R L4 radiculopathy; Hx of heavy-duty truck driving, injury on 11/27/06, rock quarry & autobody work
34	Chronic pain 2ndary to bilat. Recurrent carpal tunnel syndrome--continues to have numbness, burning pain (throughout waking period), swelling after surgeries
35	Chronic daily intractable pain 2ndary to Hx of polytrauma incl. mult. concussions & blunt trauma to back, neck, & head. (10 yrs ago: struck on back and across legs by a log ~150ft in length & 1ft diameter)
36	Chronic myofasical and neuropathic pain and muscle spasms in neck and back 2ndary to C- & L-spinal stenosis and multilevel DJD+DDD; intermittent radicular pain, numbness, tingling in arm + leg L>R
37	Chronic pain 2ndary to complex hx of mult. Polyorthopedic injuries incl. compound fx's in both legs w/ residual deformities, facial injuries w/ residual defects, closed head injury with residual defects
38	Chronic pain 2ndary to severe L ulnar neuropathy (pain and numbness since 1996)--status post surgery
39	Chronic neuropathic pain and Ashworth Grade 3 spasticity 2ndary to ASIA Class C C7 quadriplegia
40	Chronic back and neck pain 2ndary to chronic L C6-7 radiculopathy and DJD+DDD in C-spine
41	Chronic pain syndrome in shoulders (pred. myofascial) 2ndary to Hx of bilat. Rotator cuff. Tears requiring surgery and underlying DJD and inter-articular dysfunction (hx of caregiving for heavy clients)
42	Chronic low back pain with peripheral neuropathic pain (L sciatic nerve entrapment)--numbness, tingling, and very cold feeling

43	Chronic muscle cramping 2ndary to myotonia congenita (Thomsen's Disease) (first seen on 3/13/97 @ age 17)
44	Chronic neuropathic pain in lower extremities 2ndary to myalgia paresthetica in the lat. Fem. Cut. Nerve; Hx of two MVA's 1985+1988--residual chronic pain in head and L knee
45	Chronic pain in lower back and hips 2ndary to HX of DJD+DD in L-spine and L- decompression in 1999;
46	Chronic neurogenic and myofascial lower back, neck and radicular pain 2ndary to DJD+DDD t/o spine with Hx of lumbar laminectomy
47	Severe Chronic lower back pain and intermittent bilat. Lower extremity pain (R>L). C- and L- DJD+DDD and Hx of C- and L- sprain/strain injuries (Hx of truck driver work and industrial accidents)
48	Chronic pain 2ndary to severe polytrauma w/ massive traumatic brain injuries and peripheral orthopedic injuries (cortical blindness)--headaches and L leg pain centered on knee
49	Chronic pain 2ndary to DJD+DDD in C-spine w/ herniated disk @ C6-7, impinging on C7 nerve root (Hx of injury at work in 2005 when she had a hot, searing pain down her arm)
50	Chronic neck and back pain 2ndary to MVA
51	Metastatic Breast Cancer (terminal with 6 mo to live; on hospice. Diag'd in 2000 ER and PR sensitive on biopsy) L side pain 24/7.
52	Chronic daily myofascial lower back pain with some radiation to legs (numbness + tingling in ant. Lat. Aspects of legs) (Hx of MVA on 9/15/06 when her Geo was rear-ended by delivery truck)
53	Chronic Severe myofascial lower back pain w/ underlying DJD+DDD and numerous areas of muscle spasm; Hx of L- sprain/strain
54	Chronic neck and back pain due2 Chronic stable C- myelopathy 2ndary to C-spinal stenosis; adv. DJD+DDD in C- & L-spine; disc herniation at C6/7 with radiculopathy; Hx of L-decompression & restenosis
55	Chronic pain, including radicular pain, in lower back, mid back, hips, L leg, L wrist 2ndary to crushed L leg in conveyor belt w/ likely injury to the post. Tibial and common peroneal nerves
56	Chronic neuropathic pain 2ndary to ASIA Class C C5 quadriplegia and Ashworth Grade 2 spasticity 2ndary to GSW on 1/23/08 (shot at bank)
57	Chronic head pain 2ndary to extensive craniophryngioma resection w/ gamma-knife (8/13/99). Post:CFS w/ chronic headaches & depression; some pain that shoots up in a band-like fashion f/ neck
58	ALS (diag'd in 2004) -- terminally ill -- increasing weakness, pain, dysphagia, dysarthria, gastronomy
59	Chronic neck and back musculoskeletal pain, 2ndary to DDD greatest at C7-T1 & nerve damages from 4 (3 back + 1 neck) surgeries
60	Severe, Chronic, daily lower back, neck, shoulder, bilat hip pain 2ndary to Hx of post-traumatic syringomyelia in C-spine (12 yrs ago severely injured in

	sledding accident) and advanced DJD+DDD t/o spine
61	Chronic neuropathic pain 2ndary to C-M-T (type II) disease (mutation not yet determined)
62	Chronic neck pain and chronic daily headaches 2ndary to C- dystonia, C-myleopathy, Adv DJD-DDD in C-spine, Gliosis in Cerebral Cortex (early MS? Fibromyalgia?)
63	Chronic neck, low back, & gen. body pain, spasm, intermit. R severe radicular pain,Hx of GSW in 1976. Regained ability to walk post-paralysis. Hx of stenosis @ C5-6, L C6 root impingement, L4-5 lamin.
64	Chronic bilat. Hip pain 2ndary to DJD-DDD in L-spine, DJD in hips and early RA and likely OA
65	Chronic neuropathic pain (allodynia & hyperpathia) in L upper extremity 2ndary to previous mastectomy w/ removal of lymph tissue; myofascial pain in upper back and neck (2003-breast cancer diagnosis)
66	Chronic back and neck musculoskeletal pain syndrome.Significant degen of L shoulder, post acromioplasty w/ decompression; degenerative changes in C-spine.
67	Chronic daily migraine headaches with a myofascial component and Hx of absence seizures and subarachnoid cyst in medial L temporal lobe
68	Multiple Sclerosis (with positive white matter lesions on MRI and vague lesions in spinal cord which could represent demyelination; + FH of MS)
69	Chronic low back pain and bilat. Leg pain w/ sharp, stabbing pain in buttocks (L>R) 2ndary to Hx of L sprain/strain, degen changes in L-spine and multilevel DJD; bulging annulus & retrolisthesis @ L4-L5
70	Chronic pain and significant neuropathic pain 2ndary to C-M-T (Type II suspected) -- back pain and weakness from pelvis down
71	Chronic back and neck pain 2ndary to L-spine stenosis w/ chronic L L5-radiculopathy, C-spinal stenosis, DJD+DDD in L- & C-spine. Hx of decompression surgery in back.
72	Chronic intractable pain in lower back and hips 2ndary to C-and L-DJD+DDD, ongoing C & L radiculopathy, bilat spondylosis @ L3 w/ grade 1 spondylolisthesis of L3-L4; L3 root impingement
73	Chronic hip and myofascial pain in neck and back 2ndary to iliotibial band dysfunction and DJD+DDD in C- and L-spine with spondylolisthesis @ L3/4 and C-spine stenosis
74	Chronic pain syndrome 2ndary to TBI w/ abnor. Cognitive & higher exec func., slowed motor planning, impaired sensorium, aggression, anger mgmt issues (motorcycle acc. In Oct 1997-> R renal hematoma)
75	Chronic pain syndrome w/component of myofascial pain and DJD-DDD (Veteran w/ 3 tours of duty in Vietnam); OA
76	Multiple Sclerosis, relapsing, remitting. Previously carried diag of progressive, but converted (15 yr hx) --> major issues: memory, balance, walking

77	Chronic intractable severe lower back pain (lower L-spine, sacrum, coccyx) with Hx of pelvis Fx in trauma as a child
78	Chronic pain 2ndary to fibromyalgia with frequent headaches, multiple joint pain, chronic nausea with difficulty eating
79	Chronic abdominal pain 2ndary to endstage polycystic kidney disease with a component of myofascial pain in upper back and neck and chronic daily headaches
80	Chronic lower back pain syndrome 2ndary to Hx of vertebral hairline Fx's over 10 yrs ago. Init accident was while working on a horse ranch as a ranch hand
81	Chronic pain syndrome in hands, feet, neck, shoulders, back (29 yrs). 2ndary to spastic L hemiparesis 2ndary to massive TBI w/ Ashworth Grade 3 spasticity (from MVA in 1978). Past phy abusive rel.
82	Significant nausea 2ndary to chemotherapy assoc. w/ T1 lobular breast cancer (status post-mastectomy w/ C- and axillary lymph nodes removed);
83	Chronic pain 2ndary to cluster headaches behind R eye (problem since childhood with 15 yrs documentation) (excruciating pain w/ vision disturbances and nausea)
84	Chronic musculoskeletal pain syndrome in upper back, neck, knees, hips 2ndary to C- and L- DJD+DDD w/ C8 C-radiculopathy; Hx of injury to neck in 2005 when running, collided w/ a wall.
85	Chronic intractable pain and profound spasticity (Ashworth grade 3-4) 2ndary to severe TBI w/ cognitive impairment and spastic L hemiparesis. Hx of MVA on 10/24/01
86	Chronic intractable pain 2ndary to Hx of polytrauma in MVA; advanced DJD-DDD t/o spine; C- myleopathy
87	Chronic shoulder pain, daily neuropathic pain with burning, numbness and tingling in feet 2ndary to Chronic active Hepatitis C, severe DJD & OA, RA, migraine headaches, L rotator cuff tear
88	Chronic back and neuropathic pain 2ndary to R sciatica 2ndary sacroiliac joint dysfunction. Problem since 8/07
89	Chronic back and sciatica pain with L-spinal stenosis and DDD (on MRI); Hx of fall injury in 1992 with blunt trauma to lower back
90	Chronic severe pain in back and lungs 2ndary to COPD (steroid-dependent)
91	Chronic intractable back pain including lumbar radiculopathy 2ndary to failed back surgery syndrome including DDD @ L4-L5 and microdiskectomy in 2004
92	Chronic back and neck pain and C- myleopathy w/ radicular secondary to C-spinal stenosis & C- & L-sprain/strain & DJD+DDD t/o spine
93	Chronic pain syndrome in LB, shoulders, & hips w/ R leg radic.Pain; also in neck, hands, knees (->10 yrs) 2ndary to OA w/ mult. Joint involvement incl.:neck, back, shoulder, hips, knees & bilat Carpal T.S.
94	Chronic pain with myofascial component and C- myleopathy 2ndary to

	DJD+DDD t/o spine (on MRI), OA, C-spinal stenosis, and bilat. Rotator cuff tendonitis
95	Chronic pain in joints (shoulders bilat) 2ndar to Behcet's disease, a very rare chronic inflammatory disorder (flare-ups incl. frequent ulcerations in soft tissues, uveitis, peripheral neuropathy) (probs for 5 yrs)
96	Chronic pain syndrome in low back, neck, R leg, and knees with chronic radicular pain 2ndary to DJD+DDD in C- & L-spine and OA in spine, knees, and hips
97	Chronic back and leg pain (began @ work 11/01when there was an increase in car commuting for work)
98	Chronic UBP & LBP & seizures 2ndary to:1:fell down stairs,struck head 1 mo Ago;2.MVA w/ vertex head injury w/o LOC (12/05), 3.Class 4 TBI-77ft fall from tree, mult.spinal compression fractures (6/17/92); OA; DJD-DDD t/o spine
99	Sev. chronic neuropathic pain f/ trigeminal nerve injury 2ndary to complex R tripod & orbital blowout & R zygomatic arch Fxs w/ shrapnel & wounds in R orbit,soft tissue trauma to IT fossa-IED expl in Iraq(vet)
100	Chronic upper back, neck, lower back and bilat radicular pain 2ndary to DJD-DDD in C- & L-spine and OA; chronic daily headaches. Hx of # of injuries to upper back and neck.
101	Chronic back, leg, bilat. Shoulder pain 2ndary to DJD and failed back surgery syndrome (eg, diskectomy, multilevel fusion, rotator cuff repairs)
102	Chronic back and neck pain with myofascial component 2ndary to C-myleopathy 2ndary to spinal stenosis & DJD-DDD in spine
103	Chronic LBP and S1 radiculopathy (by EMG) 2ndary to small R postereolateral herniation @ L5-S1, compressing the origin of the S1 nerve root (problem for 14 yrs)
104	Chronic myofascial back pain and chronic daily headaches 2ndary to massive TBI, C- sprain/strain--Hx:9/26/91:sustained bilat eye + C-injury.Employed as truck driver.Tire blew up in face, fell bkwds ~12ft
105	Chronic pain and chronic daily headaches 2ndary to Hepatitis C (Hx of IVDU), TBI (w/ Hx of GSW to head in 1986) w/ spasticity, ataxia; Hx of MVA 9/8/06
106	Chronic pain 2ndary to C- stenosis, DDD, cervicobrachial radiculopathy and closed head injury (1983). Hx mult. Spinal surgeries (L5-S2 fusion, redo-diskectomy @ S2 in 1997)
107	Chronic back and neck pain and intermittent shooting pain down posterolateral aspect of R leg 2ndary to post-polio syndrome (in R leg as a child)
108	Chronic myofasical pain and C- myleopathy 2ndary to adv. C- DJD+DDD, L C7 radiculopathy and spinal stenosis
109	Chronic intractable pain in LB, hips, knees, shoulders, worse in AM. OA Hx with likely DDD in spine. Retired former rancher

110	Chronic LBP centered in mid-L region for most of adult life; Hx of DJD+DDD, systemic OA; Hx of chronic daily headaches
111	Chronic LBP + appetite loss 2ndary to POEMS syndrome; Hx of multiple myeloma, Hx of lung CA w/ lobectomy of R upper Q;
112	Chronic bilat knee pain with joint swelling 2ndary to RA; Chronic LBP and stomach upset associated with RA tx. Hx of snowboarding accident--bilat. Knee injury w/ surgical repair
113	Chronic pain,partially vascular,partially neuropathic f/ R below-knee amputation 2ndary to severe peripheral vascular disease;vascular claudication in L leg;Chronic neck pain w/ ant. C- diskectomy & fusion
114	Chronic pain in neck + back and loss of appetite 2ndary to severe OA w/ mult. Joint involvement, incl spine, hips, knees, ankles; DDD t/o spine; hx of Compression Fx in spine; bilat tot. hip replacement
115	Chronic pain syndrome w/ sev. resid. Neuropathic pain 2ndary to sev. Deformity of R arm w/ Hx of complete R median nerve lac., post-traumatic neuroma, and deformity of L arm 2ndary to GSW (L) and shrapnel injury on R with bone damage - on 2/28/1967 in Vietnam
116	Chronic pain 2ndary to fibromyalgia and Hx of OA and C-spine DJD+DDD
117	Chronic intractable back pain 2ndary to idiopathic scoliosis (slowly progressive and quite advanced--60deg in thoracolumbar spine and S-shaped stenosis); severe headaches
118	Chronic myofasical pain syndrome including sacrococcygeal pain aka coccydynia. Since age 10 2ndary to contusion (headbutted by a child she was babysitting)
119	Chronic pain in lower back, neck, ankles 2ndary to C- radiculopathy, OA, DJD-DDD, Hx of Bilat Carpal Tunnel surgery, Hx of MVA with severe trauma in 1986
120	Chronic neuropathic and myofasical pain: LBP & intermit. Radic. Pain 2ndary to failed back surgery syndrome; DJD+DDD t/o C- & L-spine, C- & L-spinal stenosis, herniated disc @ L5/S1, OA; injury HX; Chronic headaches 2ndary to underlying DJD
121	Chronic pain in lower back and R leg 2ndary to DJD in L-spine, herniated disc @ L5-S1, bilat L- and S1 radicular pain, meralgia paresthetica on R (entrapment of lat. Fem. Cut. Nerve)
122	Chronic neuropathic and musculoskeletal pain 2ndary to Hx of AVM resection w/ residual L-sided spastic hemiparesis and R sided pain
123	Chronic musculoskeletal pain syndrome in back and shoulders w/ muscle spasms 2ndary fibromyalgia and underlying OA in spine + hips;Hx of L laminectomy L5-S1;Hx of freq. headaches; DDD multilevel
124	Chronic LBP 2ndary to DJD+DDD t/o spine, L radiculopathy; Hx of bilat foot numbness; sensory hypesthesia in extremities; Hx of heavy work of caring for wife
125	Chronic mid+low BP with DDD(L5-S1) and radiculopathy; pain radiates to L

	arm and both legs, R>L. Pain in L upper back radiates to posterior L arm; pain in mid+lower back radiates to R gluteus; injury Hx
126	Chronic ongoing abd pain 2ndary to chronic active hepatitis C; Chronic neck and back pain 2ndary to C- and L- DJD+DDD; Hx of splenic mass, status post splenectomy
127	Chronic neck & back pain--multifac--neuropathic,myofascial,&mechanical in nature--2ndary to L spinal stenosis, spondylolisthesis of L5 on S1, R ulnar neuropathy; hx of MVAs in the late 70s/early 80s; Hx of competitive wt liftting in early 90s, w/ damage; hx of logging injuries
128	Chronic pain syndrome in back & neck 2ndary to C- + L- spinal stenosis, with large disk protrusion @ C6, C7 producing moderately severe central canal stenosis.Herniation @ L3/L4, impinging on R L4 root
129	Chronic pain syndrome t/o back & neck 2ndary to post-polio syndrome (age 13, likely exp. To live virus vaccinated boy) w/ sig. inv. of lower extremities; Hx of OA, RA;Hx of numerous reconst joint surgeries
130	Chronic pain syndrome w/ chronic daily headaches R spastic hemiparesis, 2ndary to TBI w/ polytrauma, Hx of incomplete SCI, Hx of head-on MVA (pedestrian vs. MV) in July 2002
131	Chronic L shoulder pain with radicular Sx in L arm with Hx of L rotator cuff tear (w/ surgical repair x2: '02 & '03); Hx of R hip pain, Hx of C-DJD+DDD. Hx of truck driving w/ injury on 3/1/01
132	Chronic myofascial pain esp in LB and legs 2ndary to limb-girdle muscular dystrophy (familial, late-onset); disc herniations @ L4/L5 & L5/S1; profound weakness
133	Chronic pain: chronic C myelopathy 2ndary to severe C stenosis with Hx of ant. C diskectomy & fusion; chronic neuropathic pain (radicular sx's); Hx of Chronic rotator cuff impairment on L, status-post surg.
134	Extreme R sided sciatic pain 2ndary to either L radiculopathy vs. piriformis syndrome; Hx of DJD throughout body--hips, knees, L- & C-spine; Hx of knee pain (Bakers cyst), morning stiffness
135	Chronic upper back & neck pain w/ chron daily headaches,mixed migrainous & tension, w/ nausea (since 2000)2ndary to C- DJD+DDD,chronic OA,Hx of multi-lev laminectomy & fusion at C4-5, ongoing radic pain in upper extrem
136	Chronic intractable myofascial pain in the back, neck, + radicular pain & Ashworth gr2 spasticity 2ndary to DJD+DDD t/o spine & C-spine stenosis, Hx of MCA infract w/ R spastic hemiparesis; chronic rotator cuff tendinitis in both shoulders
137	Chronic, intractable neck, back, R wrist 2ndary to severe L Brachial plexus injury, R sciatica, multiple spinal fractures: C1, C7, T9; TBI; freq. headaches; Hx of ser. Life-threatening motorcycle accid. (9/8/06)
138	Chronic pain 2ndary to C-myleopathy, adv. DJD+DDD t/o spine, Hx of multi-level C- and L- fusions, Hx of diffuse OA, Hx of seizure disorder,Hx of diabetes w/ neuropathy in arms;Ashworth grade 3 spasticity

139	Chronic abdominal pain w/ bloating 2ndary to Crohn's disease and celiac sprue, Hx of prolapsed colon, with Hx of prior major abdominal surgeries; Hx of arthritic pain t/o back+neck

Pt #	Secondary Diagnoses (if present)
1	
2	Diffuse Osteoarthritis
3	2ndary myofascial pain complicated by dysmenorrheal
4	Right L5 Radiculopathy secondary to synovial cyst
5	Chronic Active Hepatitis C Virus
6	hyperpathia and allodynia
7	throbbing temporal headaches
8	Osteoarthritis and Degenerative Joint Disease
9	Multiple Chemical Sensitivity
10	Fibromyalgia
11	Hx of 36 surgeries
12	
13	IBS, CFS
14	Fibromyalgia, IBS
15	History of MVA in 06/07-->cervical sprain/strain
16	
17	
18	Diabetic peripheral neuropathy with neuropathic pain
19	L post. Occ. Lobe depressed skull Fx with mult. Bone fragments going into L. parietal lobe; L craniotomy
20	Hx of OA; Hx of heavy construction work throughout most of life + truck driving
21	Degenerative changes and moderate foraminal narrowing
22	fibromyalgia and Hx of chronic depression
23	Hx of entrapment neuropathy in upper extremities
24	
25	
26	Hx of benign intracranial tumor in L temporal lobe, resected (and work history involving nuclear reactor)
27	Hx of OA and chronic depression (with family history of mental illness)
28	Hx of Fibromylagia, DJD-DDD t/o spine (works doing physical labor)
29	
30	
31	Hx of trauma to back in Aug 1983 (garage door came off and fell on top of her); leg break in 3 places in Dec 1983; etc.
32	Cervical DJD
33	Diabetic peripheral neuropathy

34	allodynia and hyperpathia
35	
36	Hx of asbestosis, Hx of MVA in 2006 with numerous soft tissue & head injuries; Hx of work as longshoreman/truck driver
37	1979, 1983--motorcycle accidents
38	arthritic/musculoskeletal lower back and hip chronic pain
39	Depression
40	Moderate bilat. peripheral neuropathy of the upper and lower extremities w/ superimposed L carpal tunnel and bilat cubital tunnel syndromes
41	Potential for developing frozen shoulder
42	Fibromyalgia and hx of bilat carpal tunnel syndrome
43	
44	Chronic thrombophlebitis (recurring DVT's in legs; hypercoagulability--Protein C and Factor V Leiden deficiency)
45	Chronic migraine headaches with history suggestive of fibromyalgia, but not all criteria met; hx of chronic depression and anxiety
46	Osteoarthritis and chronic daily headaches
47	L spastic hemiparesis and L hemiplegia 2ndary to thromboischemic infarct in R MCA (stroke)
48	
49	
50	possible osteomyelitis in pelvis
51	
52	Hx of Tarlov Cyst in Spine (L4/L5)
53	chronic daily headaches with possible fibromyalgia
54	Hx of depression, petit mal seizures, joint pain and partially neurogenic bladder
55	Hx of DVT in L leg with thrombectomy; mild discogenic degenerative change @ L4-L5 and L5-S1
56	
57	cortical blindness
58	
59	
60	Hx of bilat shoulder surgeries 2ndary to rotator cuff injuries; testicular pain
61	
62	MVA in Jan 2003, bike accident in 1982; HX of CFS, IBS, OA
63	Incomplete SCI and R brachial plexus injury. Hx of untreated injuries from heavy work while incarcerated
64	Hx of fibromyalgia
65	chronic lymphedema
66	Lumbar strain w/ hx of assault in 2005 and work injury in 2005. Hx of TBI (hemiplegia, dysarthria, behavioral+cognitive impairment), seizures
67	Hx of numerous musculoskeletal problems, incl. bilat chondral malacia in

	knees
68	
69	Hx of back injuries (8/07-gravel work) and another 20 yrs ago
70	
71	Hx of construction injury in 1980 which ruptured L5,S1 discs and herniated L4-L5 discs.
72	Hx of back pain traces back to injuries from bucking and training/riding horses
73	Fibromyalgia equivalent, Hx of Chronic active Hepatitis C, Hx of Connective Tissue disease assoc. w/ systemic sarcoidosis, borderline epilep
74	maxillary sinus fracture
75	PTSD, BPD II
76	
77	PMS
78	Hx of fall from bike and broken "tailbone" but no radiographic evidence of Fx of coccyx
79	DJD+DDD throughout spine and Hx of multiple facial fractures when he broke his face and nose in six places, requiring surgical repair (1986)
80	
81	Hepatitis C Virus post interferon Tx; Lumbar Laminectomy Hx from DJD-DDD leading to spinal stenosis, hand deformities
82	Chronic severe R-sided burning leg pain and numbness from R S1 radiculopathy and Hx of DJD+DDD (MRI documented)
83	
84	
85	
86	Chronic myofascial pain syndrome vs. post-traumatic fibromyalgia
87	Hx of L total knee replacement and bilat carpal tunnel syndrome by EMG; morbid obesity
88	Pregnant in 3rd trimester as of 1/23/08
89	
90	Multiple hernia repairs; Hx of AAA repair
91	
92	Hx of seizure disorder, Hx of migraine syndrome vs. cervicogenic headache, Hx of injury working as waitress on 10/16/05
93	Hx of PTSD with 2 tours in Vietnam
94	
95	Hx of grand mal seizures; Hx of methotrexate/prednisone tx
96	
97	Hx of IBS
98	
99	Multiple Facial Reconstruction surgeries throughout 2004-6; severe hyperalgesia and allodynia

100	
101	
102	Hx of Hashimodo's thyroiditis, Hx of fibromyalgia
103	
104	Bilat corneal foreign body, dislocated C- vertebrae, spained neck, lumbar region; more recently, an MVA--> C-/L- sprain; depr/anxiety/rage
105	Hx of 3 arthroscopic surgeries of L knee; Hx of open kidney surgery 1986; Hx of kidney stones with lithotripsy
106	
107	Hx of Osteoarthritis and glaucoma
108	Chronic Abdomi. Pain Syndr 2ndary to Chron. Active HCV, Liver t'plant candidate-->end-stage cirrhotic liver (post- IFN Tx),likely transfu expo.
109	
110	Hx of mild glaucoma
111	Polyneuropathy (peripheral), Organomegaly (liver+spleen), Endocrinopathy, Monocolonal Gammopathy, Trophic Skin Changes; Raynaud's S
112	
113	Hepatitis C Virus; Clinical depression
114	suspect early diabetic neuropathy and presumed osteoporosis
115	medically documented primary open angle glaucoma vs. ocular hypertensive; congenital cataracts
116	Chronic fatigue syndrome and "fibrofog"
117	
118	extensor tendonitis in both wrists with Hx of R wrist Fx @ age 8 and L wrist Fx @ age 17
119	
120	10/6/98-"Have been hit by Tree Top and 2 logs from about 8 feet high and Maple top all across low back. Hit on head and neck by Top and fell on Ribs bounced in air, Land on ribs and many others."
121	Hx of migraine headaches w/ myofascial tension
122	Hx of R rotator cuff repair in 2000
123	Signs and Sx's of IBS; Hx of Depression 2ndary to early loss of son
124	Hx of lymphedema
125	numbness from top of foot to anterior shin; has had pain since 1992, injured while heavy lifting; Grade 1 anterolisthesis of L5 on S1; Gr 1 retrolisthesis of L4 on L5.
126	hx of panic disorder; hx of coccidiodmycosis (Valley fever)
127	L spinal stenosis is 2ndary DJD+DDD w/ both central & foraminal canal stenosis;subactue L5-S1 radiculopathy; mild CP f/ brain trauma from childhood
128	
129	Chronic Fatigue and Peripheral Vascular disease

130	2002 accident required craniotomy and placement of ventriculoperitoneal shunt; also prior accident w/ coma in 1992
131	Hx of tension and migraine headaches
132	Chronic anxiety disorder
133	Hx of injuries as CNA; C- & L- DJD+DDD, progressive, erosive OA; Hx of Sjoren's disease; hx of IBS
134	Hx of Lyme disease
135	Ashworth grade 2 spasticity
136	Hx of motorcycle accident 16 yrs ago w/ C-, L- sprain/strain & fractures, Hx of OA, Hx of Diabetic peripheral neuropathy, Hx of migraines
137	
138	Hx of cardiac arrest w/ flatline rhythm for ~2min; Hx of parathyroid adenoma; Hx of RCC; Hx of granulomatous disease
139	Cachexia, w/ loss of appetite; Hx of polio as a child in 1949; Hx of chronic ear pain w/ recurrent infections

Pt #	Medical marijuana-specific chart notes
1	
2	MMJ prn
3	max of 5 MJ cigarettes/day
4	
5	MMJ sole source of pain relief; uses linaments and tinctures
6	
7	using MJ successfully on a daily basis; pain from 8-9-->2-3; needs only ~2-3 inhalations from a MJ cigarette to get pain relief
8	
9	uses MJ daily
10	vaporized cannabis use, 3-4x/week; tincture use
11	
12	mmj is occ. Supplemented with hydrocodone
13	
14	mmj 2x/week: "marijuana-it helps me more than any of the pills do with the exception of my hormone pill & piaquinel"
15	
16	
17	
18	"pot/daily"
19	
20	medications, incl. MMJ, reduce the pain from 7-8-->2-3; states that cannabis works considerably better than hydrocodone to tx pain
21	

22	uses 2oz of cannabis/month; approx. 2g smoked/day to relieve pain, although sometimes more; cannabis use tx's pain 7-8-->2-3
23	"feels satisfied with this pain control now"--9/13/07
24	
25	
26	
27	uses marijuana to control her pain and states that this is the only thing that really works effectively for her
28	
29	
30	
31	combination of low dose methadone with MMJ was working well for her; using mmj successfully, but not covering all pain
32	successfully used MJ to treat pain
33	
34	
35	marijuana frequently; works better than any Rx drug he has ever used
36	successfully used cannabis to treat his pain and he feel that works better than anything
37	MJ daily to control pain
38	marijuana daily with no SE; "only thing she is now currently using for pain"
39	1/3/08:"getting fairly good pain control on his current medication regimen"
40	marijuana prn
41	reports that MJ gives her the best pain relief and she tolerates that much better
42	MJ really works better than anything to relieve the pain; Pot 3x week when pain is extreme. Varies.
43	
44	marijuana as needed for pain
45	
46	7/16/07: "His pain is under reasonable control."
47	
48	"He has also used marijuana for pain relief and states that this works better than anything for him." "Helped him recover substantially…can ocassionally see blurry images, and he feels that his vision is coming back slowly since he as been using the medical marijuana."
49	
50	
51	"wants to get off morphine & pain meds--only wants to be on marijuana"
52	diclofenac led to GI problems, flexaril made her feel horrible, celebrex and Lortab caused GI upset; has tried elavil and tramadol; on MS contin and trial of lidoderm patches
53	
54	

55	Cannabis/10+ times a day not in last month and a half (5/16/06); no other med besides MMJ but not not work as well
56	
57	
58	
59	medical cannabis weekly, 5-7x
60	
61	he is using mmj to control most of his pain. He occ. Uses oxycodone.
62	using medicinal marijuana and has had good results with that.
63	does use marijuana to treat his pain
64	
65	MMJ continues to work well for her. It is controlling her pain. No residual SE (5/30/07),"Doing fairly well.Pain has decreased(12/11/07)
66	
67	"She has been using cannabis in the past and has had excellent results with respect to her migraine headaches." Using <1/4 oz/week
68	
69	MMJ is "safer"
70	
71	"He is getting good relief from medical marijuana to treat his chronic back pain." (4/30/08); "He is still getting very beneficial effect from the medicinal use of marijuana."(5/8/07); "He is currently using medical cannabis only for pain, and that is controlling his pain."(4/14/05). "I still use the herb. Almost every morning, I get up with strong nausea. I sometimes dream of back ache. The pain in my spine is directly behind the hunger center, and it gives such nausea I can't eat until I smoke. Even then it takes a while. Often I don't eat until around 3: or 4: in the afternoon. I don't smoke much. I don't enjoy being high. It does help with pain management, though."..."Medical herb...I don't know what I'd do without it right now, I think it's about the only good thing for my attitude." "Three small bowls a day right now of the herb, and that's a lot for me, somehow I survive until nightfall."(4/14/05).."I don't know why. It isn't I don't feel the pain, I just don't care. I've found if I take in small doses, I avoid the mental weirdness and still get the pain and nausea help."
72	
73	
74	"He admits to using marijuana to control his pain."
75	"Mr. X has been substantially disabled by his problems and states that MJ is the only thing that has helped him." (vaporizer user)
76	"admits to having already used MJ to treat the symptoms of MS, and he feels it works better than any Rx medication he has tried, in terms of controlling his pain, spasticity, and depression"
77	antidepressants have increased side effects and antiepileptics are too sedating

78	"She also uses medical marijuana and has been doing so for some time now. She uses it appropriately, and this has helped considerably w/ pain."
79	ideal candidate for mmj as it may improve his appetite as well as limit opiate intake b/c incr. doses will not be safe due to lims w/ renal clearance…"Doing fairly well with current regimen. The majority of his pain is controlled with medical marijuana."(12/11/07); "He is getting good pain relief from his current medications."(5/21/08)
80	cannabis successfully manages pain
81	uses MJ for pain relief (daily)
82	
83	"has been using marijuana to relieve the pain, and this is the only thing that has worked for him"
84	Has used MJ in the past to occ. Tx. Pain (~1/month); difficulty w/ nighttime pain: MMJ recommended.
85	3 bowls/day MMJ (9/28/06); 2x/day MMJ (8/7/06); 20 bowls/day (7/6/06)
86	
87	"his pain is under reasonably good control"
88	no other medications aside from medical marijuana
89	"She has used this recreationally and had good success w.r.t. pain relief and inquiring about using it officially as a medical agent."
90	says MJ helps him to eat & breathe; uses MJ 3x day
91	"states quite forthrightly that he has used marijuana to treat his pain, and he gets better relief from that than most other medications."(9/25/07)
92	
93	Approx 1 oz/week of MMJ: "relieves pain quite well"
94	
95	uses MJ three times/week to control pain & inflammation
96	it would appear that he is using the cannabis appropriately(4/23/08); satisf. Control from his current pain regimen(4/24/07); has used MJ in the past with success. Uses predominantly @ night. 1-2 cigarettes/day(10/26/06)
97	
98	
99	
100	pain is 5-7/10, but with Cannabis, 2-3/10 (3/27/07); getting satisfactory pain relief from MMJ; Cannabis allows him to sleep (4/10/07); First used cannabis @ 8 yrs old: "an elder described its use & benefits" uses 4x day or prn. Cannabis works better than prescribed medicines; other reasons for cannabis use: stress reduction; reports that whole family uses it
101	"He has been using marijuana on his own, as he feels gives him the best pain relief of anything that he has used." 2-3 inhalations on a MJ cigarette 2-3/day,& this improves his pain levels drastically w/o incapacitating him
102	
103	

104	
105	Cannabis for breakthrough pain (doing well)(7/20/06); 1/4 oz medical marijuana/day, occ. More (10/4/04)
106	"He has used MJ in the past & it provided great pain relief.",1-2 MJ cigarettes/day"moderate" use acc'ding to pt.5/25/07;"With the institution of marijuana,he has noted a 60-70% decrease in his muscle spasms."(4/23/07)
107	
108	
109	"he does use marijuana for pain control. He states this is the only thing that has ever helped him." Only thing used for pain control is marijuana
110	Does use MJ to control the pain and feels that this has more than satisfactorily controlled her pain; uses 1-2 MJ cigarettes, primarily in the evening-9/18/07; cannabinoids more effective & safer than opiates in this setting
111	medical marijuana has helped with his neuropathic pain as well as his appetite
112	only uses marijuana…2 oz/month (smoked)
113	"freely admits to using marijuana to control the pain although he has done this on a recreational/informal basis without specific healthcare provider authorization."
114	pt has used mj for pain control, "and he gets much better relief from that than opioids."; "as needed"
115	Has used MMJ successfully for pain relief
116	
117	"pot daily"
118	with respect to pain control, she states she has used cannabis with good effect in the past.
119	
120	MMJ daily; pt agreed to use less hydrocodone with MMJ
121	
122	"She uses MJ on a daily basis to control her pain…She had done this for years and states it is the only thing that really relieves her pain."
123	
124	"medical marijuana has helped him substantially with pain" (11/6/07); "occ. Uses mj to tx pain and that is the only thing that relieves"; "uses pot when I can't sleep with the pain"(12/12/06);
125	
126	"states openly that he has used marijuana in the past and it has helped his pain substantially. Tolerates it much better than opiates and his use of marijuana has substantially decreased his dependence on opiates
127	"he has been using MJ to control his pain and he feels this has worked better than anything he has used." Daily use.' "no unwanted side effects; no comparison with Rx meds; use lessens need for EtOH(past heavy use)
128	
129	

130	has used MJ with significant success for headache relief, nausea relief, and incr. appetite. Pt coached on MJ dosing. 2-4 inhalations than wait & titrate; Using MMJ to control headaches + upper back + neck pain" (9/13/07); "has been using mmj very appropriately"; "with respect to his neurological functioning, that appears to be stable. He has had no headaches, no nausea, or vomiting."
131	
132	
133	he is using medicinal marijuana to control his pain with good luck with that. He also uses oxycodone and oxyContin, but he tries to limit this.(5/20/08); "Cannabis daily for pain control"(4/10/07)
134	uses marijuana, which she states works better than anything for pain
135	pt has used MJ in the past to control her nausea and headaches(11/30/06)
136	"He has used recreational marijuana in the past, and states this is the only thing that has actually helped relieve his pain + headaches."(7/15/02) "reasonably good relief from the medical marijuana" (11/18/02)
137	
138	
139	has been using marijuana to treat her pain

Pt #	Notes about other medications: using, tried, failed, side-effects (if present)
1	
2	
3	cannot tolerate opiate medications; also takes nortriptyline @ bedtime
4	allergic to codeine, darvon, percocet, percodan, darvocet, oxycodone
5	cannot tolerate opiate medications, which make him sick. Difficulty w/ muscle relaxers, which are too sedating.
6	limited tolerance to narcotics-->extreme sedation, constipation, loss of appetite, intermittent vomiting; marinol--too sedating; cannot tolerate gabapentin
7	has difficulty tolerating opioid medications
8	
9	no other pain medications; allergies to morphine and aspirin
10	
11	allergic to codeine; also uses temezepam, limited norco (as a back up to cannabis)
12	also uses intrathecal opiate pump in L-spine (morphine, then later dialaudid);
13	also uses gabapentin, aspirin, and naproxen
14	also uses tramadol, percocet, celexa; allergy to codeine
15	vicodin and tramadol cause itching, has a codeine allergy; has done a trial of propoxy
16	also uses oxycodone, celebrex, dialaudid, hydrocodone

17	also uses oxycontin, and oxycodone for breakthrough pain
18	also uses 50 mg ultram, and norco; cannot tolerate codeine makes him "hyperactive" and "keyed up"
19	tried neurontin, tried trazadone
20	also uses hydrocodone and tylenol (was advised to lower dose), IBP
21	also uses baclofen, vicodin extra-strength, klonopin, trial of vioxx; has tried neurontin; refractory to other adjunctive analgesics
22	does not tolerate narcotics, which make her nauseated and worsen appetite; allergic to morphine+demerol; uses loperimide for nausea
23	uses methadone; opiate medicine causes nausea
24	poor tolerance to opioids…finds too sedating; also uses cymbalta, IBP; tramadol and flexaril--he didn't think they helped much; has received trigger pt injections
25	since 1954, has tried four types of narcotics (T3-codeine, hydrocodone, oxycodone, tramadol); 5 triptans (imitrex tablet and injection, amerge, relpax, maxalt), migranal, depomedrol, marcaine nerve block, excedrin
26	also uses baclofen, tizanide, botox injections
27	also uses celebrex
28	also uses lyrica, oxycodone, trazadone and on lidoderm patches trial
29	has been on narcotic meds, anti-inflammatories, muscle relaxers, etc.; narcotics make him feel more "drugged" cf. w/ marijuana--cannot tolerate them; "has tried almost every pain medication I can imagine"
30	uses morphine
31	uses methadone, less lyrica because not good insurance coverage
32	cannot tolerate opiate medications-->make her sick + destrys her appetite; occ. Tylenol, alleve is ineffective
33	gabapentin and hydrocodone, but cannot tolerate opiates well
34	Norco
35	
36	cannot tolerate opiate pain medications, which make him nauseated and causes hives; uses flexaril for back spasms
37	feels "too euphoric" on morphine, doesn't want to get that "high" feeling; taking oxycodone and xanax
38	rarely percocet
39	also uses methadone and oxycodone
40	also uses MS Contin, not well controlled with methadone, now off tylenol and neurontin
41	also uses hydrocodone and baby aspirin
42	
43	
44	uses methadone with side effects of "hot flashes, memory loss, irritability"; lyrica with SE of "jittery feeling" but "it's okay"; also on Imitrex, lidoderm patches

45	allergy to Tylenol+codeine and aspirin; uses hydrocodone and migrazon
46	oxycontin, morphine ---> some nausea associated with opiates
47	takes hydrocodone, aspirin
48	occasionally uses oxycodone, but has some allergies
49	also uses alleve, hydrocodone, lidoderm patches
50	aspirin allergy, vicodin not helping
51	currently on morphine and methadone
52	diclofenac led to GI problems, flexaril made her feel horrible, celebrex and Lortab caused GI upset; has tried elavil and tramadol; on MS contin, IBP or tylenol, hydrocodone, and trial of lidoderm patches
53	limited tolerance to oxycodone; cannot tolerate methadone--"makes me sick"; little relief from hydrocodone, no response from trazadone, trying percocet and trial of lidoderm patches
54	on methadone, previously on oxycontin, lidoderm patches trial, duragesic trial; cannot tolerate anti-inflammatories
55	some benefit w/ vicodin prn; no effect with muscle relaxers and other narcotics; very poor tolerance for opiates; hydrocodone does not work very well. "pain killers stopped working a long time ago."
56	prior history of opiate abuse with premorbid Hx of methadone maintenance program; on neurontin, methadone, and oxycodone
57	rash from morphine sulfate; uses oxycontin, oxycodone, hydrocodone
58	uses amitriptyline
59	tried amitriptyline
60	has taken percocert, norco, and now on oxycodone + oxycontin which makes him "feel like a junky"-->he wants off the oxycontin
61	poor tolerance to opiates which make him nauseous; vicodin allergy, oxycodone is helping; also uses IBP
62	using percocet; allergy with anaphylactic shock to darvon and vicodin; bad reaction with soma, neurontin, Imitrex
63	limited success w/ opiate meds (higher doses cause him to feel sick, constipated); allergy to aspirin; on methadone and diazepam
64	not successful relief with hydrocodone, limited tolerance to NSAIDS due to gastritis; uses MS contin, and intertrochanteric injection of both hips (bupiv + dexa)
65	trial of capsaicin cream--could not tolerate due to burning; has tried other modalities w/o effect
66	uses norco, percocet, oxycodone
67	also uses neurontin
68	also uses tramadol, elavil, maxalt, axert
69	does not want to start with a more addictive opioid drug
70	also uses norco
71	considers oxycodone "powerful". narcotics make pt constipated; on valium, oxycodone, and diclofenac--"I am so 'stoned' I can't drive, wobble a lot on

	my bicycle, and still can't walk worth a damn." tried Voltoren and Celebrex as anti-inflam. Medrol caused rectal bleed.
72	uses oxycodone. Has hx of under-medicating w/ opioids
73	cannot tolerate opiates, e.g. oxycontin. Uses lidoderm patches
74	also on percocet
75	poor tolerance to opiates which make him nauseated and itchy
76	
77	
78	off oxycontin and using methadone, flexaril, trial of vioxx
79	also uses oxycodone and lorazepam
80	limited success w/ opiates…increasing doses are incapacitating & make him constipated. Past hx of morphine, hydromorphone, and methadone use
81	not able to tolerate opiates, valium allergy
82	occ. Using pain meds. Uses hydrocodone, IBP, methadone
83	cannot tolerate opiate medicine--makes him nauseous to the point of throwing up; topomax is difficult for him to tolerate and very expensive by pt's acct.
84	uses methadone, IBP, amitriptyline
85	uses hydrocodone and baclofen
86	uses methadone, dialaudid, hydromorphone. Opiate tolerant pt.
87	cannot tolerate: codeine+demerol, chronic narcotic medication makes him "sick"; poor outcomes with antidepressants and neurontin; some relief with percocet but cannot tolerate any stronger
88	pt denied hydrocodone w/ tylenol as a pain control option
89	difficulty tolerating narcotics; amitriptyline @ night for LBP, effexor
90	
91	addiction to higher dose narcotics-pain specialists referral to get him off narcotics; uses oxycodone, APAP, carisoprodol (for muscle spasm), IBP
92	uses methadone, which causes sleepiness and dialaudid, which causes vomiting/nausea
93	"not tolerating narcotic pain meds well, and has had poor response to other anti-inflammatories & muscle relaxants; tries to avoid vicodin, but occ. Uses for pain; also uses diazepam
94	trigger pt injections in lower lumbar region; uses methadone and oxycodone
95	
96	opiate intolerance--makes him sick; has used OTC alleve with little success; anti-epileptics make him very sedated
97	uses hydrocodone and lexapro
98	uses oxycodone, alprazolam, prozac, percocet, gabapentin; morphine allergy
99	has failed gabapentin, tegretol, elavil, percocet, celebrex, and others; also tried implantable nerve stimulator--no effect(11/7/06); on oxycodone/acetominphen, methadone, nortriptyline, percocet
100	cannot tolerate opiate medications, which for the most part make him nauseated; marinol did not agree w/ stomach; LSD, psilocybin, peyote--

	>indicated that they for spiritual use-->used as often as needed
101	MS Contin
102	poor response to narcotics, TCA's; has tried relafen, flexaril, lodine XL, tylenol; on: vicodin, cataflam
103	narcotics make him sick; has used steroid injections
104	on hydrocodone, IBP
105	on methadone; no success on anti-epileptics and antidepressants; demerol allergy
106	persistent nausea from opioid medication, but takes methadone + morphone sulfate + citalopram + neurontin (5/25/07)
107	cannot tolerate codeine; failed vioxx, percocet, amitriptyline, neurontin, tramadol
108	uses oxycontin, oxycodone, percocet. Has tried MS, methadone, dialaudid, tramadol, darvocet, fentanyl. Allergic to morphine and demerol
109	he has very poor tolerance to opiates. Failed numerous analgesics.
110	allergies to morphine, demerol, codeine
111	allergy to morphine or Demerol
112	
113	uses methadone, aware of risks of opiates-->wishes to reduce
114	uses neurontin, tramadol, aspirin; "He does not tolerate opiate medication very well as it causes him to be too spaced out and nauseous."
115	very poor tolerance to opiates; takes aspirin. "A number of medications have previously been tried."
116	on methadone, lyrica, hydrocodone for breakthrough pain
117	allergy to aspirin & other pain remedies; @ one time, was on methadone in fairly high doses--"He does not want narcotic medications."
118	She reports poor tolerance to opioid med & severe rxns to other meds incl. antidepressants; uses IBP
119	uses ultram
120	does not tolerate narcotics due to N/V, and little success w/ other meds (e.g., neurontin); uses hydrocodone and muscle relaxers
121	uses hydrocodone, IBP, and trigger pt injections
122	uses MS Contin, oxycodone, but she reports relative intolerance to opiates --> incr. dose-->nausea; cannot tolerate anti-inflammatories and flexaril; marinol-ineffective
123	Hx of failed pain meds mgmt: celebrex, vicodin; celebrex is "upsetting her stomach" (2/12/07); allergy to muscle relaxants, anti-inflammatories, aspirin and other pain remedies; poor response to opiate meds, which make her nauseated; most adjunctive medications for pain have also been poorly tolerated; some help from Lexapro (used as an antidepressant), excedrin-migraine; and florinal-headache.
124	OTC anti-inflammatories + tylenol + intermittent MMJ --> not controlling pain; little success with most analgesics and anti-inflammatories; given

	vicodin Rx
125	uses gabapentin, naproxen, oxycodone
126	previously was taking oxycontin 40-80mg 2x/day; since using MMJ, he is now completely off oxycontin and is only using vicodin prn
127	pt is Rx'd hydrocodone but is not certain if he will fill the Rx; pt has tried: oxycontin, oxycodone, aspirin, IBP, tylenol, tylenol/codeine, percodan, percocet, vicodin
128	using oxycodone as needed for breakthrough pain, MS contin
129	uses hydrocodone, celebrex for antinflammation
130	little response to amitriptyline, vicodin, tylenol, marinol, and others for headaches (such as inderal, anti-inflammatories, and IBP)
131	uses norco which causes drowsiness and loss of appetite; codeine allergy; previously used ultram and neurontin
132	occ. Uses opiate medication such as hydrocodone, but he does not like to do this, because it makes him sick and constipated; uses IBP-5/20/08
133	uses oxycodone and oxyContin-->which cause SE's of constipation and nausea; uses celebrex and cortisone injections
134	hydrocodone makes her feel somewhat ill; uses tramadol, clonazepam
135	cannot tolerate opiates, plus the SE of opiates, including constipation & bowel hypomotility would be contraindicated in this setting; Allergy to morphine & demerol; taking methadone, oxycodone, xanax
136	was taking too much tylenol, doctor concerned; constipation SE w/ oxycodone; cannot tolerate vicodin; narcotics give worse headaches; uses oxycodone, percocet and occ. Lidoderm patch use
137	uses norco, neurontin, oxycodone
138	uses morphine, oxycodone, lidocaine, trigger pt injections, lidoderm patches, diazepam; cannot tolerate Duragesic patches--> rash; tried dialaudid
139	opiate intolerance-->cause her nausea/vomiting and bowel obstruction; wants to avoid unnatural / artificial medications; codeine allergy

Pt #	Notes about patients who have faced major access hurdles
7	5/22/08: DOC process was disallowing his MMJ use
12	9/21/06: "big concern for him is access to MMJ…can barely afford what the Green Cross Coop asks for their medication"
18	had MMJ authorization from Oregon, but not accepted in WA
22	involved in some type of legal altercation where she was arrested for possession of marijuana. Was authorized by a previous MD who moved. "She was a good candidate for MMJ at time of arrest."
24	Partner doctor in practice would not authorize
26	came from IL for Doc's opinion; will need to stay in WA for MMJ exp. trial
29	has had some issues with his employer regarding MMJ; and a previous

	physician who would not authorize
30	pt has Hx of incarceration and forcible removal from Canadian ER with urinary catheter in place stemming from medical marijuana charges
36	3/26/08: referral by atty b/c pt is facing major legal problems due to mmj growing and use
37	previous docs referred to his marijuana use as illicit
48	2/11/08: "went to court. They took his marijuana card. He need another one."
50	another MD wrote in her social history: she abstained from using marijuana since Oct 2003 (5/17/06)
51	MD at Hem/Onc service unwilling to provide MMJ; referred for "medical marijuana consult"
53	pt wanted to take MMJ to NV, but learned she was only covered in WA
55	pt had to go to jail for marijuana-related charges. Could not use MMJ-so used oxycontin (9/20/07) and wants off oxycodone (11/6/07)
56	use limited by cost of MMJ
57	referred by non-practicing cannabinoid medicine specialist who was unwilling to recommend MMJ
61	"He does state that he cannot afford the medical marijuana, which is somewhat expensive even when obtained from the Green Cross Co-op. Marinol too expensive.
62	"She is having increasing difficulty obtaining MMJ." 6/15/06
63	Pt referred by attorney b/c pt was being forced by DOC to stop mmj use or face re-incarceration
69	previous MD did not authorize ("we talked about medicinal marijuana. At the end of the appt. nothing was settled on.")
71	Seeking authorization for "hemp therapy". "It's funny, so many doctors recommended it before it was legal, and now a helpful doctor is hard to find. I've been told it should be only for terminal patients, but unless I find surgical relief, it goes with me to my grave and it feels like it's killing me. I wouldn't wish this on Saddam Hussien." (pt statement shared with Carter and referring doctor). Another DO doc wrote: "He recently requested for me to give him a prescription for medical marijuana, however, I am not inclined to do so mainly because the D.O. board is quite conservative and tends to frown on that very much. I know that Greg will sometimes do this..."(3/7/03)-->note was sent to another MD who said 'no' as well. (3/23/03)
75	referred by VA psychiatrist for MMJ eval but also NO Referral because VA won't refer out; mention made of remote past history of MJ abuse (3/1/06)
76	referred by major city hospital neurologist for MMJ eval--"I have advised them, unfortunately, I cannot prescribe medical marijuana for them." (9/10/07)
81	wants Rx for marinol, trying to get DL back
84	Pt was referred to ARNP for pain mgmt. Then his care was transferred to Dr. Carter when urine drug screen showed +methadone, +cannabis

85	traveled out to Hawaii and had trouble accessing MMJ; had legal problems related to medical marijuana use/cultivation--Charged pt's mother with the following "crimes" "against the peace and dignity of the State of WA": "Manufacture of a controlled substance" (max penalty- 5yrs in prison +$10,000 fine), "Unlawful use of drug paraphernalia to grow a controlled substance" (max penalty-90 days in jail +$1000 fine); previous MD believed psychosis in pt was due to large amount of MJ use; wanted pt to want off MMJ completely (7/6/06)
87	referred by DO for MMJ discussion
88	referral from an attorney in some kind of MJ-related case
91	wanted to consider MMJ only after L&I claim was closed
98	not able to use much b/c wife who is in the military worries due to fed. Laws
99	had some difficulties getting cannabinoid medicine through the co-ops, so he has had limited ability to use the medicine
100	"difficulty obtaining MMJ due to financial reasons"(4/10/07); Trial on 6/4/07-->MMJ related, it seems; pt reports: "I fear our government"; previous MMJ recommending doctor noted: " "HIPPY"-Appearance w/ "Dread-Locks" as an objective finding.
101	"He is quite adamant noting that he has never been a recreational marijuana user and is adamantly against recreational drug use. He stated a number of times during our visit that he is embarrassed to inquire about this."
103	another doc wrote:"He is possibly interested in medical marijuana as a means to be comfortable in the evenings, but again he is not real excited by anything that is going to alter his sensorium." (11/4/07)
105	arrested several months ago for possession of cannabis, despite medical authorization-->referral by atty
106	another doctor wrote: "I am aware of this particular act and unfortunate I do not participate in the medical marijuana program." (4/25/07)
108	all prepped to use cannabis (found right medical source) but could not avail as the liver transplant service said that he was not allowed to use medical marijuana to be kept on the list.
111	given Rx for marinol if he travels out of state and cannot take his natural marijuana. I did state, however, that I do not feel Marinol is a true substitute for natural marijuana, as it has only one cannabinoid whereas the natural plant has over 60-70 different cannabinoids
112	was Rx'd for marinol for a job-related potential urine test
115	Vietnam Vet seeking MMj authorization; had some MMJ-related legal problems
118	chart history form filled out by pt says she "quit" marijuana on 5/17/06…no reason given
125	was receiving VA care with MMJ auth. Does not occur; referred by another patient of Dr. Carter
127	pt feels unsafe in his community due to law enforcement; pt was authorized

	for MMJ use previously from low quality bot. cb. Med specialist. Seeking re-authorization
129	lives in a very rural setting
130	(2/1/06):internal medicine MD: "He continues to have persistent headache and is here today to talk about medical marijuana. He tried amitryptaline, inderal, anti-inflammatories, and vicodin in the past. Nothing really worked. Only wearing L eye patch and smoking marijuana help. He wants to know if medical marijuana could be prescribed." MMJ request denied. And Doc gave Rx for MARINOL 2.5 mg, #60, no refills. 10/19/06: "Could not afford MARINOL (and state wouldn't pay) ($400 for 1 mo. supply)
132	has difficulty obtaining good amounts of medical marijuana. Is trying to start a grow in his house b/c he cannot afford the prices at the co-ops-5/20/08
133	Told by another MD on 10/26/06: "He does need to quit using marijuana for safe general anesthesia."
136	Previous DO docs says medical marijuana is not appropriate and Dr. "is not comfortable prescribing it today."-->vicodin instead (1/25/02); pt continues to request MMJ treatment from DO, but is refused (2/1/02)
137	turned down for Social security disability; unclear why; "pt reports that he occasionally uses marijuana, stating that it calms him" said one psychiatrist--however, note also states that his depression problems are exacerbated by "current substance use", not distinguishing between documented MJ + EtOH use.
139	past legal problems related to MMJ
51 pts total	

APPENDIX B: Interview Script and Survey Instruments

Study Instrument 1: Complementary and Alternative Botanical Medicine Provider Semi-Structured Interview Script

References:

Adapted from:
Reiman A. 2006. Cannabis Care: Medical Cannabis facilities as health service providers. Dissertation. School of Social Welfare/Alcohol Research Group: University of California, Berkeley.

Study Instrument 2: Medical Marijuana Patient On-site Questionnaire

References:

Standard Instruments:
SF-36, CDC-HRQOL-14, BSI-53, NSDUH (IF MAR12MON= 1 – 3)

List of diseases and symptoms from:
Grinspoon L and Bakalar J. 1997. *Marihuana: The Forbidden Medicine*. New Haven: Yale University Press.

Health Canada-CIHR Medical Marijuana Research Program (Archived). 2008. Available at: http://www.cihr-irsc.gc.ca/e/4628.html

International Association for Cannabis as Medicine (IACM). 2008. Available at: http://www.cannabis-med.org

Medical Marijuana Patient Survey Form. 2008. Available at: http://www.onlinepot.org/patientsurvey.htm

Oregon Medical Marijuana Program (OMMP) Data, Department of Human Services. 2008. Available at: http://oregon.gov/DHS/ph/ommp/data.shtml

POZ Medical Marijuana Survey. 2008. Available at: http://www.poz.com/phpESP/public/survey.php?name=Medical_Marijuana_Survey

Swift W, Gates P, & Dillon P. 2005. Survey of Australians using cannabis for medical purposes. *Harm Reduction Journal*, 2, 18-27. Available at: http://www.harmreductionjournal.com/content/2/1/18

Demographic questions adapted from:

Reiman A. 2006. Cannabis Care: Medical Cannabis facilities as health service providers. Dissertation. School of Social Welfare/Alcohol Research Group: University of California, Berkeley.

Coping scale is López-Vázquez adaptation of "Échelle Toulousaine de Coping" from: López-Vázquez E, Marván ML. 2004. Validación de una escala de afrontamiento frente a riesgos extremos. *Salud Publica Mex* 46:00-00. (Translation: Validation of a scale measuring coping with extreme risks)

Study Instrument 3: Medical Marijuana Patient Take-Home Questionnaire

References:
Standard Instruments:
SF-36, CDC-HRQOL-14

Several Items Adapted From:
Dr. Alfonso Jimenez's Follow Up/Renewal Assessment Tool Questionnaire. 2008. Available at:
http://www.medicalmarijuanaoforangecounty.com/CMS/scripts/esurvey.cgi?action=viewSurvey&id=1173657528

Reiman A. (2006). Cannabis Care: Medical Cannabis facilities as health service providers. Dissertation. School of Social Welfare/Alcohol Research Group: University of California, Berkeley.

Ryan K, Bissell P, Morecroft C. 2007. Narratives about illness and medication: a neglected theme/new methodology within pharmacy practice research. Part II: medication narratives in practice. *Pharm World Sci*. 29:4: 353-360.

Complementary and Alternative Botanical Medicine Provider Semi-Structured Interview Script

"Cannabinoid Medical Geography in Washington State: Germplasm Delivery in a Convenience Sample"

PI: Sunil Aggarwal, PhD Candidate, Department of Geography, Third Year Medical Student, University of Washington

Facility Characteristics

In this section, I will ask you about the number and type of services offered by your facility as well as hours of operation. Also, this section will ask about related facility rules, such as the ability to use Cannabis on site.

1. How long has this facility been open?

_____ years _____ months

Please list your hours of operation below

2. Sunday: _____ am/pm to _____ am/pm
3. Monday: _____ am/pm to _____ am/pm
4. Tuesday: _____ am/pm to _____ am/pm
5. Wednesday: _____ am/pm to _____ am/pm
6. Thursday: _____ am/pm to _____ am/pm
7. Friday: _____ am/pm to _____ am/pm
8. Saturday: _____ am/pm to _____ am/pm

9. Please list all services offered to patients, other than Cannabis distribution, at your facility (e.g., massage, legal workshops, healing circles, peer counseling, etc.), and their associated costs to the patients.

SERVICE	COST (NC = FREE)

10. What is the requirement regarding identification for patients? (Check all that apply)

____ State issued ID + an approved medical Cannabis card
____ State issued ID + an approved medical Cannabis card + Dr.'s letter
____ An approved medical Cannabis card + Dr.'s letter
____ State issued ID + Dr.'s letter
____ An approved medical Cannabis card
____ A Dr.'s letter

11. Are patients allowed to use marijuana on site?

_____Yes
_____No (go to question 15)

12. Must patients use their medicine inside the facility? (vs. using outside in a courtyard or on a patio)

_____Yes
_____No

13. Is there a restriction on how long patients can stay and use their medicine?

_____Yes
_____No

14. Is there a restriction on what type of medicine can be used? (for example, vaporized medicine only, or no smoked medicine, edibles only)

____Yes
____No

15. Is there a rule against smoking tobacco in the facility?

_____Yes
_____No

16. During an average week, approximately how many medical Cannabis patients utilize your facility?

_____ patients

17. Approximately how many patients has your facility served overall since opening? It is true that you have a protocol in place for handling and managing risks of sucidiality in patients in if they such risk are discovered, correct? Please discuss briefly.

_____ patients & _____

18. Approximately how many different health care providers' authorized patients have receive botanical medicine from your facility?

_____ health care providers

Political, Economic and Environmental Characteristics

In this part of the interview, I will ask you about the political environment in the city in which your facility is located.

How much would you agree with the following statement…

19. I feel that my facility has the support of local government officials (check one)
    ____All of the time
    ____Most of the time
    ____Some of the time
    ____Rarely
    ____Never

20. Would you describe the relationship between your facility and local police as (check one)
    ____Excellent
    ____Good
    ____Fair
    ____Poor

Please explain.

22. Has your facility ever been raided by local law enforcement?
    ____Yes
    ____No (go to 24)

23. How many times? Please explain.

24. Has your facility ever been raided by state law enforcement?
    ____Yes
    ____No (go to 26)

25. How many times? Please explain.

26. Has your facility ever been raided by federal law enforcement?

____Yes
____No (go to 28)

27. How many times? Please explain.

Please complete the table below concerning the availability of different Cannabis products at your facility.

Product	**Available to patients at your facility?**
28.Cannabis flower buds	1 Yes 2 No
29.Edibles (cookies, brownies, etc.)	1 Yes 2 No
30.Tincture	1 Yes 2 No
31.Salve	1 Yes 2 No
32.Butter	1 Yes 2 No
33.Peanut Butter	1 Yes 2 No
34.Hash	1 Yes 2 No
35.Kif	1 Yes 2 No

Other medical items offered (if any)

Does your facility offer any of the following for your patients either for free or for donation?

Service	**Available at your facility**	**Average donation per item**
36.Coffee	1 Yes → 2 No ↓	$
37.Non-Cannabis snacks	1 Yes → 2 No ↓	$
38.Medical Delivery Pipe	1 Yes → 2 No ↓	$
40.Medical delivery Paper	1 Yes → 2 No ↓	$
41.T-shirts	1 Yes → 2 No ↓	$
42.Books	1 Yes → 2 No ↓	$
43.Games/Crafts	1 Yes → 2 No ↓	$
44.Television	1 Yes → 2 No ↓	$
45.Meals	1 Yes → 2 No ↓	$
46.Other (please explain below table)	1 Yes → 2 No ↓	$

Please explain other non-Cannabis items that are sold at your facility (if any):

47. Approximately how many square feet is your facility?

_____ square feet

48. Approximately how much does it cost on a daily basis to keep a given lot of medical marijuana botanical medicine stocked, available, and deliverable to patients?

49. Please indicate the staff members, their roles in the facility, and the extent to which you utilize volunteer services.

50. What roadblocks do you see in achieving your goals and/or in meeting patients' needs?

51. Please share any other thoughts about your facility as well as anything else you would like people to know about your facility.

Interview items adapted from: Reiman, A. (2006). Cannabis Care: Medical Cannabis facilities as health service providers. Dissertation. School of Social Welfare/Alcohol Research Group: University of California, Berkeley.

Medical Marijuana Patient On-site Questionnaire

"Cannabinoid Medical Geography in Washington State: Germplasm Delivery in a Convenience Sample"

PI: Sunil Aggarwal, PhD Candidate, Department of Geography, Third Year Medical Student, University of Washington

Instructions: Please complete the questionnaire only after reviewing the information statement. Please answer questions to the best of your knowledge.

Part I.

1. Are you a qualifying patient under Washington State's Medical Marijuana Law (RCW 69.51a)?

Please Circle One: Yes No

If you answered "No", please do not complete this questionnaire.

2. How long have you been a qualifying medical marijuana patient in Washington State (since a Washington-licensed physician first provided documentation in your medical record regarding your medical use of marijuana)? Please approximate to the closest number of years and months.

   _____

3. Which qualifying condition(s) have you been diagnosed with? Please check all that apply.

   __cancer. Please specify type(s):
   _____

   __human immunodeficiency virus (HIV).

   __multiple sclerosis.

   __epilepsy.

   __other seizure disorder. Please specify type(s):
   _____

   __spasticity disorders. Please specify type(s):
   _____

(question 3 continued on next page)

__ intractable [not manageable] pain, limited to mean pain unrelieved by standard medical treatments and medications. Please specify type(s):_____

__ glaucoma, either acute or chronic, limited to mean increased intraocular pressure unrelieved by standard treatments and medications. Please specify:_____

__Crohn's Disease with debilitating symptoms unrelieved by standard treatments or medications.

__Hepatitis C with debilitating nausea and/or intractable pain unrelieved by standard treatments or medication.

__ any disease, including anorexia, which results in nausea, vomiting, wasting, appetite loss, cramping, seizures, muscle spasms, and/or spasticity, when these symptoms are unrelieved by standard treatments or medications. Please specify:_____

4. Have you ever been a legal medical marijuana patient in other places in the United States of America outside of Washington State?
   Please Circle One: Yes No

   a. If "Yes", which state(s)?_____
   b. If other countries, please state which ones_____

5. The following is a list of conditions that are thought to be responsive to marijuana/cannabinoid therapy based on cannabinoid physiology studies, clinical experience, and/or population surveys. Do you currently suffer from any of these conditions, or have you ever been diagnosed with any of these conditions? If yes, please also indicate if you have used medical marijuana to treat the condition.

Yes?	Used Marijuana for treatment?	
_____	_____	Arthritis. Please specify type, if known_____
_____	_____	Autoimmune Disease (Lupus, Sjogren's disease, Graves's disease, etc.). Please specify: _____
_____	_____	Migraine
_____	_____	Persistent nausea
_____	_____	ME (chronic fatigue) (Myalgic Encephalomyelitis)
_____	_____	Fibromyalgia
_____	_____	Hypertension
_____	_____	Diabetes. Please specify type: _____

_____ _____Asthma
_____ _____Incontinence
_____ _____Sleep Apnea
_____ _____Irritable bowel syndrome
_____ _____Pre-menstrual Syndrome and dsymenorrhoea
_____ _____Muscular Dystrophy
_____ _____Lou Gerhig's Disease (ALS)
_____ _____Osteoporosis
_____ _____Ankylosing Spondylitis
_____ _____Convulsions
_____ _____Neuralgia/neuropathy. Please specify: _____
_____ _____Other neurological disorder. Please specify: _____
_____ _____Alzheimer's Disease
_____ _____Parkinson's Disease
_____ _____Huntington's Disease
_____ _____Head trauma
_____ _____Stroke
_____ _____Spinal cord injury
_____ _____Spinal cord disease. Please specify: _____
_____ _____Post-Traumatic Stress Disorder (PTSD)
_____ _____Depression
_____ _____Bipolar Disorder
_____ _____Psychotic episodes
_____ _____Substance Use Disorder(s). Please specify: _____
_____ _____Insomnia
_____ _____Tourette's syndrome
_____ _____Panic Disorder
_____ _____Attention Deficit Disorder (ADD)
_____ _____Schizophrenia
_____ _____Pruritis (severe itching)
__X___ __X_Other _____

6. Thinking now about your qualifying condition, for which of the following symptom-relieving purposes do you use medical marijuana Please **circle** only the ones that apply to you. Then, please indicate using a number from 1 to 10, what kind of relief you get, where 10 = absolute symptom control and 1 = minimum symptom control.

Symptom control by Body System:	**Symptom Control Rating**
General	
to manage/gain weight	_____
Dermatological	
to reduce pain	_____
Head, Ears, Eyes, Nose, Throat	

to reduce pain _____
to lower intraocular pressure _____

Breast
to reduce pain _____

Respiratory
to reduce pain _____

Cardiovascular
to reduce chest pain _____

Gastrointestinal
to reduce nausea _____
to reduce vomiting _____
to stimulate appetite _____
to reduce abdominal pain _____
to reduce GI motility [gastrointestinal motor activity] _____
to increase GI motility [gastrointestinal motor activity] _____

Genitourinary
to reduce pain _____
to reduce urinary urgency
to reduce urinary frequency _____

Musculoskeletal
to reduce pain
to relieve spasms _____

Neurological
to reduce pain _____
to reduce dizziness _____
to control or prevent seizures _____

Psychiatric
to improve mood _____
to reduce anxiety _____

Others? _____
_____
_____

Overall, what would you say are the main symptoms that you regularly use medical marijuana to treat (not necessarily limited to those stemming from your qualifying condition)?

8. What is your gender? (check all that apply)
M ____
F _____
9. What is your age? _____ years

10. What is your ethnicity? (check all that apply)

____ Native American
____ African American
____ Caucasian
____ Hispanic
____ Asian
____ Other: please explain

11. Do you currently have health insurance?

____Yes
____No (go to question 13)

12. What kind of health insurance?

_____ HMO
_____ PPO
_____ Medicare/Medicaid
_____ Other (please explain)

13. What is the average yearly income of your household? (include taxed and non-taxed income)

____ less than $20,000
____ $20,000-$34,999
____ $35,000-$49,999
____ $50,000-$99,999
____ greater than $100,000

Part II: Please mark the best answer.

1. In general, would you say your health is:

☐ Excellent
☐ Very good
☐ Good
☐ Fair
☐ Poor

2. Compared to one year ago, how would you rate your health in general now?

☐ Much better now than a year ago
☐ Somewhat better now than a year ago
☐ About the same as one year ago
☐ Somewhat worse now than one year ago
☐ Much worse now than one year ago

3. The following items are about activities you might do during a typical day. Does your health now limit you in these activities? If so, how much?

a. Vigorous activities, such as running, lifting heavy objects, participating in strenuous sports.
☐ Yes, limited a lot.
☐ Yes, limited a little.
☐ No, not limited at all.

b. Moderate activities, such as moving a table, pushing a vacuum cleaner, bowling, or playing golf?
☐ Yes, limited a lot.
☐ Yes, limited a little.
☐ No, not limited at all.

c. Lifting or carrying groceries.
☐ Yes, limited a lot.
☐ Yes, limited a little.
☐ No, not limited at all.

d. Climbing several flights of stairs.
☐ Yes, limited a lot.
☐ Yes, limited a little.
☐ No, not limited at all.

e. Climbing one flight of stairs.
☐ Yes, limited a lot.
☐ Yes, limited a little.
☐ No, not limited at all.

f. Bending, kneeling or stooping.
☐ Yes, limited a lot.
☐ Yes, limited a little.
☐ No, not limited at all.

g. Walking more than one mile.
☐ Yes, limited a lot.
☐ Yes, limited a little.
☐ No, not limited at all.

h. Walking several blocks.
☐ Yes, limited a lot.
☐ Yes, limited a little.
☐ No, not limited at all.

i. Walking one block.
☐ Yes, limited a lot.
☐ Yes, limited a little.
☐ No, not limited at all.

j. Bathing or dressing yourself.
☐ Yes, limited a lot.
☐ Yes, limited a little.
☐ No, not limited at all.

4. During the past 4 weeks, have you had any of the following problems with your work or other regular daily activities as a result of your physical health?

a. Cut down the amount of time you spent on work or other activities?
☐ Yes ☐ No

b. Accomplished less than you would like?
☐ Yes ☐ No

c. Were limited in the kind of work or other activities
☐ Yes ☐ No

d. Had difficulty performing the work or other activities (for example, it took extra time)
☐ Yes ☐ No

5. During the past 4 weeks, have you had any of the following problems with your work or other regular daily activities as a result of any emotional problems (such as feeling depressed or anxious)?

a. Cut down the amount of time you spent on work or other activities?
☐ Yes ☐ No

b. Accomplished less than you would like
☐ Yes ☐ No

c. Didn't do work or other activities as carefully as usual
☐ Yes ☐ No

6. During the past 4 weeks, to what extent has your physical health or emotional problems interfered with your normal social activities with family, friends, neighbors, or groups?
☐ Not at all
☐Slightly

☐ Moderately
☐ Quite a bit
☐ Extremely

7. How much bodily pain have you had during the past 4 weeks?
☐ Not at all
☐ Slightly
☐ Moderately
☐ Quite a bit
☐ Extremely

8. During the past 4 weeks, how much did pain interfere with your normal work (including both work outside the home and housework)?
☐ Not at all
☐ Slightly
☐ Moderately
☐ Quite a bit
☐ Extremely

9. These questions are about how you feel and how things have been with you during the past 4 weeks. For each question, please give the one answer that comes closest to the way you have been feeling. How much of the time during the past 4 weeks.

a. did you feel full of pep?
☐ All of the time
☐ Most of the time
☐ A good bit of the time
☐ Some of the time
☐ A little of the time
☐ None of the time

b. have you been a very nervous person?
☐ All of the time
☐ Most of the time
☐ A good bit of the time
☐ Some of the time
☐ A little of the time
☐ None of the time

c. have you felt so down in the dumps nothing could cheer you up?
☐ All of the time
☐ Most of the time
☐ A good bit of the time
☐ Some of the time

☐ A little of the time
☐ None of the time

d. have you felt calm and peaceful?
☐ All of the time
☐ Most of the time
☐ A good bit of the time
☐ Some of the time
☐ A little of the time
☐ None of the time

e. did you have a lot of energy?
☐ All of the time
☐ Most of the time
☐ A good bit of the time
☐ Some of the time
☐ A little of the time
☐ None of the time

f. have you felt downhearted and blue?

☐ All of the time
☐ Most of the time
☐ A good bit of the time
☐ Some of the time
☐ A little of the time
☐ None of the time

g. did you feel worn out?
☐ All of the time
☐ Most of the time
☐ A good bit of the time
☐ Some of the time
☐ A little of the time
☐ None of the time

h. have you been a happy person?
☐ All of the time
☐ Most of the time
☐ A good bit of the time
☐ Some of the time
☐ A little of the time
☐ None of the time

i. did you feel tired?
☐ All of the time
☐ Most of the time
☐ A good bit of the time
☐ Some of the time
☐ A little of the time
☐ None of the time

10. During the past 4 weeks, how much of the time has your physical health or emotional problems interfered with your social activities (like visiting friends, relatives, etc.)?
☐ All of the time
☐ Most of the time
☐ Some of the time
☐ A little of the time
☐ None of the time

11. How TRUE or FALSE is each of the following statements for you?

a. I seem to get sick a little easier than other people
☐ Definitely true
☐ Mostly true
☐ Don't know
☐ Mostly false
☐ Definitely false

b. I am as healthy as anybody I know
☐ Definitely true
☐ Mostly true
☐ Don't know
☐ Mostly false
☐ Definitely false

c. I expect my health to get worse
☐ Definitely true
☐ Mostly true
☐ Don't know
☐ Mostly false
☐ Definitely false

d. My health is excellent
☐ Definitely true
☐ Mostly true
☐ Don't know

☐ Mostly false
☐ Definitely false

Part III: Please circle and/or write-in the best answer.

1. Would you say that in general your health is:
a. Excellent
b. Very good
c. Good
d. Fair
e. Poor

2. Now thinking about your physical health, which includes physical illness and injury, for how many days during the past 30 days was your physical health not good?
a. Number of Days _ _
b. None

3. Now thinking about your mental health, which includes stress, depression, and problems with emotions, for how many days during the past 30 days was your mental health not good?
a. Number of Days _ _
b. None If both Q2 AND Q3 ="None", skip next question

4. During the past 30 days, for about how many days did poor physical or mental health keep you from doing your usual activities, such as self-care, work, or recreation?
a. Number of Days _ _
b. None

5. Are you LIMITED in any way in any activities because of any impairment or health problem?
a. Yes
b. No Go to Q1 of Healthy Days Symptoms Module

6. What is the MAJOR impairment or health problem that limits your activities?
_ _

7. For HOW LONG have your activities been limited because of your major impairment or health problem?
Number: _ _ Unit of time: _ _

8. Because of any impairment or health problem, do you need the help of other persons with your PERSONAL CARE needs, such as eating, bathing, dressing, or getting around the house?
a. Yes

b. No

9. Because of any impairment or health problem, do you need the help of other persons in handling your ROUTINE needs, such as everyday household chores, doing necessary business, shopping, or getting around for other purposes?
a. Yes
b. No

Healthy Days Symptoms Module

10. During the past 30 days, for about how many days did PAIN make it hard for you to do your usual activities, such as self-care, work, or recreation?
a. Number of Days _ _
b. None

11. During the past 30 days, for about how many days have you felt SAD, BLUE, or DEPRESSED?
a. Number of Days _ _
b. None

12. During the past 30 days, for about how many days have you felt WORRIED, TENSE, or ANXIOUS?
a. Number of Days _ _
b. None

13. During the past 30 days, for about how many days have you felt you did NOT get ENOUGH REST or SLEEP?
a. Number of Days _ _
b. None

14. During the past 30 days, for about how many days have you felt VERY HEALTHY AND FULL OF ENERGY?
a. Number of Days _ _
b. None

Part IV:

INSTRUCTIONS
I am going to read a list of problems and complaints that people sometimes have. For each one, tell me how much that problem has bothered or distressed you during the past week, including today. Please tell me whether each problem has bothered you not at all, a little bit, moderately, quite a bit, or extremely.

1. Nervousness or shakiness inside. (Choose one)

Not at all
A little bit
Moderately
Quite a bit
Extremely

2. Faintness or dizziness. (Choose one)
Not at all
A little bit
Moderately
Quite a bit
Extremely

3. The idea that someone else can control your thoughts. (Choose one)
Not at all
A little bit
Moderately
Quite a bit
Extremely

4. Feeling others are to blame for most of your troubles. (Choose one)
Not at all
A little bit
Moderately
Quite a bit
Extremely

5. Trouble remembering things. (Choose one)
Not at all
A little bit
Moderately
Quite a bit
Extremely

6. Feeling easily annoyed or irritated. (Choose one)
Not at all
A little bit
Moderately
Quite a bit
Extremely

7. Pains in heart or chest. (Choose one)
Not at all
A little bit

Moderately
Quite a bit
Extremely

8. Feeling afraid in open spaces. (Choose one)
Not at all
A little bit
Moderately
Quite a bit
Extremely

9. Thoughts of ending your life. (Choose one)
Not at all
A little bit
Moderately
Quite a bit
Extremely

10. Feeling that most people cannot be trusted. (Choose one)
Not at all
A little bit
Moderately
Quite a bit
Extremely

11. Poor appetite. (Choose one)
Not at all
A little bit
Moderately
Quite a bit
Extremely

12. Suddenly scared for no reason. (Choose one)
Not at all
A little bit
Moderately
Quite a bit
Extremely

13. Temper outbursts that you could not control. (Choose one)
Not at all
A little bit
Moderately
Quite a bit
Extremely

14. Feeling lonely even when you are with people. (Choose one)
Not at all
A little bit
Moderately
Quite a bit
Extremely

15. Feeling blocked in getting things done. (Choose one)
Not at all
A little bit
Moderately
Quite a bit
Extremely

16. Feeling lonely. (Choose one)
Not at all
A little bit
Moderately
Quite a bit
Extremely

17. Feeling blue. (Choose one)
Not at all
A little bit
Moderately
Quite a bit
Extremely

18. Feeling no interest in things. (Choose one)
Not at all
A little bit
Moderately
Quite a bit
Extremely

19. Feeling fearful. (Choose one)
Not at all
A little bit
Moderately
Quite a bit
Extremely

20. Your feelings being easily hurt. (Choose one)
Not at all

A little bit
Moderately
Quite a bit
Extremely

21. Feeling that people are unfriendly or dislike you. (Choose one)
Not at all
A little bit
Moderately
Quite a bit
Extremely

22. Feeling inferior to others. (Choose one)
Not at all
A little bit
Moderately
Quite a bit
Extremely

23. Nausea or upset stomach. (Choose one)
Not at all
A little bit
Moderately
Quite a bit
Extremely

24. Feeling that you are watched or talked about by others. (Choose one)
Not at all
A little bit
Moderately
Quite a bit
Extremely

25. Trouble falling asleep. (Choose one)
Not at all
A little bit
Moderately
Quite a bit
Extremely

26. Having to check and double check what you do. (Choose one)
Not at all
A little bit
Moderately

Quite a bit
Extremely

27. Difficulty in making decisions. (Choose one)
Not at all
A little bit
Moderately
Quite a bit
Extremely

28. Feeling afraid to travel on buses, subways, or trains. (Choose one)
Not at all
A little bit
Moderately
Quite a bit
Extremely

29. Trouble getting your breath. (Choose one)
Not at all
A little bit
Moderately
Quite a bit
Extremely

30. Hot or cold spells. (Choose one)
Not at all
A little bit
Moderately
Quite a bit
Extremely

31. Having to avoid certain things, places, or activities because they frighten you. (Choose one)
Not at all
A little bit
Moderately
Quite a bit
Extremely

32. Your mind going blank. (Choose one)
Not at all
A little bit
Moderately
Quite a bit
Extremely

33. Numbness or tingling in parts of your body. (Choose one)
Not at all
A little bit
Moderately
Quite a bit
Extremely

34. The idea that you should be punished for your sins. (Choose one)
Not at all
A little bit
Moderately
Quite a bit
Extremely

35. Feeling hopeless about the future. (Choose one)
Not at all
A little bit
Moderately
Quite a bit
Extremely

36. Trouble concentrating. (Choose one)
Not at all
A little bit
Moderately
Quite a bit
Extremely

37. Feeling weak in parts of your body. (Choose one)
Not at all
A little bit
Moderately
Quite a bit
Extremely

38. Feeling tense or keyed up. (Choose one)
Not at all
A little bit
Moderately
Quite a bit
Extremely

39. Thoughts of death or dying. (Choose one)

Not at all
A little bit
Moderately
Quite a bit
Extremely

40. Having urges to beat, injure, or harm someone. (Choose one)
Not at all
A little bit
Moderately
Quite a bit
Extremely

41. Having urges to break or smash things. (Choose one)
Not at all
A little bit
Moderately
Quite a bit
Extremely

42. Feeling very self-conscious with others. (Choose one)
Not at all
A little bit
Moderately
Quite a bit
Extremely

43. Feeling uneasy in crowds. (Choose one)
Not at all
A little bit
Moderately
Quite a bit
Extremely
44. Never feeling close to another person. (Choose one)
Not at all
A little bit
Moderately
Quite a bit
Extremely

45. Spells of terror or panic. (Choose one)
Not at all
A little bit
Moderately

Quite a bit
Extremely

46. Getting into frequent arguments. (Choose one)
Not at all
A little bit
Moderately
Quite a bit
Extremely

47. Feeling nervous when you are left alone. (Choose one)
Not at all
A little bit
Moderately
Quite a bit
Extremely

48. Others not giving you proper credit for your achievements. (Choose one)
Not at all
A little bit
Moderately
Quite a bit
Extremely

49. Feeling so restless you could not sit still. (Choose one)
Not at all
A little bit
Moderately
Quite a bit
Extremely

50. Feelings of worthlessness. (Choose one)
Not at all
A little bit
Moderately
Quite a bit
Extremely

51. Feeling that people will take advantage of you if you let them. (Choose one)
Not at all
A little bit
Moderately
Quite a bit
Extremely

52. Feelings of guilt. (Choose one)
Not at all
A little bit
Moderately
Quite a bit
Extremely

53. The idea that something is wrong with your mind. (Choose one)
Not at all
A little bit
Moderately
Quite a bit
Extremely

Part V: Now please think about your experiences with **substance control/drug enforcement.**

1. Do you feel any distress related to the criminality of marijuana in federal law?

Please Circle One:
Not at all
A little bit
Moderately
Quite a bit
Extremely

Please explain your choice:

2. Have you ever been subjected to:
__searches,
__surveillance,
__raids,
__confidential informant placement,
__arrest,
__trial,
__incarceration,
__child-removal,
__job loss,
__home eviction,
__asset forfeiture,
__financial aid suspension,
__biometabolite screening of excrement or hair,
__robbery of your medical marijuana,
__assault by law enforcement,
__assault/injury related to violent elements from the underground market in controlled substances
__other: Please specify:_____

3. Have you received threats about being subjected to these experiences or specifically feared enduring any of these:
__searches,
__surveillance,
__raids,
__confidential informant placement,
__arrest,
__trial,
__incarceration,
__child-removal,
__job loss,
__home eviction,
__asset forfeiture,
__financial aid suspension,
__biometabolite screening of excrement or hair,
__robbery of your medical marijuana,
__assault by law enforcement,
__assault/injury related to violent elements from the underground market in controlled substances
__other: Please specify:_____

4. How do you cope? What follows is a list of affirmations. Please specify the frequency you identify with these affirmations. Indicate your answer marking a

cross (X) on the square related to the option you most identify with. There are not good or bad answers. Thank you

	Never	Seldom	Sometimes	Very often	Always
1. I accept the situation as it is inevitable					
2. I wish for a miracle and pray to God for help					
3. I reject the idea of this situation being serious					
4. Sometimes I do not do what I have planned					
5. I evaluate circumstances to resolve what to do					
6. I make jokes and take it easy					
7. I try to get busy and to think about something else					
8. I search for information with people who know about the matter					
9. I discuss the problem with professionals					
10. I control my emotions all the time					
11. I talk with my family to share emotions					
12. I pretend there is no danger					
13. I face the situation directly					
14. I make certain changes in my environment					
15. I have established my own preventive plan and I follow it					
16. It is difficult for me to describe what I feel in this situation					
17. I have goals and I try to increase my efforts					
18. I stroll to get distracted					
19. I participate more in social prevention activities					
20. I reflect upon strategies to be used					
21. I do what others do					
22. I have a preventive plan and I follow it					

23. I try to change my daily habits depending on the problem					
24. I try not to think about the problem					
25. I try not to rush and to understand the steps to be followed					
26. I avoid feeling					

Part VI:
Think about your use of marijuana or hashish during the past 12 months as you answer these next questions.

1a. During the past 12 months, was there a month or more when you spent a lot of your time getting or using marijuana or hashish?
Yes
No

1b. Would you have answered this question differently if marijuana were treated like other herbal medicines?
Yes
No

2a. During the past 12 months, was there a month or more when you spent a lot of your time getting over the effects of the marijuana or hashish you used?
Yes
No

2b. Would you have answered this question differently if marijuana were treated like other herbal medicines?
Yes
No

3a. During the past 12 months, did you try to set limits on how often or how much marijuana or hashish you would use?
Yes
No

3b. Would you have answered this question differently if marijuana were treated like other herbal medicines?
Yes
No

4a. Were you able to keep to the limits you set, or did you often use marijuana or hashish more than you intended to?

Usually kept to the limits set
Often used more than intended

4b. Would you have answered this question differently if marijuana were treated like other herbal medicines?
Yes
No

5a. During the past 12 months, did you need to use more marijuana or hashish than you used to in order to get the effect you wanted?
Yes
No

5b. Would you have answered this question differently if marijuana were treated like other herbal medicines?
Yes
No

6a. During the past 12 months, did you notice that using the same amount of marijuana or hashish had less effect on you than it used to?
Yes
No

6b. Would you have answered this question differently if marijuana were treated like other herbal medicines?
Yes
No

7a. During the past 12 months, did you want to or try to cut down or stop using marijuana or hashish?
Yes
No

7b. Would you have answered this question differently if marijuana were treated like other herbal medicines?
Yes
No

8a. During the past 12 months, were you able to cut down or stop using marijuana or hashish every time you wanted to or tried to?
Yes
No

8b. Would you have answered this question differently if marijuana were treated like other herbal medicines?
Yes
No

9a. During the past 12 months, did you have any problems with your emotions, nerves, or mental health that were probably caused or made worse by your use of marijuana or hashish?
Yes
No

9b. Would you have answered this question differently if marijuana were treated like other herbal medicines?
Yes
No

10a. Did you continue to use marijuana or hashish even though you thought it was causing you to have problems with your emotions, nerves, or mental health?
Yes
No

10b. Would you have answered this question differently if marijuana were treated like other herbal medicines?
Yes
No

11a. During the past 12 months, did you have any physical health problems that were probably caused or made worse by your use of marijuana or hashish?
Yes
No

11b. Would you have answered this question differently if marijuana were treated like other herbal medicines?
Yes
No

12a. Did you continue to use marijuana or hashish even though you thought it was causing you to have physical problems?
Yes
No

12b. Would you have answered this question differently if marijuana were treated like other herbal medicines?
Yes

No

13a. This question is about important activities such as working, going to school, taking care of children, doing fun things such as hobbies and sports, and spending time with friends and family. During the past 12 months, did using marijuana or hashish cause you to give up or spend less time doing these types of important activities?
Yes
No

13b. Would you have answered this question differently if marijuana were treated like other herbal medicines?
Yes
No
Sometimes people who use marijuana or hashish have serious problems at home, work or school — such as:
• neglecting their children
• missing work or school
• doing a poor job at work or school
• losing a job or dropping out of school

14a. During the past 12 months, did using marijuana or hashish cause you to have serious problems like this either at home, work, or school?
Yes
No

14b. Would you have answered this question differently if marijuana were treated like other herbal medicines?
Yes
No

15a. During the past 12 months, did you regularly use marijuana or hashish and then do something where using marijuana or hashish might have put you in physical danger?
Yes
No

15b. Would you have answered this question differently if marijuana were treated like other herbal medicines?
Yes
No

16a. During the past 12 months, did using marijuana or hashish cause you to do things that repeatedly got you in trouble with the law?
Yes

No

16b. Would you have answered this question differently if marijuana were treated like other herbal medicines?
Yes
No

17a. During the past 12 months, did you have any problems with family or friends that were probably caused by your use of marijuana or hashish?
Yes
No

17b. Would you have answered this question differently if marijuana were treated like other herbal medicines?
Yes
No

18a. Did you continue to use marijuana or hashish even though you thought it caused problems with family or friends?
Yes
No

18b. Would you have answered this question differently if marijuana were treated like other herbal medicines?
Yes
No

19. Is there anything you would like to say about the prevention and control of Cannabis abuse and/or dependence?

Appearing in this questionnaire are the SF-36, CDC-HRQOL-16, BSI-53, and elements from
Reiman, A. (2006). Cannabis Care: Medical Cannabis facilities as health service providers. Dissertation. School of Social Welfare/Alcohol Research Group: University of California, Berkeley.

The López-Vázquez adaptation of the "Échelle Toulousaine de Coping" coping scale as published in López-Vázquez E, Marván ML. Validación de una escala de afrontamiento frente a riesgos extremos. Salud Publica Mex 2004;46:00-00.

National Survey on Drug Use and Health

Medical Marijuana Patient Take-Home Questionnaire

"Cannabinoid Medical Geography in Washington State: Germplasm Delivery in a Convenience Sample"

Researcher: Sunil Aggarwal, Medical Student, Doctoral Candidate, Department of Geography, Box 353550, University of Washington, Seattle, WA 98105. Tel: 206-375-3785, Email: sunila@u.washington.edu. Please remember that we cannot guarantee the confidentiality of any information sent by email.

Instructions: Please answer questions to the best of your knowledge. Please return this questionnaire by mail or drop it off at the clinic.

THESE QUESTIONS RELATE TO YOUR USE OF MEDICAL MARIJUANA IN GENERAL AND ARE NOT SPECIFIC TO ANY ONE BATCH OR STRAIN.

Part I.

1. Do you believe marijuana or alcohol has a negative impact on your mobile senses, while performing physical movements? (e.g. driving a car, physical sports, etc)
   ____Marijuana
   ____Alcohol
   ____Both

2. Have you ever stopped using Cannabis because of bothersome adverse effects?
   ___Yes
   ___No

3. What negative side effects, if any, do you experience with Cannabis and how do you manage these?

4. What is your preferred method of using Cannabis? Choose one or more. Please circle preferred method(s) within each option.

   _____Inhalation by smoking (joint, pipe, water pipe)
   _____Ingestion (baked goods, candies, pastries, sauce, tea, mari-pills [encapsulated Cannabis in oil], butter, oil, tincture [ethyl alcohol or liquor-based by the dropper], drink, potion or other edible).
   _____Inhalation by vaporization
   _____Rectal/vaginal suppository
   _____Topical (tincture-ethyl alcohol based suspensions, cream, ointment, lotion, paste, Parabath [paraffin bath], liniment - isopropyl [rubbing] alcohol-based or DMSO-based suspensions, poultice)
   _____Mouth spray

Now I would like to ask about the use of alcohol and/or other psychoactive substances as a means of self-medication. Self-medication refers to the personal decision to use a non-prescription substance, including alcohol, tobacco, and other substances, to address a personal problem, either emotional or physical.

5. Have you ever used alcohol to self-medicate as it is described above?
   ___Yes
   ___No

6. Have you ever used a non-prescription, legal drug besides alcohol such as an herbal supplement to self-medicate as it is described above?
   ___Yes
   ___No

7. Have you ever used a non-prescription psychoactive substance other than Cannabis to self-medicate as it is described above?
   ___Yes
   ___No

Now I would like to ask you about substituting Cannabis for other psychoactive substances. What this means is purposely choosing to use Cannabis INSTEAD of other substances….

8. Have you ever used Cannabis as a substitute for alcohol?
   ___Yes
   ___No

9. Have you ever used Cannabis as a substitute for other psychoactive substances?
   ___Yes…..Please specify which substance(s):_____
   ___No

10. Have you ever used Cannabis as a substitute for prescription drugs?
   ___Yes
   ___No

11. Why did you use Cannabis instead of other psychoactive substances? (check all that apply)
   ___Less adverse side-effects from Cannabis
   ___Less withdrawal symptoms with Cannabis
   ___The ability to obtain Cannabis vs. other psychoactive substances
   ___Social acceptance of Cannabis is greater than other psychoactive substances
   ___Better symptom management from Cannabis than from other substances
   ___Other: Please explain:_____

12. Did the use of Cannabis modify your use of prescription and/or over-the-counter (OTC) medicines?
    ____I was able to stop all my prescription and/or OTC medicines
    ____I was able to reduce my prescription and/or OTC medicines.
    ____I found that Cannabis and my prescription and/or OTC medicines work best together
    ____All prescription drugs are useless for my condition.

13. Does the use of Cannabis help you to tolerate other medication?
    ___Yes
    ___No
    If 'Yes', please explain.

14. How often do you use Cannabis?
    ___Once a month
    ___Two to three times a week
    ___Once a day
    ___Twice a day
    ___Three times a day
    ___Four times a day
    ___More than four times a day
    ___Less than once a month

15. If you are a daily user of flower buds, what is your average amount of Cannabis used per day? e.g (large joint = 1 gram, 1/8 oz = 3.5 grams)
    ___Less than 1 gram
    ___1 gram
    ___2 grams
    ___3 grams
    ___More than 3 grams a day
    ___I do not smoke or ingest every day so this question is irrelevant

16. Would you use it more if cost were not an issue?
    ___Yes
    ___No

17. How do you usually obtain your medical Cannabis? Check all that apply.
    ___Dispensary/Collective/COOP
    ___From a friend or the street
    ___Cultivation

18. Would you use it more if it was easier to obtain?
    ___Yes
    ___No

19. Compared to available prices?
    ___Price is cheaper on the street
    ___Price is cheaper at dispensaries/collective/COOPs
    ___Street and dispensaries/collective/COOPs are no different
    ___Price is of no consideration at all for me
    ___I do not have access to a collective/COOPs

20. Do you grow your own medical marijuana?
    __Yes
    __No
    If 'No', please skip to Question 22.

21. How did you obtain your seeds or female clones?
    ___Dispensary/Collective/COOP
    ___Internet or mail
    ___Friend or street

22. Has the amount of Cannabis needed to control your symptoms changed over time?
    ___Required more
    ___Stayed about the same
    ___Required less

23. Have you ever used synthetic THC (Marinol [Dronabinol]) available by prescription as a class III drug?
    ___Yes
    ___No
    If 'No', please skip to Question 25.

24. How does your Marinol experience compare to natural Cannabis?
    ___Marinol is better
    ___Marinol is the same
    ___Marinol wasn't effective

25. Do you have a pending Cannabis case?
    ___Yes
    ___No

26. Are you on probation or parole?
    ___Yes
    ___No

27. Have you ever discontinued Cannabis only to find your condition worsen?
___Yes
___No

28. If your medical condition dissipates or is substantially reduced would you keep on using Cannabis?
___Yes
___No

28. Do you have any spiritual or religious views regarding Cannabis?
___Yes If 'Yes', please explain.
___No

29. Has medical marijuana use helped you to extinguish any aversive (painful) memories?
___Yes If 'Yes', please explain.
___No

30. Has medical marijuana use helped you to extinguish any irrational fears?
___Yes If 'Yes', please explain.
___No

.

31. Is medical marijuana able to synergize (or improve the effectiveness) of other medications that you take?

___Yes If 'Yes', please explain.

___No

32. Do you use medical marijuana as preventive medicine?

___Yes If 'Yes', please explain.

___No

33. How have you incorporated medical marijuana into your life? Do you have a relationship with this botanical medicine?

34. What are your overall thoughts about medicines? Please include relevant social, cultural, and political aspects.

35. How likely are you to recommend medical marijuana to a friend who has the same disease as you?

36. Do you have any major worries or concerns regarding your use of medical marijuana?

36. Is there anything else that you would like to share with the researcher?

PLEASE COMPLETE THE REST OF THIS QUESTIONNAIRE ONLY AFTER YOU HAVE FINISHED CONSUMING THE STUDY MEDICAL MARIJUANA STRAIN BATCH THAT YOU RECEIVED ON THE SAME DAY YOU RECEIVED THIS SURVEY. PLEASE COMPLETE IT AS SOON AS YOU FINISH CONSUMING THE BATCH.

Part II.: This part of this questionnaire deals with your level of satisfaction with the study medical marijuana strain batch that you received on _____from the clinic.

1. What amount did you receive? _____

2. Please indicate the cost you paid (or donation you gave) to the clinic for the study medical marijuana strain batch. If you received more than one variety, please only indicate the cost (or donation you gave) for the variety that is under study.

   _____

3. How long did it take you to completely use up the study medical marijuana strain batch? If you have not yet completed it, how much of it have you used by this point?

4. Would you say that medical marijuana treatment is a major component of your health/disease management?
   ___Yes
   ___No

5. How far did you have to travel to make it to the clinic to pick up your medical marijuana? Please give your best estimate. It may be helpful to enter your home address and the clinic address into http://maps.google.com on the internet where you can get a good estimate of the distance. If you do not have access to the internet, please contact the researcher, who can put you in touch with someone who can help you. PLEASE DO NOT WRITE DOWN YOUR ADDRESS HERE.

   Distance: _____

   Cardinal Direction that you have to travel to get from home to clinic? (N, S, E, W, NW, SW, etc.): _____

   Your home zip-code (first three digits only): _____

6. How much time, approximately, did it take you to travel to the clinic? _____

7. Did your transportation to the clinic require special accommodations (driver, special vehicle, public transit, etc.)?

8. In general, has medical marijuana use allowed you to reduce or discontinue other medications?

   ___Yes
   ___No
   If Yes, please explain with details. If No, please skip to question 10.

9. During the period you used study medical marijuana strain batch obtained from the clinic, how much of the other medications (that you reduced or discontinued) **would you have used** had you not used the medical marijuana, and approximately how much would they have cost?

10. Did using the study medical marijuana strain batch marijuana help to maintain your functional status (activities of daily living such as ambulating, toileting, eating, etc.)?
    ___Yes
    ___No
    If Yes, please explain with details.

11. Please describe what effect, if any, the use of the study medical marijuana strain batch has had on your quality of life.

12. Please describe any negative side effects you experienced with the study medical marijuana strain batch? How did you deal with these?

13. Please describe any positive side effects you experienced with the study medical marijuana strain batch?

14. Please report on the frequency and amounts of other strains of medical marijuana that you used during the same period of time that you used the study medical marijuana strain batch? If you know the name(s) of the other strain(s) you used, please include that as well.

15. Please rate the study medical marijuana strain batch on a scale of 1 to 10 for each symptom recorded on your symptom relief dosing-diary. How effective was the study strain of medical marijuana in relieving each symptom, (A) COMPARED TO OTHER MEDICAL MARIJUANA YOU HAVE USED, (B) COMPARED TO OTHER NON-MARIJUANA MEDICATION YOU HAVE USED. For column (A), please give a number between 1 and 10 where 1 = least effective relative **to other medical marijuana**; 10 = most effective relative **to other medical marijuana**. For column (B), please give a number between 1 and 10 where 1 = least effective relative **to other non-marijuana medicine**; 10 = most effective relative **to other non-marijuana medicine**

Symptom Name	(A) Rating	(B) Rating
Symptom 1_____	_____	_____
Symptom 2_____	_____	_____
Symptom 3_____	_____	_____
Symptom 4_____	_____	_____

16. For each symptom recorded on your symptom relief dosing diary, overall what percentage of the time (how often) was the study medical marijuana strain batch able to provide any degree of treatment for your symptoms?

Symptom Name	Percentage of the time treatment was provided
Symptom 1_____	_____
Symptom 2_____	_____
Symptom 3_____	_____
Symptom 4_____	_____

17. Overall, how satisfied were you with the study medical marijuana strain batch, on a scale of 1 to 10?

_____ Relative to other medical marijuana you have used

_____ Relative to other medication you have used

18. Is there anything else you would like to share with the researcher regarding the study medical marijuana strain batch?

Part III: Please mark the best answer.

1. In general, would you say your health is:
☐ Excellent
☐ Very good
☐ Good
☐ Fair
☐ Poor

2. Compared to one year ago, how would you rate your health in general now?
☐ Much better now than a year ago
☐ Somewhat better now than a year ago
☐ About the same as one year ago
☐ Somewhat worse now than one year ago
☐ Much worse now than one year ago

3. The following items are about activities you might do during a typical day. Does your health now limit you in these activities? If so, how much?

a. Vigorous activities, such as running, lifting heavy objects, participating in strenuous sports.
☐ Yes, limited a lot.
☐ Yes, limited a little.
☐ No, not limited at all.

b. Moderate activities, such as moving a table, pushing a vacuum cleaner, bowling, or playing golf?
☐ Yes, limited a lot.
☐ Yes, limited a little.
☐ No, not limited at all.

c. Lifting or carrying groceries.
☐ Yes, limited a lot.
☐ Yes, limited a little.
☐ No, not limited at all.

d. Climbing several flights of stairs.
☐ Yes, limited a lot.
☐ Yes, limited a little.
☐ No, not limited at all.

e. Climbing one flight of stairs.
☐ Yes, limited a lot.
☐ Yes, limited a little.
☐ No, not limited at all.

f. Bending, kneeling or stooping.
☐ Yes, limited a lot.
☐ Yes, limited a little.
☐ No, not limited at all.

g. Walking more than one mile.
☐ Yes, limited a lot.
☐ Yes, limited a little.
☐ No, not limited at all.

h. Walking several blocks.
☐ Yes, limited a lot.
☐ Yes, limited a little.
☐ No, not limited at all.

i. Walking one block.
☐ Yes, limited a lot.
☐ Yes, limited a little.
☐ No, not limited at all.

j. Bathing or dressing yourself.
☐ Yes, limited a lot.
☐ Yes, limited a little.

☐ No, not limited at all.

4. During the past 4 weeks, have you had any of the following problems with your work or other regular daily activities as a result of your physical health?

a. Cut down the amount of time you spent on work or other activities?
☐ Yes ☐ No

b. Accomplished less than you would like?
☐ Yes ☐ No

c. Were limited in the kind of work or other activities
☐ Yes ☐ No

d. Had difficulty performing the work or other activities (for example, it took extra time)
☐ Yes ☐ No

5. During the past 4 weeks, have you had any of the following problems with your work or other regular daily activities as a result of any emotional problems (such as feeling depressed or anxious)?

a. Cut down the amount of time you spent on work or other activities?
☐ Yes ☐ No

b. Accomplished less than you would like
☐ Yes ☐ No

c. Didn't do work or other activities as carefully as usual
☐ Yes ☐ No

6. During the past 4 weeks, to what extent has your physical health or emotional problems interfered with your normal social activities with family, friends, neighbors, or groups?
☐ Not at all
☐Slightly
☐ Moderately
☐ Quite a bit
☐Extremely

7. How much bodily pain have you had during the past 4 weeks?
☐ Not at all
☐ Slightly
☐Moderately

☐ Quite a bit
☐ Extremely

8. During the past 4 weeks, how much did pain interfere with your normal work (including both work outside the home and housework)?
☐ Not at all
☐ Slightly
☐ Moderately
☐ Quite a bit
☐ Extremely

9. These questions are about how you feel and how things have been with you during the past 4 weeks. For each question, please give the one answer that comes closest to the way you have been feeling. How much of the time during the past 4 weeks.

a. did you feel full of pep?
☐ All of the time
☐ Most of the time
☐ A good bit of the time
☐ Some of the time
☐ A little of the time
☐ None of the time

b. have you been a very nervous person?
☐ All of the time
☐ Most of the time
☐ A good bit of the time
☐ Some of the time
☐ A little of the time
☐ None of the time

c. have you felt so down in the dumps nothing could cheer you up?
☐ All of the time
☐ Most of the time
☐ A good bit of the time
☐ Some of the time
☐ A little of the time
☐ None of the time

d. have you felt calm and peaceful?
☐ All of the time
☐ Most of the time
☐ A good bit of the time
☐ Some of the time

☐ A little of the time
☐ None of the time

e. did you have a lot of energy?
☐ All of the time
☐ Most of the time
☐ A good bit of the time
☐ Some of the time
☐ A little of the time
☐ None of the time

f. have you felt downhearted and blue?
☐ All of the time
☐ Most of the time
☐ A good bit of the time
☐ Some of the time
☐ A little of the time
☐ None of the time

g. did you feel worn out?
☐ All of the time
☐ Most of the time
☐ A good bit of the time
☐ Some of the time
☐ A little of the time
☐ None of the time

h. have you been a happy person?
☐ All of the time
☐ Most of the time
☐ A good bit of the time
☐ Some of the time
☐ A little of the time
☐ None of the time

i. did you feel tired?
☐ All of the time
☐ Most of the time
☐ A good bit of the time
☐ Some of the time
☐ A little of the time
☐ None of the time

10. During the past 4 weeks, how much of the time has your physical health or emotional problems interfered with your social activities (like visiting friends, relatives, etc.)?

☐ All of the time
☐ Most of the time
☐ Some of the time
☐ A little of the time
☐ None of the time

11. How TRUE or FALSE is each of the following statements for you?

a. I seem to get sick a little easier than other people

☐ Definitely true
☐ Mostly true
☐ Don't know
☐ Mostly false
☐ Definitely false

b. I am as healthy as anybody I know

☐ Definitely true
☐ Mostly true
☐ Don't know
☐ Mostly false
☐ Definitely false

c. I expect my health to get worse

☐ Definitely true
☐ Mostly true
☐ Don't know
☐ Mostly false
☐ Definitely false

d. My health is excellent

☐ Definitely true
☐ Mostly true
☐ Don't know
☐ Mostly false
☐ Definitely false

Part III: Please circle and/or write-in the best answer.

1. Would you say that in general your health is:
   a. Excellent
   b. Very good

c. Good
d. Fair
e. Poor

2. Now thinking about your physical health, which includes physical illness and injury, for how many days during the past 30 days was your physical health not good?
a. Number of Days _ _
b. None

3. Now thinking about your mental health, which includes stress, depression, and problems with emotions, for how many days during the past 30 days was your mental health not good?
a. Number of Days _ _
b. None If both Q2 AND Q3 ="None", skip next question

4. During the past 30 days, for about how many days did poor physical or mental health keep you from doing your usual activities, such as self-care, work, or recreation?
a. Number of Days _ _
b. None

5. Are you LIMITED in any way in any activities because of any impairment or health problem?
a. Yes
b. No Go to Q1 of Healthy Days Symptoms Module

6. What is the MAJOR impairment or health problem that limits your activities?
_ _

7. For HOW LONG have your activities been limited because of your major impairment
or health problem?
Number: _ _ Unit of time: _ _

8. Because of any impairment or health problem, do you need the help of other persons with your PERSONAL CARE needs, such as eating, bathing, dressing, or getting around the house?
a. Yes
b. No

9. Because of any impairment or health problem, do you need the help of other persons in handling your ROUTINE needs, such as everyday household chores, doing necessary business, shopping, or getting around for other purposes?
a. Yes

b. No

Healthy Days Symptoms Module

10. During the past 30 days, for about how many days did PAIN make it hard for you to do your usual activities, such as self-care, work, or recreation?
    a. Number of Days _ _
    b. None

11. During the past 30 days, for about how many days have you felt SAD, BLUE, or DEPRESSED?
    a. Number of Days _ _
    b. None

12. During the past 30 days, for about how many days have you felt WORRIED, TENSE, or ANXIOUS?
    a. Number of Days _ _
    b. None

13. During the past 30 days, for about how many days have you felt you did NOT get ENOUGH REST or SLEEP?
    a. Number of Days _ _
    b. None

14. During the past 30 days, for about how many days have you felt VERY HEALTHY AND FULL OF ENERGY?
    a. Number of Days _ _
    b. None

15. How many of the days that you listed above that you felt VERY HEALTHY AND FULL OF ENERGY were directly attributable to your use of medical marijuana?
    a. Number of Days _ _
    b. None

16. Approximately what percentage of the medical marijuana you used that was directly attributable to days that you felt VERY HEALTHY AND FULL OF ENERGY during the past 30 days was the study medical marijuana strain batch?
    a. Approximate Percentage _ _
    b. None

APPENDIX C: Consent Form

UNIVERSITY OF WASHINGTON
INFORMATION STATEMENT
"Cannabinoid Medical Geography in Washington State: Germplasm Delivery in a Convenience Sample"

Researchers' statement

We are asking you to be in a research study. The purpose of this consent form is to give you the information you will need to help you decide whether to be in the study or not. Please read the form carefully. You may ask questions about the purpose of the research, what we would ask you to do, the possible risks and benefits, your rights as a volunteer, and anything else about the research or this form that is not clear. When we have answered all your questions, you can decide if you want to be in the study or not. This process is called "informed consent." We will give you a copy of this form for your records. You might wish to seek legal counsel about the potential risks of being in this study. The researcher and the University of Washington cannot provide this legal advice.

PURPOSE OF THE STUDY

We would like to better understand how a defined population of medical marijuana patients in Washington State responds to the treatment.

STUDY PROCEDURES

If you are the clinic director, we would like to conduct an interview with you regarding botanical medicine provision. If you are a patient receiving botanical medicine at this clinic, we would like you to fill out two questionnaires and a symptom-relief dosing diary. The first questionnaire we would like to administer on-site, and the second questionnaire and dosing diary we would like you to complete at home. The purpose of the questionnaires and dosing diary is to gather further information about your health and medical history with regards to medical marijuana. Filling out both questionnaires should not take longer than one hour. The dosing diary should be filled out over the course of your dosing regimen with the medical marijuana you received today, and the second portion of the take-home questionnaire should be filled out upon completely using up the medical marijuana you received today. Once you have filled out the study materials, please return them to the researcher by mail or drop-off. All information will remain confidential. The most personal or sensitive questions asked will relate to your use of medical marijuana. You may refuse to answer any question or item in any interview or form.

RISKS, STRESS, OR DISCOMFORT

Such risks might include discomfort or psychological distress when discussing health and social history with researchers. We have taken steps to protect to any information you provide from breach of confidentiality.

BENEFITS OF THE STUDY

You will not directly benefit if you take part in this study. We hope that the information we learn from the study will benefit people with chronic pain in the future.

OTHER INFORMATION

All of the information you provide will be anonymous and may be used in future studies. However, if we learn that you intend to harm yourself or others, we must report that to the authorities.

Government or university staff sometimes review studies such as this one to make sure they are being done safely and legally. If a review of this study takes place, your records may be examined. The reviewers will protect your privacy. The study records will not be used to put you at legal risk of harm.

You may refuse to participate or may withdraw from the study at any time without penalty or loss of benefits to which you are otherwise entitled.

We have obtained a Certificate of Confidentiality from the Federal Government.

This Certificate is not an endorsement from the Federal Government for our research. Rather, a Certificate of Confidentiality protects your privacy by allowing us to refuse to release your name or other identifying information to anyone outside the research project and institution, even by a court subpoena, except as described below. In the unlikely event of a federal audit, we may have to reveal your name but only to those authorized representatives. The Certificate of Confidentiality does not prevent you or a member of your family from voluntarily releasing information about yourself or your involvement in this research. If an insurer, employer, or other person obtains your written consent to receive research information, then the researchers may not use the Certificate to withhold that information.

You should be informed that while Washington State law contains narrow exceptions allowing patients to possess and use marijuana for medical uses, federal law does not contain any exceptions. Because of this, you might wish to seek legal counsel about the potential risks of being in this study. The researcher and the University of Washington cannot provide this legal advice. If you have questions later about the research, you can ask one of the researchers listed above. If you have questions about your rights as a research subject, you can call the Human Subjects Division at (206) 543-0098. You will receive a copy of this information statement, if you so wish.

APPENDIX D: Available Health Statistics from State Agencies Administering Cannabinoid Botanical Medical Access Programs: OR, NV, CO, RI

Oregon: As of 7/1/08

Nevada: As of 4/30/07

Colorado: As of 1/31/08

Rhode Island: As of 12/29/06

Oregon Medical Marijuana Program

Data from: Public Health Division, Oregon Department of Human Services
Current as of: July 1, 2008
Available at: http://oregon.gov/DHS/ph/ommp/data.shtml

Statistics

Oregon Medical Marijuana Program data as of July 1, 2008.
These data will be updated and posted on this website every quarter. Next update: October 1, 2008.

Please note, in a few instances, to protect the confidentiality of patients, the response given is "< 50." This practice is consistent with DHS policy and HIPAA requirements.

	OMMP Statistics as of 7/1/08
Number of patients currently holding cards	19,646
Number of caregivers holding cards for these patients	9,672
Number of Oregon-licensed physicians who have signed applications (MDs and DOs only)	2,970
Number of *new* applications received July 1, 2007 through June 30, 2008	9,573
Number of *renewal* applications received July 1, 2007 through June 30, 2008	9,973
Number of pending applications on July 1, 2008*	1,229
*Pending applications include all new and renewal applications waiting for initial staff review after being received, "incomplete" applications, and all application files waiting for receipt of a signed and dated attending physician "verification" letter.	
Number of applications denied July 1, 2007 through June 30, 2008	736
Conditions* **A patient may have more than one diagnosed qualifying medical condition.*	
Agitation related to Alzheimer's disease	<50
Cachexia	493
Cancer	584
Glaucoma	316
HIV+/AIDS	384
Nausea	3,114
Severe Pain	17,284
Seizures, including but not limited to epilepsy	579

Persistent muscle spasms, including but not limited to those caused by multiple sclerosis	4,528
Number of patient cardholders per County*	
Baker	71
Benton	232
Clackamas	1,481
Clatsop	203
Columbia	319
Coos	720
Crook	85
Curry	308
Deschutes	818
Douglas	1,239
Hood River	140
Jackson	1,801
Jefferson	66
Josephine	1,291
Klamath	320
Lake	59
Lane	2,275
Lincoln	452
Linn	500
Malheur	55
Marion	870
Multnomah	3,552
Polk	247
Tillamook	264
Umatilla	154
Union	117
Wasco	185
Washington	1,311
Yamhill	361
Combined total patient cardholder count for: Gilliam, Grant, Harney, Morrow, Sherman, Wallowa, and Wheeler Counties.	

**Note:* To protect the confidentiality of patients, the responses for these counties have been combined. This practice is consistent with DHS policy and HIPAA requirements.

Nevada Medical Marijuana Program

Data from: Nevada Department of Agriculture
Current as of: April 30, 2007
Note: Program Administration Shifted to Nevada State Health Division as of July 1, 2008, and is no longer available at http://agri.nv.gov/ADMIN_MedMarijuana.htm

Reported Condition	Number of Patients Reporting Condition	Percent of Patients Reporting Condition**
Cachexia	48	4%
Cancer	46	4%
Glaucoma	29	3%
HIV/AIDS	27	2%
Muscle Spasms	386	30%
Seizures	73	6%
Severe Pain	1043	81%
Severe Nausea	280	22%

**Does not add to 100% as some patients report using medical marijuana for more than one debilitating medical condition.

Colorado Medical Marijuana Program

Data from: Colorado Department of Public Health and Environment
Current as of: January 31, 2008
Available at: http://www.cdphe.state.co.us/hs/Medicalmarijuana/marijuanaupdate.html

Medical Marijuana Registry Program Update

(as of January 31, 2008)

In the November 2000 general election, Coloradoans passed Amendment 20, and the Colorado Department of Public Health and Environment (CDPHE) was tasked with implementing and administering the Medical Marijuana Registry program. In March of 2001, the State of Colorado Board of Health approved the Rules and Regulations pertaining to the administration of the program, and on June 1st, 2001, the Registry began accepting and processing applications for Registry Identification cards.

Statistics of the registry include:

- 2810 new patient applications have been received to date since the registry began operating in June 2001. Seventeen (17) applications have been denied, 8 cards have been revoked, 85 patients have died, and 649 cards have expired, bringing the total number of patients who currently possess valid Registry ID cards to 2051. The renewal rate is 57%.
- Seventy-three percent of approved applicants are male.
- The average age is 43, and patients range in age from 18-92 years old.
- Fifty-four counties (84% of counties) in Colorado have registered applicants. Forty-three percent of patients reside in the Denver-metro and Boulder area, with the remainder of patients found in counties throughout Colorado.
- Patients on the Registry represent all the debilitating conditions covered under Amendment 20. Severe pain accounts for 85% of all reported conditions; with muscle spasms the second-most reported condition at 24%.
- Sixty-one percent of patients have designated a primary caregiver (someone who has significant responsibility for managing the patient's care).

Please see the tables below for a complete listing of all statistical information.

As of June 14, 2004 caregivers are no longer issued cards.

As of January 25, 2008 only a portion of the patient's social security number appears on their registration card.

The Amendment requires that an application be approved or denied within 35 days of receipt by CDPHE. Currently, the Registry is issuing ID cards within ten to fifteen days of receipt of a complete application.

In addition to administering the Registry, CDPHE has been charged with accepting and reviewing petitions to add conditions to the current list of debilitating medical conditions/symptoms. To date, four petitions have been received, one for Parkinson's disease, one for Asthma, one for Anxiety, and another for Bi-Polar Disorder. All petitions were subsequently denied due to lack of scientific evidence that treatment with marijuana might have a beneficial effect.

There have been two marijuana-related convictions of patients on the Registry, and no physicians have experienced federal reprisals. However, reluctance to participate due to the inconsistencies between state and federal marijuana laws has been expressed by doctors and patients alike.

Another barrier to participation on the Registry may be the cost. No general funds have been designated for this program, and the Amendment allows CDPHE to collect fees to cover the administrative costs of administering the program. Currently the fee is $90, and is evaluated annually by CDPHE. The fee was lowered from $110 on June 1, 2007.

There are numerous questions that have arisen surrounding interpretation of statutory language. The law does not clearly state where marijuana plants may be grown or if two or more patients and/or caregivers may share one growing space. Statutory language also places certain burdens upon local and state law enforcement officers, such as the requirement of keeping alive plants that are confiscated until a resolution is reached (i.e. a decision not to prosecute, the dismissal of charges, or an acquittal).

Table I: County Information

County	Number of Patients	Percent of Patients
Adams	94	4%
Alamosa	3	<1%
Arapahoe	118	5%
Archuleta	10	<1%
Baca	*	*
Boulder	159	7%
Broomfield	16	<1%
Chaffee	16	<1%

Cheyenne	*	*
Clear Creek	8	<1%
Crowley	*	*
Custer	5	<1%
Delta	35	1%
Denver	220	10%
Dolores	*	*
Douglas	45	2%
Eagle	22	1%
El Paso	253	12%
Elbert	9	<1%
Fremont	28	1%
Garfield	27	1%
Gilpin	8	<1%
Grand	33	1%
Gunnison	19	<1%
Hinsdale	*	*
Huerfano	22	1%
Jefferson	250	12%
Kit Carson	*	*
La Plata	53	2%
Lake	21	1%
Larimer	192	9%
Las Animas	10	<1%
Lincoln	*	*
Logan	3	<1%
Mesa	74	3%
Moffat	*	*
Montezuma	9	<1%
Montrose	25	1%
Morgan	5	<1%
Otero	4	<1%
Ouray	*	*

Park	28	1%
Phillips	3	<1%
Pitkin	3	<1%
Pueblo	45	2%
Rio Blanco	*	*
Rio Grande	*	*
Routt	4	<1%
Saguache	6	<1%
San Juan	*	*
San Miguel	7	<1%
Summit	30	1%
Teller	39	1%
Weld	73	3%

* Indicates fewer than three patients in each category

Table II: Conditions

Reported Condition	Number of Patients Reporting Condition	Percent of Patients Reporting Condition**
Cachexia	74	3%
Cancer	71	3%
Glaucoma	41	1%
HIV/AIDS	58	2%
Muscle Spasms	506	24%
Seizures	87	4%
Severe Pain	1747	85%
Severe Nausea	444	21%

**Does not add to 100% as some patients report using medical marijuana for more than one debilitating medical condition.

Table III: User Characteristics

Sex	Percent on Registry	Average Age**
Male	73%	43

Female	27%	43

** The overall average age of all patients is 43 years old.

Rhode Island Medical Marijuana Program

Data from: Rhode Island Department of Health
Current as of: December 29, 2006
Available at: http://www.health.ri.gov/hsr/mmp/MMP_2006_Annual_Report.pdf

DATE: December 29, 2006
TO: Representative Joseph M. McNamara, Chairperson
House Committee on Health, Education and Welfare
Senator Michael J. McCaffrey, Chairperson
Senate Committee on the Judiciary
FROM: Charles Alexandre
Chief, Health Professions Regulation
SUBJECT: Rhode Island Medical Marijuana Program

The Edward O. Hawkins and Thomas C. Slater Medical Marijuana Act was enacted on January 3, 2006. This report is submitted pursuant to section 21-28.6-6(k) of the Act.

The Department of Health implemented the Medical Marijuana Program on April 3, 2006. The first registration cards were issued to qualified patients and their designated caregivers on or about May 1, 2006. As of December 29, 2006 one hundred ninety two (192) registration cards have been issued to patients with qualifying conditions. An additional one hundred seventy three (173) registration cards have been issued to designated caregivers. To date the Department has revoked one (1) patient registration upon this individual's arrest and arraignment on charges of contributing to the delinquency of a minor, narcotics and weapons charges.

Pursuant to the Act, registration fees were to cover the expenses of the program. The Department estimated a startup budget of $111,600 for personnel and the costs of necessary equipment and supplies. A registration fee of $75 was implemented assuming a best-guess estimate of 1500 registrants in the first year. Community input demonstrated a need for a reduced fee for individuals on medical assistance. The Department charges a registration fee for qualified patients of $75 at the time of application. Patients who submit satisfactory evidence to the Department of being a recipient of Medicaid, Supplemental Security Income (SSI) or Social Security Disability Insurance (SSDI) pay a $10 registration fee. Pursuant to provisions of the Act there is no fee for the registration of caregivers. Actual direct personnel and equipment costs for the program total $21,361. To date the Department has collected a total of $8515 in registration fees. It would be

unrealistic to charge patient and/or caregivers at a rate that would cover the program expenses.

		Active	Pending	Revoked
Minor Patient	Non-Medicaid/SSI	1	0	0
	Total	1	0	0
Adult Patient	Medicaid/SSI	94	8	1
	Non-Medicaid/SSI	98	14	0
	Total	192	22	1
Caregiver		173	2	0

Section 21-28.6-6(d) allows a patient to designate two (2) caregivers to assist with the patient's medical use of marijuana. The caregiver may not have a felony drug conviction. To date the Department has denied 10 caregiver registrations due to felony drug convictions. Section 21-28.6-3(6) allows a caregiver to assist a maximum of five patients.

ACTIVE MMP PATIENTS	
Patients with 0 caregivers	64
Patients with 1 caregiver	77
Patients with 2 caregivers	43
ACTIVE CAREGIVERS	
Caregivers with 1 patient	158
Caregiver with 2 patients	5

One hundred thirteen (119) Rhode Island licensed physicians have certified patients for the program. 96.6% of certifying physicians have referred 4 or fewer patients to the program. Four (4) physicians have referred between 8 and 15 patients each. These physicians are known by the Department to treat patients that meet the criteria for the

Program. A breakdown of qualifying diagnosis follows. Note that some patients may have more than one diagnosis.

Diagnosis	Count	Percent
Cancer or Treatment	29	11.55%
Glaucoma or Treatment	6	2.39%
Positive Status for HIV or Treatment	28	11.16%
AIDS or Treatment	14	5.58%
Hepatitis C or Treatment	31	12.35%
Chronic or Debilitating Disease or Condition	143	56.97%
Total	209	

“Chronic or debilitating disease or conditions” include cachexia or “wasting” syndrome, severe, debilitating, chronic pain, severe nausea, seizures, including, but not limited to, those characteristic of epilepsy, severe persistent muscle spasms, including, but not limited to, those characteristic of multiple sclerosis or Crohn’s disease, or agitation of Alzheimer’s disease. The Department has not been petitioned to add any other debilitating medical condition to the program.

Since the program’s implementation the Department has had one request for information with respect to the use of marijuana by a nursing home resident. Specifically the facility requested information regarding provisions to obtain marijuana for the resident’s use. The statute does not address the use of marijuana in inpatient facilities. These facilities should be able to accommodate the patient and or resident who is using marijuana under the provisions of this act and be protected from state prosecution.

Pursuant to section 21-28.6-6(k) of the Act the Department is unaware of any specific cost to law enforcement agencies or any litigation regarding the implementation of the Act. One registered patient license was revoked upon notification from Rhode Island State Police that the individual was arrested and charged with nineteen (19) counts of delinquency of a minor, three (3) counts of possession of narcotics with intent to deliver, and two counts of possession of firearms/armor piercing bullets. Seventy-two (72) marijuana plants were seized from his property. The Department is unaware of any prosecutions against physicians for violations of the Act. The United States Food and Drug Administration has not altered its position regarding the use of marijuana for medical purposes; nor has it approved alternative delivery systems for marijuana.

There has been minimal community response to the implementation of the medical marijuana program. One registered patient did report that he was assaulted when he attempted to purchase marijuana from a dealer. The most frequent request to the Department is for information regarding the purchase of marijuana. There continues to be confusion regarding the availability of marijuana to registered patients and caregivers.

Additional issues for consideration include the addition of a registration fee for caregivers, the amount of marijuana allowed to be in the possession of caregivers at any one time, the personal information contained on registration cards, and extending the registration period from one to two years.

Additional information or questions about the Medical Marijuana Program should be directed to Charles Alexandre, Chief of Health Professions Regulations at (401) 222-2828 or via email to Charles.Alexandre@health.ri.gov.

CURRICULUM VITAE

SUNIL KUMAR AGGARWAL

------- FORMAL EDUCATION -------

- University of Washington School of Medicine (UWSOM), Third Year Medical Student, entering class 2002, MD/PhD program, Medical Scientist Training Program.
- University of Washington Department of Geography, PhD in Geography, specialization in Medical Geography, Fall 2004-Summer 2008..
- University of Edinburgh, Scotland, Fall 2000, semester study abroad, GPA 3.70.
- University of California, Berkeley, 1997-2001, BS in Chemistry with high honors and BA in Philosophy with distinction; minor: Religious Studies; cumulative GPA 3.75.
- Oklahoma School of Science and Mathematics, Oklahoma City, OK, 1995-97, GPA 4.00.
- Muskogee High School, Muskogee, OK, 1993-1995, GPA 4.00.

------- SCIENTIFIC WORK EXPERIENCE -------

- Conducted medical geographic dissertation field research, retrospective and prospective studies: the medical geography of cannabinoid botanicals in Washington State: access, delivery, and distress. Approvals secured from Doctoral Supervisory Committee, UW Human Subjects Division, and Certificates of Confidentiality issued by the NIH NCCAM (National Center for Complementary and Alternative Medicine), 2007-8.
- Malaria drug-resistance research: Using microsatellite markers to geographically track drug-resistant *dhfr* alleles in P. Falciparum, Research Rotation, under Dr. Carol Sibley, University of Washington Genome Sciences Department, Summer 2003.
- Medical geography, Research Rotation, under Dr. Jonathan Mayer, University of Washington Geography Department, Summer 2002.
- Antibiotics discovery research project: elicitation of antibiotically-active secondary metabolites from co-cultured marine bacteria, University of Hawai'i, Manoa, MarBEC/NSF Research Fellowship, under Dr. Thomas Hemscheidt, Honolulu, HI, Summer 2001.
- Medicinal chemistry internship: hypercholesterolemia pharmaceuticals development, Tularik, Inc., under Dr. Sharon McKendry, San Francisco, CA, May-September 2000.
- Polymer chemistry and photolithography research project: synthesis and evaluation of novel monomers and polymers for 193nm lithography, IBM Almaden Research Labs, NSF/IBM Research Fellowship, under Dr. Richard DiPietro, San Jose, CA, Summer 1999.

- Bioorganic chemistry research project: synthesis of an unnatural amino acid, UC Berkeley, under Dr. Peter Schultz, Berkeley, CA, Summer 1998.
- Bioinformatics research project: evolutionary history of phycobiliproteins based on sequential alignment, UC Berkeley, under Dr. Alexander Glazer, Berkeley, CA, Fall 1997.
- Organic chemistry research project: retention time prediction in gas chromatography, Baylor University, High School Science Research Fellowship, under Dr. Charles Garner, Waco, TX, Summer 1996.

------- CLINICAL EXPERIENCE -------

- Helped Conduct Prisoner-Extraction for Chronic Pain Patient, Seattle, WA, September 2005.
- Completed Betty Ford Center Summer Institute for Medical Students Inpatient Program, totaling 42 hours, Rancho Mirage, CA, Summer 2005.
- Completed Family Medicine Clerkship at the Country Doctor Community Clinic, Seattle, WA, Summer 2004.
- Completed 30 hours work experience in Swedish Providence Emergency Department, Seattle, WA, Summer 2004.
- Certified, United States Medical Licensing Exam (USMLE) Step 1, 2004.
- Completed preceptorship in family medicine with Dr. Peter Grote, Montlake Professional Building, emphasis on integrative medicine, Seattle, WA, Spring 2003.
- Completed Anatomy and Autopsy elective, UWSOM, Spring 2003.
- Completed The Healer's Art elective, UWSOM, Winter 2003.
- Completed Introduction to Mind/Body Medicine elective, UWSOM, Autumn 2004.
- Completed Tropical Medicine elective and Introduction to Emergency Medicine elective, UWSOM, Spring 2004.
- Proficient in full physical exam and complete medical database.
- Volunteer first aid medic for Seattle outdoor public events: First Aid/CPR Certification, September 2002.
- Volunteer Clinical Work at the Community Health Advancement Program Dermatology Clinic for the Homeless at Seattle's Downtown Emergency Service Center, 2002.
- Additional Clinical Mentoring with Dr. Greg Carter (Physical and Rehabilitation Medicine), Dr. Jonathan Mayer and Dr. Wes van Voorhis (Infectious Disease, Travel Medicine, Family Medicine), Dr. Vijay Aggarwal (Nuclear Medicine), Dr. Tod Mikuriya and Dr. Frank Lucido (Medical Cannabis Consultation)

------- PUBLICATIONS -------

- Aggarwal SK, Kyashna-Tocha M, Carter GT. Dosing Medical Marijuana: Rational Guidelines on Trial in Washington State. *Medscape General Medicine*. 2007;9(3):52. Epub 2007 Sept 11.

- Aggarwal SK and Carter GT. Neuroprotective Therapeutic Cannabinoids. In: Holland J, ed. *Cannabis: The Complete Guide. A Comprehensive Look at the Risks and Benefits of Marijuana.* 2008, In Press.
- Aggarwal SK, Carter GT, Steinborn JJ. Clearing the air: what the latest Supreme Court decision regarding medical marijuana really means. *American Journal of Hospice and Palliative Medicine*. 2005 Sep-Oct;22(5):327-9.
- Contributing Author to *Meanings Beyond Mountains: A Glossary of Terms from the Work of Paul Farmer*, edited by Dr. Matthew Sparke, as part of the 2006 UW Common Book *Mountains Beyond Mountains* Study Guide developed by the UW Center for Curriculum Transformation. (http://depts.washington.edu/ctcenter/MBMglossary.htm)
- "The World Within Us." In *Mantranjali* Souvenir Book for the occasion of Prana Prathishtapana and Maha Kumbhabhishekam. Hindu Temple of Greater Tulsa, 2005.
- Given acknowledgement for help with assembling sequence data in: Bickel PJ, Kechris KJ, Spector PC, Wedemayer GJ, Glazer AN. Finding important sites in protein sequences. *Proc Natl Acad Sci U S A*. 2002 Nov 12;99(23):14764-71. Epub 2002 Nov 4.
- Aggarwal S. Hemscheidt T. Elicitation of Antibiotically Active Secondary Metabolites from Co-cultured Marine Bacteria. *Berkeley Scientific Journal*, 2002, vol. 6:1, 39-42.
- Research results published in Garner, Charles. *Techniques and Experiments for Advanced Organic Laboratory*; Wiley & Sons: New York, 1997; pp 46-48.

------- PRESENTATIONS -------

- Invited to speak on panels at 2008 Seattle Hempfest Hemposium entitled "State of the State: Washington Medical Marijuana Law", "Ask Your Doctor If Medical Marijuana Is Right For You", "Cannabis and Spiritual Freedom." 8/16-17/08.
- "Medical Geographic Perspectives of the U.S. War on Drugs and Public Health." Invited speaker for class session of GEOGRAPHY 280: Introduction to the Geography of Health and Health Care. Co-presented with Dominic Corva, PhC, 8/14/08.
- Invited guest NORML's Daily Audio Stash: The Growing Truth About Cannabis Podcast. Topic: Medical Students and Medical Marijuana. 7/17/08.
- Invited guest on the FM 89.5 KOPN Community Radio in Columbia, MO. "Sex, Drugs, and Civil Liberties" with host Dan Viets. Topic: Medical Marijuana and the AMA. 7/1/08.
- "Shedding Light On Unseen People: What the Candidates Should be Saying About Immigration and Drug Policies", Invited Moderator and Panelist, Abe Keller Peace Education Fund Annual Meeting, 4/9/08.
- "War as the continuation of healthcare by other means: the U.S. war on drugs and the perversion of public health", UW Global Health Seminar co-presented with Dominic Corva, PhC, 3/7/08.

- "Industrial Hemp." Invited speaker for class session of LAW, SOCIETIES, AND JUSTICE 380: "Reefer Madness": Cannabis and Criminalization in the U.S., 1/31/08.
- "Marijuana and Medical Geography." Invited Speaker for class session of LAW, SOCIETIES, AND JUSTICE 380: "Reefer Madness": Cannabis and Criminalization in the U.S., 2/19/08.
- Invited moderator for Wallingford Neighbors for Peace and Justice Meaningful Movies Event Panel featuring King County Councilmember Larry Gossett following screening of *American Drug War: The Last White Hope*, 11/9/07.
- "Medical Geographic Perspectives on the Drug War", Invited Speaker, Hosted by the Cannabis Reform Union of Highline Community College, 10/30/07.
- Presented Public Comment at all four statewide public workshops held by the Washington Department of Health on medical marijuana 60-day supply rules and safe and effective distribution systems rulemaking: Seattle (9/10/07), Spokane (9/11/07), Vancouver (9/17/07), Yakima (9/19/07).
- "Medical Marijuana and Structural Violence." Invited speaker for class session of LAW, SOCIETIES, AND JUSTICE 375: Crime, Politics, and Justice, 10/23/07.
- Invited Presentation at Seattle Hempfest Core Staff Retreat: "Cannabis Use: Harm Reduction and Benefit Maximization." 10/20/07.
- Invited guest on the AM 790 KGMI (largest AM radio station in Whatcom County, Washington) "The Joe Teehan Show". Topic: Medical Marijuana in Washington State. 8/30/07.
- Invited to speak on panels at 2007 Seattle Hempfest Hemposium entitled "Cannabis and Religious Freedom" and "Ask Your Doctor If Medical Marijuana Is Right For You." 8/18-19/07.
- Aggarwal, S. "The Medical Geography of Medical Marijuana" UW Medical Scientist Training Program Poster Session. 8/13/07.
- Invited emcee for "From Hiroshima to Hope 2007". Twenty-third annual Toro Nagashi lantern floating event commemorating the 62nd remembrance of the victims of the atomic bombings of Hiroshima and Nagasaki and all victims of war and violence. Greenlake, Seattle, WA. 8/6/07.
- "Drug War Structural Violence." Invited Speaker for class session of LAW, SOCIETIES, AND JUSTICE 375: Crime, Politics, and Justice, 6/28/07.
- "Learning About Medical Marijuana as a Medical Student in a Medical Marijuana State." Symposium in Exile, June 23, 2007: Medical Marijuana: Myths, Facts & Current Science, Chicago, IL. Presented by The Medical Marijuana Policy Advocacy Project (MMPAP) in collaboration with Roosevelt University's Illinois Consortium on Drug Policy, Students for Sensible Drug Policy (RU Chapter), and the Drug Policy Alliance.
- Invited Presentation: "The Medical Consequences of the Drug War: A Focus on Violence" Hosted by Bastyr University Student Physicians for Social Responsibility, 5/21/07.

- "The Political Ecology of Cannabinergic Botanical Medicine Access and Delivery: Cost-Effectiveness and Death Penalty Apportionment for a Germplasm-Linked Group of Qualifying Patients in Washington State." Abstract Accepted for Poster Presentation at the 2007 MD/PhD Conference: Rethinking Health, Culture, and Society: Physician-Scholars in the Social Sciences and Medical Humanities. Chicago, IL. 4/21/07.
- Abstract Accepted for Oral Presentation at 2007 Association of American Geographers Annual Meeting: San Francisco, CA. 4/19/07. Same topic as above.
- Invited Speaker for Wallingford Neighbors for Peace and Justice Meaningful Movies Event following screening of *Waiting to Inhale: Marijuana, Medicine, and the Law*. 3/16/07.
- "The Medical Consequences of the Drug War: A Focus on Violence", Invited Presentation at the 2007 National Student Physicians for Social Responsibility Conference, Stanford University, 2/24/07.
- Invited moderator for "The War on Drugs: A Panel Discussion" featuring Former Seattle Police Chief Norm Stamper, King County Councilmember Larry Gossett, and King County Bar Association Drug Policy Project Deputy Director Rachel Kurtz. Organized by the Student Physicians for Social Responsibility at UW. 2/13/07.
- "The Impact of Global Warming Induced Mean Sea Level Rise on the Puget Sound Costal Zone." Co-presented final project in GEOGRAPHY 460: Geographic Information Systems Analysis: A Coastal Perspective, Fall 2006, 12/6/06.
- Invited to speak on breaking state monopolies of botanical medicines at town hall forum entitled "Essential Medicines: Global Access, Global Responsibility" hosted by the UW student chapter of Americans for Informed Democracy, along with Universities Allied for Essential Medicines at UW and AMSA UW Premedical Chapter. 11/21/06.
- Invited to speak on panel "War, Health and Human Rights" in GEOGRAPHY 195: Violence, Resistance & Lessons of Paul Farmer. 11/13/06.
- "Emergency Cross-Border Prison Extractions in the Americas: Global Health, Structural Violence, and the Enforcement of Evidence-Denying Prohibitions on Botanical Biota." Invited talk part of the 'Students Moving Mountains' Speakers Series sponsored by the University of Washington Libraries and the Friends of the UW Libraries, 11/2/06.
- Invited to speak on sociomedical context of cannabis therapeutics at staff retreat of Rosehedge: AIDS Housing & Health Care in Seattle, WA. 8/30/06.
- Invited to speak on panel at 2006 Seattle Hempfest entitled "Cannabis: A Holistic Medicine", 8/19/06. Broadcast on SCANTV, Seattle Community Access Network.
- "Substance Abuse: A medical/legal problem." Invited speaker for class session of LAW, SOCIETIES, AND JUSTICE 375: Introduction to Criminal Justice, 6/26/06.
- "Resistance to the War on Drugs." Invited speaker for class session of LAW, SOCIETIES, AND JUSTICE 380: Contemporary Issues in Law, Societies, and Justice: The War on Drugs and Globalization, 5/31/06.

- "Mental Health and Cannabis: Loose Ends." Invited presentation at 2006 NORML Conference in San Francisco, 4/21/06.
- Invited member of panel "Grass Roots to Grass Tops: Activists Effectively Working Together At All Levels" at the 2006 National Organization for the Reform of Marijuana Laws Conference in San Francisco, 4/20/06. Broadcast nationally on C-SPAN Radio, 5/7/06, 10 AM (eastern).
- "Persecution of the Ill and Disabled who use Cannabis as Medicine – Health and Human Rights Cases in the American-led 'War on Marijuana'"; Written and Presented for Health Services 590K/Law H540: Health and Human Rights, Winter 2006, 3/7/06.
- Invited Seminar Discussion leader for GEOGRAPHY 580: Medical Geography Graduate Seminar. Topic: "Social Theory and Narrative in Medical Geography", 12/7/05.
- Presenter at King County Bar Association's Press Conference on 'An Exit Strategy from the War on Drugs.' Subsequently broadcast on Seattle Channel. 3/3/05.
- Presenter at press Conference on the costs of the Iraq War organized by Steve Ludwig of S.N.O.W.: Sound Nonviolent Opponents of War. Theme: US siege on Fallujah. 2/14/05.
- Presented inaugural address at the 2004 Washington Physicians For Social Responsibility Annual Dinner. Theme: "Bringing In the Next Generation", 10/16/04.
- Aggarwal, S. "Developing a Depression Management System: A Small Follow-up Study." UW MSTP (Medical Scientist Training Program) Poster Session. 8/21/04.
- "Smoking, Nutrition, and Physical Activity: Do Physicians Have a Role to Play in Modifying Patient Behaviors?" Group presentation for HUMAN BIOLOGY 555: Medicine, Health, and Society: Discussions in Health Policy, Winter 2004, 1/27/04.
- "Of Malaria and Microsatellites: Geographically Tracking drug-resistant *dhfr* alleles in Plasmodium Falciparum" Sibley Lab, UW Genome Sciences, 9/2/03.
- Elicitation of antibiotics. Presentation given at the Marine Bioproducts Engineering Research Center Industrial Advisory Board Meeting. 8/6-7/01.
- Aggarwal, S. Before the Blizzard Came: the Rise and Fall of the 1890 Ghost Dance Religion. Paper presented at 2001 American Academy of Religion Western Regional Meeting. 3/11-13/01.
- Medicinal chemistry internship final presentation. Tularik, Inc. 9/8/00.
- Aggarwal, S., DiPietro, R., Allen, R. Synthesis and evaluation of novel monomers and polymers for 193nm lithography. Poster presentation given at IBM Almaden Research Labs. A technical paper was submitted as part of the NSF GOALI grant CHE9625628. 8/11/99.

------- COMMUNITY SERVICE AND TEACHING ACTIVITIES -----

- American Physician-Scientists Association (APSA) Institutional Representative for University of Washington, 2008-ongoing.
- American Medical Association, Medical Student Section (AMA-MSS), Elected Alternate Delegate representing UWSOM-Seattle campus at national meetings, 2008-ongoing. Lead author on adopted resolution calling for reclassification of cannabis.
- Washington Physicians for Social Responsibility (WPSR) Immediate Past President, 2004-2006, Executive Board, 2004-2007, Board Member, 2003-ongoing.
- Abe Keller Peace Education Fund, Board Member, 2007-ongoing.
- Co-founder and Project Advisor for The Marijuana Project of Washington State, an organization fighting for the rights of medical marijuana patients in Washington State and beyond through legal defense, and education of lawyers, health professionals, lawmakers, and voters. Project is a collaboration of The November Coalition with the Law Office of Douglas Hiatt, 2007-ongoing.
- Co-founder, Vice President of Membership, and Board Member of the American Academy of Cannabinoid Medicine. An organization promoting medical standards and education in the emerging field of cannabinoid medicine, 2008-ongoing.
- Invited Delegate, Beyond 2008: An International NGO Forum, Vancouver, Canada. Part of a worldwide United Nations civil society consultation on International Drug Conventions system reviewing the accomplishments and failures of the UN General Assembly Special Session (UNGASS) on drugs. One of two North American consultations. February 4–5, 2008.
- Al-Shifa, UWSOM student-run free community clinic, Board Member, 2007-ongoing.
- Founding Officer, UW Students for a Democratic Society, 2007-ongoing.
- Medical Marijuana Policy Advocacy Project, Scientific Advisory Board Member, now merging with the Medical and Scientific Advisory Board of Americans for Safe Access, 2007-ongoing.
- Invited, state legislature-mandated medical expert Stakeholder in Washington State Department of Health rulemaking process regarding medical marijuana dosing, supply, access and delivery, 2007-ongoing.
- Seattle Hempfest Speaker's Crew Core Volunteer, 2007-8. Panelist, Speaker: 2006, 2007, 2008. Cannabis Expert Information Dissemination Canopies co-creator, 2007.
- Physicians for Social Responsibility, Social Justice Committee Member, 2007-ongoing.
- American Student Delegate to 2006 International Physicians for the Prevention of Nuclear War (IPPNW) World Congress, Helsinki, Finland. Sept 7-10, 2006.
- Health Professional Students for Substance Abuse Training, Board Member, 2006-7.
- Member of WPSR/IPPNW delegation that visited health care and peace workers Israel/Palestine, March 2005.

- State Delegate, Washington State Democratic Convention, 2004.
- Trained Volunteer with Chaya, a South Asian American Domestic Violence advocacy and support organization, 2006-ongoing.
- Public Comment, Courtroom Advocacy, and Care for political prisoners of conscience and other raised-profile public individuals whose rights to health have been compromised by corrupt criminal justice systems and/or flawed public health regulation and control of Substance Abuse mental disorders.
- Manuscript Reviewer for *Harm Reduction Journal*, *The Geographical Review*, and the *International Journal of Drug Policy*.
- Graduate and Professional Student Senator, representing Geography Dept., Feb. 2006-May 2007. Served as liaison to Associated Students of the University of Washington Senate and spearheaded GPSS support for repeal of the HEA (Higher Education Act) Aid Elimination Penalty.
- UWSOM Student Physicians for Social Responsibility co-chair, 2003-4.
- Member of King County Bar Association's Drug Policy Project—Legal Frameworks Group. Member of American Civil Liberties Union Drug Policy Coordinating Group.
- Student Advisory Group member for Introduction to Clinical Medicine course, UWSOM, 2003-4.
- Member of UWSOM International Health Group; volunteer for two Annual Western Region International Health Conferences, 2002 & 2005.
- Teacher for Seattle Kaplan Test Prep, MCAT, 11/02-07/03, 10/04-04/05
- Teaching assistant for general chemistry intensive section, UC Berkeley, 1 semester, 2001.
- Tutoring: volunteer general chemistry tutor at UC Berkeley Student Learning Center, trained position, 1999-2001.
- Tutoring: private tutoring offered in organic chemistry, Spring 2001.
- Tutoring: volunteer math tutor for AmeriCorps program, Summer 1999.
- Volunteer Caseworker for Suitcase Clinic and Women's Clinic, free health clinics for the homeless, trained position, Spring 2000.
- Member of UC Berkeley Students For Sensible Drug Policy Chapter, Fall 2001. SSDP founding officer at the University of Washington, 2007.
- Research Papers Editor for *Berkeley Scientific: The Journal of Young Scientists*, Spring 1999-Summer 2000.
- Assistant Editor and list manager for *Cal Literary Arts Magazine*, Spring 1999.
- Member of UC Berkeley Undergraduate Philosophy Club, Spring 1998-Fall 2001.
- Member of Honor Students' Society, community service club, Spring 1998.
- Publicity Chairperson for South Asian Student Alliance, Spring-Fall 1998.
- Chairperson for Residential Hall Peer Review Board, Fall 1997-Spring 1998.

------- AWARDS AND HONORS RECEIVED -------

- Poncin Scholarship recipient, July 2008.
- Freedom Fighter of the Month, *High Times* magazine, March 2008.
- Designated Expert in Medical Marijuana by University of Washington Media Relations, 2007.
- Travel Grant Award from Student Physicians for Social Responsibility, 2006.
- National Science Foundation Graduate Research Fellow, 2005-ongoing. Honored at First-Year National Fellowship and Graduate School Medal Awards Reception, 4/6/06.
- Mental Diversity Scholarship Award, Center for Cognitive Liberty & Ethics, Davis, CA, 2006.
- Honors evaluations in Clinical Epidemiology; Medicine, Health and Society; and Psychopharmacology, UW School of Medicine, 2004.
- Barry M. Goldwater Scholarship, 1998.
- Chemistry Honors Student, UC Berkeley College of Chemistry, 1999, 2000, 2001
- UC Berkeley Kraft Scholarship, 4.00 GPA freshman year, 1998
- Howard Memorial Scholarship, UC Berkeley College of Chemistry, 1998
- Golden Key National Honor Society Inductee, UC Berkeley, 1999
- Outstanding Tutor Award, Honor Students' Society, UC Berkeley, 1998
- Distinguished Member Award, Honor Students' Society: for most community service hours, UC Berkeley, 1998
- US National Chemistry Olympiad Team member, first member from Oklahoma, 1997
- Robert C. Byrd Honors Scholarship, 1997
- National Merit Scholarship, 1997

------- RECENT CONFERENCES ATTENDED-------

- American Medical Association Annual Meeting, Chicago, IL, 6/12-18/08.
- Fifth National Clinical Conference on Cannabis Therapeutics, Pacific Grove (Monterey), CA, 4/4-5/08.
- 2007 International Drug Policy Reform Conference, New Orleans, LA, 12/5-8/07.
- 2007 MD/PhD Conference: Rethinking Health, Culture, and Society: Physician-Scholars in the Social Sciences and Medical Humanities, Chicago, IL, 4/21-22/07.
- 2007 Association of American Geographers Annual Meeting, San Francisco, CA, 4/18-20/07.
- 2007 National Student Physicians for Social Responsibility Conference, Stanford University, Palo Alto, CA, 2/24/07.
- American Student Delegate to 2006 International Physicians for the Prevention of Nuclear War World Congress, Helsinki, Finland, 9/7-10/06.
- Western Regional International Health Conferences on Politics, Social Justice, and Global Health, University of Washington, 11/15-17/2002; 2/18-20/2005.

- 34th, 35th, & 36th National Organization for the Reform of Marijuana Laws (NORML) Conferences, 3/31-4/2/05, 4/20-22/06 (San Francisco, CA), 10/11-14/07 (Los Angeles, CA).
- "Practicing Theory, Theorizing Practice: Physician Scholars in the Social Sciences and Humanities"; MD/PhD Social Science and Humanities Conference, San Francisco, CA, 5/14-15/05.
- Entheogenesis 2: From Darkness Back to Light, Vancouver, BC, 5/21-23/05.
- International Cannabinoid Research Society Meeting, Clearwater Beach, FL, 6/24-27/05.
- Keeping the Door Open 2005: Dialogues on drug use. A symposium: "Beyond Drug Prohibition: A Public Health Approach", Vancouver BC, 10/18-19/05.
- 2006 American Association of Geographers Annual Meeting, incl. NIDA/AAG Symposium on Geography and Drug Addiction, Chicago, IL, 3/7-11/06.
- Fourth National Clinical Conference on Cannabis Therapeutics, Santa Barbara, CA, 4/6-8/06.
- Mental Diversity Scholar attendee to Human Enhancement Technologies and Human Rights Conference, Stanford Law School, Palo Alto, CA, 5/26-28/06.